Ecosystem Profile
Cerrado Biodiversity Hotspot

REVISED
February 2017

Prepared by the ecosystem profiling team:

Donald Sawyer	ISPN, Team Leader
Beto Mesquita	Conservation International Brazil
Bruno Coutinho	Conservation International Brazil
Fábio Vaz de Almeida	ISPN
Isabel Figueiredo	ISPN
Ivana Lamas	Conservation International Brazil
Ludivine Eloy Pereira	Independent consultant
Luiz Paulo Pinto	Independent consultant
Mauro Oliveira Pires	Independent consultant
Thaís Kasecker	Conservation International Brazil

With the assistance of:

João Guilherme Cruz	ISPN
Juliana Napolitano	ISPN
Renata Ceolin	ISPN
Renato Araújo	ISPN
Silvana Bastos	ISPN
David Hathaway	Independent consultant
Maria Isabel Martínez	Independent consultant
Andréa Zimmermann	Matres Socioambiental
Elise Dalmaso	Matres Socioambiental
Marina Palhares	Matres Socioambiental
Renata Navega	Matres Socioambiental
Peggy Poncelet	Critical Ecosystem Partnership Fund

Senior Advisory Group:

Adriana Moreira	Global Leader on Biodiversity, World Bank
Ana Cristina Barros	National Secretary of Biodiversity, Ministry of Environment
André Nassar*	National Secretary of Agricultural Policies, Ministry of Agriculture, Livestock and Supply
Debora Castellani	Director of Research, Natura
Edite Lopes de Souza	Agência 10envolvimento
Elaine Barbosa Silva	Federal University of Goiás, Laboratory of Image Processing and Geoprocessing (LAPIG)
Fábio Scarano	Federal University of Rio de Janeiro and Brazilian Foundation for Sustainable Development (FBDS)
Fátima A. G. de Moura	Federation of Organizations for Social and Educational Assistance (FASE)
Jean-François Timmers	WWF International
Júlio Cesar Sampaio	WWF Brazil, Coordinator of Cerrado Program
Laerte Ferreira*	Federal University of Goiás, Laboratory of Image Processing and Geoprocessing (LAPIG)
Luiz Fernando Merico	National Coordinator of IUCN
Marcelo de Paula*	Brazil's GEF Focal Point, Ministry of Planning, Budget and Management (MP)
Mercedes Bustamante*	Department of Ecology, University of Brasília (UnB)

Selma Yuki Ishii*	Alternativas para a Pequena Agricultura do Tocantins (APATO)
Valmir Soares de Macedo	Centro de Agricultura Alternativa Vicente Nica (CAV)

* Advisors who accepted or expressed interest in participating but had little or no opportunity to collaborate with preparation of the ecosystem profile.

In preparing the Cerrado ecosystem profile, a large number of experts, contributors and stakeholders generously participated in at least one of the consultation workshops, the Advisory Group meeting or personal interviews. However, the concepts and proposals presented in this Ecosystem Profile do not necessarily reflect their views.

Conservation International and ISPN are very grateful to the professionals listed below:

Aldicir Scariot	Center for Genetic Resources and Biotechnology (CENARGEN), Brazilian Agricultural Resarch Corporation (EMBRAPA)
Adolfo Dalla Pria Pereira	Center for Sustainable Development (CDS), University of Brasília (UnB)
Adriana Moreira	World Bank
Adriano Ferreira da Silva	Peasants Workers Movement (MTC)
Alessandra Chaves	Bahian Association of Agricultors and Irrigators (AIBA)
Álvaro Alves Carrara	Center for Alternative Agriculture of Northern of Minas Gerais (CAA/NM)
Ana Cristina Barros	Department of Forest and Biodiversity, Ministry of Environment (MMA)
Analise Cristoldo Romero	Mais Cerrado Foundation
André Ramalho	Brazilian Business Council for Sustainable Development (CEBDS)
Andrew Miccolis	World Agroforestry Centre (ICRAF)
Aneliza Miranda Melo	State Institute of Forest (IEF), Minas Gerais
Asier Santellan	European Comission
Beatriz Secaf	Brazilian Association of Agribusiness (ABAG)
Bruno Lopes Rocha Mello	Mais Cerrado Foundation
Caio Cescir Gomes Fonseca	Small Farmers Movement (MPA)
Carlos Eduardo Negres Victorio	Coordination of Quilombola Communities of Tocantins (COEQTO)
Cesar Victor de Espírito Santo	Pro-Nature Foundation (FUNATURA)
Claudia Calório	Center for Alternative Agriculture of North of Minas Gerais (CAA-NM), Dedicated Grant Mechanism (DGM)
Cleidionice Pereira dos Santos	Peasants Workers Movement (MTC)
Cristiane Moura	Department of Policies for Racial Equity Promotion (SEPPIR)
Cristiane Peres da Silva	State Department of Environment, Tocantins (SEMA/TO)
Cristina Carvalho	European Comission
Dalci José de Carvalho	Associação de Promoção ao Lavrador e Assistência ao Menor de Turmalina (APLAMT)
Daniel Pereira Lobo	Bonsucro
Débora Cristina Castellani	Natura
Denise Daleva Costa	State Department of Environment and Cities, Goiás (SECIMA/GO)
Edite Lopes de Souza	10envolvimento Agency
Eduardo Barroso de Souza	Chico Mendes Institute for Biodiversity Conservation (ICMBio, the federal agency for protected areas)
Eduardo Safons Soares	Department of Extractivism and Sustainable Rural Development (SEDR), Ministry of Environment (MMA)

Elaine Barbosa da Silva	Federal University of Goiás (UFG), Laboratory of Image Processing and Geoprocessing (LAPIG)
Eldo Moreira Barreto	Community Association of Small Farmers of Fecho de Pasto de Clemente (ACCFC)
Eliane Braga Ribeiro	State Department of Environment, Maranhão (SEMA/MA)
Eline Matos Martins	National Center for Flora Conservation (CNC Flora)
Elizabeth Turini	National Food Supply Company (CONAB)
Elton Antonio Silveira	State Department of Environment, Mato Grosso (SEMA/MT)
Eric Vieira da Silva	Regional Cooperative of Agricultors and Extractivists of Sertão Veredas (COOPSERTÃO)
Estevão Bororo Taukane	Brazilian Alliance of Indigenous People (APIB)
Eulinda de Campos Lopes	State Department of Environment, Mato Grosso (SEMA/MT)
Fábio Matsumoto Ricarte	Ministry of Environment (MMA)
Fábio Scarano	Brazilian Foundation for Sustainable Development (FBDS)
Fátima Aparecida Garcia de Moura	Federation of Organizations for Social and Educational Assistance (FASE)
Fernando Antonio Rodrigues Lima	Pro-Nature Foundation (FUNATURA)
Fernando Tatagiba	Department of Forest and Biodiversity, Ministry of Environment (MMA)
Flamarion Luiz Soares	Peasants Workers Movement (MTC)
Flavia Costa Bandeira	Small Agricultors Mobilization (MPA)
Francisca da Silva Nascimento	Movement of Women Babassu Breakers (MIQCB)
Gabriela Gonçalves	Brazilian Forest Service (SFB), Ministry of Environment (MMA)
Gabriela Grisolia	Brazilian Forest Service (SFB), Ministry of Environment (MMA)
Gislano Oliveira	Ministry of Environment (MMA)
Glaciana Araujo	Bahian Association of Agricultors and Irrigators (AIBA)
Guilherme Eidt	German Corporation for International Cooperation (GIZ)
Gustavo Luedemann	Economic Applied Research Institute (IPEA)
Gustavo Martinelli	Rio de Janeiro Botanical Garden (JBRJ)
Gustavo Oliveira	Ministry of Environment (MMA)
Helena Maria Maltez	Department of Environment, Distrito Federal (SEMA/DF)
Helena Pavese	United Nations Program for Environment (PNUMA)
Hudson Coimbra Felix	Chico Mendes Institute for Biodiversity Conservation (ICMBio, the federal agency for protected areas)
Iran Magno Xavier de Oliveira Filho	California Environmental Associates (CEA)
Irene dos Santos	Central Brazil Institute (IBRACE)
Isabel Belloni Schmidt	Departament of Ecology, University of Brasília (UnB)
Isis Freitas	Ministry of Envitonment (MMA)
Isolete Wichinieski	Pastoral Land Comission (CPT)
Ítalo Veras Eduardo	Inter-American Institute for Cooperation on Agriculture (IICA)
Jackson Luís da Silva	Suzano Pulp and Paper
Janaína Gomes Dantas	State Department of Environment, Maranhão (SEMA/MA)
Jean-François Timmers	WWF International
João da Mata Nunes Rocha	Chico Mendes Institute for Biodiversity Conservation (ICMBio, the federal agency for protected areas)

John Landers O.B.E.	Cerrado No-Till Farming Association (APDC)
Júlio Cesar Sampaio da Silva	WWF Brazil
Jussara Pinto	Center for Alternative Agriculture of North of Minas Gerais (CAA-NM), Dedicated Grant Mechanism (DGM)
Juvana Evarista dos Santos	Mobilization of Indigenous Peoples of the Cerrado (MOPIC)
Kátia Torres Ribeiro	Indepent consultant
Keila Juarez	Ministry of Science, Technology and Inovation (MCTI)
Kolbe Soares	WWF Brazil
Laercio Machado de Sousa	National Confederation of Private Natural Heritage Reserves (CNRPPN)
Letícia Campos	WWF Brazil
Lourdes Cardozo Laureano	Pacari Association
Luciana Brandão	Brazilian Federation of Direct Seed Cropping and Irrigation
Luciano Andra	City Hall of Valparaíso de Goiás
Luiz Fernando Krieger Merico	International Union for Conservation of Nature (IUCN)
Márcia Andaluza Xavier	Lina Galvani Institute
Márcio Macedo Costa	Brazilian National Development Bank (BNDES)
Maria Faria do Amaral	Ministry of Environment (MMA)
Mariana de Alencar Ramos Fernandes	Inter-American Institute for Cooperation on Agriculture (IICA)
Mário Augusto de Campos Cardoso	National Confederation of Industry (CNI)
Martha Gilka Gutierrez Carrijo	State Environment Institute, Mato Grosso do Sul
Matheus Campos Fonseca	Small Farmers Movement (MPA)
Mauro Terena	Mobilization of Indigenous Peoples of the Cerrado (MOPIC)
Miguel D'Avila de Morais	International Union for Conservation of Nature (IUCN)
Nina Paula Laranjeira	Cerrado Centre, University of Brasília (UnB)
Olympio Barbanti Junior	Independent consultant
Onildo Marini	National Center for Research and Biodiversity Conservation of Cerrado and Caatinga, Chico Mendes Institute for Biodiversity Conservation (ICMBio)
Patrícia de Lucena Mourão	Departament of Family Farming (SAF), Ministry of Agrarian Development (MDA)
Paulo Fiúza	Mais Cerrado Foundation
Paulo Roberto Neil Magalhães	Banco of Brazil Foundation (FBB)
Pedro Gasparinetti	Mais Cerrado Foundation
Rafael de Oliveira Poubel	Center of Excelence and Studies of Cerrado (CEEX), Cerratenses, Brasília Botanical Garden (JBB)
Rafael Dias Loyola	Federal University of Goiás (UFG)
Rafael Pereira	Department of Climate Change and Environmental Quality (SMCQ), Ministry of Environment (MMA)
Raíssa Ribeiro Pereira Silva	Socioenvironmental Institute (ISA)
Raul Xavier de Oliveira	Department of Climate Change and Environmental Quality (SMCQ), Ministry of Environment (MMA)
Renato Flit	Department of Policies for Racial Equity Promotion (SEPPIR)
Roberta Holmes	Department of Forest and Biodiversity, Ministry of Environment (MMA)
Samantha Ro'otsitsina de Carvalho Juruna	Indigenous Youth Network (REJUIND)
Samir Gomes Tannus	Mais Cerrado Foundation

Sandra Regina Afonso	Brazilian Forest Service (SFB), Ministry of Environment (MMA)
Sara Pitombo	Ministry of Environment (MMA)
Sarah Alves de Melo	Management Group of Productive Chain of Pequi and Other Cerrado Fruits
Silvia Torrecilha	Environmental Institute of Mato Grosso do Sul
Srewê da Mata de Brito	Mobilization of Indigenous Peoples of the Cerrado (MOPIC), Xerente Indigenous Union
Stéphane Guéneau	University of Brasília (UnB)
Sueli Gomes Fernandes	Center for Alternative Agriculture Vicente Nica (CAV)
Sueli Matiko Sano	Brazilian Agricultural Resarch Corporation (EMBRAPA)
Suelma Silva	National Center for Research and Biodiversity Conservation of Cerrado and Caatinga, Chico Mendes Institute for Biodiversity Conservation (ICMBio)
Talia Manceira Bonfante	Natura
Tania M. Caldeira Jardim	Brazilian Agency for Cooperation (ABC)
Tiago Jordão Porto Santos	State Department of Environment, Bahia (SEMA/BA)
Ugo Todde	Mais Cerrado Foudation
Valmir Macedo	Center for Alternative Agriculture Vicente Nica (CAV)
Valney Dias Rigonato	Federal University of Western Bahia
Vinicius de Araujo Klier	Indepent consultant
Wilson Miguel	Regional Cooperative of Agricultors and Extractivists of Sertão Veredas

In addition to the workshops and personal meetings, representatives of 42 community organizations responded to a survey carried out in July of 2014, during the National Meeting of Cerrado Peoples. The results of this survey contributed to enhance the knowledge about the concerns of these stakeholders as well to define priorities for KBAs and corridors, providing to the authors relevant information on the current status of civil society organizations in the Cerrado Hotspot.

TABLE OF CONTENTS

GLOSSARY

1) Adaptation – adjustment in natural or human systems in response to actual or expected climatic stimuli or to their effects, which moderates harm or exploits beneficial opportunities.

2) Agrobiodiversity – part of biodiversity used in agriculture or related activities, be it in nature or under domestication or semi-domestication.

3) Agroextractivism – family farming that combines production of crops and livestock with use of native biodiversity.

4) Benefit sharing – channeling some kind of returns, whether monetary or non-monetary, back to affected communities, source communities or source nations, among others.

5) Best practice – technique or methodology that, through experience and research, has been proven to reliably lead to a desired result. In the context of this document, the desired result is a lower environmental and social negative impact.

6) Biome – according to Osborne (2000), biomes are defined as large groups of ecosystems that occur in different regions of the world, characterized by dominant forms of life (plants and animals) that have developed in response to relatively uniform climatic conditions (distribution of rainfall and average annual temperature). There is great controversy in Brazil about the concept of biome, and the Brazilian Institute of Geography and Statistics (IBGE) uses the term to refer to large bioclimatic regions of the country (Amazon, Cerrado, Caatinga, Atlantic Forest, Pampa and Pantanal).

7) Caatinga – semi-arid biome in Northeastern Brazil, bordering on the Amazon, Cerrado and Atlantic Forest.

8) Cerrado – wooded savanna including 12 vegetation types in Central Brazil and parts of Bolivia and Paraguay, bordering on the Amazon, Caatinga, Atlantic Forest and Pantanal biomes.

9) Chaco – sparsely populated, hot and semi-arid lowland natural region of the Río de la Plata basin, divided among eastern Bolivia, Paraguay, northern Argentina and a portion of the Brazilian states of Mato Grosso and Mato Grosso do Sul.

10) Chiquitano – dry forests of Bolivia and Brazil with trees that lose their leaves during the dry season and are generally resistant to flooding and fire.

11) Civil Society Organization (CSO) – defined by CEPF as nongovernmental and private sector organizations, community groups, individuals, universities and foundations, including government organizations provided they can establish their legal personality independent of any government agency, their authority to apply for and receive private funds and that they may not assert a claim of sovereign immunity.

12) Conservation mainstreaming – making conservation an integral dimension of the design, implementation, monitoring and evaluation of policies and programs in all political, economic and societal spheres.

13) Conservation outcome – defined by CEPF as the full set of quantitative and justifiable conservation targets in a hotspot that should be achieved to prevent biodiversity loss. These targets are defined at three hierarchical levels: species (extinctions avoided); sites (areas protected); and landscapes (corridors created), corresponding to recognizable units of biodiversity along an ecological continuum.

14) Conservation units – according to Federal Law 9.985/2000, conservation units are defined as "territorial space and its environmental resources, including jurisdictional waters, with relevant natural characteristics, legally instituted by the government, with conservation objectives and defined limits, under a special administrative regime, which is subject to appropriate guarantees of protection." There are 12 categories of conservation units, divided into two groups: Integral Protection and Sustainable Use.

15) Corridor – defined by CEPF as inter-connected landscape of sites important for the conservation of broad-scale ecological and evolutionary processes and little-changed ('intact') ecological communities.

16) Developmentalism – economic theory that developing countries should foster strong and varied internal markets, promote domestic industry and impose high tariffs on imported goods, often as opposed to environmentalism.

17) Ecosystem – interactive system consisting in all living organisms and their abiotic (physical and chemical) environment within a given area, covering various spatial scales.

18) Ecosystem Profile – for CEPF, rapid assessment of a biodiversity hotspot or priority area within a hotspot, providing an overview of biodiversity importance, overall conservation targets or outcomes, major threats and the policy, civil society and socioeconomic contexts, as well as funding gaps and opportunities.

19) Ecosystem services – services provided by ecosystems that result in ecological balance and favorable conditions for human well-being, such as water purification, pollination of crops, watershed protection, erosion control and carbon sequestration.

20) Endemic – ecological state of a species being unique to a defined geographic location, such as an island, nation, country or other defined zone or habitat type; organisms that are indigenous to a place are not *endemic* to it if they are also found elsewhere.

21) Environmental services – set of human actions and decisions that favor the maintenance and/or recovery of the capacity of ecosystems to provide essential services for ecological balance and human well-being.

22) Environmentalism – a broad philosophy, ideology and social movement regarding concerns for environmental protection and improvement of the health of the environment, particularly its non-human elements, often as opposed to developmentalism.

23) Extinction - global disappearance of an entire species.

24) Extractivism – in Brazil, wild collection or harvesting of native biodiversity products, not including mining and oil.

25) Family farmer – for official purposes in Brazil, rural producers who: a) use the land as owners, squatters, tenants or land reform settlers; b) reside on or near the property; c) have no more than four fiscal modules (varying in size according to location) for farming or six fiscal modules for livestock; and d) primarily use family labor.

26) Free, prior, informed consent (FPIC) – principle that communities (particulary of Indigenous People) have the right to give or withhold their consent to proposed projects that may affect the lands they customarily own, occupy or otherwise use.

27) *Fundo de pasto/fecho de pasto* – traditional rural livelihood in parts of the Caatinga and Cerrado in which family plots are combined with commons in which cattle, goats and sheep feed on native pasture in free range.

28) Geraizeiro – traditional communities living in the Cerrado on the southern side of the São Francisco River in northern Minas Gerais.

29) Hotspots – ecosystems with high concentrations of endemic species and intensive habitat loss where ecological conservation and restoration efforts are prioritized to protect biodiversity. In Brazil, the Atlantic Forest and Cerrado are considered hotspots. Myers *et al.* (2000) established 25 world hotspots. Subsequently, the list was expanded to 36 hotspots (Mittermeier *et al.* 2004 and Noss *et al.* 2015). A hotspot is home to at least 1,500 endemic plant species and has some degree of degradation in at least 70% of its native vegetation.

30) Important Bird Area (IBA) – site of international importance for the conservation of birds and other biodiversity.

31) Indigenist – individual or organization that works to defend indigenous peoples.

32) Indigenous and Conserved Community Area (ICCA) – natural and/or modified ecosystem containing significant biodiversity values and ecological services, voluntarily conserved by (sedentary and mobile) indigenous and local communities, through customary laws or other effective means.

33) Indigenous land – part of the national territory, owned by the federal government and inhabited by one or more indigenous peoples, which they use for their productive activities, indispensable for the preservation of environmental resources necessary for their well-being and their physical and cultural reproduction, according to their uses, customs and traditions.

34) Indigenous people – group of people recognized as having specific rights under national or international law, based upon: residence within or attachment to geographically distinct traditional habitats, ancestral territories, and their natural resources; maintenance of cultural and social identities, and social, economic, cultural and political institutions separate from mainstream or dominant societies and cultures; descent from population groups present in a given area, most frequently before modern states or territories were created and current borders defined; and/or self-identification as being part of a distinct indigenous cultural group, and the desire to preserve that cultural identity.

35) Integral Protection – according to Federal Law 9.985/2000, integral protection is defined as the "maintenance of ecosystems free of changes caused by human interference, admitting only indirect use of their natural attributes". The Integral Protection group of conservation units covered in SNUC includes those which permit the indirect use of natural resources, such as visitation, tourism, environmental education and research.

36) Investment niche – –the specific geographic and thematic areas in which CEPF's investments can be most effective, considering conservation needs and the pattern of other investments.

37) Investment Priority – one of a set of thematic priorities for CEPF investment.

38) Key Biodiversity Area (KBA) – site of international importance for the conservation of biodiversity defined according to standard criteria based in principles of irreplaceability and vulnerability.

39) Leakage – metaphor to represent any significant loss of natural resources caused by human activities with adverse effects on functionality, structure and composition of ecosystems. Such leakage also has adverse effects on the flow of ecosystem services to society. It can also be defined as the spatial displacement of negative environmental impacts caused by environmental protection in certain areas.

40) Legal Amazon – the states of Rondônia, Acre, Amazonas, Roraima, Pará, Amapá, Tocantins and Mato Grosso and Maranhão west of 44º W.

41) Legal Reserve – according to Federal Law 12.651/2012, Legal Reserves are defined as "areas located within a property or rural possession, defined under Art. 12, with the function of ensuring sustainable economic use of the natural resources of rural property, assist the conservation and rehabilitation of ecological processes and promote the conservation of biodiversity, as well as sheltering and protecting native wildlife and flora". All Brazilian rural properties should demarcate their Legal Reserves, which should not be less than 80% of the total area of the property in the Amazon biome, 35% in the Cerrado biome in the Legal Amazon region and 20% in other regions. They must be included in the Rural Environmental Registry (CAR).

42) Mitigation – anthropogenic intervention to reduce the anthropogenic forcing of the climate system, including strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

43) Pantanal – wetlands biome in Mato Grosso and Mato Grosso do Sul, bordering on Cerrado, Atlantic Forest, Chaco and Chiquitano.

44) Permanent Preservation Areas (APP) – according to Federal Law 12,651/2012, APPs are defined as "a protected area covered or not by native vegetation, with the environmental function of preserving water resources, landscapes, geological stability and biodiversity, facilitating gene flows of fauna and flora, protecting the soil and ensuring welfare of human populations", which should be demarcated within all rural properties in Brazil and included in the Rural Environmental Registry (CAR).

45) Preservation – according to Federal Law 9.985/2000, preservation is defined as the "set of methods, procedures and policies aimed at long-term protection of species, habitats and ecosystems, as well as maintenance of ecological processes, preventing the simplification of natural systems", assuming minimum levels of human intervention.

46) Private Natural Heritage Reserve (RPPN) – according to Federal Law 9.985/2000, a category of conservation units defined as "a private area, recorded with perpetuity, in order to conserve biological diversity". RPPNs are legally recognized by the government through voluntary application by the owner of the area and may cover all or part of the rural property. RPPNs only allow for indirect use of natural resources through activities such as visitation, tourism, environmental education and research.

47) Protected areas – in Brazil, the concept of protected areas includes conservation units, defined according to Federal Law 9.985/2000, Indigenous Lands and *Quilombola* Territories, as well as Legal Reserves and Permanent Preservation Areas, as defined by Federal Law 12.651/2012.

48) *Quilombola* – traditional community constituted by descendants of enslaved Africans.

49) Regional Implementation Team (RIT) – organization selected by the CEPF to coordinate the implementation of its investment strategy in a hotspot.

50) Resilience – ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, including the capacity for self-organization and the capacity to adapt to stress and change.

51) Restoration – according to the International Society for Ecological Restoration, restoration is defined as the process and practice of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed, with minimal recuperation of form and function.

52) *Retireiro* – traditional communities living along the Araguaia River in Tocantins and Mato Grosso.

53) Rural Environmental Registry – created by Federal Law 12,651/2012 and known by the acronym 'CAR', it is defined as the public nationwide electronic record which is compulsory for all rural properties, in order to compile environmental information about rural properties and possessions, constituting a database for control, monitoring, environmental and economic planning and avoiding deforestation.

54) Satoyama – a global initiative with the purpose of realizing "societies in harmony with nature" through the conservation and advancement of "socio-ecological production landscapes and seascapes".

55) Savanna – tropical grassland scattered with shrubs and isolated trees, due to limited rainfall, which can be found between rainforest and desert biomes.

56) *Sertanejo* – traditional inhabitant of the *sertão*, the backlands of Brazil.

57) Sociobiodiversity – goods and services based on use of natural resources by traditional peoples and communities and family farmers.

58) Socioenvironmental – environmental but taking into account synergies with traditional social organization and culture.

59) Stakeholder – person, group or organization that has stake (interest or concern) in an organization or issue.

60) Stepping stones – dispersed patches of habitat in the landscape matrix that, even when they are not physically connected (as opposed to corridors), serve as points that connect fragmented habitats, facilitating dispersal and gene flow for some species.

61) Strategic Direction – a grouping of several investment priorities within the CEPF investment strategy for a hotspot.

62) Sustainable use – according to Federal Law 9.985/2000, sustainable use is defined as "environmental utilization in order to ensure the sustainability of renewable environmental resources and ecological processes, maintaining biodiversity and other environmentally friendly attributes, in socially just and economically feasible ways". The group of sustainable use conservation units covered in SNUC integrates those where sustainable productive activities are allowed, unlike those of Integral Protection (indirect use conservation).

63) Traditional peoples and communities – groups that have cultures different from those that prevail in society, with their own identity, distinct social organization, use of territories and natural resources to maintain their culture in terms of social organization, religion, economy and ancestry. According to Diegues (2003), they are human populations or societies where individuals have lifestyles strongly associated with the use and management of natural resources throughout their historical occupation of natural ecosystems and adjacent farmland, and who have so-called traditional ecological knowledge. They include both indigenous and non-indigenous traditional populations, such as coastal fisherfolk (*caiçaras*), raft fisherfolk (*jangadeiros*), backlanders (*sertanejos*), countrysiders (*caipiras*), descendants of enslaved Africans (*quilombolas*) and riverine communities (*ribeirinhos*). In general, they are people who, through extraction, use various products of native flora and fauna as a source of medicine, fiber, food and energy, as well as having a number of cultural and religious traits associated with biodiversity and local ecosystems. In addition, traditional societies usually obtain a significant part of their livelihood from the cultivation of small clearings and animal breeding in mosaics of natural areas and agricultural fields opened periodically in secondary vegetation.

64) *Vazanteiro* – member of a traditional community living on islands in or banks along the São Francisco, Tocantins and Araguaia rivers.

LIST OF ACRONYMS

ABA	Brazilian Anthropological Association
ABAG	Brazilian Association of Agribusiness
ABC	Brazilian Agency for Cooperation
ABC	Low-Carbon Agriculture
ABEMA	Brazilian Association of State Environmental Agencies
ABI	Brazilian Press Association
ABIP	Brazilian Indigenous Peoples Network
ABIOVE	Brazilian Association of Vegetable Oil Industries
ABONG	Brazilian Association of Non-Governmental Organizations
ABRAS	Brazilian Association of Supermarkets
ABRH	Brazilian Association of Water Resources
AECID	Spanish Agency for International Development Cooperation
AFD	French Development Agency (Agence Française de Développement)
AHP	Analytical Hierarchical Process
AMAVIDA	Maranhão Association for Nature Conservation
ANA	National Water Agency
ANAMMA	National Association of Municipal Environmental Agencies
ANATER	National Rural Extension Agency
ANPEC	National Association of Graduate Study and Research in Economics
ANPOCS	National Association of Graduate Study and Research in Social Sciences
ANPPAS	National Association of Research and Graduate Study on Environment and Society
ANVISA	National Agency for Sanitary Surveillance and Inspection
APA	Environmental Protection Area
APDC	Cerrado No-Till Farming Association
APOINME	Network of Indigenous Peoples and Organizations of the Northeast, Minas Gerais and Espírito Santo
APP	Area of Permanent Preservation
APROSOJA	Brazilian Soybean Producer Association
ASCEMA	National Association of Environment Experts Servers
ASIBAMA	Association of Environment Civil Servants of the Brazilian Institute of Environment and Renewable Natural Resources and Chico Mendes Institute for Biodiversity Conservation
ASMUPIB	Regional Association of Women Rural Workers in the Bico do Papagaio
ASPTA	Advisory and Services for Alternative Agriculture Projects
ASSEMA	Association of Ministry of Environment Servers
AZE	Alliance for Zero Extinction
BASA	Bank of the Amazon
BASIC	Brazil, South Africa, India and China
BB	Bank of Brazil
BNB	Bank of the Northeast
BNDES	Brazilian National Development Bank
BRB	Regional Bank of Brasília
BRIICS	Brazil, Russia, India, Indonesia, China and South Africa
BVRio	Rio de Janeiro Environmental Stock Exchange
CAR	Rural Environmental Registry
CAPES	Coordination for the Improvement of Higher Education
CBH	Watershed Committees

CBD	Convention on Biological Diversity
CEBDS	Brazilian Business Council for Sustainable Development
CECAT	National Center for Research and Conservation of the Biodiversity of the Cerrado and Caatinga
CEDAC	Cerrado Agroecological Development Center
CENARGEN	Genetic Resources and Biotechnology Center
CEPF	Critical Ecosystem Partnership Fund
CESE	Ecumenical Coordination of Service
CFRs	Rural Family Houses (schools)
CGTB	General Central of Brazilian Workers
CI	Conservation International
CIF	Climate Investment Fund
CIMI	Missionary Indigenist Council
CIRAD	Center of Agronomy Research for Development
CIRAT	International Reference Center on Water and Transdisciplinarity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLUA	Climate and Land Use Alliance
CMADS	Commission on Environment and Sustainable Development
CMBBC	Conservation and Management of the Plant Biodiversity of the Cerrado Biome
CNA	National Confederation of Agriculture and Livestock
CNAPO	National Commission of Agroecology and Organic Production
CNC	National Confederation of Commerce
CNC Flora	National Center for Flora Conservation
CNEA	National Registry of Environmental Organizations
CNI	National Confederation of Industry
CNJI	National Commission of Indigenous Youth
CNMP	National Council of Public Attorneys
CNPJ	National Register of Legal Entities
CNPq	National Research and Technological Development Council
CNRH	National Water Resources Council
CNS	National Council of Extractivist Populations
CODEVASF	Company for Development of the São Francisco Valley
COIAB	Coordination of Indigenous Organizations of the Brazilian Amazon
COMCERRADO	Science and Technology Cooperation Network for Conservation and Sustainable Use of the Cerrado
CONAB	National Food Supply Company
CONABIO	National Biodiversity Commission
CONACER	National Cerrado Commission
CONAMA	National Environment Council
CONDRAF	National Sustainable Rural Development Commission
COPALJ	Cooperative of Agro-extractivist Producers of Lago de Junco
CONTAG	National Confederation of Workers in Agriculture
COP	Conference of the Parties
CPAC	Center for Cerrado Agricultural Research (at EMBRAPA)
CPT	Pastoral Land Commission
CSO	Civil Society Organization
CSTT	Civil Society Tracking Tool
CTB	Confederation of Brazilian Workers
CTC	Countryside Workers Central

CTI	Center of Indigenous Work
CUT	Unified Workers Central
DAP	Declaration of Aptitude for PRONAF
DEFRA	Department of Environment, Food and Rural Affairs (United Kingdom)
DETER	System to Detect Deforestation in Real Time
DfID	Department for International Development
EBC	Brazilian Communication Company
ECODATA	Brazilian Agency for Environment and Information Technology
EFR	Family Rural School
EMBRAPA	Brazilian Agricultural Research Corporation
FAMATO	Federation of Agriculture and Livestock of the State of Mato Grosso
FAO	Food and Agriculture Organization of the United Nations
FAP	Research Support Foundations
FAPESP	State Research Support Foundation in São Paulo
FASE	Federation of Organizations for Social and Educational Assistance
FBB	Bank of Brazil Foundation
FBDS	Brazilian Foundation for Sustainable Development
FBES	Brazilian Solidary Economy Forum
FBMC	Brazilian Forum on Climate Change
FBOMS	Brazilian Forum of NGOs and Social Movements for Environment and Development
FCO	Constitutional Fund of the Center-West
FEBRABAN	Brazilian Federation of Banks
FGTS	Guarantee Fund for Employees
FIP	Forest Investment Program
FNDF	National Education Development Fund
FNE	Constitutional Fund of the Northeast
FNO	Constitutional Fund of the North
FOIRN	Federation of Indigenous Organizations of the Rio Negro
FORMAD	Mato Grosso Forum for Environment and Development
FUNATURA	Pro-Nature Foundation
GAPAN	Supporting Groups to National Action Plans
GCC	Global Climate Change
GCF	Global Conservation Fund
GDP	Gross Domestic Product
GEF	Global Environment Facility
GENPAC	Network for Geographic Genetics and Regional Planning for Conservation of the Cerrado
GHG	Greenhouse Gas
GIZ	German Technical Cooperation Agency
GMO	Genetically Modified Organism
GTA	Amazon Working Group
HDI	Human Development Index
IABS	Brazilian Institute of Development and Sustainability
IBÁ	Brazilian Tree Industry
IBA	Important Bird Area
IBAMA	Brazilian Institute of Environment and Renewable Natural Resources
IBAS	India, Brazil and South Africa
IBRACE	Central Brazil Institute
IBGE	Brazilian Institute of Geography and Statistics

ICCA	Indigenous and Community Conserved Areas
ICMBio	Chico Mendes Institute for Biodiversity Conservation
ICMS	Value-added tax
ICRAF	World Agroforestry Centre
ICV	Life Center Institute
IDB	Inter-American Development Bank
IESB	Institute for Socio-Environmental Studies of Southern Bahia
IICA	Inter-American Institute for Cooperation on Agriculture
IIEB	Brazililan International Institute for Education
ILUC	Indirect Land Use Change
IMAFLORA	Institute for Forestry and Agriculture Management and Certification
IMAZON	Institute of Man and the Environment in the Amazon
IMS	Marista Solidarity Institute
INCRA	National Institute of Colonization and Agrarian Reform
INDC	Intended Nationally Determined Contribution
INPA	Amazon National Research Institute
INPE	National Space Research Agency
INSA	National Semi-Arid Institute
IPA	Anthropic Pressure Index
IPAM	Institute for Amazon Research
IPCC	Intergovernmental Panel on Climate Change
IPÊ	Ecological Research Institute
IPEC	Cerrado Permaculture Institute
IPHAN	National Institute of Historical and Artistic Heritages
IRD	Research Institute for Development (Institut de Recherche pour le Développement)
ISA	Socioenvironmental Institute
ISPN	Institute for Society, Population and Nature
IUCN	International Union for Conservation of Nature
JBB	Botanical Garden of Brasília
JBRJ	Rio de Janeiro Botanical Garden
JICA	Japan International Cooperation Agency
LAPIG	Laboratory of Image Processing and Geoprocessing
LR	Legal Reserve
LULUCF	Land Use, Land Use Change and Forestry
KBA	Key Biodiversity Area
MAPA	Ministry of Agriculture, Livestock and Supply
Matopiba	Maranhão, Tocantins, Piauí and Bahia
MCTI	Ministry of Science, Technology and Innovation
MDA	Ministry of Agrarian Development
MDB	Multilateral Development Banks
MDG	Millennium Development Goals
MDS	Ministry of Social Development and the Fight against Hunger
MEC	Ministry of Education
MI	Ministry of National Integration
MIQCB	Interstate Movement of Women Babassu Crackers
MMA	Ministry of Environment
MME	Ministry of Mines and Energy
MOPIC	Mobilization of Indigenous Peoples of the Cerrado
MRE	Ministry of International Affairs

MPA	Small Farmers Movement
MPEG	Emilio Goeldi Museum of Pará
MROSC	Framework for Civil Society Organizations
MSI	Multi-Stakeholder Initiatives
MST	Landless Workers Movement
MTC	Rural Workers Movement
NGO	non-governmental organization
NCP	Cerrado and Pantanal Center
NTFP	Non-Timber Forest Product
OAS	Organization of American States
OCB	Brazilian Cooperative Organization
ONS	National System Operator
OPAN	Native Amazon Operation
OS	Social Organizations
OSCIPs	Public Interest Civil Society Organizations
OTCA	Amazon Cooperation Treaty Organization
PA	Protected Area
PAA	Food Acquisition Program
PAE	Agro-Extractive Settlement Project
PAC	Plan to Accelerate Growth
PAN	National Action Plan
PBMC	Brazilian Panel on Climate Change
PCS	Sustainable Cerrado Program
PES	Payment for Environmental Services
PGPM	Minimum Price Guarantee Policy
PGPM-Bio	Minimum Price Guarantee Policy for Socio-Biodiversity Products
PESACRE	Acre Agroforestry Research and Extension Group
PLANAVEG	National Plan to Recover Native Vegetation
PN	National Park
PNAE	National School Lunch Program
PNAP	National Strategic Plan for Protected Areas
PNAPO	National Policy for Agro-Ecology and Organic Production
PNGATI	National Policy for Environmental Management in Indigenous Lands
PNPCT	National Policy for Sustainable Development of Traditional Peoples and Communities
PNPSB	National Plan for Promotion of Socio-Biodiversity Value Chains
POP	Persistent Organic Pollutants
PPCerrado	Action Plan for Prevention and Control of Deforestation and Fires in the Cerrado
PPG7	Pilot Program to Conserve the Brazilian Rain Forest
PRA	Environmental Regularization Program
PROBIO	National Program for Biodiversity Protection
PRONAF	National Program to Strengthen Family Agriculture
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
RBJA	Brazilian Network of Environmental Journalism
RDS	Sustainable Development Reserve
REBAL	Brazilian Network of Local Agendas 21
REBEA	Environmental Education Network
REBIA	Brazilian Network of Environmental Information
RECO	Eco-social Region

REDD+	Reduction of Emissions from Deforestation and Forest Degradation
REDEPROUC	Pro-Conservation Unit Network
RESEX	Extractive Reserve
RIDE	Integrated Development Region of the Federal District and surrounding areas
RMA	Atlantic Forest NGOs Network
RPPN	Private Natural Heritage Reserve
RTRS	Round Table on Responsible Soy
RTS	Social Technology Network
SAE	Department of Strategic Affairs
SAF	Department of Family Farming
SAIC	Department of Institutional Coordination and Environmental Citizenship
SBPC	Society for the Advancement of Science
SDG	Sustainable Development Goals
SEDR	Department of Extractivism and Sustainable Rural Development
SESI	Social Service of Industry
SEPPIR	Department of Policies for Racial Equity Promotion
SFB	Brazilian Forest Service
SGP	Small Grants Program
SIN	National Integrated System
SISNAMA	National Environment System
SMCQ	Department of Climate Change and Environmental Quality
SNA	National Agriculture Society
SNUC	National System of Nature Conservation Units
SOSMA	SOS Atlantic Forest Foundation
SPM	Specific Federal Ministry for Policies for Women
SPVS	Society for Research on Wildlife and Environmental Education
SRB	Brazilian Rural Society
SRHU	Department of Water Resources and Urban Environment
STRLRV	Rural Workers Union of Lucas do Rio Verde
SUASA	Single System of Care for Agricultural Sanitation
SUDAM	Superintendency for Development of the Amazon
SUDECO	Superintendency for Development of the Center-West
SUDENE	Superintendency for Development of the Northeast
SUNY	State University of New York
SUS	Single Health System
TFCA	Tropical Forest Conservation Act
TFF	Tropical Forest Foundation
TNC	The Nature Conservancy
UC	Conservation Unit
UF	Federative Unit
UFG	Federal University of Goiás
UGT	General Workers' Union
UHE	Hydroelectric Power Plant
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNEMAT	Mato Grosso State University
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNI	Union of Indigenous Nations
UNICA	Sugarcane Industry Union

UNICAFES	National Union of Family Farmer Cooperatives and Solidary Economy
UNICAMP	State University of Campinas
UNIMONTES	Montes Claros State University
USAID	United States Agency for International Development
WBCSD	World Business Council for Sustainable Development
WLT	World Land Trust
WRI	World Resources Institute
WWF	World-Wide Fund for Nature
ZEE	Ecological-Economic Zoning

EXECUTIVE SUMMARY

Biodiversity and the threats to it are not distributed evenly over the face of the globe. Conservation organizations seek to maximize the effectiveness of their limited funds by focusing on the most important places, where action is most urgent and effective. One of the most influential priority-setting analyses was the identification of biodiversity 'hotspots' (Myers *et al.* 2000; Mittermeier *et al.* 2004), defined as regions that have at least 1,500 endemic plants species and have lost at least 70 percent of their natural habitat. There are 35 hotspots globally, covering 15.7% of the earth's surface. The natural habitats within these hotspots cover only 2.3% of the world's surface, but contain half of all plants and 77% of all terrestrial vertebrates. There are two hotspots in Brazil: the Atlantic Forest and the Cerrado. The CEPF invested in the Atlantic Forest Hotspot between 2001 and 2010.

According to the original definition, the Cerrado Hotspot, located in central South America, has a total land area of 2,024,838 km^2, 99.30% in Brazil and the remainder divided between Paraguay (0.41%) and Bolivia (0.29%). These numbers have been updated to 2,039,386 km^2 just for the Cerrado biome in Brazil but no agreement has been reached for the extent of Cerrado in Paraguay and Bolivia. For the purposes of the ecosystem profile, the Cerrado Hotspot was taken to comprise the Cerrado biome recognized by the Brazilian government plus four Important Bird Areas (IBAs) in neighboring Bolivia and Paraguay, which contain examples of Cerrado ecosystems. The total area considered for the Cerrado Hotspot in this ecosystem profile is thus 2,064,301 km^2.

The Cerrado is one of the largest and biologically richest tropical savanna regions in the world (Mittermeier *et al*. 2004) and supports highly diverse biological communities with many unique species and varieties. Many of these species and varieties are endemic not only to the hotspot, but also to single sites within it. They are unique and useful, as well as constituting an ecosystem that is vital regarding national supplies of water and energy, control of erosion and reduction of greenhouse gas emissions. Such species are highly vulnerable to habitat loss, hunting, poaching, pollution and other pressures.

The development of an ecosystem profile to guide investments in each hotspot is a fundamental part of CEPF's approach prior to the award of grants. The process is led by civil society groups and includes diverse stakeholders to develop a shared strategy from the outset. This ecosystem profile includes overall conservation outcomes, major threats, policy, civil society and socioeconomic contexts, funding gaps and opportunities, as well as the CEPF niche, strategies and sustainability.

The ecosystem profile lists 1,593 terrestrial and freshwater species classified by the International Union for Conservation of Nature (IUCN) as globally threatened and by Brazilian environmental authorities as nationally threatened, as well as rare fish and rare plant species. There are many more species for which data is inadequate to allow full assessment of their status. For many species, the key to conservation is protection of adequate areas of appropriate habitat. The profile therefore identifies important sites, known as key biodiversity areas (KBAs), where these threatened species are known to survive. In Brazil, 761 KBAs have been identified using records of the presence of threatened and vulnerable species. In Bolivia and Paraguay, four Important Bird Areas (IBAs) were used.

In some cases, the protection of discrete areas of habitat within a KBA may not ensure the survival of a species, especially where the species ranges widely over the landscape or occurs

at a very low density. These large areas play a vital role in ensuring connectivity among KBAs. In doing so, they also play an important role in maintaining ecosystem functions important for nature and for human livelihoods in the Cerrado, other biomes and neighboring countries, or even the whole planet, in the case of climate change.

Fragmentation of the region has had a defining influence on social, political and economic landscapes. The majority of the region's 43 million people live in urban areas, but around 12.5 million still derive their living from agricultural lands, natural ecosystems and wetlands. However, the region is changing rapidly. The construction of the new capital at Brasília in the late 1950s intensified a process of frontier settlement in the heart of Cerrado. In the 1980s, with technological innovation, agribusiness boomed in the hotspot.

The major threats to the Cerrado now and in the near future are cattle-raising, annual crops (mainly soybeans, corn and cotton), biofuel (sugar cane), charcoal, fire and mono-species tree plantations. Erosion, invasive species, permanent crops, swine, transportation and warming (both local and global) are also relevant. This leads to deforestation at the rate of 6,000 km^2 per year; with the current knowledge, the hotspot lost approximately 50% of its natural coverage.

Despite these problems, national and local governments have recognized the importance of the region's natural resources and biodiversity. Brazil has created official terrestrial protected areas in 8.3% of the Cerrado. It has set a goal of 17% of the biome in protected areas in order to meet the Aichi target, as well as ambitious goals to reduce deforestation and emissions. In order to significantly reduce greenhouse gas emissions and maintain hydrological cycles, larger areas are needed. The ideal would be to keep at least 50% of the Cerrado, about a million square kilometers, with native vegetation coverage, through a combination of conservation, sustainable use and restoration. Creation of public protected areas on private land is very costly in cases that imply land expropriation, especially with the government facing budget restrictions. The Forest Law also requires Legal Reserves of at least 35% in the hotspot zone declared as 'Legal Amazon' and 20% in the remaining area, and Areas of Permanent Preservation on hilltops and steep slopes and along the edges of streams and rivers. Indigenous and traditional communities have developed a variety of mechanisms for controlling and managing their natural resources. Indigenous lands, which are the most intact parts of the Cerrado, are located mostly on the fringes of the Amazon.

Many other types of traditional communities and family farmers are omnipresent wherever native vegetation remains, mostly in the northern portion of the hotspot. The nature of resource use, however, has changed to use of land for large-scale crop and livestock production. Formal mechanisms for the planning and enforcement of rules on the exploitation of natural resources have generally failed to deliver efficient or sustainable outcomes. Limited capacity, lack of political will, poor monitoring and conflicts between customary and formal resource management regimes have conspired to create a situation in which opportunistic, short-term and often illegal natural resource exploitation by companies and individuals predominates, while carefully planned and managed sustainable use is the exception.

To increase the chance of success, it is important that actions supported by CEPF complement existing strategies and programs of national governments, donors and other stakeholders. To this end, before starting a grant-making program, CEPF works with local stakeholders to develop an ecosystem profile for each hotspot. The profile describes the important species and sites, as well as the threats, opportunities and actions that are already being taken for

conservation in the region, enabling CEPF to identify priority sites, species and themes to support.

The ecosystem profile for the Cerrado was developed between October 2014 and October 2015, through a process that involved the participation of more than 170 people representing 130 private or public institutions and companies. It also involved extensive literature review, analysis of various kinds of data and use of experience in support for local communities all over the region through the GEF-UNDP Small Grants Program. A group of senior experts with different skills and profiles – composed by specialists from universities, government, civil society organizations, multilateral institutions and private sector – was invited to join an Advisory Group to provide strategic guidelines to the ecosystem profile preparation and to review the approach, the methods and the document as well.

Criteria, including government priority, urgency, opportunity, remaining native vegetation coverage area, protected areas and strength of civil society organization, were used to select four priority corridors out of the 13 identified. CEPF investment will focus on the northern and eastern part of the hotspot, from Maranhão in the north to Minas Gerais in the south with Mirador-Mesas, Central of Matopiba, Veadeiros-Pouso Alto-Kalungas and Sertão Veredas-Peruaçu priority corridors. Within these four priority corridors, certain site-level investments will target 62 priority sites, based upon a prioritization of KBAs according to biological, socioeconomic and ecosystem services criteria.

Increasingly, funding from abroad will mostly be directed at addressing climate change, which can be mitigated by keeping native vegetation standing. Funding from within Brazil, on the other hand, could be mobilized by showing how the native flora and fauna of the Cerrado maintain flows of rivers and atmospheric moisture to other regions to the south, as well as parts of Bolivia, Paraguay, Argentina and Uruguay. Awareness of the interdependent ecosystem and socioeconomic functions of biodiversity in the Cerrado can be one of CEPF's major contributions. In addition, it would be fundamental to invest in the strengthening of civil society and changes in norms and regulations at the federal and state levels so as to mainstream biodiversity conservation into public policies and private practices. CEPF investments in Cerrado will produce a relevant impact on the ability of civil society to positively influence public policies and private initiatives towards conservation and sustainable development of the hotspot. By also supporting the practices of non-timber forest products supply chains carried out by rural communities, indigenous people and '*quilombolas'* (Afro-Brazilian descendants of slaves), CEPF funds will enable a better insertion in the market of the so-called 'socio-biodiversity products' thus creating economic incentives for biodiversity conservation. By investing in one of the most important regions for agricultural commodities in the world, CEPF will help to increase the effectiveness and the scale of agribusiness' sustainable practices.

CEPF's support to the establishment of new public and private protected areas and the management effectiveness of already existing ones will also enhance the status of legal protection for the critically endangered species in the hotspot. Altogether, this strategy, in targeted priority areas, will leverage a remarkable contribution to the conservation of Cerrado, as has been the case for the protection of other hotspots around the world.

1. INTRODUCTION

1.1 Cerrado Hotspot

The Cerrado is the largest hotspot in the Western Hemisphere, covering more than 2 million km^2 in Brazil and extending marginally (about 1%) into Bolivia and Paraguay. The Brazilian Cerrado biome is the second largest biome in South America, covering an area[1] of 2,039,386 km^2, 24% of Brazil's territory.

Recognized as a global biodiversity hotspot, the Cerrado presents an extreme abundance of endemic species, being home to 12,070 catalogued native plants species. The great diversity of habitats gives rise to remarkable transitions among different vegetation typologies. A total of 251 species of mammals live in the Cerrado, along with a rich avifauna comprising 856 species. Fish (800 species), reptile (262 species) and amphibian (204 species) diversities are also high. For those reasons, the Cerrado is considered to be one of the biologically richest tropical savanna regions in the world (Mittermeier *et al.* 2004). This hotspot also includes the headwaters of three of South America's major river basins (Amazon/Tocantins, São Francisco and Plata), thus highlighting its importance for both water security and biodiversity.

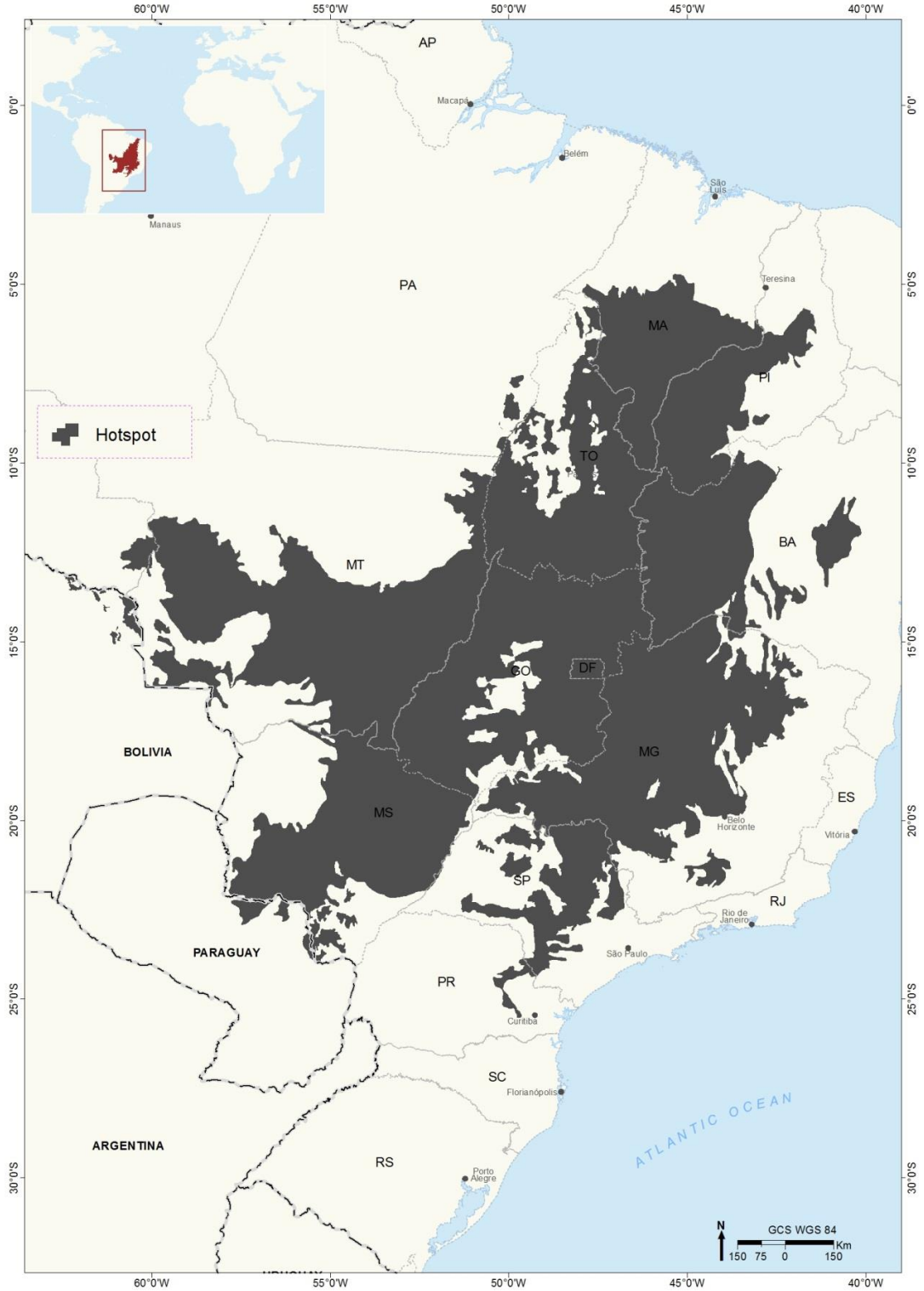
During the preparation of this ecosystem profile, one challenge faced by the team was to reconcile the Cerrado Hotspot limits (Figure 1.1) proposed in a publication by Mittermeier *et al.* (2004) and the official boundaries of the Cerrado biome set by the Brazilian government.

The original hotspot boundaries in Bolivia and Paraguay cover significant natural areas, whose biological importance is highlighted by classifying them as Important Bird Areas (IBAs). However, when analyzing these IBAs – one in Bolivia and three in Paraguay – it appears that only a small part of them is included in the original hotspot boundary. Other differences between the boundaries of the hotspot and the Brazilian biome were noticed along the northern and southern boundaries of the hotspot (Figure 1.2 highlights the differences between the Brazilian biome boundaries and the hotspot boundaries).

Therefore, in order to include a larger area of analysis, encompassing the entire hotspot as well as the entire Cerrado biome, plus the IBAs in Bolivia and Paraguay, an initial proposal for a new delimitation of the hotspot boundary was made for the profiling exercise. This initial redefinition of the hotspot boundary combined the Cerrado biome in Brazil with the four IBAs in Bolivia and Paraguay (Figure 1.3).

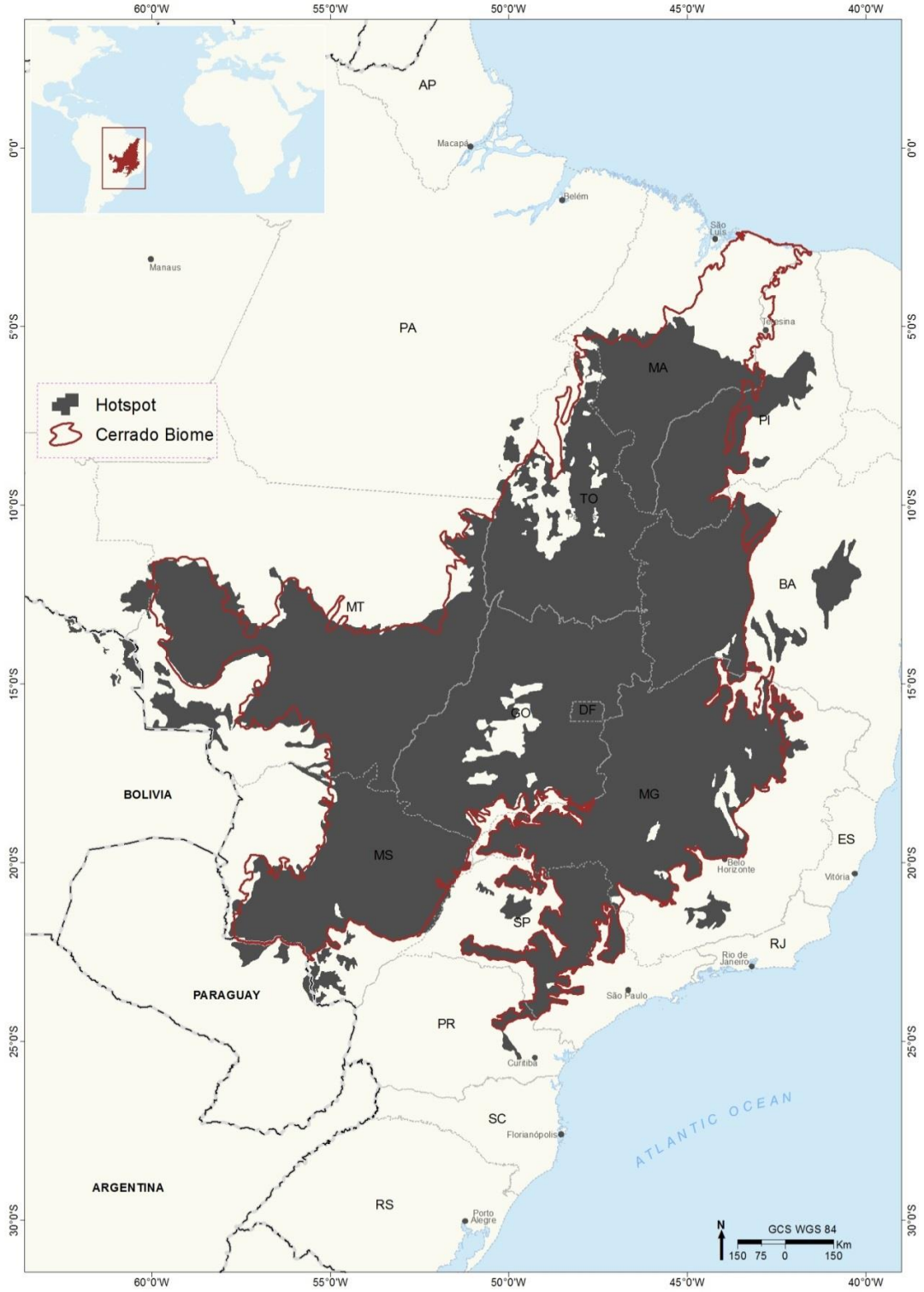
[1] Brazilian official sources differ about this figure. The figure presented in this document is used by both the Brazilian Institute of Geography and Statistics (IBGE) and the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA).

Figure 1.1: Cerrado Hotspot boundaries.



Source: Mittermeier *et al.* (2004).

Figure 1.2: Cerrado Biome boundaries and Cerrado Hotspot boundaries.

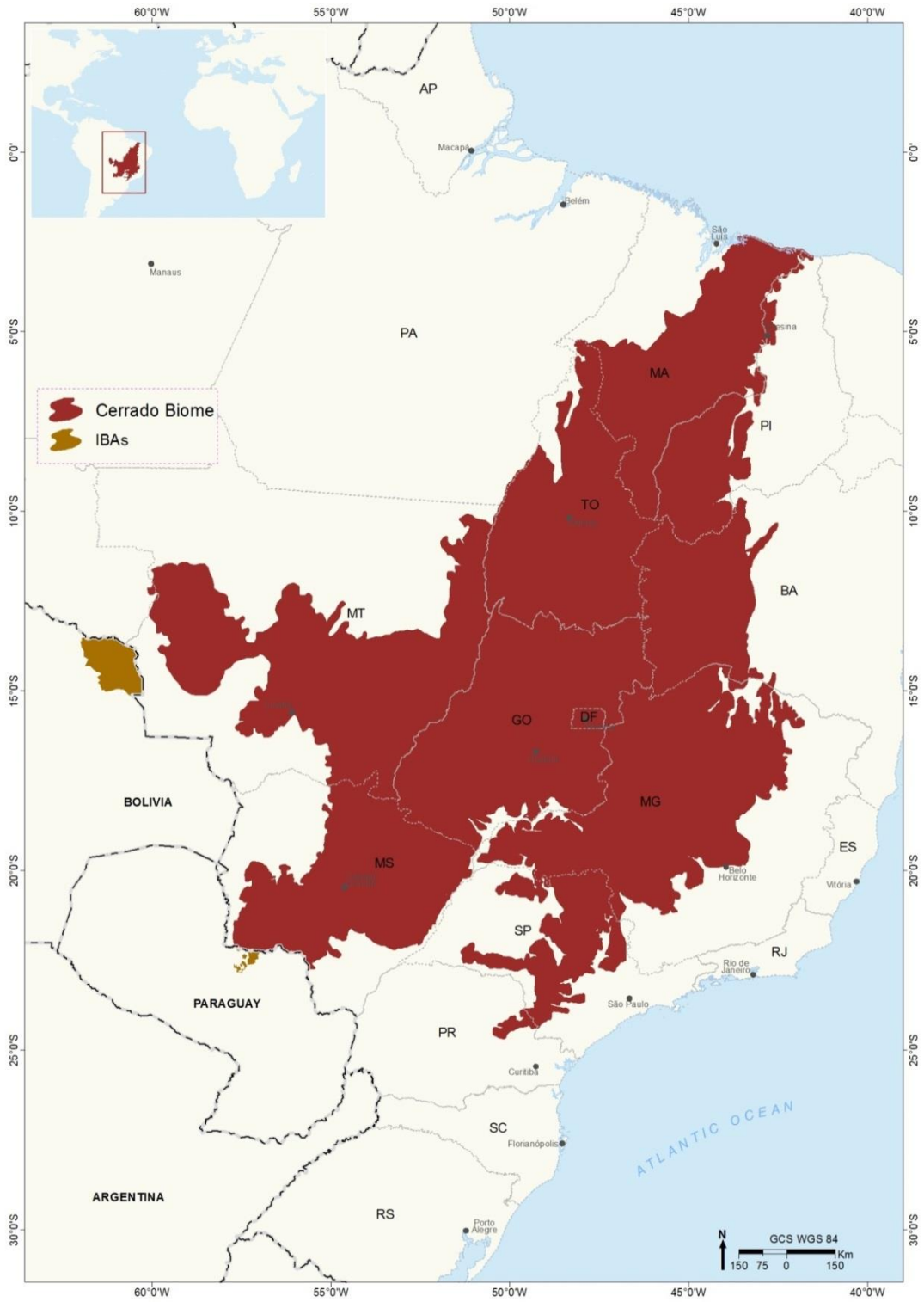


Sources: Ministry of Environment and IBGE (2004); Mittermeier *et al.* (2004).

This proposal could certainly be further analyzed in the future after more information is gathered and consultation with experts in the three countries. This is one of the initiatives that

the CEPF investments could support, as part of the exchange of experiences among the three countries.

Figure 1.3: Cerrado biome boundaries and Important Bird Areas that contain Cerrado ecosystems.



Sources: Ministry of Environment; Birdlife International.

The dimensions of the original hotspot boundaries and of the newly proposed ones, including those in Paraguay and Bolivia, are shown in Table 1.1 below.

Table 1.1. Distribution of Hotspot Areas per Country (Original and New Proposal).

	Area (hectares)[a]	**%**
Cerrado Hotspot (original)	**202,483,809.57**	**100%**
Hotspot in Brazil	201,068,328.90	99.30%
Hotspot in Bolivia	594,558.27	0.29%
Hotspot in Paraguay	820,922.13	0.41%
New proposed area for the Cerrado Hotspot	**206,430,056.84**	**100%**
Cerrado Biome (by Brazilian Law)	204,006,553.92	98.83%
IBAs – Bolivia (BirdLife)	2,246,778.53	1.09%
IBAs – Paraguay (BirdLife)	176,724.39	0.09%

[a] These figures may differ on the basis of the type of projection used. Here figures reflect a shapefile calculation based on a SIRGAS 2000 projection.

Besides its environmental aspects, the Cerrado has great social importance. Many people depend on its natural resources to survive and thrive, including indigenous groups, *quilombolas*[2], *geraizeiros*[3], *ribeirinhos*[4] and babassu brakers[5], which are all part of Brazil's historical and cultural heritage, and who share traditional knowledge of biodiversity. More than 220 species have known medicinal use, and a wide variety of native fruits are regularly consumed by local people and sold in urban centers, particularly *pequi* (*Caryocar braziliense*), *buriti* (*Mauritia flexuosa*), *mangaba* (*Hancornia speciosa*), *cagaita* (*Eugenia dysenterica*), *bacupari* (*Salacia crassifolia*), *araticum* (*Annona crassifolia*) and the nuts of *baru* (*Dipteryx alata*).

However, numerous species of plants and animals are threatened or at risk of extinction. It is estimated that 20% of native and endemic species are not protected by any legal protected areas and at least 339 species of animals occurring in the Cerrado are threatened with extinction (see Section 5.2, Table 5.3), according to official lists.

After the Atlantic Forest, the Cerrado is the Brazilian biome that has suffered most from human occupation. It is this combination of conditions – high biodiversity and high degree of threat to and loss of habitat – that makes these two biomes priorities for investment in biodiversity conservation and ecosystem services.

[2] ***Quilombola*** is a common name for descendants of slaves who, during the period of slavery, fled the sugarcane mills,farms and mines. They are similar to "Maroons."

[3] ***Geraizeiros*** are traditional people living in savannas of northern Minas Gerais. This term derives from the fact that local Cerrado regions are known as "Gerais."

[4] ***Ribeirinhos*** make up a traditional population living along rivers whose main livelihood is artisanal fishing. They cultivate small clearings for themselves and sometimes also practice extractive activities.

[5] **Babassu brakers** are groups almost exclusively made up of women in extractive communities in the states of Maranhão, Tocantins, Pará and Piauí. Located around areas of babassu palm trees, the crackers developed original forms of land management and have their own code of organization.

Despite the recognition of its biological importance, the Cerrado has a low percentage of areas under full protection. This biome has 8.3% of its territory legally protected. Of this total, 3.1% are fully protected conservation units and 5.2% are sustainable-use protected areas, including private reserves (0.09%).

Currently, the Cerrado is one of the planet's leading areas for agricultural and livestock production. Although this is a cause of pride for many, frontier expansion also takes its toll: half of the biome has already been cleared, placing the rich, unique and useful biodiversity and all the ecosystem services it provides at risk. The pressure continues to be intense because of the agricultural expansion of soy, beef, sugarcane, eucalyptus and cotton, which are essential for the national economy and world markets. As a consequence, yearly deforestation rates in the Cerrado are higher than in the Amazon, where rates have dropped and the total area already cleared is smaller. At the same time, the socioeconomic situation in the Cerrado is far from equitable, inclusive or respectful of nature. For instance, the Cerrado currently produces 30% of Brazil's Gross Domestic Product (GDP), but its Human Development Index (HDI) is lower than the national average. Although it has the largest intact areas with indigenous lands, indigenous and traditional communities are under intense pressure from crop and cattle expansion. This hotspot thus needs urgent action to ensure environmental sustainability and the well-being of its population.

1.2 The Cerrado Ecosystem Profile

Between October 2014 and October 2015, Conservation International Brazil (CI-Brazil) and the Institute for Society, Population and Nature (ISPN) joined efforts to develop this ecosystem profile. The process to prepare this document featured contributions, critical analyses and recommendations from more than 170 people, including researchers, community and indigenous leaders, private sector representatives and members of nongovernmental organizations, government authorities and universities or research centers.

Four workshops were held with different stakeholders, three in Brasilia and one in Sao Paulo. During these workshops the profiling team presented CEPF to a wide range of institutions in the three sectors – government, business and civil society – and gathered recommendations for the production of this document. The first workshop was attended by 55 representatives of the civil society. A total of 22 leading private sector representatives were subsequently consulted during two other workshops. The final workshop, attended by about 50 people from different segments, was crucial to revise the methodology for systematizing and prioritizing Key Biodiversity Areas (KBAs) and strategic corridors, as well as to set strategic directions and investment priorities for CEPF.

In addition to these consultation and strategic planning workshops, the preparation of the ecosystem profile involved a broad, detailed bibliographical and documentary survey, which resulted in the compilation of information found in the first chapters. Given the peculiarities of this hotspot, innovations in the methodologies for prioritizing KBAs and targeting corridors for CEPF investment were proposed and applied.

This ecosystem profile of the Cerrado Hotspot was drafted and revised by taking into account comments by reviewers, including the CEPF Secretariat and Working Group, specialists, donors and government authorities. The Advisory Group with representatives from different sectors (civil society, private companies, government, academia and multilateral institutions, as presented in the preface) also provided its support.

As a final stepping stone to the elaboration of this ecosystem profile, a fifth and last consultation workshop was held in mid-October 2015 to validate the strategic directions and the priority investments with key senior stakeholders.

It is important to emphasize that this ecosystem profile is a public document. Although its main objective is to guide CEPF's investments in biodiversity conservation and recovery for the Cerrado, it also aims to inform best practices for public and private initiatives. Therefore, the diagnosis and the strategic directions and investment priorities listed in this document can and should inspire and guide other programs and donors as well.

2. BACKGROUND

This chapter describes the ecosystem profile process, including the compilation of this document, the literature review and the stakeholder consultations.

The purpose of the ecosystem profile is to provide an overview of biodiversity conservation in the Cerrado Hotspot, to analyze priorities for action and to identify ways to strengthen the constituency for conservation in the Cerrado. In doing so, it lays out a strategic framework for the implementation of CEPF's conservation grant-making program in the hotspot, which will span five years beginning in 2016. It also sets out a broader conservation agenda in the region and aims to encourage more stakeholders to engage with and support this agenda.

Although the Cerrado was selected as one of the original 25 global hotspots (Myers 1988, 1990; Mittermeier *et al.* 2000), until recently it received very little attention from the Brazilian government and the international community. The other global hotspot in Brazil, the Atlantic Forest, was included in the Pilot Program to Conserve the Brazilian Rain Forest (PPG7) between 1993 and 2009 and received support from CEPF between 2001 and 2011. Now that there has been significant reduction in deforestation in the Atlantic Forest and the Amazon, the Cerrado has begun to receive more international attention. Yet it still receives much lower levels of funding (see Chapter 11).

The ecosystem profile describes biodiversity conservation actions needed in the Cerrado by defining conservation outcomes. As described in detail in Chapter 5, these outcomes are defined at three levels: species, sites and corridors (*i.e.*, landscapes). The basic unit of analysis for defining conservation outcomes, therefore, is information on sites where populations of threatened species can be found, called Key Biodiversity Areas (KBAs). To collate this information, the profiling team at CI-Brazil reviewed existing analyses, including the International Union for Conservation of Nature (IUCN) Red List of globally threatened species and the updated Red List for Brazil published in December 2014. The team also reviewed published books, reports and papers describing species and habitats in the Cerrado, as well as unpublished reports and information available on the Internet or from stakeholders consulted during the process.

CEPF makes grants to civil society organizations, which are defined as non-governmental organizations (NGOs), community groups, individuals, universities, foundations and private sector organizations. Government organizations are eligible for the CEPF funds provided they can establish their legal status as being independent of any government agency, their authority to apply for and receive private funds, and their inability to assert a claim of sovereign immunity. For CEPF, understanding the interests, capacity and needs of civil society in Brazil is as important as understanding the Cerrado biodiversity. ISPN has extensive hands-on experience in working with civil society in the Cerrado, especially as Technical-Administrative Coordination of the Global Environment Facility-United Nations Development Program (GEF-UNDP) Small Grants Program (SGP) in the Cerrado since 1995, called the "Program of Ecosocial Small Projects" or PPP-ECOS by its Portuguese acronym. The PPP-ECOS has been the only such program in Brazil with a geographical focus on the Cerrado and its transitions to the Amazon, Pantanal, Caatinga and Atlantic Forest. The strategy has been to promote conservation through sustainable biodiversity use within sustainable production landscapes that combine native vegetation and agriculture. The initiative has been important to systematize knowledge and lessons learned so far about the empowerment of local communities, the sustainability of their organizations over time (ability to avoid dependence of communities on

the program, their participation in public policy dialogues and actual policy making), the establishment of appropriate controls, etc. The experience of the Pilot Program and the SGP of the GEF-UNDP, which have supported more than 400 projects in the Cerrado since 1995, makes it possible to take advantage of lessons learned and to undertake effective action to fulfill expectations about combining conservation and development. This is also true of other experiences such as government plans, programs and policies for conservation and international efforts such as the CEPF over the years, including support for the Atlantic Forest within Brazil. Chapter 8 greatly benefited from this analysis.

During 2014 and 2015, consultations were carried out with a wide range of stakeholders in civil society, government, the private sector and academia. Representatives of community organizations responded to a survey carried out in July 2014, during the National Meeting of Cerrado Peoples. In 2015, specific workshops were organized with civil society (March 31-April 1), the private sector (April 15 and June 16) and government, conservationists and researchers (June 10-11 and October 14-15), as well as a final workshop on October 14-15. Other meetings were also held with individual stakeholders, with a total participation of around 170 people. Although CEPF makes grants to civil society, government plays a critical role in conservation and is always a partner in its efforts. Representatives participated in the workshops and in many one-on-one meetings. The national GEF focal point for Brazil was invited, as were representatives of the CEPF global donors, federal and state environmental authorities and conservation, development, indigenous peoples and private-sector organizations.

The profile is based to a large extent on published and unpublished literature about the Cerrado, especially in the ISPN library. Part of the vast bibliography is listed in the reference section. The documentation also includes the results of various participatory processes, such as: the Cerrado Treaty (1992), the conservation priority-setting workshop held by the National Program for Biodiversity Protection (PROBIO) (1998); reports of the project on Conservation and Management of the Plant Biodiversity of the Cerrado Biome (1996-1999); Cerrado Network Principles (1999); Sustainable Cerrado Program (2004); first revision of Priority Areas for Conservation of the Cerrado (2006); Science and Technology Cooperation Network for Conservation and Sustainable Use of the Cerrado (COMCERRADO) Scientific Plan for 2008-2011 (2007); Seminar on Cerrado Sociobiodiversity Value Chains (2007); COMCERRADO Planning Seminar (2008); IX National Cerrado Symposium (2008); Analyses of Regulatory Barriers (2010); second revision of Priority Areas for Conservation of the Cerrado (2011); Brazilian Forest Service Seminar on the Cerrado (2014); Action Plan for Prevention and Control of Deforestation and Fires in the Cerrado (PPCerrado) (2014) and results of the National Meetings and Fairs of Cerrado Peoples (2000-2014). The results of participatory processes regarding the Cerrado were compiled for discussion in the first workshop (Sawyer 2015).

The Sustainable Cerrado Program's National Commission (CONACER) is part of the governance system and the main forum consulted by PPCerrado in implementing its strategy. The CONACER has representatives from different sectors of society – the production sector, governments, indigenous groups, organized civil society and social movements. Civil society, under the leadership of the Cerrado Network of NGOs, has seats on the CONACER.

One of the important lessons from the process is that, while there are many gaps in data on biodiversity in the region, there is also a great deal of data, published and unpublished, in the files of conservation organizations, universities, individual scientists, companies, government

departments and amateur observers. This ecosystem profile is one of the first attempts to collate the data into one place and make it available to conservationists, decision makers and other stakeholders in the region. There is a need to regularly update the analysis of priority conservation sites as new information comes to light, as shown in Chapters 5 and 13.

The consultation process for the ecosystem profile has demonstrated that this hotspot enjoys important, ongoing public policies, a complex network of institutions, and a wide variety of field projects and programs in different contexts, working with various scales and categories of grants. The Cerrado also has groups of researchers producing high-quality scientific information. It has a strong private sector, including small- and large-scale ranchers and farmers, cooperatives, and agribusiness companies, many of which are interested in partnerships and alliances to find and implement new approaches and actions to promote sustainable landscapes. These institutions, which complement each other, have the potential to provide an efficient means for turning site-based and regional conservation actions into policies and practices. The results of the ecosystem profile consultation process provided a strong base on which to build a long-term, comprehensive strategy for conservation and sustainable use of the Cerrado, as described in detail in the next chapters.

3. BIOLOGICAL IMPORTANCE OF THE HOTSPOT

The Cerrado, on top of being one of the richest tropical savannas in the world in terms of biodiversity (Mittermeier *et al.* 2004), is also one of the most unique in terms of biological heritage, agricultural production and water resources (Scariot, Sousa-Silva and Felfili 2005). The Cerrado is similar to savanna woodlands in other South American countries, such as the *Chaco* and *Chiquitania* in Bolivia and Paraguay, the *llanos* in Colombia and Ecuador and the *pampas* in Uruguay and Argentina, as well as to savannas in parts of Africa, Asia and Australia. Covering an area the size of Mexico, it is located in the center of the South American continent.

The biological importance of the region became more evident when, along with 34 other regions in the world, it was named one of the 35 biodiversity hotspots, *i.e.* one of the regions with the greatest diversity of endemic plant species, associated with a high rate of natural habitat degradation (Myers 2000; Mittermeier *et al.* 2004). The Cerrado is home to complex landscapes and biodiversity, slowly unveiled and documented by researchers and traditional communities.

The biological importance of the Cerrado and the various positive and negative environmental impacts can only be understood in the context of Brazil and neighboring countries in South America (Bolivia, Paraguay, Argentina and Uruguay). With an area of 8.5 million km^2, Brazil is the world's fifth largest country, the largest in South America and the third largest of the Americas, after Canada and United States. The country has a variety of landscapes, including coastal mountain ranges, central highlands, a large semi-arid region, the Amazon rain forest, wetlands and grasslands, which are divided into the country's six biomes: Atlantic Forest, Cerrado, Caatinga, Amazon, Pantanal and Southern Grasslands (Pampas). The Caatinga and Cerrado, both of which are sub-humid, are ecologically similar in that they have long dry seasons, few dense forests and much herbaceous plant cover. The Cerrado is contiguous with and closely related to the Pantanal and to the Chaco and Chiquitania areas of Bolivia and Paraguay.

3.1 History and Geography

The Cerrado is the largest tropical savanna region in South America, including a large part of central Brazil and small parts of northeastern Paraguay and eastern Bolivia (Silva and Bates 2002). The Cerrado shares boundaries with four other Brazilian biomes: to the north, it meets the Amazon; to the east and northeast with the Caatinga; to the east and southeast with the Atlantic Forest; and to the southwest with the Pantanal. The Cerrado is at the center of a wide range of "open" formations, from the Caatinga to the Pantanal and the Chaco, separating South American dense tropical rainforests, *i.e.* the Amazon and the Atlantic Forest. No other South American biome has such distinct penetrations and biogeographical contact zones, enabling exchanges of fauna and flora with other hotspots and large natural regions.

With a total area of approximately 2.06 million km^2, the Cerrado Hotspot is mostly in Brazil, where it covers an area of 2.04 million km^2, or 24% of the Brazilian territory. The Cerrado in Paraguay (1,767 km^2 of the hotspot) occupies the northeast of the eastern region of the country, on the border with Brazil, and the northern end of the western region, on the border with Bolivia (Spichiger *et al.* 2011). In Bolivia (with 22,478 km^2 of the hotspot), the Cerrado is expressed to a greater extent and diversity especially in areas east of the country, in the Department of Santa Cruz, in the region called Cerrado Chiquitano, which borders in places with Brazil's states of Mato Grosso and Mato Grosso do Sul (Wood 2011).

In Brazil, the nuclear area of the Cerrado covers the Federal District (Brasília) and ten states: Goiás, Mato Grosso, Mato Grosso do Sul, Tocantins, Maranhão, Bahia, Piauí, Minas Gerais, São Paulo and Paraná, for a total of 1,408 municipalities. There are also isolated Cerrado enclaves in other regions of the country, such as in Roraima, Amapá, southern Amazonas, western Pará, parts of São Paulo and northern Paraná. There are islands of Cerrado plant life in other biomes.

The more extensive distribution of the Cerrado is seen as a result of dryer climates in the past that could have favored distribution of this type of plant cover (Henriques 2005). The hypothesis of Pleistocene distribution for separate Cerrado areas is based on floristic similarities found in non-adjacent Cerrado areas and the low levels of endemism of species in non-adjacent areas, especially to the Amazon.

Studies by Salgado-Labouriau (2005) reveal a time series of plant types and their relative extension, as well as signs of past climates and the age of the Cerrado, using paleo-ecological analyses, including those of pollen, fungus spores and microalgae from sediments in central Brazil and others outside the core area of the Cerrado. The results of those studies indicate the presence of Cerrado ecosystems in central Brazil dating longer than 36,000 years. A dry period began 22,000 years ago, peaked between 14,000 and 10,500 years ago, and lasted until 7,000 years ago. Climate returned to a semi-humid state only 5,000 years ago. Biogeographical studies of the Cerrado's fauna, mainly birds (Silva and Bates 2002) and lizards (Werneck *et al.* 2009), confirm Salgado-Labouriau's analysis, *i.e.*, geographical differentiation in this hotspot is older than originally imagined.

The soils of the Cerrado are relatively flat, deep and well-drained, but they have low fertility and high acidity and aluminum saturation. They can be made suitable for agriculture by using lime to adjust their acidity and applying fertilizers, especially nitrogen and phosphorous, to make them more fertile.

The contrast between lower altitudes, under 300 meters, and vast plateaus between 900 and 1,600 meters, combined with the extensive latitudinal distribution, results in a wide range of environments. The tropical climate of the Cerrado is characterized by a long dry season, with little or no precipitation between May and October. Annual average temperatures range from 22ºC to 27ºC. Average yearly rainfall varies between 600 and 2,000 millimeters, in a climate classified as rainy tropical (Ribeiro and Dias 2007). Recently, the rainy season has started later, and rains have become more torrential (see Chapter 10). Rainfall varies between 600 and 800 millimeters in areas adjoining the Caatinga and between 2,000 and 2,200 millimeters closer to the Amazon.

In addition to climate aspects and contacts with neighboring ecosystems, Cerrado biodiversity is associated with altitude and topography (Silva and Bates 2002; Nogueira *et al.* 2010a; Valdujo 2011). Currently, the core area of the Cerrado consists of vast plateaus with complex structures between 300 and 1,600 meters of altitude, separated by a network of peripheral or inter-plain depressions (Ab'Saber 2003). This geomorphological variation helps explain the plant cover gradients in the region. The top of the plateaus (500 to 1,600 meters) is generally flat and covered by Cerrado *sensu stricto*. Peripheral depressions (100 to 500 meters), albeit flat with residual elevations, are far more heterogeneous, with different types of plant life, such as cerrado, mesophytical forests and lengthy riparian woods forming narrow strips with fine texture along waterways (Silva and Santos 2005).

In the Cerrado, fauna and flora from neighboring biomes are found mainly in riparian woods, which cover less than 10% of the hotspot, and Seasonal Forests (Dry Forests) that are limited to depressions between plateaus (Silva and Santos 2005). Oliveira-Filho and Ratter (1995) indicate that various plant species from forest environments in the Cerrado are distributed along a northwest-southeast arch, from the Amazon Rainforest to the Atlantic Forest, crossing the network of forests associated with waterways. Swamps and gallery forests share floristic traits with the Atlantic Forest and Dry Forests. Decidual Seasonal Forests have common floristic traits with Caatinga trees and semidecidual forests in the Atlantic Forest of the Southeast. Felfili *et al.* (2005) point out that seasonal forests on limestone formations spread throughout the Cerrado, especially in the Paranã Valley, Goiás, are home to flora and fauna also found in the Caatinga, Chiquitania and Chaco.

Biotic exchanges played an important role in establishing the regional diversity of Cerrado fauna (Silva and Santos 2005; Valdujo 2011). Bird fauna from other biomes, such as the Atlantic Forest, are mainly found in gallery and dry forests. In the Cerrado, riparian corridors are thus essential for the permanent flow of populations and species among adjacent biomes. As in the case of birds, the amphibian species composition in the Cerrado is also largely influenced by contacts with the largest South American biomes: Amazon, Atlantic Forest, Caatinga and Chaco (Valdujo 2011). Amphibian species that share populations with other biomes do not coexist with species from other neighboring biomes, *i.e.,* a species found both in the Cerrado and the Atlantic Forest does not coexist with species found both in the Cerrado and the Amazon.

3.2 Ecosystems and Vegetation Coverage

Although there are many gradations and fine-grained interpenetration of small areas with different kinds of vegetation in the Cerrado, the terrestrial habitats and ecosystems in this hotspot can be divided into three broad categories: forests, savannas and grasslands (as described below). In addition, there are many freshwater streams, rivers, lakes and ponds, with wide seasonal variation in the volume of water.

The Cerrado is made up of a large variety of vegetation forms, which confer great environmental heterogeneity. Henriques (2005) believes that the form, dynamics and occurrence of phytophysiognomies (*i.e.,* general forms or appearances of plants) in the Cerrado are determined by the area's history, its soil (depth and water availability) and the presence or absence of fire. Each physiognomy type is developed in accordance with interactions among edaphic factors (soil, water, nutrients), resulting in different final succession stages. The influence of fire in phytophysiognomy dynamics in the Cerrado is also an important historical factor for the landscape, as studies in the region show a series of modifications in the structure of plant life undergoing this type of interference (Henriques 2005; Lima *et al.* 2009). Currently the Cerrado has a higher frequency of fires than in the past due to anthropic activities, which may alter the phytophysiognomical gradient.

Cerrado plant life has physiognomies that include a group of savannas ranging from sparse plant formations with few trees and shrubs, such as clean fields, to forest formations such as the Cerradão, with thick plant cover and predominant arboreal strata (Ribeiro and Dias 2007). Cerrado *sensu stricto*, with typical savanna plant cover, is the most abundant phytophysiognomy in this hotspot (Eiten 1972). Grasses, in turn, are present in all phytophysiognomies, especially field formations.

Ribeiro and Dias (2007) propose 11 phytophysiognomical types for the Cerrado: (a) Forest Formations (Riparian Woods, Gallery Forests, Dry Forests and Cerradão), (b) Savanna Formations (Cerrado *sensu stricto*, Cerrado Parks, Palm Groves and Veredas) and (c) Grassland Formations (Dirty Fields, Rocky Fields and Clean Fields). Criteria to differentiate phytophysiognomical types in the Cerrado are based on structure, dominant forms of growth and seasonal and environmental changes, particularly edaphic changes, in addition to floristic composition.

3.2.1 Forest Formations

Forest formations in the Cerrado include plant types with predominantly tree species and canopy formation. Riparian Forests (with open canopy along streams and rivers) and Gallery Forests (riparian forests with closed canopy over the water) may occur on well or poorly drained terrain. Dry Forests and Cerradão appear in interflows, on well-drained terrain. Cerrado trees are typically twisted and have thick bark and leaves in order to survive the dry season and frequent fire. Altogether, woodlands cover 32% of the natural areas of the hotspot.

3.2.2 Savanna Formations

Savanna formations in the Cerrado include mainly Cerrado *sensu stricto*, Cerrado Park lands (Parque de Cerrado), Palm Groves (Palmeiral) and Vereda. Cerrado *sensu stricto* is characterized by defined tree and shrub-herb strata, with trees randomly distributed over the terrain under different densities. In Cerrado Park lands, trees are concentrated in specific locations called 'murundus', with 0.1-5.0 meters high and 0.2-2.0 meters diameter. The Veredas have marked presence of a single palm species, *buriti* (*Mauritia flexuosa*) surrounded by a characteristic shrub-herb, permanently flooded terrain, often with a waterway flowing through them. In Palm Groves, which may be in either well or poorly drained areas, the highest density and predominance of palm species is found (such as *Acrocomia*, *Attalea* and *Syagrus*). The savanna formations cover 61% of the natural areas of the hotspot.

3.2.3 Grassland Formations

Dirty Fields are characterized by shrubs and sub-shrubs scattered in the herbaceous stratum. Clean Fields have an insignificant occurrence of shrubs and sub-shrubs. Rocky Fields or Rupestrian Grasslands, are a complex mosaic of vegetation influenced by relief and ancient geological history, showing different grassy and shrubby vegetation types on rock outcrops, stony to sandy soils, peat bogs, and other transitional physiognomies (Fernandes *et al*. 2014). These field formations cover 7% of the natural areas of the hotspot. The native grasses are typically about 30 cm high. They survive the dry season, but become too dry for forage. In many cases, old pastures undergo regeneration that makes them new scrubland (*capoeira, juquira*).

The evaluation of Cerrado flora in its different phytophysiognomies by Walter (2006) shows that savanna formations are richest in species, followed by forest and grassland formations, respectively. This study also shows that most flora interpenetrations take place between savannas and fields, followed by forests and savannas, and, less significantly, forests and fields. The greatest similarities in the composition of flora species are between *stricto sensu* Cerrado and Dirty Fields and between the latter and Clean Fields.

Based on flora studies since the 1990s, Ratter *et al.* (2011) identified patterns in species distribution and indicated at least seven floristic geographic subdivisions for the hotspot:

(i) Southeast, a distinct group composed of parts of São Paulo, Paraná and southern Minas Gerais;
(ii) Center-southeast, with parts of Brasilia, neighboring parts of Goiás, southeastern and central Minas Gerais;
(iii) North-northeast, with parts of far northern Minas Gerais, Bahia, Ceará, Maranhão, Piauí and Tocantins and a part of Pará next to the border with Tocantins;
(iv) Center-west, with areas distributed over an extensive strip crossing the states of Mato Grosso do Sul, Mato Grosso, Goiás, Tocantins and Pará;
(v) Widely dispersed areas with strong mesotrophic traits (soils of intermediate fertility in the Cerrado landscape) – a particularly ubiquitous group in Mato Grosso do Sul;
(vi) Mesotrophic areas in the far western edge, forming a group in Rondônia, Mato Grosso do Sul and Mato Grosso; and
(vii) Amazon Savanna in Roraima and Amapá.

The greatest floristic similarity was identified between the Center-Southeast and Center-West. The Amazon savanna group showed the greatest floristic differentiation from the others. The analysis showed that more than half of the 951 species registered in the study occur only in one of the floristic groups, while only 37 species are common to all groups. The evaluation by Ratter and collaborators also showed that peripheral Cerrado areas have rates of plant species diversity equal to or higher than, in some areas, those in core hotspot locations.

The high degree of heterogeneity in the Cerrado is also found in the diversity of landscapes in this hotspot. Barroso *et al.* (2012) identified 214 landscapes in the Cerrado. Each landscape was cross-analyzed with the physiognomy map (seasonal, savanna and steppe forest formations or *chaqueña* plant cover) defined in accordance with the Brazilian Technical Plant Cover Manual, resulting in 495 ecosystems.

3.3 Diversity of Species and Endemism

Knowledge about the Cerrado's biodiversity has evolved significantly in the past decade. Nevertheless, many remaining gaps suggest that more investments are necessary in inventories and studies for different biological groups (Marinho-Filho *et al.* 2010). A recent survey showed that between 1998 and 2008, a total of 1,300 new vertebrate species were described by scientists in Brazil (Cavalcanti *et al.* 2012). Of these, 347 vertebrate species were found in Cerrado sites, 222 of which are new fish species, 40 amphibians, 57 reptiles, 27 mammals and one bird. These numbers are revealing and reinforce the colossal biological relevance of the Cerrado.

A few iconic large mammals occur in the Cerrado. The superorder Xenarthra is a group of placental mammals only found in the Americas and represented by anteaters (Myrmecophagidae), three-toed sloths (Bradypodidae) and armadillos (Dasypodidae) (Redford 1994). Xenarthrans are an important part of the mammalian fauna of the Cerrado. The Dasypodidae is the most widespread family of the superorder Xenarthra, occurring from the United States of America to Argentina (Emmons 1999). In Brazil, ten armadillo species have been recorded, while the Cerrado has been predicted to harbor eight armadillo species (Anacleto 2007).

Giant armadillo (*Priodontes maximus*) is the most impressive member of the Cerrado armadillo fauna. The species has a wide area of distribution, but it is rare over its entire range and is very patchily distributed (Anacleto *et al.* 2014). It is classified as "vulnerable" in the Brazilian Red List and in the IUCN Red List. It is an extremely powerful digger and highly fossorial (adapted to life underground) and it is probably the most myrmecophagous (feeding behavior defined by the consumption of said insect types) of the armadillos: it has been recorded as eating virtually nothing other than ants and termites. It is largely nocturnal, which combined with its fossorial habits make it difficult to encounter (Redford 1994).

In central Brazil anteaters seem to be dependent on gallery forests, entering them either to drink or sleep. Anteaters sleep in the forest or out in the grassland. Giant anteater (*Myrmecophaga tridactyla)* is widespread geographically (Miranda *et al.* 2014) and could be found in many different habitat types, from tropical forest to grasslands but probably reaches its greatest densities in the Cerrado and grassland vegetation. There have been many records of population extirpation. Outside Cerrado, this species seems to be regionally extinct or at least critically endangered in several southeastern states of Brazil (Bergallo *et al*. 2000; Chiarello *et al*. 2007; Cherem *et al.* 2004; Mikich and Bérnils 2004; Fontana *et al.* 2003). The dietary specificity, low reproductive rates, large body size, along with threats to habitat degradation in many parts of its range, have proved to be significant factors in its decline. Because of the real threats to this species and the noticeable declines, a precautionary assessment of 'vulnerable' is given in the Brazilian and IUCN Red Lists. More data and population monitoring are required for this species, and a reassessment is recommended as soon as additional information becomes available.

Another iconic large mammal found in the Cerrado is the maned wolf (*Chrysocyon brachyurus*), or lobo-guará. It is the largest South American canid, weighting between 20 and 30 kg (Rodrigues *et al.* 2014; Rodden *et al.* 2004). It is broadly distributed in the open vegetation of South America, mainly in the Cerrado of Central Brazil (Rodden *et al.* 2004). The current population of maned wolves is estimated at approximately 17,000 mature individuals (≥ two years of age), with the majority of the population (>90%) in Brazil (Cunha de Paula and DeMatteo 2015). The maned wolf is listed as 'near threatened' on the IUCN Red List (Cunha de Paula and DeMatteo 2015) but is classified as 'vulnerable' on the Brazilian Red List, mainly due to habitat fragmentation, the highest risk to the species conservation. In addition to the estimated population reduction from deforestation, the species is also subject to other threats, including road kills, direct persecution by humans, and disease due to contact with domestic animals. In other range countries (Argentina, Paraguay and Bolivia), the species' status is even more precarious with small isolated populations and declining numbers due to the low quality of habitat and hunting. Maned wolves are generalist canids, with a broad diet, and consume most of the food items according to their availability in the habitat. This diet flexibility allows maned wolves to adapt well to some human altered habitats, where they consume large amounts of cultivated fruits (Rodrigues *et al.* 2014). Nonetheless, maned wolves can be selective with regard to some food items, mainly in the dry season, probably a key element in the maintenance of their populations in the Cerrado in Brazil.

In the last century, jaguar (*Panthera onca*) could be found from the southern United States of America to the south-central Argentina and Uruguay (Hoogesteijn and Mondolfi, 1992). Since then, its geographical distribution has been reduced dramatically, and it is estimated that about 50% of its original distribution was lost (Sanderson *et al.* 2002). Despite this wide distribution, it is estimated that the effective population size is less than 10,000 individuals, with less than 250 individuals in the Cerrado biome (Morato *et al*. 2013). The jaguar occupies approximately

32% of the Cerrado, but this subpopulation is fragmented, without being necessarily isolated individuals (Morato *et al.* 2013). The main threats are habitat loss and fragmentation, associated mainly to agricultural expansion, elimination of individuals by hunting and retaliation, and decreased prey abundance as a result of human activities. The jaguar is classified as 'vulnerable' in the Brazilian Red List and 'near threatened' in the IUCN Red List.

The Cerrado is also estimated to contain approximately 12,000 plant species, 34.9% (4,208) of which are endemic (Forzza *et al.* 2012; Table 3.1). The Cerrado contains 13.4% of all plant species in the neotropical region and 1.5% of all plant species in the world. Felfili and Silva Júnior (2005) draw attention to the differentiated size of flora species populations across the Cerrado. Common species in many areas are, generally, abundant in one area and rare in others. Thus, the density of species is also an important variable for decision making on Cerrado conservation and management.

Table 3.1. Diversity, Endemism and Threats to Extinction of Plant and Vertebrate Species in the Cerrado.

Biological Group	Species	Endemic Species	% Endemism
Plants	12,070	4,208	34.9
Vertebrates	2,373	433	18.2
Fish	800	200	25.0
Amphibians	204	72	35.3
Squamata reptiles	262	99	37.8
Birds	856	30	3.5
Mammals	251	32	12.7
Total	14,443	4,641	32.2

Sources: Mittermeier *et al*. (2004); Nogueira *et al*. (2010); Valdujo (2011); Cavalcanti *et al*. (2012); Forzza *et al.* (2012); Paglia *et al*. (2012).

In addition to plants, 2,373 species of terrestrial and aquatic vertebrates have been registered to the Cerrado, 433 (18.2%) of which are restricted (endemic) to the region (Table 3.1). Squamata reptiles (lizards, serpents and amphisbaenia or 'worm lizards') stand out, with 38% of their species endemic to this hotspot (Nogueira *et al.* 2010a). Eight-hundred-fifty-six bird species have been registered, corresponding to approximately half of the bird fauna in Brazil. Good information on invertebrates is lacking. However, regarding bees, 7,000 species are estimated to live in the neotropical region, 820 of which are known to exist in the Cerrado (Raw 2007). According to the author, considering areas still lacking in inventories and studies about Cerrado bees, this group may actually possess from 1,200 to 1,500 species, which would account for 20% of all neotropical bee species.

Contrary to what was believed up to the 1990s, the Cerrado is home to a large number of endemic species. Approximately 32% of all plants and vertebrates are endemic. This characteristic is reinforced as more biologically specific groups, including some invertebrates, and areas are analyzed (Table 3.2). Two examples are bee and amphisbaenia groups, in which

over 50% of all species are limited to the hotspot (Raw 2007; Nogueira *et al.* 2010a). The Espinhaço mountain range, in the states of Bahia and Minas Gerais, also well illustrates this high endemism. It has a wealth of species and high rates of flora endemism, especially in rocky fields. Endemism stands out more in the Eriocaulaceae family, well known for the *Paepalanthus* genus, popularly known as '*sempre vivas'*. The Espinhaço range has 70% of all known species in Brazil, and 85% are endemic to that area (Costa *et al.* 2008). The Espinhaço chain also has important endemism for the Bromeliaceae family. Of the 244 species recorded in the area, 111 (49.5%) are limited to the Espinhaço.

Considering the concept of rare species, *i.e.*, species with areas of occurrence of up to 10,000 km^2, the Cerrado is Brazil's second most important biome with regards to key areas (176) for rare plants, and the largest area (30%) considering all key areas for all rare plant species in Brazil (Kasecker *et al.* 2009). According to Martinelli *et al.* (2014), the Cerrado is home to 578 rare plant species of 176 genera and 65 families.

Similar results were found for the analysis of key areas for rare freshwater fish (Nogueira *et al.* 2010b). Like rare plants, the analysis considered species with areas of occurrence of up to 10,000 km^2. In Brazil, 819 rare fish species were identified, most of which (530 or 65%) are found in Cerrado and Atlantic Forest river basins. Both hotspots also have most of the threatened basins in Brazil, considering hydroelectric plants, lack of conservation units and loss of habitat.

Table 3.2. Diversity and Endemism of Species in Specific Cerrado Fauna and Flora Groups.

Biological Group	Species	Endemic Species	% Endemism	Region
Eriocaulaceae	379	322	85	Espinhaço Range
Bromeliaceae	224	111	49.5	Espinhaço Range
Termites	151 (140)[a]	56	40	Cerrado
Bees	820	417	51	Cerrado
Amphisbaenia	30	18	60	Cerrado
Lizards	74	33	44.6	Cerrado

[a] There are doubts regarding 11 morpho species with taxonomical uncertainties (Constantino and Schmidt 2010).
Sources: Raw (2007); Nogueira *et al*. (2010a); Versieux *et al*. (2008); Constantino and Schmidt (2010); Cavalcanti *et al*. (2012).

The Cerrado in Paraguay and Bolivia is still little known by the scientific community. However, some areas are recognized for their biological importance to conservation in these countries.

The Cerrado in Paraguay receives many influences from neighboring ecoregions, such as Chaco and Atlantic Forest. The Laguna Blanca, with 2,500 hectares, is located in the transition between the Cerrado and Atlantic Forest in Paraguay, being recognized by BirdLife International as a key area for bird conservation (Important Birds Area - IBA) due to the occurrence of 18 globally endangered bird species (A. Yanosky, pers. comm.). The area is one of three known sites with Caprimulgiforme populations known as white-winged nightjar (*Eleothreptus candicans*), and is the only place outside of Brazil with the lesser nothura (*Nothura minor*). Studies with fauna of reptiles in that location also reveal many common elements with the Brazilian Cerrado biome, such as the serpent *Philodryas livida*, which is vulnerable according to the IUCN Red List (Smith *et al.* 2011; 2014). Another important area

is the Zona de Aguara, with about 6,000 hectares, a part of the Mbaracayú Biosphere Reserve. With typical Cerrado vegetation, the area has a high diversity of plant endemism and some typical vegetation in Paraguay such as *Alternathera hirtula*, *Bidens chodatii* and *Viguiera linearifolia* (Céspedes and Mereles 2006).

In Bolivia, the Chiquitano Cerrado forms a mosaic of habitats with the Chaco forest in the south and the dry Chiquitano forest in the core area of Chiquitania region (Wood 2011). The heterogeneity of plant formations is similar to that of the Brazilian Cerrado biome (Villarroel *et al.* 2009; Wood 2011). At least 80 species of endemic plants from the Chiquitano Cerrado are known, and this number may be even higher, according to Darwin Project projections for the Conservation of the Cerrado of the Bolivian East, a partnership between the Museo de Historia Natural Noel Kempff, the Universidad Autónoma Gabriel René Moreno and the Department of Plant Sciences, University of Oxford (Wood 2011). According to Segarra (2011), the Chapada Huanchaca in northern Santa Cruz Department and Sierra Chiquitana in the Southeast are the areas of greatest richness and endemism of the flora species in the Bolivian Cerrado.

Almost half of the Bolivian Cerrado (272,281 hectares) is protected by Noel Kempff Mercado National Park (1,523,000 hectares), which contains the most significant areas with high plant diversity and the greatest degree of conservation anywhere in Bolivia (Wood 2011). The exceptional biodiversity and ecosystems in this area were recognized by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as a World Natural Heritage Site, using the criteria of ecological and evolutionary processes. These sites present natural habitats with relevant and significant species for *in situ* conservation of biological diversity of Outstanding Universal Value, from the point of view of science and conservation. The area of the park includes a large section of the Huanchaca mesa, with heights ranging from 500 to 600 m above surrounding plains and 150 km long by 50 km wide. The cerrado habitats found on the Huanchaca Meseta have been isolated for millions of years, providing an ideal living laboratory for the study of the evolution of these ecosystems. This area has at least 100 endemic plant species of the region and several threatened species (Torres *et al.* 1999; Wood 2011).

3.4 Social Importance

Knowledge about potential uses of native biodiversity in the Cerrado has also grown. Seeds, flowers, fruits, leaves, roots, bark, latex, oils and resins have countless uses for family farmers and traditional communities for income generation, food, medicine, utensils and tools. Many Cerrado flora species are already known, used and traded by traditional communities and many family farmer cooperatives in the region (Carvalho 2007). Examples of native species that are well known and widely used include: (a) *pequi* (*Caryocar braziliense*), part of traditional recipes for sweets, creams, liqueurs and ice cream, in addition to phytotherapeutical uses; (b) *baru* (*Dipteryx alata*), with edible pulp and seeds, in addition to endocarp that can be turned into charcoal for industrial use; and (c) golden grass (*Syngonanthus nitens*), which is ubiquitous in nearly all of the Cerrado and is one of the main products used in regional handicrafts.

Studies, particularly since the last decade, by the Brazilian Agriculture and Livestock Research Enterprise (EMBRAPA), the University of Brasilia and the University of Campinas have shown the wealth of fruit and other Non-Timber Forest Products (NTFP) from the Cerrado (UnB 2010; Marin 2006; Roesler *et al.* 2007). Many native species are being analyzed and identified with high levels of B-complex vitamins, which are recommended for deactivation of free radicals, such as *ingá* (*Inga laurina*), *jatobá* (*Hymenaea courbaril*), *araticum* (*Annona*

crassiflora), *buriti* (*Mauritia flexuosa*), *mangaba* (*Hancornia speciosa*) and *pequi* (*Caryocar braziliense*). Additionally, some species contain bioactive substances of great nutritional value, such as passion fruit, *baru* (*Dipteryx alata*), *macaúba* (*Acrocomia aculeata*), *jatobá, pequi, cagaita* (*Eugenia dysenterica)* and *gabiroba* (*Campomanesia cambessedeana*). This is just a sample of the vast potential for use of the Cerrado's rich biodiversity, which is capable of improving food security and well-being for the population.

3.5 Hydrological Systems and Biological Values

The Cerrado contains a large variety of natural aquatic ecosystems and specific systems associated with floodplains. The predominance of highlands in the core of the hotspot area provides conditions for superficial waters to be drained to the country's major water basins. The region also plays a key role as a watershed, home to countless water replenishing areas and large volumes of both superficial and underground waters (Fonseca 2005).

It is in the Cerrado that most of the main Brazilian rivers have their headwaters, such as the Xingu, São Francisco, Tocantins-Araguaia, Parnaíba, Tapajós, tributaries to the right margin of the Paraná River and all rivers forming the Pantanal. Additionally, six of the eight large water basins in Brazil have sources in this hotspot: the Amazon Basin (Xingu, Madeira and Trombetas rivers), the Tocantins Basin (Araguaia and Tocantins rivers), the Atlantic North/Northeast Basin (Parnaíba and Itapecuru rivers), the São Francisco Basin (São Francisco, Pará, Paraopeba, das Velhas, Jequitaí, Paracatu, Urucuia, Carinhanha, Corrente and Grande rivers), the East Atlantic Basin (Pardo and Jequitinhonha rivers) and the Paraná/Paraguai Basin (Paranaíba, Grande, Sucuriú, Verde, Pardo, Cuiabá, São Lourenço, Taquari and Aquidauana rivers). Of the 12 Brazilian hydrographic regions, as defined by the National Water Agency (ANA), eight are in the Cerrado (Lima 2011).

Lima and Silva (2005) also reinforce the importance of the Cerrado with regard to flow of water basins in the region. Over 70% of the outflow in the Araguaia/Tocantins, São Francisco and Paraná/Paraguay basins is generated in the Cerrado. The São Francisco Basin is hydrologically dependent on the Cerrado, which generates 94% of the basin's surface water. The Paraná/Paraguay Basin is another recipient of important hydrological contributions from the Cerrado, since, covering 48% of its total area, it generates 71% of the average outflow for this basin. This water network provides approximately 14% of Brazil's surface water production, but when the Amazon Basin is removed from the analysis, the Cerrado covers 40% of the area and is responsible for 43% of the total remaining surface water production for the entire country (Lima and Silva 2005).

The broad range of aquatic environments in the Cerrado - rivers, lakes, swamps - is remarkable but little explored. Scientific knowledge is more focused on major rivers and a few groups of organisms such as fish (Fonseca 2005; Lambert and Ribeiro 2007). The 800 species of fresh-water fish registered for the Cerrado represent 27% of nearly 3,000 species of fish in South America (Mittermeier *et al.* 2004; Fonseca 2005; Lambert and Ribeiro 2007). This number may be much higher considering that between 30 and 40% of freshwater fish species in Brazil are still unknown or have unpublished records (Fonseca 2005).

An important aspect is the peculiarity of the fish fauna of the river basins. Among the 298 fish genera recorded for the Cerrado, 148 (50%) are unique to a particular watershed (Lambert and Ribeiro 2007). At the species level, 84% can be considered exclusive of any watershed. The basins of the Tocantins and San Francisco rivers (12) are those with greater richness of genera

of fish with 74 and 12 genera, respectively (Lambert and Ribeiro 2007). The Araguaia-Tocantins system has the highest fish species richness of the Cerrado. For the Araguaia River basin alone, 360 species of fish have been recorded (Amaral 2013). This is equivalent to 68% of all freshwater fish species known to the European continent. Fish such as São Francisco River catfish (*Pseudoplatystoma corruscans*), Araguaia River surubim (*Pseudoplatystoma fasciatum*), Curimatã-pacu (*Prochilodus argenteus*) and Dourado (*Salmius franciscanus*), endemic species of the São Francisco river, are characteristic of these basins and appreciated by thousands of artisanal fishermen as a source of protein and for the local market.

3.6 Conclusions

Strong arguments in terms of biodiversity, endemism and hydrology were provided in this chapter to confirm the biological importance of the Cerrado. The size of this hotspot, the complexity of its environmental heterogeneity, the high levels of endemism of species and the imminent threats (see chapters 9 and 10), constitute a great challenge regarding conservation of its biodiversity and ecosystem services as well as promotion of more sustainable development in the region, including by the residents who live in close contact with nature.

4. ECOSYSTEM SERVICES IN THE HOTSPOT

According to the Millennium Ecosystem Assessment (2005), ecosystem services include provisioning, regulating, supporting and cultural services for human well-being and poverty reduction. For purposes of this Cerrado ecosystem profile, a different classification is used, covering the same services but using different categories. The specific ecosystem services provided by the Cerrado Hotspot also refer to the well-being of elements of its own and other ecosystems, which in turn make important contributions to human well-being. The scope of the ecosystem services is not limited to their origin, benefits within the Cerrado or only to human well-being, but also includes benefits shared among ecosystem elements at all geographic levels, including the continent, in the case of water, and the global level, in the case of greenhouse gases.

The services selected for analysis in this chapter have to do with biodiversity as such (Section 4.1); water security for humans and nature (4.2); storage of carbon that would otherwise be emitted as greenhouse gases (4.3); services related to rural livelihoods (4.4); and services related to culture, tourism and recreation (4.5).

4.1 Biodiversity

The biodiversity of the Cerrado, as that of any ecosystem, has intrinsic value, but conservation efforts should also take into account that the biome has a very high level of richness, in absolute terms, actually the greatest among the world's tropical savannas, due to its size, internal diversity and the fact that it links four other biomes (Myers 1988; Souza 2006). Although many species remain unknown, it may well be as rich in biological terms as tropical forests like the Amazon and the Atlantic Forest (Castro *et al.* 1999). Because of high levels of endemism, much of the biodiversity is also unique, being found nowhere else on earth (Brandão 2015; Machado 2015; Pivello 2015). The species and varieties of the Cerrado and other tropical savannas are no less valuable than those of other ecosystems. They are just as likely to contain substances that can cure diseases, thus providing a vital service to all of mankind.

The biodiversity of the Cerrado, both native and agro-extractive, can also provide vital services in terms of food production. The biome is the center of origin for pineapples and of dispersion for other established commercial crops like peanuts, beans and manioc (Hathaway 2015). The grasses, legumes, tubers and bromeliads of its tropical savannas that are wild relatives of various crops have genetic characteristics of resistance to heat and drought (Strassburg et al. 2014). The same is true of its agrobiodiversity, including crops and managed species of indigenous and traditional communities. Wild relatives of crops that are grains, tubers or legumes do not occur in pure forests of any kind, much less in rainforests. Their genetic characteristics are increasingly important for direct use, breeding and genetic modification in the context of global warming and changes in rainfall patterns, with less total annual precipitation and more frequent or longer dry spells and droughts (Assad 2007; Carvalho *et al.* 2013). In this case, the rest of native biodiversity in the ecosystem would not be subjected to risks from introduction of alien genes, as might happen with genetically modified organisms (IUCN 2007). Rather, native biodiversity itself could be used for purposes of breeding, especially when climate change becomes more severe. Genetic engineering using new breeding techniques to recover the genetic properties of ancestors is conceived as distinct from genetic modification of organisms and has been called "rewilding" (Andersen 2015).

The same importance of adapted genetic characteristics of species and varieties holds for both agricultural and agro-extractive biodiversity. It is the case for many varieties of staple foods such as rice, corn, beans, manioc and squash that have been used for centuries by traditional communities. Contemporary family farmers survive well in environmental conditions that are adverse in terms of soil fertility, temperature, humidity, weeds, pests and diseases. These existing and potential environmental services are provided by intra-specific variation recognized as 'agrobiodiversity' (Santilli 2009). The same holds true for products of sustainable use of biodiversity, as described in more detail in Section 4.4. In addition to crops, fungi and micro-organisms in the soil or used for processing, as in the case of cheese, may also be important.

The Cerrado's native plants are the basis of the entire food chain of its flora and fauna. Insects, bats and hummingbirds of the Cerrado are important for pollination of native plant species and therefore for their reproduction and survival as well as their ecological functions or services. There is a wide variety of native stingless bees that may be threatened by clearing, burning, pollution and competition from exotic species (*Apis mellifera*). Native species of bees such as *jataí, mandaçaia, jandaíra, tiúba, uruçu* and *canudo* are useful for pollination and for production of honey (Pinheiro-Machado *et al.* 2002; Villas-Boas 2012). These bees require nesting places like hollow trees, while the bats and birds require specific habitats, although they can also fly from one fragment to another. It should be noted that both native and exotic species of bees co-exist in the Cerrado. The native species are not necessarily displaced by competition for nectar, destruction of small native flowers by large exotic bees or attacks of aliens on their colonies. Keeping pollinator populations and their habitats throughout landscapes is essential to maintaining native biodiversity as well as crops.

At the same time, fauna such as native owls, hawks, snakes, anteaters, peccaries, canines and felines are predators that help control populations of rodents, termites, leaf-cutting ants, other insects and various enemies of native flora and fauna as well as crops and livestock. Feral dogs and cats can reduce populations of valuable fauna as well as control invasive species like rats, replacing important natural predators such as jaguar (*Panthera onca*), that previously played this role. Some ants also protect plants against herbivore predators (Leal 2006).

As described in the following sections on water and carbon, the main indirect ecosystem services provided by conservation of the biodiversity of the Cerrado depend on maintenance of hydrological cycles and carbon stocks, since both of these functions in turn depend on biodiversity, *i.e.*, flora and fauna. The flora store carbon, while flying insects and vertebrates are necessary for pollination of flowers and the mammals and birds are necessary for the dispersal of seeds and maintenance of gene flows. Predators help keep environmental balance and curb diseases such as Hantavirus transmitted by wild rats. The interdependence of all kinds of species is key to maintaining biodiversity and its ecological functions in landscapes.

4.2 Water

The water in the Cerrado, falling as rain from clouds or flowing in rivers, is essential for the survival of all of its biodiversity, as well as for the well-being of its human inhabitants and the functioning of its economy. The water downriver from the Cerrado is also essential for the ecology of all of the Pantanal wetlands on the borders of Bolivia and Paraguay (Lima 2015). Other ecosystems along the São Francisco, Parnaíba, Paranaíba, Paraguay and Paraná rivers also depend on water coming from sources in the central plateau (Lima 2015). Furthermore, all of the southern tributaries of the Amazon except the Juruá and Purus (Guaporé-Madeira, Teles

Pires-Tapajós, Xingu and Araguaia-Tocantins) also have their sources in the Cerrado, as do various rivers in Maranhão and Piauí (Grajaú, Mearim and Parnaíba). They return the moisture received from the Atlantic Ocean via the Amazon. Soon, by means of an ambitious transposition project to 'integrate' the various river basins, the semi-arid region of the Northeast outside the São Francisco basin (Ceará, Rio Grande do Norte, Paraíba and Pernambuco) will receive water transferred from that major river (Stolf *et al.* 2012). Altogether, about 70% of Brazil receives or will receive surface water originating in the Cerrado. The waters of the São Francisco are 90% from the Cerrado, while the Plata waters are 73% from the Cerrado (Lima 2015). The river basins that have their origin in the Cerrado are home to approximately 40% of Brazil's population and part of the population of Bolivia, Paraguay, Argentina and Uruguay.

Furthermore, the Guarani Aquifer, the second largest underground reservoir of water in the world, covering 1,200,000 km^2 in densely populated areas of southwestern Brazil and extending into Paraguay, Argentina and Uruguay, is fed by water from the Cerrado that infiltrates down to levels between 150 and 1,800 m and is tapped by artesian wells (Ribeiro 2008). It is essential for water supply in large parts of Southeastern Brazil.

The seasonality of water flow in all the rivers and aquifers is affected by the rates of surface runoff and evapotranspiration. When the native vegetation is removed, runoff is accelerated and water flows back to the sea rather than infiltrating and feeding springs or aquifers or being absorbed by roots, rising to leaves and returning to the atmosphere through evapotranspiration. Thus, the consequences of clearing are more flooding, erosion and sedimentation during the rainy season and lower volumes of water in rivers and reservoirs during the dry season. More intense seasonal variation in surface water causes damage to nature, especially fish, turtles and mammals, and to humans, who cannot make full use of rivers for water supply, transportation, fishing or generation of electricity. Biodiversity thus provides a key indirect environmental service through its role in the hydrology of surface stocks and flows of water. In addition to the quantity of water over time, plant cover is also essential for the quality of water.

In addition to providing surface and underground water for neighboring regions to the north, east and south, the Cerrado also supplies aboveground water to southeastern and southern Brazil and neighboring countries (Bolivia, Paraguay, Argentina and Uruguay) through atmospheric flows of water vapor. The moisture from the Amazon travels southward after moving westward from the Atlantic and approaching the Andes (Salati 1978; Arraut 2012; Marengo 2009; Nobre 2014). The names 'water pump', 'flying rivers', 'aerial rivers' or 'rivers in the sky' may not be appropriate, but they do provide metaphors. What is not recognized is that the rivers do not "fly" thousands of kilometers without landing, but are a result of reiterated cycles back and forth, up and down, between land and air. They are fed by successive cycles of precipitation and evapotranspiration on their way southward, as also happens during the journey from east to west. Without the native vegetation of the Cerrado, *i.e.* its biodiversity, they would not reach the southern part of the Cerrado, much less other regions or countries. The largest metropolitan areas in Brazil (São Paulo, Rio de Janeiro and Belo Horizonte, with some 40 million people) depend on rain coming from the Cerrado, as do industries in Brazil's most developed region. Increased runoff and reduced evapotranspiration interrupt part of the flow. In 2015, São Paulo was hard hit by a water shortage, a true crisis. This irreplaceable environmental service is one of the strongest justifications for large-scale conservation of biodiversity in the Cerrado.

In economic and social terms, regularity of water supply is vital for human consumption and hygiene in both rural and urban areas (ANA 2015), as well as industries, most of which depend on water. Both population and industry in Brazil are heavily concentrated to the south of the Cerrado but rely on what happens in the northern and central parts.

In 2015, the shortage of water in the Southeast, most notably in São Paulo, but also in other cities and states, caused rationing of water, blackouts due to the shortage of electricity from hydropower and movement of industries to areas with better supplies of water. The impact of the water and energy crises on the GDP for 2015 is estimated at 1% or more (Fraga 2015). The shortage even contributed to an epidemic of dengue because residents created breeding places for *Aedes aegypti* mosquitoes by storing water at home.

Agriculture, both rain-fed and irrigated, in the Cerrado as well as downwind and downriver, also depends on water from the central highlands. In recent years, there have been shortages of rainwater for crops in Bolivia, Paraguay, Argentina and Uruguay. In the Cerrado, central pivot technology is widespread to provide irrigation by dispersion and ensure production during the dry season (Lima 2015). In places like Petrolina, Pernambuco, water from the São Francisco River sustains a rich cluster of irrigated fruit farming, much of which is for export, generating income of tens of millions of US$ per year (Sawyer 2001; Nóbrega 2004). There is now fear of the farms' collapse because of the record low water level in 2015 (Cruz 2015).

River transportation of commodities, especially soybeans from the Cerrado, is important on the Tietê, Paranaíba, Paraná, São Francisco and Madeira rivers, but has been interrupted in 2015 by low water levels and sand bars. The Tietê River in São Paulo is a central transportation artery. The cost of dredging the Madeira River has led to its privatization. Waterways are planned as alternatives to roads, but their use would be interrupted by low water levels. Thus, maintenance of river flow and reduction of sedimentation are important indirect environment services provided by the Cerrado's biodiversity. Furthermore, new roads require and induce clearing, as was shown in the Amazon (Alves 1999) but more use of waterways might help reduce deforestation.

Above all, water within the Cerrado or coming from it is vital for generation of hydropower in Brazil. More than 200 million people in Brazil, except for the few that live off the power grid of the National Integrated System (SIN) in remote parts of the Amazon, depend at least in part on electricity generated by hydroelectric projects installed along the various rivers that flow north, east and south from the central plateau. The Itaipu hydroelectric plant, on the Paraná River, is one of the largest in the world. According to the National System Operator (ONS), the SIN is responsible for 98.7% of the electricity generated in Brazil. Availability of water in the dry season is vital, especially for hydroelectric plants that do not have large reservoirs, but depend on the flow of the river, using technology that has been adopted in the last three decades to reduce the environmental impacts of large reservoirs, but which should now be changed (Goldemberg 2015).

Avoidance of sedimentation of reservoirs above hydroelectric power plants is also important (Cabral 2005). This environmental service can be provided by reduced clearing and by keeping or restoring native plant cover on hilltops, on steep slopes and along the edges of streams and rivers, as provided by the Forest Law, as well as use of contour plowing and strips of native vegetation in fields.

Greater productivity with sustainability on land already cleared could reduce erosion, runoff, sedimentation and pollution, which in turn have negative impacts on biodiversity. Pollution of water sources by improper use of agricultural chemicals (fertilizers, herbicides, insecticides and fungicides) can also have negative impacts on human health (Lima 2011).

In addition to well-known urban heat islands (UHI), there are also rural heat islands, rarely recognized in the literature, which require urgent attention. Pastures have temperatures that are higher than areas in cities (Carvajal and Pabón 2014). Vast heat islands range over a million square kilometers of cleared rural areas, where temperatures are several degrees Celsius higher than in woodlands, as anyone familiar with the countryside knows. These rural heat islands create turbulence and cumulonimbus clouds that result in storms with torrential rains, lightning discharges and strong winds that damage crops, knock down trees, flood lowlands, cause wildfires and impact human settlements. Now there are even tornadoes in Brazil, unheard of before (G1 2015).

The Cerrado also provides indirect ecosystem services related to global warming. As described in Chapter 9, sugar cane, production of which has been concentrated in São Paulo, is expanding into the Cerrado and neighboring states. Sugar cane requires annual precipitation of 1,200 mm (Castro 2010). The annual average in the northern part of the state of São Paulo, where there are areas of Cerrado and transitions to Atlantic Forest, is 1,427 mm (Nascimento and Nery 2005). Thus, a reduction of only 20% would mean insufficient water (1,142 mm) for this crop, which is the main source of biofuel (ethanol) in Brazil and one of the main strategies to reduce greenhouse gas emissions, as well as to improve human health in cities by reducing air pollution (Sawyer 2015).

It is important to note that the ecosystem services provided by water from the Cerrado benefit nearly all of Brazil and parts of neighboring countries, including the most developed regions of Brazil, in the Southeast, responsible for most of the country's GDP. Only one relatively small part of Brazil, north of the Amazon River, does not depend on the Cerrado. It is self-evident that without sufficient flows of rain and rivers from the Cerrado, and therefore without sufficient water for agriculture and hydropower, not to mention human consumption, there would be catastrophic consequences, some of which are already on the horizon (Madeiro 2015). Catastrophe in a country as large and important as Brazil, with the world's seventh largest GDP, would have global economic impacts.

4.3 Carbon

It is probable that the Cerrado now has greater emissions of greenhouse gases than the Amazon (Sawyer 2009). Per hectare, stocks of carbon in the Cerrado are much greater than meets the eye, since the deep roots that trees, shrubs and herbaceous plants need to survive the long dry season, hold most of the biomass. The roots in rainforests are shallow in order to capture the water that reaches the forest floor, where nutrients are also concentrated, during the entire year. In contrast, the proportion of biomass that is underground in the Cerrado is as high as 70% (Lenti 2015; Bustamante 2015).

There is considerable variation in the density of carbon in biomass from one type of vegetation to another. Considering a conservative overall average of 37.4 tons of carbon per hectare (Table 4.1), including the above-ground biomass and part of the below-ground biomass, but not soil carbon, this corresponds to 137.3 tons of CO_2 per hectare, using the factor of 3.67 tons of CO_2 per ton of carbon. Clearing releases this much CO_2 per hectare. The 100 million hectares of

natural vegetation in the remaining half of the Cerrado hold carbon corresponding to approximately 13.7 billion tons of CO_2.

Table 4.1. Carbon in Cerrado Biomass, by Main Vegetation Type.

Vegetation type	Tons of carbon/hectare in biomass[a]	Reference	Estimated hectares in intact Cerrado
Cerrado sensu stricto	29.5	Miranda (2013)	40,000,000
Riparian forest	73.0	Delitti and Burger (2000)	10,000,000
Savanna	18.8	Miranda (2003)	30,000,000
Seasonal forest	113.4	Scolforo *et al.* (2015)	20,000,000
Average[b]	37.4		100,000,000

[a] Includes part of underground biomass; [b] Weighted according to estimated area of each vegetation type.
Source: Based on Lenti 2015. Bustamante (2015) shows 80 tons of carbon per hectare, not counting biomass in soil.

Underground carbon in pastures and cropland is concentrated in the first meter or less (Mello *et al.* 2014), but needs to be measured at greater depths where the Cerrado is still standing or is being restored and there are trees, bushes and scrub. In woodlands, in contrast to pastures and cropland, there is also wide variation from one point to another, depending on the exact location of individual trees and roots, the distribution of which is very uneven. Compared to pasture or crops like sugar cane, large samples are necessary. Despite practical difficulties of measuring carbon at depths up to 20 m or more, by digging deep holes, more research is needed on this important topic, at least to establish proportions according to depth.

Less frequent burning, be it intentional or accidental, would allow trees to survive and grow to adulthood, when they become resistant to grass fires because of their size and thick bark, and thus store more carbon. Although fire caused by lightning every two decades or so is part of the natural Cerrado ecosystem, burning is common as a traditional means of pasture management, in addition to frequent accidental wildfires, made more intense by the spread of tall invasive species of pasture grass.

The new federal government program to promote expansion of the agricultural frontier into a total area of 73 million hectares in the states of Maranhão, Tocantins, Piaui and Bahia, a region now known as Matopiba, is bound to cause vast new emissions due to clearing and burning. If 10% of the area is cleared, the emissions from 7.3 million hectares would amount to more than a billion tons of CO_2. This increase would cancel one third of the emissions avoided by reduction in deforestation in the Amazon since 2004, which according to Nepstad *et al.* (2014) amounts to 3.2 billion tons. It should be noted that the Matopiba program does not include any environmental component, at least as part of its initial formulation in 2015 (Miranda 2015). There are no benefits foreseen for family farmers or traditional communities such as women babassu palmnut crackers, and babassu stands are considered as already ‘cleared’.

There is potential for reducing emissions from clearing natural vegetation by, instead, intensification of production on land already cleared, thus leading to 'land-sparing' and 'land-sharing' (Egan and Mortensen 2012).

In addition to CO_2, the Cerrado's greenhouse gas emissions include methane from some 100 million head of cattle (Schlesinger 2010) as well as nitrous oxide (N_2O) from crops other than soybeans, mainly corn, that use water-soluble, synthetic nitrogen fertilizers (Bustamante 2015). Both methane and nitrous oxide are very powerful greenhouse gases, although their residence time in the atmosphere is shorter than that of CO_2. These emissions are exacerbated by the CO_2 emitted by industry and transportation, both upstream and downstream in global supply chains. Upstream, fertilizers are imported from Russia, Canada and Norway, while machines and fuels come from other regions or countries. Downstream, soy and beef are exported to China, Europe and the Middle East (Sawyer 2009).

There is also enormous potential for carbon sequestration through recovery of the Cerrado's degraded pastures, which cover 32 million hectares in the biome (EMBRAPA 2014). Both stocking (density of head per hectare) and take-off rates (tons of beef per year) for cattle are very low, and many pastures are degraded (Peron and Evangelista 2004; Schlesinger 2010). The area to be recovered to comply with the new Forest Law's provisions on Legal Reserves and Areas of Permanent Preservation is 2,098,988 hectares. It is thus important to add restoration to conservation strategies, if only to relieve part of the pressure from the surrounding matrix on protected areas, which are and will continue to be few and far between. Restoration also provides "conservation connectivity" among remnants (Crooks and Sanjayan 2006). It can be a way to promote the forest transition now under way in many countries (Rudel, Schneider and Uriarte 2010).

4.4 Rural Livelihoods

Biodiversity is essential for the sustainable livelihoods of virtually all the family farmers, traditional communities and indigenous peoples in the Cerrado. In addition, residents of small towns, who are formally urban, consume biodiversity directly for their own subsistence or barter products locally and sell them in urban markets to generate supplemental income.

Among local communities, wood from Cerrado trees has traditionally been important for fuel, charcoal, construction, fence posts, oxcarts, furniture and household utensils such as bowls and spoons used by the rural population. It has been and can be harvested sustainably (FAO 2010). Some species such as *aroeira* (*Myracroduon urundeuva*) are resistant to rotting and do not require frequent replacement. Gnarled trunks and branches from fallen or dead Cerrado trees are now used to make rustic furniture for sale in urban areas.

All indigenous peoples and traditional communities in the hotspot use or manage dozens of native species of fruits and nuts for their own consumption, providing low-cost and nutritious food security with carbohydrates, proteins, fats, fiber, vitamins and minerals. The number of species used by the communities varies from one Cerrado region to another. For example, in the Água Boa traditional community of *geraizeiros* in Northern Minas Gerais, 69 trees are used (Lima 2008). The wide array of resources consumed is a strategy to deal with short harvest seasons for native fruit species. Some indigenous groups have their own varieties, such as the spineless pequi (*Caryocar brasiliensis*) bred and used by the Kuikuro in the Xingu Indigenous Park (Smith 2013).

In addition to being consumed, fruits and nuts are also marketed. The most important native species in commercial terms is the babassu palmnut (*Attalea speciosa*), which involves 450,000 women collectors and breakers in Maranhão, Tocantins and Piauí. They are organized in about 50 associations and five cooperatives producing oil, soap, flour and charcoal. The Cooperative of Agro-extractivist Producers of Lago de Junco (COPALJ), with 400 families, sold 160 tons of babassu oil in 2014, generating US$324,000. *Pequi* (*Caryocar brasiliensis*), *baru* or *cumbaru* (*Dipteryx alata*) and *buriti* (*Mauritia flexuosa*) are important in economic terms in various states. *Baru* is sold for prices reaching US$ 15 per kilogram. *Coquinho azedo* (*Butia capitata*) is locally important in northern Minas Gerais, where local markets take everything collectors can provide. Pulp for juice is made from *cajá* (*Spondius mombim*), *bacuri* (*Platonia esculenta*), *araçá* (*Psidium firmum*), *mangaba* (*Hancornia speciosa*), *murici* (*Byrsonima crassifolia*) and *cagaita* (*Eugenia dysenterica*), as well as many other native fruits, which are also used to make ice cream, popsicles, jams and jellies. The FrutaSã industry in Carolina, Maranhão, owned by the Vyty-Cate indigenous association, with technical support from the Center of Indigenous Work (CTI), produces more than 50 tons of fruit pulp per year, from 13 different fruit species (Carvalho and Silveira 2006). *Bacuri* is sold for US$ 5 per kilogram. The Grande Sertão Cooperative in Montes Altos, Minas Gerais, produces fruit pulp, marmalades, meal and oil from ten Cerrado species collected by 2000 families (Carvalho 2007; ISPN files). Other fruits and leaves are dried or made into liqueurs, teas, condiments, oils and soaps (Carrazza and Figueiredo 2010). Plans are being made for an industrial-scale plant in Brasília to do the final processing of products from the central part of the Cerrado.

Flowers such as *sempre-vivas* (*Comanthera veronoioides, Syngonanthus elegans*) had been collected by local communities and dried and sold for decoration in the Espinhaço mountains, in the southeastern part of the Cerrado, since the 1970s, until a new national park became an obstacle (Monteiro *et al.* 2012). In the Jalapão region of Tocantins, golden grass (*capim dourado, Syngonanthus nitens*) is turned into attractive handicrafts and bio-jewelry sold in the region and the Southeast. One sous-plat is sold for US$ 16. These handicrafts are one of the Jalapão's main income sources, providing between US$ 65 and US$ 365 per artisan per month. There are 11 associations involving about 600 *quilombolas* (Schmidt *et al.* 2007). Plants are also used for fiber and as sources of dye for textiles.

Honey of native stingless bees (*Meliponia spp.*) is produced on a small scale but brings high prices, up to US$ 22 per liter. Honey from exotic bees (*Apis mellifera*) also depends of the flowering of various native plant species, thus involving indirect use of Cerrado biodiversity. Seventy people from five ethnic groups in the Xingu Indigenous Park produce two tons of certified organic honey, sold to Pão-de-Açúcar supermarkets in São Paulo for US$ 12 per liter, twice the price they can get locally (ISPN files).

Hunting is now illegal, except on a small scale for subsistence on indigenous lands. There are some initiatives to carry out semi-confined wildlife management with native species such as capybara (*Hydrochaeris hydrochaeris*), peccaries (*Tayassu tajacu* and *Tayassu pecari*), greater rhea (*Rhea americana*) and river turtles. Their meat can be sold for prices two or three times higher than prices for beef (Sawyer 1999). According to the Ministry of Agriculture's sanitary regulations, however, slaughter requires the presence of veterinarians and sale requires expensive certification, so there are now very few such projects left. Some indigenous groups, such as Krikati, Xavante, Karajás and Apinayé, have projects to manage wildlife for their own protein provision.

Medicinal plants are important mainly for consumption by families and local communities, for example among the members of the Pacari Articulation, a regional network promoting the use of medicinal plants and cosmetics named after an emblematic Cerrado tree (Dias and Laureano 2009; Dias 2014). Larger industries use plants such as fava d'anta (*Dimorphandra mollis* and *Dimorphandra gardneriana*), to extract rutin (*quercetina-3-rutinosídio*), a bioflavonoid used in many medicines (Ribeiro-Silva 2013; Filizola 2013). Attempts to process phytotherapeutic products at small-scale laboratories such as AGROTEC, in Diorama, Goiás, have run into technical barriers raised by health authorities; some have even been closed by armed police. If the legal framework is made more suitable, the collection of medicinal plants for phytotherapy could generate income that is orders of magnitude greater than for fruits and nuts, as well as reduce public health spending on treatments and imported pharmaceuticals (Sawyer 2009). While fruit is sold for cents or dollars per kilogram (Teixeira 2015), medicinal plants are sold for tens or hundreds of dollars per kilogram. The medical and pharmaceutical establishment is opposed to any such competition.

4.5 Other Cultural Services

Some anthropologists report that indigenous communities consider their lands to include sacred places (Andrade 2010), a notable aspect of Brazil's rich cultural diversity. Although the Cerrado was considered a barren wasteland by the first settlers and continues to be treated as essentially worthless by developmentalists who are concerned primarily with profit and economic growth, those who have lived there appreciate and value its beauty and its specificity. Nowadays, the Cerrado is becoming 'chic' in food, clothing and music. Some people, both traditional and modern, are proud of the Cerrado.

Non-indigenous rural communities often place value on the land where their ancestors lived for generations before them. Rivers, wetlands and canyons in the Cerrado itself and those located downstream from the central plateau in neighboring biomes have esthetic, cultural and spiritual importance for local communities. The countryside, called *roça*, is part of their cultural identity as *sertanejos*. The Center of Excellence of Cerrado Studies (*Cerratenses*) at the Brasília Botanical Garden (JBB) stresses cultural dimensions. The Lais Aderne Ecomuseum of the Cerrado emphasizes the cultural aspects of life in the Cerrado (Encinas and Nóbrega 2006). As one backlands *chapadeiro* emotionally put it at the National Congress on September 18, 2015, 'This is where I belong'.

Cerrado landscapes also provide tourism and recreation services for many urban and some foreign visitors. The urban population of large cities in the Cerrado and other regions, especially in the Southeast, seeks the cool waterfalls and the hot thermal waters of the Cerrado, which have become tourist attractions. The main thermal waters, adjacent to the Serra de Caldas Novas State Park, in southern Goiás, are visited by a million tourists per year, who probably spend a total of US$ 200 million. Waterfalls are abundant, the most well-known of them being located in and around the Chapada dos Veadeiros in Goiás and the Chapada dos Guimarães in Mato Grosso. The rivers and lakes in the Araguaia region attract fishermen from elsewhere in Brazil and around the world to catch fish weighing up to 70 kg. Birdwatchers flock to the Pantanal wetlands, to the southwest of the Cerrado. There are magnificent caves in Terra Ronca, in northeastern Goiás. To the northeast, the canyons of the São Francisco River are another major tourist attraction that depends on water from the Cerrado. Indigenous tourism is now legal and has been regulated. It can provide income, especially from once-in-a-lifetime visits by foreign tourists, but requires investment and organization to avoid negative impacts.

4.6 Conclusions

The main ecosystem services provided by the Cerrado within and beyond its boundaries are summarized in Table 4.2.

Ecosystem services provided by Cerrado biodiversity are far greater than is generally recognized by specialists, policy makers or the public at large. Unprotected areas provide services for protected areas and vice versa. The services reach far beyond specific sites or corridors or even the entire hotspot, extending as far as neighboring countries to the west and south. The protected areas of the hotspot and the unprotected remnants, most of which are home to local communities, keep the entire ecosystem functioning, a necessary condition for conservation at specific sites. The various ecosystem services provide strong justifications for the conservation of biodiversity and for investments from national sources, primarily for water, as well as international sources, primarily for mitigation of climate change through global warming, as further discussed in Chapter 11.

Table 4.2. Ecosystem Services of the Cerrado.

Type	**Services**
Provisioning	Rivers in the Cerrado and downstream (north, east and south)
	Medications (existing and potential)
	Wood
	Food security
	Livelihood supplementary income
	Less need for clearing and for social protection (cash transfers etc.)
	Genetic resources (potential)
	Hydroelectricity for all of Brazil, through the nationally integrated power grid
	River transportation, especially of commodities
Regulating	Rain in the Cerrado and neighboring regions and countries (hydrological cycles)
	Storage and sequestration of carbon
	Avoided carbon emissions
Supporting	Biodiversity intrinsic value
	Species protection
	Pollination
Cultural	Sacred indigenous lands
	Backlands (*sertanejo*) cultural values
	Tourism and recreation (thermal waters, waterfalls, birdwatching, fishing, camping, hiking etc.)

Source: Authors and stakeholders.

5. CONSERVATION OUTCOMES

Selection of conservation outcomes relies on the understanding that biodiversity is not measured in any single unit. Rather, it is distributed across a hierarchical continuum of ecological scales that can be categorized into three levels: (i) species; (ii) sites; and (iii) broad landscapes (or ecosystem-level units) termed corridors. These levels interlock geographically through the occurrence of species at sites and of species and sites within corridors. Given the threats to biodiversity at each of these three levels, targets for conservation can be set in terms of 'extinctions avoided' (species outcomes), 'areas protected' (site outcomes) and 'corridors consolidated' (corridor outcomes). Species are selected as those classified as threatened according to the IUCN Red List, or the National Red List for Brazil (recognizing that the IUCN Red List is incomplete with regard to coverage of certain taxonomic groups in Brazil, especially plants, freshwater fishes and invertebrates, and that national threat assessments can act as a proxy for global assessments). Sites are identified as Key Biodiversity Areas (KBAs): places that "*contribute significantly to the global persistence of biodiversity*", for example by supporting threatened species and species with severely restricted global distributions. Corridors are delineated to link KBAs (in particular to support landscape connectivity and maintain ecosystem function and services for long-term persistence of species). Following this approach, quantifiable measures of progress in the conservation of threatened biodiversity can be tracked across the Cerrado Hotspot, allowing the limited resources available for conservation to be targeted more effectively.

5.1 Sites of Importance to Conservation and Environmental Management Instruments

At least ten key initiatives provided breakthroughs in knowledge about the Cerrado Hotspot: biodiversity workshops with their revisions and detailing (1998, 2007, 2011 and 2014); definition of the world's biodiversity hotspots (2000 and 2004); preparation of national red lists of endangered species of flora and fauna (2008 and 2014); identification of key areas for biodiversity conservation (KBAs 2007); identification of rare species of plants and fish (2009 and 2010); and identification of irreplaceable areas taking into account species of flora and fauna of the Cerrado or specific areas of the hotspot (2007 and 2008).

The first exercise, carried out in 1998, was based on the model of biodiversity workshops to identify priority areas and actions for conservation, mainly considering the occurrence and distribution of endemic and endangered species in the Cerrado. Richness was most important, while singularity, usefulness and other criteria were not considered. Biodiversity workshops were part of the Project for Conservation and Sustainable Use of Brazilian Biological Diversity (PROBIO) under the National Biodiversity Program. Additional studies were carried out in all Brazilian biomes until the mid-2000s for the identification of priority areas and actions for conservation, in compliance with the country's obligations under the Convention on Biological Diversity. The best available information was used to produce new analyses for the Cerrado, with the identification of 87 priority areas for biodiversity conservation, also including areas in the Pantanal, published in 2007 (MMA 1999; 2007). Recently (2012), the Ministry of the Environment (MMA) assumed the review of priority areas in all biomes, one by one. The Cerrado was reviewed together with the Pantanal biome, under the leadership of World Wide Fund for Nature (WWF) Brazil, and the report was issued in 2012. It recommended the creation of protected areas in 42 polygons, in three different classes of priorities. In addition, the exercise also provides several recommendations of conservation actions: 1) Rural Environmental Registry (CAR) and Good Practice; 2) Recovery; 3) Compensation of Legal

Reserve; 4) Promotion of Sustainable Use; and 5) Creation of Corridors or Mosaics in 48 polygons, also in three different priority classes.

In the early 2000s, new analyses and proposals were enabled by greater scientific knowledge about the Cerrado's biodiversity (Marinho-Filho *et al.* 2010), and the emergence of analytical methods involving systematic conservation planning (Margules and Pressey 2000). They were also stimulated by new proposals for large-scale conservation in biodiversity corridors or ecological corridors (Sanderson *et al.* 2003). As a result of a broad effort to make systematic use of biological databases, new approaches used information on the occurrence of endangered species or relevance to conservation, such as key areas for biodiversity conservation based on the distribution of endangered, rare and/or endemic species (Eken *et al.* 2004; Langhammer *et al.* 2007). Identification of key areas for conservation in the Cerrado included vertebrates, plants and rare fish (Kasecker *et al.* 2009; Nogueira *et al*. 2010) and areas of the Alliance for Zero Extinction (AZE 2010).

The Cerrado has some sites identified by the AZE, which aims to create a line of defense against the extinction of species by eliminating threats and restoring habitats, in order to recover natural populations. The international initiative seeks to prevent extinctions by identifying key sites for local protection, each of which is considered the last refuge of one or more species categorized as 'endangered' or 'critically endangered' according to IUCN criteria. The first AZE site identified in the Cerrado was the Serra das Araras Ecological Station, in Mato Grosso, which has populations of blue-eyed ground doves (*Columbina cyanopis*), a species which is critically endangered (AZE 2010). The Brazilian Alliance for Zero Extinction was created to contribute to the identification of global AZE sites in the country. AZE-Brazil identified an additional seven AZE sites for the Cerrado, considering only the national Red List. The sites are:

1. Brasília Zoo (Brasilia) for the *Candango* mouse (*Juscelinomys candango*)
2. Emas National Park (Goiás) for the white-winged nightjar bird (*Eleothreptus candicans*)
3. Brejinho de Nazaré (Tocantins) for a fish (*Simpsonichthys multiradiatus*)
4. Catu River (Bahia) for the Barrigudinho fish (Phalloptychus eigenmanni)
5. Patos River (Goiás) for a fish (*Simpsonichthys marginatus*)
6. Tabocas River (Minas Gerais) for a fish (*Simpsonichthy sauratus*)
7. Urucuia River (Minas Gerais) for a fish (*Simpsonichthys zonatus*)

More recently, the National Center for Conservation of Flora (CNCFlora) of the Botanical Garden Research Institute in Rio de Janeiro coordinated a broad effort to update the list of Brazilian threatened flora and to identify priority areas for biodiversity conservation (Martinelli and Moraes 2013; Martinelli *et al.* 2014). The Chico Mendes Institute for Biodiversity Conservation (ICMBio) coordinated the review of Brazilian fauna threatened with extinction that led to the new list published in December 2014. The results reinforce the urgent need for new, integrated actions to conserve the Cerrado. All these initiatives helped to understand the current situation and highlighted critical areas for conservation in the Cerrado Hotspot, as described below.

5.2 Species Outcomes

Brazil is a signatory to important international agreements and conventions regarding the conservation of endangered species, like the Convention on International Trade in Endangered

Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD). Based on these international commitments and its own National Biodiversity Policy, the Brazilian government, with support from dozens of experts, has expanded and upgraded red lists for fauna and flora (Machado *et al.* 2008; Martinelli and Moraes 2014).

Significant anthropic pressure on natural habitats in the Cerrado is jeopardizing the long-term maintenance of its biodiversity. Analyses of the Red List in Brazil show that 903 Cerrado species are threatened with extinction, including 266 species of fauna and 637 species of flora. Only the Atlantic Forest biome has more endangered species.

These numbers are certainly higher, since only 10% of the Cerrado flora species have been evaluated. Only 77 of these 266 threatened fauna species have been recognized and incorporated in the list of globally threatened species of the International Union for Conservation of Nature (IUCN) as of 2015 since the taxonomic evaluation working groups of IUCN do not meet annually to incorporate these updates. However, as shown in Table 5.2, 118 Cerrado fauna species are currently listed as globally threatened species on the IUCN Red List. Of the 637 plant species on the national Red List, only 41 also have some degree of threat on the IUCN list. Overall, 976 species in the Cerrado have been assessed as threatened at either the national or global level or both: these represent the species outcomes for the hotspot. See Table 5.1 for the Brazilian National Red List, Table 5.2 for the IUCN Red List, and Table 5.3 for comparison of both.

Table 5.1. Nationally Threatened Species in the Cerrado Hotspot, by Taxonomic Group.

Taxonomic groups	Critically Endangered	Extinct in the Wild	Endangered	Vulnerable	Total
Plants	110	--	356	171	637
Birds	2	1	10	21	34
Amphibians	2	--	2	--	4
Reptiles	1	--	10	6	17
Mammals	--	1	14	26	41
Fish	22	--	34	47	103
Invertebrates	26	--	26	15	67
Total	**163**	**2**	**452**	**286**	**903**

One very representative endangered species in the Cerrado is the Brazilian merganser (*Mergus octosetaceus*), which occurs in low density in waterway regions of subtropical forest and savanna with gallery forest. It is the only species representative of the Mergini family (Order Anseriformes) in the Southern Hemisphere, and little is known about its biology. The species is one of the most threatened birds in the Americas, and it is classified as critically endangered on both the Brazilian National Red List and the IUCN Red List, due to the decline of its already small populations (BirdLife International 2000). The total Brazilian merganser population estimate is 175 to 225 individuals in the disjunct distribution areas in Minas Gerais, Goiás and Tocantins states (WPE 2015) and there are four individuals in captivity. There are confirmed sightings in four water basins (São Francisco, Tocantins, Paraná and Doce Rivers) and three countries (Paraguay, Argentina and Brazil). The latest sighting in Paraguay, however, was in 1984, while in Argentina there have only been two sightings since 1993. All records in both

countries refer to isolated birds, indicating an abrupt reduction or even disappearance of the species in the investigated areas. It is a sedentary and monogamous bird. It is believed that couples pair for life and remain in the same stretch of river. This makes it extremely susceptible to habitat loss and degradation.

Table 5.2. Globally Threatened Species in the Cerrado Hotspot, by Taxonomic Group.

Taxonomic groups	Critically Endangered	Extinct in the Wild	Endangered	Vulnerable	Total
Plants	4	--	17	20	41
Birds	6	--	8	27	41[a]
Amphibians	4	--	--	--	4
Reptiles	--	--	2	5	7
Mammals	1	1	8	10	20
Fish	--	--	--	5	5
Invertebrates	10	4	12	15	41
Total	**25**	**5**	**47**	**82**	**159**

[a] Including three endangered birds from KBAs in Bolivia and Paraguay.

Table 5.3. Nationally and Globally Threatened Species in the Cerrado Hotspot, by Taxonomic Group.

Taxonomic groups	Brazilian National Red List	IUCN Global Red List	Total Threatened Species [b]
Plants	637	41	637
Birds	34	41 [a]	54
Amphibians	4	4	7
Reptiles	17	7	22
Mammals	41	20	46
Fishes	103	5	108
Invertebrates	67	41	102
Cerrado	**903**	**159**	**976**

[a] Including endangered birds from Bolivia and Paraguay [b] Species evaluated as threatened nationally and/or globally.

Another important group of endangered Cerrado species, very important to extractive communities, are the species from Eriocaulaceae family, popularly known as 'evergreens' because their inflorescences keep the same look they had before been detached from the plants. The evergreens inhabit open fields exposed to the sun, on land ranging from dry to very flooded, in areas of high-altitude grasslands, savannas, Amazon fields called *campinaranas*, dunes and salt marshes in the Atlantic Forest and *vereda* wetlands. Despite their apparent plasticity, these plants do not easily survive outside their range.

The Eriocaulaceae family has ten genera and about 1,200 species distributed throughout the tropical regions of the planet. This is one of the largest families of endemism (*i.e.*, exclusive occurrence) in Brazil. Often a species occurs on a single mountain or in a very restricted area, with a very limited geographical distribution. This makes many of them seriously threatened. In addition to threats due to habitat loss from agricultural activities and urban sprawl, a serious threat to these species is their own indiscriminate extraction, especially when this takes place with the premature collection of inflorescences, prior to production or the complete maturation of seeds. The removal of many entire plants at the time of collection and the frequent use of fire as a flowering stimulator are factors that contribute to the reduction of populations of these species in their native areas. It is important to note that several human communities depend on

the extraction of evergreens for their survival. Therefore, the quest for sustainable alternatives for these communities is more than a challenge, it is a necessity.

The rarity of species can be defined by limiting geographical distribution, habitat affinity and specificity, or according to their local density (Kruckerberg and Rabinowitz 1985). Especially when associated with environmental impacts, the rarity implies in a concrete risk of extinction. In this sense, rare species should be frequently treated as conservation targets, since their high vulnerability characteristics give them a higher vulnerability status.

In Brazil, one of the most comprehensive studies on rare plants was published by Giulietti *et al.* (2009), considering geographical distribution as a rarity parameter (species with a distribution area smaller than 10,000 km^2) and covering 2,291 species, 687 of which occur within the Cerrado Biome. In 2014, the CNC Flora led an extinction risk assessment only on the Cerrado species mentioned in this study, reviewing and updating the occurrence data of these species. They evaluated nearly 5,000 points of occurrence of 577 species of rare plants, of which 366 (67%) were categorized as threatened with extinction risk, reinforcing the vulnerable status of these species. Due to a lack of consistent spatial data of some species, it was possible to have occurrence points for only 439 rare plants, which were incorporated into the KBA analysis.

The same rarity parameter was used in a study (Nogueira *et al.* 2010) that found 819 rare fish in Brazil. Most (65%) species considered rare can be found in small water basins in the Cerrado (210 species) and Atlantic Forest (322 species) biomes, identified as global hotspots for conservation due to their high degree of endemism and habitat loss. The species identified in both studies were also considered conservation targets within the framework of the CEPF. All the target species are summarized in Table 5.4.

Table 5.4. Cerrado Conservation Targets: Species Level.

		Number of species	**Total number of species**
Irreplaceable species	Rare plants	439	649
	Rare fish	210	
Vulnerable species	Threatened flora	637	976
	Threatened fauna	339	
		Total Cerrado	**1,593***

* 32 species are common to both lists- threatened and rare species

The Cerrado is estimated to contain approximately 12,000 plant species, 34.9% (4,208) of which are endemic (Forzza *et al.* 2012; Chapter 3, Table 3.1) and 5.3% (637) are threatened. This means that the Cerrado contains 13.4% of all plant species in the neotropical region and 1.5% of all plant species in the world are present only in this hotspot. A total of 2,373 species of terrestrial and aquatic vertebrates have been registered in the Cerrado, 433 (18.2%) of which are restricted (endemic) to the region (Chapter 3, Table 3.1) and 10% are threatened (237 species). Squamata reptiles (lizards, serpents and amphisbaenia or "worm lizards") stand out, with 38% of their species endemic to this hotspot (Nogueira *et al.* 2010). Mammals are the taxonomic group with the highest proportion of threatened species: 18.7% (46 of 251 species). The full list of trigger species can be found in Appendix 1.

5.3 Sites Outcomes: Key Biodiversity Areas

Efforts to identify strategic locations for the conservation of globally important biodiversity in the Cerrado have been conducted since the mid-2000s. The Cerrado Hotspot in Brasilia already had a list of KBAs (CI-Brazil 2009) based on vulnerability criteria (Langhammer *et al.* 2007) from older assessments of national and international red lists for plants and vertebrates, which had been used in biodiversity conservation strategies in this hotspot. Bolivia and Paraguay also have their own assessments, but the identification of sites important to biodiversity conservation was focused on threatened birds alone, led by BirdLife International. The important bird areas (IBAs) follow the same conceptual and methodological principles as KBAs and are intended to identify exceptionally important places and outline conservation strategies for birds. Studies of rare fish (2010) and rare plants (2014) done by researchers in Brazil also identified KBAs, using the irreplaceability criteria (Langhammer *et al.* 2007) for these species, and were also included in this analysis.

The Brazilian endangered species KBAs have been updated with new fauna and flora species records, and also with the inclusion or removal of species following the revision of the recently published Brazilian list of endangered species. Both Brazilian national (IBAMA, published in December 2014) and international (IUCN, accessed January 2015) lists were considered, as well as species occurrence records found in scientific literature, herbaria and museums over the last ten years. This update has generated a database with more than 10,000 occurrence points for species of threatened flora and fauna on the Brazilian side of the Cerrado Hotspot.

The KBAs in Bolivia and Paraguay, with an IBA assessment that used 42 and 15 species, respectively, identified only one Bolivian IBA, and three in Paraguay. Of these, however, only two species are considered to be endangered birds according to IUCN criteria, and ten vulnerable, all part of the Cerrado species outcomes. The rest belong to the 'least concern', 'near threatened' and 'not recognized' categories.

The review of Brazilian sites produced a total of 773 KBAs for Brazilian threatened species (Table 5.5). Added to KBAs for Brazilian irreplaceable species and KBAs for Bolivia and Paraguay, the total is 1,270 important sites for conservation of the biome. However, since the Brazilian KBAs from different groups presented spatial overlap, a grouping analysis of these areas resulted in a final figure of 761 Brazilian KBAs plus one in Bolivia and three in Paraguay (Figure 5.1).

Table 5.5. Key Areas for Biodiversity Conservation of Different Biological Groups in the Cerrado.

Langhammer criteria	Taxonomic groups	Number of species analyzed	Total KBAs
Irreplaceability	Rare plants	439	344
	Rare fish	210	149
Vulnerability	Threatened flora	637	392
	Threatened fauna	339	385
	Total Cerrado	1,593	765 [a]

[a] Because many KBAs qualify under multiple criteria and thus overlapping, this figure is not equal to the sum of all criteria (1,270).

Figure 5.1: 765 Key Biodiversity Areas of the Cerrado Hotspot.

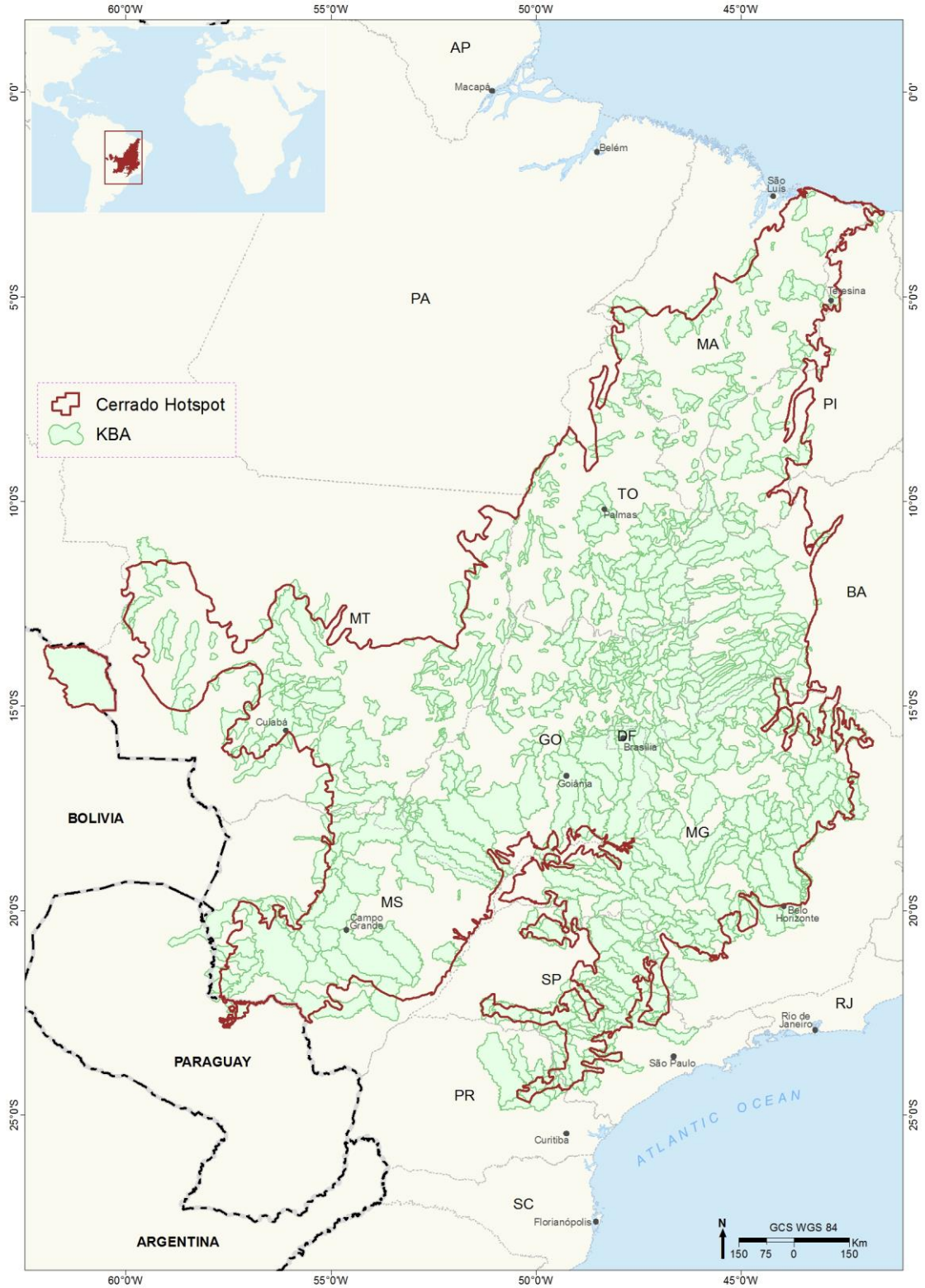
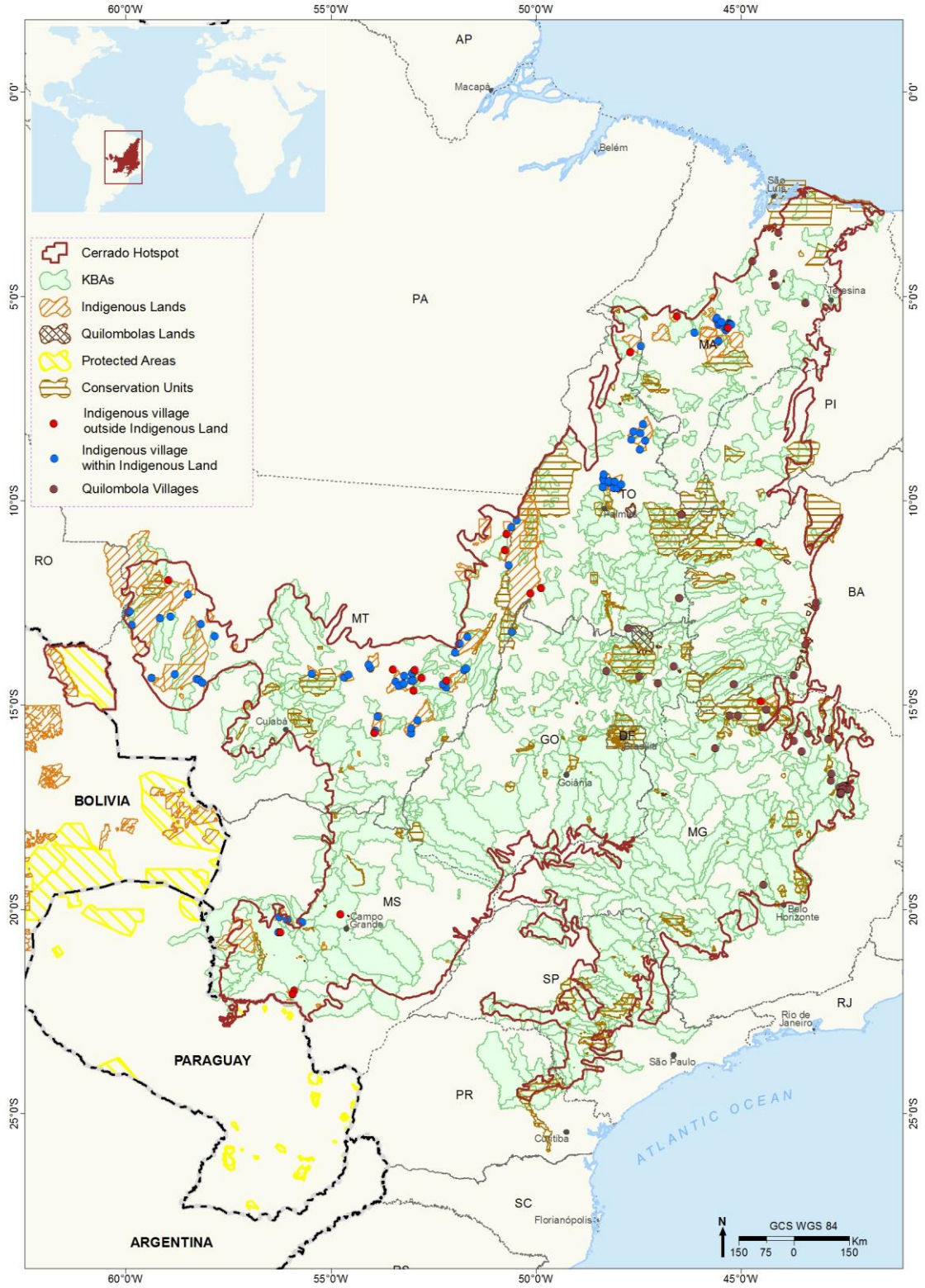


Figure 5.2: Key Biodiversity Areas and Protected Areas in the Cerrado Hotspot.



These 765 sites encompass an area of about 1.2 million km^2, out of which 1.18 million km^2 is in Brazilian territory, representing approximately 60% of the Brazilian biome. The full list of 765 KBAs, their identifier codes and names can be found in Appendix 2.

Brazil's KBAs in the Cerrado have 474,000 km^2 of remaining original vegetation cover (24% of the biome), and 117,000 km^2 inside Protected Areas, including Indigenous Lands, *quilombola* Territories and both federal and state Protected Areas (~10% of the biome) (Figure 5.2).

There is an apparent discrepancy between the area of KBAs (1.18 million km^2) and the area of remaining vegetation cover within them (0.47 million km^2). Since the last database of Cerrado remnants is outdated (from 2009), the KBA delineation did not consider the remnants' limits, and the conservation strategy for these areas definitely needs to consider natural vegetation restoration programs. Besides that, the landscape strategy must consider actions to connect fragments through corridors. The states with the highest number of KBAs are Goiás, Minas Gerais and Mato Grosso.

The KBAs in Bolivia and Paraguay include areas notably in transition, with multiple landscapes and varied vegetation. There are humid and gallery forests, pampas, wetlands and savannas in their various configurations (*cerradões, campos limpos, campos sujos*). Half of the KBAs are currently protected by national parks (San Luis and Paso Bravo in Paraguay and Noel Kempff in Bolivia) (Figure 5.2), as well as one private reserve (Cerrado del Tagatija). Another area within a KBA in Paraguay is awaiting recognition as a private scientific reserve. The Noel Kempff National Park in Bolivia (totally contained by the KBA site) was also declared a World Heritage Site by UNESCO in 2000.

5.3.1 KBA for the Provision of Ecosystem Services: KBA+

In the past, identification of KBAs has not included an assessment of ecosystem services. However, the importance of ecosystem services (ES) has been recognized in the most recent version of the KBA guidelines (IUCN 2012). The guidance states that when possible, ecosystem service values of KBAs should be documented, communicated, and incorporated into subsequent decision making.

The understanding of the role that KBAs play in the provision of services that are important to people, particularly to the poor, is called KBA+. The framework was developed by CI's Betty and Gordon Moore Center for Science and Oceans (MCSO) with the support and partnership of CEPF and CI-Madagascar.

The KBA+ methodology includes the following seven steps:

(1) Scope key ecosystem service values within and around KBAs
(2) Develop narrative description of ecosystem service values
(3) Identify criteria for assessing important areas
(4) Apply criteria to identify and map important areas within and around KBAs
(5) Summarize ecosystem services values for KBAs
(6) Review and refine results
(7) Develop recommendations and integrate into CEPF profile

These steps were followed by CI-Brazil and ISPN in this study, including engagement with different stakeholders, a cross-cutting component of this methodology. For the Cerrado ecosystem profile, the main adjustment to the methodology was to focus on specific ecosystem services regarding water (especially provision for hydropower generation, irrigation and urban supply). Some approaches used for the KBA+ in Madagascar were discussed and found not to be applicable to the Cerrado biome (*e.g*., available data sources or surrogates for fisheries, hunting, risk of disasters) or had severe database bias problems, despite being important ES indicators (*e.g*., food supply, based on non-timber and timber forest products; and tourism).

As in the framework used in Madagascar, ecosystem services identified in KBA+ are not 'valued' in economic terms, but ranked as to their relative importance for water supply.

The data was provided by the National Water Agency (ANA) and includes demand for water use in five categories: animal, industrial, irrigation, rural and urban (all at a small basin scale). It was performed by using a weighted average for each KBA, and the results were ranked in five categories (Figure 5.3), regarding the relative importance of ecosystem services in providing water for each type of use.

One-hundred-fifty-two KBAs were considered to be of very high importance for ecosystem services of water, all located close to big cities and agricultural activities, where demand for water consumption is higher.

5.4 Corridor Outcomes

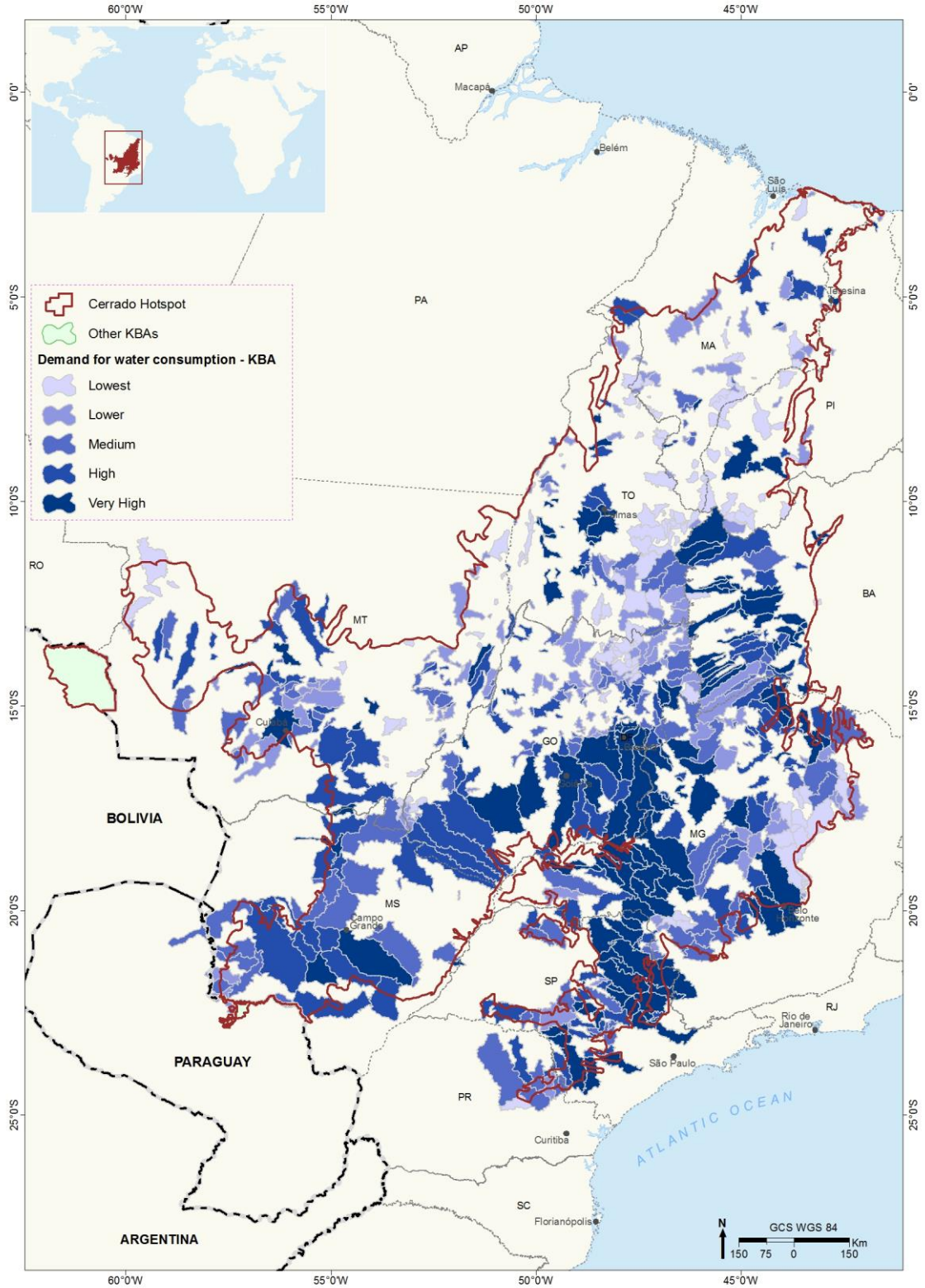
Corridors, under the CEPF proposal, were defined as large-scale spatial units required for maintenance processes on ecological and evolutionary scales, considering landscape scale. The corridors were delimited and defined from KBA clusters of great importance to the Cerrado biome (after the KBA prioritization process), according to three main criteria:

1. Clusters of KBAs found in the High Importance category (see Chapter 13 for KBA rank);
2. Connectivity of natural vegetation and remnants;
3. Protected areas, including conservation units and indigenous and *quilombola* lands.

The corridors already established in the Cerrado region were also incorporated into this analysis, to reinforce the instrument and because they already had ownership from stakeholders.

A first approach to the corridor definition was discussed and presented to stakeholders for inputs and improvement. Using socioeconomic dynamics and some previously defined environmental landscape strategies, ten strategic corridors were designed: Cerrado Maranhense, Cerrado na Amazonia Legal, Jalapão, Araguaia, APA Pouso Alto-Veadeiros-Kalungas, RIDE Brasília, Mosaico Grande Sertão-Peruaçu, Serra do Espinhaço, Emas-Taquari and Miranda-Bodoquena.

Figure 5.3: KBA+ in the Five Categories of Relative Importance for Water Provisioning.



The Cerrado Maranhense and Cerrado in the Legal Amazon were both considered too large to define a good strategy, and the recommendation was to split them into smaller parts, focusing on the core protection components. The first one gave rise to the Lençóis Maranhenses and Mirador-Mesas corridor, and the second corridor was split in Alto Juruena and Chapada dos Guimarães, both of them with important protected areas in the core, connected by surrounding fragments. Part of the Cerrado in the Legal Amazon corridor also contributed to the increase in the Araguaia corridor.

The Jalapão corridor was renamed as Central de Matopiba, since it encompasses an area larger than the Jalapão Biodiversity Corridor (from the government initiative). Four corridors: Veadeiros-Pouso Alto-Kalungas, Emas-Taquari, Miranda-Bodoquena and Serra do Espinhaço kept almost the same area throughout the process, with minor adjustments according to the stakeholders' recommendations and priority KBA final results.

It was recommended that the western portion of Bahia state be incorporated into a landscape strategy, because of its unique ecosystems, the opportunity to connect fragments and the urgency of conservation actions. The *Sertão-Veredas-Peruaçu* Corridor therefore incorporated this area due to its similar environmental dynamics and nearly doubled in size. The RIDE Brasília also incorporated an important area in the middle of Minas Gerais state due to an important, priority cluster area of KBAs and was renamed *RIDE DF-Paranaíba-Abaeté*.

And finally, after the KBA prioritization, another important corridor was identified: *Serra da Canastra*, with important protected areas and fragments in a matrix of other land uses, including pastures and urban areas.

The final proposal presents 13 strategic conservation corridors for the biome, with different historical, socioeconomic, conservation and land use characteristics. Table 5.6 summarizes some of the basic indicators for each of them, while their position and areas can be visualized in Figure 5.4. A detailed description of the main features and importance of each corridor for the biome's conservation follows.

Figure 5.4: Conservation Corridors in the Cerrado Hotspot.

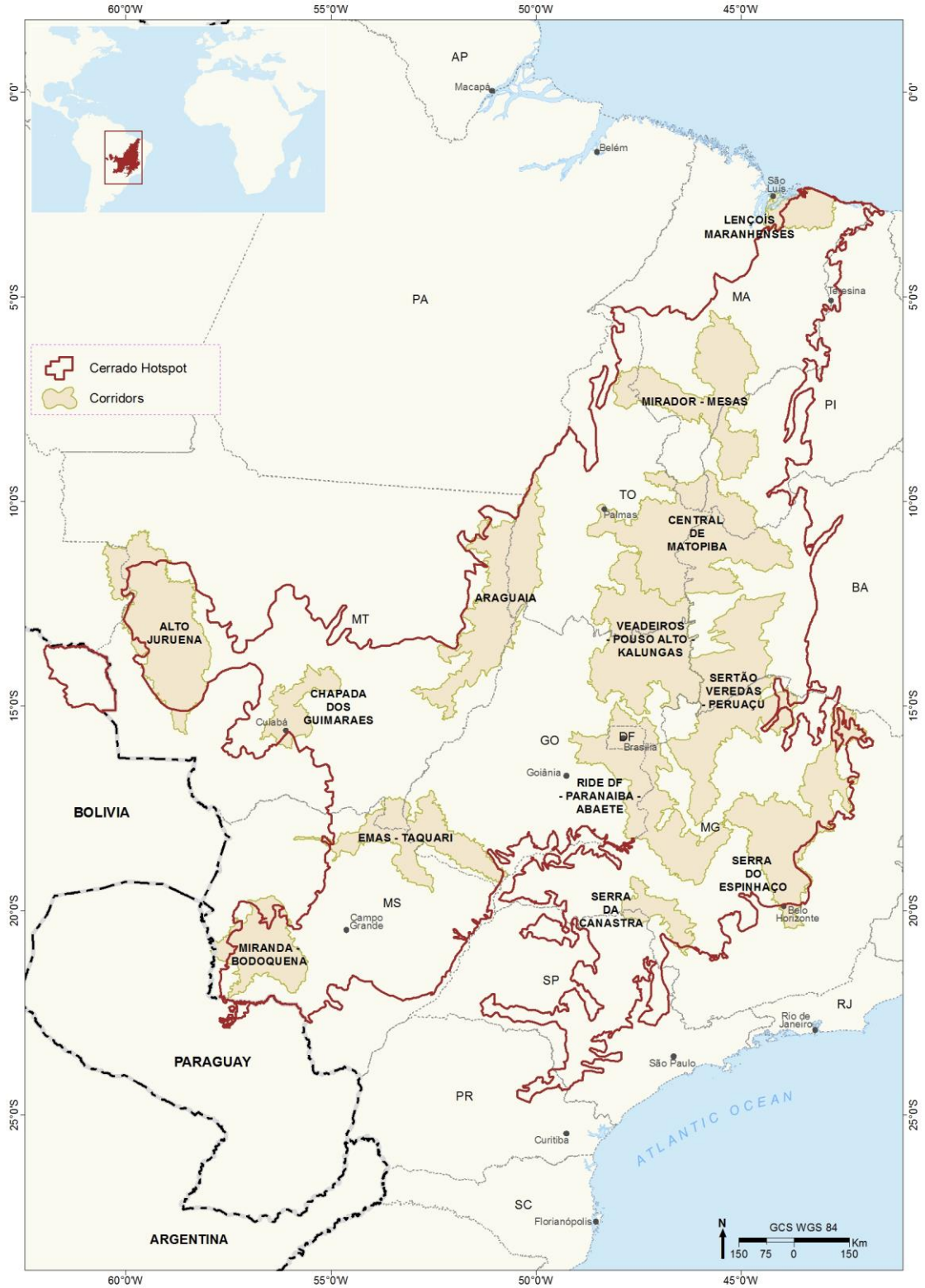


Table 5.6. Cerrado Corridors and Some Environmental and Socioeconomic Indicators.

Corridors	No. Municipalities	Population 2011	Average GDP (R$)	Average HDI [a]	Average Threat Level (IPA index)[b]	Area (km^2) inside Cerrado	% Original Vegetation Cover within	% Legal Protection	% Indigenous Lands	% Quilombola Lands	% UC Strict Protection	% UC Sustainable Use
Alto Juruena	17	400,321	34,674	0.70	5.59	60,289.59	80	55	55	0	4	0
Araguaia	27	338,564	18,736	0.66	5.26	68,259.63	84	50	38	0	13	8
Chapada dos Guimarães	17	1,020,611	28,275	0.68	5.59	17,732.47	61	38	2	0.14	2	36
Emas-Taquari	27	408,026	30,800	0.70	6.15	42,972.58	30	4	0	0	4	0
Central of Matopiba	42	844,577	11,809	0.62	4.95	99,096.07	81	34	0	0.13	16	19
Lençois Maranhenses	18	455,472	4,276	0.56	5.83	12,101.15	88	90	0	0.10	12	78
Mirador-Mesas	38	901,360	11,117	0.57	5.45	64,237.86	85	23	11	0.03	12	0
Miranda-Bodoquena	15	454,437	16,692	0.68	5.80	29,678.55	44	16	14	0.01	3	0
RIDE DF-Paranaíba- Abaeté	55	4,771,838	20,478	0.70	7.09	64,670.95	41	11	0	0.13	1	10
Serra da Canastra	29	791,769	31,071	0.72	6.28	13,854.46	37	13	0	0	13	0
Serra do Espinhaco	102	5,433,500	13,724	0.66	5.25	57,688.63	60	7	0	0	5	3
Sertao Veredas-Peruacu	45	703,335	10,577	0.62	5.58	80,995.30	70	18	1	0	6	12
Veadeiros-Pouso Alto- Kalungas	39	335,345	12,599	0.65	5.49	78,124.37	75	20	1	4.20	2	15

[a] HDI: Human Development Index. The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. It is the geometric mean of normalized indices for each of the three dimensions. Variation: 0-1.

[b] IPA index: Anthropic Pressure Index. IPA is a synthetic index of economic and demographic pressures under environment. It is a combination between agriculture and pasture pressure, population growth, stock and flow, at the municipal level. Methodology detailed in the Appendixes. Variation: 2-10 (with 10 being the highest pressure).

UC: *Unidades de Conservação*- Conservation Units in Portuguese, or Protected Areas, as commonly used.

5.4.1 Alto Juruena

The Alto Juruena Corridor consists of 16 municipalities in Mato Grosso state and one in Rondônia state and has one of the smallest resident populations. Nevertheless, its average GDP is the largest of the identified corridors, reaching almost R$ 35,000, and its average HDI is also relatively high (0.7). Its area still has a high proportion of remaining vegetation cover within the Cerrado biome (80%), much of which is in protected areas (55%), with indigenous lands of the Paresi, Memku, Nambikwara, Manoki, and Enauwenê-Nawê peoples and only one protected area, the Iquê Ecological Station, with 200,000 hectares. The region has little organization of civil society, while some indigenous support organizations work there.

5.4.2 Araguaia

The Araguaia River is the third longest river in Brazil outside the Amazon Basin, with great cultural and socioeconomic wealth and a high potential for tourism. This river runs through the two largest Brazilian biomes and connects many protected areas. The corridor covers the middle portion of the Araguaia River, with Bananal Island at its northern tip. It runs from Registro do Araguaia to Santa Isabel do Araguaia, a distance of 1,505 km. The corridor has 27 municipalities in Goiás, Mato Grosso, Pará and Tocantins states, with the second smallest resident population according to Brazil's official census (IBGE 2010): 338,000 people.

The plant cover is characterized by different Cerrado vegetation types, with significant variation in composition and with some influence of Amazonian species and flooding dynamics, resulting in a marked heterogeneity of environments. Eighty-four percent of the corridor's expanse is still intact, covered by remnants of original vegetation. The Bananal plains have aquatic and terrestrial ecosystems in good condition due to the adoption of conservation and indigenous policies, with the implementation of protected areas and indigenous lands, especially the Araguaia National Park (555,517 hectares), Araguaia Park (1.3 million hectares) and the Cantão State Park (90,000 hectares), as well as the Avá-Canoeiro, Javaé, Karajá and Tapirapé indigenous lands. This is one of the most extensive areas with official protection status in the hotspot.

This region has a strong presence of civil society organizations whose actions focus on technical assistance to agrarian reform settlers, mainly to support agroextractivism and agroecology, as well as a Xavante indigenous group that is reoccupying the Marãwaitsédé Indigenous Land, over 60% of which had been overrun by monocultures and livestock.

5.4.3 Chapada dos Guimarães

The Chapada dos Guimarães Corridor consists of 17 municipalities in the state of Mato Grosso, including the state capital (Cuiabá), and is the corridor with the third largest resident population: just over 1 million inhabitants. The area of the corridor has a good share of remaining Cerrado vegetation cover (60%) and protected areas (38%), highlighting the Chapada dos Guimarães National Park and the Águas de Cuiabá State Park. The corridor follows the Upper Paraguay River Basin, connecting the Cerrado to the Pantanal.

Agriculture, especially extensive livestock raising, is the main force replacing native vegetation in the region. Among the municipalities that make up the Upper Paraguay

River Basin, Chapada dos Guimarães has the greatest floristic diversity (MMA 1997). Ecotourism is growing in the corridor region, with the main attractions being the Chapada dos Guimarães National Park and the Pantanal region.

5.4.4 Emas-Taquari

The Emas-Taquari Corridor was one of the biodiversity corridors identified by the Workshop on Priority Areas and Actions for Conservation of the Cerrado and Pantanal Biodiversity in 1988. The corridor stretches from southwestern Goiás to north-central Mato Grosso do Sul and has the highest rate of clearing in the entire cerrado (70% of the area already cleared), as well as the least protected areas, only 4%. The corridor contains the headwaters of three river basins – the Paraguay River Basin, with the Taquari River; the Parnaíba Basin; and the Araguaia-Tocantins Basin. The corridor is anchored by one of the most important protected areas of the Cerrado, Emas National Park.

The process of agricultural exploitation is the strongest landscape change in the Emas-Taquari Corridor. Traditionally an area for beef cattle, the region has undergone a major transformation since the second half of the 1970s, with the conversion of highland plateaus to plant grain crops. Thus the highlands have large grain farming extensions, with high technology and mechanization. In the lowlands still dominates a matrix formed by planted pastures, almost entirely made up of African grasses. The remnants of natural Cerrado vegetation are for the most part fragmented and heavily pressured by production areas. Ecological restoration projects to provide ecological connectivity among fragments, expansion of private reserves and consolidation of public protected areas are actions in progress and need strengthening.

5.4.5 Central Corridor of Matopiba

The Matopiba is a region known as the new agricultural frontier in the Brazilian north-northeast, which includes the southern part of Maranhão, southwestern Piauí, the entire state of Tocantins and western Bahia. The region is characterized by favorable conditions for high-precision technology in agricultural commodities such as soybeans, corn and cotton. Because of the importance of this region for the development of Brazilian agriculture, in 2015 the federal government launched the Matopiba Regional Development Agency. Besides its exceptional conditions for agricultural expansion, the region also is notable for the presence of extensive and continuous native Cerrado vegetation. While the low-lying areas and isolated mountains of Jalapão are conserved and increasingly known for their scenic beauty and ecotourism alternatives, the highlands are suffering intensely from deforestation. According to 2009 satellite images, 82% of this region was still covered by natural remnants, which are certainly under severe threat by agriculture and recent land use changes.

In its central portion, Matopiba encompasses 42 municipalities in all four states. The Jalapão region has the largest continuous Cerrado in this hotspot within protected areas, made up by the Parnaíba River Headlands National Park, with an area of 729,813 hectares; the Serra Geral do Tocantins Ecological Station, with an area of 716,316 hectares; and the Jalapão State Park with 160,000 hectares. Beyond its great ecotourism potential, extractive products and handicrafts are also important alternative income sources and are key to the sustainable development of local communities, which maintain traditional lifestyles and make beautiful handicrafts and biojewelry from stems of *capim dourado* (*Singonanthus nitens*) and fiber from a palm called *buriti* (*Mauritia flexuosa*).

Aside from this continuum of protected areas, the region is seen as the next frontier for expansion by agribusiness, which is a major threat to people living there, to biodiversity and to the maintenance of water resources.

5.4.6 Lençóis Maranhenses

The Lençóis Maranhenses corridor is made up of 18 municipalities in northeastern Maranhão. It is the smallest corridor in terms of area and also has the lowest per capita GDP and HDI (0.56). However, the corridor has the highest proportion of land within the Cerrado biome (88%), 90% of it within protected areas: the Lençóis Maranhenses National Park (~12%) and the Upaon-Açu/Miritiba/Alto Preguiças Environmental Protection Area (~78%).

This corridor is in the eastern coastal region of Maranhão, having most of its length covered by a vast area of sand dunes. The landscape consists of dunes and sandbanks in the north and west. There are also patches of forest savanna and scrub in complex transition vegetation that extends to the south and southeast.

5.4.7 Mirador-Mesas

The Mirador-Mesas Corridor is in the northern part of the Cerrado, near both the Amazon and the Caatinga. This geographical position favors the existence of a wide variety of environments, as seen in the variety of fauna and flora. The corridor is part of the Parnaíba River Basin, the main river in the region, along with its tributary, the Uruçuí-Una River.

Connecting Piaui, Maranhao and a small region of Tocantins, this corridor has the municipalities with one of the lowest HDI in the biome. However, the region is very rich in natural resources such as babassu palm nuts and native fruits such as cashew, *buriti*, *bacuri* and *cajá.* It is a reference region for native Cerrado fruits processed by local communities.

The region's biodiversity has been poorly studied, and 85% of its area is still covered by remnants of native vegetation. The main protected areas within the corridor are the Chapada das Mesas National Park, with 160,000 hectares, the Mirador State Park, with 500,000 hectares in the state of Maranhão, the Árvores Fossilizadas Natural Monument, with 32,000 hectares in the state of Tocantins and the Urucuí-Una Ecological Station in Piaui, with 135,000 hectares.

Due to its high vegetation cover and good areas for the establishment of monocrops, this region is part of the federal government's new plans for expansion of agribusiness to the Matopiba region. For this reason, the region is under heavy pressure, particularly in areas outside the 23% of the land that is now legally protected.

5.4.8 Miranda-Bodoquena

The Miranda-Bodoquena Corridor has only 15 municipalities in Mato Grosso do Sul, some of which are important, like Bodoquena, Bonito, Garden, Miranda, Nioaque and Porto Murtinho. It occupies a strategic position in the South American continent as a contact area between the Cerrado, Atlantic Forest, Pantanal and humid Chaco biomes, giving it high relevance for the biogeographic patterns of fauna and flora. Other regional

features also contribute to its environmental relevance, such as the presence of the Serra da Bodoquena, an important aquifer recharge zone and watershed that supplies the region's major river basins, which is home to the largest remaining deciduous forest in Mato Grosso do Sul. The region is internationally known as one of Brazil's leading ecotourism destinations, especially Bonito and surrounding areas. Despite its importance, the corridor has less than 45% of its natural plant cover, only 16% of which is now protected.

5.4.9 RIDE DF-Paranaíba-Abaeté

With the second highest HDI of the corridors, the Integrated Development Region of the Federal District and surrounding areas (RIDE DF-Paranaíba-Abaeté) encompasses the Federal District and also includes 55 municipalities in eastern Goiás and western Minas Gerais. The area has the largest anthropogenic pressure index of these selected corridors, due to the presence of agribusiness and major cities such as Brasília and Anápolis.

Only 41% of its plant cover is intact, and only 10% of it is legally protected. Most of the Federal District is protected by the Environmental Protection Areas (APAs) and the Brasília National Park, the Contagem Biological Reserve and the Águas Emendadas Ecological Station. However, there is no other protected area in the other municipalities in the states of Goiás and Minas Gerais.

The corridor has long been settled, and municipalities known for their high volume of agricultural production (mainly soybeans, eucalyptus, and cotton) include Cristalina, Catalão and Ipameri in Goiás and Unaí and Paracatu in Minas Gerais. There is also a strong presence of mining companies, mainly in Catalão, Goiás.

5.4.10 Serra da Canastra

The Serra da Canastra corridor is located predominantly in southwestern Minas Gerais and covers 23 municipalities from Minas and six from São Paulo. Their average GDP is the second largest of the identified corridors, and their average HDI is also considered high (0.72). It has a variety of Cerrado-biome vegetation types, with some influence of the Atlantic Forest, especially in its southern portion. The Serra da Canastra National Park, with about 200,000 hectares, is its core and the most important region for biodiversity conservation.

The entire region has a dense drainage network with numerous tributaries and springs feeding the various waterways. The park is a natural watershed of two important Brazilian river basins – San Francisco and Paraná. Another component of its landscape is the four hydroelectric power plants (UHE) such as UHE Furnas, UHE Mascarenhas de Morais, UHE Estreito and UHE Jaguara.

The area is high on the human pressure index (IPA), despite its old and consolidated human activities. The predominance of pastures is absolute, demonstrating the importance of livestock in the economy of the municipalities. In agriculture, coffee occupies the largest area of perennial crops; while soybeans and corn are the most important temporary crops. Much of the milk production goes into Canastra cheese production, recognized as a Brazilian intangible cultural heritage by the National Historical and Artistic Heritage Institute (IPHAN).

5.4.11 Serra do Espinhaço

The Serra do Espinhaço range is one of Brazil's major mountain formations, stretching over 1,000 km, from mid-southern Minas Gerais to the Chapada Diamantina in Bahia. The Serra do Espinhaço corridor recognized here refers to an approximate 550 km portion of that range located in Minas Gerais. The region was recognized in 2005 as a Biosphere Reserve by UNESCO's Man and the Biosphere program. With altitudes reaching 2000 m, the grasslands are the corridor's most notable vegetation. They display high rates of endemic biodiversity and are centers of diversity for various plant groups (Rapini *et al.* 2008). Its microendemic species are often only represented by small populations, which are therefore more susceptible to natural stochastic or anthropogenic episodes. The specificity of habitats provides a great number of unique plant species in stony fields, this being a special condition of this flora, requiring conservation actions on a larger scale. Despite the specificity of its ecosystems and biodiversity, the corridor has an extremely low proportion of land inside protected areas (7%), highlighting the Serra do Cipó and Sempre-Vivas National Parks, and many small Ecological Stations, Natural Monuments and state parks.

The extraction of evergreen flowers (*'sempre-vivas'*) has been one of the main economic activities for many traditional communities and *quilombola*s in the region. However, their uncontrolled extraction has led some species close to extinction. Today, the Sempre-Vivas National Park, with 124,000 hectares, aims to protect the rocky fields where these species occur, but this protection has also led to conflicts with local residents, who have been excluded from the areas they have used for generations (see for example, http://vimeo.com//116962413).

5.4.12 Sertão Veredas-Peruaçu

The southern portion of the Sertão Veredas-Peruaçu corridor is located in north-western Cerrado areas in upstate Minas Gerais – in the municipalities of Formoso, Arinos, Chapada Gaúcha, Urucuia, Cônego Marinho, Januária, Itacarambi, Bonito de Minas, São João das Missões and Manga – and in a small portion of southwestern Bahia, in the Cocos municipality. The corridor consists of a Protected Areas Mosaic, formally recognized by the federal government as the Sertão Veredas-Peruaçu Mosaic, including the Xacriabá indigenous land and 14 public and private protected areas in different management categories, particularly the Grande Sertão Veredas National Park (230,671 hectares). The mosaic has more than 1,500,000 hectares, containing all the Cerrado's different types of vegetation, as well as small to large farms ranging from family farming to agribusiness. The rural population includes traditional and extractive communities, family farmers, land-reform settlers and indigenous peoples. The region displays a great wealth of cultural expression, as portrayed by the famous writer João Guimarães Rosa, after whose most famous novel, *Grande Sertão Veredas* (translated as *The Devil to Pay in the Backlands*), the national park in Chapada Gaúcha was named.

The northern portion of the corridor reaches into western Bahia, where agribusiness has intensified since the mid-1980s, with the arrival of farmers from southern Brazil. Finding a favorable climate, land available at modicum prices and government support, they pioneered modern grain crops, mainly soybeans and eucalyptus. The region is formed by the municipalities of Correntina, Jaborandi, and São Desidério, among others. Agribusiness has yielded high rates of deforestation, as much as 3% per year from 2008 to 2011, one of the highest in the Cerrado and a major concern. One typical feature of the

area is the large number of springs that supply *vereda* waterholes and some of the largest affluents to the left bank of the São Francisco River. Effective environmental adaptation measures are urgently needed on farms in the area, to reduce impacts, as well as the adoption of more sustainable farming practices and projects to protect the remnants of native vegetation and restore ecologically degraded areas.

5.4.13 Veadeiros-Pouso Alto-Kalungas

The corridor encompasses all of northeastern Goiás and southeastern Tocantins in 39 municipalities. Seventy-five percent of the area is covered by native vegetation. The Goias portion consists of the Paranã Valley, the poorest region of the state, with the presence of dry forests, the most threatened vegetation type of the Cerrado biome. Tourism is very important in this region, due to its numerous waterfalls and beautiful, conserved landscapes. Also a region of high biological importance, it is, for example, one of the rare habitats of the threatened Brazilian merganser. In addition to Chapada dos Veadeiros National Park, the Goiás part of the corridor has about 20 private reserves, Pouso Alto Environmental Protection Area (APA) and Recanto das Araras de Terra Ronca Extractive Reserve. The Tocantins section of the corridor has no protected areas.

The region is rich in *quilombola* communities, such as Forte, Muquém and Kalunga in the Chapada dos Veadeiros region, and other communities in the municipalities of Arraias and Natividade, in Tocantins. The Kalunga *quilombola* territory, home to 5,000 people, preserves 26,200 hectares that are sustainably managed by local residents with agriculture, cattle and small-scale extraction.

5.5 Conclusions

The 13 conservation corridors encompass an area of 723,000 km^2, 95% of which (689,700 km^2) is within the Cerrado biome boundaries. This means that around one-third of the hotspot is located within conservation corridors considered highly important for biodiversity conservation and provision of ecosystem services (water). The corridors have an average natural vegetation cover of almost 70% and include the last large, pristine areas of the original Cerrado ecosystem. The 13 corridors all have unique characteristics, with different vegetation formations and areas of transition, different level of species endemism and specific socioeconomic dynamics. Each corridor requires, therefore, a specific strategy and a differentiated conservation action to achieve the goal of sustainable landscapes. All these corridors are important for the conservation of the hotspot.

6. SOCIOECONOMIC CONTEXT OF THE HOTSPOT

This chapter provides an overview of the socioeconomic context of the Cerrado Hotspot, analyzing how it affects conservation outcomes and how it could influence the priorities for conservation actions. Section 6.1 provides information and analysis on population, including demographics, migration and distribution trends, traditional communities and indigenous peoples. Section 6.2 deals with social and demographic trends while Section 6.3 deals specifically with gender. Economic trends are the subject of Section 6.4, which also discusses how these trends relate to natural resource use and how the major actors may be either threats to or partners in conservation.

6.1 Eco-Social Regions

In order to map and analyze socioeconomic and demographic data, which in Brazil are collected and published according to the political-administrative division in municipalities, the hotspot was divided into 21 Cerrado Eco-social Regions (RECOS) of approximately the same size (Table 6.1 and Figure 6.1). Table 6.1 lists the RECOS in geographical order, from north to south and west to east, with the respective Meso-Regions, groups of municipalities defined by the Brazilian Institute of Geography and Statistics (IBGE), and, when appropriate, additional IBGE Micro-Regions, which are a subdivision of Meso-Regions, as needed to cover the Cerrado area.

Table 6.1. Cerrado Eco-Social Regions, Main Cities and Area, by State.

Nº	State	Eco-Social Region	IBGE Meso-Regions	+ IBGE Micro-Regions	Main City	Area (km^2)
1	MA	West Maranhão	Sul Maranhense	Imperatriz	Balsas	149,900
2	MA	East Maranhão	Centro Maranhense, Leste Maranhense	Itapecuru-Mirim, Lençois Maranhenses, Rosário	Caxias	98,610
3	PI	West Piauí	Sudoeste Piauiense	Teresina, Médio Parnaíba Piauiense	Floriano	148,400
4	TO	North Tocantins		Bico do Papagaio, Araguaína	Araguaína	42,880
5	TO	West Tocantins		Miracema, Rio Formoso, Gurupi	Gurupi	117,800
6	TO	East Tocantins	Oriental do Tocantins		Palmas	126,100
7	BA	West Bahia	Extremo Oeste Baiano	Barra, Bom Jesus da Lapa, Guanambi	Barreiras	196,700
8	GO	Northwest Goiás	Norte Goiano, Leste Goiano		Goiânia	406,600
9	GO	Northeast Goiás	Nordeste Goiano, Centro Goiano		Alto Paraíso de Goiás	186,400
10	GO	South Goiás	Sul Goiano		Rio Verde	183,400

Nº	State	Eco-Social Region	IBGE Meso-Regions	+ IBGE Micro-Regions	Main City	Area (km^2)
11	DF	Federal District	Distrito Federal		Brasília	78,030
12	MT	Northwest Mato Grosso		Aripuanã, Parecis, Arinos, Alto Teles Pires, Sinop, Paranatinga	Lucas do Rio Verde	119,600
13	MT	Northeast Mato Grosso	Nordeste Mato-Grossense		Canarana	103,800
14	MT	Southwest Mato Grosso		Alto Guaporé, Jauru, Tangará da Serra, Alto Paraguai, Rosário Oeste, Cuiabá, Alto Pantanal	Cuiabá	145,000
15	MT	Southeast Mato Grosso		Primavera do Leste, Tesouro, Rondonópolis, Alto Araguaia	Rondo-nópolis	6,262
16	MS	West Mato Grosso do Sul		Aquidauana, Bodoquena, Campo Grande, Dourados, Baixo Pantanal	Campo Grande	169,600
17	MS	East Mato Grosso do Sul		Alto Taquari, Cassilândia, Paranaíba, Três Lagoas, Nova Andradina	Três Lagoas	193,900
18	MG	North Minas Gerais	Norte de Minas, Jequitinhonha		Montes Claros	107,300
19	MG	West Minas Gerais	Noroeste de Minas, Triângulo Mineiro/Alto Paranaíba		Uberlândia	226,300
20	MG	Central Minas Gerais	Central Mineira, Metropolitana de Belo Horizonte, Oeste de Minas		Belo Horizonte	153,300
21	SP	São Paulo Cerrado	Ribeirão Preto, Araraquara, Piracicaba, Bauru, Assis, Marilia, Pres. Prudente, Araçatuba, S. José do Rio Preto		Campinas	229,000

Source: ISPN (2015).

The average size of these aggregates is about 125,000 km^2, which would be a square approximately 350 km x 350 km. The regions are relatively homogeneous in bio-geophysical terms, even though they generally contain most if not all the forms of

vegetation mentioned in Chapter 3, except for the altitudinal grasslands (*campos rupestres*), which are limited to parts of Minas Gerais, Goiás and Bahia.

The 21 RECOS were defined so as to include nearly all of the official Cerrado biome and some of the transitions to the Amazon, Caatinga, Atlantic Forest and Pantanal biomes. They include the entire Federal District and parts of nine of the 26 states of Brazil. This corresponds to most of the Center-West region and parts of all of the other regions except the South, since Paraná is not included in the RECOS, although there is a small extension of Cerrado in the northeastern part of the state. The RECOS do not include isolated areas of Cerrado in Amazonas, Roraima and Amapá or in the Northeast of Brazil, which are off the official map of the biome.

The outer limits of the RECOS extend beyond the boundaries of the official Cerrado biome as defined in 2004, especially to the northwest and west. The reasons for the extension are: (1) the need to include all of the official areas, except small strips in the states of Paraná and Rondônia; (2) the existence of transitions, ecotones and isolated fragments that do not have clear boundaries; (3) many maps that indicate larger boundaries of the core area of the Cerrado (e.g., WWF n.d.; EMBRAPA CPAC n.d.; Rodrigues 2003; IGA 2012; AIBA n.d.; Evaristo 2015); (4) literature (e.g., Fiori and Fioravante 2001); (5) stakeholder consultations; and (6) field observations by ISPN in all of the areas.

This division of RECOS following official boundaries makes it possible to tabulate socioeconomic and demographic data for Brazil. No such tabulations were possible for the very small areas of Cerrado in Bolivia and Paraguay, although some data are available for the broader context in these countries. Such regions respecting the political-administrative division are also important for management at a regional scale. For purposes of management, the criteria for defining the RECOS include the involvement of only one state government, although the Federal District, with only 5,788 km^2, interacts closely with the Integrated Development Region of the Federal District and Surrounding Area (RIDE-DF), including nearby municipalities in Goiás, Bahia and Minas Gerais. Another practical criterion for regions of this limited size was the possibility, for the future, of organizing meetings that do not require overnight or air travel and per diems for participants, so that civil society participation in regional management can be effective, even when funds for these purposes are scarce and difficult to access and report on, as is the case with government regulations about travel.

6.2 Social and Demographic Trends

Current and future social and demographic trends in the Cerrado Hotspot are conditioned by the past history of the region and its place in the national context of the three countries. The main points of this history are summarized here.

The Cerrado was first occupied by indigenous peoples about 12,000 years ago (Barbosa 2002). They may be the ancestors of the Gê groups that are now spread throughout the region (Maybury-Lewis 1971). They built some earthworks that suggest dense settlement (Mann 2005), but the first Europeans to arrive found hunters and gatherers living in small villages with garden plots (shifting cultivation) who often moved to new sites.

Figure 6.1: Cerrado Eco-social Regions.

The Portuguese first reached the coast of Brazil in 1500. During the 16th and 17th centuries, Portuguese, Dutch and French colonizers stayed near the Atlantic coast in the Northeast, Southeast and South, without penetrating the interior. Brazil wood (*Caesalpinia echinata*) and sugar cane were the main exports (Furtado 1963). The Portuguese prevailed, and the Dutch and French did not stay. The Guarani peoples living in the southern part of the region were incorporated in Jesuit missions. In their language, Paraguay means 'a place with a great river'. Many other groups were displaced farther inland (Martins 2015). In the early 18th century, gold, diamonds and emeralds were discovered in the interior of Brazil by *bandeirante* explorers from São Paulo (Bruno 1967; Bertran 1988). They gave the Cerrado this name because the savanna grasslands were closed (*cerrados*) by scattered trees and woodlands. Since indigenous slavery did not function well, African slaves were brought to work in the mines. Extensive cattle raising moved up the São Francisco River into the interior (Furtado 1963).

Paraguay and Bolivia won their independence in 1811 and 1825, respectively, from Spain and Peru, and became republics. Brazil became independent in 1822, without war, but was an empire until 1889. Bolivia's economy was based on mining for silver in the Andes, in the west, while Paraguay's economy remained based on cattle raising.

In the 19th and early 20th centuries, after the mining cycle ended, the main activity in the Cerrado was extensive cattle raising, combined with some extractive activities (Castro 2001). Between 1864 and 1870, during the Paraguay War, troops of the Triple Alliance of Brazil, Argentina and Uruguay killed so many Paraguayan men that there were long-lasting negative economic and demographic effects (Warren 1949). Between 1879 and 1883, during the Pacific War, Bolivia lost its access to the Pacific. After the disastrous Chaco War, Bolivian officers took power and attempted to implement reforms (Klein 1982).

In the 1950s, a new capital city of Brazil was built at Brasília and roads were opened to the north and northwest. This favored more intense migration from the South, Southeast and Northeast to the new frontier, although the process was already under way due to rapid population growth and concentrated land tenure in more densely settled regions (Mandell 1969).

Settlement of small farmers from other regions, mainly Minas Gerais and the Northeast, began in the 1940s, including both government-sponsored colonization and spontaneous migration (Neiva 1984). It continued in the following decades, including private colonization in Mato Grosso (Kinzo 1986). Thus, in addition to large properties, there are also many settlements of small farmers. There are practically no foreigners among the landowners. Many of the large landowners are absentee, especially the owners of large cattle ranches, which are managed by one cowboy per thousand head.

During this period, frontier settlement in Bolivia was concentrated at the foot of the Andes, around the city of Santa Cruz de la Sierra, but not near the Brazilian border (Klein 1982). In Paraguay, under the Stroessner regime (1954-1989), settlement was concentrated in the southeastern part of the country, not in Alto Paraguay, Presidente Hayes e Concepción, where there are transitions to the Cerrado. Settlers included migrants from Brazil, known as *brasiguaios* seeking land (Albuquerque 2009).

Until the 1980s, fertility and mortality levels in the Cerrado were both high, with high rates of natural increase and migration from the Northeast, Southeast and South regions to rural areas, resulting in high rates of population growth. Urbanization was intense. Recently, there has been more intra-regional rural-urban migration, and the urbanization level varies between 63.1% and 96.6%. The rural population is densest in the southern half of the Cerrado, although rural population growth is now negative. Table 6.2 shows population data for the 21 RECOS, an area larger than the hotspot, including transitions. There is now a vast and relatively dense urban network that links small towns and cities in the interior with large cities with millions of inhabitants. The average maximum distance to a city is only 10.6 km, although there is wide variation from north to south. There is no longer such a strong urban/rural dichotomy, and the rural population has more access to urban services and markets (Sawyer 2002).

Table 6.2. Rural, Urban and Total Population and % Urban, by RECOS 2010.

	RECOS	Rural	Urban	Total	% Urban
1	East Maranhão	2,322,982	3,973,958	6,296,940	63
2	West Maranhão	2,376,443	4,085,298	6,461,741	63
3	West Piauí	1,045,931	2,042,934	30,88,865	66
4	North Tocantins	292,424	1,088,630	1,381,054	79
5	East Tocantins	277,653	1,043,813	1,321,466	79
6	West Tocantins	2,578,099	5,079,560	7,657,659	66
7	West Bahia	3,784,910	9,846,100	13,631,010	72
8	Northwest Mato Grosso	518,777	2,344,819	2,863,596	82
9	Northeast Mato Grosso	538,457	2,468,583	3,007,040	82
10	Southwest Mato Grosso	545,032	2,475,407	3,020,439	82
11	Southeast Mato Grosso	509,955	2,136,040	2,645,995	81
12	Northeast Goiás	581,279	5,415,633	5,996,912	90
13	Northwest Goiás	571,444	5,262,830	5,834,274	90
14	South Goiás	571,426	5,399,849	5,971,275	90
15	Federal District	87,950	2,482,210	2,570,160	97
16	West Minas Gerais	2,844,975	16,479,781	19,324,756	85
17	North Minas Gerais	2,828,790	16,601,468	19,430,258	85
18	Central Minas Gerais	2,845,297	16,581,971	19,427,268	85
19	West Mato Grosso do Sul	207,969	1,516,154	1,724,123	88
20	East Mato Grosso do Sul	81,389	417,179	498,568	84
21	São Paulo Cerrado	1,672,091	39,534,153	41,206,244	96

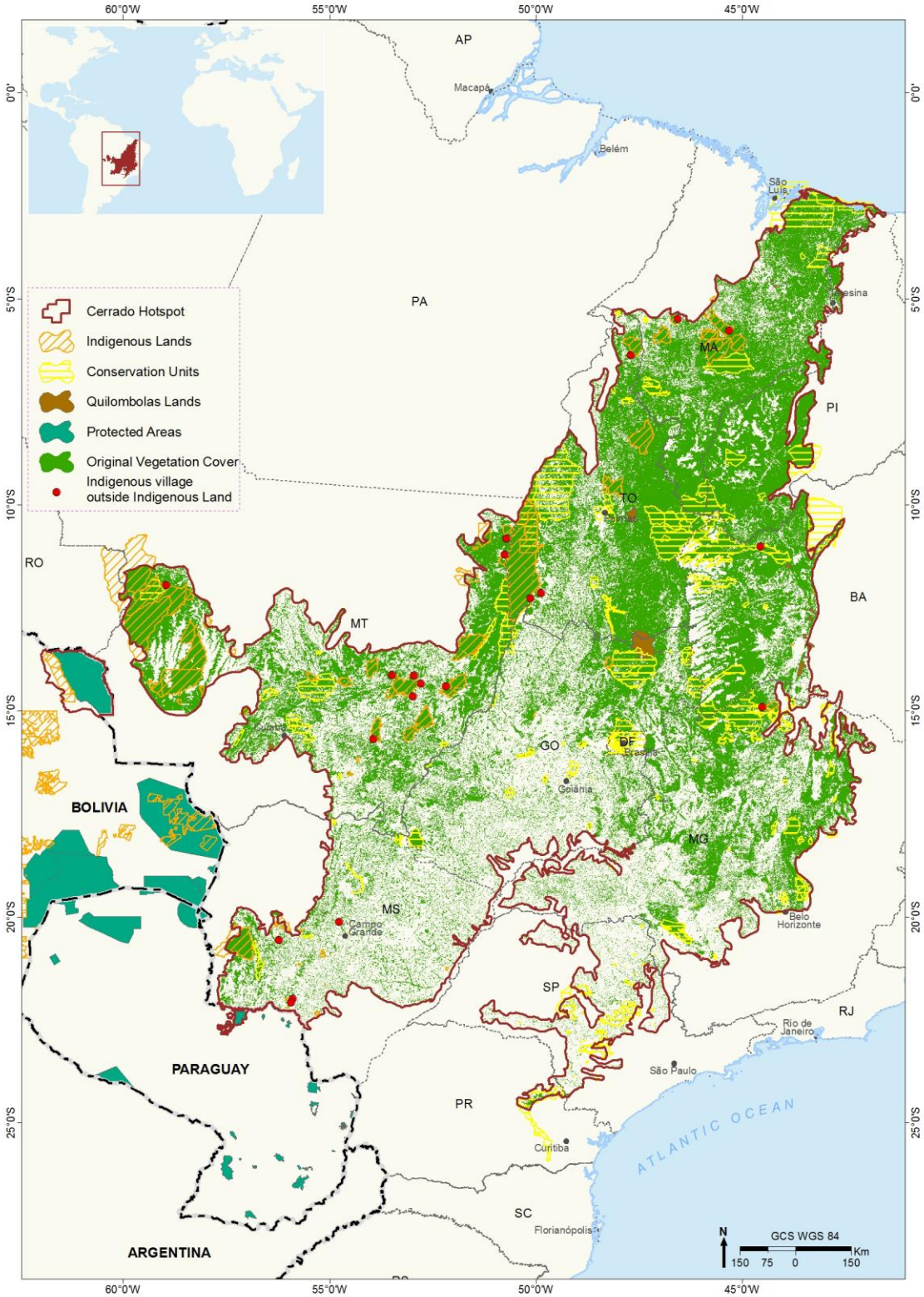
Source: IBGE (2015).

Some estimates are possible of the population and the number of communities that play a relevant role in ecosystem functions at the landscape level in the hotspot. In a total rural population of 28 million in the Brazilian Cerrado biome within the RECOS, there are an estimated 25 million engaged in family farming (rice, beans, manioc, chickens etc.) and extraction (fruits, nuts, fish, flowers etc.) in agricultural settlements and traditional communities of various kinds. Assuming an average of 1,000 people and 250 families per rural community, there are approximately 25,000 local communities and 6,250,000 families in the RECOS. They are a key to ecosystem conservation, since their landscapes, albeit fragmented, contain considerable biodiversity, without mechanized monocultures. They do raise some cattle, but could increase their stocking and take-off rates and productivity of milk (Imbach 2015).

The relevant demographic trends at the present time include lower fertility and longer life expectancy, leading to aging of the demographic pyramid. There are increasing rates of female participation in labor markets as well as separation, divorce and informal unions (see Section 6.3, on gender). Out-migration is strong among rural youth. Multiple residences and temporary mobility are common. These demographic trends present challenges to small-scale farming, which requires large amounts of family labor and close kinship ties.

Although there is strong racial mixing and many indigenous people live in urban areas, the social and demographic analysis should take into account that there are various indigenous groups and communities of descendants of enslaved Africans (*quilombolas* or maroons) on land provided by the government. Since 1988, both have constitutional rights to land. The largest intact areas of natural vegetation in the Cerrado are in its 95 indigenous lands, covering 96,000 km^2, 4.8% of the biome, primarily near the Amazon region to the north and west (Table 6.3 and Figure 6.2). The indigenous lands in Brazil have less deforestation than official protected areas, even those of integral protection (Paiva *et al.* 2015). The 44 *quilombola* lands cover about 3,900 km^2, with wide variation in size.

Figure 6.2: Cerrado Protected Areas, Indigenous and *Quilombola* Lands.



Source: FUNAI (2014); SEPPIR (2014); IBAMA (2009); WDPA (2015).
Note: The data on Quilombola lands are incomplete.

Table 6.3. Indigenous Lands in the Brazilian Cerrado.

Indigenous Land	Group	Area (ha)	Municipality	State	Situation
São Marcos	Xavante	188,478	Barra do Garças	MT	Registered
TI Isou´pa	Xavante	nd	Água Boa, Capinápolis, Nova Xavantina	MT	TBI
Norotsurã	Xavante	nd	Água Boa, Campinápolis, Nova Xavantina	MT	TBI
Eterairebere	Xavante	nd	Campinápolis, N.S. Joaquim, S.A. Leste	MT	TBI
Hu´uhi	Xavante	nd	Paranatinga	MT	TBI
Ubawawe	Xavante	52,234	Novo São Joaquim	MT	Registered
Chão Preto	Xavante	12,741	Campinápolis	MT	Registered
Sangradouro/ Volta Grande	Xavante	100,280	N.S. Joaquim, Gal. Gomes Carneiro, Poxoréu	MT	Registered
Pimentel Barbosa	Xavante	328,966	Ribeirão Cascalheira, Canarana	MT	Registered
Pimentel Barbosa I, II	Xavante	nd	Ribeirão Cascalheira, Canarana	MT	Pending
Areões	Xavante	218,515	Água Boa	MT	Registered
Areões I	Xavante	24,450	Água Boa	MT	TBI
Areões II	Xavante	16,650	Água Boa, Cocalinho	MT	TBI
Parabubure	Xavante	224,447	Campinápolis, Água Boa	MT	Registered
Parabubure II, III, IV, V	Xavante	nd	Campinápolis, Nova Xavantina	MT	Pending
Marechal Rondon	Xavante	98,500	Paranatinga	MT	Registered
Merure	Bororo	82,301	Barra do Garças, General Carneiro	MT	Registered
Jarudore	Bororo	4,706	Poxoréu	MT	Registered
Tadarimana	Bororo	9,785	Rondonópolis	MT	Registered
Tereza Cristina	Bororo	34,149	Santo Antônio Leverger	MT	Declared
São Domingos	Karajá	5,705	Luciara, São Félix do Araguaia	MT	Registered
Cacique Fontoura	Karajá	32,069	Luciara, São Félix do Araguaia	MT	Identified
Karajá de Aruanã II	Karajá	893,26	Cocalinho	MT	Registered
Urubu Branco	Tapirapé	167,533	Santa Terezinha, Confresa, Porto Alegre do Norte	MT	Registered
Tapirapé/ Karajá	Tapirapé	66,166	Luciara, Santa Terezinha	MT	Registered
Pareci	Pareci	563,586	Tangará da Serra	MT	Registered

Indigenous Land	Group	Area (ha)	Municipality	State	Situation
Utiariti	Pareci	412,304	Campo Novo do Pareci, Sapezal	MT	Registered
Juininha	Pareci	70,538	Pontes e Lacerda	MT	Registered
Estivadinho	Pareci	2,032	Tangará da Serra	MT	Registered
Rio Formoso	Pareci	19,749	Tangará da Serra	MT	Registered
Figueiras	Pareci	9,859	Tangará da Serra, Pontes e Lacerda	MT	Registered
Ponte de Pedra	Pareci	17,000	Campo Novo dos Parecis, Diamantino, Nova Maringá	MT	Declared
Taihantesu	Wuasusu	5,362	Comodoro	MT	Registered
Pequizal	Nambikwara	9,887	Vila Bela de S. Trindade	MT	Registered
Vale do Guaporé	Nambikwara	242,593	Vila Bela de S. Trindade, Comodoro	MT	Registered
Nambikwara	Nambikwara	1,011,961	Comodoro	MT	Registered
Pirineus de Souza	Nambikwara	28,212	Comodoro	MT	Registered
Tirecatinga	Holotesu, Irantxe, Morcego, Pareci	130,575	Sapezal	MT	Registered
Irantxe/ Manoki	Irantxe	252,000	Brasnorte	MT	Identified
Menku	Menku	47,094	Brasnorte	MT	Registered
Enawenê Nawê	Enawenê Nawê	742,089	Juína, Comodoro, C. N. dos Pareci	MT	Registered
Santana	Bakairi	35,471	Nobres	MT	Registered
Bakairi	Bakairi	61,405	Paranatinga	MT	Registered
Avá Canoeiro	Avá-Canoeiro	38,000	Colinas do Sul, Minaçu	GO	Declared
Karajá de Aruanã I	Karajá	14	Aruanã	GO	Registered
Karajá de Aruanã III	Karajá	705	Aruanã	GO	Registered
TI Carretão I	Tapuia	1,666	Nova América, Rubiataba	GO	Registered
Carretão II	Tapuia	78	Nova América	GO	Registered
Funil	Xerente	15,704	Tocantínia	TO	Registered
Xerente	Xerente	167,542	Tocantínia, Aparecida do Rio Negro	TO	Registered
Apinajé	Apinajé	141,904	Tocantinópolis, Maurilândia, São Bento	TO	Registered
Kraholândia	Krahô	302,533	Itacajá, Goiatins	TO	Registered
Boto Velho	Javaé, Karajá, Avá Canoeiro	377,113	Pium, Lagoa da Confusão	TO	Approved
Parque do Araguaia	Javaé, Karajá,Avá	1,358,499	Pium, Formoso do Araguaia, Cristalândia	TO	Registered

Indigenous Land	Group	Area (ha)	Municipality	State	Situation
	Canoeiro, Tapirapé				
Utaria Wyhyna Hirari	Karajá, Javaé	nd	Pium, Lagoa da Confusão	TO	TBI
Xambioá	Karajá, Guarani	3,326	Araguaina	TO	Registered
Krahô/ Kanela	Krahô/ Kanela	nd	Cristalândia	TO	TBI
Governador	Gavião-Pykobjê	41,644	Amarante	MA	Registered
Bacurizinho	Guajajara	82,432	Grajaú	MA	Registered
Cana Brava	Guajajara	137,329	Barra do Corda, Grajaú	MA	Registered
Rodeador	Guajajara	2,319	Barra do Corda	MA	Dominial Indígena
Lagoa Comprida	Guajajara	13,198	Jenipapo dos Vieiras	MA	Regularized
Urucu/Juruá	Guajajara	12,697	Itaipava do Grajaú	MA	Regularized
Porquinhos	Canela-Apãnjekra	79,520	Barra do Corda	MA	Registered
Kanela	Canela-Ramkoka-mekra	125,212	Barra do Corda	MA	Registered
Krikati	Krikati	144,775	Montes Altos, Lageado Novo, Amarante	MA	Approved
Amambai	Guarani Kaiowá	2,429	Amambai	MS	Registered
Javaitari	Guarani Kaiowá	8,800	Ponta Porã	MS	Identified
Lima Campo	Guarani Kaiowá	9,300	Ponta Porá	MS	TBI
Nande Ru Marangatu	Guarani Kaiowá	9,317	Antônio João	MS	Approved
Panambi/ Lagoa Rica	Guarani Kaiowá	12,196	Douradina, Itaporã	MS	Delimited
Pirakuá	Guarani Kaiowá	2,384	Bela Vista	MS	Registered
Sucuriy	Guarani Kaiowá	535	Maracaju	MS	Registered
Aldeia Campestre	Guarani Kaiowá	9	Antônio João	MS	Pending
Cabeceira Comprida	Guarani Kaiowá	nd	Antônio João	MS	Pending
Kamba	Guarani Kaiowá	nd	Corumbá	MS	Pending
Suvirando	Guarani Kaiowá	nd	Antônio João	MS	Pending
Yvyrapyraka	Guarani Kaiowá	nd	Antônio João	MS	Pending
Buriti	Terena	17,200	Dois Irmãos do Buriti, Sidrolândia	MS	Identified
Buritizinho	Terena	10	Sidrolândia	MS	Registered
Cachoeirinha	Terena	36,288	Miranda	MS	Identificada
Limão Verde	Terena	5,370	Aquidauana	MS	Approved

Indigenous Land	Group	Area (ha)	Municipality	State	Situation
Nioaque	Terena	3,029	Nioaque	MS	Registered
N.S. Fátima	Terena	100	Miranda	MS	TBI
Pilad Rebua	Terena	208	Miranda	MS	Registered
Taunay/ Ipegue	Terena	33,900	Aquidauana	MS	Delimited
Kadiwéu	Kadiwéu, Kinikinaua, Terana	538,536	Porto Murtinho	MS	Registered
Kinikinaua	Kininkinaua	nd	Nd	MS	Pending
Lalima	Terena, Kinikinaua	3,000	Miranda	MS	Registered
Ofayé-Xavante	Ofayé-Xavante	1937	Brasilândia	MS	Declared
Kaxixó	Kaxixó	nd	Martinho Campos	MG	TBI
Xakriabá	Xakriabá	46,415	São João das Missões	MG	Registered
Xakriabá Rancharia	Xakriabá	6,798	São João das Missões	MG	Registered
Araribá	Guarani, Terena	1,930	Avai	SP	Registered

TBI = to be identified
Source: Centro de Trabalho Indigenista (2012).

Table 6.4. Cerrado *Quilombola* Lands, Locations, Years of Creation and Areas.

Quilombola Land	State	Year of creation	Km² in Cerrado biome
Árvores Verdes e Estreito	MA	2005	26
Machadinho	MG	2009	22
São Domingos	MG	2009	7
Ipiranga do Carmina	MA	2005	14
Santa Joana	MA	2005	12
Santa Rosa - Itapecuru Mirim	MA	2008	73
Santa Maria dos Pinheiros	MA	2005	10
São Francisco Malaquias	MA	2007	11
Família Magalhães	GO	2010	55
Mata de São Benedito	MA	2005	11
Baco Pari	GO	2009	31
Da Volta	BA	2009	189
Mangueiras	MG	2009	0.2
Brejo dos Crioulos	MG	2007	173
Família dos Amaros	MG	2009	10
Kalunga do Mimoso	TO	2006	575
Riacho da Sacutiaba e Sacutiaba	BA	2011	123
Lagoa do Peixe	BA	2006	67
Santa Maria dos Pretos	MA	2006	56
Barra do Aroeira	TO	2011	623

Quilombola Land	State	Year of creation	Km² in Cerrado biome
Matões dos Moreira	MA	2006	53
Kalunga	GO	2000	262
Nova Batalhinha	BA	2008	74
Mangal e Barro Vermelho	BA	2009	90
Parateca e Pau D'arco	BA	2006	418
Jatobá	BA	2007	145
Usina Velha	MA	2006	12
Mocorongo	MA	1999	2
Cipó	MA	2006	24
Jenipapo	MA	2002	6
Rio das Rãs	BA	2000	272
Mesquita	GO	2011	43
Tomás Cardoso	GO	2011	18
Grotão	TO	2011	21
Colônia de São Miguel	MS	2008	4
Lagoinha de Baixo	MT	2007	25
Chácara do Buriti	MS	2008	0.43
Campina de Pedra	MT	2010	18
Mata Cavalo	MT	2006	147
Furnas do Dionísio	MS	2008	10
Furnas da Boa Sorte	MS	2006	15
Lagoa das Piranhas	BA	2011	100
Pitoro dos Pretos	MA	2010	43
Família Cardoso	MS	2014	2
TOTAL			**3,892.63**

Source: SEPPIR (2014).

In addition to indigenous peoples and maroons, there are also at least five kinds of traditional communities that live off the land, without legal demarcation of their territories, in a large part of the natural vegetation remnants (Table 6.5). They are difficult to count, but constitute a majority of the rural population.

Table 6.5. Cerrado Traditional Communities and Main Locations.

Traditional Community	Main Locations
Babassu palmnut crackers	Northern Tocantins, Maranhão, Piaui
Geraizeiros	Northern Minas Gerais, west Bahia, northeast Goiás
Vazanteiros	Northern Minas Gerais, São Francisco River
Retireiros	Araguaia River, Mato Grosso, Tocantins
Fundo de pasto/fecho de pasto	Western Bahia
Sertanejos	All Cerrado states

Source: ISPN (2015).

The social and demographic trends in Bolivia and Paraguay are quite different from Brazil and from each other, although the Human Development Index (HDI), which reflects income, health and education, and other indicators are similar, except for urbanization and income. In the Center-West of Brazil, the HDI is 0.731, in Bolivia it is 0.667 and in Paraguay it is 0.669 (Table 6.6).

Table 6.6. Social and Demographic Indicators for the Cerrado Hotspot in Brazil, Bolivia and Paraguay.

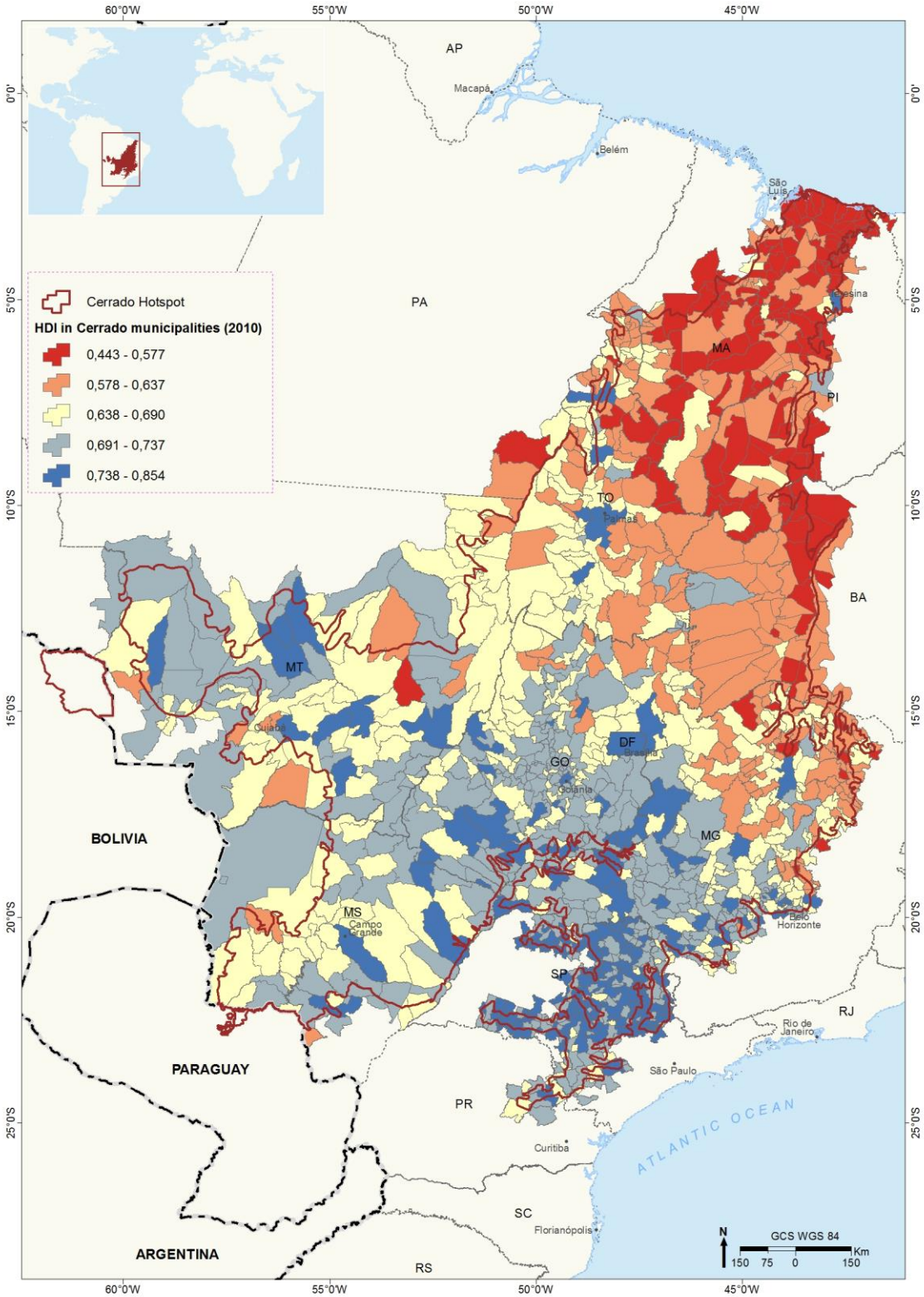
Indicator	Brazil	Bolivia	Paraguay
Human Development Index (HDI)	0.731	0.667	0.669
Total Fertility Rate (TFR)	2.07	2.93	2.06
Life Expectancy	74.3	67.9	76.4
Sex Ratio (males per 100 females)	98	105	101
Literacy (age 15 and over who can read and write)	90	87	94
Urbanization (%)	84	67	61
Per capita income (US$)	7,913	4,800	5,500

Sources: ISPN research on UNDP, IBGE and other websites (2015).
Notes: For these social and demographic data, many of which are not available with sufficient disaggregation, the proxy used for the Cerrado in Brazil is the aggregate data, weighted by total population, for the set of Central Brazil states including Goiás, Federal District, Mato Grosso, Mato Grosso do Sul and Tocantins (core, almost entirely Cerrado), plus Maranhão to represent the Northeastern Cerrado (Maranhão, Piauí and Bahia) and Minas Gerais to represent the Southeastern Cerrado (Minas Gerais and São Paulo). The data for Bolivia and Paraguay are for the entire countries.

The map of HDI by municipality of Brazil (Figure 6.3) shows that the highest indices are in São Paulo, Minas Gerais, Mato Grosso and Mato Grosso do Sul and lowest to the north and east. Since 1980, the HDI has improved dramatically in the interior, due to significant reductions in regional inequality (UNDP 2014).

In Brazil, although there are some differences, at least among more isolated indigenous groups and among indigenous women, practically everyone speaks Portuguese and shares a national culture. Bolivia and Paraguay have more cultural diversity than Central Brazil. Bolivia has become pluri-national, while in Paraguay the Guarani language is official, in addition to Spanish.

Figure 6.3: Human Development Index in the Cerrado.



Source: IBGE (2010).

6.3 Gender

Generally speaking, gender is not as serious a problem in Brazil as in many other developing countries, especially in Africa and Asia. There are nearly as many women as men in the labor force and there are more women and girls in schools and colleges than boys and men. There is a specific federal ministry for policies for women and special police stations. Nonetheless, gender issues require attention in order to guarantee full citizenship and human well-being (SPM 2015), as well as environmental equilibrium and adaptation to climate change, in which women play key roles (Litre and Rocha 2014).

Working women earn less than men. *Machismo* is deep rooted, especially in rural areas, although change is under way. Domestic violence remains a problem, and there is need for improved access to family planning for girls and women.

In the past, many rural women migrated to urban areas, where they found employment as domestic servants, but this is now more difficult because of labor legislation. Youth, seeking modernity, are also leaving the countryside, where the elderly remain, especially the older women, who have a longer life expectancy than men. Because of increasing rates of separation and divorce, combined with male migration to more distant frontier areas, there are many female-headed households, a pattern which contributes to 'feminization of poverty' (Medeiros and Costa 2008).

Women play a key role in family farming, especially with regard to home gardens, gathering of firewood and water and care for domestic livestock (Butto *et al.* 2014). Sustainable use of biodiversity, including food processing and handicrafts, contributes to the empowerment of rural women by providing them with income of their own (ISPN field observations). In the northern part of the Cerrado, 400,000 women make a living cracking palmnuts of babassu.

Some public policies favor women, as in the case of land titles in rural settlements and cash transfers (family stipends). Most elementary and secondary school teachers are women, who play a key role in environmental education. There are nearly two women for every man in civil society organizations (CSOs) (see Chapter 8). In the GEF-UNDP Small Grants Program, it has been observed that women play leadership roles in local community organizations in the Cerrado, the most emblematic of which is the Regional Association of Women Rural Workers in the Bico do Papagaio (ASMUPIB), in northern Tocantins. There is also an Interstate Movement of Women Babassu Crackers (MIQCB). On the other hand, women are underrepresented in local, state and federal legislatures and other government structures.

6.4 Economic Trends

In the middle of the 20th century, central Brazil produced rice on recently cleared land. Starting in the 1980s, the main new economic trend in Cerrado was growth of commodity production as a result of adaptation of agricultural technology to allow continuous planting of monocultures in the Cerrado (Mueller 1993). Soils have high acidity and low fertility but are relatively flat, deep and well drained, being well suited to mechanization of cultivation and harvesting. Productivity of cattle ranching and dairy farming was improved by breeding Zebu and European cattle with artificial insemination and by introduction of exotic species of pasture, mainly from Africa.

Because of the Cerrado, Brazil is now a leading producer and exporter of soybeans and cotton as well as beef, mostly from planted pastures, as well as chicken and pork, fed with grains (Table 6.7). Agribusiness is responsible for 23% of Brazil's GDP, which is now the eighth largest in the world. The Cerrado has the largest area of farm and ranch land in Brazil, some 88 million hectares (Sparovek *et al.* 2011), 44% of the total area. It produces 40% of the beef in Brazil, 84% of the cotton, 60% of the soybeans and 44% of the corn. Cattle raising competes with crops near large cities in the southern part of the hotspot, while grain cultivation expands rapidly in remote regions with more level topography (Silva 2013).

Table 6.7. Production and Exports of Beef and Soybeans, 2014.

	Soy production (tons, 2013) [a]	Beef production (tons, 2014) [b]	Soy exports (US$ FOB, 2014)[c]	Beef exports (US$ FOB, 2014)[c]
Brazil	81,724,477	8,062,933	31,805,627,204	6,047,374,891
Tocantins	1,557,939	269,302	626,798,100	183,483,729
Maranhão	1,581,687	191,612	757,926,671	4,931,507
Minas Gerais	3,375,690	741,138	852,108,803	401,169,794
Mato Grosso do Sul	5,780,519	965,361	9,966,590,511	1,249,752,589
Mato Grosso	23,416,774	1,325,782	2,339,838,076	1,014,675,751
Goiás	8,913,069	844,34	92,772,238	113,642
Distrito Federal	152,250	5,216	1,470,497,607	724,876,420

Sources: [a] IBGE Produção Agrícola Municipal; [b] IBGE Pesquisa Trimestral do Abate de Animais; [c] Ministério do Desenvolvimento, Indústria e Comércio Exterior, portal AliceWeb2.

As seen in Chapter 9, economic trends are responsible for the destruction of half of the Cerrado (see also map of land use in IBGE 2015). However, there are some possibilities for changes in the pattern of horizontal expansion and even for enhanced partnerships of agribusiness with conservation. For example, a promising new development for the environment is the decision of Brookfield Assets Management Inc., formerly Brascan Ltd., Canada's largest alternative asset manager, to invest US$ 300 million for a new agricultural fund to buy up pasture land and convert it into soy and sugar farming, thus intensifying production. Transnational companies like Bunge now intend to contribute to increasing production of food by 60% with an increase of 90% in productivity and only a 10% increase of the land area (Santos 2015). Monsanto and Syngenta have similar intentions. There is much new technological innovation (Ivaris Jr. 2015). New technology can reduce pressures for deforestation. There could be a rebound effect, with further frontier expansion, but increases in productivity require better locations, close to infrastructure and services.

On a more general level, the requirements of conformity with social, environmental and health standards in countries that import these products can favor sustainability of agribusiness (Nepstad 2008). Exports also mean that the concerns of multinational companies about their reputations among their customers and their shareholders make them interested parties in promoting sustainability in the distant corners of Brazil. This

has led to pacts among private sector stakeholders, certification schemes, roundtables, supply chains and global value chains (Gereffi 1994; Dros and Van Gelder 2002; Forest Trends 2015; Supply Change/Forest Trends 2015). Modern agribusiness can be an ally of conservation, if separated from the predatory sectors and monitored as to actual performance.

Agribusiness and urban migration, stimulated to a large extent by silent or violent land conflict, generated a dense urban network and resulted in reduction in the growth of the rural population. The urban economy, based primarily on services that are increasingly modern, does not provide enough employment and income for the migrants and their offspring. On the other hand, urbanization has provided a transportation and communication infrastructure as well as health and educational services for the rural population. At the same time, the urban population in the Cerrado, and in the urban centers of the Southeast, constitutes a consumer market that can purchase products of sustainable use of biodiversity, or 'sociobiodiversity', with no need to export these products, as is the case in smaller countries (MMA *et al.* 2007).

The problem now is in Matopiba (Maranhão, Tocantins, Piauí and Bahia), where the government proposes agricultural development with little or no social or environmental concern, at least to date (Clark 2015). According to the official plan (Miranda 2015), in the 731,735 km^2, 91% of which is Cerrado, in Tocantins and parts of the other three states, there are 865 settlements, 34 *quilombola* territories and 28 indigenous lands.

The economic trends in Bolivia and Paraguay are different from each other, while Paraguay is following the path of Brazil's Cerrado.

6.5 Bolivia

While the Santa Cruz de la Sierra region has a dynamic economy as compared to the highlands, southeastern Bolivia remains isolated, with few transportation connections to the Atlantic or the Pacific. Since the small part of Bolivia that is in the Cerrado Hotspot is quite different from most of the rest of the country, this section provides more detail about the socioeconomic context of the area on the eastern border. The same kind of detail is provided in the following section for the small parts of northern Paraguay that are included in the hotspot.

The IBA in Bolivia, with 2,246,779 hectares, is in extreme north of the province of José Miguel de Velasco in Santa Cruz de la Sierra, the country's largest department, which covers most of the eastern lowlands. The Serranía de Huanchaca, in one of the most remote and least accessible parts of Bolivia, lies between the Guaporé (border of Brazil) and Paraguá rivers, 125 km from Vilhena, Rondônia, in Brazil, to the west of the Serra dos Parecis and the BR-364 highway. Thus, the IBA is 150 km west of the Alto Juruena Corridor in the states of Mato Grosso and Rondônia as defined in this profile (see Chapter 13).

The population of the entire Velasco province is 64,517. Bella Vista, Puerto Alegre and Puerto Frey are small towns in or near the IBA, an essentially pristine area which is already highly protected as Noel Kempff Mercado National Park, covering 1,523,000 hectares, having been created in 1988 and declared a UNESCO World Heritage Site in

2000. There is little anthropic pressure, although there was some logging in the 1980s. Now the park is a tourist attraction.

While Santa Cruz de la Sierra has one of the fastest growing metropolitan areas in the world, the economy of the interior of the department is based on crops and livestock, as well as production for subsistence, with low levels of income and human development. There is strong emigration from Bolivia, the poorest country in South America to other countries, especially to large cities in Brazil.

6.6 Paraguay

The main IBA in Paraguay, namely Cerrados de Concepción, is located along the border of Brazil south of the Apa River and east of the Paraguay River in the Department of Concepción. It includes the Paso Bravo National Park, with 93,000 hectares, the smaller Serranía San Luis National Park and the Cerrado de Tagatija private reserve. It is in an area of cattle-raising and is under pressure from illegal logging. The IBA lies south of the Miranda-Bodoquena Corridor in the state of Mato Grosso do Sul (see Chapter 13). The Brazilian side of the Apa River is a Unit of Planning and Management used for environmental planning (Terra *et al.* 2014).

The other two IBA in Paraguay, Estancia Estrella and Arroyo Tagatiya (10,954 hectares and 31,566 hectares respectively), lie in a relatively remote area of the country, west of the Paraguay River in the Department of Alto Paraguay, north of the departmental capital Fuerte Olimpo (population 5,200) and adjacent to the southern extreme of Brazil's Pantanal Biome. The remote areas of Paraguay, which have low income and human development levels, are under growing pressure from expansion of livestock and crops (soybeans, cotton, tobacco, coffee and sugarcane), the basis of the country's economy. The agricultural sector involves many foreign landowners, including Brazilians. Respectively 2% of each IBA is currently used for agriculture, while Arroyo Tagatiya is a major tourism/recreation site.

After being settled by migrants from Brazil (*brasiguaios*), eastern Paraguay has now attracted a strong flow of direct foreign investment, in part because land on the Brazilian side of the Cerrado has become more expensive and in part because of environmental restrictions in Brazil. Exports can be transported down the Paraná River to the Atlantic. Thus, Paraguay has become subject to leakage from its neighbor to the east. All three countries are part of the Mercosul (Common Market of the South) trading block but this has not led to economic integration as originally expected.

6.7 Conclusions

The Cerrado is a stage on which there is strong conflict between agribusiness and local communities of various kinds. Agribusiness puts pressure on the ecosystem, while local communities generally coexist with nature in complex mosaics. Agribusiness is often supported by the executive and legislative branches of government, especially at the state and local levels. On the other hand, as is seen in chapters 7 and 8, there is growing awareness about negative environmental impacts, and some opportunities for synergies between communities and companies are emerging in the progressive subsectors.

The analysis of the socioeconomic context of the Cerrado Hotspot indicates that population growth on the frontier and increased human well-being place strong pressures on the environment. There is no more wilderness in the sense of vast, unsettled virgin areas. The Cerrado is at the heart of an emerging world power and provides food for itself and the world, as well as income and tax revenues. Development is inevitable.

For the short, medium and long terms, it will be necessary to go beyond a focus on conservation of species at local sites to include landscapes at a larger scale. Except in a few cases, rather than isolation between people and nature, it will be necessary to find means for maintaining co-existence of nature with large- and small-scale agriculture, livestock, transportation, energy and communications infrastructure, small communities and large towns and cities. This is "*living in harmony with nature*", as foreseen in the CBD's 2020 Vision and Strategic Plan for Biodiversity 2011-2020, a ten-year framework for action by all countries and stakeholders to save biodiversity and enhance its benefits for all people.

Funding for this strategy will depend on going beyond biodiversity conservation as such to include water and climate. Water is primarily a regional, national and continental concern, while climate change is a global concern that directly affects both developed and developing countries, which due to globalization are increasingly interdependent. The broader consequences of loss of biodiversity in landscapes can motivate the world to invest in protecting the Cerrado.

7. POLICY CONTEXT OF THE HOTSPOT

This chapter reviews and analyzes policies related to the environment in Brazil, Bolivia and Paraguay, with special emphasis on natural resources management and biodiversity conservation. The text reviews the political situation at different levels, describes development policies and strategies, and assesses how the policy context affects biodiversity. While civil society, analyzed in Chapter 8, is a key player, government policy, analyzed in this chapter, and private sector practices, analyzed in chapters 6 and 9, are closely related and are the main determinants of what actually happens on the ground.

Government in Brazil is particularly complex and fluid, with a tradition of distance between paper and practice that is being overcome through actions of new enforcement institutions, a free press and public participation. Civil society participation has grown, but is not always effective because of capacity limitations, high operating costs, weak technical analysis and political polarization, as well as government and private sector resistance, as described in Chapter 8. Bolivia and Paraguay differ from Brazil and are specific in many ways, while the parts of these countries that lie within the hotspot are very small and remote rather than vast and central.

The first six sections of this chapter focus on Brazil as a whole: 7.1, Overview of Brazil's national political situation; 7.2, Natural resource policies; 7.3, Socio-environmental policies; 7.4, Development policies; 7.5, Land tenure and land use policies; and 7.6, Institutions for implementation. Section 7.7 focuses specifically on policy and governance in the Cerrado Hotspot. Sections 7.8 and 7.9 focuses on the policy contexts in Bolivia and Paraguay, while Section 7.10 highlights the commitments by all three countries under global and regional agreements.

7.1 Overview of Brazil's National Political Situation

After 21 years of military rule ending in 1985 and nearly that many years of civilian rule, Brazil is now a mature democracy. There are periodic elections at the national, state and municipal levels. However, following demonstrations in 2013, elections in 2014 and economic and political crises in 2015, there are strong signs of popular dissatisfaction, growing regional and social class divisions and lack of clarity about the way forward (BBC 2015; Unger 2015). Political parties, of which there are 36, are in flux, and the alignments among them are without clear directions. Because of the economic crisis in 2015, it will now be more difficult to protect the environment than when Brazil's economic development stood out among 'emerging' countries. The economy has become the overriding concern. Investments in forest conservation dropped by 45% in 2015 as compared to 2014 (Ghelfi 2015).

In 1988, there were sudden changes in public opinion and official attitudes regarding the environment, sparked by burning in the Amazon and the murder of Chico Mendes. The new constitution approved that year provides guarantees for a healthy environment in Article 225. Between 1988 and 2010, there were various important environmental initiatives at all levels (Bursztyn and Persegona 2008). More recent emphasis in government policy, however, has been on economic growth and development, which now seems more urgent than ever. Environmental issues were absent from the general election campaigns in 2014. Congress has become more conservative and seeks greater

independence from the executive branch (Sarney 2015). There is growing concern about 'backsliding' in the sense of weakening of laws and policies regarding environment, protected areas and indigenous lands. This is the case of a draft constitutional amendment (PEC 215) that would transfer the power to define and revise protected areas and indigenous and *quilombola* lands from the executive to the legislative branch of government.

The policies adopted are not always as positive as they seem at first sight. Various government plans regarding environment, such as Brazil's Agenda 21 (MMA 2004) and the Sustainable Amazon Plan (MMA 2008), look good on paper, but are not implemented. Their role is more inspirational than effective. At least the concept of sustainable development has been widely accepted rather than being considered a luxury or an international conspiracy, as was common before the Earth Summit in Rio de Janeiro in 1992 (Dewar 1995; Ferreira 2003; Carrasco 2006). Rhetorically, at least, the dominant paradigm is now sustainability.

In international forums on the environment, the Ministry of External Relations (MRE) continues to insist on the right to development and differentiated treatment for developing countries, especially as regards to climate change, and emphasizes development and social inclusion (Lago 2009). Brazil stresses North-South transfer of financial resources and technology. Nonetheless, there are also attempts to provide leadership on environment. Brazil hosted the 1992 and 2012 conferences in Rio de Janeiro. At the Conference of the Parties (COP-15) on climate in Copenhagen, Brazil established an important precedent by setting voluntary national goals of reducing deforestation in the Amazon by 80% by 2020 and in the Cerrado by 40% in the same period. It is also proposing ambitious goals at the COP-16 on climate in Paris in December 2015, behind only those of the European Union.

Brazil continues to seek a leadership role in international affairs, both within groups of emerging or middle-income countries such as Brazil, Russia, India, China and South Africa (BRICS) and with other developing countries in the G-77 plus China. At the same time, Brazil also participates in the G-20, the group of the world's wealthiest nations, in which it has ranked as high as sixth in terms of total Gross Domestic Product (GDP). It seeks to maintain good relations with Europe, the United States and China, with which it has strong commercial ties.

7.2 Natural Resource Policies

The main natural resource policies and laws in Brazil described in the following sub-sections have to do with environment in general, protected areas, water resources, forests/deforestation and climate. Climate is also the subject of Chapter 10.

7.2.1 Environmental Policies

The starting point for natural resource policies and laws in Brazil is the National Environment Policy of 1981, which created the National Environment System (SISNAMA), connecting the federal, state and municipal levels (Ganem 2015). The original policy was very generic, but it established the National Environment Council (CONAMA), which defines environmental policy through its specific resolutions, a total of 467 to date. CONAMA includes representatives of government, civil society and the

private sector. The national system also includes state and municipal environmental agencies and councils.

A process of decentralization to states and municipalities is under way. Responsibilities are defined so that lower administrative levels can be more rigorous, establishing higher (but never weaker) standards than higher levels (Nunes and Philippi 2012). State and local capacities for environmental management vary considerably, being lowest in the Amazon, Cerrado and Caatinga biomes, although considerable progress has been made in recent years (Nascimento 2008). Many municipalities lack sufficient human and financial resources for environmental management, especially those with small populations and large areas (ISPN field observations). Since local economic interests are powerful, state and federal oversight is needed. Municipal authorities tend not to be concerned about environment or get involved in environmental projects (IICA 2015). Municipal conservation and restoration plans could be stimulated, as was done in the Atlantic Forest (Dutra 2013), perhaps at the scale of territories such as RECOS rather than individual municipalities or territories unrelated to the political-administrative structure.

7.2.2 Protected Area Policies

The Cerrado has the second largest network of official protected areas in Brazil, second only to the Amazon, which has many more. This hotspot has 168,416 km^2 covered by 214 public protected areas in the various management categories defined by the National System of Nature Conservation Units (SNUC), created by Law 9985 in 2000. This protection network covers 8.3% of the hotspot, with 3.1% (62,875 km^2) in the Strict Protection category and 5.2% (105,541 km^2) in the Sustainable Use category (MMA 2012; Bensusan and Prates 2014). Brazil as a whole has more than 2,000 conservation units, covering 1.5 million km^2 (Bensusan and Prates 2014). The 1,860 terrestrial conservation units cover 17% (1.4 million km^2) of the country. Another 151 conservation units cover 1.5% (52,304 km^2) of the marine zone of 200 miles. Indigenous and maroon (*quilombola*) community lands are not "conservation units" under SNUC, but are considered to be part of the protected areas national program (Maretti 2015a).

The SNUC is coordinated by the Ministry of Environment (MMA). The SNUC divides protected areas into two categories: (1) strictly protected areas (*proteção integral*) and (2) sustainable use protected areas. The first category includes National Parks (IUCN category II), Biological Reserves (Ia), Ecological Stations (Ia), Natural Monuments (III) and Wildlife Refuges (III). The second category includes Environmental Protection Areas (IV), Areas of Particular Ecological Interest (IV), National Forests (VI), Extractive Reserves (VI), Fauna Reserves (VI), Sustainable Development Reserves (VI) and Private Natural Heritage Reserves (IV). Conservation corridors and mosaics are mentioned in the SNUC law but do not have the same legal status as conservation units. Within the ministry, the Chico Mendes Institute for Biodiversity Conservation (ICMBio), created in 2008, became responsible for creating and managing federal protected areas. Analogous secretariats and forestry institutes are responsible for equivalent functions at state and municipal levels.

Coverage of protected areas in the Cerrado is below the Aichi target of 17% set under the Convention on Biological Diversity. The importance of reaching this target is enormous because of the high diversity of endemic species and the great environmental

heterogeneity of this hotspot. Machado *et al.* (2004) assessed the effectiveness of protected areas in the Cerrado for 67 species of interest for conservation, including birds, mammals and trees. The results indicated that 14 species, 20.9% of all species under consideration, are not protected by the network of protected areas. Another 33 species (49.3%) are present in protected areas, but their numbers are below the targets set as minimally satisfactory. Only 20 species (29.9%) can be considered well-protected by existing protected areas in the Cerrado. Another example of this situation is in the Espinhaço Mountain Range, notable for the high occurrence of rare and endemic species. Gap analysis by Silva *et al.* (2008), for a set of 31 conservation units and 607 species of flora and fauna, and other elements of conservation interest (types of ecosystems) of the complex shows that 41.8% of the species are not adequately protected. Furthermore, a study of endemic lizards indicates that the current protected area system in the Cerrado is not representative of regional biogeographic regions and does not take into account ancient and current diversity distribution patterns (Mello *et al.* 2015).

Federal, state and municipal governments should provide budget resources every year for the basic expenses of each protected area, such as staff salaries, infrastructure maintenance, inspection and enforcement. In addition to budget resources, some investments in protected areas come from partnerships with the private sector, bilateral and multilateral agencies, nongovernmental organizations and others. However, the government itself recognizes the fragility of the protected area system and knows that its agencies' shortcomings in providing the right instruments for management and protection mean undefined land ownership status, absence of planning mechanisms, lack of resources for basic investments and shortage of technical personnel, among other problems. The creation and implementation of protected areas is therefore a pressing current issue on the Cerrado conservation agenda.

Recent studies on the effectiveness of management of conservation units and other protected areas in the Cerrado attest to the importance of strictly protected areas for biodiversity in maintaining the integrity of the hotspot (Françoso *et al.* 2015; Paiva *et al.* 2015). Both studies evaluated how different categories of protected areas in the Cerrado contribute to achieving conservation targets. Deforestation rates in sustainable use PAs are similar to those outside PAs, indicating they are not suitable to ensure the protection of biodiversity, while integral protection PAs exhibit significantly less deforestation.

It is also important to note that integral protection PAs, recognized as the main biodiversity protection mechanism, still cover only a small portion of the entire Cerrado, as mentioned above. Environmental Protection Areas (APAs, in Portuguese) cover the largest share of protected areas in the Cerrado, representing 62% of the area protected in the hotspot. This fact is very important and reinforces the need for urgent measures to strengthen the Cerrado's PA network, to ensure the representativity and persistence of its biodiversity.

In an attempt to improve the management of protected areas, the federal government has been monitoring the effectiveness of management in federal units, using Rapid Assessment and Prioritization of Protected Area Management (RAPPAM), a method that provides information and analysis to guide institutional management (ICMBio and WWF-Brazil 2011). There have been two assessment cycles, one in 2005-2006 and the other in 2010. The Amazon and Cerrado regions showed greatest improvement in the effective management of protected areas between the two assessment cycles. Despite

positive results, the Cerrado and other regions still have a medium score for management effectiveness, indicating the need for investments and improved management.

The creation of protected areas requires some consultations, but not full prior and informed consent for all kinds of areas. Residents of these areas can be resettled. Previous landowners must be paid, although the Law of Fiscal Responsibility, which requires that all government expenses have previously identified sources, is not applied in all cases.

In addition to the conservation strategy for public lands, there has been a significant growth in the number of landowners interested in turning parts of their properties into Private Natural Heritage Reserves (RPPN) (Mesquita 2014). These reserves are declared voluntarily by a person or company and formally recognized by the different levels of government. The 1,340 private reserves currently registered in Brazil represent more than half of the national number of protected areas but cover less than 0.02% (about 7,150 km^2) in terms of area being protected. In Cerrado, 51% of the number of protected areas are private reserves (204), representing an area of 0.09% (about 1,600 km^2) of the area being protected in the biome. Cerrado has about 22% of the area of RPPNs in Brazil. This category is one of the most important conservation strategies in this hotspot, since most of the land is privately owned. With new incentives and greater support for landowners, private reserves could play an even more important role in biodiversity conservation in the Cerrado.

The Brazilian government has considered various areas not officially provided by SNUC as part of the national conservation strategy (CONABIO Resolution 6 of September 3, 2013). They include indigenous and *quilombola* (maroon) lands as well as Legal Reserves (LRs) and Permanent Preservation Areas (APPs) required by the Forest Law. The Cerrado has 95 indigenous lands, totaling 9.6 million hectares, of which 9.1 million hectares are covered by native vegetation. The region also has 44 *quilombola* lands totaling almost 400,000 hectares. About half of these remain covered by native vegetation. Considering the SNUC conservation units together with indigenous and *quilombola* lands with native vegetation cover, protected area coverage reaches 13.4% of the total Cerrado area, covering about 27 million hectares in 500 different areas throughout the hotspot. Studies with satellite images indicate less clearing on indigenous lands than in conservation units and less clearing in sustainable use reserves than in integral protection conservation units in the Amazon (Ferreira *et al.* 2005; Nepstad *et al.* 2006). Both logic and this evidence suggest that environmental set-asides can be better protected by communities than by a few park guards, who have a limited capacity to control intrusions for logging, poaching and artisanal mining (*garimpo*) and will probably never be numerous enough to effectively manage for large areas in remote regions such as the Cerrado outside the southeast.

After 1992, outstanding progress was made in the creation of protected areas in the Amazon, an achievement facilitated by the fact that most land in the region is in the public domain and property values are an order of magnitude lower than in developed regions (Costa 2012). Now, however, the lack of government revenues for maintenance and for paying former landowners (few have been paid, as can be seen in the table on ‘regularization’ on the ICMBio website) has led the government to give priority to better management of existing protected areas, so that they are not mere ‘paper parks’ (Gaetani 2015).

The Aichi biodiversity targets of 17% in protected areas are being applied to each biome in Brazil. Indigenous lands will be counted to achieve the target. The gap in the Cerrado is enormous, on the order of 200,000 km^2, and will be difficult to cover, because land in this biome is private and expensive. The ways to reach the target for each biome, if it is not revised to be more realistic, would be to count reserves required by the Forest Law, include remaining areas above the minimum required by the Forest Law, facilitate and provide incentives for private natural heritage reserves (RPPNs) and create more Environmental Protection Areas (APAs), a loose category of protected areas generally considered ineffective by conservationists. Those decisions would apply to all of Brazil, not just one biome. What really counts the most for the Cerrado's ecosystems, however, is to maintain the plant cover that still exists on 50% of the total area.

Although RPPNs and APAs are both part of SNUC, they do not require government purchase of land. There is a national association of owners of RPPNs that promotes this alternative, supported and sometimes sponsored by NGOs, through technical expertise, capacity building, advocacy and funds. It should be noted that CEPF investments in the Atlantic Forest included a very successful incentive program for this type of voluntary private protected areas, which after 13 years has been responsible for supporting the creation of more than half of the existing RPPNs in that hotspot. The growing environmental concern in society, including large rural landowners of both older and younger generations, creates a favorable climate for the establishment of private reserves, although insufficient incentives and the bureaucracy, which requires approval of detailed management plans, remain formidable barriers.

The use of environmental criteria to apportion state value-added tax (ICMS) revenues among municipal governments, through a mechanism called ICMS Ecológico, has been adopted voluntarily by some states. It is an important incentive for municipal governments to create and support protected areas and to adopt other conservation measures (Fernandes *et al.* 2011). Of the states that have ICMS Ecológico, five (Mato Grosso, Mato Grosso do Sul, Minas Gerais, São Paulo and Tocantins) are in the Cerrado. In 2009, the value that was redistributed was about US$ 200 million (R$ 402.7 million) in 11 states for which data are available (Medeiros *et al.* 2011). The same kind of compensation mechanism could be extended to distribution of federal tax revenues to state governments through Green State Participation Fund (*Fundo de Participação Estadual Verde*), which was proposed by former Minister of Environment and presidential candidate Marina Silva but has not been adopted. Among all biomes, it would favor the Amazon.

Cooperating with the government, the United Nations Educational, Scientific and Cultural Organization (UNESCO) has promoted Biosphere Reserves, as in other countries, but this approach has been more successful in the Atlantic Forest than in the Cerrado, where implementation has been undertaken in the Federal District (Galinkin 2004) but has not spread. There are also some Ramsar and World Heritage sites.

Since signing the Convention on Wetlands of International Importance, Brazil has added 12 wetlands to the Ramsar List. This enhances support for research, access to international funds for project finance and a favorable environment for international cooperation. In exchange, Brazil has promised to maintain their ecological characteristics – elements of biodiversity, as well as the processes that sustain them – and should give priority to their consolidation before other protected areas, as provided in General Objective 8 of the

National Strategic Plan for Protected Areas (PNAP), approved by Decree No. 5,758/06. The guideline adopted for Ramsar sites designation was that these areas are already protected areas, which favors the adoption of measures to implement commitments made by the country under the Convention.

Other instruments for environmental management and planning provided by the SNUC are Biosphere Reserves and mosaics of protected areas. The Cerrado has two Biosphere Reserves recognized by UNESCO. The Espinhaço Biosphere Reserve with 30,070 km^2 is in Minas Gerais, and the proposed Biosphere Reserve of the Cerrado, which would have 296,500 km^2, covers the Federal District and parts of the states of Goiás, Tocantins, Maranhão and Piauí.

The mosaics of protected areas can make a major contribution to the governance of protected areas, enabling integration among different categories of units, groups and levels of government, without destroying the individuality and specific objectives of each unit (Pinheiro 2010). The Atlantic Forest Hotspot pioneered this approach and has nine officially recognized mosaics, with important examples and innovations in the governance of a network of protected areas.

The Cerrado has important experience through the Sertão Veredas-Peruaçu Mosaic, located mainly on the left bank of the São Francisco River in the north and northwest of Minas Gerais and a small portion of southwestern Bahia (FUNATURA 2008). The mosaic has 14 public and private protected areas and an indigenous reservation, totaling more than 1.3 million hectares of protected land in an area of the Cerrado that is strategic in terms of biodiversity, water and opportunities to overcome great social fragility. The mosaics of protected areas offer various opportunities for long-term biodiversity protection, environmental services and regional sustainable development.

Brazil also launched its biodiversity (or 'conservation') corridors approach in the 1990s, as part of the Ecological Corridors Project, aimed at establishing an integrated strategy for protected areas in forest environments in the Amazon and the Atlantic Forest, under the Pilot Program to Conserve the Brazilian Rainforest-PPG7 (Ayres *et al.* 2005). Several conservation initiatives in Brazil and Andean countries currently are using the approach of biodiversity corridors (Arruda 2004). Corridors are not political or administrative units, but large geographic areas defined on the basis of biological criteria for the purpose of conservation planning. Planning biodiversity corridors incorporates interventions at different spatial scales (from a conservation unit to watersheds to entire states) and different temporal scales (in the short- and medium-term and over decades), seeking alternatives for wider, gradual, decentralized and participatory forms of biodiversity conservation and integrated regional development (Sanderson *et al.* 2003).

Cerrado biodiversity corridors were identified in the assessments of priority areas for the Cerrado and Pantanal in 1998 and 2007. The first to be implemented were: (1) the Araguaia-Bananal Corridor, along the Araguaia River, including the world's largest fluvial island; (2) the Emas-Taquari Corridor, connecting the Cerrado and the Pantanal; and (3) the Jalapão corridor, in the tri-state area of Tocantins, Bahia and Piauí.

The Jalapão Biodiversity Corridor is an initiative of the Chico Mendes Institute for Biodiversity Conservation (ICMBio), in technical cooperation with the Japan International Cooperation Agency (JICA) and the Government of the State of Tocantins,

as well as other partners. The area, located on one of the most important agricultural frontiers in Brazil, called Matopiba (initials of the states of Maranhão, Tocantins, Piauí and Bahia), is covered by an extensive network of protected areas, such as Jalapão State Park (158,885 hectares), the Serra Geral Tocantins Ecological Station (761,306 hectares) and the Parnaíba Headwaters National Park (729,813 hectares). These protected areas, along with six others, make up one of the largest remaining native vegetation blocs in Central Brazil and the largest collection of official protected areas in the Cerrado, totaling more than 3 million hectares.

Lastly, Biosphere Reserves, protected areas in the APA category and mosaics are important mechanisms to discipline land use and ensure the sustainable use of natural resources, through participatory planning and management, as in the case of new biodiversity corridors, described below.

Indigenous and Community Conserved Areas (ICCAs), as they are known internationally (Borrini-Feyerabend 2005), are not an official category in Brazil. An analysis of the experience at the global level about ICCAs and the Aichi Targets concludes: "*It is worth highlighting here that while ICCAs can help in the achievement of all Targets, in particular Targets 1, 5, 7, 11, 13, 14 and 18 simply cannot be achieved without ICCAs*" (Kothari and Neumann 2014). Brazilian membership in the international ICCA consortium is incipient. There could be official recognition of these areas, including for ICMS Ecológico and FPE Verde, without their having to become part of the SNUC or subjected to control by federal, state or municipal environmental agencies and their staff, many of which do not always respect indigenous and community rights and values (ISPN field observations). ICCAs would be a way to minimize the conflicts that arise when official protected areas are created in areas occupied by traditional peoples and communities.

7.2.3 Water Resources Policies

The National Water Resources Policy approved in 1997 established watersheds as the units of study and management. There are federal (interstate), state (inter-municipal) and municipal watersheds. The law requires authorization for use of water as well as payment of fees (OCDE 2015).

The water law provides for watershed committees (CBH) including government authorities, users and civil society specialists in water, but not civil society *per se*, as well as water resource agencies (Salles 2015). Watershed committees are located mainly in the more developed regions of Brazil, including the southern half of the Cerrado Hotspot, and the Northeast (Freitas 2015). They are more effective in developed regions, where civil society has greater capacity and watersheds are smaller (Abers 2010; Abers and Keck 2013).

Such environmental management arrangements are made more difficult by the lack of geographical correspondence between watersheds and political and administrative divisions. The water divides rarely if ever coincide with municipal boundaries, while rivers often *are* those very boundaries. It is difficult for committees and agencies to manage activities in the watershed as a whole, especially activities that do not require authorization for use of water. The approach can be considered 'fluviocentric'. On the other hand, the participatory decentralization of water management creates the possibility

that funds will be made available for conserving and regenerating forests in headwaters and along water courses that regulate river flow.

There are programs of support for so-called "producers of water" who plant and maintain trees on their properties, a practice that also generates benefits for biodiversity and climate. The National Water Agency (ANA) offers a total of US$ 1.4 million (R$ 5.6 million) in grant funds for projects of up to US$ 175,000 (R$ 700,000) each (http://produtordeagua.ana.gov.br). Payment by users of water is possible in areas close to cities, as in the case of Extrema, in Minas Gerais, which provides water for São Paulo. This is difficult in most of the Cerrado, however, where per capita water availability is much higher (Jardim 2010), but it may be possible in specific areas.

7.2.4 Forest/Deforestation Policies

The Forest Code, which was first approved in 1934 to guarantee the supply of firewood and modified in 1965, 1996 and 2012, provides for Legal Reserves to maintain native plant cover on all rural properties. In most of the Cerrado and most of Brazil, the requirement is 20%, while in the Amazon it is 80%. The parts of the Cerrado that are in the Legal Amazon, *i.e.*, all of Mato Grosso and Tocantins and the western part of Maranhão, require Legal Reserves of 35%. Areas of Permanent Preservation (APPs) are required along water courses and on hilltops and steep slopes. Legal Reserves can be used sustainably, with approved management plans, while APPs cannot be used at all.

As a result of negotiations between 'ruralists' and environmentalists, the 1996 version of the Forest Code, which was never effectively applied, was replaced by the new Forest Law in 2012. It reduced requirements for APPs. There is controversy about a pardon for old clearing on small farms. As for monitoring and enforcement, the new Rural Environmental Registry (CAR) requires self-declared, geo-referenced reporting on compliance. The Brazilian Forest Service (SFB) and state environmental agencies are responsible for CAR implementation. Some states, like Mato Grosso and Bahia, already have their own registries. The Environmental Regularization Program (PRA) can provide support for reaching compliance. There can also be compensation by acquiring surplus uncleared land in nearby areas.

The various registries will provide valuable, detailed data on land use and plant cover. However, at the level of individual properties, many landowners want to avoid self-incrimination, while many state agency personnel do not want to be legally liable for approving self-declared information without verification (ISPN field observations). The normal courses of streams and rivers and the exact boundaries of hilltops and steep slopes are technically difficult to determine on the ground and in satellite images (Oliveira and Fernandes 2013). Establishing consistency between CAR reporting and the forthcoming official maps of land ownership will be a challenge (Dourado 2015).

The deficit of Legal Reserves and APPs in the Cerrado is estimated to be 4.5 million hectares, which will need to be recovered or compensated (Observatório do Código Florestal 2015). On the other hand, impacts in the Cerrado are mixed. With large areas still intact and Legal Reserves of only 20%, another 40 million hectares can still be legally cleared (Sparovek *et al.* 2011; Soares-Filho 2014). Reporting deadlines have been extended to 2016. After 2017, compliance will be a requirement for access to bank credit.

Care must be taken to avoid excessive reliance on protection of riparian forests over other vegetation types uphill from streams and rivers, without dealing with causes and drivers in the watershed as a whole. APPs along water courses can provide habitat and connectivity among forest fragments for species that require continuous forest cover for their mobility. Obviously, however, forests along the banks cannot solve all the problems of availability of water or runoff, erosion and pollution due to land use at higher elevations. Neither do they protect all the biodiversity or carbon stocks.

As mentioned, in 2009 Brazil announced voluntary goals to reduce deforestation in the Amazon and the Cerrado. New ambitious goals are being announced in 2015, including zero illegal deforestation. They do not preclude legal deforestation. They also refer to net deforestation, while national campaigns demand zero deforestation without compensation by reforestation. Brazil did not sign the New York Declaration on Forests, calling for zero deforestation, which is defended by Greenpeace and other organizations.

In addition to the Forest Law, there are various policies and programs to fight deforestation and burning, primarily to reduce emissions of greenhouse gases. In 2009 in Copenhagen, Brazil established a voluntary goal for nationally appropriate mitigation actions (NAMA) with reductions between 36.1% and 38.9% of projected emissions by 2020 by reducing deforestation in the Amazon by 80% and by 40% in the Cerrado.

The Bolsa Verde Program (‘green stipend’), established in 2011, provides payments for poor residents of official protected areas and others that are considered priorities for protection. The stipend is US$ 75 (R$ 300) every three months for two years and can be renewed.

Brazil is very proud of its success in reducing deforestation rates in the Amazon by 83% since 2004. The main enforcement targets are illegal deforestation and logging. In 2015, the government proposed reaching zero illegal deforestation by 2030. However, most of the clearing is legal in the Cerrado, the Pantanal and the Caatinga, where Legal Reserves are much smaller than in the Amazon, while there is little left to clear in the Atlantic Forest. Enforcement in the Amazon could end up increasing pressure on the Cerrado, *i.e.*, reverse leakage. It is also necessary to take into account indirect land use changes, such as expansion of sugarcane plantations to produce ethanol biofuel (Sawyer 2014).

The deforestation policies now include control of fire, which is monitored by the National Institute of Space Research (INPE) using data from various satellites. In 12 months in 2008-2009, there were 32,001 fires detected in the Cerrado, 40% of the national total. The majority were in the center-north portion of the biome, particularly in the Tocantins-Araguaia and São Francisco basins, mostly in the remnant savanna vegetation (75.6%), with 13.2% in planted pastures and 11% in agricultural areas (Nascimento *et al.* 2011). It should be recalled that “*hot spots*” on satellite images do not necessarily correspond to clearing, but may be the result of annual pasture management in areas cleared long ago, or traditional land use. The accumulation of clearing in the past should not be confused with new clearing.

In 2015, the Ministry of Environment launched a National Plan to Recover Native Vegetation (PLANAVEG), which is based on effective enforcement of the new Forest Law. The levels of deficit in terms of the Forest Law have been calculated for each biome

but are being revised. As mentioned above, the deficit for the Cerrado is estimated at 4.5 million hectares. Restoration will be an essential complement to conservation.

7.2.5 Climate Policies

Climate policies in Brazil are closely linked to policies regarding deforestation, which has been the country's main source of greenhouse gas emissions, as described in Chapter 10. Because of reductions of 83% in emissions from deforestation since 1994, more attention must be paid to agriculture, energy and transportation. Agriculture is especially relevant in the Cerrado (Bustamante 2015). Of course forests, biodiversity and climate are closely linked, as was evident in the Brazil-Germany symposium on this subject in August 2015. At present, climate is an overriding global concern and thus constitutes a major justification for North-South international cooperation on environment.

Brazil's climate policy has been based on defense of the right to development and the principle of common but differentiated responsibilities (Lago 2009). The voluntary commitment to reduce emissions, announced at the COP in Copenhagen in 2009 and defined in the National Climate Change Policy (Motta 2011), depends on reduction of deforestation, which has been achieved mainly in the Amazon. The Intended Nationally Determined Contributions (INDCs) to be presented at the COP in Paris in 2015 also focus mostly on lowering deforestation rates, thus generating significant co-benefits for biodiversity and hydrological cycles. Cap-and-trade initiatives are very limited. REDD+ is being discussed, but the main actual practice is the Amazon Fund, which begun with US$ 1 billion from Norway.

In 2010, Brazil launched the Low-Carbon Agriculture Plan (ABC) and a special line of credit. Coordinated by the Ministries of Agriculture (MAPA) and Agrarian Development (MDA), the plan seeks to reduce carbon emissions by promoting practices in agriculture such as zero till and integrated crop-livestock systems. The initiative has been slow in uptake, given uncertainties about the Forest Law, lack of technical assistance and difficulty in access to credit.

7.3 Socio-Environmental Policies

In addition to specific natural resource policies for Brazil as a whole, described above, there are also numerous 'socio-environmental' initiatives that have positive impacts on biodiversity conservation in Brazil in general and in the Cerrado in particular.

7.3.1 Socio-Biodiversity

In 2008, the Secretariat of Extractivism and Sustainable Rural Development (SEDR) of the MMA began promoting value chains for non-timber products, including babassu, *pequi* and *buriti*. In Brazil, 'extractivism' does not refer to mining, petroleum and gas, but to the sustainable use of biodiversity, which is called 'agro-extractivism'. In 2009, these actions were included in the National Plan for Promotion of Socio-Biodiversity Value Chains (PNPSB). Socio-biodiversity products are defined as goods and services (finished products, raw materials or benefits) generated from biodiversity resources, focused on the formation of production chains of interest to traditional people and communities and family farmers, promoting the maintenance and enhancement of their

practices and knowledge, ensuring their rights, generating income, promoting their quality of life and improving the environment in which they live.

The plan has focused on six areas: (1) sustainable production and extractivism; (2) industrial processes; (3) markets for socio-biodiversity products; (4) social and productive organization; (5) socio-biodiversity value chains; and (6) valuation of socio-biodiversity services. The macro-level actions seek to include socio-biodiversity products in agricultural policies, in partnership with the National Supply Company (CONAB), such as the Minimum Price Guarantee Policy (PGPM), the Food Acquisition Program (PAA) and the National School Lunch Program (PNAE). The meso-level actions seek to offer specific technical assistance and training for extractive production. At the micro-level, the plan involves two national value chains, one of which, for babassu, occurs in the Cerrado. Local production arrangements that are supported include *pequi* and *buriti* from the Cerrado (Afonso 2014).

The PNPSB is coordinated by the Ministries of Environment, Agrarian Development and Social Development and Fight against Hunger (MDS) and the National Supply Company. It includes state governments, staff, the National Agency for Sanitary Surveillance and Inspection (ANVISA), the Brazilian Forest Service (SFB), the Chico Mendes Institute for Biodiversity Conservation (ICMBio), the National Institute of Colonization and Agrarian Reform (INCRA), the German Technical Cooperation Agency (GIZ), the Brazilian Agricultural Research Corporation (EMBRAPA) and the business sector, development agencies and civil society organizations (MMA *et al.* 2012). The PNPSB was absorbed by the National Commission of Agroecology and Organic Production (CNAPO) in 2015.

In 1966, Decree-Law 79 established rules for agricultural produce floor prices. Since 2008, in response to demands by extractivists, the Floor Price Guarantee Policy for Socio-Biodiversity Products (PGPM-Bio) has provided bonuses for extractivists forced to sell their produce at prices below the official minimum. CONAB, which administers the PGPM, set up an office to develop and operationalize floor prices for socio-biodiversity products. For the 2014/2015 harvest, floor prices were set for six Cerrado products: babassu and *baru* nuts and *macaúba*, *mangaba*, *pequi* and *umbu* fruits. Average prices are only a few dollars per kilogram.

7.3.2 Institutional Markets

The Food Acquisition Program (PAA), established in 2003, is a very important institutional market operated with funds from MDA and MDS. Products purchased from farmers are donated to public institutions such as schools, shelters and hospitals. There are also loans for investments in value-added and storage facilities. The Cerrado products sold by family farms directly to the federal government via CONAB include babassu, *bacaba*, *bacuri*, *baru*, *buriti*, *cagaita*, *cajá*, coconuts, *cupuaçu*, *guariroba*, honey, *murici*, *pequi* and *umbu* in various forms.

Since 2009, Law 11,947 provides that at least 30% of the total funds transferred by the National Education Development Fund (FNDE) should be used to purchase food directly from family farms, marketed individually or collectively. This is another major institutional market for family farmers, especially those located close to large urban centers, where there are more students in schools. In order to help bring family farmers' productive organizations into the PNAE market, the Department of Family Farming

(SAF) developed the Nourish Brazil strategy, which seeks to overcome bureaucratic bottlenecks that thwart the matching of supply and demand of family farm products.

This project was later strengthened by the More Management Program, which developed a technical assistance methodology in organization, management, production and marketing for family farming enterprises (Afonso 2012). The More Management program provides technical assistance for productive organizations to promote the integration and qualification of collective enterprises of family farming for institutional and private markets. The program currently serves 461 cooperatives, of which 200 are fully dedicated to providing food for the National School Lunch Program (PNAE). On the other hand, health and sanitary regulations of the Single System of Care for Agricultural Sanitation (SUASA) at times impose severe limits on family and community production and marketing.

7.3.3 Agro-Ecology and Organic Production

In addition to the National Plan for the Promotion of Chains of Socio-Biodiversity Products, the involved ministries established the National Policy for Agro-Ecology and Organic Production (PNAPO) in 2011. The policy aims to integrate, coordinate and adapt policies, programs and actions to induce the agro-ecological transition and organic and agro-ecological production, contributing to sustainable development and quality of life, through the sustainable use of natural resources and the supply and consumption of healthy foods. The PNAPO is run by two bodies: the National Commission for Organic Production and Agro-Ecology (CNAPO) and the Inter-Ministerial Committee for Agro-Ecology and Organic Production (CIAPO). Although the focus is different from the sustainable use of biodiversity, these committees help implement and monitor the socio-biodiversity agenda, within the different spheres of the federal government.

7.3.4 Traditional Peoples and Communities

The National Policy for the Sustainable Development of Traditional Peoples and Communities (PNPCT), set forth by Decree 6040 in 2007, aims to promote sustainable development for traditional peoples and communities, emphasizing the recognition, strengthening and guarantee of their territorial, social, environmental, economic and cultural rights, with respect for and appreciation of their identity, forms of organization and institutions. Traditional peoples and communities are officially defined as being culturally different groups who recognize themselves as such, have their own forms of social organization, occupy and use territories and natural resources as a condition for their cultural, social, religious, ancestral and economic reproduction, using knowledge, innovations and practices generated and transmitted by tradition.

Coordination and implementation of PNPCT is the responsibility of the National Commission for Sustainable Development of Traditional Peoples and Communities (CNPCT), created in 2006 and composed of 15 representatives of federal authorities and 15 representatives of non-governmental organizations. The CNPCT is chaired by the Ministry of Social Development and Fight against Hunger and the Executive Secretary is the Ministry of the Environment, through the Secretariat of Extractivism and Sustainable Rural Development (SEDR). The representatives of civil society include Amazon extractivists, *caiçara* fishers, *fundo de pasto* communities, *terreiro* communities, *quilombolas*, *faxinais*, *geraizeiros*, *pantaneiros*, artisan fishers, Pomeranians, indigenous peoples, Gypsies, babassu palmnut crackers, *retireiros* and rubber tappers. Cerrado

peoples and traditional communities are included in the CNPCT through *geraizeiros*, indigenous peoples and babassu palmnut crackers.

Indigenous peoples do not feel entirely comfortable in the broad official category of Traditional Peoples and Communities and Family Farmers (PCTAFs), especially because of many diverse ethnic identities, land conflicts and, in some areas, high rates of suicide and even talk of collective suicide (MOPIC representative at stakeholder consultation).

7.3.5 Indigenous Policy

The Brazilian Constitution of 1988 guarantees indigenous peoples the right to usufruct of the natural resources of the lands they have traditionally occupied, which remain federal property. Indigenous lands are the largest intact areas of the Cerrado and have less deforestation than official protected areas classified for either integral protection or sustainable use. Indigenous hunting and gathering typically constitute forms of sustainable use of biodiversity. However, logging, small-scale mining (*garimpo*) and poaching are threats to biodiversity in these areas.

Indigenous policy is the responsibility of the National Indigenous Foundation (FUNAI), within the Ministry of Justice (MJ). There is political opposition to demarcation of indigenous lands, who want to grant to the National Congress the authority to define which lands are indigenous.

In 2012, the National Policy of Territorial and Environmental Management of Indigenous Lands was established. Although indigenous lands are not "conservation units" in the national system (SNUC) or protected areas according to IUCN criteria, they can be considered *de facto* protected areas, based on deforestation rates and other indicators of biodiversity conservation. There is now a small grants program called GATI, coordinated by ISPN, to support specific projects for: 1) territorial and environmental ethno-management; 2) environmental conservation and recovery; and 3) sustainable productive activities. Three of the regional nuclei are in the Cerrado.

7.4 Development Policies

The main development policy in recent years has been the Program to Accelerate Growth (PAC), which is focused on public infrastructure works and is beginning a second phase. At the moment, however, priorities are economic adjustment, reduction in government spending – or at least the budget deficit – and resumption of economic growth.

Social development and inclusion has been promoted through family stipends and benefits of various kinds, especially since 2003. With aging, rural pensions are critically important in the countryside for the elderly and for local economies. The Unified Health System (SUS) provides free public health care. The Light for All Program has provided rural electrification and the My House My Life Program has built millions of low-income housing units. These income redistribution policies may reduce environmental pressure on the part of small farmers, who receive cash, goods or services and are therefore under less economic pressure to produce and sell food.

One of the most relevant development programs for family farmers is the National Program to Strengthen Family Farming (PRONAF), which provides rural credit. To have

access, farmers need PRONAF Eligibility Declarations (DAPs). Such declarations and credit are highly concentrated in the Southern Region and in Minas Gerais. On the other hand, rural credit requires the adoption of high-input technology and defaults can lead to loss of property. It is still important to find ways to decrease production costs and increase prices paid to farmers.

7.5 Land Tenure and Land Use Policies

On the whole, land tenure in Brazil is highly concentrated. The open frontier of the past, which received millions of migrants from other parts of Brazil, closed in the 1960s and 1970s, in part because land that was public became large rural estates, many of which were forms of real estate speculation (Sawyer 1984). Even so, there are about a million small family farmers in the Cerrado, with small areas and modest income from rural production, often including milk and eggs (Peres *et al.* 2006).

The Ministry of Agriculture, Livestock and Supply (MAPA) deals with commercial agriculture, while the Ministry of Agrarian Development (MDA) deals with small farmers. The National Institute of Land Settlements and Agrarian Reform (INCRA) is within the MDA. In the 1970s and 1980s, agrarian reform settlements were mostly in the Amazon, but social movements now demand better locations in the South, Southeast, Northeast and Center-West. Access to land in agrarian reform settlements requires expropriation of land, which is now expensive in the Cerrado, while government budgets face large deficits. Settlements are often created on degraded land that was pasture or cropland. They maintain complex mosaics of land use, as compared to monocultures and pastures (*Cadernos do Diálogo* 2011). Some of them have agroforestry systems, contributing to the return of biodiversity and connectivity among fragments. INCRA also creates Agroextractive Settlement Projects (PAEs).

With regard to land use planning, Brazil has decades of experience with Ecological-Economic Zoning (EEZ) by state authorities, especially in the Amazon (Schubart 1992). Technically, it has been difficult to combine environmental and socioeconomic data at the scale needed. The current situation of EEZ planning in each state of the Cerrado varies from scales of 1:1,000,000 to 1:50,000. The states that are farthest advanced are Mato Grosso do Sul and Minas Gerais.

In practice, it has also proven difficult to enforce zoning within the existing legal structure, based on private property. On the other hand, a combination of zoning with the Forest Law, which requires the same percentage of Legal Reserve for all properties regardless of location, could make application of the law more rational in ecological and economic terms, as well as making it more feasible in practice.

7.6 Institutions for Implementation of Resource Management Policies

The governmental institutions involved in the design, implementation and monitoring of natural resource management policies described in the following sections are federal, state, municipal and academic.

7.6.1 Federal Institutions

The federal Ministry of the Environment administers the following agencies: the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), the Chico Mendes Institute of Biodiversity Conservation (ICMBio), the National Water Agency (ANA), the Brazilian Forest Service (SFB) and the Rio de Janeiro Botanical Garden (JBRJ). Within the MMA, in addition to the Executive Secretariat, the most relevant secretariats for implementation of natural resource policy are biodiversity and forests (SBF), extractivism and sustainable rural development (SEDR), climate change and environmental quality (SMCQ), water resources and urban environment (SRHU) and institutional coordination and environmental citizenship (SAIC). A separate secretariat is now being created for forests.

IBAMA was created in 1989, unifying the agencies responsible for forests, fishing and rubber with the secretariat of environment. It is responsible for environmental licensing. ICMBio was split off from IBAMA in 2008, with specific responsibilities for Brazil's protected areas under SNUC. ICMBio also collects and makes available many kinds of data about biodiversity (Silva *et al*. 2015).

Each official conservation unit has its own management board. The boards of federal conservation units are chaired by the chief of the unit, an ICMBio employee. In some cases, there are mosaics of protected areas, for example the Sertão Veredas Peruaçu, in northern Minas Gerais.

ANA was described in the section on water resources policy (7.2.3). Water resource management is typically the responsibility of state environmental agencies. At the same time, however, there is some conflict with companies and agencies responsible for generating hydroelectric power, which are under the Ministry of Mines and Energy (MME).

The Rio de Janeiro Botanical Garden (JBRJ) is much older, having been founded in 1808, before Brazil's Independence. It does research on plants all over Brazil and participated in the stakeholder consultations for the Cerrado ecosystem profile (Martinelli 2014; Martinelli and Moraes 2013).

The SFB, created in 2006, promotes forest-based activities; supports training, research and technical assistance for the implementation of forestry activities; carries out the National Forest Inventory and manages the National Forest Development Fund (FNDF). The National Forest Inventory aims to provide information about area of forest cover and different land uses, dynamics of fragmentation, health and vitality of forests, diversity and abundance of forest species, biomass, carbon stocks and soil characteristics under forests. Socioeconomic data includes major uses and perceptions of forest products and services by local people.

The participatory federal environmental councils connected to MMA are the National Environment Council (CONAMA), the National Biodiversity Commission (CONABIO), the National Cerrado Commission (CONACER) and the National Council of Water Resources (CNRH). At the inter-ministerial level, the Commission of Sustainable Development Policies and National Agenda 21, created in 1997, has not been active.

The Green Protocol, which places restrictions on access to bank credit, as well as green procurement policies on the part of government, as proposed by the MMA, could be a means to limit unsustainable practices and to encourage sustainable production in general. Banks may also be held liable for environmental impacts of their investments.

The National Commission of Sustainable Rural Development (CONDRAF), connected to the MDA, is directly concerned with environmental sustainability. There is a specific inter-ministerial committee on climate change (CIM), created in 2007, and an Executive Group (GEx), but no such inter-ministerial committee exists for biodiversity or water. Inter-ministerial committees do not include nongovernmental representatives. Other relevant federal councils that directly influence natural resources management are those mentioned above in the sub-sections on natural-resource, water and socio-environmental policies: CONAMA, CONABIO, CONACER, CNRH, CNPCT and CNAPO. It is difficult for civil society to mobilize qualified representatives to participate effectively in all of them.

The Ministry of National Integration (MI) includes three regional development agencies. The Superintendency of Development of the Center-West (SUDECO) covers a large part of the Cerrado, *i.e.* the states of Goiás, Mato Grosso, Mato Grosso do Sul and the Federal District. The Superintendency for Development of the Northeast (SUDENE) and the Amazon (SUDAM) are important in the eastern and northern parts of the hotspot. These regional agencies mostly seek to promote regional economic and social development, but have incorporated concerns with environmental sustainability. For example, SUDECO supports 'National Integration Routes' that link local socio-biodiversity productive arrangements (clusters) in the Cerrado (ECODATA 2015).

The other federal ministries and agencies that are most relevant to biodiversity conservation are those for agrarian development (MDA), agriculture, livestock and supply (MAPA), science, technology and innovation (MCTI) and strategic affairs (SAE). The latter ministry was abolished in October 2015. MDA is a close ally of MMA (ISPN observations). MAPA is more interested in production and export of commodities than in the environment, but it also works with organic production, which is seen as a business opportunity. MCTI works with climate change, competing with the MMA, and now also works with biodiversity. The National Space Research Institute (INPE) uses sophisticated technology to monitor clearing, burning and the scars they leave. SAE, another ministry, which has a sub-secretariat on sustainable development, has worked mainly with regularization of land tenure in the Amazon, but now also works with the forum of governors of Central Brazil, *i.e.* the Center-West region plus Tocantins, and could focus on sustainability in the Cerrado. The Secretariat of Micro and Small Business (SMPE), downgraded from ministerial status in 2015, works to simplify regulations for small-scale entrepreneurs, an initiative that could be extended to small farmers and local communities. Some of these secretariats have recently been subsumed by ministries, in order to reduce government spending, but their missions continue.

The federal government works on environmental issues together with various intergovernmental organizations, including the United Nations Development Program (UNDP), the United Nations Environment Program (UNEP), the Food and Agriculture Organization (FAO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO). They are implementing agencies of the Global Environment Facility (GEF) in its focal areas, which are related to multilateral environmental

agreements. International cooperation is coordinated by the Brazilian Cooperation Agency (ABC) of the Ministry of External Relations (MRE) and the Secretariat of International Affairs (SEAIN) of the Ministry of Planning, Budget and Management (MP).

7.6.2 State Institutions

There are ten states in the hotspot in Brazil, as well as the Federal District, with their respective institutions. The National Environment System (SISNAMA) includes federal, state and municipal authorities and promotes nationwide and statewide exchanges of information and experiences. Regionally, there is also a specific Forum of State Secretaries of Environment in the Cerrado, in which the new administration in the Federal District plans to play a leadership role.

State agencies in the Cerrado are uneven in terms of concern about and effective action on environmental affairs. All are now restricted by budget cutbacks, which often impose mergers with development-promotion secretariats. Minas Gerais is the most advanced. Mato Grosso has pioneered work to implement the Forest Law. Mato Grosso do Sul stands out for having completed its ecological-economic zoning, although implementation is another matter. The Secretariat of Environment of the Federal District created a Center of Excellence for Cerrado Studies called 'Cerratenses' at the Brasília Botanical Garden (JBB) and is planning to set up a processing plant for agro-socio-biodiversity products from the surrounding region.

The states have rural extension agencies, which are now part of a National Rural Extension Agency (ANATER). Stakeholder consultations highlight the need to make extension effective, move beyond 'green revolution' technologies and use modern means of communication and peer-to-peer techniques, in addition to traditional individual in-house technical assistance. When technical assistance is required for credit, technical parameters are needed to support activities other than conventional crops and livestock (Carrazza 2015).

7.6.3 Municipal and Other Local Institutions

In addition to the Federal District, there are 1,408 municipalities with at least part of their area included in the official Cerrado Hotspot. The great majority have small populations and budgets. Micro-Regions and Meso-Regions defined by the IBGE are used to aggregate statistical data, but not for political or administrative purposes. From 1995 to 2010, there were Rural Territories and 'Rural Sustainable and Solidary Development Plans' led by the MDA. Now there are 32 Citizenship Territories in the Cerrado Hotspot, also made up of groups of municipalities. These territories are designed to promote different dimensions of citizenship. It is not clear to what extent they are functional or if they embrace environmental causes.

The Federal District, together with 19 municipalities in the neighboring state of Goiás and two in Minas Gerais, are part of the Integrated Development Region of the Federal District and Surroundings (RIDE).

Table 7.1. Citizenship Territories in the Cerrado.

Águas Emendadas – DF/GO/MG	Lençóis Maranhenses/Munin – MA
Alto Jequitinhonha – MG	Médio Jequitinhonha – MG
Alto Rio Pardo – MG	Noroeste – MT
Baixada Cuiabana – MT	Noroeste de Minas – MG
Baixada Ocidental – MA	Pontal do Paranapanema – SP
Baixo Araguaia – MT	Reforma – MS
Baixo Jequitinhonha – MG	Serra Geral – MG
Baixo Parnaíba – MA	Sertão de Minas – MG
Bico do Papagaio – TO	Sertão do São Francisco – BA
Chapada Diamantina – BA	Sudeste – TO
Chapada dos Veadeiros – GO	Sudoeste Paulista – SP
Cocais – MA	Vale do Itapecuru – MA
Cocais – PI	Vale do Ivinhema – MS
Cone Sul – MS	Vale do Mucuri – MG
Grande Dourados – MS	Vale do Paranã – GO
Jalapão – TO	Vale do Rio Vermelho – GO

7.6.4 Academic and Scientific Organizations

Another set of governmental institutions involved in environmental affairs are public universities and research institutes. There are now many public colleges and universities in all states, both in the capital cities and the interior, where they have more contact with local realities. Research and training are supported by the Ministry of Science, Technology and Innovation (MCTI), especially through the National Research and Technological Development Council (CNPq), and the Ministry of Education (MEC), especially through the Coordination for the Improvement of Higher Education (CAPES). Faculty are required to do research and extension, although these are secondary to teaching. The states have research support foundations (FAP), which are described in Chapter 11, on investment.

A wealth of data, unparalleled in most developing countries, is produced by the Brazilian Institute of Geography and Statistics (IBGE) and the National Space Research Institute (INPE). IBGE has developed sustainable development indicators (IBGE 2015). There is no specific federal research institute for the Cerrado, as there are for the Amazon, which has the Amazon National Research Institute (INPA) and the Goeldi Museum (MPEG), and for the Semi-Arid region, which has the National Semi-Arid Institute (INSA). A national research institute for the Cerrado could be proposed in order to help fill the numerous gaps in knowledge and carry out more applied research, especially as regards ecology, economy and sociology. What exists is the Scientific and Technological Network for the Conservation and Sustainable Use of the Cerrado (COMCERRADO), a network of researchers supported by the MCTI focused primarily on biological inventories (Machado 2015).

7.7 Policy and Governance in the Cerrado Hotspot

Brazil started paying attention to the Cerrado as a result of symposia on the Cerrado carried out by researchers in the 1960s. Only then was the name modified from the plural *cerrados* to refer to a unified, singular ecosystem. Government initiatives aimed at conservation and sustainable use of the Cerrado biome are recent, with the first dating back to the preparation of the Rio-92 UNCED Conference. The Constituent Assembly of 1988 did not give the Cerrado, the Caatinga or the Pampas the status of national heritage regions, as it did with the Amazon, the Pantanal, the Atlantic Forest and even the Serra do Mar, which is not a biome.

After the 1960s, the Cerrado was considered to be the main site for expansion of the agricultural frontier, seen by nationalists as the new "breadbasket of the world." Its agricultural occupation took place under the aegis of "conservative modernization" dominated by large-scale commodity production, intensive use of capital and building of infrastructure and new roads, with little or no concern for environmental impacts.

The years after the return to democracy in Brazil in 1985 were marked by major social mobilizations. Environmental organizations, social movements and researchers preparing for the Rio-92 Conference drew attention to the fast pace of Cerrado loss, involving erosion, habitat destruction, decrease of fauna and privatization of areas used by local communities. New civil society organizations and social movements united in the Brazilian NGO Forum. Organizations linked to defense of the Cerrado held parallel meetings and were the embryo of the Cerrado NGO Network.

During the official conference, civil society from various countries participated in the parallel ‘Global Forum 92’. The International Forum of NGOs discussed the same topics as the official conference, and various international covenants were signed, including the International Treaty on the Cerrado, which contained a brief summary of the situation and a list of actions to be taken to curb deforestation and loss of biodiversity, water and territories (La Rovere and Vieira 1992). Afterwards, another meeting of environmental organizations held in Goiânia launched the Cerrado NGO Network. During the IV National Meeting, held in 1999 in Montes Claros, Minas Gerais, it approved the Charter of Principles of the Cerrado Network. A document delivered to the Ministry of Environment pointed out the urgency of setting up a specific program for the conservation and sustainable use of the Cerrado.

After the 2002 federal elections, the Cerrado Network sent a letter to the transition team with three main demands: (a) inclusion of the Cerrado in the Constitution as National Heritage; (b) creation of a comprehensive conservation and sustainable use program; and (c) creation of a specific secretariat for the biome within the MMA, as already existed for the Amazon. The first demand has not been met to date, the second was met, at least in terms of intentions, and the third has resulted in a minor change in the administrative structure so far.

7.7.1 Sustainable Cerrado Program (PCS)

The demand by the Cerrado Network to the MMA for the creation of a comprehensive conservation and sustainable use program was the most feasible. During the celebrations

of the first National Cerrado Day, on September 11 of each year, the MMA published Ordinance 361/2003, creating a working group to prepare a program for the conservation of the Cerrado. The working group included representatives of the Cerrado Network, other civil society organizations, federal agencies and state governments. Several public consultations around the biome were held. In September 2004, it presented a proposal for the National Program for the Conservation and Sustainable Use of the Cerrado, which became the Sustainable Cerrado Program (PCS). In early 2004, the Secretary of Biodiversity and Forests created centers for each biome. The Cerrado and Pantanal Center (NCP) was intended to facilitate the integration of MMA actions in the two biomes. The Sustainable Cerrado Program and the National Sustainable Cerrado Program Commission (CONACER) were established in 2005. The commission has equal participation between representatives of government and civil society and is responsible for monitoring implementation of the program.

The aim of the program is to promote conservation, restoration, recovery and sustainable management of natural and agricultural ecosystems as well as appreciation and recognition of their traditional populations, seeking to reverse negative social and environmental impacts through: (i) biodiversity conservation; (ii) sustainable use of biodiversity; (iii) traditional communities and family farmers; and (iv) sustainable agriculture, livestock and forestry. Funding and effectiveness have not met expectations.

7.7.2 GEF Sustainable Cerrado Initiative

In order to carry out program guidelines, the NCP was already in negotiations with the World Bank to submit a proposal to the GEF, which received preliminary approval in November 2005 with an initial US$ 13 million grant. Officially called the GEF Sustainable Cerrado Initiative, the project aimed to promote increased biodiversity conservation and enhance the sustainable use of natural resources from the Cerrado biome, through appropriate policies and practices (Viana 2009). Negotiations over this project, however, turned out to be more complex than originally anticipated, and funding only began in 2009. Two states were involved: Goiás and Tocantins. A seminar in June 2015 presented some of the results, with greater focus on the ministerial level than on the states, where environmental secretariats were apparently strengthened.

7.7.3 PPCerrado

In 2009, the MMA released its proposal for the Action Plan for the Prevention and Control of Cerrado Deforestation (PPCerrado), similar in many ways to the plan for the Amazon (PPCDAm), which was considered highly successful. The new version of PPCerrado launched in 2010 stressed the integration of state and local government efforts to reduce deforestation and fires. It also made clear that without the involvement of the private sector, especially agribusiness, it would not be possible to reduce the loss of the biome (MMA 2011). While the Sustainable Cerrado Program (PCS) can be characterized as guiding and directive, the PPCerrado is more operative, containing actions, detailed goals and deadlines. The PPCerrado proposes an investment of US$ 100 million in four thematic areas: (i) sustainable production activities; (ii) monitoring and control; (iii) protected areas and land use planning; and (iv) environmental education. Two projects now under way support the PPCerrado in Brazil: the Program to Reduce Deforestation and Burning in the Cerrado and the Project on Prevention, Monitoring and Control of Illegal Burning and Forest Fires in the Cerrado (Cerrado-Jalapão Project), described in Chapter 11. It focuses on 52 priority municipalities where there has been the most

deforestation. These municipalities, which constitute only 4% of the 1,408 in the Cerrado biome, accounted for 44% of the deforestation and 22% of the remaining vegetation during 2009-2010 (MMA 2015). The results of PPCerrado have not met expectations, however.

7.7.4 Program to Reduce Deforestation and Burning in the Cerrado in Brazil

Coordinated by the MMA and using British funds of US$ 4.3 million, from the Department for Environment, Food and Rural Affairs (DEFRA), the program's overall objective is to help mitigate climate change and improve natural resource management in the Cerrado by improving public policies and practices of farmers. There are two components: (i) rural environmental legalization, helping farmers comply with forest legislation through the environmental registry of rural properties and by recovering degraded areas; and (ii) preventing and fighting forest fires, strengthening capacity to prevent and fight forest fires at the federal, state and local levels, and promoting alternative farming practices to avoid the use of fire. The area covered by the program is the entire Cerrado Hotspot, focusing on federal protected areas (Chapada das Mesas, Serra da Canastra and Veredas of Western Bahia) and a few municipalities on the list of priorities for prevention and control of deforestation and burning in Maranhão, Tocantins, Piauí and Bahia.

7.7.5 Cerrado-Jalapão Project

The Program for Prevention, Control and Monitoring of Illegal Burning in the Cerrado in Brazil**,** coordinated by the MMA, supported by financial and technical German Official Cooperation (GIZ) and implemented by federal and state executing agencies, carries out a set of activities aimed at improving the prevention and control of fires and burning in the Cerrado, particularly in the region of Jalapão (Tocantins).

7.7.6 CAR-FIP Cerrado Project

The CAR-FIP Cerrado Project is part of the Brazil Investment Plan, through the Forest Investment Program (FIP) under the Climate Investment Fund (CIF). Carried out by the MMA in partnership with state environmental agencies, it will support implementation of the Rural Environmental Registry (CAR) in the Cerrado in order to reduce deforestation and forest degradation and improve the sustainable management of forests, aiming at reductions in CO_2 emissions and protection of forest carbon stocks. The project is budgeted for US$ 32.5 million through a loan agreement with the FIP as well as US$ 17.5 million in matching funds. The activities focus on implementing the CAR in selected municipalities in the biome, by: (i) structuring services; (ii) deeding small family farm holdings; (iii) providing equipment and vehicles to enable inclusion in the CAR; (iv) publicity campaigns; (v) mobilizing farmers and their organizations; (vi) training local facilitators to carry out registration; (vii) strengthening state and municipal partners; (viii) thematic databases; (ix) satellite images; (x) monitoring; (xi) analysis of the CAR results; (xi) a system for joining the Environmental Adjustment Program (PRA); and (xii) diffusing technologies for environmental reclamation of degraded areas.

7.7.7 Forest Service

The SFB has three specific actions for the Cerrado biome: (1) completion of the Forest Inventory, now under way; (2) development of strategies to promote community and family forest management; and (3) providing technical assistance to strengthen

community-based forest enterprises through the FNDF. In 2013, the FNDF offered technical assistance to five projects in Minas Gerais and Goiás, benefiting 500 families that collect *pequi*, *buriti*, *mangaba*, *baru* and sour coconut, among other products. There is a specific study about community and family forest management in the Cerrado and another about potential sources of supply for an agroindustry in the Federal District.

7.8 Policy Context in Bolivia

After the election in 2006 of Evo Morales, the country's first indigenous President, Bolivia's constitution was revised in 2009 to introduce major reforms benefiting many of the country's peasant and indigenous communities. Morales was reelected in 2014. Internationally, President Morales is known for championing environmentalism. He has accused certain countries of committing 'ecocide' against 'Mother Earth'. The Law of the Rights of Mother Earth was passed in 2010, allowing citizens to sue on behalf of (and as part of) Mother Earth.

However, such measures have done little to stop environmental degradation in Bolivia, which loses between 200,000 and 300,000 hectares of forest each year. This jeopardizes endangered species like the giant otter (*Pteronura brasiliensis*), spectacled bear (*Remarctos ornatus*) and jaguar (*Panthera onca*).

Laws halting deforestation have been eased. For example, the 2013 Law of Restitution of Forests excused landowners from paying fines for land they had illegally cleared before 2011. In 2015, small-scale farmers won support for a proposal to expand from five to 20 hectares the limits on the amount of land small producers are allowed to deforest. The government party has given expansion of the agricultural frontier a fundamental role in development. The expansion of soy production has contributed to deforestation, especially in the southeastern state of Santa Cruz, where the Bolivian Cerrado is located.

In 2009, the Ministry of Sustainable Development and Environment was divided into two new ministries, the Ministry of Environment and Water (MMAyA) and the Ministry of Rural Development and Land (MDRyT). The MMAyA develops and implements public policy, laws, plans and projects for conservation, adaptation and sustainable use of natural resources. It is also responsible for irrigation and basic hygiene with a focus on catchment areas. Bolivia's National Service for Protected Areas (SERNAP) currently manages 21 protected areas.

There are three UNESCO Biosphere Reserves in Bolivia. The Ulla-Ulla and Pilón-Lajas reserves are in the Andes or foothills in the northwest, while the Beni Biosphere Reserve is located at the convergence of three biogeographical zones: the Amazon, Chaco and Cerrado.

Recent policy making in Bolivia has tended to emphasize domestic development based on natural resources. It may also be more difficult to implement conservation measures in the context of administrative decentralization and popular participation.

Another important environmental issue has been the construction of hydropower plants within Bolivia on tributaries of the Amazon River to the north or of the Paraná River to the south, along the borders or downstream in Brazil, as in the case of Jirau and Santo

Antônio in Rondônia. The decisions on such projects are subject to influence by Brazilian economic interests.

7.9 Policy Context in Paraguay

The Secretariat of Environment (SEAM) is Paraguay's ministry of environment. The country has 22 protected areas in the National System of Protected Wildlife Areas (SINASIP) under the General Directorate of Protection and Conservation of Biodiversity (DGPCB) of SEAM. The Institute of Environmental Development and Economy (IDEA) declares areas such as Laguna Blanca as Natural Heritage.

IDEA evaluates economic, social and environmental values for companies in Paraguay, ensuring that they comply with social and environmental regulations, drawing up management plans and granting licenses and offering expertise on the use of agro chemicals and managing the environment in accordance with sustainable development.

The area including the Paso Bravo and the Serranía San Luis National Parks is being proposed as a UNESCO Biosphere Reserve. The adjacent areas of the Pantanal and Atlantic Forest biomes on the Brazilian side of the border have been nominated as UNESCO Biosphere Reserves.

7.10 Commitments under Global and Regional Agreements

Brazil, Bolivia and Paraguay are all committed to the Convention on Biological Diversity and the various other Rio-1992 agreements, particularly on climate, desertification and forests, as well as the Basel, Rotterdam, Stockholm and Marrakesh agreements. They are also committed to the Millennium Development Goals (MDG), which include sustainable development, and to the post-2015 process, with the Sustainable Development Goals (SDGs) proposed at the Rio+20 conference in 2012, with 17 goals and 169 targets. Goal 15 ("Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss") is especially relevant and can justify increases in funding.

With regard specifically to biodiversity, the three countries are committed to the Strategic Plan for Biodiversity 2011-2020, framed by parties to the CBD at the 10th COP in 2010, with its 20 "Aichi Targets." Brazil has decided to conserve 17% of each biome (Maretti 2015a). As seen earlier in this chapter, there are also commitments to implement Ramsar, Man and the Biosphere and World Heritage sites.

The participation of Brazil in the BRIICS (Brazil, Russia, India, Indonesia, China and South Africa), IBAS (India, Brazil and South Africa) and BASIC (Brazil, South Africa, India and China) groupings, although they are not regional associations defined by geography, may be more important than American or Latin American regional groupings in terms of influencing decisions on policies that affect the use of natural resources (Sawyer 2011).

At the hemispheric level of the Americas, Brazil, Bolivia and Paraguay all participate in the Organization of American States (OAS). Relations with Brazil were strained when the OAS condemned it for building the Belo Monte hydropower plant on the Xingu River, and Brazil withdrew its ambassador, with no replacement as yet.

Within South America, Brazil and Bolivia participate in the Amazon Cooperation Treaty Organization (OTCA), which involves explicit concern with the environment. Ties with Mercosul, which includes all three countries, are weak, although there have been some regional negotiations regarding environment. There is no similar concern with South American savannas.

7.11 Conclusions

Generally speaking, environmental governance may be difficult in the next few years in Brazil because of economic and political constraints. In political terms, the Cerrado includes ten different states and 1,408 municipalities, and the trend is to decentralize from the federal level to state and local levels. However, economic interests tend to be stronger than environmental interests at the lower levels than at the central level. In economic terms, it is essential to develop environmental strategies, policies, programs and projects that take more account of costs and benefits, as well as who shoulders the costs versus who enjoys the benefits. This requires a socio-ecosystemic perspective.

There are no intermediate levels of government, like counties in the United States, which would be needed for environmental management on an inter-municipal scale. The Territories of Citizenship involve groups of municipalities. Although they do not have legal powers, they could be useful for joint efforts. As mentioned elsewhere, watershed committees have little influence over land use.

Participation of civil society has been structured into many boards, commissions and conferences at all levels, especially since 2003. In practice, however, qualified and representative participation is problematic, as is effective decision making. Civil society representatives tend to defend their own interests rather than the common good. It may be necessary to aim for governance that may not be perfect, but is ‘good enough’ (Grindle 2012).

It should be noted that there are no global or regional agreements for savannas, as there are for forests, desertification and oceans, among other broad environmental categories. This lack of international standing limits both national action and international cooperation for the Cerrado and all other non-forest and non-desert terrestrial ecosystems. Brazil could provide leadership in focusing global attention on savannas, as it did with desertification more than two decades ago.

8. CIVIL SOCIETY CONTEXT OF THE HOTSPOT

This chapter provides an extensive examination of the context of civil society players and their potential direct or indirect roles in conservation and sustainable development in the Cerrado Hotspot. For the purposes of this chapter, civil society is defined, as per CEPF, as all the international, national, sub-national and local non-government actors that are relevant to the achievement of conservation outcomes and strategic directions described in Chapter 13. This includes, at least, local and international conservation NGOs, economic and community development NGOs, scientific/research/academic institutions (including local universities), professional organizations, producer and sales associations, religious organizations, media, advocacy groups, outreach/education/awareness groups, education, social welfare, indigenous rights, land reform and the parts of the private sector concerned with the sustainable use of natural resources.

In Brazil, indigenous organizations, labor unions (especially of rural workers, including family farmers) and professional and religious organizations are not primarily environmental, but they are nonetheless important to the environment. Women's organizations can also be relevant, and women are very active in other types of organization.

There can also be associations at all levels (federal, state and local) of the legislative and judicial branches of government, as well as associations of state and local governmental authorities or individuals who are not part of the formal structure of government.

Although in the Brazilian legal and political context it may be difficult to justify donor support to for-profit companies or individuals, the private sector is eligible for CEPF grants. Government officials and employees can have their own organizations that are considered civil society.

8.1 Civil Society Organizations

Until the 1980s, when democracy was re-established in Brazil, there were relatively few CSOs mediating between citizens and governments (Schmitter 1972). Since then, there has been large-scale multiplication of a wide range of organizations and a trend for them to spread the scope of their activities from the Southeast and South to the North, Northeast and Center-West.

There are thousands of civil society organizations in Brazil. According to the FASFIL Mapping of Private Foundations and Non-Profit Associations (ABONG *et al.* 2012), in 2010 there were 290,700 such foundations and associations in the country. They were focused predominantly on religion (28.5%), employers and professional associations (15.5%) and development and advocacy (14.6%). The areas of health, education, research and social assistance, having to do with government policies, totaled 54,100 entities (18.6%). There were 2,242 organizations (0.8%) specifically for environment and animal protection in Brazil, a small percentage – less than 1% – but still a significant number.

Although the proportion of CSOs dedicated to the environment as such is small, all the other organizations deal with environment in one way or another. They all participate in decisions affecting the environment through their participation in councils, commissions and conferences of various kinds. They also affect environment through their influence

on the private and public behavior of their members. This magnitude of civil society organizations has few parallels in other countries where CEPF works. The size and complexity make it difficult to carry out specific surveys of their activities and their capacities, as has been done in some other hotspots. Some generalizations are nonetheless possible, as explained below. The main point is that local environmental CSOs can only achieve objectives through working together with the rest of society.

According to FASFIL, the regional distribution of CSOs was unequal, although not very different from the distribution of population. The formal organizations surveyed were concentrated in the Southeast (44.2%), Northeast (22.9%) and South (21.5%), being less present in the North (4.9%) and Center-West (6.5%). In 2010, 2.1 million people were employed in these CSOs, more than 1% of the total population. They were mostly women (62.9%), *i.e.* almost two women for every man in CSOs. The average wages were US$ 400 (R$ 1,667) per month, just above twice the minimum wage.

This section describes the various types of CSOs in Brazil, Bolivia and Paraguay as a whole and cites examples, without being exhaustive, especially as regards the local level. Their activities in the hotspot are described in section 8.2. The CSOs described in the subsections below are classified in ten categories as environmental movements, socio-environmental movements, workers and family farmers, indigenous peoples, academic, private sector, semi-governmental organizations, coalitions and fora, philanthropy and media. Political parties are also relevant as representatives of civil society, but they are not included here as a category.

8.1.1 Environmental Movements

The National Environment Council (CONAMA) maintains a National Registry of Environmental Organizations (CNEA) with contact information for each organization that sends in an application and shows that environment is part of its bylaws. The Center-West region, most representative of the Cerrado, lists 74 member organizations. The Northeast has 123, the Southeast 283, the South 125 and the North 44, for a total of 649 in Brazil, 28.9% of the 2,242 environmental organizations in the FASFIL survey. Of the 649 organizations registered in CNEA in Brazil, the Center-West has only 11.4%, behind only the North, which has the smallest population of the macro-regions.

Historically, the Brazilian Foundation for Sustainable Development (FBDS) has played a pioneer role in defense of the environmental cause in Brazil (Franco and Drummond 2008). The environmental movement was originally strongest in Rio Grande do Sul and São Paulo, in the most developed regions, but it has spread to other regions, especially when social and environmental priorities are linked.

The largest international environmental CSOs present in Brazil include WWF, CI and The Nature Conservancy (TNC). WWF and CI both have legal status as Brazilian organizations. As can be seen on their websites, the three are active all over Brazil. TNC was instrumental in negotiating application of the Tropical Forest Conservation Act (TFCA) with the United States to swap debt for nature in Brazil starting in 2010. Greenpeace and Friends of the Earth have been active for many years, while the World Resources Institute (WRI) has recently established in Brazil to work with low-carbon economy. The World Conservation Union (IUCN) set up an office in Brasília. Although Indigenous and Community Conserved Areas (ICCAs), which are common in other

countries (Borrini-Feyerabend, Kothari, Oviedo 2004), are not yet well known in Brazil, the ICCA Consortium is now recruiting members in the country. The activities of international CSOs relevant to the Cerrado are described in Section 8.3.

The Socioenvironmental Institute (ISA) is a large, entirely Brazilian organization with main offices in São Paulo and Brasília and field operations among indigenous and non-indigenous local communities, primarily in the Amazon region and the state of São Paulo, but also in parts of the Cerrado Hotspot, as described in Section 8.3.

Friends of the Earth Amazonia (*Amigos da Terra Programa Amazônia*) has done important work on public policies in the Amazon, on management of fire and on the marketing of forest products, especially with regard to gastronomy. It plays an important role in dissemination of news clippings about the Amazon and the environment in general, with some overlap with the Cerrado.

The Boticário Group Foundation for Nature Conservation and the Society for Research on Wildlife and Environmental Education (SPVS), both located in Paraná, in southern Brazil, have been key actors in the Pro-Conservation Unit Network (REDEPROUC). The Boticário Group Foundation has organized seven Brazilian Conservation Unit Congress (CBUC) since 1997, bringing together conservationists from all over Brazil to discuss and take positions on conservation issues.

Since 1985, the Pro-Nature Foundation (FUNATURA), located in Brasília, has been a key player in conservation in Brazil. On a national scale, it played a leadership role in the late 1990s in the design of and negotiations over the law that governs the National System of Nature Conservation Units (SNUC). It works primarily in the Cerrado (see Section 8.3).

After working mostly on research in the Amazon, the Institute for Society, Population and Nature (ISPN), based in Brasília, has focused mainly on the Cerrado since 1995. As Technical-Administrative Coordination of the GEF-UNDP Small Grants Program and the *Programa de Pequenos Projetos Ecossociais* (PPP-ECOS), it has supported local communities in the Cerrado, the Caatinga and the Amazon. The ISPN also works with environmental management of indigenous lands. It is engaged in policy advocacy at the national level regarding rural development and public health regulations.

The Brazilian Forum of NGOs and Social Movements for Environment and Development (FBOMS), established during preparations for the Rio-1992 Conference, is a national umbrella network including dozens of CSOs that are primarily or at least significantly involved with the environment. It has 11 working groups, including Forests, Climate and Socio-biodiversity, among others, and participates in international networks. Its main office is in Brasília.

There are regional networks such as the National Council of Extractivist Populations (CNS, formerly the National Rubber Tappers Council), the Amazon Working Group (GTA), the Atlantic Forest Network (RMA), the Cerrado Network, the Pantanal Network and the Carajás Forum. There are various state networks focusing on more than one biome such as the Mato Grosso Forum for Environment and Development (FORMAD), which includes the Amazon, Cerrado and Pantanal. The Atlantic Forest Network is more

environmental than social, while other networks, in less devastated biomes to the north and west, tend more towards socio-environmental issues.

National thematic networks, without specific geographic focus, but which are active in or influence the Cerrado, include the Climate Observatory (OC), with 32 members, and the Brazilian Environmental Education Network (REBEA). The Brazilian Semi-Arid Education Network (RESAB) has both a thematic and a geographic focus. The Brazilian Environmental Information Network (REBIA) works to disseminate information. The Brazilian Local Agenda 21 Network (REBAL) works with Agenda 21 issues at the municipal level. The Consultants and Services for Alternative Agricultural Projects (AS-PTA) works with appropriate technological alternatives. The National Agroecology Association (ANA) promotes organic and agro-ecological methods all over Brazil. The Brazilian Association of Water Resources (ABRH) works with water. All of these thematic networks are present in the Cerrado, but could increase the attention they give to the hotspot and be more active, effective and engaged in relevant policy issues.

8.1.2 Socio-Environmental Movements

The most important national and regional associations or networks are listed below in Table 8.1. Some of them have specific working groups on subjects such as forests and climate.

Table 8.1. National and Regional Civil Society Organizations.

Acronym	Associations / Networks
ABONG	Brazilian Association of NGOs
APIB	Brazilian Indigenous Peoples Association
Articulação Pacari	Pacari Network
Caritas Brasileira	Caritas
CONAQ	National Coordination of Quilombola Communities
FBOMS	Brazilian Forum of NGOs and Social Movements for Environment and Development
REBEA	Brazilian Environmental Education Network
Rede Cerrado	Cerrado Network
REJUIND	Indigenous Youth Network

On the whole, despite their efforts, civil society associations and networks face difficulties keeping their organizations afoot and gaining any sway over public policy.

Since there are many more social CSOs than environmental CSOs in the hotspot, and the large national and international environmental CSOs are most active in other biomes, there might be a shortage of CSOs dedicated primarily to the environment, particulary in the Cerrado. At the same time, however, social movements have undergone a "greening" process, as they gain more concern about environmental issues. Meanwhile, a more limited "reddening" of environmental movements has stimulated their concerns over social dimensions. Thus, reference is made here to ‘socio-environmental’ or ‘eco-social’ organizations and movements, which play a strategic role.

The Brazilian Association of NGOs (ABONG), a nationwide network with headquarters in either Rio de Janeiro or São Paulo, depending on its coordination, is more involved in urban issues in the most developed regions of Brazil, although it has also spoken out on some environmental issues affecting the rest of the country.

The Amazon Working Group (GTA), the National Council of Extractivist Populations (CNS), and the Semi-Arid Network (ASA) tend to be more social than environmental, but are key stakeholders and protagonists regarding environment in general.

The Pastoral Land Commission (CPT), led by the National Conference of Catholic Bishops (CNBB), defends the interests of small farmers in rural areas and is increasingly concerned about the environment. The Marista Solidarity Institute (IMS) promotes social inclusion and human solidarity. The Catholic Church has a universal presence in Brazil, although it is stronger in areas of rural out-migration like Minas Gerais than in frontier and urban areas. The leadership of Pope Francis on "integral ecology" (Alves 2015) has begun making the work of the Catholic Church even more relevant to environmental stewardship.

The Federation of Organizations for Social and Educational Assistance (FASE), based in Rio de Janeiro, is an important organization providing support for socio-environmental initiatives in grassroots communities, including Mato Grosso.

8.1.3 Workers and Family Farmers

Workers in the formal sector are an official social category in Brazil. They are important in terms of public policy, especially since the Workers' Party took office in 2003. In some cases, workers' CSOs in urban areas or in industry provide direct or indirect support to rural CSOs or groups.

There are both urban and rural labor unions in every municipality in Brazil, including 1,408 of each kind in the official Cerrado biome. Rural labor unions such as the Rural Workers Union of Lucas do Rio Verde (STRLRV), in northern Mato Grosso, which denounced aerial spraying of pesticides, can make outstanding contributions involving rural workers and their organizations in environmental causes and increasing the visibility of socio-environmental issues.

Each local (municipal) labor union is affiliated with a state federation formally recognized by law. The Unified Workers' Center (CUT), the main national labor movement, has spoken out on environmental issues. There are now various other national worker organizations such as Labor Strength (*Força Sindical*), General Workers' Union (UGT), Confederation of Brazilian Workers (CTB), General Central of Brazilian Workers (CGTB), *Nova Central, Intersindical* and *Conlutas*.

The National Confederation of Workers in Agriculture (CONTAG) and the National Federation of Men and Women Workers in Family Agriculture (FETRAF) are more directly relevant to and involved in the environment. Officially, independent small family farmers are members of farmworkers' labor unions, under the CONTAG. FETRAF is informal. There are numerous cooperatives of both small and medium farmers, organized at the national level by the Brazilian Cooperative Organization (OCB). The National Union of Family Farmer Cooperatives and Solidarity Economy (UNICAFES), founded

in 2005 in Luziânia, Goiás, and based in Brasília, defends sustainable local development through cooperatives of small farmers.

There are various unofficial rural worker movements such as the Landless Workers' Movement (MST), the Small Farmers' Movement (MPA) and the Countryside Workers' Central (CTC), which have become "greener". *Via Campesina* is an international network.

8.1.4 Indigenous Peoples

Indigenous organizations merit specific attention because of the importance of indigenous lands for conservation of biodiversity and maintenance of ecological functions. They can also spread awareness about harmonious relations between nature and culture in the population at large.

The Union of Indigenous Nations (UNI), founded in 1980, and more recently the Brazilian Indigenous Peoples Network (ABIP) are the main nationwide indigenous organizations. There is also a National Commission of Indigenous Youth (CNJI) and an Indigenous Youth Network (REJUIND). Regional indigenous associations include the Coordination of Indigenous Organizations of the Brazilian Amazon (COIAB), the Network of Indigenous Peoples and Organizations of the Northeast, Minas Gerais and Espírito Santo (APOINME), other regional networks for the South, Southeast and Pantanal, the Federation of Indigenous Organizations of the Rio Negro (FOIRN) and the Mobilization of Indigenous Peoples of the Cerrado (MOPIC). At the more local level, there are associations, such as Vyty-Cati, for the Gê groups in Maranhão, Tocantins and Pará, Juruena Vivo, in the Juruena region of Mato Grosso, and Anaí Bahia, in Bahia.

The Missionary Indigenist Council (CIMI), also led by the Catholic Church's CNBB, has played and continues to play an important role in indigenous affairs all over Brazil. The Amazon Cooperation Network (RCA) includes some Cerrado indigenous or indigenist organizations. NGOs that work closely with indigenous peoples include the Socioenvironmental Institute (ISA), mainly in the Upper Rio Negro and the Xingu Indigenous Park; the Center of Indigenist Work (CTI), mainly in Maranhão and Tocantins; the Pro-Indigenous Commission (CPI), mainly in Acre; the Native Amazon Operation (OPAN), mainly in Amazonas and Mato Grosso; and the International Institute of Education in Brazil (IEB), mainly in Amazonas. Of these indigenist organizations, only CTI and OPAN work in the Cerrado, at least so far.

8.1.5 Academia

The main academic and scientific organizations in Brazil are listed in Table 8.2. Through their meetings and publications, the academic and scientific organizations provide for exchange of information at the national level and also for some contact with researchers from other countries. Their interest in and potential to influence public policies and private practices are limited.

Table 8.2. Academic and Scientific Organizations in Brazil.

Acronym	Organization
ABA	Brazilian Anthropology Association
ABEP	Brazilian Population Studies Association
AGB	Association of Brazilian Geographers
ANPEC	National Association of Graduate Centers in Economics
ANPEGE	National Association of Graduate Study and Research in Geography
ANPOCS	National Association of Graduate Study and Research in Social Sciences
ANPAD	National Association of Graduate Study and Research in Administration
ANPPAS	National Association of Graduate Study and Research in Environment and Society
SBPC	Brazilian Society for the Progress of Science

The creation of the Brazilian Agricultural Research Corporation (EMBRAPA) in 1973 has generated technology for Brazilian agriculture, especially in the Cerrado. EMBRAPA's headquarters are in Brasília, and there are 17 administrative units around the country, including EMBRAPA Cerrados, located outside of Brasília.

The Research Institute at the Rio de Janeiro Botanical Garden (JBRJ) is another important scientific institution. One of its main institutional objectives is to support public policy initiatives that meet the needs of conservation and rational use of the plant genetic resources in Brazil. Its National Center for Plant Conservation (CNCFlora) is responsible for gathering all available data to assess the conservation status of species of national flora and defining action plans to remove them from the list of endangered species. In addition to the Red List of the Brazilian Flora published in 2013, the CNCFlora has been working on the risk assessment and National Action Plan (PAN) for rare plants of the Cerrado (Martinelli *et al.* 2014). The Biodiversitas Foundation, in Belo Horizonte, Minas Gerais, compiled the list of threatened fauna (Machado *et al.* 2013).

8.1.6 Private Sector

There are various business associations, state federations and national confederations in the private sector, as well as vocational training and support services for industrial, commercial and agricultural workers. The main organizations and associations in the private sector in Brazil are listed in Table 8.3.

Seeking competitive differentials and reputational advantages, the private sector has increasingly included the environment as part of corporate social responsibility. Many large firms publish annual social and environmental reports. There is now a stock exchange for environmental assets in Rio de Janeiro (BVRio and BVTrade). There are various kinds of seals and certifications such as the Forest Stewardship Council (FSC) for forest products and the Biodynamic Institute for organic products. Some large companies seek to keep their supply chains clean. This is especially relevant for companies that

export products and seek to avoid non-tariff barriers (Nepstad *et al.* 2006). For medium and small business, as well as individual entrepreneurs, on the other hand, the process is more difficult.

Table 8.3. Brazilian Business Associations and Organizations.

Acronym	Organization / Association
ABAG	Brazilian Agribusiness Association
ABIOVE	Brazilian Association of Vegetable Oil Industries
ABRAS	Brazilian Association of Supermarkets
AIBA	Farmers and Irrigation Association of Bahia
APCD	Cerrado No-Till Farming Association
APROSOJA	Association of Producers of Soybeans and Corn
CEBDS	Brazilian Business Council for Sustainable Development
CNA	National Confederation of Agriculture and Livestock
CNI	National Confederation of Industry
IBÁ	Brazilian Tree Industry
Instituto Ethos	Ethos Institute of Companies and Social Responsibility
OCB	Brazilian Organization of Cooperatives
SENAC	National Service of Commercial Apprenticeship
SENAI	National Service of Industrial Apprenticeship
SENAR	National Service of Rural Apprenticeship
SNA	National Society of Agriculture
SRB	Brazilian Rural Society

In the Cerrado, the Cerrado No-Till Farming Association (APDC) has been successful in promoting minimum tillage and integrated crop-livestock systems (Landers *et al.* 2005; Landers 2015). The Association of Farmers and Irrigation in Bahia (AIBA) works in the western part that state, where frontier expansion is intense. The Round Table on Responsible Soy (RTRS) is engaged in keeping the supply chain clean. It has mapped "*go*" and "*no go*" zones according to the location of High Conservation Value Areas (HCVA). Most of the Amazon is off limits, but much of the Cerrado can be used under certain conditions (http://panda.maps.arcgis.com). RTRS provides certification, which remains very limited. The Maggi group seeks compliance with the Forest Law and exports non-GMO soy. The paper and pulp industry is particularly concerned about publicizing its benefits for carbon sequestration and has supported private reserves (Carvalhaes 2015).

To meet consumer demands, many supermarkets have included specific sections for organic products, which sell at higher prices. The *Pão de Açúcar* chain, one of the largest in Brazil, includes community products in its *Caras do Brazil* program. The Brazilian

Association of Supermarkets (ABRAS) has joined the chorus of complaints over scant government support to offset the high cost of sustainable production.

The "S" System's national apprenticeship services (SENAI, SENAC and SENAR) provide vocational training that includes environmental issues. The National Confederation of Agriculture and Livestock (CNA) has a special program for youth, who are more open to new technologies.

Rural employer syndicates in each municipality are organized in state federations such as the Federation of Agriculture and Livestock of the State of Mato Grosso (FAMATO) and also the CNA at the federal level. The so-called 'ruralists', organized in their congressional caucus or bloc called the Parliamentary Agriculture and Livestock Front, are a major political force. There are also national confederations of industry (CNI) and commerce (CNC). The three confederations work with government relations through their offices in Brasília. The CNI adopted an Agenda 21 for Industry, but the environment has not been a priority, and there is no parallel for agriculture or commerce.

The National Agriculture Society (SNA), located in Rio de Janeiro, was established in 1897, and the Brazilian Rural Society (SRB) was established in São Paulo in 1919. Both are supported by their members. The Brazilian Association of Agribusiness (ABAG), created in 1993, has held 13 national congresses since then. These associations brought together various groups that previously operated in parallel, such as producers of sugar, coffee and beef. Although they are traditional defenders of the large-scale agricultural sector, they have begun to embrace environmental causes.

Some of the other important private sector institutions or organizations in Brazil and their specific initiatives are:

- The Cerrado No-Till Farming Association (APDC) has been very successful in promoting zero-tillage technology, which reduces erosion and keeps biomass in the soil, although it consumes large amounts of pesticides.
- The Brazilian Soybean Producer Association (APROSOJA) began in Mato Grosso and expanded all over Brazil. There is also a Brazilian Association of Vegetable Oil Industries (ABIOVE). They have sought to embrace sustainability through participation in the Round Table on Responsible Soy (RTRS) with support from WWF and Greenpeace.
- The Brazilian Tree Institute (IBÁ) claims to reduce carbon emissions through tree plantations, primarily eucalyptus, grown on a large scale in Minas Gerais and now spreading through other states.
- The Sugarcane Industry Union (UNICA) is the organization that represents sugarcane planters and processors. It claims that use of sugarcane ethanol is one of the best ways to reduce emissions and contests allegations that it involves deforestation, directly or indirectly.
- The Brazilian Federation of Banks (FEBRABAN), which represents the great majority of Brazilian banks, has the stated purpose of contributing to economic, social and sustainable development.
- The Brazilian Association of Supermarkets (ABRAS) includes state-level associations of a sector that is responsible for 6% of the GDP and has direct contact with consumers. Many supermarkets now have special sections for organic food.

- The Rio de Janeiro Environmental Stock Exchange (BVRio) seeks to promote market mechanisms that can contribute to compliance with environmental regulations and policies.
- The Brazilian Business Council for Sustainable Development (CEBDS) was founded by a group of business leaders after the Rio 1992 Conference. Its members include 70 of the largest business groups in the country, accounting for 40% of GDP. CEBDS is the representative in Brazil of the World Business Council for Sustainable Development (WBCSD).

8.1.7 Semi-Governmental Organizations

Government agencies as well as individual authorities and civil servants participate in various organizations that are not part of the formal government structure. The Brazilian Association of State Environmental Agencies (ABEMA) is for state-level agencies, including the agency of the Federal District, while the National Association of Municipal Environmental Agencies (ANAMMA) and its associations in each state involve local authorities.

The employees of the MMA and its environmental agencies have workers' unions and civil-servant associations, such as ASIBAMA, ASSEMA and ASCEMA, which often speak out on matters of policy, demanding more rigorous enforcement of environmental laws and more support for protected areas. There is a National Council of Public Attorneys (CNMP), a key group for environmental law enforcement.

The Social Technology Network (RTS) brings together various federal government agencies, nongovernmental organizations and research institutions that disseminate technologies that are developed with and are appropriate for replication by local communities.

In the National Congress, there is a parliamentary caucus for environment (*Frente Parlamentar Ambientalista*) with support from the SOS Atlantic Forest Foundation (SOSMA). The president of the caucus, former Minister of Environment José Sarney Filho, defends specific laws for each Brazilian biome, following the example of the Atlantic Forest Law, approved in 2006. There is now a specific congressional caucus to defend the Cerrado, involving 201 federal deputies and three senators led by Federal Deputy Augusto Carvalho from the Federal District. However, there is an even stronger "FPA" caucus on the other side, in which 'ruralists' in large numbers in the *Frente Parlamentar da Agricultura* join forces against environmental and indigenous causes.

8.1.8 Coalitions and Fora

There are various inter-sector coalitions or fora that combine different types of CSOs and could be relevant for the environment in the Cerrado Hotspot. For example, in order to influence multilateral negotiations on forests, some companies came together with the Brazilian Business Council on Sustainable Development (mentioned above), the Ethos Institute, the Forest Dialogue, the Climate Observatory and Brazilian CSOs such as CI, Greenpeace, ISA, IMAFLORA, WRI and WWF to create the Brazil Coalition on Climate, Forests and Agriculture. Their goal is to promote dialogue among the different stakeholders and the federal government.

The Brazilian Solidarity Economy Forum (FBES) brings together small-scale collective enterprises, civil society and government authorities related to sustainable use of biodiversity.

The Brazilian Environmental Education Network (REBEA) has the interesting characteristic of allowing individual memberships rather than restricting participation to organizations, as is the rule in most networks, which exclude civil servants, university professors, staff of international organizations and other interested individuals who could have much to contribute..

An inter-sector forum that could be relevant to the Cerrado and serve as a model for similar initiatives involving conservation and sustainable use of biodiversity is the Brazilian Forum on Climate Change (FBMC), created in 2000, which brings together government, academia and civil society. Climate has high international visibility and is related to biodiversity through land use, land use change and forestry (LULUCF).

8.1.9 Philanthropy

The main foreign foundations that have been active in Brazil in the area of the environment are the Ford Foundation, MacArthur Foundation and Gordon and Betty Moore Foundation. The Mott, Skoll, Packard and Oak foundations have arrived more recently, as has Climate Works. The Climate and Land Use Alliance (CLUA), which involves the Ford, MacArthur and Packard foundations and Climate Works, has been active in the Amazon and is now analyzing what might be done in the Cerrado. It defends zero deforestation.

Philanthropy within Brazil is historically weak, with few signs of improvement. The traditional feeling is that government is responsible for everything. The government provides tax exemptions only for culture under the Rouanet Law, run by the Ministry of Culture (MinC). Some socio-environmental initiatives might qualify.

The Ecumenical Coordination of Service (CESE) is a joint effort of Christian churches that supports local organizations in the defense of human rights. The Socioenvironmental Fund called CASA provides small grants to these organizations with more emphasis on the environment.

The Bank of Brazil Foundation (FBB) has supported local initiatives in the area of environment, including parts of the Cerrado. The Bank of the Northeast (BNB) and the Regional Bank of Brasília (BRB) have also supported various projects. Santander, Itaú and some other private banks provide limited support for environmental initiatives.

8.1.10 Media

Newspapers in large metropolitan areas, mainly São Paulo and Rio de Janeiro, have regular sections and columns on the environment. The federal government's Brazilian Communication Company (EBC) has a program on "Our Environment".

Radio is the traditional medium for the rural areas of Brazil, especially in more remote regions, but television is now widely available, as are internet and cellular telephones. National Radio has special programming that includes environment. The Globo network, the major communication company in Brazil, has programs on the environment, and its

specific program for rural areas includes some environmental issues and examples of best practices.

The Brazilian Press Association (ABI) is concerned primarily with freedom of the press. There is a Brazilian Network of Environmental Journalism (RBJA), which has congresses every two years. There are numerous websites dealing with environmental issues and providing clippings of relevant news stories.

Bolivia and Paraguay can take advantage of material developed in other Latin American countries where Spanish is spoken, in addition to material provided through Spain's international cooperation, which is not highly focused on rain forests, but includes dry lands and desertification.

8.2 Operating Environment for CSOs

The National Environment Council (CONAMA), established in 1981, during the transition from military to civilian rule, was a pioneer in civil society participation in Brazil. Since then, especially in the past 12 years, numerous opportunities have opened up to CSOs for participation in governmental councils (IPEA 2013). There have also been many national conferences, with state and regional preparatory conferences, as was the case with the National Environment Conferences held in 2003, 2005, 2008 and 2013, inspired by the National Health Conferences.

There are serious difficulties with the legal framework for associations in Brazil, especially for local organizations outside the capital cities and close to nature. There is no legal status for NGOs as such, with that terminology, although the acronym ('ONG' in Portuguese) is in common use. They are now classified as CSOs. In order to have legal standing, nonprofit associations must have bylaws, annual assemblies, elected officers, fiscal councils and accountants, among other requirements.

It is very difficult to comply with official rules and regulations regarding expenditures of government funds, which require bidding and complex accounting and reporting. There are various agencies to monitor and enforce regulations, such as the Federal Accounts Court (TCU). Non-compliance requires returning all the funds with interest and monetary correction for inflation, even after many years. Any association in Brazil must obey the labor legislation, which requires 30 days of paid vacation, a 13th month's wage, maternity leave, payment of social security and payment into a severance fund, among other payroll expenses.

The government has created Social Organizations (OS) and Public Interest Civil Society Organizations (OSCIPs) to facilitate operations in some cases, but such organizations are rare, and they still face major difficulties. A new legal framework for civil society organizations is being debated, and a congressional bloc to defend CSOs has been created, but many of the shortcomings remain in the drafts being considered. A new framework would at least help, even if it does not solve all the problems.

Formal organization is not always compatible with the necessary informality of family and community organizations, especially in rural areas. The 'impersonality' (*i.e.*, not hiring or otherwise benefiting any family, relatives or friends, regardless of merit) required in the public sector is incompatible with family and community organization

based on kinship. Productive activities based on nature are diverse, with multiple locations in space and seasonality over time. They are not continuous and routine, as in urban industry or commerce. This makes it much more difficult to maintain administrative structures year round for small financial turnovers and to comply with labor laws, which presume long-term, formal employment.

Nonprofit organizations are not eligible for bank credit. Cooperatives for small farmers can get bank credit, but have difficulty in complying with complex bureaucratic requirements and finding reliable leaders. 'Social enterprises' such as FrutaSã, in Carolina, Maranhão, owned by the Vyty-Cate indigenous association, are non-profit private companies. This form of organization manages to solve problems such as access to credit, but it is still very rare.

Because of recent economic growth, on the one hand, and recent global and domestic economic crises, on the other, funds from the Brazilian government and from international donors are drying up. Some CSOs have now become inactive, closed down or face disappearance.

At the political level, many environmental CSOs express frustration regarding the results of their participation in government councils and conferences. This was further expressed during the consultation process for the ecosystem profile. They feel they have legitimized decisions with which they do not agree. There are complaints of cooptation. There is much radicalization and polarization and little seeking of compromise or a middle ground. At the same time, of 11,338 rural conflicts surveyed by the CPT between 2005 and 2014, 39% were in the Cerrado (Clark 2015). Environmentalists, rural workers and indigenous leaders are being murdered in the interior of Brazil. Socioenvironmental conflicts are widespread (Assad *et al.* 2009). Chico Mendes is not alone.

8.3 Civil Society Programs and Activities in the Cerrado

This section describes the main national and local organizations that are active in socio-environmental issues in the Cerrado Hotspot. An extensive, although not exhaustive, list of civil society organizations is provided in Appendix 6.

The Cerrado Network, a legacy of the "Cerrados Treaty" signed by NGOs at the Rio Conference in 1992, involves hundreds of local civil society organizations. It organizes biannual national meetings and fairs of Cerrado peoples. Its role in public policy is described in Chapter 7. Because of lack of funding for the Cerrado, its office is now closed, and it has no more staff of its own. It operates through its member organizations.

State or regional networks, at intermediate levels between the local and national groupings, include, among others, the Mato Grosso Forum for Environment and Development (FORMAD), the Forum of Environmental NGOs of the Federal District and Surroundings, and the Carajás Forum, which works in Maranhão (especially the lower Parnaíba), Tocantins and Pará.

The Cerrado Center (*Central do Cerrado*), based in Brasília, is a second-order cooperative joining 30 cooperatives from all over the Cerrado to market a wide range of sustainable-use biodiversity products. It ensures high visibility for these products in the national capital.

The Pacari Network works with medicinal plants at the community level in the Cerrado, primarily in Goiás and Minas Gerais, and has begun to develop cosmetics for formal markets because of the difficulties of compliance with rigorous regulations for health products. It won the UNDP Equator Prize in 2012.

The Mobilization of Indigenous Peoples of the Cerrado (MOPIC), created in 2008, is a network that seeks to unite indigenous groups in approximately 100 Indigenous Lands throughout the hotspot. Previously, Cerrado indigenous groups were a minor part of larger organizations in Brazil or the Amazon basin. MOPIC is part of the Cerrado Network. Vyty-Cate, in Maranhão and Tocantins, the Kanindé Ethno-Environmental Defense Fund, in Rondônia, and Warã, in Mato Grosso, are examples of local indigenous or indigenist associations.

The largest international environmental NGOs most active in the Cerrado are WWF and TNC, both of which have their main offices in Brasília, and CI, which has its main office in Rio de Janeiro and a small office in Brasília.

WWF carries out the trinational Cerrado-Pantanal project in the entire Upper Paraguay River basin, including Mato Grosso do Sul, Mato Grosso, Bolivia and Paraguay. The focus is on freshwater ecosystem conservation, protected areas, sustainable value chains and territorial planning, including the three countries. WWF also works with the Sertão Veredas-Peruaçu Protected Areas Mosaic in northern Minas Gerais. It prepared an important photographic exhibit on the Cerrado that was on display at the Brasília airport for several months in 2015.

TNC helps rural landowners comply with the Forest Law in western Bahia and northern Mato Grosso, in close association with agribusiness, including the Bunge corporation. It also works closely with indigenous groups, mostly in the Amazon region.

Conservation International has a long history of experience in the Cerrado. In 1997, it initiated actions to protect the Emas National Park in Goiás, which first resulted in the Emas-Taquari Corridor and later in the Cerrado-Pantanal Corridor. It was also responsible for coordinating the preparation of the first version of the document 'Priority Actions for the Conservation of the Cerrado and Pantanal Biodiversity' in 1998. In 2001, it played a crucial role in creating the Jalapão Ecological Station in Tocantins, one of the largest protected areas in the Cerrado, with 716,000 hectares. More recently, between 2010 and 2014, it carried out, in partnership with Monsanto, the Produce and Conserve Program, focusing on restoration of Permanent Preservation Areas and strengthening of seed collector networks in western Bahia, part of the region called Matopiba. Currently, as a GEF Implementing Agency, it is preparing a proposal in partnership with the Federal Government, the Brazilian Rural Society and the Brazilian Foundation for Sustainable Development to promote the protection of natural capital and zero net deforestation in Matopiba, including actions for restoration and compliance with the Forest Law.
As mentioned in Section 8.1, the Socioenvironmental Institute (ISA) is a large Brazilian NGO based in Brasília. Its work in the Cerrado is carried out in the transition to the Cerrado in the southern part of the Xingu Indigenous Park and in northeastern Mato Grosso, where it promotes compliance with the Forest Law through planting of native seeds and seedlings. It plays a key role in national networks and in policy dialogue.

The Institute for Society, Population and Nature (ISPN), based in Brasília and with a branch office in Maranhão, is one of the middle-size Brazilian NGOs that work mostly in the Cerrado. Founded in 1990, it has participated in work on conservation and biodiversity (priority areas and actions, conservation law). It was secretariat of the Cerrado Network. Since 1995, it has managed the GEF-UNDP Small Grants Program, supporting 380 projects carried out by 275 local or regional organizations all over the Cerrado, as well as organizations in the Caatinga, the Northeast and the Arch of Deforestation, the transition between the Cerrado and the Amazon. The National Steering Committee selects projects from a pool of applicants that is seven times greater than the number that can be supported.

The Pro-Nature Foundation (FUNATURA), mentioned previously because of its national role in conservation, focuses primarily on the Cerrado. It has played a central role in the Cerrado Network. It helped create the Grande Sertão Veredas National Park with the first debt-for-nature swap in Brazil in 1991. With support from GEF, it promoted Private Natural Heritage Reserves (RPPNs) and created one of its own in Pirenópolis, Goiás. FUNATURA is now active mainly in the Sertão Veredas-Peruaçu Protected Areas Mosaic in northern Minas Gerais.

The Brazilian Agency for Environment and Information Technology (ECODATA), based in Brasília, has provided capacity development for communities to write proposals for government funding to set up local agro-extractivist processing plants. ECODATA is also very active in the National Congress, especially in the Commission on Environment and Sustainable Development (CMADS). In 2015, it organized a two-day seminar in the National Congress on norms for conservation and sustainable use in the Cerrado.

The main subregional or state-level organizations that work in the Cerrado primarily with the environment or give it high priority are ICV, FORMAD, ECOA, AMAVIDA, AMDA, CEDAC, Rede Terra, IBRACE, IPEC, IPÊ, Terra Brasilis and Pró-Carnívoros. As can be seen in Appendix 6, there are about 100 other organizations that are not primarily environmental but work on related issues and are indispensable partners in efforts to protect the hotspot ecosystem.

Brazilian social movements active in the Cerrado include the National Confederation of Agricultural Workers (CONTAG), the National Federation of Men and Women Workers in Family Farming (FETRAF), the Pastoral Land Commission (CPT), the Landless Workers' Movement (MST), the Small Farmers' Movement (MPA) and the Rural Workers' Movement (MTC), among others. The CPT, with headquarters in Goiânia, Goiás, has launched a specific campaign to defend the Cerrado. These social movements are all increasingly concerned with the environment, in part because of their own needs and interests and in part because the environment is a way for them to criticize big business. Experience shows that projects on the environment can spur social movements to put “green” issues on their own respective agendas, without attempting to create and maintain strictly environmental CSOs, which would be an unrealistic undertaking in the Cerrado, given bureaucratic barriers, high costs and reductions in funding.

In academia, the main federal universities in the Cerrado Hotspot are located in Brasília, Minas Gerais, Goiás, Mato Grosso, Mato Grosso do Sul, Tocantins and Maranhão. There are also various state and private universities. Graduate programs in environmental sciences and sustainable development are offered at the University of Brasília (UnB),

which has specialists in the Departament of Ecology, a herbarium specialized in the Cerrado and a center in Alto Paraíso, Chapada dos Veadeiros, Goiás. The UnB campus in Planaltina has strong focus on the Cerrado. The Federal University of Goiás (UFG) has a laboratory specialized in monitoring and mapping (LAPIG). There is a specific Network for Geographic Genetics and Regional Planning for Conservation of the Cerrado (GENPAC). The Ministry of Science, Technology and Innovation (MCTI) supported the creation of the Scientific and Technological Network for Conservation and Sustainable Use of the Cerrado (COMCERRADO), which held planning meetings and carried out research on the biome (Machado 2015).

In 2015, the Center of Excellence of Cerrado Studies (Cerratenses) at the Brasília Botanical Garden (JBB) set up a Cerrado Alliance of 32 governmental and nongovernmental research centers. It houses the National Center for Research and Conservation of the Biodiversity of the Cerrado and Caatinga (CECAT) of the Chico Mendes Institute for Biodiversity Conservation (ICMBio) in addition to the International Reference Center on Water and Transdisciplinarity (CIRAT), providing for rich exchanges. In addition to science and technology, Cerratenses also stresses cultural dimensions.

Among semi-governmental organizations, there is a specific Forum of State Secretaries of Environment of the Cerrado. This is especially important in the context of decentralization of environmental management in Brazil, with states implementing federal policies and making their own laws, policies and administrative structures. The government of the Federal District is willing to play a leadership role.

8.4 Civil Society Capacity in the Cerrado

With few exceptions, civil society capacity in the Cerrado is at intermediate levels. On the one hand, it is very difficult for CSOs to comply with unrealistic government regulations, which do not fund administrative expenses and require complex bidding and financial reporting, among many other bureaucratic difficulties intended to avoid corruption. Use of internet is mandatory. There is also limited knowledge in civil society about the complex legal frameworks and government policies and programs relevant to the environment, as described in Chapter 7. There are regional variations, with the strongest organizations in the national and state capitals and limitations in the interior.

In the Cerrado, civil society capacity is highest in the states of São Paulo and Minas Gerais, including the interior. It is also high in the Federal District, Brazil's national capital, although most of the organizations located there operate at a larger scale, reaching other states. Even the organizations with the highest capacity need institutional strengthening, as was made clear in the consultation workshop with civil society. One of those needs regards implementation of the new Regulatory Framework for Civil Society Organizations (MROSC).

The lowest levels of civil society capacity, on the other hand, with a few exceptions, are in the western parts of the states of Piauí and Bahia, especially as regards the environment. However, labor and religious movements are present in these areas, as is the private sector. While there is little explicit concern with environment, the CSOs are all very concerned about water, which depends on land use and land cover, *i.e.*, biodiversity.

Indigenous groups are strongest in the Amazon, where there are more people, more land and more sources of international support, especially from Germany and Norway, as well as connections with indigenous groups in neighboring countries. In the Cerrado, MOPIC is isolated and in need of specific support. One key issue, once land is secured, is how to generate income from sustainable use of natural resources and, in some cases, ethnotourism.

The private sector is well organized in the Cerrado in sectoral associations such as the Brazilian Soybean Producer Association (APROSOJA) and the Brazilian Association of Vegetable Oil Industries (ABIOVE). It has also participated in the Round Table on Responsible Soy (RTRS). There is a specific organization for coffee, gourmet varieties of which are now produced in the Cerrado. The Cerrado No-Till Farming Association (APDC) has brought about a remarkable shift in crop management and defends conservation. There is increasing concern about the environment because of market pressures and because of prospects of scarcity of water, which is already being felt by coffee growers in Minas Gerais, who may also be pushed south by climate change. The private sector in the Amazon region has previous experience with the Soy Moratorium, which was a boycott of soy from recently cleared areas, supported by the Brazilian government. However, since it applied only to the Amazon and excluded the Cerrado, it could cause leakage back to the south. There could also be the same kind of moratorium on purchases of soy or beef from areas that have been cleared recently in the Cerrado.

8.5 Civil Society in Bolivia and Paraguay

International environmental organizations are active in Bolivia and Paraguay. CI has worked in Bolivia since 1987 on conservation and connectivity with public policy and civil society. Eastern Paraguay's Gura Reta Reserve in the San Rafael Forest benefits from a US$ 1 million endowment fund established by CI's Global Conservation Fund (GCF), the World Land Trust (WLT) and Guyra Paraguay Association, a partner of BirdLife International, which is a leading conservation organization in Paraguay.

WWF has a tri-national program on the Cerrado-Pantanal that operates in Brazil, Bolivia and Paraguay. It has offices and staff working together in all three countries. The program's objectives are biodiversity conservation through creation and implementation of protected areas, preservation of species, incentives for economic activities with low environmental impact and promotion of sustainable development.

The GEF-UNDP Small Grants Program (SGP), known as *Programa de Pequeñas Donaciones* (PPD), is active in both Bolivia and Paraguay, working with the focal areas of conservation and sustainable use of biodiversity, land degradation and climate change. It provides small grants to NGOs and community-based organizations. The SGP in Bolivia supports protected areas in the Chaco.

Civil society organizations have been strong forces in Bolivia. The Pact of Unity, an alliance formed in 2004 between indigenous peoples and peasant farmers, fought vigorously for reform in the early days of the Morales administration and was decisive in creating Bolivia's new constitution. The Bolivian NGO Environmental Defense League is one of the most prominent environmental NGOs in Bolivia. Friends of Nature is another NGO. There is also a Bolivian Forum on the Environment and Development. The Land Foundation, a Bolivian NGO, is dedicated to supporting small producers. Many peasant

and indigenous organizations are weak and fractured due to internal divisions. However, a *2013 law and presidential decree granted the government broad powers to dissolve nongovernmental organizations.* A civil society strengthening project was launched in 2015 under the coordination of the National Union of Institutions of Social Action (UNITAS) and Welthungerhilfe.

In Paraguay, the USAID Democracy Program has been helping CSOs improve their government oversight and issue-tracking capabilities through a cooperative agreement with *Semillas para la Democracia* (Seeds for Democracy). The association is providing technical assistance and training in managerial capability, financial processes, organizational structure, fundraising, project development, communication strategies and monitoring and evaluation.

8.6 Addressing Gaps in Civil Society Capacity

In the civil society consultation workshop held during the ecosystem profile process and in various other stakeholder consultations, it became clear that, although some common demands such as land and territory would be difficult or impossible to address, there is strong need for:

1. Small grants that could be made available in the priority corridors and KBAs, but should also be made in other areas where the applicants can demonstrate direct strategic relevance to the conservation objectives of the Cerrado. For local organizations, it is essential to simplify the bureaucratic requirements. When this is not possible, subcontracting by larger organizations can be an alternative. Small grants can influence the work of large-scale social movements so as to include the environment.
2. Consolidation grants, for larger amounts and longer periods, that would be important for organizations that have demonstrated capacity to generate relevant impacts and that face high operating expenses in order to maintain offices and qualified staff in capital cities as well as working in remote locations in the interior.
3. Continuous institutional support that is essential for networks among CSOs of various kinds (regional, thematic, indigenous) so that they can maintain offices and staff over time, not just for specific short-term projects, and hold regular meetings involving members who must travel long distances.
4. Capacity development that is needed for CSO representatives in order to ensure qualified participation in official councils, commissions and conferences. There are many such bodies and consultations for the environment, rural development, citizenship territories, traditional peoples and communities, and watersheds, among others, but the representatives need to know more about complex legal frameworks, organizations and programs, the past history, future prospects and ‘who’s who’ among relevant players.
5. Specific capacity development for community leaders who, in order to represent civil society at the ecosystem level and defend collective causes that are for the common good, need to become familiar with other groups and other parts of the Cerrado.
6. Specific capacities for indigenous representatives who need to enhance their participation in national and international fora and negotiations. Indigenous

issues are not limited to Brazil, and Portuguese is of little or no use for contacts and participation in meetings in other countries.

7. Further guidance to journalists in various kinds of media, who have little knowledge about the Cerrado or the best ways to achieve appropriate conservation outcomes.

At the same time, experience shows that local CSOs are not able to pay for the qualified professionals they need, while also complying with difficult rules and regulations. There is a need for changing regulatory frameworks, not just training and capacity-building, as some government agencies and authorities claim. CSOs need some of the same simplifications or 'debureaucratization' that the government has provided for small and medium businesses and individual micro-entrepreneurs. The government has also adopted more appropriate procedures for priority government programs such as building cisterns in the Northeast, where the requirements now refer to delivery of final products rather than paperwork formalities. There is now a congressional bloc to defend civil society organizations. The time is right for such adjustments.

Until changes are made in the legal framework, one way to overcome barriers to local civil society organizations is for them to work together with larger organizations in capital cities that are better prepared to deal with all the official regulations and that can subcontract the local organizations in the interior. Thus, local communities would not need to carry out bidding processes and document every expense in forms that are not available or feasible in remote rural areas of the hotspot.

Another way to learn lessons and overcome limitations is interregional cooperation among CSOs. Organizations that focus on the Amazon region, such as the Amazon Working Group (GTA) and the National Council of Extractivist Populations (CNS), can be relevant actors in the Cerrado and transitions in Mato Grosso, Tocantins and Maranhão, which are part of the Amazon region. They have accumulated many years of experience (1994-2010) working with the Pilot Program to Conserve the Brazilian Rainforest (PPG7), described in Chapter 11, which provided knowledge about a range of relevant activities from sustainable forest management and sustainable-use protected areas to policy advocacy and international fundraising. International cooperation among Brazil, Bolivia and Paraguay can also be useful.

8.7 Conclusions

Although only a few environmentalist CSOs are already active in the Cerrado, important national-level organizations can be attracted to the hotspot and incorporate specific environmental concerns into their own agendas. There are also at least a hundred local organizations that are not primarily environmental, but are already involved in environmental issues. Beyond them, there are thousands of formal and informal labor, church, civic, business, academic and indigenous organizations that are increasingly concerned about the environment but need stimulus and support to really get involved. This is especially true in the northern part of the hotspot.

The only organization that works with transboundary conservation issues among Brazilian, Bolivian and Paraguayan parts of the hotspot is WWF. Because of Brazilian financial regulations, it is impractical for Brazilian organizations to carry out activities in other countries.

After a boom of creation of CSOs in the post-military period in Brazil, today's main barriers to their survival and effectiveness in promoting conservation outcomes are:

1. Complex and unrealistic regulations regarding nonprofit organizations, the need to comply with labor laws, requirements limiting the use of government funds, etc.;
2. Lack of qualified civil society representatives to participate in official councils, commissions and consultations;
3. Political polarization and lack of realistic environmentalist proposals that might optimize actual outcomes;
4. Limited socio-environmental integration.

Based on an analysis of past experiences, the current situation and the outlooks of stakeholders from all parts of the hotspot, the key opportunities to improve conservation outcomes in the Cerrado can be summarized as follows:

1. Strengthen the institutional capacity of existing CSOs;
2. Facilitate more effective representation in government processes;
3. Work with the three branches of government;
4. Reduce domestic non-tariff barriers to sustainable use of biodiversity;
5. Spatially redistribute activities and funding to include priority areas;
6. Raise greater awareness about the Cerrado and savannas in all of Brazil, and abroad;
7. Enable the 'greening' of CSOs that are not primarily concerned about conservation;
8. Effectively apply the private sector's declared commitment to sustainability and avoid greenwashing;
9. Network on regional, inter-regional and international scales;
10. Forge partnerships among large and small CSOs.

9. THREATS TO BIODIVERSITY IN THE HOTSPOT

As explained previously, especially in chapters 6 and 7, the main threat to biodiversity in the Cerrado is clearing of land for pastures and monocultures. Production of commodities for consumption within Brazil and for export is essential for Brazil's balance of trade and for generating tax revenues for government budgets, as well as for meeting the needs of a growing world population and rising consumption of protein in low-income countries.

In the last five decades, the Cerrado has been the main area for agricultural expansion and consolidation of Brazilian agribusiness, leading to loss of half of the original plant cover. It has been projected that the continuing uncontrolled occupation of the Cerrado may lead to loss of 72% of its original area by 2020 and 82% by 2050 (Machado *et al.* 2004; Machado 2015). The process now extends from Brazil into Paraguay as well.

Exact figures on deforestation are difficult to obtain for various reasons. Monitoring of clearing in the Cerrado is much more difficult than in homogenous dense forests, due to the high diversity and fine texture of plant cover. Cerrado vegetation varies from narrow riparian forests that do not appear in satellite images to woody savannas and fields that can easily be confused with degraded pastures where trees and shrubs sprout from deep roots. Little effort has been put into Cerrado deforestation monitoring, while for the Amazon, the Project to Monitor Deforestation in the Legal Amazon **(**PRODES) has monitored annual deforestation rates since 1980. The Action Plan on Deforestation and Fire Prevention and Control in the Cerrado (PPCerrado) of the Ministry of Environment provides official deforestation data from 2003 to 2008 only in averages of 15,000 km^2 per year (Brazil 2014). PPCerrado concluded that up to 2010, 986,711 km^2 of Cerrado were already converted, *i.e.*, 47% of its original area. Most of the remaining areas are fragmented.

9.1 Direct Threats

An overview of the various types of proximate threats to the Cerrado's biodiversity and their relative importance is provided in the following sections. The first deals with direct threats: habitat degradation, fragmentation and conversion; overexploitation of natural resources; fire; pollution, erosion and sedimentation; invasive species. Climate change is described in Chapter 10. The indirect causes of threats (cattle raising, crops, mining, pulp mills, transportation infrastructure, electric power, oil and gas, urban sprawl) are dealt with in Section 9.2. The main conclusions and a ranking of the relative severity of the threats are presented at the end of the chapter.

9.1.1 Habitat Degradation, Fragmentation and Conversion

While half of the Cerrado has been totally cleared, most of the rest has been subject to various kinds of interference. Despite its importance and the critical situation in this hotspot, there is a lack of detailed and historical information about vegetation cover changes, especially during the 1990s. Grecchi *et al.* (2015) concluded that land cover changes from 1990 to 2010 (mostly for agriculture, but not entirely) occurred at an average annual rate of -0.61% between 1990 and 2010. In this period, the hotspot had a net loss of approximately 12 million hectares of natural vegetation. The rates of vegetation loss decreased from the first decade (0.79% per year) to the second (0.44% per year).

It is important to note that the deforestation rate of the Cerrado of 0.69% per year in 2008 was nearly twice the rate of the Amazon (0.42%). However, the deforestation rate in the Cerrado had a 16% decrease between June 2009 and July 2010. Compared with rates of the early 2000's, deforestation has dropped about 40%. The government also announced a 50% reduction in deforestation of the Cerrado in the period between August 2010 and February 2011, compared to the previous 12-month period. Evidence to support these numbers is needed.

Projections for coming decades show the largest increases in agricultural production in the country will be in this region. At the same time, the new Forest Law allows for vast further legal deforestation in the Cerrado (Soares-Filho *et al.* 2014). The spatial analysis of deforestation indicated that about 70% of the warnings (heat points that indicate fire, but could be confused with reflection of sunlight) were concentrated in only 100 municipalities and that there are two active agricultural frontiers in the Cerrado – along the western portion of Bahia State up to the south of Maranhão; and the other one extending from the southeast of Mato Grosso to the east of Mato Grosso do Sul states (Rocha *et al.* 2011). Such expansion occurs mainly in areas of dense vegetation and flat terrain, which are amenable to mechanized crop fields. The urgency of conservation actions is one of the criteria used to define the priority corridors in this ecosystem profile.

Ecosystems consisting of a dozen different types of habitat that are intermingled are naturally fragmented. The fragments are primarily of riparian forests, legally protected by the Forest Law as Areas of Permanent Preservation (APPs), but Legal Reserves (LRs) and areas of restricted use, also foreseen in the Forest Law, are or will also be fragments. In the near future, the Rural Environmental Registry (CAR) information system managed by the Brazilian Forest Service (SFB) will allow for mapping, tabulation and analysis of detailed data at the level of each rural property or landholding. The National Forest Inventory, also being carried out by SFB, will be another source of relevant data. In this context, it will be very important to study the different fragmentation patterns, which can result in different pressures on Cerrado biodiversity. A study by Carvalho, Marco Junior and Ferreira (2009) in the state of Goiás, in the core area of Cerrado, shows that landscapes dominated by crops are more fragmented than landscapes dominated by pastures. These crop-dominated landscapes also presented a smaller number of fragments that, for example, could maintain populations of threatened mammal species in Cerrado. In addition, the results of this study indicate that croplands, which usually cover continuous areas larger than pastures, generate a landscape structure more damaging for the conservation of biodiversity in the Cerrado.

Many pastures considered by farmers as degraded are in fact the Cerrado under natural regeneration, as Cerrado plants, because of their deep roots, have a remarkable capacity to resprout. Such regeneration, especially in areas of hilly topography, in addition to enforcement of the Forest Law, could eventually contribute to zero net deforestation. In this context, actions that favor or assist natural regeneration of the Cerrado are important elements in conservation strategies. Although imperfect, they at least provide habitat for larger, more viable populations as well as connectivity to enable gene flows among them.

Habitat loss and fragmentation could be much lower through land sparing. Livestock productivity in the Cerrado is very low, using vast expanses to produce beef, milk and leather. Sano *et al.* (2008) found that 26% of deforested Cerrado lands were occupied by

pasture in 2002. Cattle raising involves average herd densities of only one head per hectare, far below rates in developed countries. The time needed for cattle to reach market weight can be three times longer than in developed countries. Approximately one third of the pastureland in the Cerrado is considered "degraded" in the sense of becoming barren or being infested with weeds and brush, although some estimates are much higher.

Mechanized monocultures usually move into flat areas that have been used for cattle raising (Silva 2013). Unlike cattle raising, crop yields are high by international standards and are increasing constantly with the use of modern technology (Abreu 2015). Many traditional territories are surrounded by monocultures, which impede community access to natural resources on which they depend for their livelihoods. Some communities have lost their water courses or had them contaminated by excessive use of agricultural chemicals (field observations).

9.1.2 Pollution, Erosion and Sedimentation

As described in Chapter 4, rapid land use changes in the Cerrado negatively affect the availability of water in hydrological basins of utmost importance to Brazil. Irrigation needed for agricultural activities in the Cerrado and elsewhere to the east and south exerts strong pressure on water resources. Indeed, irrigation represents at least 70% of water consumption in the country as a whole (Lima 2015).

In addition to the impacts associated with reduced water supply, chemical pollution from pesticides (herbicides, insecticides and fungicides) is a major concern. These inputs are widely used in tropical agriculture, where there is no cold winter to avoid the constant buildup of weeds, pests, fungi and disease. The main consumption is for soy, corn and cotton, the most important crops in the Cerrado. Some persistent organic pollutants (POPs) are used illegally and pesticides forbidden elsewhere are still legal in Brazil. Brazil uses more pesticides than any other country in the world, with 19% of global use, as compared to 17% for the United States (Dall'Agnol 2015).

Chemical fertilizers, which are essential in the poor soils of the Cerrado, can also pollute local streams, a major complaint of communities (Eloy 2014). Pollution downstream is not yet comparable to the Gulf of Mexico's dead zone, but the Pantanal wetlands and the Paraguay-Paraná basin are threatened. Fertilizers are also responsible for emissions of nitrous oxide, a potent greenhouse gas (Bustamante 2015).

In addition to generalized loss of soil from surface erosion when the land is cleared and cultivated or converted to pastureland, there are deep gullies (*voçorocas*) in some parts of the Cerrado. Because of shallow or deep soil erosion, rivers and streams are muddied with clay, and their beds accumulate sand. Stream banks are also damaged by cattle that visit them daily to drink water, which is only rarely channeled by gravity or pumped to troughs in the pastures (ISPN field observations).

Most of the important rivers in the Cerrado have been dammed for hydroelectric plants, which are Brazil's main source of electric power. The dams affect water flows and modify the margins, keeping several species from migrating up to headwaters for spawning. This also impacts fisher communities whose livelihoods depend on these resources.

9.1.3 Invasive Species

The most important invasive species in the Cerrado are African grasses that grow faster and higher than native grasses (Pivello 2005). *Brachiaria* and other pasture species spread wherever there is little or no shade from trees and shrubs, the seeds being dispersed by livestock.

Plantations of eucalyptus and pine now cover vast areas of the Cerrado in Minas Gerais, Goiás, Mato Grosso do Sul and Maranhão, and there are plans for expansion. In the Botanical Garden of Brasília (JBB), the pine trees spread spontaneously, as do exotic ferns (*Pterydium aquilinum*), which are especially aggressive (field observations).

European javalins (*Sus scrofa*), originally brought to South America for hunting, have spread to the southernmost part of the Cerrado, where they are a threat to nature and humans. Other invasive animal species include native species of fish from other parts of the country, even shrimp, as well as exotic species, especially Tilapia, farmed to supply supermarkets. These exotic fish compete with native species, especially in reservoirs used for fish farming.

9.1.4 GMOs

Genetically modified soybeans are widely used in the Cerrado, although there are also non-GMO soybeans exported from Mato Grosso to the European market through a specific port at Kristiansand, in Norway, in response to consumer and government demands. Environmental groups are deeply concerned about impacts of GMOs on native biodiversity, but the National Technical Commission on Biodiversity (CTNBio) approved their use. More research is needed on genetic contamination by GMO crops in the Brazilian context. What is clear is that producers of GMO soybeans make intensive use of glyphosate herbicide, which affects human health.

9.1.5 Fire

Cerrado biodiversity has lived with fire for millennia. The vegetation has features that minimize the effect of burning, such as thick bark, rhizomes and bulbs, as well as high regrowth capacity after fire and a high proportion of underground biomass (Castro and Kauffman 1998; Coutinho 1990).

Nonetheless, fire frequency has intensified drastically due to human actions. Nowadays, fires may occur every year or two, rather than following cycles of 16 years on average as they did before European settlement (Coutinho 1990). Some fire helps Cerrado seeds disperse, germinate and grow. However, a frequent and intense fire regime causes changes in the dynamics of plant communities, affecting the populations of rare species (Miranda 2002). Fire may also affect flowering, fruiting, seed dispersal, biological recruitment and mortality rates.

When the pastures dry out in July and August, they are typically burned intentionally and can easily catch fire accidentally. The fires from exotic species of grass such as *Andropogon*, which reaches heights of 3-4 meters, are much hotter and spread farther, through airborne embers. Hotter fires, caused by the presence of exotic grasses, kill off juvenile trees, preventing recovery of the woodlands and reducing carbon stocks far below what they would be if the juveniles reached adulthood and produced seeds,

multiplying the population. While cattle spread exotic seeds, they also reduce fuel quantity by consuming the biomass of the grasses and reducing the intensity of fires. Late fires, for example in October, when accumulated dry biomass is more voluminous, can kill mature trees, abort blossoming and cause other negative effects on the community (Schmidt *et al.* 2005). In addition, a positive feedback triggers expansion of grasses when fire frequency increases (Miranda 2002).

The Cerrado and the Amazon are the biomes most affected by fires in Brazil. One study on the incidence of fires in the Cerrado from 2002-2012 indicates that the areas most affected are pastures in the northern part of the biome (Santos *et al.* 2014). In these areas, the concentration of fire alerts (*pontos de calor*) could be higher than four foci per km^2 per year. The average is about 140,000 fire outbreaks per year in the entire area of the Cerrado.

9.2 Indirect Causes of Threats

The indirect causes of threats to Cerrado ecosystems analyzed in this section include cattle raising, crops, steel, pulp and paper, transportation, electric power, oil and gas, mining and urban sprawl. These derive from the root causes of population growth, increasing food consumption among poor people around the world, especially consumption of protein, economic globalization, North-South outsourcing of economic activities with high energy demands and environmental impacts, spread of "green revolution" agricultural technology and limited concern about the environment and about future generations, among others; in sum, continuity of unsustainable perceptions, practices and policies.

A major indirect cause of threats to the Cerrado is increased global demand for soy and meat from livestock fed with soy, due to changing consumer preferences and purchasing power. Soybeans are also an important commodity imported into Europe for animal feed and for oil (Vankrunkelsven 2006). Recognition of these indirect responsibilities on the part of governments and, possibly, public opinion, could provide leverage for funding of conservation efforts in the hotspot. Such recognition will probably not come spontaneously, without stimulus from Brazil, concerned parties in other countries and international organizations (see Chapter 11).

Investments in the Cerrado prioritize the primary sector of the economy and consume natural resources at a macro-landscape scale (Fearnside 2005; Wood and Porro 2002; Becker *et al.* 2009). They either promote or lead to expansion of the agricultural frontier, including both crops (monocultures) and cattle (extensive pastures), which in turn leads to deforestation and landscape fragmentation, with little or no connectivity through corridors or even 'stepping stones', a more practical alternative (Ditt, Menezes and Pádua 2008). Agribusiness also pollutes air, soil and water. Investments in the various sectors are interrelated and tend to reinforce each other.

At the same time, investments in conservation in other regions may end up sacrificing the Cerrado, because of displacement ('leakage') of deforestation from other biomes to the Cerrado. This biome has been chosen as the main productive region by the Brazilian government, with little objection from civil society, which considers forests (the Amazon and the Atlantic Forest) more important to conserve. The Cerrado does not have dense forest, but it is equally or more important in terms of both its own biodiversity, water and

carbon and the impact of these components on other ecosystems. For example, the largest tributaries of the Amazon descend from the Cerrado, which receives its water from the rain forest. As seen in Chapter 4, Brazil's biomes are interdependent.

It should be noted that investments in the region do not always generate negative impacts on biodiversity, water or carbon. Policies and practices that favor the consolidation and intensification of settlements in areas of the Cerrado that are already densely occupied may reduce pressures for deforestation elsewhere. Horizontal frontier expansion without increases in productivity was the dominant pattern in the past, but verticalization of agriculture through higher productivity on existing farms and ranches, and greater integration with agroindustry, is now under way through Crop-Livestock Integration, which seeks to increase soil quality and organic matter content.

9.2.1 Cattle Raising

Historically, after the mining cycle in the colonial period in the 1700s, traditional cattle raising took advantage of the Cerrado's natural savannas and grasslands, including seasonal cattle drives into wetlands, like the Araguaia Valley, during the long dry season. There was little or no monetary investment or financial return (Mueller 1995).

Nowadays, although the productivity of cattle raising (both stocking and take-off rates) remains very low by international standards, ranches depend primarily on planted pastures, which require investment in formation and maintenance, as well as fencing. Modern ranches also require investment in vaccines and artificial insemination. Hormones to speed up growth and reduce fat may also be used. Tracking of beef requires electricity, computers and skilled labor (Sawyer 2010).

Creating pastures for cattle-raising is by far the main cause of deforestation in the Cerrado and the Amazon. There are 135 million head of cattle in the Cerrado, on 400,000 km^2 (Oliveira 2015). Some of Brazil's largest companies, like JBS or Friboi, Brazil Foods and Marfrig, are in this sector, with multinational ramifications. In 2008, Brazil became the world's largest exporter of beef, but it competes closely with the United States and now with India (Gartlan 2010).

In more settled areas, especially in the southern part of the Cerrado, cattle raising is the basis for production of milk and other dairy products that require proximity to consumer markets (Silva 2013). Milk production is scattered among small farmers, but processing is concentrated in firms like Nestlé, Danone and the new conglomerate Lácteos Brazil.

Traditionally, pastures are burned during the Cerrado's extended dry season to promote new green sprouts, since the tall dry grass is useless for feeding the cattle. The net emissions of CO_2 from this burning are zero because of compensation by regrowth during the rainy season. On the other hand, intentional and accidental burning prevents regrowth of brush and trees, and fires in tall exotic pasture species kill trees and spread far, thus reducing total carbon sequestration in woody biomass, including the roots, which reach 10 to 20 m in depth (Bustamante 2015).

The immense herd of cattle in Brazil also emits a very significant volume of methane, a potent greenhouse gas, which, however, has a shorter residence in the atmosphere

(Bustamante 2015). Some investments in technology can decrease methane emissions from this source.

The sale of beef, leather and dairy products is profitable, especially when global consumption of animal protein is growing faster than the population. On the other hand, cattle raising is to a large extent a pretext for investment in real estate speculation. Increases in land values come with public and private investments in transportation infrastructure and urban services. Direct investment in farms or ranches, usually by absentee owners in the remote areas, is made all the more attractive by cheap credit, rolling over of loans or defaults, tax evasion, money laundering, illegal logging and even degrading work conditions that the government considers a form of 'slave' labor (Sawyer 2014). In more developed regions, cattle raising is generally more legal, responsible and sustainable. Ranchers have access to subsidized bank credit, often from official banks. Loans are easy to approve because the technical criteria are well known to bank personnel in the interior and the cattle are collateral, as compared to parameters for new crops or biodiversity products, which are considered as being more prone to risk. Ranchers from the South and Southeast regions can sell their land to soybean or sugarcane growers and buy much larger areas on the frontier. Likewise, ranchers in the southern part of the Cerrado can sell their land and buy larger areas farther north. Thus, in addition to simple displacement, there is also multiplication of the 'indirect land use change' (ILUC) effect because of the sharp (often up to ten-fold) differential in the land prices (Sawyer 2014).

New investments in fencing and water supply could improve the extremely low productivity of cattle raising, with a stocking rate of only about one head per hectare and with birth-to-slaughter time of several years, *i.e.*, low take-off rates. While overgrazing should be avoided, supplying water within the pastures through gravity or pumps would also limit the damage done to riparian and freshwater biodiversity where cattle rove daily to drink at streams and riversides. Another interesting alternative is integrated crop-livestock systems, which rotate crops and cattle, thus taking better advantage of chemical fertilizers used on crops and of manure left by cattle. The main barrier is that cattle ranchers and crop farmers are distinct social categories, although younger generations are more open to innovations of this kind.

9.2.2 Crops

The main crops grown in the Cerrado are soybeans, sugarcane, corn, cotton, coffee and trees. Data on hectares, tons and value of crops are only available for states and municipalities, following the political-administrative division, not for the biome, but some estimates of relative magnitude can be made.

In the past, the farming frontier was a major producer of rice, beans and manioc, grown by small farmers in the first year or two after clearing. Rice was sold to be consumed in the more developed Southeast. Nowadays manioc meal is no longer a staple food, except in parts of the Amazon, and there has been mechanization and concentration of land tenure in the Cerrado. Rice now comes mainly from mechanized farms in the South region, and the beans come from places like Irecê, Bahia, in the country's semiarid Northeast.

Land use in the Cerrado can be divided into four quadrants by the 48th meridian west and the 15th parallel south. While most of the southwest quadrant of the Cerrado has been

cleared, and there are intermediate levels in the southeast and northwest quadrants, the northeast quadrant (in Matopiba: Maranhão, Tocantins, Piauí and Bahia) is undergoing rapid conversion, mostly to soybeans, and an ambitious federal agricultural development plan has been announced (MAPA 2015; Miranda *et al.* 2014).

Land tenure in the Cerrado is highly concentrated. According to the 2006 Agricultural Census, 69% of all rural properties in the Cerrado are still owned by small farmers who occupy only 9% of the total area, some 180,000 km^2. Unless local communities receive support, the tendency toward greater concentration of land in large farms is likely to remain strong, accelerating the rate of land use change and generating negative impacts on biodiversity, water and climate.

Crops in the Cerrado are typically planted as monocultures, since the relatively flat topography allows for mechanization of the stages of soil preparation, cultivation and harvesting. Even harvests of sugarcane and coffee, which until recently were still entirely manual, using migrant labor, are now being mechanized (Silva 1981; Ortega *et al.* 2009).

Annual crops and almost all other crops except coffee promote soil erosion and silt waterways. The absence of plant cover during most of the year also favors rapid surface runoff of rainfall, thereby reducing infiltration, evapotranspiration and the formation of new clouds to generate precipitation downwind. The rainwater that runs off the surface flows back to the Atlantic, rather than returning to the atmosphere and moving south to other regions and neighboring countries (Lima 2015).

The chemical fertilizers used on the many crops emit nitrous oxide, a powerful albeit short-lived greenhouse gas (Bustamante 2015). On the other hand, some progress is being made on genetically modified sugarcane that does not rely on nitrogen fertilizer inputs.

In ecosystemic terms and at the global level, greenhouse gas emissions generated by the long-distance life cycles of agribusiness are often ignored. Fertilizers come from Russia, Canada, Morocco and Norway, and soybeans, beef, chicken and pork are exported mainly to Europe and China. All the industry and transportation so far upstream and downstream in global supply chains generate very significant emissions, mostly carbon dioxide from fossil fuels. Obviously, these activities along the commodity chains involve many investors with no direct connections to the Cerrado, who are never held accountable for their local and global environmental impacts.

Soybeans. Soybeans are the main new crop in the Cerrado. Expansion from southern Brazil was enabled by public investments in agricultural technology in the 1970s, primarily by the Brazilian Agricultural Research Corporation (EMBRAPA) of the Ministry of Agriculture, Livestock and Supply (MAPA), often in association with companies such as Monsanto and Bunge, especially for genetically modified soybeans (Christoffoli 2010).

Japan invested in soybean expansion in the Cerrado in the 1970s (Pires 1997), but foreign involvement is now indirect. The soybean growers are nearly all Brazilian, while foreign companies sell inputs (seeds, fertilizers, pesticides, etc.) and machinery, even providing the credit, and buy the beans, meal and oil. Agribusiness, including some direct foreign investment, has moved into the Cerrado to process and add value to local beans, although less so than in Argentina, which produces and exports more oil. Chinese companies and

American farmers and investors are beginning to buy land in the Cerrado (Oliveira 2014; Romero 2015).

The Cerrado has been responsible for 35% of all crop production in Brazil, including 58% of the country's total soybean production. Soy production will undoubtedly continue to grow because the beans have so many uses for food, feed and industry in Brazil and abroad. It is useless to fight against the presence of soybeans in the Cerrado (Pufal 1998).

In response to criticism of negative social and environmental impacts, a Round Table on Responsable Soy was organized in 2004, with strong support from the Netherlands, a major importer (Dros 2002). Grower associations joined but have been reluctant about implementation. The associated moratorium on expansion of soy, limited mainly to the Amazon, has to some extent intensified pressure on the Cerrado.

Sugarcane. In Brazil, since the colonial beginnings, sugarcane has been used to make sugar, mostly for export, and *cachaça*, a type of rum that is mainly for domestic consumption. On small farms, it can provide fodder for cattle during the dry season, but most sugarcane is grown on vast monocrop plantations.

Production of sugarcane has shifted from the Northeast, the leading producer in colonial times, to São Paulo, where yields are much higher. It is now penetrating the southern fringes of the Cerrado, in many cases with investors from the Northeast (ISPN 2007).

Sugarcane is now used to produce ethanol (Sawyer 2014) in an effort intended to reduce greenhouse gas emissions from fossil fuels. There are also human health benefits, due to less air pollution in urban areas. On the other hand, expansion of sugarcane plantations has negative impacts on biodiversity. The social impacts are not clear. Migrant workers are exploited, but they also earn cash income that can allow their family farms to survive, thus avoiding permanent migration to the cities.

Since sugarcane cannot be transported for long distances without losing the level of sucrose sugar, its expansion depends on investments in sugar mills, roads and bridges. Private investments depend on public subsidies and official standards to mix ethanol into all gasoline sold in Brazil.

Sugarcane is not usually a direct cause of deforestation, but, as mentioned above, expansion onto areas of soybean cultivation or ranching can provoke indirect land use change, *i.e.*, deforestation in other locations, if the landowners who sell their land move to frontier areas, where land is also much cheaper.

Currently, sugarcane bagasse is being used for cogeneration of electricity in São Paulo (UNDP 2014). This makes planting of cane more profitable and decreases the net emissions of the industry, which in turn justifies government subsidies to sugar mills.

Cotton. Cotton for use in textile production in Brazil and abroad is also being grown in increasingly vast areas of western Bahia and parts of Goiás. Cotton is notorious for the intense use of pesticides and their impacts on both human health and the environment. Brazil's main industrial cotton consumers are textile companies, led by Coats Corrente, Coteminas, Santista, Bezerra de Menezes, Canatiba and Vicunha Nordeste.

Corn. There are now large monocultures of corn (maize) on the flat lands of the Cerrado, the abundant supply of which attracts farmers who raise chickens and pigs. Corn may be rotated with soybeans, cotton or sorghum, and there may be a second crop in the same year. In addition to animal feed, pig farmers from southern Brazil and from Europe are attracted to the region by the lack of severe restrictions on waste disposal, which has caused serious pollution problems in Holland and Santa Catarina (Lazaretti 2013). About 90% of all corn cultivated in Brazil is now transgenic.

Coffee. The production of coffee has moved from São Paulo and Paraná into the Cerrado region of Minas Gerais, much of which is hilly. It fled from frost, but may need to move back south to cooler latitudes. Some Cerrado coffee is gourmet varieties with all kinds of certification, rather than being produced in bulk for export (Motta 2015). Growing is very decentralized among farmers, but processing is done by large companies such as Três Corações, Melitta, Cacique, Nescafé and Nespresso. Coffee is rarely shaded by native trees, as in some other countries, but it provides some shelter and connectivity for native fauna and gene flows.

9.2.3 Mining

The gold, diamonds and precious stones that motivated the original non-indigenous settlement of southern parts of the Cerrado in the 18th century (Sawyer 2002) are no longer important, except for the Yamana Gold mine in Pilar de Goiás, owned by a Canadian company.

Since the 1940s, however, significant iron ore deposits have been found and developed by Brazilian companies in and around the Cerrado, mainly in Minas Gerais and Pará. The local impacts of mining are intense but cover less than 1% of the Cerrado's 2 million km^2 or Brazil's 8.5 million km^2. On the other hand, the roads, railroads and pipelines needed to transport the iron ore and intermediary products greatly expand the area affected by mining, for example the Carajás railroad, which runs from southern Pará to the port at Itaqui, in Maranhão. Small-scale gold prospectors (*garimpeiros*) also pollute streams and rivers with silt and mercury, but mostly in the Amazon.

The steel industry of Minas Gerais, which has vast deposits of iron ore, has traditionally burned charcoal from native woody species extracted from the Cerrado, often illegally and with severe environmental impacts. This is the major indirect impact of mining, although charcoal is theoretically renewable, compared to coal, the traditional source of energy for smelting. Smaller companies convert iron ore into pig iron, which is then turned into steel at larger plants. One of the main companies producing steel is Usiminas. A similar industry is growing in Maranhão, near the source of ore from Carajás. In the past, the energy source in that region was wood residues from sawmills (ESMAP 1993), but more is now coming from expanding eucalyptus plantations.

There are also asbestos mines in northern Goiás. The criticisms (denied by producers, who argue that their chrysotile asbestos is harmless) refer mainly to the impacts on human health. The main company is SAMA, part of the Eternit group. Anglo-American also mines nickel ore in the same region.

The World Bank has supported eucalyptus plantations to produce charcoal for the steel industry as a means to reduce emissions of greenhouse gases, which would be much

greater if Brazil imported mineral coke. Beneficiaries claim they only plant on land that has already been cleared. There are also new investments through a Global Environment Facility (GEF) project to increase the thermal efficiency of charcoal use.

Small-scale gold and diamond panning was important in the past, but widespread small-scale mining today is mostly limited to the extraction of large volumes of clay (for bricks and tiles) and sand for construction. This type of mining takes place throughout the region, affecting rivers and streams as well as adjacent land. The use of firewood in kilns can cause net emissions if there is unsustainable harvesting, without sufficient regrowth. Many Cerrado native tree species that are used as firewood are slow to grow, but others like acacia do not take so long.

9.2.4 Tree Plantations

Eucalyptus plantations have covered huge swaths of northern Minas Gerais, stretching hundreds of kilometers, and are now being established in western Maranhão. The total area of eucalyptus in Brazil is 4.8 million hectares, mostly in the Cerrado. In some areas, there are also plantations of pine trees. The main companies are Suzano, ArcelorMittal and Fibria. Some large companies also make agreements with farmers and provide seedlings for small-scale plots that are a form of medium- to long-term investment, with low maintenance costs.

While some eucalyptus is made into charcoal to produce pig iron or for home use, most eucalyptus and pine is used as wood or is turned into cellulose pulp for making paper. No native trees are used to make paper in Brazil (Castanheira 2015). Some is also used to make hardboards, particle boards and fiberboards by large companies such as Duratex and Eucatex.

Local communities in northern Minas Gerais complain bitterly that massive eucalyptus plantations in flat highland areas cause water scarcity. This may be because precipitation is transformed into cellulose, while most of it returns to the atmosphere as evapotranspiration. Many plantations have filled in and dried up springs, but there are now improved techniques with lower impacts (Rômulo Mello, personal communication). Studies of rainfall trends and case-control observations are needed to clarify the issue.

9.2.5 Transportation Infrastructure

In the late 1950s, pioneer or penetration dirt roads such as the Belém-Brasília (BR-153) and the Cuiabá-Porto Velho (BR-364) opened up vast new frontiers to the north and west, even before they were actually paved (with World Bank loans) in the 1970s. Since 2000, improvement of the BR-163 highway, from Cuiabá to Santarém, has enabled soybean export from Mato Grosso up a shorter route to the Atlantic, although pavement is still incomplete.

Investments in ports in Porto Velho (Rondônia), Itacoatiara (Amazonas), Santarém (Pará), Itaqui (Maranhão) and Santos (São Paulo), although outside the Cerrado biome, along the Amazon or its tributaries or on the Atlantic coast, are essential for export of soybeans to Europe and China. Beef also is exported live on the hoof to the Mideastern countries, as well as frozen poultry and pork.

The new Ferronorte railway from Mato Grosso to the port of Santos and the recently completed North-South railway, which connects the Center-West to the port of Itaqui, in São Luis, Maranhão, by way of the Carajás railway, built in the 1970s, favors even greater expansion of soybeans in the Cerrado. Now there are plans for roads and railroads to the Pacific, to facilitate exports to China, which will finance the construction.

As occurs in the Amazon (Alves 1999), roads into new areas cause vast impacts on biodiversity in the Cerrado by opening frontier areas. In net terms for conservation, however, it would be better to concentrate impacts along the roads and increase productivity per hectare, working with market-induced anthropic pressure rather than creating roadside protected areas and pushing low-productivity ranching into larger areas, far from the roads. Furthermore, local feeder roads can help consolidate frontiers and reduce expansion to the more distant peripheries.

9.2.6 Electric Power

In the past, hydropower dams flooded riparian forests in the states of Minas Gerais, São Paulo and Goiás (Três Marias, Furnas, São Simão, Água Vermelha), Bahia (along the São Francisco River) and Mato Grosso (Manso). Since 2000, dams have been built on the Tocantins River at Serra da Mesa, Palmas (Luiz Eduardo Magalhães) and Estreito, and more are planned, leaving the Araguaia River, which has less hydropower potential, to be used for transportation and tourism.

Currently, most new major dams in Brazil are being built or are planned in the Amazon region, on the Xingu (Belo Monte), Tapajós and Madeira (Santo Antônio and Jirau) rivers. It should be noted that these dams on tributaries of the Amazon River, within that biome, depend on water that flows downhill from the Cerrado. They may restrict the migration of fish upstream to spawning grounds near the rivers' headwaters in the Cerrado (Prado 2015).

In part because of pressure from environmentalists against large hydropower projects, smaller dams (small hydroelectric centers or 'PCHs') are being built in many parts of the Cerrado. However, unless special provisions are made, both small and large dams block the upstream run of freshwater fish. They also affect the volume of water downstream, shortages of which can impair energy and transportation. Power transmission lines have confined environmental and social impacts.

Another shift in dam design has been to avoid large reservoirs and to use the flow of the river. This means, however, that a strong and increasing seasonality of river flows significantly reduces generation during the dry season (Goldemberg 2015). This seasonal variation is further exacerbated by increased clearing and climate change, with larger downstream flows during the rainy season and lower volumes during the dry season.

The main investors in electric power, which is an essential public service under Brazilian law, are state-owned companies and an increasing share of private concessionaires. Power generation and distribution companies include the state-owned company Eletronorte and the Company for Development of the São Francisco and Parnaíba Valleys (CODEVASF), all coordinated by federal authorities and *Centrais Elétricas Brasileiras* (Eletrobrás), under the Ministry of Mines and Energy.

In spite of negative local and regional impacts, it should be recognized that electricity can favor higher productivity of land use, especially conversion of pasture to the higher value-added crops that require machinery, energy, communication, qualified workers, schools, hospitals, etc. Conversion of pasture to crops may in turn relieve some of the pressure on woodlands and savannas in the Cerrado, as well as in the Amazon. Large dams and power lines also provide royalties and resources that can be used for conservation and other kinds of compensation. The net threat is lower than it appears.

9.2.7 Oil and Gas

Oil and gas in Brazil are extracted from wells in the Northeast, the Amazon, (mostly gas at Urucu in Amazonas state), and offshore, especially from the new deepwater, "pre-salt" deposits off the coast of the Southeast. Much of the natural gas is imported from Bolivia. Some deposits of petroleum have recently been discovered in the Cerrado in northern Minas Gerais, and maps indicate a widespread potential for exploration of natural gas in other parts of the Cerrado in the future, including central Maranhão, where there are many indigenous lands and *quilombola* communities (ISA 2015).

The state-owned company Petrobrás has a monopoly on exploration of oil and gas in Brazil, including biofuels. The prices of gasoline and diesel affect the economic feasibility of producing and using ethanol and biodiesel. Federal price controls have actually bankrupted many ethanol plants (Sawyer 2015).

For the conservation of the Cerrado, a key issue with regard to petroleum is how to use the return on investments in oil and gas, and the collection of royalties and compensation, to promote conservation of ecosystem functions and social benefits among directly affected groups.

9.2.8 Urban Sprawl

Large cities and metropolitan areas in the Cerrado, especially in and around the Federal District, Belo Horizonte, Goiânia and Cuiabá, have generated urban sprawl stretching dozens of kilometers around them. Urban networks in the interior have also expanded, with more than a thousand urban centers, including medium-size cities and small towns.

In the past, huge government investments built the new capital cities of Belo Horizonte, in Minas Gerais, Brasília, the new national capital, and Palmas, the new capital of the state of Tocantins. New capitals have strong impacts on their surroundings. Further investment in new capital cities is now unlikely but the cities generate urban sprawl.
While highly visible, compared to 2 million km^2 in the Cerrado as a whole, the urban impacts on biodiversity are relatively small, directly impacting perhaps 2% of the total area. Some suburban areas have more trees, including some native species, than untouched native savanna areas. Exotic species like mango trees provide food for native wildlife. There can be urban biodiversity. On the other hand, sewage systems with no investment in treatment severely contaminate rivers in many areas.

While urban expansion creates direct and indirect negative impacts, it also has an important beneficial effect of creating conditions for the rule of law and order and for organization of civil society, which are essential for conservation, as opposed to the 'wild west' that still prevails in more remote frontier areas.

9.3 Conclusions

Based on the literature review and the various consultations, the following Table 9.1 summarizes the main direct ecosystemic threats in the Cerrado as analyzed above and ranks their severity now and for the near future, *i.e.*, their immediacy. The evaluation of severity takes into account the scale of impacts at the ecosystem level. Local impacts may be severe. Severity also considers the net impacts, taking into account that some of the impacts can be positive, at least in the overall context. The analysis does not take into account the fact that localized intensification, with major impacts in specific places, may relieve pressure on other areas and make mitigation of impacts more feasible.

Of course, global climate change is also a threat, but is further addressed in the following chapter.

Table 9.1. Threats and their Relative Severity to the Cerrado Hotspot.

Threat	Relative Severity
Cattle	High
Annual crops	High
Biofuel	High
Charcoal	High
Fire	High
Tree plantations	High
Erosion	Medium
Invasive species	Medium
Permanent crops	Medium
Swine	Medium
Transportation	Medium
Warming (local and regional)	Medium
Chickens	Low
Dams	Low
Extraction of sand and clay	Low
Genetically modified organisms	Low
Hunting	Low
Logging	Low
Mining	Low
Oil and gas	Low
Urban sprawl	Low
Wild collection	Low

The vast agricultural land, the mineral resources and the hydroelectric potential of the Cerrado will certainly continue to be used as a basis for Brazil's economy, which is now under strong pressure to once again achieve high GDP growth rates. The Cerrado is even considered a ‘breadbasket’ for the world, which faces the challenge of feeding a growing population with increasing levels of consumption of protein. Thus, investments in development will certainly continue to flow. The challenge is to both minimize and compensate for negative impacts, as well as to find ways to generate positive impacts, *i.e.* sustainability.

The main way to reconcile conservation and development is undoubtedly to make better use of the land already cleared, especially as regards low-productivity cattle raising, and avoid or at least minimize new clearing. There can be large increases in per hectare yields as well as significant improvements in erosion, pollution and emissions if efficiency,

profitability and spatial concentration enable more preventive and compensatory measures to guarantee sustainability. Horizontal expansion, or 'spread' effects in terms of the categories proposed by Gunnar Myrdal (1957), tends to be less sustainable, while spatial concentration and verticalization, or 'backwash' effects, may reduce pressure on larger areas, while allowing private investment and public control to avoid negative environmental impacts. This adds spatial dimensions to the Kuznets curve, according to which environmental protection decreases during the first stages of economic development and subsequently increases, along with greater wealth and ability to care for the environment (Stern 2004).

There are also possibilities for restoring degraded areas with native species, often combined with exotic species that accelerate the process. 'Rewilding' can be undertaken at a large scale. Planting seedlings, the conventional approach, requires large investments and is high-risk where there are long dry seasons, but there are low-cost alternatives such as fencing to stimulate natural regeneration, direct planting of seeds and providing perches for birds that disperse seeds. Collection of seeds can be a source of income for small farmers and traditional peoples and communities, as in the case of the Cerrado Seed Network. Collection of seeds from areas protected by the Forest Law would be necessary to meet the demand and would not be harmful to ecology if done within limits. Direct seeding reduces costs of restoration as compared to planting seedlings, a benefit which is important for landowners who want to obey the law. These approaches are being implemented to restore Cerrado areas and are especially important in this biome because of the long dry season, which means that recovery and restoration technologies cannot be transferred directly from the Amazon or Atlantic rainforests.

Some investments are being made in agroforestry systems, which can provide environmental benefits while contributing to food security and income. They can incorporate livestock and be used to recover degraded areas (Porro and Miccolis 2011). However, it is necessary to gauge labor demand, economic feasibility (profitability) and the scale of environmental benefits, when only small plots are used. Agroforestry systems cannot be mechanized. It would be important to broaden the scope from plots to entire properties and landscapes.

The focus of efforts should not be limited to large estates. Sustainable productive landscapes can maintain a large part of the original biodiversity, especially the landscapes of family farmers and traditional and indigenous communities. These complex mosaics, including significant portions of original or cultivated plant cover and regrowth, also store carbon and maintain hydrological cycles, with a succession of positive feedback processes.

Conservation planning must be forewarned that negative environmental impacts of development investments are often indirect, for example by pressuring traditional communities and small farmers who live in mosaics of plant cover, which are also home to native fauna, as opposed to the barren pastures and monocultures of agribusiness. Investments in development often dislodge or isolate rural communities that play a role in conservation at the landscape level (ISPN field observations). They could be both more community-friendly and more wildlife-friendly.

The investments that cause negative impacts on conservation are both private and public. Public investments in infrastructure, technology, rural credit and extension and export

promotion, for example, enable private investment by farmers, ranchers and other private economic agents. Private investors also lobby the government for a wide range of incentives and investments. Many who are strongly opposed to protected areas and indigenous peoples' rights have increasing power in Congress and in some ministries, not to mention state and local governments (Sarney Filho 2015).

Except for large-scale mining, most of the investment in the Cerrado is made by Brazilian individuals, companies or banks. Some of the private companies are traded on stock markets. The banks include public banks such as the National Economic and Social Development Bank (BNDES), the Bank of Brazil (BB), the Bank of the Northeast (BNB) and the Bank of the Amazon (BASA). Other public finance comes from the Constitutional Funds of the Center-West (FCO), Northeast (FNE) or North (FNO). These public funding sources are more inclined to include environmental criteria, as provided in the Green Protocol (Braga and Moura 2013).

Multinational companies provide credit and inputs and buy and sell the products, especially soybeans. They include Archer Daniels Midland, Bunge, Cargill and Dreyfuss (the 'ABCD' giants). Other companies sell the fertilizers that are essential for growing crops in the Cerrado. Syngenta, Monsanto, DuPont and BASF sell commercial (including genetically modified) seeds and pesticides (herbicides, fungicides and insecticides). Companies like John Deere and Massey Ferguson produce tractors and other farm machinery.

The income for farmers to invest or pay back loans comes to a large extent from the companies that buy their products. In Brazil – in addition to the ABCD multinationals – they include supermarket chains like Carrefour and Pão-de-Açúcar. Walmart is gaining market share. Abroad, companies that use raw material from the Cerrado include buyers like Unilever, which can be considered as indirect investors. All are part of supply chains under increasing environmental scrutiny.

Crops also depend on various government subsidies, an indirect form of investment. Financial subsidies may take the form of low-cost and easy credit, loan rollovers or write-offs, floor prices and crop insurance. Indirect subsidies have to do with technology development, rural extension, promotion of exports and construction of roads, railroads and ports, among others.

A small share of direct investment in the Cerrado biome is foreign. As mentioned, some American farmers have bought land in western Bahia, while the government of China is looking into buying land in places like Goiás (Oliveira and Schneider 2015). In addition to national policies and consumer pressures within Brazil, Brazilian investors can be influenced by governments and consumers in countries that import their products. Foreign investors can also be influenced by various means.

Global markets are relevant. Their indirect impacts even involve the relocation of industries from developed countries like the United States and European countries to China, where they find cheap labor. Chinese workers in turn consume soybeans from the Cerrado. Such ecological footprints are global but are rarely taken into account.

Ironically, investments in conservation in other regions, both to the north and west (the Amazon) and to the south and east (the Atlantic Forest), may favor deforestation in the

Cerrado by means of leakage, *i.e.*, perverse effects. The requirement for Legal Reserves of 80% in the Amazon as opposed to only 20% in the Cerrado, or 35% for the part of the Cerrado biome located inside the Legal Amazon, is the most outstanding example. The Moratorium on Soy, which is limited to the Amazon, is another case in point.

Environmental licensing and post-licensing monitoring, as well as enforcement of the Forest Law, are ways to control the negative impacts of investments on the environment. However, they are difficult or impossible to implement for activities involving many agents spread over remote areas. Likewise, third-party certification is feasible and effective for industry, but tracking and certifying compliance with standards are not practical for the primary sector, when it involves a multitude of agents.

Payments for environmental services, including payments for Reduction of Emissions from Deforestation and Forest Degradation (REDD+), have been seen as an alternative to influence investors, but they are subject to serious problems of spatial scale and continuity over time. If only some investors in a few places are included, and only part of the time, there will be perverse effects (Sawyer 2015). To be effective in net terms, incentives must be universal and permanent. For impacts in the Cerrado, this is especially true as long as benefits are concentrated in or limited to the Amazon rain forest.

While biodiversity conservation was a worldwide priority for about 20 years, since 2007 a large and increasing part of funding for the environment has gone to reduction of emissions. The effort is sometimes described as 'low-carbon'. A more appropriate label would be 'low-emissions', since reduction of the greenhouse effect depends to a large extent on storing more carbon in biomass and using biofuels, which are also forms of carbon, instead of fossil carbon. Guaranteeing water for biomass survival and growth in dry seasons would be a low-CO_2 strategy. This approach to climate mitigation could justify more resources for biodiversity conservation.

There are various new possibilities, besides command-and-control, to influence investments made directly in the Cerrado or that have indirect effects in the biome. Efforts are under way to hold banks in Brazil liable for the negative impacts of their investments. The Green Protocol (*Protocolo Verde*) is being revived by the Ministry of Environment (Braga and Moura 2013).

Since the largest corporations trade on the stock market, activism by shareholders can influence their behavior. The market can rank companies with regard to their sustainability. Large companies are concerned about their reputations, especially when they operate with large volumes at small profit margins. In these cases, boycotts by consumers, who are also stakeholders, can be effective.

In political terms, agribusiness has been seen as anti-environmental. Overall, this is true. Some agricultural subsectors, however, are actually more stable and serious. Some landowners have an interest in their farms' long-term yields, including future use by their children and grandchildren. The 'wheat' of more responsible subsectors can be separated from the 'chaff' of frontier crooks, which cause the greatest destruction (Landers 2015). Some landowners are willing and able to create private reserves, which are also a means of protecting their property from logging, wild collection, biopiracy and invasion or clearing as well as conversion to other uses by their heirs.

In short, despite generally bleak prospects for the protection of biodiversity, hydrological cycles and carbon stocks in the Cerrado, a close analysis of investment options can identify various means to influence the behavior of Brazilian and multinational companies, and of individual farmers, ranchers and other entrepreneurs so as to reduce their impacts or at least slow the process of destruction to which the Cerrado and its peoples have been subjected to date. At the same time, such socioeconomic dynamics may gain even greater complexity under climate change scenarios that underline the need for integrated, long-term conservation strategies.

10. CLIMATE CHANGE ASSESSMENT

This chapter investigates how climate change interacts with biodiversity and society in the Cerrado Hotspot. Since climate change is global, the scope is broad. Since Brazil is the world's seventh largest emitter of greenhouse gases (GHG), due primarily to deforestation and agriculture, climate is highly relevant to the prospects for biodiversity conservation. The following sections deal with current and projected patterns in the Cerrado, impacts of climate change on biodiversity, social and economic impacts and potential mitigation and adaptation.

10.1 Past Trends in the Cerrado Climate and Biodiversity

Since at least four million years ago, when grasses spread, complex landscapes have constituted the Cerrado (Simon *et al.* 2009), which is typically dominated by a savanna matrix (with variable tree density and high species richness) that envelops patches of several other types of vegetation – from grasslands to forests. This results in a mosaic of high environmental variability (Reatto *et al.* 1998; Ribeiro and Walter 1998; Furley 1999; Durigan and Ratter 2006). The array of ecosystems in Cerrado landscapes is dynamic in both space and time, with forests predominating in humid periods of the Quaternary, while savannas expanded during dry periods; the present configuration is associated with an 'intermediary' climate (Silva 1995; Aguiar *et al*. 2004; Salgado-Labouriau 2005). At the continental scale, the influence of adjacent forest domains (Amazon and Atlantic Forest) on the composition of the Cerrado flora (Felfili *et al.* 1994) and fauna (Silva 1995) reflects this savanna-forest dynamic, indicating that the central position of the Cerrado in the continent played a role in defining its high species richness. Acting as an adaptive pressure for as long as four million years before present, the fire factor also contributed to the evolutionary processes that shaped this hotspot's biodiversity (Simon *et al.* 2009; Cavalcanti *et al.* 2010). At the local scale, isotope-derived evidence shows that forest incrustations advanced towards savanna edges since the last deglaciation (~7,000 years before present), with rates of expansion varying as a function of fire regime and soil composition (Silva *et al.* 2008; Hoffmann *et al.* 2012).

Climate-vegetation interactions that controlled past evolutionary processes in the Cerrado took place through millennia. Even considering this time span, environmental changes related to climate may have been too abrupt to some taxa, as in the case of the terrestrial megafauna that lived in the Cerrado and became extinct some 10,000 years before present (Aguiar *et al.* 2004; Cavalcanti *et al.* 2010). Human activities have influenced the climatic system on a much shorter time scale in recent decades. For the Cerrado, projected changes in temperature and precipitation regimes for the next decades may promote major shifts in ecosystems' structure and functioning (Marengo *et al.* 2010; Bustamante *et al.* 2012).

10.2 Current and Projected Patterns in the Cerrado

Several initiatives to calculate greenhouse gas (GHG) emissions in Brazil emerged from the necessity to obtain updated estimates. For example, civil society started to organize multi-institutional arrays such as the Climate Observatory (OC), which publishes independent estimates based on the same methodology used for governmental inventories. The first official report on national emissions of GHG showed that about 75% of the country's emissions of carbon dioxide (CO_2) were due to changes in land use and forests, *i.e.,* that deforestation and burning, especially in the Amazon and the Cerrado,

were the main sources of emissions from 1990 to 1994 (Brasil 2004). This trend was relatively consistent until 2005, when emissions due to land use changes started to decrease from 58% to 15% of national emissions in 2012, mainly as a result of avoided deforestation (Brasil 2014; Brandão Jr. *et al.* 2015). Even though deforestation rates are expected to further decline, climate change impacts are likely to negatively affect carbon stocks in the Cerrado's ecosystems. Due to increased dryness and more frequent burning, net ecosystem carbon exchanges would change from sink to source of carbon (Bustamante *et al.* 2012).

To examine present and future trends related to climate change in Brazil, the Brazilian Panel on Climate Change (PBMC) was established in September 2009, by the Ministries of Science, Technology and Innovation (MCTI) and the Environment (MMA). The work of PBMC integrates perspectives on climate change derived from various scientific communities working on climate science. The PBMC studies follow the division used by the Intergovernmental Panel on Climate Change (IPCC), namely: (1) physical basis; (2) impacts, vulnerability and adaptation; and (3) mitigation.

The findings of the first PBMC reports indicate a complex scenario by the year 2100, requiring adjustments and improvements in planning and knowledge about the natural environment (Domingues *et al.* 2012). The respective complete reports of the three working PBMC groups were published in 2014 (Ambrizzi and Araújo 2014; Assad and Magalhães 2014; Bustamante and La Rovere 2014).

The report of the first working group is called 'Scientific Basis of Climate Change for the First National Assessment Report'. The main indicators for the Cerrado identified were: (a) 1°C increase in air temperature, with a decrease of 10% to 20% in precipitation over the next three decades (by 2040); (b) by mid-century (2041-2070), an increase between 3 and 3.5ºC in air temperature and a reduction between 20% and 35% of rainfall; and (c) at the end of the century (2071-2100), increasing temperature between 5 and 5.5ºC and a more critical downturn in rainfall, with reductions between 35% and 45%.

As for impacts, vulnerability and adaptation, the temperature rise in any of the situations will probably result in a reduction of the photosynthetic process in Cerrado plants, resulting in a decrease of their biomass and a reduction in primary productivity. At the same time, the increase in the length of the dry period can potentially result in increased vulnerability to fire in the Cerrado, as has already been noted in recent years.

Given that local trends in desertification are already alarming (Carvalho and Almeida-Filho 2009; Horn and Baggio 2011), there is the risk that these processes could be amplified by the potential negative effects of rising temperature, more frequent burning and decreasing precipitation on Cerrado vegetation, especially considering the historically high rates of deforestation and land degradation (Klink and Machado 2005). If the dry season becomes longer (Marengo *et al.* 2010), less cloud cover would make temperatures rise even higher in the summer, which is now the rainy season. Persistent trends in that direction would lead to reduced flow of water in rivers and dry lakes, potentially reducing potable water supplies *(*Marengo *et al.* 2009), which could also be due to increased atmospheric concentrations of CO_2 'fertilizing' the growth of biomass and absorbing water (Ukkola *et al.* 2015).

Mitigation was analyzed with regard to risks and uncertainty, development and equity as well as drivers and trends. The conclusions are that there are many opportunities for transition to low-carbon and for use of renewable energy sources. Transportation can be more efficient, as can buildings. Barriers to energy efficiency in industry should be reduced. Recovery of pastures and tree farming are ways to reduce emissions of agriculture. Sustainable land-use change is important in the Amazon and Cerrado and could benefit from payment for environmental services, including carbon credits. Overall, there is need for much additional research.

10.3 Impacts of Climate Change on Biodiversity

A pioneer study on climate change effects on the Cerrado flora projected substantial declines for most tree species in the next 40 years (Siqueira and Peterson 2003). The researchers applied techniques of ecological niche modeling to develop a first-pass assessment of likely effects of climate change, as represented by global circulation models, on spatial distribution of 162 tree species by relating known occurrence points (15,657 records) to maps representing current and projected ecological dimensions. Considering both the conservative and the less conservative emission scenarios evaluated – *i.e.*, assuming a 0.5% per year atmospheric CO_2 increase and a 1% per year atmospheric CO_2 increase, respectively – 10% to 32% of the 162 analyzed species could end up without habitable areas in the Cerrado region or become extinct by 2055. Furthermore, between 91 and 123 species were predicted to decline by more than 90% in the potential distributional area in the Cerrado, with major range shifts to the south and to the east.

Expected impacts of global climate change on environmental suitability of wild edible plants, specifically, have been calculated (Oliveira *et al.* 2015). Considering the 16 most popular edible species in the Cerrado and a 'business as usual' climate scenario, this research projects large negative effects of climate change on geographical range sizes. After evaluating ecological niche models, their results indicate a shrinking distribution range for 12 species when comparing present and future (2080) climate scenarios. This would lead to insulation of edible species richness in the southeast Cerrado, as this region presented the highest predicted environmental suitability; the degrees of edible species loss in other regions are expected to rise with increasing distance from the southeastern area.

Focusing on *pequi* (*Caryocar brasiliense*), a culturally and economically important Cerrado fruit tree, Nabout *et al.* (2011) found that municipalities currently using *pequi* fruit will have lower production in the future, because their regions will be less suitable for this tree, which in turn may affect the local economies. The authors warn that it will be necessary for governments to develop policies to mitigate adverse impacts, enhance positive impacts and support adaptation to climate change, as well as enhancing local food security.

Marini *et al.* (2009) also predict geographical displacement of species niches for Cerrado endemic bird species: an average range shift of 200 km towards the southeast. Their projections show that the geographical distribution of seven forest-dependent bird species would retract 41% to 80% by the end of the century, considering both the A1B and the B1 IPCC Emission Scenarios. For nine savanna species, estimated distribution retraction was 9% to 37%, while for ten grassland species, range loss was between 2% and 71%. Given the same premises, only one species (chapada flycatcher (*Suiriri islerorum*), a

habitat generalist) is expected to expand its geographical distribution, and only by 5%. The authors used consensus projections to derive these results, considering nine different ecological niche-modeling approaches and three global climatic models (from less conservative to more conservative).

Protected areas represent 8.3% of the Cerrado extension but comprise only 3.1% if considering only strict ('integral') protection, far below the 17% Aichi target. Those areas are concentrated in the northern region of the biome, with few remaining fragments in the south and the east regions, where socioeconomic pressures to convert natural habitats into commercial agroecosystems are highest *(*Klink and Machado 2005*;* Soares-Filho *et al.* 2014). This poor conservation status turns the projected range shifts toward the south and east into very troubling ones – even when considering the inherent limitations of modeling approaches (Siqueira and Peterson 2003; Marini *et al.* 2009; PBMC 2014). Hence, integrating planned actions that promote habitat preservation and ecological restoration through sustainable management is critical to prevent rising species extinction rates (Thomas *et al.* 2004; Brook *et al.* 2008).

10.4 Social and Economic Impacts of Climate Change

EMBRAPA Cerrados, in partnership with the State University of Campinas (UNICAMP), modeled changes on spatial patterns of crops in the Cerrado due to climate change. Considering the most optimistic IPCC scenario evaluated (B2 projects a 1.4ºC to 3.8°C rise in mean global surface temperature), areas with a low probability of hazardous thermic events would be reduced by 11.04% for cotton, 8.41% for rice, 4.35% for beans, 12.17% for corn and 21.62% for soy, the main crop in the Cerrado. This could cause combined economic losses of US$ 1.7 billion for the main crops in the hotspot, as well as crop migration southwards, where climate conditions might be more favorable but land and labor are more expensive (Assad *et al.* 2008; Costa *et al.* 2010).

Climate change in terms of reduced precipitation could lead to more severe dry seasons and even desertification, as evidenced in the northeastern portion of the Cerrado (Carvalho and Almeida-Filho 2009; Horn and Baggio 2011; Vieira *et al.* 2015). Given that the Cerrado is the main source of water for three of the largest river basins in South America, understanding the socioeconomic and ecological impacts of hydrological changes is critical. The PBMC report lists several studies that already indicate substantial hydrological, geomorphological and biogeochemical changes in these fluvial systems. Modeling South American future precipitation trends that derive from IPCC scenarios, Marengo *et al.* (2009) expect extensive salinization and degradation of croplands as well as dropping livestock productivity, reflecting the fact that water availability and food security are closely related. These prospects are even more critical when macroeconomic pressures towards further conversion of natural ecosystems to annual crops and pastures are considered, since this also implies negative impacts to water resource conservation and additional GHG emissions through biomass burning and oxidation of the soil's organic carbon (Costa *et al.* 2010; Bustamante *et al.* 2012; PBMC 2014). At the local scale, planters of coffee in Patrocínio, Minas Gerais, far from any drylands and between three immense reservoirs, are already worried about scarcity of water (Haggar and Schepp 2012; Motta 2015). In areas adjacent to the semi-arid Caatinga, in the Jequitinhonha Valley, ISPN field observations have also verified drought-related social and environmental issues.

Native edible plant species are widely used in restaurants, local food, desserts and ice cream, thus contributing substantially to local economies. If the predicted reduction in suitable habitat and geographical range leads to decreasing availability of those species, there can be significant economic risk for traditional communities that depend on native ecosystems for collection of these plants. This may force residents, especially youth, to undertake other economic activities, potentially resulting in less protection of natural ecosystems and further pressures towards conventional land uses.

If climate change is to cause displacement of economic activities to other regions, negative social and economic impacts could be strong. Within the Cerrado, migration to cities is not necessarily a positive route of mitigation or adaptation (Castles 2002). Impacts would be even worse if there are shortages of water and therefore electric power in cities, as are already beginning to occur. Considering the vulnerability of urban populations to floods and landslides, climatic projections indicate the expansion of high-risk areas with extreme events occurring more frequently (PBMC 2014). There has already been serious drought in São Paulo and landslides in Salvador. Overall, these threats mostly concern the economically and geographically vulnerable population, as expected worldwide (IPCC 2014).

10.5 Potential Mitigation and Adaptation

To address this situation, as explained in Chapter 7, the Brazilian government launched the Action Plan for Prevention and Control of Deforestation and Fires in the Cerrado (PPCerrado) as part of the National Policy on Climate Change in 2009. This plan seeks to ensure the reduction of GHG emissions in the region as a national priority. The PPCerrado is integrated with the Sustainable Cerrado Program, which was created in 2005 by the Ministry of Environment. The latter program aims at the conservation, restoration and sustainable use of the Cerrado's ecosystems, with particular focus on enhancing watershed integrity, improving traditional communities' livelihoods and strengthening the management role of civil society in the hotspot. If attained, these conservation goals would contribute greatly to climate change mitigation, mainly through maintenance of ecosystem services that regulate climate through biogeochemical processes (Bustamante *et al.* 2007; Costa *et al.* 2010; Bustamante *et al.* 2012).

Natural ecosystems play a substantial role in balancing anthropogenic GHG emissions, as shown by the growing convergence between the approaches of the Convention on Biological Diversity (CDB) and the United Nations Framework Convention on Climate Change (UNFCC). Thus, reaching the Aichi target of 17% of the Cerrado in protected areas would help mitigate emissions through avoided deforestation and fire management, as well as sequestration, if the hotspot continues to function as a carbon sink (Bustamante *et al.* 2012). However, this target is below what would be necessary in terms of woody plant cover. It would be fundamental to maintain about half of the hotspot with native tree cover, both original and recovered through regeneration and reforestation. That scale is needed in order to mitigate the climate change in terms of precipitation within the biome and in neighboring regions and countries, as explained in Chapter 4, on ecosystem services.

As elsewhere in the world, Cerrado communities that are more economically and environmentally vulnerable will be hit hardest by climate change (IPCC 2007, 2014). The rural poor, who are not so dependent on infrastructure for water, energy and food, may

be more resilient than the poor living in cities and towns (Feiden 2011). The best adaptation strategy would be to make it possible for the rural population, including small farmers and other traditional peoples and communities, to remain on the land. For example, Cerrado populations exposed to the risk of future precipitation shifts could adapt through social technologies that already allow rainwater capture and storage in the Caatinga, with minor adjustments. In addition to technology transfers, strong governance and sector-based policies will be required to disseminate sustainable management approaches among farmers. Solving the structural problems concerning land rights and registration is another prerequisite (Lapola *et al.* 2014; Brandão Jr. *et al.* 2015). The dissemination of successful landscape management approaches requires political decisions that guarantee efficacy and continuity. To this end, civil society must interact with various stakeholders (*i.e.*, private sector, global community, governments) to strengthen mitigation and adaptation efforts.

An initiative of this kind that is already under way in northern Minas Gerais is the Satoyama project, which is managed by ISPN, executed by local organized civil society and supported by the GEF-UNDP Small Grants Program. The landscape approach was originally developed in Japan. In this dry region of the Cerrado, the construction of small dams improves water security for local communities, thus alleviating some of the economic and environmental pressures towards emigration. Indirectly, the initiative helps mitigate habitat loss and water constraints for native flora and fauna, which is returning.

10.6 Conclusions

It is essential to link biodiversity conservation and climate change agendas. Considering that human-generated climate changes will occur in a much faster pace in relation to paleo-ecological trends, projected higher temperatures, less rainfall and extreme events are very likely to have severe impacts on the Cerrado biodiversity, as demonstrated for the groups studied so far. Past and current regional land use trends must be set to a transition towards less exploratory occupation and better management practices. Deforestation and indiscriminate use of fire are examples of undesirable activities. The central role of the Cerrado in maintaining interregional hydrological balance and relatively constant flows of water to other regions of Brazil, as well as to Bolivia, Paraguay, Argentina and Uruguay, is clear. Given that biodiversity is sensitive to rising global temperature and regional water scarcity, large increases in funding for biodiversity conservation in the Cerrado are essential, especially at the macro-landscape scale. Resilience to climate change in the Cerrado and neighboring areas depends on maintaining the original ecosystems and the services they provide at a scale of a million square kilometers. This challenging scenario requires integrated efforts from civil society, governments, farmers and the global community to elaborate strong governance and incisive environmentally oriented policies. Another fundamental goal is to provide means for the rural population to trigger the transition towards a more sustainable landscape array. Social and agroecological technology transfers will certainly play a role in this enterprise, because they provide solutions to environmental tensions – including but not restricted to the impacts of a changing climate – that may provoke emigration from rural regions.

11. ASSESSMENT OF CURRENT CONSERVATION INVESTMENT

This chapter assesses recent and current conservation investment, covering both direct investment in such elements as protected areas and environmental science, as well as investment in economic development and local governance with positive impacts on conservation outcomes. Loans are not included, nor are investments intended to generate profit. Thus, the analysis includes traditional economic and social development funders and players whose funding and work, or lack thereof, influence CEPF's niche for investment described in Chapter 12. It makes distinctions among sources, sectors and themes and identifies gaps and lessons learned. Although a precise baseline is not possible, for reasons explained below, some patterns, trends, limitations and opportunities are clear.

To understand what can be done in the Cerrado, one must look to broader contexts both in Brazil, including government, society and the private sector, and abroad, taking into account the environmental policies and priorities of governments, international agencies, foundations and companies. Some investments in social programs or economic development must also be taken into account, to the extent that they can generate large-scale environmental co-benefits, much needed in the Cerrado Hotspot. The purpose of using this broad scope is to identify limitations and opportunities for the Cerrado, as well as lessons learned.

11.1 Investment by Source and Location

The following subsections identify, to the extent possible with what limited data is publicly available, the main investments in the environment in Brazil from domestic and international sources since 1992, when the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, catalyzed Brazil's first large-scale investments in the environment. The analysis begins with the biome that received the most investment, the Amazon, and ends with the biome that received the least, the Pampa. Trends that emerge over time reveal less funding for the Amazon and more for the Cerrado, although dramatic differences remain. Understanding this context of what donors do and do not support is essential for designing a medium- to long-term strategy for additional investment in the Cerrado.

The geographical scope of this analysis is broader than the Cerrado because, for both the short and the long term, it is fundamental to see what sources are available, whether traditional or new, that might shift their geographical or thematic focus or their *modus operandi*. The Cerrado is often eligible for funding, but it has generally failed to present competitive proposals, compared to the Amazon and the Atlantic Forest. Funding tends to be cumulative, with successful grant recipients requesting and receiving further support.

Although many websites, donors and beneficiaries were consulted, detailed data are rarely available and are not broken down in the ideal way for this exercise. The analysis is made more difficult by the fact that the borders between the Cerrado and its four surrounding biomes are blurred, as the Federal District is the only unit that is 100% in the Cerrado. The nine states considered here are only partly in the Cerrado. In most of the existing sources of data, such as the catalog of projects approved by the Brazilian Cooperation Agency (ABC) of the Ministry of External Relations (MRE) or the lists of

projects funded by certain donors, provided on their websites, the investments are not categorized by biome or even by state. Nor is it possible, in most cases, to classify projects or amounts according to a 'conservation' criterion. Furthermore, the data on timing and amounts are open to interpretation and misinterpretation. Starting and ending dates and actual expenditures rarely conform with plans, and exchange rates fluctuate by more than 100% over time. The figures often include considerable co-financing, sometimes most of the total, much of which is in-kind contributions rather than in-cash funding, but this is not clearly identified.

It should be noted that many investments in conservation are for the country as a whole. For example, the National Forest Inventory (now being carried out by the Brazilian Forest Service (SFB) with funding from GEF and other sources) covers the entire country. Investments in the various Cerrado states would need to be broken down by municipality in order to be classified by biome. Likewise, many of the costs of research, training, environmental education, administration and participation in international negotiations, among other activities related to conservation, are not calculated on the basis of any geographical criteria. In sum, for all these reasons – purpose, location, timing, execution delays, blurred co-financing, and fluctuating exchange rates – the available data are not relatable enough for direct comparison in tables. Nonetheless, general patterns and trends can be identified.

Because of the hundreds or even thousands of investments in conservation in a country as large and as environmentally important as Brazil, only the main investments are considered in this analysis, *i.e.*, those involving over a million dollars, except for the Cerrado, which is analyzed in greater depth. Presumably, there is correlation between the sum of the main investments and the grand totals including all the smaller investments. The Atlantic Forest, at least in regions where wealth is more concentrated, *i.e.*, the Southeast and the South, certainly has more small-scale local investments than the Amazon, Cerrado, Caatinga and Pantanal, which are located in less developed regions.

In the following subsections on each biome, there are examples of what can be done and lessons that can be learned that are relevant for future investment in the Cerrado.

11.1.1 Amazon

The Pilot Program to Conserve the Brazilian Rain Forest (PPG7) was the largest investment ever in international cooperation on the environment. It began in 1992 and lasted until 2012. The total amount of donor money was US$ 428 million, primarily from the German government, but also involving other G7 countries, as well as the Netherlands and the European Union. The goals of the program were to conserve biodiversity, reduce deforestation and emissions and provide examples of sustainable development and international environmental cooperation. The subprograms gave rise to 28 projects and led to the creation of a natural resources policy and many protected areas, including support for 2.1 million hectares of Extractive Reserves, demarcation of indigenous lands, a surveillance system, 110 studies about rain forest ecosystems and support for demonstration projects involving 30,000 families in local communities. One major conclusion of the program was that natural resource conservation is only possible with the active participation of forest populations (World Bank website).

Between 1993, when international attention was attracted by a massacre of the Yanomami in Roraima, and 1999, when there was a reorganization of ministries, the MMA became

the Ministry of Environment and the Legal Amazon and subsequently expanded to include Water Resources. The Secretariat of Amazon Coordination (SCA), the only secretariat for a biome, had abundant funding but was eliminated during an internal reorganization of the ministry in 2008.

The United States Agency for International Development (USAID) invested in the Amazon through the Global Climate Change (GCC) program and subsequently in a broader environmental program for Brazil, before scaling down in recent years. USAID works to strengthen biodiversity and the conservation of natural resources in protected areas and indigenous lands. It has focused on forest governance, sustainable forest management and biodiversity conservation, providing technical assistance and training for indigenous groups, civil society and local government officials. It supports projects in the Amazon that preserve the environment and its biodiversity and strengthen fire management and forest health. It assists farmers and cattle ranchers with sustainable environmental management practices on their lands and provides technical training to local and indigenous groups on fire management and control. Local women's and indigenous groups have participated in training programs. USAID has supported numerous projects all over the Amazon. North of Manaus, the Smithsonian Institution, under the leadership of Thomas Lovejoy, carried out the Forest Fragments project, which was the birthplace of the concept of biodiversity. The Tropical Forest Foundation (TFF) works with low-impact forestry, mainly in Pará. The University of Florida supported PESACRE and TNC supported SOS Amazônia in Acre, the Amazon region's pioneer state for environmentalism, which spread from there to Amapá and beyond. The United States Forest Service (USFS) has worked with fire control. The State University of New York (SUNY) managed a training program.

The United Nations Food and Agriculture Organization (FAO) has implemented GEF projects in São Félix do Xingu, in Pará, and along the BR-163 highway, in Mato Grosso and Pará, while the United Nations Development Program (UNDP) has implemented several GEF projects in the Amazon, especially in Northwestern Mato Grosso.

The Amazon Fund began in 2010 with a commitment by the government of Norway to provide US$ 1 billion to reduce deforestation, although it does not include payments to landowners who do not cut down forest. Germany contributed a smaller amount. The fund is managed by Brazil's National Economic and Social Development Bank (BNDES). Up to 20% of the total could be used outside the Amazon biome, even in neighboring countries, but this has not happened yet. Discussions are now under way on how the Cerrado might be included.

The National Space Research Agency (INPE) focused its efforts on monitoring deforestation in the Amazon region and established the Project to Monitor Deforestation in the Legal Amazon **(**PRODES) and the System to Detect Deforestation in Real Time (DETER) to support law enforcement. The system costs about US$ 2 million per year and is therefore expected to expend US$ 40 million in 20 years. There was no similar monitoring for other biomes.
Because of their location and focus, the National Amazon Research Institute (INPA), in Manaus, and the Emílio Goeldi Museum of Pará (MPEG), in Belém, both of which connected to the Ministry of Science, Technology and Innovation (MCTI), have been able to attract Brazilian and foreign researchers and international cooperation, as have the

federal universities in the Amazon. The Large-Scale Biosphere Atmosphere (LBA) project was a major scientific investment.

Based in São Paulo, the Amazon Program of Friends of the Earth (*Amigos da Terra*), not connected to Friends of the Earth International, has worked in the Amazon since 1989. It promotes sustainable use of forest products, control of fire, support for isolated communities, and policy formulation and monitoring; it also provides an online clipping service about the region (www.amazonia.org.br).

Greenpeace has been active in Brazil since 1992, launching campaigns focusing mainly on the Amazon region and on logging. With support from sources in the Netherlands, it was a key player in the Soy Moratorium, to avoid purchase of soybeans from recently deforested areas in the Amazon, but not in the Cerrado (Dros and van Gelder 2002).

The Institute for Amazon Research (IPAM), the Institute of Man and the Environment in the Amazon (IMAZON), and the International Institute for Education in Brazil (IEB), all NGOs created in the 1990s with initial support from USAID, moved on to mobilize funds from other sources. They have carried out many research and training activities for the Amazon. IEB has carried out leadership training. IMAZON also monitors deforestation in its own parallel nongovernmental system.

The sum of all these investments in the Amazon biome over a little more than two decades is on the order of US$ 2 billion, *i.e*., about US$ 100 million per year, with a recent tendency to decline. In all these cases, it should be noted that the Amazon received exceptional attention because it is a tropical forest. Forests have a special appeal for the public and donors. The Amazon forest is also part of a larger South American ecosystem and one part of a broad category that exists in many countries and continents, not only in Brazil. The rich biodiversity is considered a global environmental good. The emissions caused by deforestation were a major justification for investment in conservation. Indigenous peoples, who live in large territories, were another important justification for funding.

11.1.2 Atlantic Forest

In negotiations at the Rio-92 conference, Brazil succeeded in including the Atlantic Forest in the PPG7, which was not originally intended by the donors. Approximately 10% of the US$ 428 million was earmarked for this biome, *i.e.*, US$ 43 million over 18 years.

Between 2001 and 2011, in two phases, the CEPF invested US$ 11 million in the Atlantic Forest, primarily in its central and southern corridors. Various NGOs that initially were supported by CEPF have found other sources to carry on work in this biome.

USAID supported conservation projects in southern Bahia through the Institute for Socio-Environmental Studies of Southern Bahia (IESB). German cooperation has also channeled investments into the biome.

Since 1990, the Boticário Foundation, connected to a large Brazilian cosmetics company, has supported numerous conservation projects, primarily for protected areas in the Atlantic Forest (and one private nature reserve in the Cerrado). Its present annual budget

is now US$ 1.1 million. This is a rare example of environmental grant making by a private Brazilian foundation.

Currently, a UN Food and Agriculture Organization (FAO) project funded by GEF supports integrated ecosystem management in Ilha Grande Bay (state of Rio de Janeiro) for a total of US$ 2.3 million. The evaluation found that numerous meetings have taken place, but integrated management remains problematic. The project was promising, but is not a model for other regions.

SOS Atlantic Forest and the Atlantic Forest Network, CSOs that raise funds from various sources, have highly qualified personnel and are able to influence government and society. SOS Atlantic Forest has a strong presence in the National Congress. Working in networks, the regional CSOs were successful in passing the federal Atlantic Forest Law specifically for the biome. This was not particularly difficult, since the region is not a theater for unequal conflict between agribusiness, a mainstay for the national economy, and relatively weak socioenvironmental movements.

The state government of São Paulo has invested hundreds of millions of dollars in the Atlantic Forest near the coast, *i.e.*, in mountainous areas under little anthropic pressure. This can illustrate how wealthy developed states with strong urban-industrial economies could afford large investments of this kind.

The sum of these investments in the Atlantic Forest biome is on the order of US$ 10 million per year, less than in the Amazon, but much more than in other biomes. The trend has been fairly steady over time, with less international support and more national inputs. It should be noted that, like the Amazon, the Atlantic Forest was able to fit into a broader category of tropical forests. The volume of funding has to do with the fact that most of the biome is in developed regions, with well-qualified scientists and civil society organizations who can mobilize funding from many sources. The need for conservation is essentially a consensus. There is little or no dispute over the importance of conserving the small areas that have not been cleared.

11.1.3 Caatinga

FAO has a long record of funding for the Caatinga and will receive US$ 3.9 million for a GEF project to reverse deforestation in parts of five states, with US$ 20 million in matching funds from Brazilian partners.

The Inter-American Institute for Agricultural Cooperation (IICA) works in the Caatinga (Messinis 2015; IICA 2015). The Spanish Agency for International Development Cooperation (AECID) provided approximately US$ 25 million for projects in the semi-arid part of the Northeast, mostly for cisterns and "*living in harmony with drought*" ("*convivência com a seca*"). It should be noted that Spain, which does not have many forests, is notable for not focusing primarily on rain forests. German cooperation has also been involved in small grants.

UNDP has obtained US$ 3.8 million in GEF funding for Sergipe, through the MMA, with US$ 17 million in local matching funds. It has also obtained US$ 5.2 million for non-timber products and agroforestry through EMBRAPA-CENARGEN, with US$ 26.3 million in matching funds, to work in the Caatinga, Cerrado and Amazon. The Caatinga

is different from other Brazilian biomes in that it is eligible for support under the GEF's Land Degradation focal area. This may be a possibility for parts of other biomes, especially as climate change progresses.

Government spending on social programs in the Caatinga is particularly high because of the large population and high levels of poverty in the region. Such expenditures are justified in political terms, be they well-intentioned or merely electoral. The direct and indirect investments, with conditional cash transfers and a variety of social programs, are also beneficial in helping relieve pressure on environment. Because of these benefits provided by the government, family farmers need to clear less land every year to produce food and generate cash income.

There is much to learn from the rich experiences in the Caatinga regarding work with communities and living in harmony with ecosystems. The particularly important innovations are appropriate social technologies for capture and storage of rainwater for consumption, production and conservation in the context of increasing dryness and threats of desertification. Even before the dryness intensifies due to climate change, there are already several months of practically zero rainfall. Making better use of abundant water from the rainy season by storing it for the dry season would be beneficial both to humans and to other species living in the Cerrado.

The sum of environmental investments in the Caatinga biome is on the order of US$ 10 million per year, fairly low, but social and development investments with environmental benefits are much larger. It should be noted that the Caatinga received international attention because it is an area subject to desertification, a problem that affects many other countries, especially in Africa. Another justification for donor funding is that the biome has the highest levels of poverty in Brazil, otherwise considered an emerging middle-income country.

11.1.4 Pantanal

WWF and CI work with the Pantanal, a national heritage ecosystem according to the 1988 Constitution. WWF also works with adjacent areas in Bolivia and Paraguay in the tri-national Cerrado-Pantanal project.

The Social Service of Industry (SESI), a semi-public organization funded by mandatory fees, has invested in private protected areas. The Pantanal attracts tourists from Brazil and the rest of the world, especially because of its fish, which can be observed in crystal-clear water, and its colorful birds.

The state governments of Mato Grosso and Mato Grosso do Sul, despite the lower levels of development in the Center-West as compared to those of the Southeast, have been taking a greater interest in the environment than in the past. Mato Grosso has been a leader in environmental land registration and Mato Grosso do Sul in zoning, both including the relatively limited sections that are in the Pantanal wetlands.

The relatively small investments in environment in the Pantanal biome, around US$ 2 million per year, scarcely ahead of the Pampa's, are not anywhere near investment levels in other wetlands biomes. In part, the Pantanal received very little international attention because it is small, compared to most other Brazilian biomes. The attention it

did receive has to do with charismatic species, including fish to catch and birds to watch, with potential for ecotourism and recreation. Bonito, in Mato Grosso do Sul, is a major tourist attraction in which public and private investments have synergy with environmental conservation.

11.1.5 Pampa

Although the environmental movement in Brazil began in Rio Grande do Sul, investment in conservation in the Pampa, Brazil's sixth biome, has been insignificant, except for some efforts by the state government of Rio Grande do Sul, where the entire biome is located. The Pampa is not even considered by environmentalists who want the Cerrado and the Caatinga to be declared national heritage regions through a constitutional amendment.

Environmental investments in the Pampa biome, some US$ 1 million per year, are insignificant compared to those in the first five biomes. The grasslands are not considered to be of global interest because they lack biodiversity and carbon storage appeal. It is unlikely that this will change in the near future. In that sense, there could be common links among the Cerrado, the Pampa and perhaps the Pantanal, which is sometimes considered to be a humid savanna.

11.1.6 Cerrado

As mentioned in Chapter 6, the main investments indirectly related to environment in the Cerrado were made by the Brazilian Agricultural Research Company (EMBRAPA), which has a specific unit for the Cerrado, originally known as the Center for Cerrados Agricultural Research (CPAC), located in the Federal District. Most of the investment was for technology for crops and livestock, although some researchers at CPAC worked on environmental issues such as useful plants (*e.g.*, Almeida 1998a, 1998b; Almeida *et al.* 1987) and vegetation types, especially gallery forests (*e.g.*, Ribeiro and Walter 2008), among others. EMBRAPA's Genetic Resources and Biotechnology Center (CENARGEN) also did pioneering work with saving agrobiodiversity genetic resources among the Krahô indigenous people in Tocantins, as well as supporting family farmers in northern Minas Gerais.

In 1991, FUNATURA, through The Nature Conservancy (TNC), as mentioned in Chapter 8, received support from Brazil's first debt-for-nature swap, to implement the Grand Sertão-Veredas National Park and resettle the area's original inhabitants. The interest of 6% on US$ 2,192,000 provides continuous income of US$ 131,520 every year (Piccirillo 1993).

Between 1996 and 2000, the United Kingdom Overseas Development Agency (ODA) and Department for International Development (DfID) funded the project on Conservation and Management of the Plant Biodiversity of the Cerrado Biome (CMBBC), with grants to EMBRAPA-Cerrados, IBAMA, UnB and ISPN, *i.e.* government, academia and civil society, totaling some US$ 2 million. A second phase starting in 2001 focused on the Paranã-Pirineus corridor in northeastern Goiás (no data available on funding). The project made significant contributions to scientific knowledge about the botany of the Cerrado (Felfili *et al.* 1994; Ratter *et al.* 1997; Ribeiro *et al.* 2008; Proença *et al.* 2010). Many reports on socioeconomic aspects were never published but have been very useful for the preparation of this ecosystem profile (Sawyer *et al.* 1999).

As mentioned in Chapter 7 on the policy context, the GEF Sustainable Cerrado Initiative received US$ 13 million through the World Bank to support the MMA and the states of Goiás and Tocantins from 2010 to 2015, promoting environmental protection and sustainable agriculture. The Sustainable Cerrado Plan resulting from broad-based consultation with stakeholders in 2003-2004 was used as justification for a full-scale GEF project through the World Bank, but the project did not deal with the parts of the plan regarding sustainable use of biodiversity or communities.

Brazilian government programs like PPCerrado have invested tens of millions of dollars in the hotspot for conservation *per se* (see Chapter 7), but the main government investments have been in social policies, with co-benefits for environment, both in the sense of promoting sustainable use of biodiversity and because social programs reduce the need to clear more land to produce food and income.

Since 1995, the GEF-UNDP Small Grants Program (SGP), through the *Programa de Pequenos Projetos Ecossociais* (PPP-ECOS), has invested US$ 10 million to support more than 300 projects having to do primarily with sustainable use of biodiversity by local communities in all the states that are part of the Cerrado. The future of the program in GEF6 is not certain, and it may be necessary to find other sources.

The United States Tropical Forest Conservation Act (TCFA) provides funding through the Brazilian Biodiversity Fund (FUNBIO) for activities in the Cerrado, including some projects associated with PPP-ECOS that have to do with capacity development and institutional strengthening, such as resource mobilization and dissemination.

WWF in Brazil, which until recently has received significant funding from the international parent organization, has invested in the ongoing trinational Cerrado-Pantanal project in Mato Grosso do Sul and Mato Grosso, as well as in the Chiquitano and Chaco areas of Bolivia and Paraguay. It also invests in the Grande Sertão-Peruaçu Mosaic of protected areas in northern Minas Gerais.

Through its various international cooperation agencies, Germany invested in the Cerrado in 2012 by funding the Cerrado-Jalapão project, providing a total of 13.5 million Euros, equivalent to approximately US$ 12 million, primarily for control of wildfire, which is linked to climate change mitigation but also benefits biodiversity. Part of the 550 million Euros that Germany now plans to invest in forests, biodiversity and climate in Brazil, as explained in a seminar on this subject in August 2015, may go to projects in the Cerrado, not just to the Amazon.

Regarding the private sector, Monsanto and CI invested US$ 1.1 million in the Produce and Conserve Program in western Bahia between 2009 and 2013. The Round Table on Responsible Soy (RTRS) and the Cerrado No-Till Farming Association (APDC) involve the private sector in conservation agriculture such as zero tillage and integrated crop-livestock systems. The main concern of the private sector, as expressed in the two consultation workshops held as part of the ecosystem profile process, is with covering the costs of sustainable production.

The Black Jaguar Foundation (BJF), established in Europe in 2015, plans to mobilize resources to protect a corridor along the Araguaia River from its source in southern Goiás

to its mouth in Pará (www.black-jaguar.org). It is helping to attract international attention to the Cerrado, not just to the corridor.

The state governments in the Cerrado, which now have their own environmental secretariats, have begun to invest more in the environment than in the past. The investments in the Amazon brought about change in Mato Grosso, Tocantins and Maranhão. The priority in the less developed parts of Brazil continues to be economic growth, mainly through agribusiness and large-scale mining, and social programs. Data on the amounts are not available, since the various cost categories (buildings, staff, travel, consultants, etc.) are not broken out as such. A few municipal governments, such as Alto Paraíso, Goiás, are involved, but they are exceptions to the rule.

Together with the Inter-American Development Bank (IDB), the World Bank Group (IBRD, IFC), other development partners and key Brazilian stakeholders, the Forest Investment Program (FIP) will lend between US$ 50 million and US$ 70 million for projects in the Cerrado starting in early 2016. The investment plan aims to promote sustainable management and use of previously anthropic savanna wooded areas, maintain carbon stocks and reduce GHG emissions, and improve the collection and management of information across the 11 states of the Cerrado through implementation of the Forest Law and monitoring of deforestation. Brazil's FIP investments also focus on indigenous peoples and local communities, providing access to fire alerts and early warning systems, information and support for environmental compliance, and assistance with the adoption of low-carbon farming practices in and around their lands. The Dedicated Grant Mechanism (DGM) for Indigenous People and Local Communities provides a grant of US$ 6.5 million channeled through the Center for Alternative Agriculture of Northern Minas Gerais (CAA-NM).

Also through the World Bank, the United Kingdom's Department of Environment, Food and Rural Affairs (DEFRA) is investing US$ 4.3 million in three municipalities in Bahia and six in Piauí as well as three protected areas. There appears to be considerable overlap with the priority areas and corridors identified in this ecosystem profile. The funding aims to reduce rates of deforestation by supporting the environmental registration of rural holdings and helping farmers restore vegetation on illegally cleared land. It also funds measures to prevent and manage forest fires. This includes improving Brazil's Early Warning Fire system and supporting emergency aid services to enhance local capacities to handle forest fires.

The various investments in the Cerrado biome after 1992, excluding loans, routine government expenses and for-profit investments, are listed in Table 11.1. They include various investments in economic and social development that have positive environmental impacts. Estimates of yearly amounts for 2015 are provided when available. The sum of these investments is on the order of US$ 10 million per year, with a tendency to increase in recent years, but it is still far from sufficient to avoid serious damage to biodiversity, hydrology and climate. The limitations and opportunities are analyzed in the following sections.

Table 11.1. Current Investments in the Cerrado Biome, 2015.

Project or Initiative	Source(s)	Notes	Approximate Years	Approximate amount (US$) in 2015
CAR Bahia	State Government of Bahia and Amazon Fund (BNDES)	CAR in Bahia, through the state environmental secretariat, for R$ 31.7 million (~US$ 8 million)	2014-2016	NA
CAR Mato Grosso do Sul	State Government of Mato Grosso do Sul and Amazon Fund (BNDES)	CAR in Mato Grosso do Sul, through the state environmental secretariat, for R$ 9.8 million (~US$ 2.5 million)	2014-2018	NA
CBH - Watershed Committees	Fees charged to users of water	All over Brazil, few in the Cerrado, limited benefits	Ongoing	NA
Cerrado Center (Central do Cerrado)	Federal government (Bank of Brazil Foundation - FBB), among others	Marketing of products of sustainable use of Cerrado biodiversity	Ongoing	US$ 150,000 (includes fees)
Cerrado-Jalapão	Bilateral (BMUB, GIZ and KfW)	Control of fire, protected areas and Rural Environmental Registry (CAR), Euro 13.5 million	2012-2016	NA
Cerrado Nucleus	Federal government (University of Brasília - UnB) and grants	Research and extension center in Alto Paraíso, Goiás (Chapada dos Veadeiros)	Ongoing	NA
Cerrado-Pantanal	Civil Society (WWF)	Mostly Pantanal biome, with headwaters in the Cerrado	Ongoing	NA
Cerrado Project	Bilateral (DEFRA)	CAR in western Bahia, through the state environmental secretariat	NA	NA
Cerrado Sociobiodiversity	Federal government (CAPES), with bilateral support from France	Through the University of Brasília at Planaltina (FUP)	NA	NA
Cerratenses	State government (Federal District)	Center of Excellence in Cerrado Studies, with Cerrado Alliance among 32 organizations	Ongoing	NA
Climate Fund	Federal Government and grants	Wide variety of projects	Ongoning	NA

Project or Initiative	Source(s)	Notes	Approximate Years	Approximate amount (US$) in 2015
CRAD – Reference Center in Nature Conservation and Recovery of Degraded Areas, University of Brasília (UnB)	Federal government and grants	Focuses primarily on the Cerrado	Ongoing	NA
DEFRA project	Bilateral (UK DEFRA)	8 municipalities and 3 protected areas,10 million pounds (US$ 15.4 million)	2011-2016	NA
DGM – Dedicated Grant Mechanism	World Bank	Grants for local communities, total US$ 6.5 million	2014-2020	~US$ 1 million
Ecological-Economic Zoning (ZEE)	Federal and state governments	Planning of land use	Ongoing	NA
Ecological Value Added Tax (ICMS Ecológico)	State and municipal governments	Some states distribute their tax revenues to municipalities, taking environmental protection into account	Ongoing	NA
EMBRAPA Cerrados	Federal government and grants	Research mostly for agricultural and livestock development, for some environment	Ongoing	NA
Faces of Brazil	Private sector (Pão de Açúcar supermarkets)	Purchase of handicrafts all over Brazil, but difficult to purchase food products except honey in conformity with health regulations	Ongoing	NA
Federal universities	Federal government and grants	The Federal District and all states have federal universities and all faculty are required to do research and extension	Ongoing	NA

Project or Initiative	Source(s)	Notes	Approximate Years	Approximate amount (US$) in 2015
FNDF - National Fund for Forest Development	Federal government	Strengthens community-based forest enterprises in Cerrado, total of R$ 2 million for all of Brazil (~US$ 513,000)	2014-2015	NA
GATI - Environmental Management in Indigenous Lands	Multilateral (GEF) through UNDP and federal government (FUNAI)	In selected reference areas, some of which are in the Cerrado, total US$ 2.4 million	2014-2018	NA
GEF-UNDP Small Grants Program (SGP)	Multilateral (GEF and UNDP)	Also includes Caatinga biome	Ongoing	US$ 1.3 million
IBAMA	Federal government (MMA)	Environmental licensing and inspection	Ongoing	NA
ICMBio	Federal government (MMA)	Maintenance of federal protected areas for R$ 234.5 million (~ US$ 60 million)	Ongoing	NA
INOVA Cerrado, Socio-technical and institutional innovations for conservation and valorization of the Cerrado biome	Federal government (CAPES, EMBRAPA, UnB) and Agropolis Foundation	Through the University of Brasília at Planaltina (FUP), Euro 80,000	2014-2015	~US$ 88,000
Integration of Conservation and Sustainable Use of Biodiversity in Practices of NTFPs and ASFs in Multiple-Use Forest Land-scapes with High Conservation Value	Multilateral (GEF through UNDP for CENARGEN - EMBRAPA), with 4-to-1 co-financing	Starting in 2015, with some sites in Cerrado and others in Caatinga and Amazon	2015-2017	NA
LAPIG, Federal	Federal government and various grants	Monitoring of land use change, climate, etc., in	Ongoing	NA

Project or Initiative	Source(s)	Notes	Approximate Years	Approximate amount (US$) in 2015
University of Goiás (UFG)		Cerrado and rest of Brazil		
Low-Carbon Agriculture (ABC)	Federal government	National level, but limited access to credit for practices such as integrated-livestock production, total for all of Brazil R$ 197 billion (~US$ 50.5 billion)	2011-2020	NA
Matopiba	Federal government (Ministry of Agriculture, Livestock and Food Supply - MAPA)	So far, ambitious plan almost entirely for development and practically nothing for environment in four northern Cerrado states (Maranhão, Tocantins, Piaui and Bahia)	2015-2020	~0
Municipal protected areas	Municipal governments	Many municipalities	Ongoing	NA
National Integration Sociobiodiversity Routes	Federal government (SUDECO, Ministry of National Integration - MI)	Promotes links among sociobiodiversity productive clusters in the Center-West	Ongoing	NA
PAA - Food Acquisition Program	Federal government	Institutional market for purchase of sociobiodiversity products all over Brazil, but very bureaucratic, Center-West with R$ 184 million (~US$ 47.2 million) for 2003-2013	Ongoing	NA
Petrobrás Ambiental	Federal government	Wide range of projects, funds now limited	Ongoing	NA
PGPM-Bio, Minimum Prices for Socio-Biodiversity Products	Federal government	Minimum prices all over Brazil, but with very low prices, total for all Brazil of R$ 22 million (~US$ 5.6 million)	2009-2015	NA
PMFC - Technical Assistance to Support Community and Family Forest Management	Federal government (SFB/MMA)	Federal program being extended to the Cerrado biome, R$ 1.3 million (~US$ 333,000)	2014-2016	NA

Project or Initiative	Source(s)	Notes	Approximate Years	Approximate amount (US$) in 2015
PNAE - School Lunch Program	Federal government, through municipal governments	Institutional market for purchase of sociobiodiversity products. In 2014,R$ 3.7 billion (~US$ 1 billion) for all products in all of Brazil	Ongoing	NA
PNPSB - National Plan for Promotion of Sociobiodiversity Value Chains	Federal government (various ministries) and state governments	All over Brazil, for purchase of sociobiodiversity products	Ongoing	NA
PPCerrado	Federal government (MMA) and bilateral (UK)	Focus on priority municipalities in the Cerrado, £10 million (~US$ 15.4 million)	2011-2016	NA
Private universities	Various sources	Some Catholic universities focus on environment	Ongoing	NA
Producers of water	Federal government (Bank of Brazil Foundation - FBB)	One watershed in the Federal District	Ongoing	NA
RTRS - Round Table on Responsible Soy	Bilateral (Netherlands, through NGOs)	Meetings, maps, certification	Ongoing	NA
Sertão Veredas Peruaçu Mosaic	Civil society (WWF)	Support from WWF International	Ongoing	NA
Sertão Veredas-Peruaçu Mosaic	Bilateral (interest on USA debt swap)	Through TNC and FUNATURA	Every year	US$ 131,520
State protected areas	State governments and Federal District	All states and Federal District	Ongoing	NA
State universities	State governments and grants	All states have universities, many of which have campuses in the interior	Ongoing	NA
UnB Herbarium	Federal government (University of Brasília) and grants	Collection of Cerrado flora	Ongoing	NA

Source: ISPN research on websites (2015).

In comparison to other biomes, it should be noted that the Cerrado is neither tropical forest nor drylands. It has intermediate levels of development, although there are pockets of poverty. There are few charismatic species. The Cerrado does not seem to have much carbon storage appeal, a global environmental good, although there is much more than meets the eye with the underground biomass. Its role in regional and continental hydrological cycles is of the utmost importance but is still poorly understood, at least with regard to the source of the water that flows north, east and south from the central highlands.

11.1.7 Patterns and Trends of Investment in Brazil

The general pattern revealed by the foregoing analysis of large-scale investments (over a million dollars) is hundreds of millions of dollars per year for the Amazon, tens of millions of dollars per year for the Atlantic Forest, Caatinga and Cerrado and only one or two million dollars per year for the Pantanal and Pampa. Funding for amounts under one million dollars is probably proportionally more important in the Atlantic Forest, much of which is in Brazil's most developed states. The environment in the Cerrado is attracting more attention than in the past, but the totals are still far from what is needed. It is essential not only to mobilize more funds, but also to increase the Cerrado's share in existing sources of investment for the environment and to influence investments in economic and social development that have positive or negative environmental impacts so as to shift the balance.

11.1.8 Investment in Bolivia and Paraguay

As mentioned previously, WWF, CI, BirdLife International, WLT, GEF, UNDP and USAID have all invested in biodiversity conservation in Bolivia and Paraguay. The European Union is an important donor, while German, Canadian and Danish bilateral assistance has also been important.

The World Bank has implemented a technical assistance program and supported a multisectoral analysis in order to help the Bolivian government to improve environmental management regarding: (a) water resource pollution by mining and mitigation of the pollution; (b) evaluation of potential wastewater reuse in agriculture; (c) improvement of waste management; and (d) evaluation of health benefits through adequate water supply and basic sanitation.

In Paraguay, the objective of the World Bank's project on "Conservation of Biodiversity and Sustainable Land Management in the Atlantic Forest of Eastern Paraguay" is to assist continued efforts to achieve sustainable natural resource-based economic development in the project area by: a) establishing the Mbaracayu-San Rafael conservation corridor within public and private lands through sustainable native forest management practices for biological connectivity; and b) encouraging sustainable agricultural practices that maintain biodiversity within productive landscapes, while increasing productivity and mainstreaming biodiversity conservation.

It should be noted that although Brazil is no longer a priority for many sources of international cooperation, Bolivia and Paraguay both remain developing countries that have not reached middle-income status, continue to be eligible for funding by international donors.

11.2 Gap Analysis

Universities, foundations and government agencies in developed countries, like the National Science Foundation (NSF), the Fulbright Commission, the British Council, the *Institut Recherche pour le Développement* (IRD) and the *Recherche Agronomique pour le Développement* (CIRAD) have invested vast amounts in research in the Amazon and very little in other Brazilian biomes, including the Cerrado. Investments in the Amazon and their abundant bibliographical outcomes are listed on various websites, but citations of literature about other biomes are relatively rare.

Section 11.1 shows that the main beneficiaries of investment in conservation are located in the Amazon, by far, and in the Atlantic Forest, in second place. If investments in creation of indigenous lands are included as investments in conservation, as was the explicit intention in the PPG7, the Amazon stands out even more. However, much of the land in the Amazon is already in the public domain and does not require that landowners be paid, so the same monetary investment would produce smaller results (square kilometers) in the Cerrado than in the Amazon. The Cerrado also needs to conserve much larger areas than the Atlantic Forest, where only 12% remains.

Investment in new protected areas in Brazil has dropped significantly in recent years, due in part to the fact that vast protected areas had already been created since 1992. The ICMBio website shows that there are many protected areas still awaiting "regularization." Maintenance of protected areas is far from adequate. The other alternative would be to conserve areas outside the official national system (SNUC), such as Indigenous and Community Conserved Areas (ICCAs), in which residents themselves take responsibility for nature conservation, which a few ill-equipped park guards are unable to do.

In the case of conservation in the Cerrado, as compared to the Amazon, it is essential to remember that most of the land is private and that it is and will remain relatively expensive for many years to come. If one assumes an average cost of US$ 1,000 per hectare of private land, five million hectares of protected areas would have a total cost of nearly US$ 5 billion for regularization. The fact that many payments to landowners have not been made is one of the reasons for political resistance against creating new areas.

Gaps in funding for the Cerrado actually reflect funding gaps for all biomes, as described above, according to available information. The greatest gaps in geographical coverage of protected areas in Brazil are in the Cerrado and the Pampa. The areas under the most intense pressure now have the fewest and smallest protected areas. Investments in other environmental, social and development policies, on the other hand, are less unequal.

Scientific knowledge about the Cerrado is another gap. The coverage of data on species distribution is biased toward proximity to large universities. It is expensive to do field research in remote areas. Information on deforestation, carbon stocks and water cycles is incomplete and outdated. Underground carbon, which is greater than above-ground carbon in many areas, remains a mystery. There is practically no solid information on local and inter-regional atmospheric flows in hydrological cycles or on the importance of biodiversity for surface runoff and evapotranspiration. The economic and ecological costs and benefits of traditional and innovative land uses and practices have not been analyzed, much less used to inform policy.

Federal investment in science and technology is concentrated in the Southeast, where the most qualified researchers are in a better position to compete for federal or international funds in this sector. At the same time, the state research foundation in São Paulo (FAPESP), which receives a fixed percentage of the state budget, has an annual budget larger than the science and technology budgets of the federal government or any other state.

Socio-environmental policies have roughly the same coverage in per capita terms in the Cerrado as in the rest of Brazil and amount to many billions of dollars, as can be seen in Table 11.1. However, except for Minas Gerais, there is a large gap in the per capita coverage of Declarations of Eligibility for PRONAF (DAPs), which are concentrated in South Brazil. These documents are required to gain access to institutional markets for agro-extractive products, such as PAA and PNAE (see Section 7.3.2).

As explained in Chapter 8, the Cerrado's civil society organizations urgently need funding, including capacity building and institutional support for networks, to carry out activities, meet their legal obligations and participate effectively. It became clear in the final consultation workshop for the ecosystem profile in October 2015 that dependence on one project after another is threatening and counterproductive. Continuity is essential. For this, it would be important to make the regulatory framework more workable (Santana 2015). There is now a congressional bloc to defend CSOs.

Once they have land, indigenous groups still need options for livelihoods and income generation, without depending entirely on the government. They also need special training, including in English, to participate effectively at international meetings and negotiations, for which Portuguese is far from sufficient.

Government environmental agencies have staff and offices, but they need outside support to hire consultants and for stakeholder consultations, policy dialogues, publications, media outreach (websites) and other needs not covered by limited budgets, which are shrinking.

In terms of new sources of investment, the private sector can certainly play a key role. The challenges are to reconcile the interests of producers with those of suppliers of inputs and services (upstream in the supply chains) as well as local buyers and international commodity traders (downstream in the supply chains). Large corporations are often easier to involve than are small and medium companies or individual landowners, although there is enormous heterogeneity within the private sector and change is now under way.

Mobilizations to raise funds and other sources of support depend on inter-sectorial dialogue and negotiations among governments, companies, communities and socio-environmental movements. This in turn requires financial support to develop capacity and to enable participatory processes in a vast region where citizens' physical presence at council and commission meetings is costly.

11.3 Lessons Learned

The lessons learned from the analysis of investments in the environment in various parts of Brazil over the last 25 years, as presented in this chapter, along with the outcomes of

the consultation process carried out during preparation of the ecosystem profile, can be summarized as follows:

1. Where there are synergies, links with social investments can multiply resources available for conservation.
2. Biodiversity conservation focused on specific species should take into account their ecosystem functions and should be linked with climate and water, for which there can be more funding than for biodiversity *per se*.
3. Participation of local communities is essential for large-scale conservation and can be more effective.
4. There is insufficient funding for creation of many new protected areas and proper functioning of existing protected areas.
5. International cooperation and funding can influence national, state and local policy and leverage government funding.
6. Considering their current capacities, it is difficult for civil society organizations in Brazil to access government funding and comply with complex and unrealistic requirements, especially in remote areas.
7. There is need for improvement in the scientific and technological basis to justify funding for the Cerrado.
8. Improved awareness about the Cerrado and its ecological functions among the public in general, the press and decision-makers is essential.
9. There are various state and local sources of funding in the Cerrado that should be explored.
10. There are federal and international funds that could be mobilized if proposals from the Cerrado were more frequent and more competitive.
11. Funding from the private sector is possible in some cases, although the sector also demands funding to cover the costs of sustainability, which could be reduced instead of only being paid for by consumers and taxpayers.
12. There is growing recognition among donors of the importance of the Cerrado, although recognition of savannas and non-forest terrestrial ecosystems in general would help leverage support.
13. Some investments do not increase the total amount from government or donors, but only the geographic and thematic distribution. Shifts toward environment and the Cerrado are possible.
14. Some countries that import commodities from Brazil are becoming aware of and assuming some responsibility for their global environmental footprints, which are much more serious in the Cerrado than in other biomes.

11.4 Conclusions

The main conclusion of this analysis of investments in Brazil is the necessity and opportunity of increasing funding for the Cerrado Hotspot in both absolute and relative terms. This would be facilitated by placing the Cerrado in the broader context of tropical savannas.

Because of shifts in their priorities regarding international cooperation, Brazil must depend less on foreign donors. At the same time, domestic government funds are very limited. Tax revenues are insufficient even for health, education and social programs. Public opinion in Brazil is unanimously favorable regarding the environment, as long as consumers and taxpayers do not have to pay for its protection. Consumers abroad say

they favor sustainable products, but resist paying premium prices although this is changing slowly. New technology may make it possible to carry out crowd-funding among the minority that is willing to make contributions. Support may now also involve equity, in addition to grants.

Creating protected areas in the Amazon was relatively easy, while the purpose of investing in the Atlantic Forest was to protect what little remains of the original forest. In the Cerrado, meanwhile, synergies must be found among social programs, economic development and the private sector, targeting drivers of destruction while maintaining sustainable productive landscapes, along with traditional conservation at specific sites.

Strict conservation is not feasible or effective on the scale needed to conserve biodiversity and maintain ecosystem services in the Cerrado. For less developed regions, social investments of various kinds can generate many environmental co-benefits. Likewise, infrastructure investments can make agriculture more productive, intensive and sustainable, requiring less land and counteracting the drivers of deforestation. For this to happen, it will be vital to gain a role in policy making (see Chapter 12).

Above all, it is fundamental for the various investors in environment in the Cerrado and in other regions, as well as investors in other areas (infrastructure, energy, commodities, South-South cooperation etc.), to collaborate, seeking synergies and avoiding unnecessary duplication so as to achieve the greatest impact.

12. CEPF NICHE FOR INVESTMENT

12.1 Conservation Investment Needs

As seen in Chapter 5, the remnants of natural Cerrado vegetation are, for the most part, fragmented and heavily pressured by production areas. Out of the six highest indirect threats to the hotspot ranked in Chapter 9, half are related to agriculture (i.e., cattle, annual crops and biofuel). With the Cerrado being considered a 'breadbasket' for the world and as the main productive region by the Brazilian government, the main challenge for conservation is undoubtedly to find ways to reconcile development agendas with maintenance and restoration of natural ecosystems and their associated biodiversity and socio-economic values.

Among the many barriers identified by stakeholders and captured in this document are the following: a regulatory framework that hinders the sustained, effective engagement of civil society (including local communities and private sector companies); a lack of enforcement of existing favorable policies; a weak civil society, especially in terms of capacities for participation in the decision-making sphere; and a lack of appreciation of the biological and social values of the Cerrado among decision makers at all levels. In addition, as seen in Chapter 11, funding opportunities for civil society organizations wishing to engage in the conservation of the Cerrado are currently very limited, especially in light of the size of the hotspot and the scale of the threats facing it.

The main needs for action in the next five years to conserve the Cerrado Hotspot include:

- to avoid or at least minimize new clearing by making better use of the land already cleared and/or creating alternative economic incentives for land users/owners;
- to restore degraded lands so as to recreate ecological connectivity among fragments of remnant vegetation by tailoring low-cost, ecologically and economically appropriate technologies;
- to expand the network of protected areas by creating incentives for private reserves and promoting sustainable land management by indigenous and local communities.

Addressing these needs across the Cerrado as a whole will require the combined efforts of many actors. CEPF will need to collaborate closely with (and encourage the involvement of) other funders, both international donors and, most important of all, domestic development, social and environmental programs. CEPF's focus is on engaging civil society but, even here, the fund will need to make targeted investments, to avoid duplicating efforts of other donors or spreading its resources too thinly. Considering its limited funds, CEPF investment will not attempt to deliver conservation action throughout the hotspot but, rather, to piloting demonstration models, promote their wider replication by other donors and invest in the capacity development of civil society organizations as strong partners in multi-sector initiatives for conservation and sustainable development.

12.2 CEPF Niche

Investment in conservation in the Cerrado must be strategic, in order to achieve the necessary scale in the world's third largest hotspot. The new directions for CEPF's third

phase emphasize biodiversity conservation mainstreaming into public policies and the private sector practices and dealing with the drivers of environmental degradation. The investment niche for the Cerrado should not be limited to conservation of biodiversity at specific sites but should also take into account the essential links among biodiversity, ecosystem services, cultural and social issues, and public policy.

The CEPF investment will be used to leverage, enhance and amplify opportunities for financial support as well as technical cooperation, within Brazil and abroad. In some cases, the trinational focus, including Bolivia and Paraguay, is strategic. The impact of CEPF's investment niche is much larger than it might seem at first glance, due to shrinking funding from international donors and government budget restrictions, especially in the context of the current national economic crisis in Brazil.

In terms of target groups, in addition to the civil society groups most directly involved in conservation, it would be strategic for the CEPF investment niche to include local communities of family farmers, indigenous peoples, traditional communities and civil society networks. The main needs identified by the stakeholders through the consultation process are institutional strengthening, capacity building, infrastructure and technology tools.

The Cerrado has a diversity of civil society organizations, with varying levels of capacity to achieve conservation outcomes. Some kinds of institutional strengthening and capacity development, such as learning how to access and manage grants and other kinds of funds, can be achieved through short-term projects. At the same time, support for networks of civil society organizations should be substantial and continuous over the five years, as opposed to short-term small grants for specific purposes. Such investments are strategic, by enhancing the sustainability of civil society organizations, making them more efficient and better able to establish partnerships and raise the necessary funds to fulfill their missions in the years following the period of CEPF investments.

Capacity development should include qualification for participation in policy dialogues through the various councils, commissions and conferences. Few representatives from the Cerrado have both local legitimacy and understanding of complex technical and administrative issues, and there are specific needs of indigenous groups.

Private sector engagement is essential for successful conservation of the Cerrado. In order to have large-scale impacts and to induce transformative processes, it is necessary to implement actions in partnership with associations and cooperatives of producers, farmers and extractive communities. Strengthening associations and promoting the integration of sustainable production chains will be prioritized. There should also be incentives for sustainable business initiatives and a strategy to work with supply chains that link many producers as well as their suppliers, buyers, customers and creditors.

Producer associations and other organizations related to agribusiness are also considered to be strategic partners, especially for disseminating and promoting the adoption of best practices for agricultural production. The lessons learned from the existing pilot and demonstration projects or from projects to be implemented with CEPF support have privileged spaces and means for diffusion and application throughout the hotspot. These lessons can be shared in forums for dialog and multi-sectoral cooperation, via activities of various relevant organizations such as the Brazilian Climate, Forestry and Agriculture

Coalition, in existing media and communication tools that are already used by this audience, or best practice manuals. This will complement the effort to engage the private sector in the challenge of reconciling production and conservation in the Cerrado.

Working with government at all levels is also essential to the success of conservation efforts. Therefore, CEPF will support initiatives that promote dialogue and cooperation among civil society organizations and government agencies responsible for managing issues such as the environment, agriculture, infrastructure and other strategic sectors, since they are responsible for decisions and actions with high impact on the Cerrado's conservation. The direct participation of civil society organizations or their dialogue with the governance bodies should be promoted and strengthened, through actions that increase their skills to intervene and propose innovations and solutions. CEPF investments could support the development of these skills and create better conditions to promote participatory and inclusive governance of territories and natural resources.

There are some gaps in scientific knowledge about the Cerrado, even about the occurrence of threatened species, as well as the ecosystem services. The traditional and indigenous knowledge on biodiversity and natural resources management remains poorly or not at all considered in the planning and implementation of conservation actions. On the other hand, the information available is vast, both scientific as well as from local communities, but is dispersed and lacks appropriate tools or platforms to allow integrated analysis that can support decision-making processes. CEPF investment will not fill these knowledge gaps at all but will be used strategically to develop and implement tools and protocols for the integration and analysis of existing data. Those tools are key to raising social, political and financial support for conservation of the hotspot.

The identification of conservation outcomes provides a long-term, overarching agenda for conservation of the Cerrado's unique and valuable biodiversity. Realistically, only a fraction of these priorities can be tackled by civil society organizations over the next five years. Therefore, the ecosystem profile identifies geographic and taxonomic priorities for support.

Regarding species outcomes, of the 159 globally threatened species in the hotspot, CEPF will support actions to address the conservation of seven terrestrial and freshwater priority species. These investments will be focused on the implementation of existing National Action Plans, which present the official guidelines for the protection of these species, developed by experts and validated by the responsible government agency.

Regarding geographic priorities, CEPF investments will focus on four priority corridors: Veadeiros-Pouso Alto-Kalungas; Central de Matopiba; Sertão Veredas-Peruaçu; and Mirador-Mesas. Within these corridors, CEPF investments at the site scale will focus on 62 KBAs classified as 'Very High' relative importance for conservation, according to the prioritization method validated by stakeholders (Figure 13.4). It is important to note that, as this ecosystem profile will be adopted by other institutions as a reference for action planning and fundraising for the hotspot, all 13 conservation corridors should be considered as priorities for conservation investment and action, even though the investment of CEPF will only target four of them. Similarly, it should be noted that an additional 47 KBAs of 'Very High' relative conservation importance are located outside of the four priority corridors: 40 in other corridors; and seven outside of any conservation corridor.

CEPF investments in the Cerrado are designed to have an enduring impact on the ability of civil society to influence public policies and private initiatives that are aimed at conservation and sustainable development of the hotspot. By investing in one of the most important regions for agricultural commodities in the world, CEPF will help to increase the effectiveness and scale of agribusinesses' sustainable practices. The harvesting of non-timber forest products and the traditional practices carried out by rural communities, indigenous people and *quilombolas* will also be supported, enabling the exchange of knowledge and a better insertion in the market of the so-called 'socio-biodiversity products'. Support to establish new public and private protected areas is also included in the investment strategy, to enhance the status of legal protection for critically endangered species in the hotspot. By this strategy, CEPF will help to leverage coordinated contributions to the conservation of the Cerrado from diverse actors, in the same way as in other hotspots around the world.

12.3 Collaboration with Other Initiatives

CEPF will only be one of several international donors supporting conservation efforts in the Cerrado over the next five years, albeit one of only a few with a principal focus on working through civil society. It will be essential to coordinate closely with other initiatives, to avoid duplication of effort and realize synergies. Collaboration is, therefore, an important element of the CEPF niche, and is reflected in the investment strategy. Specific mechanisms for ensuring effective collaboration with other initiatives will include, but not necessarily be limited to:

- targeting CEPF investments at strategies that align closely with national priorities and that present opportunities for financial leverage;
- proactively engaging with other funders supporting civil society to align support to organizations and share lessons learned;
- establishing a national advisory group with representatives of government, donors and civil society, to provide strategic guidance to the development of the CEPF grant portfolio in the hotspot;
- seeking the development of complementarity in terms of geographical and/or thematical focus based on the investment gaps identified in the profile or of cooperation on grant making.

Several of the conservation initiatives in the hotspot that are identified in this profile (Sections 7.7 and 11.1.6) will end in 2016, when CEPF investment will have just started. These include the Cerrado-Jalapão project supported by Germany and the Program to Reduce Deforestation and Burning in the Brazilian Cerrado supported by the United Kingdom. Final assessments of these initiatives should provide lessons learned and recommendations that the Regional Implementation Team (RIT) will be able to use to better coordinate and implement the CEPF investment strategy and strategically guide the network of partner institutions.

Regarding other known initiatives that will be implemented during part of the next five years or beyond, such as the CAR-FIP Cerrado Project or the National Plan for the Recovery of Native Vegetation (PLANAVEG), which aims to recover at least 12.5 million hectares of native vegetation over the next 20 years, the CEPF investment strategy will implement supportive actions. These actions, ranging from local capacity building to

piloting approaches and creating socio-environmental benefits as incentives for instance, have been identified as investment gaps in the Cerrado Hotspot.

At the same time, other significant initiatives may begin only during the investment phase, such as the Dedicated Grant Mechanism for Indigenous People and Local Communities. The CEPF investment strategy will need to practice adaptive management with regard to new initiatives that arise. The RIT will be instrumental in monitoring this changing investment landscape, and exploring new opportunities for collaboration. This role will be explicitly reflected in the team's scope of work, and it will be resourced accordingly.

13. CEPF INVESTMENT STRATEGY AND PROGRAMMATIC FOCUS

13.1 Conservation Outcomes Prioritization

To ensure that the CEPF strategy will have a significant impact on biodiversity conservation in the hotspot, some investments will focus on priority species and regions. In this sense, the profile identified priority species and priority geographies (KBAs and corridors) from the 1,593 vulnerable or irreplaceable species, 765 KBAs and 13 corridors presented in Chapter 5. A total of seven priority species (Table 13.1), and four priority corridors (Figures 13.3 and 13.4) containing 62 priority sites (Appendix 5 and Figure 13.2) were selected. The criteria and outcomes for each level of investment are presented in this chapter. Further details on the prioritization methodology can be found in Appendix 4.

13.1.1 Species Prioritization

Target conservation species were prioritized according to three main criteria:

1. Level of threat: focused on species classified as critically endangered, the highest risk category assigned by the Brazilian National Red List and IUCN for species facing extremely high risk of extinction in the wild, thus demanding urgent conservation action.

2. Existence of National Action Plans for the Conservation of Endangered Species or Speleological Heritage (Planos de Ação Nacional para a Conservação das Espécies Ameaçadas de Extinção ou do Patrimônio Espeleológico – PAN): focused on species, or sites which contain the species. PANs are public policies that identify and guide priority actions against threats to populations of species and natural environments. PANs are developed with researchers and experts in the field, through consultations and workshops that culminate in the publication of a planning matrix with clear objectives, actions, products, deadlines and possible collaborators. Focusing CEPF investments on species with PANs will promote alignment with federal government priorities. There are 24 brazilian PANs that contain species native to the Cerrado Hotspot.

3. Relative importance of the hotspot for species conservation: focused on endemic species in the hotspot, or even endemic to a specific Cerrado region.

Out of all the species of flora and fauna (including invertebrates) classified as critically endangered on the international Red List, only seven have PANs or are part of a regional PAN. The seven species listed in Table 13.1 below are the priorities for a CEPF conservation niche of investment. The table also briefly presents priority conservation strategies for each species, selected in accordance with both their respective action plans and specific CEPF niches of investment. The specific strategies, as well as derived actions, can be found in these official and public PANs, which may be consulted for more details.

There are 80 additional species considered potential candidates for CEPF priority investment, 63 being plant species and 17 fauna species. They are all endemic to the Cerrado Hostpot, have a PAN or are part of one, and are listed as critically endangered on the national Red List but not on the international Red List. They could become eligible

for CEPF funds should their status be revised to critically endangered on the IUCN Red List during the course of CEPF investments in the Hotspot.

Three important PANs already exist for these plant species not yet listed as critically endangered on the international Red List. Two of those PANs are for the region of Grão Mogol and Serra do Espinhaço Meridional, and the other is for Alto Tocantins Basin. The regions of Grand Mogol State Park and Grão Mogol/Francisco Sá, in central Minas Gerais, and the Serra do Espinhaço are three priority areas for biodiversity conservation (MMA 2007), and are within Serra do Espinhaço Corridor delimited on this ecosystem profile. As presented in Appendix 7, there are 12 critically endangered species in the Grão Mogol region and 45 in Serra do Espinhaço (one species is also found in the Alto Tocantins Basin), according to the Red Book of Flora of Brazil (Martinelli and Moraes 2013). These two regions have high species diversity and a high degree of endemism. The Serra do Espinhaço has entire botanical families that are endemic to the region. However, it is seriously threatened by anthropic activities such as mining (mainly diamonds and iron), agriculture, urban expansion and monocrop plantations (mainly *Eucalyptus*), meaning that conservation actions are urgently needed. The Alto Tocantins Basin is part of two CEPF Cerrado corridors: RIDE DF-Parnaiba-Abaeté and Veadeiros-Pouso Alto-Kalungas. This basin has high species richness. The Chapada dos Veadeiros National Park is considered the core area of biological diversity and is recognized as an important flora endemism center. However, the river basin covers an area with high economic interest arising mainly from the agricultural sector and mining. This is where the last six of the 63 candidate plant species are found to be listed ascritically endangered species, according to the Red Book of Flora of Brazil (Martinelli and Moraes 2013). Therefore, there is an urgent need for conservation actions to reduce the effects of these factors on endangered species.

The 17 fauna species potentially candidate for CEPF investments can be found in four different PANs: Rivulideos, São Francisco Cave, Lepidopteras, São Francisco basin, and have their priority actions listed in the Appendix 7.

13.1.2 KBA Prioritization

KBAs were prioritized by following the recommendations of Langhammer *et al.* (2007) in Chapter 7 and were validated in a workshop with researchers and stakeholders from the government and civil society. The six criteria used are listed below and described in greater detail in Appendix 4. The criteria database is also available in Appendix 3.

1- Biological priority: The relative importance of biodiversity in each KBA was determined by two subcriteria: *irreplaceability*, meaning the presence of restricted range species (plants and fish – see Chapter 5, for species outcomes details) and also the site irreplaceability; and *vulnerability*, meaning the presence of threatened species, weighted by the status on the Brazilian National Red List and IUCN Red List.

2- Level of threat: The IPA (*Indice de Pressão Antrópica* or Anthropic Pressure Index) was used. Analyzed for each KBA, the IPA is a synthetic index of economic and demographic pressures on the environment. It is a combination of agriculture/livestock pressure, population growth, stock and flow, at the municipal level.

3- Alignment with national priorities: This means the potential of that KBA to offer an important opportunity to engage with key public sector stakeholders to sustain, leverage, and/or amplify a CEPF best practice and/or conservation achievement. It used a combination of the official database on protected areas (conservation units, indigenous territories and *quilombola* lands) and official priority areas for conservation (both are official federal categories).

Table 13.1. Priority Threatened Species in the Hotspot.

Class	Family	Species	Popular Name	Brazilian National Red List[a]	IUCN Red List[a]	Priority Conservation Strategies
Magnoliopsida	Cactaceae	*Uebelmannia buiningii*	--	CR	CR	- Determine the structure, dynamics and population viability. - Study the reproductive biology and the conditions for the establishment of seedlings. - Determine the genetic structure of its populations - Propose priority areas for conservation based on studies on distribution and the occurrence of *Uebelmannia buiningii* (MG)
Magnoliopsida	Fabaceae	*Dimorphandra wilsonii*	Faveiro de Wilson	CR	CR	- Create incentives and/or reformulate public policies to mitigate and compensate the threats and to protect the populations of *Dimorphandra wilsonii* - Integrate government institutions, nongovernmentals, the private sector and local communities in actions for the conservation of *Dimorphandra wilsonii* and promote educational activities on its protection and conservation in the areas of occurrence of the species - Expand and protect populations of *Dimorphandra wilsonii* and combat and/or mitigate threats to its range
Aves	Columbidae	*Columbina cyanopis*	Rolinha do planalto	CR (PEX)	CR	Birds of the Cerrado PAN - Reduce losses and improve habitat quality for species conservation
Aves	Thraupidae	*Conothraupis mesoleuca*	Tiê-bicudo	EN	CR	- Reduce negative impacts of agribusiness activities on species - Reduce the negative impacts of human settlements, infrastructure projects and exploitation of natural resources. - Increase scientific knowledge on the species
Aves	Emberazidae	*Sporophila melanops*	Papa-capim do bananal		CR	
Aves	Anatidae	*Mergus octosetaceus*	Pato mergulhão	CR	CR	- Support conservation actions of the species and its habitat - Increase research and monitoring of their occurrence - Promote awareness and training actions for the species' conservation - Support collaboration and international communication
Amphibia	Hylidae	*Phyllomedusa ayeaye*	Perereca	--	CR	- Increase research to gain taxonomic, genetic and biological knowledge

Class	Family	Species	Popular Name	Brazilian National Red List[a]	IUCN Red List[a]	Priority Conservation Strategies
						- Support actions to decrease the loss of habitat from fires - Strengthen public policies related to the use and occupation of land and water resources that affect the species' occurrence - Establish and implement strategies to improve quality and habitat connectivity in protected and priority areas for species conservation - Develop education practices for sustainability aligned with local development, benefiting species conservation

[a] CR (PEX): Potentially Extinct in the wild; CR: Critically Endangered; EN: Endangered

4- Civil society capacity: A new study, specific to this profile, mapped socio-environmental actions, projects and institutions into the Cerrado biome, an indicator of potential for collaboration.

5- Original vegetation cover: The workshop participants recommended that the percentage of KBAs covered by original vegetation (remnants) be used as additional criteria to prioritize KBAs, emphasizing the need to conserve the Cerrado's last big vegetation covers and ensuring conservation actions in the most intact and pristine areas.

6- Ecosystem services: This criterion ranks the role that KBAs play in the provision of water services to residents (for more details, please see Chapter 5, KBA+ section).

KBA prioritization used the Analytical Hierarchical Process (AHP) methodology because of the large number of KBAs and huge variations along the criteria's range (for example, the number of species of one category ranges from 0 to 10, and another from 0 to 176), to allow the ranges to normalize and finally to enable the use of weights to determine the importance of one criterion over another. A more comprehensive and detailed methodological description is given in the Appendix 4. The final map with all five prioritization categories can be found in Figure 13.1. The analysis classified 109 KBAs as being of 'Very High' relative importance for conservation (Appendix 5). These KBAs cover a total area of about 21 million hectares, equivalent to 10% of the area of the hotspot (Table 13.2).

Table 13.2. Summary of KBAs of 'Very High' Relative Conservation Importance.

	Number of KBAs	KBA Area (ha)	Inside Protected Area (ha)	% Protected
Inside Priority Corridor	62	9,311,581.34	3,052,415.08	32.78
Inside Other Corridors	40	10,525,039.74	1,586,982.11	15.08
Outside Corridor	7	1,293,268.90	279,342.31	21.6
Total	**109**	**21,129,889.98**	**4,918,739.50**	

Of the 109 KBAs of 'Very High' relative conservation importance, 62 lie within the four priority corridors and comprise an area of over 9 million hectares. These KBAs are extremely important to include in the strategic actions on the corridor scale, since they indicate the most important areas for biodiversity and ecosystem service conservation. Thirty-three percent of these KBAs are within protected areas, indicating that strategic actions of management and creation of more protected areas can occur there.

Forty of the KBAs are completely contained by others corridors (especially Chapada dos Guimarães, RIDE DF, Espinhaço and Canastra), and the conservation actions could be designed in terms of clusters of KBAs. Only 15% of these are protected, and actions to support the creation of public or private conservation areas are a huge conservation opportunity.

Figure 13.1: KBAs Classified According to Their Relative Importance for Conservation (from Lowest to Very High Category).

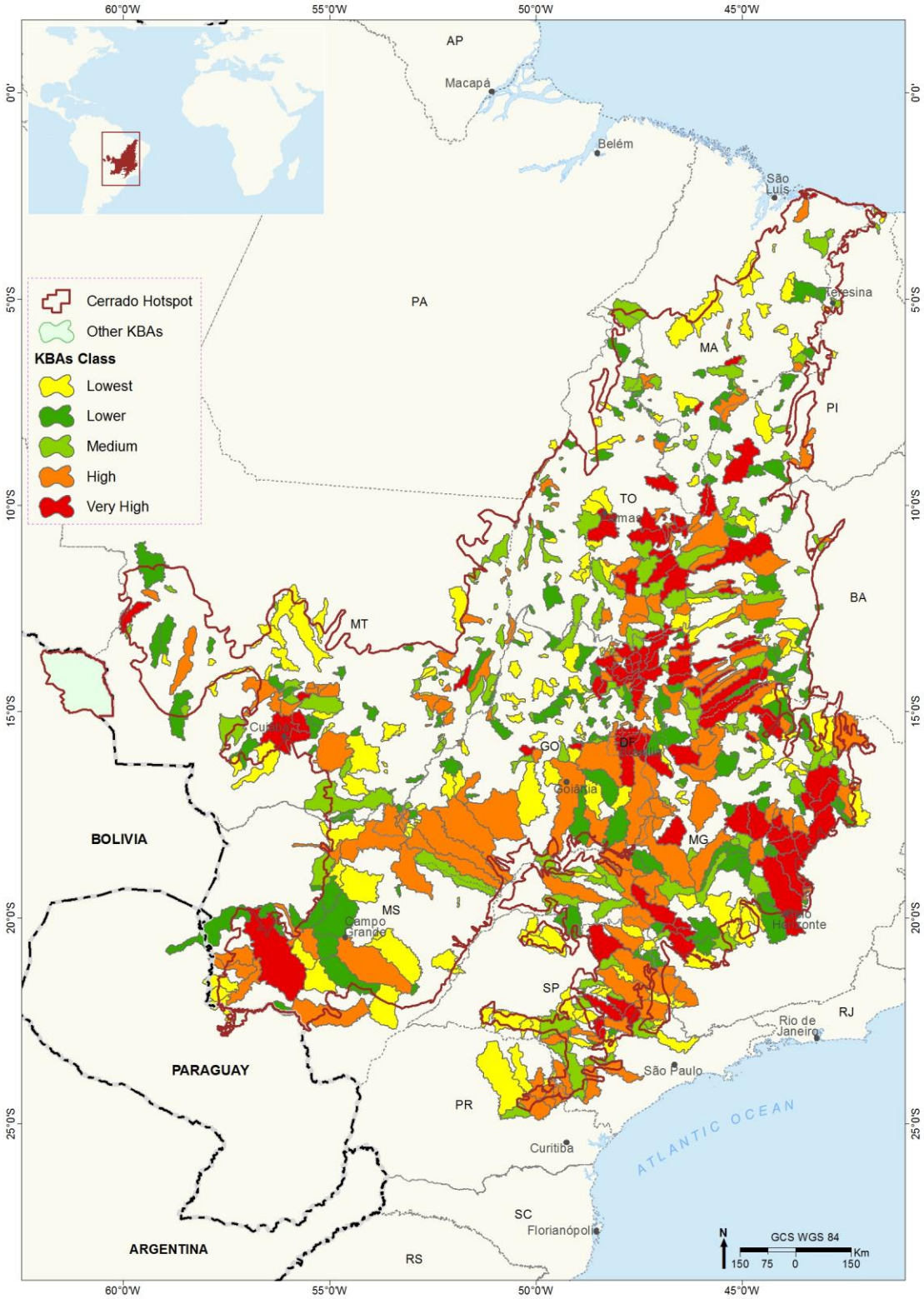
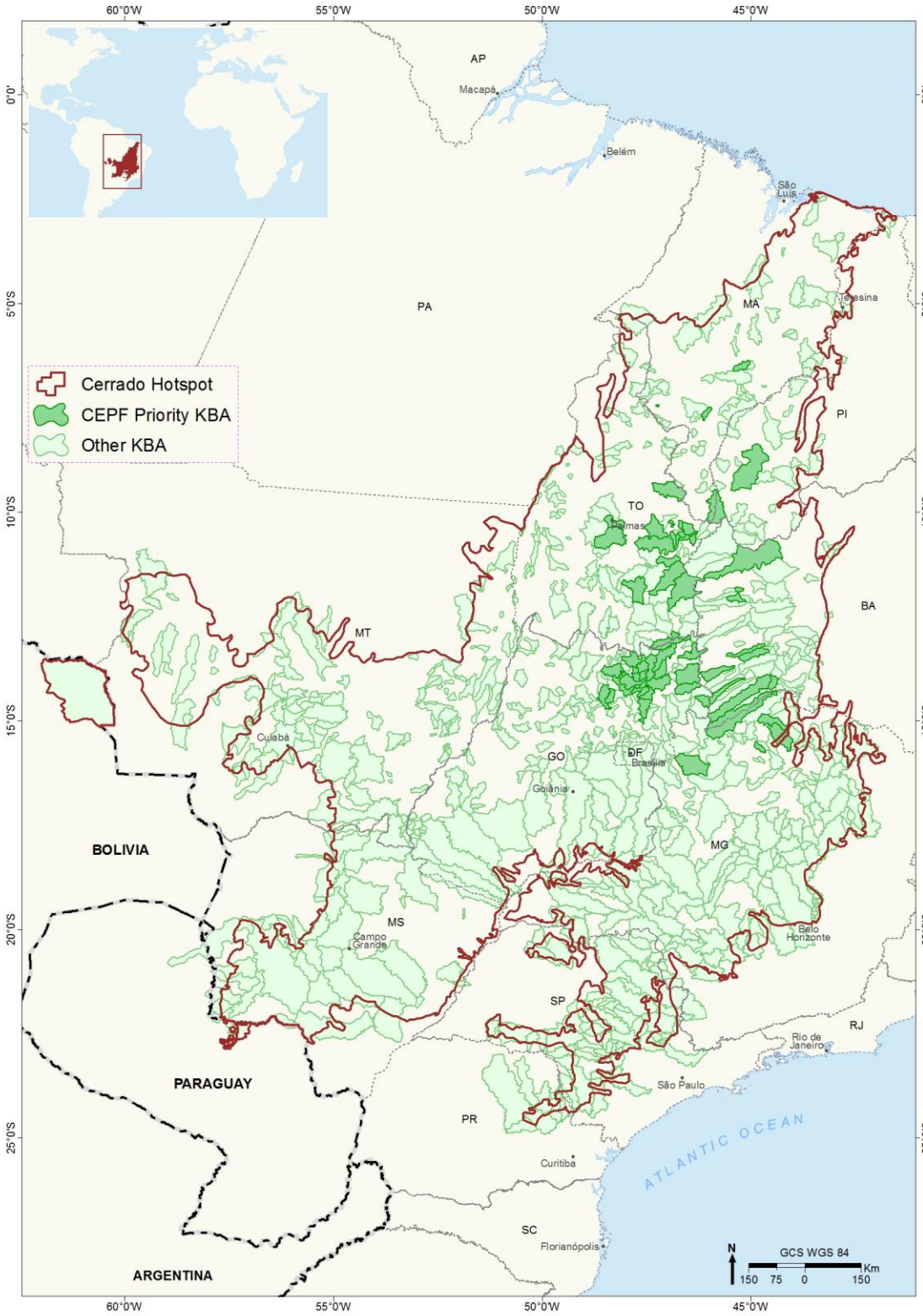


Figure 13.2: CEPF Priority KBAs in the Cerrado Hotspot.



The seven KBAs totally outside any corridor require separate conservation actions at the site scale. Six of them are located in São Paulo state and one in Goiás state. Most of the protected areas that intersect with these KBAs are APAs (Environmental Protection Areas), which allow different activities and open an opportunity for establishment of more restrictive protected areas, including private reserves.

KBAs from Bolivia and Paraguay were not part of the KBA prioritization process due to the lack of comparative data from their sites. The target species (endangered birds) considered to designate KBAs in these countries are only a fraction of those used in Brazil (threatened fauna, threatened flora, rare fish and rare plants). Thus, involving these areas in a prioritization process using these criteria would inevitably lead to a low position in the ranking. In addition, other data used to prioritize KBAs was not available for these areas. In this sense, the investment strategy for the four KBAs in Bolivia and Paraguay should follow what BirdLife already described and identified in its previous study.

13.1.3 Corridor Prioritization

The corridors are an important geographic strategy for conservation, requiring different actions that can range from support for sustainable production to the strictest protection. For the four corridors selected as CEPF's investment targets, the selection process took into account their relative importance in terms of the number and priority level of KBAs within their boundaries, imminent threat to their conservation, opportunity of results amplification and the need for more conservation funds.

The criteria used to rank the corridors were:

1. Highest relative ranking in terms of KBA: All the criteria used for KBA prioritization (biological importance, threat level, civil society capacity, natural vegetation cover, ecosystem services and alignment with national policies) also impact the corridor prioritization process. Thus, the average values of importance were calculated for KBAs that are located wholly or partially within each corridor. The results can be seen in the second column of Table 13.3 (Average KBA Importance). In order to rank these criteria, a classification was applied - as can be seen in the third column 'Average KBA Importance' in Table 13.3 - where averages less than 4 were considered 'Low', between 4 and 12 'Medium' and above 12 'High'.

2. Conservation investment gaps: To support KBA prioritization analyses of civil society capacities, a survey was done on civil society organizations and their socioenvironmental actions. Based on these results, it was possible to estimate the gaps in investments and conservation actions for each corridor. Thus, corridors with high investment and many actions were classified as 'Low' - that is, as having few gaps - while corridors with some degree of investment and action were classified as 'Medium' and those which, to date, received little or no investment and had few conservation actions were classified as 'High', indicating large gaps for this criterion. The results are shown in the fourth column of Table 13.3.

3. Opportunity to work with civil society: Also by applying the results from the civil society survey, each corridor was classified in terms of opportunities to work with civil society, considering the number and type of organizations present in each corridor and their capacity-building needs. Thus, in the corridors in which the presence and action

of CSOs are scarce or isolated, opportunity was classified as 'Low'. On the other hand, for the corridors in which CSOs are present and have good organizational skills and performance, opportunity was classified as 'High', while 'Medium' is the intermediate situation in which some organizations are present, but there is not much coordination for action.

4. CEPF's potential leverage: For this criteria, the information considered included current or potential existence of other investments in conservation that could be enhanced or supplemented with resources from CEPF, the level of presence and activity in the corridor of government agencies involved in conservation and sustainability agendas, interest and performance of research and extension institutions and public policies already in place. Thus, corridors that had the most favorable conditions according to this information were classified as having 'High' leverage potential, whereas corridors with less favorable conditions were classified as having 'Low' potential.

5. Urgency of conservation actions: This criterion was adopted in establishing priorities so as to take into account the urgency for conservation action and environmental safeguards in some corridors, something which could not be clearly perceived using other criteria. A classification was adopted with two levels of urgency ('High' and 'Medium'). As a guide, it was decided to classify as 'High' emergency all corridors located in the region known as Matopiba, which still has large areas of native vegetation and where accelerated expansion of the agricultural frontier is now under way. The others were all classified as having 'Medium' urgency.

6. Natural vegetation cover: Since one of the criteria for defining a region as a hotspot is the loss or degradation of the original vegetation cover, it was decided to adopt the percentage of remaining cover as one of the criteria for prioritizing corridors for CEPF investment. Since the purpose of CEPF investments is to reverse degradation of the hotspot, highest priority was given to regions that have the highest percentage of remaining vegetation and where such vegetation is currently under threat. Thus, a classification was adopted where corridors with less than 50% of their original vegetation are considered 'Low' priority, those with between 50% and 70% of the original cover as 'Medium' priority and those with more than 70% as 'High' priority.

Based on the application of these criteria, four priority corridors for CEPF investment were selected: Central de Matopiba; Mirador-Mesas; Sertão Veredas-Peruaçu; and Veadeiros-Pouso Alto-Kalungas (Figure 13.3). All four are located in strategic regions of the Cerrado that were recently anthropized with pasture and agriculture activities, resulting in a high level of threat to their ecosystems. They are corridors with high proportions of natural cover (average of 78%) but with little protected area coverage (average of 24%) and low management capacities to care for protected territories. On average, 3% of the four corridors is included within indigenous territories, while *quilombola* lands represent less than 1%.

The four priority corridors represent about 32.2 million hectares within the Cerrado Hotspot corresponding to approximately 16% of the whole hotspot. They represent extremely important geographic regions for the conservation of the Cerrado's biodiversity, with a need for investment and excellent opportunities to catalyze and amplify the results of conservation actions.

The Serra do Espinhaço corridor has many important endemic and threatened species, highlighted in scientific literature and in national action plans (PANs). The Serra do Espinhaço Meridional PAN (for plants and herpetofauna) and the Grão Mogol PAN (for plants) indicate priority strategies and conservation actions for the region and for threatened and endemic species that inhabit the area. It is strongly recommended that CEPF's strategic investment niche in this region keep its focus on species, aligned with these PANs.

It is also important to mention that three corridors that were not identified as priorities for CEPF investment possess important clusters of KBAs of "Very High" relative importance for conservation: RIDE DF-Parnaíba Abaeté; Chapada dos Guimarães; and Serra da Canastra.

Table 13.3. Relative Importance of the Corridors for the CEPF Investment Niche.

Corridors	Average KBA importance value	Average KBA importance class[a]	Conservation investments gaps	Opportunity to work with Civil Society	CEPF potential leverage	Urgency of conservation actions[b]	% natural vegetation cover	Natural vegetation cover[c]	CEPF prioritization sum [d]
Alto Juruena	3.16	Low	High	Medium	Medium	Medium	80	High	Medium
Araguaia	13.3	High	High	Low	Medium	High	84	High	Medium
Central de Matopiba	15.96	High	High	Medium	High	High	81	High	High
Chapada dos Guimaraes	4.53	Medium	Low	Low	Low	Medium	61	Medium	Low
Emas-Taquari	8.8	Medium	Medium	Low	Low	Medium	30	Low	Low
Lencois Maranhenses	1	Low	High	Medium	Medium	High	89	High	Medium
Mirador-Mesas	5.1	Medium	High	Medium	High	High	84	High	High
Miranda-Bodoquena	1.6	Low	Medium	High	Medium	Medium	44	Low	Medium
RIDE DF-Paranaiba-Abaete	8.75	Medium	Medium	High	Low	Medium	41	Low	Medium
Serra da Canastra	3.85	Low	Low	High	Medium	Medium	37	Low	Low
Serra do Espinhaco	14.7	High	Low	High	Medium	Medium	60	Medium	Medium
Sertao Veredas-Peruacu	12.58	High	Medium	High	High	High	70	High	High
Veadeiros-Pouso Alto-Kalungas	18.64	High	Medium	High	High	High	75	High	High

[a] Average KBA Importance: Low < 4 ≤ Medium ≤ 12 < High. [b] Urgency of Conservation Actions: All corridors that are part of Matopiba region were considered high level of urgency for conservation actions, and the others were considered medium level. [c] Natural Vegetation Cover: Low < 50% ≤ Medium ≤ 70% < High. [d] CEPF Prioritization Sum: average of all criteria, considering Low = 1, Medium = 2, High = 3 for each criterion. The final ranking score is Low < 1.5 ≤ Medium < 2.3 ≤ High.

Figure 13.3: Priority Corridors in the Cerrado Hotspot.

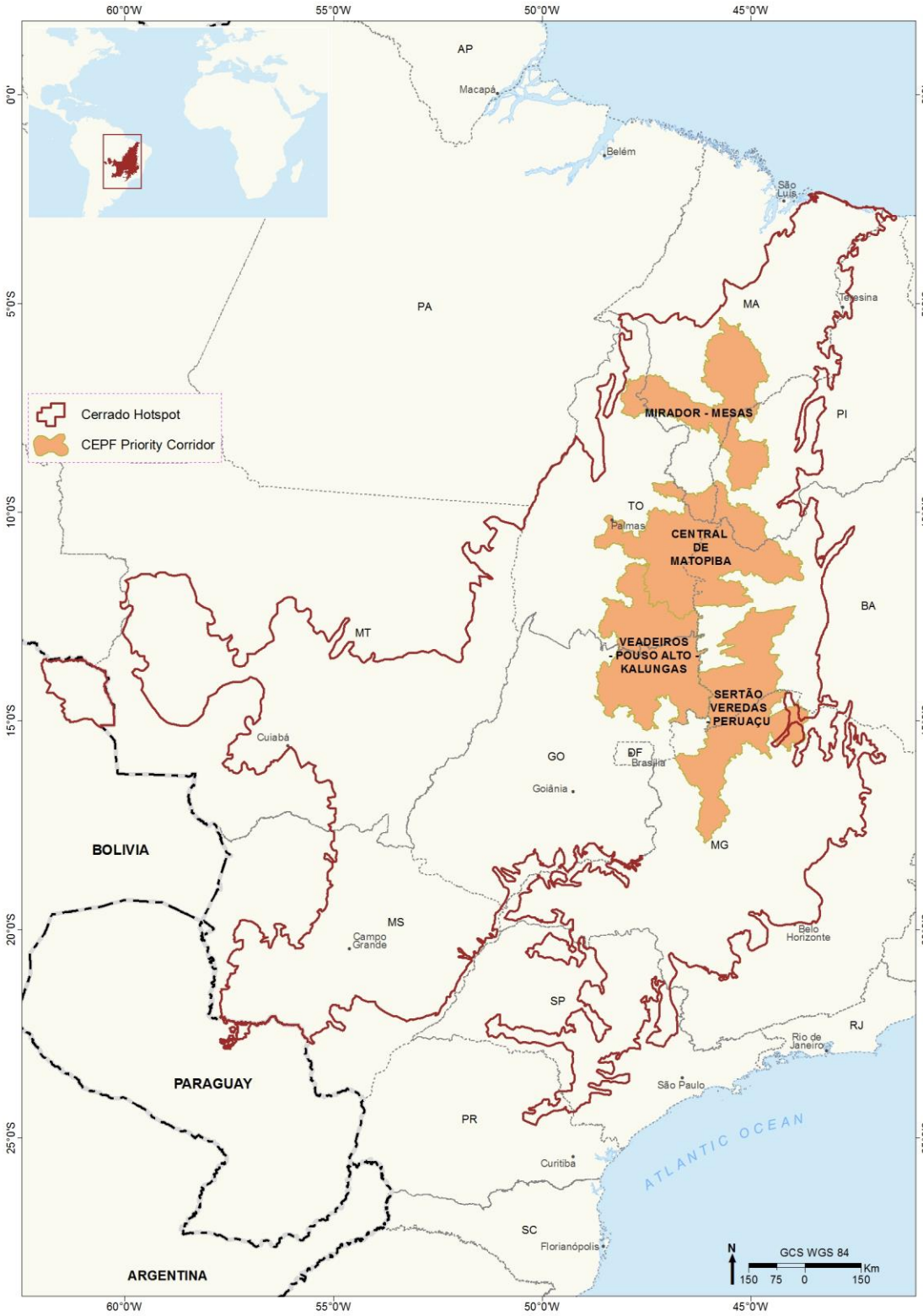
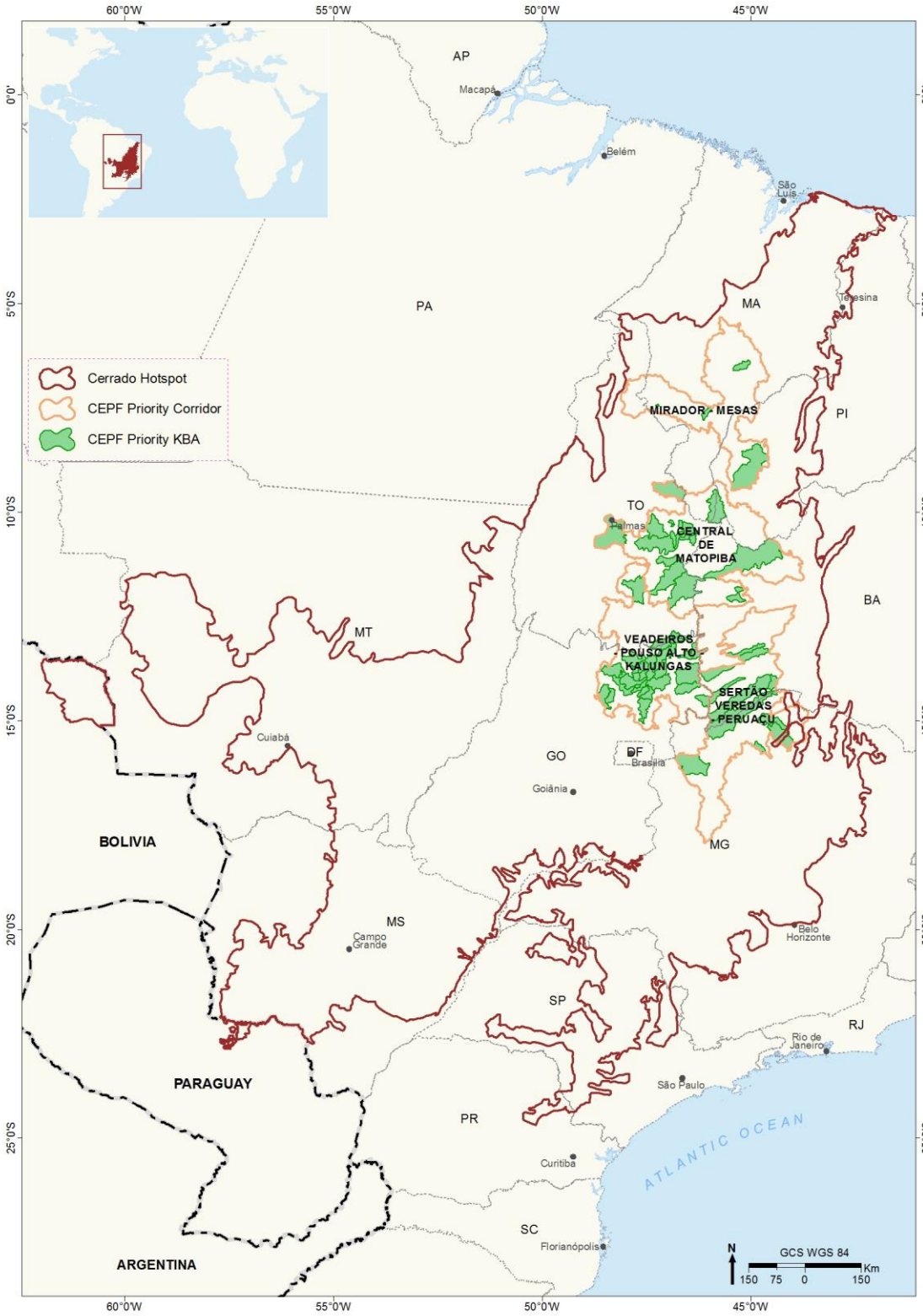


Figure 13.4: CEPF Priority KBAs and Priority Corridors in the Cerrado Hotspot.



13.2 Strategic Directions and Investment Priorities

The broad and detailed compilation of information presented in the first 11 chapters of the ecosystem profile was used to refine a first set of 120 actions for the integrated conservation of the Cerrado Hotspot. These 120 actions were organized into 12 categories:

1. Ecosocial Monitoring.
2. Integrated Ecosystem Management.
3. Environmental Protection.
4. Sustainable Use.
5. Water Resources.
6. Indigenous Peoples and Traditional Communities.
7. Family Agriculture.
8. Agriculture.
9. Public Policies.
10. Institutional Strengthening.
11. Knowledge and Information.
12. Sustainable Financing.

As described in Chapters 1 and 2, about 170 experts were consulted during the profiling process and, in particular, during the four consultation workshops that brought together CSOs, private sector companies, academia and government institutions. These experts were tasked with ranking the identified actions to guide medium-term investments in the Cerrado.

Based on this work, a preliminary investment strategy was then compiled, with 15 investment priorities grouped into four strategic directions at three geographic scales: site; corridor; and hotspot. The preliminary strategy was presented at the final consultation workshop, during which stakeholders further streamlined it.

The geographic scale created most of the discussions. Many stakeholders objected strongly to being asked prioritize among the conservation corridors. They were concerned that the corridors not being prioritized might no longer be considered for investments by other donors. Once it was made clear that this additional prioritization of the corridors was for the CEPF investment niche only and that all 13 corridors should be considered by other donors as being priorities for conservation investment, agreement was quickly reached on the four priority corridors. In addition, stakeholder felt that it was important to define site-scale priorities, based on KBAs, in order to guide site selection for the creation of private protected areas (RPPNs), as this was seen as a site-specific need rather than a landscape-wide one, due to the high fragmentation of the hotspot.

The final investment strategy, presented in Table 13.4, is in accordance with the stakeholders present at the final consultation workshop and with members of the Senior Advisory Group, and also incorporates feedback from the CEPF Working Group. The investment strategy is for five years, and comprises 17 investment priorities grouped into seven strategic directions.

Table 13.4. Strategic Directions and Investment Priorities for the CEPF Investment Niche.

CEPF Strategic Directions	CEPF Investment Priorities
1. Promote the adoption of best practices in agriculture in the priority corridors	1.1 Identify and disseminate sustainable technologies and production practices in the agriculture sector to ensure protection of biodiversity, maintenance of ecosystem services and food security
	1.2 Promote the development and adoption of public policies and economic incentives for improved agricultural and livestock production practices, promoting sustainable agricultural landscapes
2. Support the creation/ expansion and effective management of protected areas in the priority corridors	2.1 Support studies and analyses necessary to justify the creation and expansion of public protected areas, while promoting conservation and sustainable use of biodiversity and valuing local and traditional culture
	2.2 Promote the inclusion of existing indigenous, *quilombola* and traditional populations, respecting and integrating their traditional knowledge, into conservation/restoration planning by government and civil society
	2.3 Encourage the creation and implementation of private protected areas (RPPNs) to extend legal protection in priority KBAs
3. Promote and strengthen supply chains associated with the sustainable use of natural resources and ecological restoration in the hotspot	3.1 Support the development of markets and supply chains for sustainably harvested non-timber products, in particular for women and youth
	3.2 Promote capacity-building initiatives in particular among seed collectors, seedlings producers and those who carry out restoration activities, to enhance technical and management skills and low-cost, ecologically appropriate technologies in the supply chain of ecological restoration
	3.3 Promote the adoption of public policies and economic incentives to expand the scale and effectiveness of conservation and restoration of Permanent Preservation Areas (APPs) and Legal Reserves (LRs), through improved productive systems that enhance ecosystem services
4. Support the protection of threatened species in the hotspot	4.1 Support the implementation of National Action Plans (PANs) for priority species, with a focus on habitat management and protection
5. Support the implementation of tools to integrate and to share data on monitoring to better inform decision-making processes in the hotspot	5.1 Support the dissemination of data on native vegetation cover and dynamics of land uses, seeking reliability and shorter time intervals between analyses and informed evidence-based decision-making
	5.2 Support the collection and dissemination of monitoring data on quantity and quality of water resources, to integrate and to share data on the main river basins in the hotspot

CEPF Strategic Directions	CEPF Investment Priorities
6. Strengthen the capacity of civil society organizations to promote better management of territories and of natural resources and to support other investment priorities in the hotspot	6.1 Strengthen capacities of civil society organizations to participate in collective bodies and processes related to the management of territories and natural resources
	6.2 Develop and strengthen technical and management skills of civil society organizations, on environment, conservation strategy and planning, policy advocacy, fund raising, compliance with regulations and other topics relevant to investment priorities
	6.3 Facilitate processes of dialogue and cooperation among public, private and civil society actors to identify synergies and to catalyze integrated actions and policies for the conservation and sustainable development of the Cerrado
	6.4 Disseminate information about the biological, ecological, social and cultural functions of the Cerrado to different stakeholders, including civil society leaders, decision makers, and national and international audiences
7. Coordinate the implementation of the investment strategy of the CEPF in the hotspot through a Regional Implementation Team	7.1 Coordinate and implement the strategy of investments of CEPF in the Cerrado, through procedures to ensure the effective use of resources and achievement of expected results
	7.2 Support and strategically guide the network of institutions responsible for the implementation of actions and projects funded by CEPF, promoting their coordination, integration, cooperation and exchange of experiences and lessons learned

13.3 Descriptions of Strategic Directions and Investment Priorities

For the investment strategy of CEPF, the seven Strategic Directions and 17 Investment Priorities are described below.

Strategic Direction 1. Promote the adoption of best practices in agriculture in the priority corridors

Sustainability has been an issue for Brazilian rural production, insofar as the growing concern of global society with climate change and biodiversity loss and establishment of environmental standards has begun to restrict demand for products regarded as harmful to the environment. One of the main sources of greenhouse gases in the Cerrado is agriculture, mainly because of inappropriate management practices. Such practices are one reason why new Cerrado areas keep being opened, to increase output. Agriculture is the sector that consumes the most water in Brazil through irrigation.

CEPF could contribute significantly to GHG reduction, water use efficiency and higher yields, while avoiding opening new areas and promoting social development, through the dissemination of best practices in agriculture. In this scenario, the investments of CEPF could induce the implementation of social and environmental safeguards. The purpose would be to strengthen initiatives that generate added value for the protection and

recovery of natural capital, best practices for production and respect of the rights and the traditional livelihoods of communities that inhabit the hotspot.

Investment Priority 1.1 – Identify and disseminate sustainable technologies and production practices in the agriculture sector to ensure protection of biodiversity, maintenance of ecosystem services and food security

The adoption of best practices depends both on innovations based on the integration of science with traditional knowledge and dissemination of these innovations for the largest possible number of actors.

The CEPF investment strategy should prioritize initiatives involving associations, cooperatives and producer groups. This kind of investment could involve, for instance, the capacity building of farmer organizations through peer-to-peer exchanges and field visits or the preparation and distribution of technical manuals and folders in order to disseminate best practices. Best practices could focus on soil and water conservation, such as cultivation along contour lines, zero-tillage and ground cover, drip irrigation, fire reduction and control, crop rotation, crop-livestock integration, agroforestry systems and *in-situ* conservation of crop genetic resources. Locally adapted solutions could improve water infiltration, enhance groundwater recharge, reduce runoff and control erosion, among other benefits.

Investment Priority 1.2 – Promote the development and adoption of public policies and economic incentives for improved agricultural and livestock production practices, promoting sustainable agriculture landscapes

Public policies and economic incentives are key elements to induce changes in the production systems. Funds that value sustainable practices and recognize the social and economic importance of so-called "socio-biodiversity products" can increase the positive impact of these activities on biodiversity conservation and ecosystem services.

CEPF should support initiatives of civil society organizations to influence policies and their implementation and to propose incentives for best practices. Cooperation, social dialogue and coordination are initiatives that could contribute to the integration of farming with biodiversity and ecosystem services conservation. This could involve working with groups such as the Brazilian Coalition for Climate, Agriculture and Forestry, among others, in order to bring agribusiness into the conservation agenda.

Another relevant support would be for outreach and training workshops on financial incentives for agricultural practices compatible with sustainable production, such as Low Carbon Agriculture (ABC), Green Livestock, Forest Certification, Sustainable Landscape Partnership, Minimum Price Guarantee Policy for Biodiversity Products (PGPMBio), additional 30% in the price for organic products produced by family farmers within the National School Lunch Program (PNAE) etc.

Strategic Direction 2. Support the creation/expansion and effective management of protected areas in the priority corridors

According to the Convention on Biological Diversity, protected areas are the central pillar of the strategies to protect biodiversity *in situ*. Although an average of 24% of the four

priority corridors for CEPF investment are already under some degree of legal protection, some important sites for biodiversity and ecosystem services are still unprotected. In addition, some of the existing protected areas have insufficient effectiveness of management to meet the primary objectives for which these areas were created.

CEPF investments would contribute to raising the status of legal protection in the priority areas. To enhance processes to establish new public and private areas as well as to increase the effectiveness of existing ones, CEPF could support advisory councils, conservation initiatives in buffer zones, and training opportunities for managers and civil society advisors.

Investment Priority 2.1 – Support studies and analyses necessary to justify the creation and expansion of public protected areas, while promoting conservation and sustainable use of biodiversity and valuing local and traditional culture

In the priority corridors, there are many KBAs that remain unprotected. In most cases, the process to design, designate and establish a protected area is very complicated and slow, and most of the time governments need scientific support for their proposals. CEPF could support technical and territorial studies conducted by civil society organizations, including studies on the importance of protected areas as drivers for development and as suppliers of crucial ecosystem services for human welfare. These studies could provide evidence to back up proposals for the creation or expansion of protected areas in the priority corridors. The research could be linked to joint policy initiatives and social dialogue to raise support for the creation of new protected areas.

In addition, multi-stakeholders processes seeking participation and support for the preparation and implementation of management plans, financing, recruitment and other initiatives are required to enhance the effectiveness of protected areas. They could all be good investment opportunities for CEPF.

Investment Priority 2.2 – Promote the inclusion of existing indigenous, quilombola and traditional populations, respecting and integrating their traditional knowledge, into conservation/restoration planning by government and civil society

Complementary to the national system of "conservation units" in Brazil, Indigenous Lands and *quilombola* Territories contribute to nature conservation. Those lands and territories protect not only natural resources but also traditional livelihoods based on those resources for local communities. It would be strategic to integrate all these areas into conservation efforts.

To this end, it would be important to identify and disseminate good and innovative examples of appropriate conservation and environmental management approaches, including the sustainable use of natural resources in and around protected areas, in synergy with the National Policy for Environmental Management in Indigenous Lands (PNGATI). CEPF could also support the establishment of community agreements for resource use and help communities to declare their territories as ICCAs (Indigenous and Community Conserved Areas).

Investment Priority 2.3 – Encourage the creation and implementation of private protected areas (RPPNs) to extend legal protection in priority KBAs

As was successfully supported by CEPF in the Atlantic Forest, the creation and implementation of Private Natural Heritage Reserves (RPPNs) should be stimulated since they do not require expropriation of property but provide a legal framework for the protection of land. There is scope for these private properties to play a key role in complementing the existing system of public protected areas, providing increased connectivity as well as increasing the representation of priority areas included in the protected areas network. CEPF should focus its available funding on the 62 priority KBAs within the four priority corridors while seeking opportunities to leverage additional funding to support conservation actions for the other 47 priority KBAs outside of the priority corridors. The simplification of regulations and procedures is needed as well as incentives to create more RPPNs in the Cerrado.

Strategic Direction 3. Promote and strengthen supply chains associated with the sustainable use of natural resources and ecological restoration in the hotspot

The sustainable use of biodiversity is an important complementary conservation strategy because it encourages communities to maintain native areas in order to generate income. CEPF might contribute to overcoming some of the regulatory bottlenecks that keep sustainable use from becoming a more efficient strategy for social development and biodiversity conservation.

On the other hand, the conversion of natural ecosystems into farmland – an intense process in recent years in the Cerrado – is the main threat to the hotspot. Where critical areas for water springs protection and soil erosion prevention have lost their natural plant cover, serious socio-biodiversity impacts are and will be expected in the near future if these attributes are not restored. Due to soil characteristics, climate and the structure of vegetation, ecosystem restoration in the Cerrado still poses scientific and technological challenges that need to be addressed.

Investment Priority 3.1 – Support the development of markets and supply chains for sustainably harvested non-timber forest products, in particular for women and youth

Building on the successful experiences of the GEF-UNDP Small Grants Program CEPF should help local communities, in particular women and youth, to improve sustainable extraction and production practices for non-timber products. More specifically, CEPF could provide them with grants to exchange experiences and practices in the conservation and sustainable use of biodiversity and to transfer appropriate social technologies for the use of natural resources, with less environmental impact and more income generation for them. A special focus may be given to species identified as icons of conservation and sustainable use of the Cerrado (e.g., *pequi*, *baru*, golden grass, *buriti*, *babaçu* and others).

In addition, networking, coordination, knowledge management and capacity building actions are required to influence public policies to remove barriers to sustainable use.

Investment Priority 3.2 – Promote capacity-building initiatives in particular among seed collectors, seedlings producers and those who carry out restoration activities, to enhance technical and management skills and low-cost, ecologically appropriate technologies in the supply chain of ecological restoration

There is now great demand for Cerrado restoration on private land, especially in Permanent Preservation Areas (APPs) and Legal Reserves (LRs) after the Forest Code (now the Forest Law) came into force. In Brazil, most of the knowledge regarding restoration of natural vegetation comes from the Atlantic and Amazon forests. With the Cerrado being such a diverse savanna, with many specificities regarding soils, drainage and seasonal dryness, knowledge of how to restore it with lower costs and lower risks still needs to be acquired.

The Ministry of Environment launched in 2015 the National Plan for the Recovery of Native Vegetation (PLANAVEG), which will need support to be implemented in the Cerrado. CEPF may support the implementation of supportive actions, including the training and compliance of different segments in the restoration production chain (seed collection, seedling nurseries and restoration of critical areas), as well as research to tailor techniques that will enable restoration in the Cerrado. In addition, CEPF could support networking in order to influence the legal framework regarding native seed collection and seedling production for upscaling.

Further, CEPF may promote pilot demonstrations of innovations that offer greater efficiency and lower cost for ecological restoration activities in critical areas, such as direct seeding or 'muvuca' (use of seeds of native species instead of seedlings in the restoration process) and assisted natural regeneration.

Investment Priority 3.3 – Promote the adoption of public policies and economic incentives to expand the scale and effectiveness of conservation and restoration of Permanent Preservation Areas (APPs) and Legal Reserves (LRs), through improved productive systems that enhance ecosystem services

There is a need to protect the existing remnants of the Cerrado and to scale up restoration processes in order to comply with the Rural Environmental Registry (CAR). It would be important to provide socio-environmental benefits and synergies as incentives for compliance.

CEPF could also support Permanent Preservation Areas and Legal Reserves in the Cerrado, via the establishment of strategic partnerships among civil society organizations, academic institutions, businesses, governments and individuals as inspired by a similar initiative in the Atlantic Forest (Atlantic Forest Restoration Pact).

Promoting the productive chain of restoration as both employment and income generation opportunities for local communities and as a means to re-establish the integrity of biodiversity is another strategic investment approach for the hotspot. CEPF investments could also support regional strategic plans within priority corridors to address connectivity gaps and scale up environmental recovery initiatives in line with the National Plan for Native Vegetation Recovery.

Strategic Direction 4. Support the protection of threatened species in the hotspot

The Ministry of Environment of Brazil adopts a protocol for the protection of endangered species found in the country. Based on this protocol, National Action Plans (PANs) are

prepared for a species in particular, for a group of endangered species, or for regions classified as extremely important for biodiversity. In the latter, these plans include a set of actions to protect habitats for a large number of endangered species.

Investment Priority 4.1 – Support the implementation of National Action Plans (PANs) for priority species, focusing on habitat management and protection

For the Cerrado, seven species that are highly threatened globally and have a National Action Plan or are part of a regional one have been prioritized for CEPF investments. Through coordination with the National Action Plans Support Groups (Grupos de Apoio aos Planos de Ação Nacional – GAPAN), priority actions set out in the PANs related to these seven priority species could be identified. CEPF funding should also then focus on supporting the implementation of those actions, especially those related to management and habitat protection.

Strategic Direction 5. Support the implementation of tools to integrate and to share data on monitoring to better inform decision-making processes in the hotspot

In a hotspot where crops and pastures have been replacing natural ecosystems in recent years, it is essential to have an agile, efficient, reliable and transparent system to monitor native vegetation coverage. The role of the hotspot to provide water for human welfare and economic development also highlights the importance of monitoring changes in the hydrological cycle resulting from climate change and loss of native vegetation.

Despite government monitoring initiatives, stakeholders have pointed out the need for accessibility of data to enable civil society organizations and academic institutions to monitor the changes in shorter intervals and with greater accuracy. Rather than funding new monitoring activities, CEPF could support the creation of an online platform to store and disseminate data being produced by monitoring programs carried out by government, universities, civil society and the private sector, as well as encouraging the production of integrated analysis to better inform decision-makers.

Investment Priority 5.1 – Support the dissemination of data on native vegetation cover and dynamics of land uses, seeking reliability and shorter time intervals between analyses and informed evidence-based decision making

The CEPF investments can help promote partnerships and leverage resources to implement a joint long-term program to analyze existing monitoring data and to generate annual information on deforestation and changes in vegetation cover. These investments could also strengthen and expand civil society skills for monitoring and analyzing public policies affecting the Cerrado, such as the Forest Code Observatory, CAR Observatory, Climate Change Observatory, Inovacar, etc.

Investment Priority 5.2 – Support the collection and dissemination of monitoring data on the quantity and quality of water resources, to integrate and to share data about the main river basins in the hotspot

The CEPF investments could support workshops with members of the watershed management committees of the main rivers in the hotspot, local stakeholders and

researchers to discuss results of monitoring, to exchange experiences on conservation initiatives and to plan actions aimed at improving watershed management. A diagnosis of the status of Cerrado rivers could be useful to increase awareness among the general public as well as the agriculture sector in particular to make a more efficient use of water resources.

Strategic Direction 6. Strengthen the capacity of civil society organizations to promote better management of territories and natural resources and to support other investment priorities in the hotspot

Strengthening the capacity of civil society organizations is key to the long-term sustainability of the actions to be supported by CEPF. This was an integral part of CEPF's investments in the Atlantic Forest, where institutions involved in the hotspot were strengthened and became most prominent and influential. Such a strategy should also be adopted in the Cerrado.

Investment Priority 6.1 – Strengthen capacities of civil society organizations to participate in collective bodies and processes related to the management of territories and natural resources

Supporting the management and consolidation of institutional networks and coalitions for territorial governance, such as the Cerrado Network, Mobilization of Indigenous Peoples of the Cerrado (MOPIC), Interstate Movement of Babassu Crackers (MIQCB), Pacari Network, Cerrado Central, mosaics of protected areas and the Cerrado Seeds Network, is a possible investment.

Strengthening, expanding and qualifying civil society representation in forums and councils related to the conservation and sustainable use of the Cerrado is crucial in any long-term strategy. CEPF investments could be key in enhancing civil society's influence in several forums, such as management boards of protected areas and mosaics, municipal and state environmental councils, territories boards or watershed management committees, among others.

Investment Priority 6.2 – Develop and strengthen technical and management skills of civil society organizations, on environment, conservation strategy and planning, policy advocacy, fund raising, compliance with regulations and other topics relevant to investment priorities

Inspired by the Atlantic Forest experience, the implementation of an institutional strengthening program, covering the most relevant content to be identified and proposed by local organizations, will be strategic.

The content and format of this program could be designed and detailed according to a specific assessment to identify demands and gaps for training. It could include modular classroom courses, training of trainers and/or tutoring.

Investment Priority 6.3 – Facilitate processes of dialogue and cooperation among public, private and civil society actors to identify synergies and to catalyze integrated actions and policies for the conservation and sustainable development of the Cerrado

To engage the private sector in the agenda of sustainable development and to promote its interaction with government programs, CEPF investments could help establish or enhance multi-stakeholder initiatives (MSI), such as forums for dialogue and cooperation, to leverage institutional, political and financial support to conserve the Cerrado.

This approach could also support exchanges and integration among conservation and sustainable use institutions, programs and initiatives, such as PPCerrado, FIP Cerrado, GEF Cerrado, and best practices of territorial governance among public and private institutions of Brazil, Paraguay and Bolivia.

Investment Priority 6.4 – Disseminate information about the biological, ecological, social and cultural functions of the Cerrado to different stakeholders, including civil society leaders, decision makers, and national and international audiences

CEPF could support the development of promotional publications, broadcasting spots, public campaigns and other communication tools and media to contribute to the dissemination of information on the Cerrado, its ecosystems, its species, its importance for ecosystem services and climate resilience, and also on the traditional knowledge and culture of the Cerrado.

Investments should also sponsor the implementation of an integrated database, based on a broad, collaborative protocol, prioritizing information on biodiversity, ecosystem services, food and raw materials production and culture. This kind of geographic information system tool is strategic for planning and monitoring initiatives, including for monitoring the impact of CEPF investments in the medium and long term.

Strategic Direction 7. Coordinate the implementation of the CEPF investment strategy in the hotspot through a Regional Implementation Team

CEPF will support a Regional Implementation Team to convert its strategy into a cohesive portfolio of grants that exceeds in impact the sum of its parts. The Regional Implementation Team will consist of one or more civil society organizations active in the Cerrado. It will be selected by CEPF according to approved terms of reference, following a competitive process and selection criteria available at www.cepf.net. The team will operate in a transparent and open manner, consistent with CEPF's mission and all provisions of the CEPF operational manual. Organizations that are members of the Regional Implementation Team will not be eligible to apply for other CEPF grants within the Cerrado Hotspot.

The Regional Implementation Team will provide strategic leadership and local knowledge to build a broad constituency of civil society groups working across institutional and political boundaries toward achieving the conservation goals described in the ecosystem profile.

Investment Priority 7.1 – Coordinate and implement the CEPF strategy of investments in the Cerrado through procedures to ensure the effective use of resources and achievement of expected results

This investment priority covers the three administrative functions of the Regional Implementation Team: (i) establish and coordinate a process for proposal solicitation and review, (ii) manage a program of small grants, and (iii) provide reporting and monitoring.

For large grants, the Regional Implementation Team assists applicants and the CEPF Secretariat by reviewing and processing grant applications, ensuring compliance with CEPF policies, and facilitating on-time and accurate grantee and portfolio reporting and monitoring. In particular, the Regional Implementation Team has a very important role to play in soliciting and reviewing proposals. This role encompasses a wide range of activities, from issuing calls for proposals to establishing review committees to making final recommendations for approval or rejection. Though much of this work is labeled as administrative, it does have a sound programmatic foundation, as grants need to be strategic and of high quality. These tasks require technical expertise, knowledge of strategy, and the ability to understand that all selected projects will make a unique contribution to the achievement of CEPF's objectives.

The Regional Implementation Team also assumes significant administrative responsibilities as manager of CEPF's small granting mechanism, including budgeting, processing proposals, and drafting and monitoring contracts. Small grants play an extremely important role in the CEPF portfolio, so they should be coherent with the overall grant portfolio. These grants can address themes or geographic areas of importance, serve as planning grants, or provide opportunities to engage local and grassroots groups that may not have the capacity to implement large grants.

This investment priority also covers reporting and monitoring. The process entails collecting data on portfolio performance, ensuring compliance with reporting requirements, ensuring that grantees understand and comply with social and environmental safeguard policies, and reviewing reports. It also includes site visits to grantees, which may identify needs for follow-up capacity building. This will ensure effective project implementation and monitoring, and requires technical expertise to be performed effectively and to inform adaptive management.

Investment Priority 7.2 – Support and strategically guide the network of institutions responsible for the implementation of actions and projects funded by CEPF, promoting their coordination, integration, cooperation and exchange of experiences and lessons learned

This investment priority covers the two programmatic functions of the Regional Implementation Team: (i) coordinate and communicate CEPF investment, build partnerships and promote information exchange in the hotspot; and (ii) build the capacity of grantees.

These functions include facilitating learning exchanges among grantees and other stakeholders, identifying leveraging opportunities for CEPF, and aligning CEPF investment with investments by other donors. Programmatic functions require the Regional Implementation Team to maintain in-house conservation expertise to ensure that CEPF funds are strategically channeled to optimize the achievement of its conservation objectives.

A critical programmatic function, especially in the context of the Cerrado hotspot, is to coordinate different CEPF investments and facilitate partnership building among different actors. The Regional Implementation Team will be responsible for identifying local civil society organizations active within the four priority corridors, facilitating partnerships between them and the national civil society organizations best placed to provide technical and financial support.

This investment priority also covers capacity building, a function that is regarded as being at the core of the Regional Implementation Team's responsibilities. This function focuses on building the capacity of domestic civil society organizations to access and make effective use of CEPF funding. A cornerstone of the Regional Implementation Team's work is to ensure that partners have the institutional and individual ability to design and implement projects that contribute to the targets of the investment strategy. It is specifically targeted at appropriate strategic stakeholders to ensure delivery of CEPF's objectives through improved projects and higher quality implementation. Experience has shown that these capacity development efforts are essential to ensuring good projects that are integrated into a wider hotspot strategy and a common conservation vision.

14. SUSTAINABILITY

On the basis of the contents of previous chapters, especially that of Chapter 13, which in turn are all based on literature review, data analysis, field observations and extensive stakeholder consultations, this chapter presents recommendations regarding: (14.1) capacity development for sustainability; (14.2) sustainable financing; and (14.3) sustaining change through norms and regulations. Ways are suggested for the proposed strategic directions and investment priorities to result in sustainable conservation outcomes.

14.1 Capacity Development for Sustainability

The foremost demand expressed during all the stakeholder consultations for the Cerrado Hotspot ecosystem profile development was for capacity development of various kinds, both institutional and technical.

For civil society organizations in the Cerrado Hotspot to be sustainable, one of the key capacities needed at the institutional level is the ability to locate sources of funding and prepare competitive proposals. Cerrado-based CSOs are generally not as skilled as are competitors in other regions, who generally have more knowledge and experience. In addition, CSOs need institutional strengthening to learn how to spend the funds properly, achieve the results promised in their proposals and comply with all the regulations of government and donors. The new regulatory framework for CSOs approved in 2015 is more appropriate in many respects, but it maintains several difficult requirements and adds others.

Another urgent need is for training to qualify the participation of civil society representatives in networks, policy advocacy and participatory processes led by regional and national associations, the government, international organizations and the private sector.

Indigenous communities have specific needs in order to take on environmental management in their lands and to promote sustainable livelihoods without excessive dependence on doles from government. Their leaders also need to participate in national and international initiatives to defend their rights.

More capacity specifically focused on the Cerrado is needed in the academic and scientific community, especially with reference to its interdependent ecological functions regarding biodiversity, water and carbon. There could be support for students to do field work in the hotspot, hopefully becoming involved in the Cerrado for the rest of their careers, and for students, professors and scientists to participate in exchanges.

Technical capacity development is also needed for local and regional civil society organizations to monitor land use changes and their impacts on biodiversity, fire, water and pollution. In order to fit into government and international priorities, CSOs need to understand more about carbon stocks and emissions and about hydrological cycles, in addition to flora and fauna. Knowledge of appropriate social technology for the sustainable use of biodiversity can be disseminated through publications, electronic media and peer-to-peer exchanges in communities. Rural extension agents should have more capacity to disseminate this technology.

This gap in capacity also corresponds to the need for capacity building among government agencies, especially state and municipal agencies, to be able to design and implement suitable measures to reconcile conservation and development. Although governments cannot be funded by CEPF, civil society organizations can provide training, information and consulting. There is also a specific need to develop journalists' and opinion leaders' capacities to grasp the specificities of the Cerrado Hotspot and understand how to reconcile conservation and development in this particular context, where antagonisms often prevail over cooperation.

The CEPF investment strategy presented in Chapter 13 addresses several of those capacity-building needs. The implementation of this strategy will pave the way for stronger and more efficient CSOs in the hotspot. One low-cost means to stimulate higher visibility and spontaneous capacity development in the Cerrado Hotspot would be to award prizes for outstanding initiatives, as is done by the Equator Prize at the global level, for the tropics; the Celso Furtado prize, for Brazil; the Chico Mendes Prize, for the Amazon; and the Drylands Champions and Mandacaru prizes, for the Caatinga. Experience shows that the beneficiaries make good use of the money and that the publicity has broad outreach.

14.2 Sustainable Financing

For financing to become sustainable, it is essential, first of all, to provide convincing justifications to donors, governments, legislatures and the public at large. Cerrado's biodiversity is not only rich, but also unique, and it has very useful genetic properties, especially in the context of global climate change. In addition to biodiversity conservation, the ecological functions related to water and carbon, which depend on biodiversity, can provide leverage to convince many funding agents that investment is needed for the Cerrado.

As for geographical focus, much of the Cerrado biome actually lies within the Legal Amazon, which includes the entire states of Mato Grosso and Tocantins and more than half of Maranhão. Even more of the Cerrado is located in the Amazon river basin, which stretches further south and includes about half of Goiás and part of the Federal District. Thus, some of the funding earmarked for the Amazon could be used in the Cerrado.

In order to apply the Rural Environmental Registry (CAR), the Brazilian government and multilateral and bilateral international organizations will invest billions of dollars to restore land that should have been protected as Legal Reserves and Areas of Permanent Preservation under the Forest Law. It would be important to influence the use of funds so as to provide socio-environmental benefits and synergies, without punishing hardest those who are least responsible for the damage but are most vulnerable to inspections and restrictions.

The private sector, at least the large companies, can get involved in conservation through corporate social responsibility. Their suppliers can be convinced to provide commodities acceptable to consumers and governments according to standards established in Brazil and abroad. Since commodity volumes are large and profit margins are small, a relatively small group of consumers can achieve significant results, as can relatively small groups of shareholders. The field activities of agribusiness can be monitored by remote sensing

and by local communities using modern technology such as smartphones, as is now being done with monitoring of wildfire in the Federal District.

For public and private protected areas, another possibility is to establish mechanisms for them to generate their own income, especially by opening them for public visitation, recreation and tourism, charging entry fees and allowing concessions for food and lodging (Barros and La Penha 1994; IPÊ 2008; Maretti 2015b).

Payment for environmental services (PES) is an attractive approach, but it must be dealt with carefully to avoid justifying predatory practices in areas where there are no payments, or when payments have been interrupted. Interruption of payments that are not legally required is a high risk in the current economic situation or when budget deficits occur and the environment is a low priority. The most feasible payments seem to be to specific sites that provide water for large cities that can easily afford the payments, as in the case of Extrema in Minas Gerais, which supplies water for São Paulo and is literally an extreme case. It might be more replicable and secure to pay for material goods (food, handicrafts, medicinal plants, etc.) through payment for environmental goods and services ('PEGS') than for abstract services provided over areas of millions of square kilometers, with high opportunity costs to maintain the native plant cover.

Certification is also considered attractive but is difficult to apply to the primary sector in remote areas. Requiring certification could result in insufficient supplies of certified products. In actual practice, few consumers are willing to pay a premium for certified sustainable products. Branding plus sample verification of products is another approach, which depends more on reputation than verification of production processes at numerous locations in the countryside.

Financing for Brazil is now threatened by its 'graduation' as an upper middle-income country, one no longer considered a priority for international development assistance. Continued financing could be justified in terms of trilateral North-South-South financial and technical cooperation. This is an approach foreseen in the Sustainable Development Goals and one that the Brazilian government strongly favors, especially with respect to Latin America and Portuguese-speaking countries in Africa and the Pacific (Sawyer 2011; Ayllon Pino 2013).

CEPF's investment strategy can leverage additional funds for the conservation of the Cerrado by raising the profile of its biological, ecological, social and cultural functions among donors, governments, and the local and international public at large. Although small grants cannot solve the problems of all local communities in the medium and long term, they can be instrumental in discovering appropriate sustainable technologies that can be more widely diffused. They enable a learning-by-doing approach to deal with complex government regulations on the use of public funds. They can also cover expenses, like personnel and administration, which government funds cannot, and thus complement official funding. Government investment and finance can be influenced through 'seed money' from international cooperation for government, civil society, academia and the private sector, which in turn can leverage domestic funding sources, which in Brazil are many times greater than donor funds. A small percentage of the billions of dollars the government spends every year in Brazil can make an enormous difference for the environment, especially if links are established to economic, social, educational, scientific and cultural budgets and policies.

14.3 Sustaining Change through Standards and Rules

One of the most far-reaching and long-lasting changes in environment and society could be achieved by changing standards and rules that currently favor unsustainability. There are at least two targets on which to focus attention. The executive branch of government has some leeway as it issues enabling decrees, administrative orders, standards, etc., to "regulate" existing laws. Only the legislative branch, however, can write, amend or repeal the laws themselves. Convincing the executive and legislative branches of government to change existing standards and rules requires knowledge of the broader legal framework and legislative and administrative processes. Such knowledge is not common among civil society organizations, especially local groups in less developed regions. Well-grounded legal advice is important. It is only available in large state capitals and Brasília.

One way to help make standards and rules more appropriate is to study and disseminate what is done in other countries. It would be important for state and local governments to establish regulations that are suitable to each situation, rather than only being allowed to be stricter than federal requirements, as is now the case. In order to avoid abuses, there could be a requirement that any flexibility at the sub-national level be approved by the federal government, rather than automatically being considered illegal, as is now the case.

The much-needed sustainability of environmental management will be actively promoted by the CEPF investment strategy via CSOs' active participation in networks related to the management of territories and natural resources, capacity building of CSOs on policy advocacy, and dialogue and cooperation facilitation among public, private and civil society actors. This strategy will also support exchanges among public and private institutions of Brazil and its neighboring countries (Paraguay and Bolivia).

14.4 Conclusions

Sustainability of conservation outcomes in the Cerrado Hotspot requires understanding each of the country's specificities, along with changes now under way in the national and international contexts. In addition to site-specific investments, it is important for CEPF to promote systemic change. Although building awareness is challenging, there is growing recognition of the importance of the environment in general and that of the Cerrado in particular, including biodiversity, water and climate. As long as the appropriate approaches are used, stressing dialogue and multi-faceted mutual benefits of various kinds, the sustainability of conservation gains can be achieved at specific sites in the future.

CERRADO HOTSPOT LOGICAL FRAMEWORK 2016-2021

Objective	Targets	Means of Verification	Important Assumptions
Engage civil society in the conservation of globally threatened biodiversity through targeted investments that maintain ecosystem functions and human well-being **TOTAL BUDGET:** **$ 8,000,000**	At least 40 local civil society organizations with increased capacities actively participate in conservation actions and management of territories guided by the ecosystem profile. At least eight partnerships and networks formed among public, private and civil society actors to facilitate synergies and to catalyze integrated actions and policies for the conservation and sustainable development of the Cerrado in support of the ecosystem profile. At least 500,000 hectares of protected areas targeted by CEPF grants with new or strengthened protection and management. At least five land-use planning or public policies influenced to accommodate biodiversity. At least 500 000 hectares of production landscapes with improved management for biodiversity conservation or sustainable use within four corridors targeted by CEPF grants. At least five globally threatened species targeted by CEPF grants have stable or improved conservation status. At least 60 local and indigenous communities are empowered and directly benefit for sustainable use of resources and/or restoration of ecological connectivity at the landscape scale.	Civil Society Tracking Tool (CSTT) on CEPF's investment beneficiaries. Grantee and RIT performance reports. Protected Area Tracking Tool (SP1 METT). Annual portfolio overview reports; portfolio midterm and final assessment reports. IUCN Red List of Threatened Species.	The CEPF Ecosystem Profile will effectively guide conservation actions in the Cerrado Hotspot. Investments by other funders will support complementary activities that reduce threats to priority corridors, KBAs and species. Civil society organizations, government and private companies will be willing to engage in biodiversity conservation, form new partnerships, and adopt innovative approaches.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 1: Best practices in agriculture adopted in the priority corridors. US$ 800,000	At least six sustainable technologies and production best practices in the agriculture sector identified and disseminated to ensure protection of biodiversity, maintenance of ecosystem services and food security. At least four financial incentives for sustainable land-sparing agricultural and livestock practices promoted among commodity chains in priority corridors. At least two consistent public policies (legislation, policies, programs, public-private partnerships, etc.) created or adjusted to promote conservation and sustainable use of biodiversity.	Best practices dissemination tools. Grantee and RIT performance reports. Secretariat supervision mission reports. Adopted public policies.	Governments, private companies and donors will remain committed to sustainable development goals thus providing suitable and sufficient funding sources to expand best practices models. Private companies in key agriculture sectors will appreciate the business model for better environmental and social practices. Financial incentives will trigger increased interest for best practices.
Outcome 2: Protected areas in the priority corridors expanded and the effectiveness of their management strengthened. US$ 1,200,000	At least ten studies and analyses carried out to justify the creation or expansion of public protected areas in priority corridors and/or to promote conservation and sustainable use of biodiversity while valuing local and traditional culture within management plans of protected areas. Five protected areas located in the CEPF Priority KBAs with an integrated management plan designed and implemented. At least 10% of indigenous, *quilombola* and traditional community lands, located in the priority corridors, integrated in the planning and strategies for conservation and sustainable development at macro scale, respecting traditional knowledge and culture, as an alternative form of protection and management of lands outside of the official national system (SNUC). At least 50 new Private Natural Heritage Reserves (RPPN) established in priority KBAs.	Studies and maps provided to national, state and municipal governments. Protected Areas Tracking Tool (SP1 METT). Integrated management plans of protected areas. Strategic plans integrating community lands at macro scale; reports on alternative forms of conservation and management. Signed RPPN commitment agreements. Grantee and RIT performance reports. Secretariat supervision mission reports.	Government policies will provide for legal enforcement of the Forest Law. The government is receptive to participation of private landowners and indigenous, *quilombola* and traditional communities in the effort of conservation and management of the Cerrado. Local organizations, private landowners, and indigenous, *quilombola* and traditional communities will be willing to play an active role in improving the protected area network and management.

Outcome 3: Supply chains associated with the sustainable use of natural resources and ecological restoration in the hotspot promoted and strengthened. US$ 1,800,000	At least ten markets and supply chains for sustainably harvested non-timber forest products developed or enabled with direct benefit for networks or groups of women and youth in particular. Innovations regarding seeds, seedlings and planting that result in greater efficiency and lower cost in ecological restoration activities demonstrated in at least ten sites, especially in Permanent Preservation Areas (APPs) and Legal Reserves (LRs). Production capacity and management skills of 20 community-based businesses working with ecological restoration productive chain enhanced. One pilot network made of civil society organizations, academic institutions, businesses and governments supported to create synergies and provide socio-environmental benefits as incentives for ecosystem restoration and compliance with the Forest Law. At least two public policies (legislation, regional strategic plans, etc.) created or adjusted to promote ecosystem restoration and sustainable use of biodiversity.	Grantee and RIT performance reports. Reports on innovations for ecological restoration supply chain. Training needs assessments and evaluation reports. Secretariat supervision mission reports. Adopted public policies.	Private enterprises in key natural resource sectors will appreciate the business case for more sustainable practices with improved benefit sharing. Governments and donors will remain committed to environmentally sustainable development and ecological restoration. Suitable and sufficient funding sources will be available for replication of ecological restoration productive chain models. Governments create space for civil society to engage in policy reform processes.
Outcome 4: Protection of priority threatened species and their habitats increased. US$ 700,000	Priority actions identified in National Action Plans, especially on habitat management and protection, implemented for at least five priority threatened species.	IUCN Red List of Threatened Species. Grantee and RIT performance reports. Secretariat supervision mission reports.	Adequate support to habitat management will benefit the species and the main causes of threat are amenable to conservation action and can be addressed within the timeframe of the investment. Sufficient capacity to implement targeted species conservation action exists within civil society or can be built.

Outcome 5: Decision-making processes in the hotspot improved thanks to better access to monitoring data. US$ 500,000	At least one partnership successfully leverages resources for the implementation of a joint long-term dissemination program on native vegetation cover and dynamics of land uses in the hotspot in order to support different stakeholders for planning and decision making. At least four action plans based on shared data and experiences for better water quantity and quality developed and made available to relevant stakeholders to improve watershed management.	Effective long-term dissemination program. Grantee and RIT performance reports. Published action plans for improved watershed management. Secretariat supervision mission reports.	Civil society organizations are willing to work collaboratively to respond to conservation challenges. Governments will create space for civil society to engage in the review and dissemination of land-use and development plans. Economic and development decision making can be influenced by arguments about the biological, ecological, social and cultural values of natural ecosystems.

Outcome 6: Strengthened capacity of civil society organizations to influence better management of territories and of natural resources and support other investment priorities in the hotspot. US$ 2,000,000	At least five networks and/or alliances of civil society organizations strengthened, with enhanced skills to participate in relevant forums. At least 100 members of governance bodies and councils (national councils, watershed committees, protected areas management boards, Citizenship Territories, state/municipal councils, etc.) with strengthened capacity to participate in and influence forums related to the conservation and sustainable use of the Cerrado. At least 40 civil society organizations with developed and strengthened institutional and technical skills (environment, conservation strategy and planning, management, policy advocacy, fundraising and reporting, regulatory frameworks, etc.) to function effectively and participate in relevant conservation and management actions guided by the ecosystem profile. At least two multi-stakeholder initiatives (MSI) that involve the private sector (global commodity chains), small farmers, traditional communities, governments and donors promoted to identify synergies and to catalyze integrated actions and policies for the conservation and sustainable development of the Cerrado. At least 20 publications (books, manuals, technical reports, websites, etc.) or awareness raising actions (broadcasting spots, public campaigns and media outreach) on the Cerrado biodiversity, ecosystem services, protected areas, restoration, sustainable practices and climate resilience and civil society participation published. At least one tri-national initiatives to raise awareness for protection and management of Cerrado KBAs in Brazil, Bolivia and Paraguay launched	Training needs assessments and evaluation reports. Grantee and RIT performance reports. Civil Society Tracking Tool (CSTT) on CEPF's investment beneficiaries. Secretariat supervision mission reports. Published books, manuals, websites, etc. on the functions of the Cerrado. Publicized awareness raising campaigns on the Cerrado	The operating environment for civil society will remain constant or improve across the hotspot. Local organizations will be willing to play an active role in site-based conservation, in mainstreaming biodiversity and in governance forums. The key capacity limitations of civil society organizations can be addressed through a combination of capacity building and grant support. Civil society organizations are able to retain trained staff who benefit from capacity building opportunities. Civil society organizations, governments and private companies are willing to work collaboratively to respond to conservation challenges. Increased widespread awareness on the values of the Cerrado will translate into increased support for conservation initiatives locally.

Outcome 7: A Regional Implementation Team (RIT) provides strategic leadership and effectively coordinates CEPF investment in the Cerrado Hotspot. US$ 1,000,000	At least 60 civil society organizations, including at least 40 local and indigenous organizations actively participate in conservation actions guided by the ecosystem profile. At least 85 percent of local civil society organizations receiving grants demonstrate more effective capacity in managing the resources according to CEPF and government rules, in achieving goals and objectives and in learning to mobilize further resources. Funding leveraged from other donors towards the priorities set in the ecosystem profile bring an additional investment in the Cerrado Hotspot of at least $2 million. At least two participatory assessments are undertaken and lessons learned and best practices from the hotspot are documented.	Civil Society Tracking Tool (CSTT) on CEPF's investment beneficiaries. Grantee and RIT performance reports; Secretariat supervision mission reports. Strategies and reports of other donors. Portfolio midterm and final assessment reports.	Qualified organizations will apply to serve as the Regional Implementation Team in line with the approved terms of reference and the ecosystem profile. The CEPF call for proposals will elicit appropriate proposals that advance the goals of the ecosystem profile. Civil society organizations will collaborate with each other, government agencies, and private sector actors in a coordinated regional conservation program in line with the ecosystem profile.

REFERENCES

A Crítica. 2015. Rio Madeira deve ser privatizado por causa do aumento no custo de dragagem da hidrovia. A Crítica (Manaus), May 19.

Ab'Saber, A.N. 2003. Os domínios de natureza no Brasil: potencialidades paisagísticas. São Paulo: Ateliê Editorial.

Abdala, G.C.; Caldas, L.S.; Haridasan, M.; Eiten, G. 1998. Above and below-ground organic matter and root-shoot ratio in a Cerrado in central Brazil. Brazilian Journal of Ecology, v.2, p.11-23.

Abers, Rebecca (Org.). 2010. Água e política: atores, instituições e poder nos organismos colegiados de bacia hidrográfica no Brasil. São Paulo: Annablume.

Abers, Rebecca; Keck, Margaret E. 2013. Practical authority: agency and institutional change in Brazilian water politics. New York; Oxford: Oxford University Press.

ABONG; GIFE; IBGE; IPEA. 2012. Mapeamento das fundações privadas e associações sem fins lucrativos - FASFIL 2010: principais resultados. Rio de Janeiro: Associação Brasileira de ONGs.

Abreu, Kátia. 2015. Presentation by the Minister of Agriculture, Livestock and Food Supply at the Brasil-Germany Conference on Biodiversity, Forests and Climate, Brasília, Aug. 18.

Acselrad, Henri. 2000. O zoneamento ecológico-econômico e a multiplicidade de ordens socioambientais na Amazônia. Novos Cadernos NAEA, v.2, n.2, dez., p.5-15.

Acselrad, Henri. 2004. Conflitos ambientais no Brasil. Rio de Janeiro: Relume Dumará.

Afonso, Sandra R.. 2012. A política pública de incentivo à estruturação da cadeia produtiva do Pequi (Caryocar brasilienses). Brasília: Universidade de Brasília. Tese de Doutorado em Ciências Florestais.

Aguiar, L.M.S.; Machado, Ricardo B.; Marinho-Filho, Jader. 2004. A diversidade biológica do Cerrado. In: Aguiar, L.M.S.; Camargo, A.J.A. Cerrado: ecologia e caracterização. Planaltina: Embrapa-CPAC.

Albuquerque, José Lindomar C. 2009. A dinâmica das fronteiras: deslocamento e circulação dos "*brasiguaios*" entre os limites nacionais. Horizontes Antropológicos, v.15, n.31, p.137-166.

Alho, Cleber J.R.; Martins, Eduardo S. 1995. De grão em grão o cerrado perde espaço. Brasília: WWF, Pró-Cer.

Almeida, Maria Geralda (Org.). Tantos Cerrados. Goiânia: Vieira.

Almeida, C.M. *et al.* 2003. Stochastic cellular automata modeling of urban land use dynamics: empirical development and estimation. Computers, Environment and Urban Systems, 27, 481-509.

Almeida, Semíramis Pedrosa de *et al.* 1998. Cerrado: espécies vegetais úteis. Planaltina: EMBRAPA-CPAC.

Almeida, Semíramis Pedrosa de. 1998. Cerrado: aproveitamento alimentar. Planaltina: EMBRAPA-CPAC.

Almeida, Semíramis Pedrosa de; Silva, José Antônio da; Ribeiro, José Felipe. 1987. Aproveitamento alimentar de espécies nativas dos Cerrados: araticum, baru, cagaita e jatobá. Planaltina: EMBRAPA-CPAC

Alves, Diógenes. 1999. An Analysis of the Geographical Patterns of Deforestation in Brazilian Amazônia in the 1991-1996 period. Prepared for the Conference on Patterns and Processes of Land Use and Forest Change in the Amazon, Center for Latin American Studies, University of Florida. March 23-26.

Alves, José Eustáquio Diniz. 2015. A encíclica Laudato Si': ecologia integral, gênero e ecologia profunda. Horizonte, v.13, n.39, p.1315.

Amaral, R. B. 2013. Levantamento ecológico rápido da biodiversidade do rio Araguaia – Peixes. In: Silveira, L.; Jácomo, A. T. A. Levantamento Ecológico Rápido da Biodiversidade do Rio Araguaia. Mineiros: Instituto Onça-Pintada.

Ambrizzi, T.; Araújo, M. (Eds.). 2014. Base científica das mudanças climáticas. Contribuição do Grupo de Trabalho 1 do Painel Brasileiro de Mudanças Climáticas ao Primeiro Relatório da Avaliação Nacional sobre Mudanças Climáticas. Rio de Janeiro: COPPE, Universidade Federal do Rio de Janeiro.

Anacleto, T.C.S., Miranda, F., Medri, I., Cuellar, E., Abba, A.M. and Superina, M. 2014.*Priodontes maximus*. The IUCN Red List of Threatened Species 2014: e.T18144A47442343. . Downloaded on 08 December 2015.

Anacleto, T.C.S. 2007. Food Habits of Four Armadillo Species in the Cerrado Area, Mato Grosso, Brazil. *Zoological Studies* 46(4): 529-537

Andersen, Martin M. 2015. Feasibility of new breeding techniques for organic farming. Trends in Plant Science, v.20, n.7, July, p.426-434.

Andrade, Valéria Medeiros. 2006. Rumo ao etnodesenvolvimento Krahô: o papel do indigenismo e do BNDES. Brasília: Universidade de Brasília, Centro de Desenvolvimento Sustentável, Tese de Doutorado.

Arraut, Josefina Moraes; Nobre, Carlos; Barbosa, Henrique M.J.; Obregón, Guillermo; Marengo, José. 2012. Aerial rivers and lakes: looking at large-scale moisture transport and its relation to Amazonia and to subtropical rainfall in South America. Journal of Climate, 15 jan., p.543-556.

Arruda, Moacir B. 2003. Representatividade ecológica com base na biogeografia de biomas e ecorregiões continentais do Brasil: o caso do bioma Cerrado. Brasília: Instituto de Ciências Biológicas, Universidade de Brasília. Tese de Doutorado em Ecologia.

Arruda, Moacir B. (Org.). 2004. Gestão integrada de ecossistemas aplicada a corredores ecológicos. Brasília: Ministério do Meio Ambiente.

Assad, Eduardo Delgado; Magalhães, Antônio R. (Eds.). 2014. Impactos, vulnerabilidades e adaptação às mudanças climáticas. Contribuição do Grupo de Trabalho 2 do Painel Brasileiro de Mudanças Climáticas ao Primeiro Relatório da Avaliação Nacional sobre Mudanças Climáticas. Rio de Janeiro: COPPE, Universidade Federal do Rio de Janeiro.

Assad, Eduardo Delgado *et al.*A. 2008. Aquecimento global e a nova geografia da produção agrícola no Brasil. EMBRAPA-UNICAMP, São Paulo.

Assad, Eduardo Delgado 2007. Mudanças climáticas e agricultura: uma abordagem agroclimatológica. Ciência and Ambiente, n.34, p.169-182.

Assad, Eduardo Delgado (Coord.). 1994. Chuva nos Cerrados: analise e espacialização. Brasília: EMBRAPA-CPAC; EMBRAPA-SPI.

Assad, Luís Tadeu; Litre, Gabriela; Nascimento, Elimar Pinheiro do. 2009. A vida por um feixe de lenha: experimento metodológico de gestão de conflitos socioambientais. Brasília: IABS.

Aubertin, C.; Rodary, E. (Eds.). 2011. Protected areas, sustainable land? Farnham, Surrey: Ashgate.

Aubertin, Catherine. 1984. Através da evolução demográfica do Centro-Oeste Brasileiro: uma leitura da evolução dos sistemas produtivos. Rio de Janeiro: IBGE.

Aubertin, Catherine. 1990. Mouvements de populations et chagements économiques dan le Centre-Ouest brésilien. Paris: ORSTOM. Cahiers des sciences humaines, 26.

Aulakh, Raveena. 2015. Environmental activists become endangered species in Brazil. Toronto Star, Oct.18.

Ausebel, Jesse H.; Wernick, Iddo K.; Waggoner, Paul E. 2013. Peak farmland and the prospect for land sparing. Population and Development Review, v.38, supplement, p.221-242.

Ayllón Pino, Bruno. 2103. La Cooperación Sur-Sur y Triangular: ¿subversión o adaptación de la cooperación internacional? Quito: Editorial IAEN.

Ayres, José Márcio *et al.* 2005. Os corredores ecológicos das florestas tropicais do Brasil. Belém: Sociedade Civil Mamirauá.

AZE (Alliance for Zero Extinction). 2010. AZE Update. Disponível em: <http://www.zeroextinction.org/pdf/2010_AZE_Data.pdf >, Acesso em: 25 mai. 2015.

Azevedo, G. 1995. Vegetação do Cerrado: conhecimento cientifico para gestão ambiental. Brasília: Tomo II. Meio Natural, p.523-547.

Barbosa, A.S. 2002. Andarilhos da claridade: os primeiros habitantes do Cerrado. Goiânia: Universidade Católica de Goiás.

Barbosa, A.S.; Nascimento, I.V. 1993. Processos culturais associados à vegetação. In Pinto, Maria Novaes (Ed.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília, p.155-170.

Barbosa, A.S. ; Ribeiro, M.B.; Schmitz, P.I. 1993. Cultura e ambiente em áreas do sudoeste de Goiás. In: Pinto, Maria Novaes (Ed.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília, p.75-108.

Barros II, Sílvio Magalhães; La Penha, Denise Hamú M. (Coords.). 1994. Diretrizes para uma política nacional de *ecoturismo* na Amazônia Legal.

Barroso, Mário *et al.* 2012. Áreas prioritárias para a conservação do Cerrado e Pantanal. Brasília: WWF-Brasil.

BBC. 2015. Brazil cut to 'junk' credit rating by Standard and Poor's. British Broadcasting Company, Sept. 10.

Bensusan, Nurit. 2015. Dividir para quê?: biomas do Brasil. Brasília: Instituto Internacional de Educação do Brasil.

Bensusan, Nurit; Prates, AP. (Orgs.). 2014. A diversidade cabe na unidade? Áreas protegidas no Brasil. Brasília: Instituto Internacional de Educação do Brasil.

Bergallo, H., de G., da Rocha, C.F.D., Alves, M.A. dos S. and Van Sluys, M. 2000. *A Fauna Ameacada de Extinção do Estado do Rio de Janeiro*. Editora da Universidade do Estado do Rio de Janeiro (EDUERJ), Rio de Janeiro, Brazil.

Bertran, Paulo. 1988. Uma introdução à história econômica do Centro-Oeste do Brasil. Brasília: Universidade Católica de Goiás; CODEPLAN.

Beuchle, René *et al.* 2015. Land cover changes in the Brazilian Cerrado and Caatinga biomes from 1990 to 2010 based on a systematic remote sensing sampling approach. Applied Geography. v.8, p.116-127.

Birdlife International. Threatened Birds of the World. Barcelona Cambridge, UK.: Lynx Edicions, BirdLife International., 2000.

Bickel, Ulrike; Dros, Jan Maarten. 2003. The impacts of soybeans on Brazilian ecosystems. Brasília: WWF.

Blomqvist, Linus; Nordhaus, Ted; Shellenberger, Michael. 2015. Nature unbound: decoupling for conservation. Oakland: Breakthrough Institute.

Bloomberg. 2015. Brookfield said to raise $300 million for Brazil farmland fund. Bloomberg Business, May 28.

Bolliger, A.M. *et al.* 2006. Taking stock of the Brazilian "Zero-Till Revolution": a review of landmark research and farmers' practice. Advances in Agronomy, n.91, p.48-110.

Borrini-Feyerabend, G.; Kothari, A.; Oviedo, G.. 2004. Indigenous and local communities and protected areas towards equity and enhanced conservation: guidance on policy and practice for co-managed protected areas and community conserved areas. Gland; Cambridge, UK: IUCN.

Braga, Cláudia; Moura, Alexandrina Sobreira de. 2013. Protocolo Verde: sustentabilidade ambiental no setor financeiro do Brasil. Actacientifica.

Brandão, Reuber. 2015. Critérios ecológicos para a conservação do Cerrado: estamos protegendo adequadamente esse patrimônio? Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Brandão Jr., A., Barreto, P., Souza Jr., C.; Brito, B. 2015. Evolução das emissões de gases de efeito estufa no Brasil (1990-2013) : setor de mudança de uso da terra. Observatório do Clima.

Brandão, Carlos Rodrigues. 1981. Plantar, colher, comer: um estudo sobre o campesinato goiano. Rio de Janeiro: Graal.

Brannstrom, Christian. 2001. Conservation-with-development models in Brazil's agro-pastoril landscapes. World Development, n.8, p.1345-59.

Brasil. 2002. Agenda 21 Brasileira: ações prioritárias. Brasília : Comissão de Políticas de Desenvolvimento Sustentável e da Agenda Nacional.

Brasil. 2004. Comunicação nacional inicial do Brasil à Convençao-Quadro das Nações Unidas sobre Mudança do Clima. Brasília.

Brasil. 2014. Estimativas anuais de emissões de gases de efeito estufa no brasil. 2a edition. Brasília.

Brazil. 2015. Intended nationally determined contribution towards achieving the objective of the United Nations Framework Convention on Climate Change. New York: Ministry of External Relations.

Brook, B.W., Sodhi, N.S.: Bradshaw, C.J.A. 2008. Synergies among extinction drivers under global change. Trends in Ecology and Evolution, n.23, p.453-460.

Bruno, Ernani Silva. 1967. Grande Oeste. São Paulo: Cultrix. (História do Brasil geral e regional, 6).

BSP/CI/TNC/WCS/WRI/WWF. 1995. A regional analysis of geographical priorities for biodiversity conservation in Latin America and the Caribbean. Washington: Biodiversity Support Program.

Burung Indonesia *et al.* 2014. Wallacea biodiversity Hotspot: ecosystem profile. Jakarta: Burung Indonesia.

Bursztyn, Marcel; Persegona; Marcelo. 2008. A grande transformação ambiental: uma cronologia da dialética homem-natureza. Rio de Janeiro: Garamond.

Bustamante, Mercedes, Ferreira, Laerte G., Hill, M. J., Niall, P.; Hanan, N.P. 2010. Land use change and the carbon budget in the Brazilian Cerrado. In: Hill, M.J.; Hanan N.P. (Eds.). Ecosystem function in Savannas measurement and modeling at landscape to global scales. American Geophysical Union.

Bustamante, Merceded, Nardoto, G., Pinto, A., Resende, J., Takahashi, F.;Vieira, L. 2012. Potential impacts of climate change on biogeochemical functioning of Cerrado ecosystems. Brazilian Journal of Biology 72:655–671.

Bustamante, Mercedes M.C.; La Rovere, E.L. (Eds.). 2014. Mitigação das mudanças climáticas. Contribuição do Grupo de Trabalho 3 do Painel Brasileiro de Mudanças Climáticas ao Primeiro Relatório da Avaliação Nacional sobre Mudanças Climáticas Rio de Janeiro: COPPE, Universidade Federal do Rio de Janeiro.

Bustamante, Mercedes. 2015. Emissões de gases de efeito estufa no Cerrado. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Bustamante, Mercedes; Oliveira, Eddie Lenza de. 2008. Impacto das atividades agrícolas, florestais e pecuárias nos recursos naturais. In: Faleiro, Fábio Gelape; Farias Neto, Austeclínio Lopes de (Eds.). Savanas: desafios e estratégias para o equilíbrio entre sociedade, agronegócio e recursos naturais. Planaltina: EMBRAPA Cerrados. p.646-669.

Bustamante, Mercedes; Nardoto, G.B.; Pinto, A.S.; Resende, J.C., Takahashi, F.S.; Vieira, L.C. 2012. Potential impacts of climate change on biogeochemical functioning of Cerrado ecosystems. Braz J Biol; Aug;72 (3 Suppl), p.655-671.

Butto, Andréa *et al.* (Orgs.) 2014. Mulheres rurais e autonomia: formação e articulação para efetivar políticas públicas nos Territórios da Cidadania. Brasília: Ministério do Desenvolvimento Agrário.

Cabral, J.B.P. 2005. Estudo do processo de assoreamento em reservatórios. Caminhos de Geografia, Uberlândia, fev., p.62-69.

Cadernos do Diálogo. 2011. Mosaicos Florestais Sustentáveis: monitoramento integrado da biodiversidade e diretrizes para restauração florestal, v.3.

Caldas, Eduardo de Lima. 2013. Políticas de desenvolvimento territorial e intermunicipalidade no Brasil: complementaridades e tensões. Sustentabilidade em Debate, v.4, n.2, p.41-61.

Campello, Francisco. 2007. Seminário Manejo Florestal Sustentado da Caatinga. Recife – PE.

Campos, Maria Luiza. 2015. Espécies brasileiras que saíram da lista de ameaça ainda são vulneráveis. Portal EcoDebate, 16 abr.

Carrasco, Lorenzo. 2006. Máfia verde: o ambientalismo a serviço do Governo Mundial. 10ed. Rio de Janeiro: Capax Dei.

Carrara, Álvaro Alves. 2004. Uso sustentável da biodiversidade do cerrado e da caatinga do norte de Minas Gerais. In: Little, Paul (Org.). Políticas ambientais no Brasil: análises, instrumentos e experiências. Brasília: Peirópolis, IEB. p.397-409.

Carrazza, L.R.; Figueiredo, I. 2010. Cerrado que te quero vivo! Produtos e meios de vida sustentáveis apoiados pelo Programa de Pequenos Projetos Ecossociais (PPP-ECOS). Brasília: Instituto Sociedade, População e Natureza.

Carrazza, Luis. 2015. Presentation at the Seminar on the Cerrado Biome: Norms for Conservation and Sustainable Use, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Carrière, Stéphanie M.; Hervé, Dominique; Andriamahefazafy, Fano; Méral, Philippe. 2011. Corridors: compulsory passages? In: Aubertin, Catherine; Rodary, E. (Eds.). 2011. Protected areas, sustainable land? Farnham, Surrey: Ashgate.

Carvajal, Andrés Felipe; Pabón, José Daniel. 2014. Temperatura de la superficie terrestre en diferentes tipos de cobertura de la Región Andina Colombiana. Sociedade and Natureza, v.26, n.1, Jan./Apr.

Carvalho, José Ruy Porto de; Assad, Eduardo Delgado; Evangelista, Silvio Roberto Medeiros; Pinto, Hilton da Silveira. 2013. Estimation of dry spells in three Brazilian regions: analysis of extremes. Atmospheric Research, v.132-133, p.12-21.

Carvalho, Igor S.H. 2007. Potenciais e limitações do uso sustentável da biodiversidade do Cerrado: um estudo de caso da Cooperativa Grande Sertão no Norte de Minas. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Dissertação de Mestrado.

Carvalho, Igor S.H.; Silveira Junior, Omar. 2006. Uma análise do empreendimento FrutaSã (Carolina-MA, Brasil) à luz da economia solidária. Carolina: Centro de Trabalho Indigenista.

Carvalho, Igor S.H.; Sawyer, Donald. 2007. Potentials and limitations of sustainable use of Cerrado biodiversity: a case study of the Grande Sertão Cooperative, Minas Gerais, Brazil.

Carvalho, C.; Almeida-Filho, R. 2009. Temporal Landsat tm series analysis to evaluate desertification process and its causes and effects, Piauí state, northeast of Brazil. IOP Conference Series: Earth and Environmental Sciences 6.

Castanheira, Elizabeth. 2015. Presentation of the Brazilian Tree Institute (IBÁ) at the Brasil-Germany Conference on Biodiversity, Forests and Climate, Brasília, Aug. 18.

Castles, Stephen. 2002. Environmental change and forced migration: making sense of the debate. Oxford: Refugees Studies Centre, University of Oxford. (Working Paper, 70).

Castro, Carlos Ferreira. 1993. Usos sociais da biodiversidade. Cuiabá: Universidade Federal de Mato Grosso.

Castro, E.A.; Kauffman, J.B. 1998. Ecosystem structure in the Brazilian Cerrado: a vegetation gradient of above-ground biomass, root mass and consumption by fire. Journal of Tropical Ecology, v.14, p.263-283.

Castro, Maria Inês. 2001. Natureza e sociedade em Mato Grosso, 1850-1930. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Tese de doutorado.

Castro, Maria Inês; Galetti, Lilia de S. Gudes. 1995. Histórico dos usos da biodiversidade em Mato Grosso. In: Castro, Carlos *et al.* Diagnóstico florestal do Estado do Mato Grosso. Brasília: FUNATURA; ITTO; IBAMA.

Cavalcanti, Roberto B. *et al.* 2012. Cerrado. In: Scarano, F.R. *et al.* (Orgs.). Biomas brasileiros: retratos de um país plural. Rio de Janeiro: Casa da Palavra; Conservação Internacional, p.56-91.

Cavalcanti, Roberto B., Marinho-Filho, Jader, Marini, M.Â., Machado, Ricardo B. ;Aguiar, L.M.S. 2010. Cerrado e Pantanal, reservas de vida. Scientific American Brasil, p.66-71.

CBD. 2010. Strategic Plan for Biodiversity 2011-2020: "Living in harmony with nature". Montreal: Convention on Biological Diversity.

CBD. 2014. Gangwon Declaration on Biodiversity for Sustainable Development. Pyeongchang: Convention on Biological Diversity.

CBD. 2014. Global biodiversity outlook 4: a mid-term assessment of progress towards the implementation of the Strategic Plan for Biodiversity 2011-2020. Montréal: Secretariat of the Convention on Biological Diversity.

CEBDS. 2015. Coalizão Brasil Clima, Florestas e Agricultura. Rio de Janeiro: Conselho Empresarial Brasileira de Desenvolvimento Sustentável.

Céspedes, G.; Mereles, F. 2006. Estudio de la vegetación y la flora em el área de Aguara Ñu, Reserva de la Biosfera del Bosque Mbaracayú, Paraguay Oriental. Rojasiana, v. 7, n. 2, p. 153-164.

Chase, Jacquelyn Rhea. 1993. Urbanization on the grain belt of Central Brazil: the case of Rio Verde, Goiás (Parte 1). Los Angeles: University of California. Tese (Doutorado).

Cherem, J.J., Simões-Lopes, S.A. and Graipel, M.E. 2004. Lista dos mamíferos do Estado de Santa Catarina, sul do Brasil. *Mastozoología Neotropical* 11(2): 151-184.

Chiarello, A.G., Costa, L.P., Leite, Y.L.R., Passamani, M., Siciliano, S. and Zortéa, M. 2007. Os mamíferos ameaçados de extinção no Estado do Espírito Santo. In: M. Passamani and S.L. Mendes (eds), *Espécies da fauna ameaçadas de extinção no Estado do Espírito Santo*, pp. 29-45. Instituto de Pesquisas da Mata Atlântica, Vitória.

Christensen, Jon. 2003. Few habitats, many species and a debate on preservation. New York Times, July 1.

Christofidis, Demétrios. 2006. Oportunidades de irrigação no Cerrado: recursos hídricos dos cerrados e seu potencial de utilização na irrigação. Associação Brasileira de Irrigação e Drenagem, n.69-70, 1 e 2 sem.

Christoffoli, Pedro Ivan. 2009. O processo produtivo capitalista na agricultura e a introdução dos organismos geneticamente modificados: o caso da cultura de soja Roundup Ready (RR) no Brasil. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Tese de Doutorado.

Christoffoli, Pedro Ivan. 2010. O processo produtivo capitalista na agricultura e a introdução dos organismos geneticamente modificados : o caso da cultura da soja Roundup Ready (RR) no Brasil. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Tese de Doutorado.

Clark, Nathália. 2015. Rede Cerrado questiona governo sobre Plano Matopiba. Goiânia: Comissão Pastoral da Terra.

CNBB *et al.* 2004. Grito dos povos contra a destruição do Cerrado: sobre o Seminário Internacional Bioma Cerrado realizado em Balsas/MA, 7-11 jul. Balsas: CNBB, CPT/MA, GTA Babaçu, GTA Pesca, CENTRU, Tijupá.

Constantino, R.; Schmidt, K. 2010. Cupins (Insecta: Isoptera). In: Diniz, I.R. *et al.* (Orgs.). Cerrado: conhecimento científico quantitativo como subsídio para ações de conservação. Brasília: Thesaurus, p.187-202.

Costa, Francisco de Assis. 2012. Mercado de terras e trajetórias tecnológicas na Amazônia. Economia e Sociedade, v.21, n.2.

Costa, F.N. *et al.* 2008. Erioucaulaceae na Cadeia do Espinhaço: riqueza, endemismo e ameaças. Megadiversidade, v. 4, n 1-2, p. 89-97,

Costa, J.C. *et al.* Memória do workshop O Cerrado no contexto das mudanças climáticas globais. Planaltina: Embrapa Cerrados, 2010.

Costa, C. J., Mozzer, G. B., Carvalho, A. M. De, Müller, A. G., Antônio, F., Mauro, J., Ávila, M., Moreira, P., and Meirelles, M. L. 2010. Memória do workshop o cerrado no contexto das mudanças climáticas globais.

Costa, M.H. *et al.* 2003. Effects of large-scale change in land cover on the discharge of the Tocantins River, Southeastern Amazonia. Journal of Hydrology, 283(12), 206-217.

Costa, M.H.; Pires, G.F. 2009. Effects of Amazon and central Brazil deforestation scenarios on the duration of the dry season in the arc of deforestation. International Journal of Climatology, 30(13), 1970-1979. doi:10.1002/joc.2048.

Coutinho, L.M. 1990. Fire in the ecology of the Brazilian Cerrado. In: Goldammer, J.G. (Ed.). Fire in the tropical biota: ecosystem processes and global challenges. Berlin: Springer Verlag, p.82-105. (Ecological Studies, 8).

CPI. 2013. Production and protection: a first look at key challenges in Brazil. Rio de Janeiro: Climate Policy Initiative.

CPT. 2010. Cerrado: no veio das águas brota a vida, dos troncos retorcidos surge a esperança. Goiânia: Comissão Pastoral da Terra.

CPT. 2015. Campanha em Defesa do Cerrado. Goiânia: Comissão Pastoral da Terra.

Crooks, K.R.; Sanjayan, M. (Eds.). 2006. Connectivity conservation: maintaining connections of nature. Cambridge: Cambridge University Press.
Cruz, Luana. 2015. Armazenamento indevido de água na crise hídrica faz disparar casos de dengue. Estado de Minas, Apr. 13.
CTE. 2015. Plano de manejo Área de Proteção Ambiental Pouso Alto. Goiânia: Centro Tecnológico de Engenharia Ltda.
Cunha, Aércio S. (Coord.). 1994. Uma avaliação da sustentabilidade da agricultura nos Cerrados. Brasília: IPEA.
Cunha, José Marcos Pinto da. 1997. Os movimentos migratórios no Centro-Oeste na década de 80. Primeiro Encontro de Demografia da Região Centro-Oeste. Brasília: CODEPLAN; NEPO/UNICAMP.
Cunha de Paula, R. and DeMatteo, K. 2015. *Chrysocyon brachyurus*. The IUCN Red List of Threatened Species 2015: e.T4819A82316878. . Downloaded on 08 December 2015.
Dall'Agnol, Amélio . 2015. Campeão mundial no uso de agrotóxicos? AgroLink, July 17.
Delduque, Maria Celia. 2005. Conflitos sócio-ambientais no Cerrado brasileiro: o meio ambiente na instância judiciária federal. Brasilia: Universidade Católica de Brasília, Programa de Pós-Graduação stricto sensu em Planejamento e Gestão Ambiental,
Del Prette, Marcos Estevam; Matteo, Kátia Castro de. 2006. Origens e possibilidades do Zoneamento Ecológico-Econômico no Brasil. In: Ministério do Meio Ambiente. Programa de Zoneamento Ecológico-Econômico: Caderno de Referência. Brasília: MMA.
Dewar, Elaine. 1995. *Cloak of green*: the links between key environmental groups, government and big business. Toronto: James Lorimer.
Dianese, J.C.; Medeiros, R.B.; Santos, L.T.P. 1997. Biodiversity of microfungi found on native plants of the Brazilian Cerrado. In: Hyde, K.D. (Ed.). Biodiversity of tropical microfungi. Hong Kong: Hong Kong University Press, p.367-417.
Dias, Bráulio Ferreira de Souza (Coord.). 1992. Alternativas de desenvolvimento dos Cerrados: manejo e conservação dos recursos naturais renováveis. Brasília: FUNATURA, IBAMA.
Dias, Bráulio F.S. 1992. Cerrados: uma caracterização. In: Pinto, Maria Novaes (Org.). Alternativas de desenvolvimento dos Cerrados: manejo e conservação dos recursos naturais renováveis. Brasília: Fundação Pró-Natureza.
Dias, Bráulio F.S. 1993. A conservação da natureza. In: Pinto, Maria Novaes (Org.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília, p.607-663.
Dias, Jaqueline E. 2014. Protocolo comunitário biocultural das raizeiras do Cerrado: direito consuetudinário de praticar a medicina tradicional.
Dias, Jaqueline E.; Laureano, Lourdes C. (Coords.). 2009. Farmacopéia opular do Cerrado. Goiás: Articulação Pacari (Associação Pacari).
Diegues, Antônio C. 1998. O mito moderno da natureza intocada, Editora HUCITEC, São Paulo.
Diegues, Antônio C, 2003. Sociedades e comunidades sustentáveis. Nota técnica disponível em http://nupaub.fflch.usp.br/sites/nupaub.fflch.usp.br/files/color/comsust.pdf
Diniz, Bernardo Campolina. 2008. O Grande Cerrado do Brasil Central: geopolítica e economia. São Paulo: Universidade de São Paulo. Tese de Doutorado em Geografia.

Diniz-Filho, J.*et al.* 2008. Agriculture, habitat loss and spatial patterns of human occupation in a biodiversity Hotspot. Scientia Agricola ,66(6), 764-771.

Ditt, Eduardo H.; Menezes, Ronei S. de; Pádua, Cláudio V. 2008. O manejo da paisagem e a paisagem do manejo. Brasilia: Instituto Internacional de Educação do Brasil, p.21-36.

Dros, Jan Maarten; Van Gelder J.W. 2002. Corporate actors in the South American soy production chain. Gland: World Wide Fund for Nature.

Drummond, José Augusto; Franco, José Luiz de Andrade. 2009. Os naturalistas e a nação: heranças e contribuições. Rio de Janeiro: Editora FIOCRUZ.

Domingues, Edson; Araújo, Maria Silvia Muylaert de; Barata; Martha Macedo de Lima; Abramovay, Ricardo; Sawyer, Donald; Mamede, Euridice; Lacerda, Gleide; Vale, Petterson; Ribas; Rodrigo. 2012. Primeiro relatório de avaliação nacional, v.3, mitigação à mudança climática. Rio de Janeiro: Painel Brasileiro de Mudanças Climáticas.

Dourado, Bruno. 2015. Comments at the Seminar on the Cerrado Biome: Norms for Conservation and Sustainable Use, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Dutra, Cláudia Martins *et al.* 2013. Roteiro para a elaboração dos Planos Municipais de Conservação e Recuperação da Mata Atlântica. Brasília: Ministério do Meio Ambiente.

Dutra, Cláudia Martins. 2013. Lições aprendidas na conservação e recuperação da Mata Atlântica: Planos Municipais de Conservação e Recuperação da Mata Atlântica. Brasília: Ministério do Meio Ambiente.

Duarte, Laura M.G.; Braga, M.L.S. (Orgs). 1998. Tristes Cerrados: sociedade e biodiversidade. Brasília: Paralelo 15.

Duarte, Laura M.G.; Theodoro, Suzi (Orgs.). Dilemas do Cerrado: entre o ecologicamente (in)correto e o socialmente (in)justo. Rio de Janeiro: Garamond.

Durigan, G., and Ratter, James A. 2006. Successional changes in cerrado and cerrado/forest ecotonal vegetation in western são paulo state, brazil, 1962–2000. Edinburgh Journal of Botany 63:119.

ECODATA. 2015. Rota da Sociobiodiversidade do Cerrado. Brasília: Agência Brasileira de Meio Ambiente e Tecnologia da Informação.

Egan, J. Franklin; Mortensen, David A. 2012. A comparison of land-sharing and land-sparing strategies for plant richness conservation in agricultural landscapes. Ecological Applications, n.22, p.459-471.

Eiten, George. 1972. The Cerrado vegetation of Brazil. Botanical Review, v.38, p.201-341.

Eiten, George. 1993. Vegetação. In: Pinto, Maria Novaes (Org.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora da Universidade de Brasília; Secretaria do Meio Ambiente, Ciência e Tecnologia, p.9-67.

Eken, George *et al.* 2004. Key Biodiversity Areas: the site conservation targets. BioScience, v.54, n. 12, p.1110-1118,

Eloy, Ludivine. 2014. Consulta durante o VIII Encontro dos Povos do Cerrado, 6-8 de junho de 2014: relatório de análise dos dados. Brasília: Instituto Sociedade, População e Natureza.

Eloy, Ludivine; Carvalho, Igor S.H.; Figueiredo, Isabel. 2014. Sistemas agrícolas tradicionais no Cerrado: caracterização, transformações e perspectivas.

Emmons, L. H. 1999. Mamiferos de Los Bosques Humedos de América Tropical: Una guia de campo. Bolivia: FAN.

Encinas, José Imañas; Nóbrega, R.C. 2006. Uso atual do solo do projeto Ecomuseu do Cerrado. Revista Árvore, v.30, n.1, p.117-122.
ESMAP. 1993. Alternativas energéticas para o polo siderúrgico de Carajás. Brasília: World Bank.
Faleiro, F.G.; Farias Neto, A.L. de (Eds.). Savanas: desafios e estratégias para o equilíbrio entre sociedade, agronegócio e recursos naturais. Planaltina: EMBRAPA Cerrados, p.1153-1181.
FAO. 2010. Criteria and indicators for sustainable woodfuels. Rome: Food and Agriculture Organization.
Farinaci, Juliana Sampaio; Ferreira, Leila da Costa; Batistella, Mateus. 2013. Transição florestal e modernização ecológica: a eucaliptocultura para além do bem e do mal. Ambiente and Sociedade, v.16, n.2, p.25-46.
Fearnside, P.M. 2014. Conservation research in Brazilian Amazonia and its contribution to biodiversity maintenance and sustainable use of tropical forests. In: 1st Conference on Biodiversity in the Congo Basin, 6-10 June 2014, Kisangani, Democratic Republic of Congo, p.12-27
Feiden, Peter. 2011. Adapting to climate change: cities and the urban poor. Washington: International Housing Coalition.
Felfili, Jeanine Maria *et al.* 1994. Projeto Biogeografia do Bioma Cerrado: vegetação e solos. Cadernos de Geociências. Rio de Janeiro: Diretoria de Geociências/IBGE. n.12, out.-dez. p.75-166.
Felfili, Jeanine *et al.* 2005. Biodiversidade, ecologia e conservação do Cerrado: avanços no conhecimento. In: Scariot, Aldicir. *et al.* (Orgs). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente, p.27-44.
Felfili, Jeanine; Silva Júnior, Manoel C.. 2005. Diversidade alfa e beta no cerrado sensu strictu , Distrito Federal, Goiás, Minas Gerais e Bahia. In: Scariot, A. *et al.* (Orgs). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente, p.140-154.
Fernandes, L.L.; Coelho, A.B.; Fernandes, E.A.; Lima, J.E.. 2011. Compensação e incentivo à proteção ambiental: o caso do ICMS ecológico em Minas Gerais. Revista de Economia e Sociologia Rural, v.49, n.3, p.521-544.
Ferrari, M.F.; Jong, Caroline de; Belohrad, Viola Stella. 2015. Community-based monitoring and information systems (CBMIS) in the context of the Convention on Biological Diversity (CBD). Biodiversity, v.16, n.2-3, p.57-67.
Ferreira Filho, J.B.S.; Rocha M.T. 2004. Avaliação econômica de políticas públicas visando redução das emissões de gases de efeito estufa no Brasil. In: Congresso da Sociedade Brasileira de Economia e Sociologia Rural, 45. Anais do XLV Congresso da Sober, Londrina, p.1-27.
Ferreira Jr., L.G.; Bustamante, M.M.C. (Orgs.). 2011. Monitoramento das emissões de carbono no Cerrado brasileiro. Brasília: Embaixada Britânica.
Ferreira, A.M.M.; Salati, Enéas. 2005. Forças de transformação do ecossistema amazônico. Estudos Avançados, v.19, n.54, p.25-44.
Ferreira, L.V.; Venticinque, E; Almeida, S. 2005. O desmatamento na Amazônia e a importância das áreas protegidas. Estudos Avançados, v.19, n.53, p.157-166.
Ferreira, Leila da Costa. 2003. A questão ambiental: sustentabilidade e políticas públicas no Brasil. São Paulo: Boitempo
Ferreira, M.E. 2009. Modelagem da dinâmica de paisagem do Cerrado. Goiânia: Universidade Federal de Goiás (UFG). Tese de Doutorado em Ciências Ambientais.

Ferreira, M.E. *et al.* 2008. Indicativos de desmatamentos em unidades de conservação com base em dados orbitais: uma análise temporal (2003-2006) para o Cerrado Goiano. In: IX Simpósio Nacional Cerrado e II Simpósio Internacional Savanas Tropicais. Planaltina, DF: Embrapa Cerrados.

Ferreira, M.E. *et al.* 2009. Ativos ambientais do bioma Cerrado: uma análise da cobertura vegetal nativa e sua relação com o preço da terra no estado Goiás. Revista Brasileira de Cartografia, 61(1), 37-50.

Ferreira, M.E. *et al.* 2012. Modeling landscape dynamics in the central Brazilian savanna biome: future scenarios and perspectives for conservation. Journal of Land Use Science, 8(2), 403-421.

Ferreira, N.C. *et al.* 2007. Riscos de desmatamentos e potencial de regeneração da vegetação nativa: definindo prioridades e estratégias territoriais. Boletim Goiano de Geografia, 27(1), 83-96.

Ferri, Mário Guimarães (Coord.). 1971. Simpósio sobre o Cerrado. São Paulo: Edgard Blucher/Universidade de São Paulo.

Ferri, Mário Guimarães (Coord.). 1977. IV Simpósio sobre o Cerrado. São Paulo: EDUSP; Belo Horizonte: Itatiaia.

Filguieras, T.; Pereira, B.S. 1993. Flora. In: Pinto, Maria Novaes (Ed.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília.

Filizola, B.C. 2013. Boas práticas de manejo para o extrativismo sustentável da fava d'anta. Brasília: Instituto Sociedade, População e Natureza.

Fioravanti, C. 2015. Terra frágil: análises de imagens de satélite indicam desmatamento no Cerrado e Caatinga. Revista Pesquisa FAPESP, n.231, maio, p.46-51.

Fiori, A.M.; Fioravante, C. 2001. Os caminhos para salvar o Cerrado paulista. Revista Pesquisa, n.63, abr.

Fonseca, C.P. 2005. Caracterização dos ecossistemas aquáticos do Cerrado. In: Scariot, Aldicir *et al.* (Orgs). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente, p.414-429.

Fonseca, Gustavo A.B.; Hermann, G.; Leite, Y.L.R. 1999. Macrogeography of Brazilian mammals. In: Eisenberg, J.F.; Redford, K.H. (Eds.). Mammals of the Neotropics: the Central Neotropics. v.3, Ecuador, Peru, Bolivia, Brazil. Chicago: University of Chicago Press, p.549-563.

Fontana, C.S., Bencke, G.A. and Reis, R.E. 2003. *Livro vermelho da fauna ameaçada de extinção no Rio Grande do Sul.* EDIPUCRS, Porto Alegre.

Fontana, Maiti; Gualdani, Carla; Burgos Andrés; Assad, Luís Tadeu . 2015. Mandacaru awards: innovative projects and practices on access to water and living in harmony with the semi-arid. Brasília: IABS.

Forest Trends. 2015. Incentivos econômicos para serviços ecossistêmicos no Brasil. Rio de Janeiro: Forest Trends.

Forzza, R.C. *et al.* 2012. New Brazilian floristic list highlights conservation challenges. BioScience, v.62, p.39-45.

Franco, José Luiz de Andrade; José Augusto Drummond. 2008. Wilderness and the Brazilian mind: nation and nature in Brazil from the 1920s to the 1940s. Environmental History, 13, Oct., p.724-750.

Françoso, R.D. *et al.* 2015. Habitat loss and the effectiveness of protected areas in the Cerrado Biodiversity Hotspot. Nature and Conservation, v.13, n.2, p.35-40.

Fraga, Érica. 2015. PIB pode afundar mais de 1% este ano e empurrar economia para recessão. Folha de São Paulo, Jan. 25.

Freitas, Nelson Neto de. 2015. Comitês de Bacias Hidrográficas: desafios para o fortalecimento. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

FUNBIO. 2015. TFCA: a experiência brasileira; the Brazilian experience. Rio de Janeiro: Fundo Brasileiro para a Biodiversidade.

Furley, Peter A. 1999. The nature and diversity of neotropical savanna vegetation with particular reference to the Brazilian Cerrados. Global Ecology and Biogeography 8:223–241.

Furtado, Celso. 1963. The economic growth of Brazil: a survey from colonial to modern times. Berkeley: University of California Press.

Funatura, Conservation International; Fundação Biodiversitas; Universidade de Brasília. 2000. Avaliação e ações prioritárias para a conservação da biodiversidade do Cerrado e Pantanal. Brasília. Secretaria de Biodiversidade e Florestas, Ministério do Meio Ambiente.

FUNATURA-. 2008. Plano de desenvolvimento territorial de base conservacionista do Mosaico Sertão Veredas-Peruaçu. Brasília: Fundação Pro-Natureza.

Gaetani, Francisco. 2015. Statement at the meeting of the Executive Secretary of the Minister of Environment with the ecosystem profile team and the Executive Director of CEPF on April 14.

Galetti, Lylia da Silva Guedes. 2000. Nos confins da "civilização": sertão, fronteira e identidade nas representações sobre Mato Grosso. São Paulo: FFLCH/USP. Tese de Doutorado.

Gall, Norman. 2015. Why the water is running out. www.nybooks.com.

Ganem, Roseli Senna. 2010. Políticas de conservação da biodiversidade e conectividade entre remanescentes de Cerrado. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Tese de Doutorado.

Ganem, Roseli Senna; Drummond, José Augusto; Franco, José Luiz de Andrade. 2013. Conservation policies and control of habitat fragmentation in the Brazilian Cerrado biome. Ambiente and Sociedade, v.16, n.3.

Ganem, Roseli S.; Drummond, José Augusto; Franco, José Luiz A. 2009. Conservação da biodiversidade no bioma Cerrado: ameaças e oportunidades. Novas Fronteiras, p.335-355.

Ganem, Roseli Senna (Org.). 2011. Conservação da biodiversidade: legislação e políticas públicas. Brasília: Câmara dos Deputados, Edições Câmara.

Ganem, Roseli Senna (Org.). 2015. Legislação brasileira sobre meio ambiente: instrumentos da Política Nacional de Meio Ambiente. Brasília: Câmara dos Deputados, Edições Câmara.

Gariglio, M.A.; Sampaio, E.V.S.B.; Cestaro, L.A.; Kageyama, P.Y. (Orgs.). 2010. Uso sustentável e conservação dos recursos florestais da Caatinga. Brasília: Serviço Florestal Brasileiro.

Gartlan, Kieran. 2010. The global power of Brazilian agribusiness. London: The Economist Intelligence Unit.

GCP. 2012. Community-powered monitoring of REDD+: open-source technology boosts community forest monitoring. Canopy Viewpoint: Forests and Wellbeing, June.

GEF. 1998. Evaluation of experiences with conservation trust funds.

Gerholdt, J.; Pandya, S. (n.d.). Resources: the energy–water–food nexus. v.2. Arlington: Conservation International's Business and Sustainability Council.

Gereffi, Gary. 1994. The organisation of buyer-driven commodity chains: how US retailers share overseas production networks. In: Gereffi, G.; Korzeniewicz, M. (Eds.). Commodity chains and global capitalism. Westport: Praeger, p. 95-122.

Gereffi, Gary; Humphrey, John; Sturgeon, Timothy. 2005. The governance of global value chains. Review of International Political Economy, v.12, n.1, Feb., p.78-104.

Ghelfi, Renato. 2015. Despesas com conservação florestal recuam 45% em 2015. DCI – SP, 20 out., p.5.

Ghelfi, Renato. 2015. Despesas com preservação florestal recuam 45% em 2015. DCI-CP, 20 out.

Giulietti, N.; Giulietti; A.M. Pirani, J.R.; Menezes, N.L. 1988. Estudos em semprevivas: importância econômica do extrativismo em Minas Gerais. Acta Botanica Brasilica, v.1, n.2, p.179-193Giulietti, A.M. *et al.* (Orgs.). 2009. Plantas raras do Brasil. Belo Horizonte: Conservação Internacional e Universidade Estadual de Feira de Santana.

Goldemberg, José. 2009. Em defesa das hidrelétricas. O Estado de São Paulo, 20 jul.

Goodland, R.J.A.; Irwin, H.S. 1975. Amazon jungle: green hell to red desert; an ecological discussion of the environmental impact of the highway construction program of the Amazon basin. Amsterdam: Elsevier.

Grecchi, Rosana; Gwyn, Q. Hugh; Benié,, Goze B.; Formaggio, Antônio R.; Fahl, Fernando C. 2014. Land use and land cover changes in the Brazilian Cerrado: a multidisciplinar approach to assess the impacts of agricultural expansion. Applied Geography, v.55, p.300-312.

Grecchi, R.C.; Beuchle, R.; Shimabukuro, Y.E.; Sano, E.E.; Achard, F. 2015. Assessing land cover changes in the Brazilian Cerrado between 1990 and 2010 using a remote sensing sampling approach. In: Anais XVII Simpósio Brasileiro de Sensoriamento Remoto-SBSR, João Pessoa, PB, 25 a 29 de abril de 2015. João Pessoa: INPE.

Grégoire-Zawilski, Myriam. 2015. Construire l'avantage comparative du Brésil? La coordination dand les filiales soje du Mato Grosso et du Paraná. Montréal: Université de Montréal. Mémoire de M.Sc.

Grindle, Merilee S. 2004. Good enough governance: poverty reduction and reform in developing countries. Governance: an International Journal of Policy, Administration, and Institutions, v.17, p.525-548.

Grindle, Merilee S. 2007. Good enough governance revisited. Development Policy Review, v.25, n.5, p.553.

Guest, Peter. 2015. The nutcrackers and 'the Chainsaw Queen": the fight for control over Brazil's Amazon. news/vice/com, Aug. 7.

Guest, Peter. The nutcrackers and the "chainsaw queen": the fight for control over Brazil's Amazon. news.vice.com, Aug. 7.

Guimarães, Carla. 2013. Rebanho bovino brasileiro se concentra em áreas do Cerrado. Revista Sara, 9 set.

Guimarães, Eduardo Nunes; Leme, Heládio José de Campos. 1998. Caracterização histórica e configuração espacial da estrutura produtiva do Centro-Oeste. In: Redistribuição da população e meio ambiente: São Paulo e Centro-Oeste. Campinas: Núcleo de Estudos de População, Universidade Estadual de Campinas, p.21-74. (Textos NEPO, 33).

Guimarães, Maria. 2014. Dança da chuva: a escassez de água que alarma o país tem relação íntima com as florestas. Revista FAPESP, dez.

Haggar, Jeremy; Schepp, Kathleen. 2012. Coffee and climate change: impacts and options for adaption in Brazil, Guatemala, Tanzania and Vietnam. Greenwich: NRI. (NRI Working Paper Series, Climate Change, Agriculture and Natural Resources, 4).

Hecht, Susanna. 2011. From eco-catastrophe to zero deforestation? Interdisciplinarities, politics, environmentalisms and reduced clearing in Amazonia. Environmental Conservation.

Hecht, Susanna. 2014. Forests lost and found in tropical Latin America: the woodland "green revolution". Journal of Peasant Studies, v.41, n.5, p.877-909.

Hecht, Susanna; Anderson, Anthony B.; May, Peter. 1988. The subsidy from nature: shifting cultivation, successional palm forests, and rural development. Human Organization, v.47, n.1, p.25-35.

Henriques, R.P.B. 2005. Influência da história, solo e fogo na distribuição e dinâmica das fitofisionomias no bioma Cerrado. In: Scariot, A. *et al.* (Orgs). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente. p. 73-92.

Heringer, E.P.; Barroso, G.M.; Rizzo, J.A.; Rizzini, C.T. 1977. A flora do Cerrado. In: Simpósio sobre o Cerrado. São Paulo: Universidade de São Paulo, v.4, p.211-232.

Hill, David. 2015. Future of Brazil's babassu fruit breakers threatened by deforestation. BST Guardian, Aug. 18.

Hill, David. Future of Brazil's babassu fruit breakers threatened by deforestation. Guardian, Aug. 18.

HLPE. 2015. Water for food security and nutrition. Rome: High-Level Panel of Experts on Food Security and Nutrition, Committee on World Food Security.

Hogan, Daniel Joseph. 2000. Redistribuição da população e meio ambiente: São Paulo e Centro-Oeste: dinâmica demográfica e mudança ambiental. Campinas: UNICAMP; Núcleo de Estudos de População.

Holanda, Sérgio Buarque. 1936. Raizes do Brasil. xxx: Companhia das Letras, 3ed. 1997.

Hoogesteijn, R. and Mondolfi, E. 1992. The jaguar. Armitano Editores. 183p.

Horn, H.A.: Baggio, H. 2011. Desertification processes in the eastern central highlands of Brazil: Caatinga-Cerrado near the São Francisco valley, Minas gerais, and the relationship with the deterioration of life quality. Geo-riskGManagement–a German Latin American approach.

Hunke, Philip. 2014. The Brazilian Cerrado: assessment of water and soil degradation in catchments under intensive agricultural use. Ecohydrology, v.8, n.6, Oct., p.1154-1180.

IBGE. 2011. Atlas do espaço rural brasileiro. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística.

IBGE. 2015. Mapa de cobertura e uso da terra no Brasil 2012. Rio de Janeiro: Instituto Brasileiro de Geografia e Estatística.

IBAMA. 2002. GEO Brazil 2002 Environmental outlooks in Brazil. Brasília: Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis.. 440p.

ICMBIO. 2011. Plano de Ação para a Conservação da Onça-Pintada. Sumário Executivo. ICMBio. 8p.

ICMBio - Instituto Chico Mendes de Conservação da Biodiversidade; WWF-Brasil. 2011. Avaliação comparada das aplicações do método Rappam nas unidades de conservação federais, nos ciclos 2005-06 e 2010. Brasília: ICMBio, 2011.

ICV. 2005. Cerrado que te quero vivo! Produtos e meios de vida sustentáveis apoiados pelo Programa de Pequenos Projetos Ecossociais (PPP-Ecos). Brasília: Instituto Centro de Vida (ICV); Instituto Sociedade, População e Natureza (ISPN).

IICA. 2015. Supporting local initiatives in the fight against desertification. Brasília: Inter-American Institute for Cooperation on Agriculture.
Imbach, Alejandro. 2015. Midterm Review (MTR) of the Fifth Operational Phase of the GEF Small Grants Program in Brazil.
INESC. 2014. De onde vem a ideia de conservar a biodiversidade em áreas protegidas? Brasília: Instituto de Estudos Socioeconômicos, Heinrich Böll Stiftung.
IPCC. 2007. Contribution of working groups i, ii and iii to the fourth assessment report of the intergovernmental panel on climate change. IPCC, Geneva.
IPCC. 2014. Climate change 2014: synthesis report. contribution of working groups i, ii and iii to the fifth assessment report of the intergovernmental panel on climate change. Geneva.
IPÊ. 2008. Como receber turistas em áreas naturais. Manaus: Instituto de Pesquisas Ecológicas; GTZ/Projeto Corredores Ecológicos.
ISPN. 2007. Cana-de-açúcar avança em áreas prioritárias para a conservação e uso sustentável do Cerrado. Brasília: Instituto Sociedade, População e Natureza.
ISPN. 2008. Cana-de-açúcar avança em áreas prioritárias para a conservação e uso sustentável do Cerrado. Brasília: Instituto Sociedade, População e Natureza.
ISPN. 2011. Long live the Cerrado! Sustainable products and livelihoods supported by the GEF Small Grants Programme in Brazil and the Programa de Pequenos Projetos Ecossociais. Brasília: Instituto Sociedade, População e Natureza.
ISPN. 1999. Final reports on conservation and management of biodiversity of the Cerrado biome. Brasília: Instituto Sociedade, População e Natureza.
Ivaris Jr. 2015. Agricultura a serviço da produção de carne: integração lavoura-pecuária (ILP) é ferramenta para garantir alta produção dos bovinos Carpa Serrana. Folha de São Paulo, Sept. 26, Agro-Agricultura, p.4-5.
IUCN. 2007. Current knowledge of the impacts of genetically modified organisms on biodiversity and human health: an information paper. World Conservation Union.
Jardim, Mariana Heilbuth. 2010. Pagamentos por serviços ambientais na gestão de recursos hídricos: o caso do município de Extrema – MG. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Dissertação de Mestrado.
Jasinski, E. *et al.* 2005. Physical landscape correlates of the expansion of mechanized agriculture in Mato Grosso, Brazil. Earth Interactions, 9(16), 1-18.
Jepson, Wendy E. 2003. A political ecology of land-use and land-cover change in the Central Brazilian Savanna since 1970. Los Angeles: University of California. Ph.D. Thesis.
Jepson, Wendy E.; Brannstrom, Christian. 2005. A case of contested ecological modernisation: the governance of genetically modified crops in Brazil. Environment and Planning C: Government and Policy v.23, p.295-310.
Kasecker, Thais P. *et al.* 2009. Áreas-chave para espécies raras de fanerógamas. In: Giulietti, A.M. *et al.* (Orgs.). Plantas raras do Brasil. Belo Horizonte: Conservação Internacional; Universidade Estadual de Feira de Santana, p.433-471.
Kelman, Jerson. 2009. Prólogo. In: Salati, Enéas (Coord.). 2009. Economia das mudanças climáticas no Brasil: estimativas da oferta de recursos hídricos no Brasil em cenários futuros de clima (2015-2100). Rio de Janeiro: Fundação Brasileira de Desenvolvimento Sustentável, p.4-5.
Keys, P.W. *et al.* 2012. Analyzing precipitationsheds to understand the vulnerability of rainfall dependent regions. Biogeosciences, v.9, p.733-746.
Kinzo, Mary Dayse. 1986. Small producers and the State: agriculture in the Amazon frontier. Manchester: University of Manchester. Ph.D. thesis.

Kinzo, Mary Dayse; Gontijo, Vander. 1999. Políticas públicas e desenvolvimento sustentável no Cerrado. Brasília: Instituto Sociedade, População e Natureza.

Klein, Herbert S. 1982. A *concise history of Bolivia*. Revised edition of Bolivia, the evolution of a multi-ethnic society. Cambridge: Cambridge University Press.

Klink, Carlos Augusto; Moreira, Adriana G. 2002. Past and current human occupation and land-use. In: P.S. Oliveira; R.J. Marquis (Eds.). The Cerrados of Brazil: ecology and natural history of a neotropical savanna. New York: Columbia University Press. p.69-88.

Klink, Carlos Augusto; Moreira, Adriana G.; Solbrig, O.T. 1993. Ecological impact of agricultural development in the Brazilian Cerrados. In: Young, M.D.; Solbrig, O.T. (ed.) 1993. The world's savannas: economic driving forces, ecological constraints and policy options for sustainable land use. Paris; Carnforth, UK: UNESCO; Parthenon. (Man and the Biosphere Series, 12),

Klink, Carlos A. 2013. Policy intervention in the Cerrado savannas of Brazil: changes in land-use and effects on conservation. In: Consorte-McCrea, A.G.; Santos, E.F. (Eds.). Ecology and conservation of the maned wolf: multidisciplinary perspectives. CRC Press.

Klink, Carlos A.; Machado, R.B. 2005. Conservation of the Brazilian Cerrado. Conservation Biology, n.19, p.707-713.

Klink, Carlos A.; Machado, R.B. 2005. A conservação do Cerrado brasileiro. Megadiversidade, v.1, n.1,

Kothari, A.; Neumann, A. 2014. ICCAs and Aichi Targets: the contribution of indigenous peoples' and local community conserved territories and areas to the Strategic Plan for Biodiversity 2011-20. (Policy Brief of the ICCA Consortium, 1).

Kruckerberg, A.R. and Rabinowitz, D. Biological aspects of endemism in higher plants. Ann. Rev. Ecol. Syst., 16: 447-479. 1985

La Rovere, Ana Lúcia; Vieira, Liszt. 1992. Tratados das ONGs aprovados no Fórum Internacional de Organizações Não Governamentais e Movimento Sociais no âmbito do Fórum Global – ECO 92. Rio de Janeiro: Instituto de Ecologia e Desenvolvimento.

La Rovere, Emilio Lèbre. 2001. Instrumentos de planejamento e gestão ambiental para a Amazônia, Cerrado e Pantanal; demandas e propostas: metodologia de avaliação de impacto ambiental. Brasília: Editora IBAMA.

Lago, André Aranha Corrêa do. 2009. Stockholm, Rio, Johannesburg: Brazil and the three United Nations Conferences on the Environment. Brasília: Fundação Alexandre Gusmão.

Lambert, M.C.; Ribeiro, B. 2007. Diversidade e conservação da biota aquática. In: MMA. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para conservação. Brasília: Ministério do Meio Ambiente.

Landers, John N.; Freitas, Pedro L. de; Boddey, Robert M. 2005. Potential for mitigation of deforestation and negative off-farm impacts with conservation agriculture: employing zero tillage farming in the Brazilian Cerrado. Ch.10 In: Mistry, J.; Berardi, A. (Eds). Savannas and dry forests: linking people with nature. Aldershot, Hants: Ashgate, p.241-264.

Landers, John N. 2015. Presentation by the former President of the Association for Zero Tillage in the Cerrado, Seminar on the Cerrado Biome: Norms for Conservation and Sustainable Use, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Langhammer, P.F. *et al.* 2007. Identification and gap analysis of key biodiversity areas: targets for comprehensive protected area systems. Gland: IUCN.

Lapola, D. M., Martinelli, L. a., Peres, C. a., Ometto, J. P. H. B., Ferreira, M. E., Nobre, C. a., Aguiar, A. P. D., Bustamante, M. M. C., Cardoso, M. F., Costa, M. H., Joly, C. a., Leite, C. C., Moutinho, P., Sampaio, G., Strassburg, B. B. N., and Vieira, I. C. G. 2014. Pervasive transition of the brazilian land-use system. Nature Climate Change 4:27–35.

Latawiec, Agnieszka E.; Strassburg, Bernardo; Brancalion, Pedro; Rodrigues, Ricardo R.; Gardner, Toby. 2015. Creating space for large-scale restoration in tropical agricultural landscapes. Frontiers in Ecology and the Environment, v.13, n.4, p.211-218

Lazaretti, Rhubia Maria Jorge; Santos, José Maurício Gonçalves dos; Andreazzi, Márcia Aparecida. 2013. Destinação dos resíduos da suinocultura em granjas das regiões sudoeste, norte e noroeste do estado do Paraná. VIII Encontro Internacional de Produção Científica UniCesumar, 22-25 out.

Leal, I.R.; Fischer, E.; Kost, C.; Tabarelli, M.; Wirth, R. 2006. *Ant protection against herbivores and nectar thieves in Passiflora coccinea* flowers. Ecoscience, v.13, n.4, p.431-438.

Leme, Taciana Neto. 2010. Os municípios e a Política Nacional do Meio Ambiente. Planejamento e Políticas Públicas, n.35, jul./dez.

Lenti, Felipe. 2015. Estimativa das emissões evitadas e sequestros de carbono no PPP-ECOS: contribuições de projetos locais para a questão climática global. Brasília: ISPN.

Leroy, Maya; Derroire, Géraldine; Vendé, Jeremy; Leménager, Tiphaine. Sustainable management of tropical forests: from a critical analysis of the concept to an environmental evaluation of its management arrangements. Paris: Agence Française de Développement.

Leroy; Jean-Pierre; Maia, Kátia Drager; Guimarães, Roberto Pereira (Orgs.). 1997. Brasil Século XXI: os caminhos da sustentabilidade cinco anos depois do Rio-92. Rio de Janeiro: FASE.

Leuzinger, Márcia Dieguez. 2009. Natureza e cultura: unidades de conservação e populações tradicionais residentes. Curitiba: Letra da Lei.

Lima, Jorge Enoch Furquim Werneck. 2015. Contribuição do Cerrado para a conservação das águas no Brasil. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Lima, I.L.P. 2008. Etnobotânica quantitativa de plantas do Cerrado e extrativismo de mangaba (Hancornia speciosa Gomes) no Norte de Minas Gerais: implicações para o manejo sustentável. Universidade de Brasília. Dissertação de mestrado em Ecologia.

Lima, E.S. *et al.* 2009. Mudanças pós-fogo na estrutura e composição da vegetação lenhosa, em um cerrado mesotrófico, no período de cinco anos (1997-2002) em Nova Xavantina, MT. Cerne, v.15, n.4, p.468-480.

Lima, Jorge Enoch F.W. 2011. Situação e perspectivas sobre as águas do Cerrado. Ciência e Cultura, v. 63, n. 3, p. 27-29.

Lima, Jorge Enoch F.W. 2015. Contribuição do Cerrado para a conservação das águas no Brasil. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Câmara dos Deputados, Brasília, Sept. 17-18.

Lima, Jorge Enoch F.W.; Silva, E.M. 2005. Estimativa da produção hídrica superficial do Cerrado brasileiro. In: Scariot, A. *et al.* (Orgs). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente. p. 60-72.

Lino, Geraldo Luís; Carrasco, Lorenzo; Costa, Nilder; Palacios, Silvia. Máfia Verde 2: Ambientalismo, Novo Colonialismo.
Lins, Bárbara. 2015. Temperatura média anual do DF sobe 1,95ºC em 50 anos, diz pesquisa. g1.globo.com/distrito-federal/noticia, 11 out.
Lins, Livia; Disconzi, Gislaine. 2015. Estimativa populacional das aves aquáticas. Waterbird Population Estimation.
Litre, Gabriela; Rocha, Juliana Dalboni (Eds). 2014. Sustentabilidade em Debate, v.5, n.2, mai-ago.
Little, Paul E. (Org.). 2014. Os novos desafios da política ambiental brasileira. Brasília: Instituto Internacional de Educação do Brasil.
Lovett, Jon C. 2015. Fairness and nature: when worlds collide. Leeds: University of Leeds. 2v.
Machado, Angelo .B.M. *et al.* (Eds.). 2008. Livro vermelho da fauna brasileira ameaçada de extinção. Brasília: Ministério do Meio Ambiente, 2008.
Machado, Ricardo B.; Ramos Neto, M.B.; Pereira, P.; Caldas, E.; Gonçalves, D.; Santos, N.; Tabor, K.; Steininger, M. 2004. Estimativas de perda da área do Cerrado brasileiro. Conservation International do Brasil, Brasília, 2004.
Machado, Ricardo B. *et al.* 2004. Análise de lacunas de proteção da biodiversidade no Cerrado – Brasil. In: Anais do IV Congresso Brasileiro de Unidades de Conservação, 2004. v. II – Seminários. Curitiba: Fundação O Boticário de Proteção à Natureza. p.29-38.
Machado, Ricardo. 2015. Unidades de Conservação no Cerrado. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.
Magalhães, Rogério Marcos. 2011. Obstáculos à exploração do baru (Dipteryx alata Vog.) no Cerrado goiano: sustentabilidade comprometida? Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília.
Mandell, Paul I. 1969. The development of the southern Goiás-Brasília region: agricultural development in a land-rich economy. New York: Columbia University. Ph.D. thesis.
Malhi, Yadvinder *et al.* 1998. Carbon dioxide transfer over a Central Amazonian rain forest, J. Geophys. Res., 103(D24), 31593-31612.
Malhi, Yadvinder *et al.* 2006. Regional variation of above-ground live biomass in old-growth Amazonian forests. Glob. Change Biol., 12, 1-32.
Malhi, Yavinder *et al.* 2008. Climate change, deforestation, and the fate of the Amazon. Science, 319, 169- 172.
Malhi, Yadvinder *et al.* 2009. Exploring the likelihood and mechanism of a climate-change-induced dieback of the Amazon rainforest. Proceedings of the National Academy of Sciences (PNAS), 106(49), 20610- 20615.
Malhi, Yadvinder; Wright J. 2004. Spatial patterns and recent trends in the climate of tropical rainforest regions. Philosophical Transactions of the Royal Society of London., Series B: Biological Sciences, 359(1443), 311-329.
Malhi, Yadvinder; Grace. J., 2000. Tropical forests and atmospheric carbon dioxide. Trends in Ecology and Evolution, 15, 332-337.
Mann, Charles C. 2005. 1491: new revelations of the Americas before Columbus. New York: Knopf.
Mann, Charles C. 2012. 1493: uncovering the new world Columbus created. New York: Vintage.
Mantovani, J.E.; Pereira, L.A. 1998. Estimativa da integridade da cobertura vegetal do Cerrado/Pantanal através de dados TM/Landsat. Unpublished report for the

Workshop Ações Prioritárias para a Conservação do Cerrado e Pantanal, Brasília, Brazil. Brasília: Funatura, Conservation International, Universidade de Brasília, Fundação Biodiversitas.

Mardas, N. *et al.* 2012. Amazonia security agenda: summary of findings and initial recommendations. Global Canopy Programme, International Center for Tropical Agriculture.

Marengo, José A. *et al.* 2009. Future change of temperature and precipitation extremes in South America as derived from the PRECIS regional climate modeling system. International Journal of Climatology, v.15, p.2241-2255.

Marengo, José A., Ambrizzi, T., da Rocha, R. P., Alves, L. M., Cuadra, S. V., Valverde, M. C., Torres, R. R., Santos, D. C., and Ferraz, S. E. T. 2010. Future change of climate in south america in the late twenty-first century: intercomparison of scenarios from three regional climate models. Climate Dynamics 35:1089–1113.

Marengo, José A. *et al.* 2011. Development of regional future climate change scenarios in South America using the Eta CPTEC/HadCM3 climate change projections: climatology and regional analyses for the Amazon, São Francisco and the Paraná River basins. Climate Dynamics, v.38, p.1829-1848.

Marengo, José A.; Nobre, Carlos A.; Tomasella, J.; Cardoso, M.F.; Oyama, M.D. 2008. Hydro-climatic and ecological behaviour of the drought of Amazonia in 2005. Phil. Trans. R. Soc. B, v.363, p.1773-1778.

Maretti, Cláudio. 2015a. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Maretti, Cláudio. 2015b. Presentation of the President of ICMBio at the Seminar on OCDE Environmental Performance Review, Ministry of Enviroment, Brasília, Nov. 4.

Margules, C.R.; Pressey, R.L. 2000. Systematic conservation planning. Nature, v.405, p.243-253.

Marin, A.M.F. 2006. Potencial nutritivo de frutos do Cerrado: composição em minerais e componentes não convencionais. Dissertação (Mestrado em Nutrição Humana. Área de Concentração: Ciência dos Alimentos), Universidade de Brasília, Brasília.

Marinho-Filho, J. *et al.* 2010. Evolução do conhecimento e da conservação do Cerrado brasileiro. In: Diniz, I.R. *et al.* (Orgs.). Cerrado: conhecimento científico quantitativo como subsídio para ações de conservação. Brasília: Thesaurus, p.13-31.

Marini, M.A.; Barbet-Massin, M.; Lopes, L.E.; Jiguet, F. 2009. Predicted Climate Driven Bird Distribution Changes and Forecasted Conservation Conflicts in a Neotropical Savanna. Conservation Biology, v. 23, p. 1558-1567.

Marques, Fabrício. 2012. Um país, dois modelos: dispêndios estaduais em pesquisa e desenvolvimento revelam fosso entre São Paulo e as outras unidades da federação. Pesquisa FAPESP, n.199, set.

Martinelli, Gustavo *et al.* (Orgs.). 2014. Livro vermelho da flora do Brasil: plantas raras do Cerrado. Rio de Janeiro: Andrea Jakobsson Estúdio; Instituto de Pesquisas Jardim Botânico do Rio de Janeiro.

Martinelli, Gustavo; Moraes, M.A. 2013. Livro vermelho da flora do Brasil. Rio de Janeiro: Instituto Pesquisa Jardim Botânico do Rio de Janeiro.

Martins, Carlos Romero; Hay, John Duval; Walter, B.M.T.; Proença, Carolyn Elinore Barnes; Vivaldi, Lúcio José. 2011. Impacto da invasão e do manejo do capim-

gordura (Melinis minutiflora) sobre a riqueza e biomassa da flora nativa do Cerrado sentido restrito. Revista Brasileira de Botânica, v.34, p.73-90.

Martins, Rodrigo. 2015. Mapping indigenous from Central Brazil between 1700 and 1900: a contribution to Nimuendaju's ethno-historical map using IBGE's database and other maps. In: Anais da Pre-Conference Symposium on Atlases, Toponymy and the History of Cartography, 27th International Cartographic Conference. Rio de Janeiro: ICA; IBGE.

Mata, Gonzalo Castro de la; Riega-Campos, Sait. 2014. An analysis of international conservation funding in the Amazon. Ecosystem Services, Gordon and Betty Moore Foundation.

May, Peter; Millikan, Brent; Gebara, Maria Fernanda. 2010. The context of REDD+ in Brazil: drivers, agents and institutions. Bogor: CIFOR. (Occasional Paper, 55).

May, Peter Herman. 1990. Palmeiras em chamas: transformação agrária e justiça social na zona do babaçu. São Luís: EMAPA.

Maybury-Lewis, David. 1971. Akwê-Shavante society. Oxford: Clarendon.

Medeiros, Josemar Xavier 1995. Aspectos econômicos-ecológicos da produção e utilização do carvão vegetal na siderurgia brasileira. In: May, Peter Herman (Org.). Economia ecológica: aplicações no Brasil. Rio de Janeiro: Campus. p.83-114.

Medeiros, Marcelo; Costa, J. (2008). "Is There a Feminization of Poverty in Latin America?" World Development. v.36, n.1, p.115-127.

Medeiros, Rodrigo; Young; Carlos E.F.; Pavese, Helena B.; Araújo, F.F.S. 2011. Contribuição das unidades de conservação brasileiras para a economia nacional: sumário executivo. Brasília: UNEP-WCMC.

Mello, Francisco F.C.; Cerri, Carlos E.P.; Davies, Christian A.; Holbrook, N. Michele; Paustian, Keith; Maia, Stoécio M.F.; Galdos, Marcelo V.; Bernoux, Martial; Cerri, Carlos C. 2014. Payback time for soil carbon and sugar-cane ethanol. Nature Climate Change, v.4, n.7, p.605-609

Mello, P.L.H.; Machado, R.B.; Nogueira, C.C. 2015. Conserving biogeography: habitat loss and vicariant patterns in endemic squamates of the Cerrado Hotspot. PLoS One, 2015. Doi:10.1371/journal.pone.0133995.

Mena, Fernanda. 2015. Incentivo fiscal pode tornar filantropos os bilionários do Brasil. Folha de São Paulo, 26 abr.

Mendonça, R.C., Felfili, J.M., Walter, B.M.T.; da Silva, M.C. Jr.; Rezende, A.V.; Filgueiras, T.S.; Oliveira, P.E. 1997. Flora vascular do Cerrado. In: Sano, S.M.; Almeida, P. (Eds.). Cerrado: flora, homem e ambiente. Planaltina, Brazil: EMBRAPA - Cerrados. p.217-396.

Mendonça, R.C.; Felfili, J.M.; Walter, B.M.T.; Silva Junior, M.C.; Filgueiras, T.S.; Nogueira, P.E.; Fagg, C.W. 2008. Flora vascular do bioma Cerrado: checklist com 12.356 espécies. In: Sano, S.M.; Almeida, S.P.; Ribeiro, J.F. (eds.). Cerrado: ecologia e flora. Brasilia, Embrapa Informação e Tecnologia. v.2, p.423-1279.

Mesquita, C.A.B. 2014. A natureza como o maior patrimônio: desafios e perspectivas da conservação voluntária em áreas protegidas privadas no Brasil. Tese (Doutorado em Ciências Ambientais e Florestais), Instituto de Florestas, Universidade Federal Rural do Rio de Janeiro, Seropédica,

Messinis, Stelliany Symeon (Org.). 2015. Supporting local initiatives in the fight against desertification. Brasília: International Institute for Cooperation on Agriculture.

Mikich, S.B. and Bernils, R.S. 2004. Livro Vermelho da Fauna Ameaçada no Estado do Paraná. Instituto Ambiental do Paraná, Curitiba, Brazil.

Miller, Michael E. 2015. Why are Brazil's environmentalists being murdered? Washington Post, Aug. 28.
Millennium Ecosystem Assessment. 2005. Ecosystems and human well-being: synthesis. Washington: Island Press.
Miragaya, Júlio Carlos Gameiro. 2013. A expansão da pecuária bovina na Amazônia Legal no período 1990/2009: impactos econômicos e ambientais. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília. Tese de Doutorado.
Miranda, F., Bertassoni, A. and Abba, A.M. 2014. *Myrmecophaga tridactyla*. The IUCN Red List of Threatened Species 2014: e.T14224A47441961. Downloaded on 08 December 2015.
Miranda, Evaristo Eduardo de; Magalhães, Lucíola Alves; Carvalho, Carlos Alberto de. 2014. Proposta de delimitação territorial do Matopiba. Campinas: EMBRAPA.
Miranda, Heloisa S.; Miranda, Antonio Carlos. 1999. Estoques de carbono e queimadas no Cerrado. Brasília: Departamento de Ecologia, Universidade de Brasília.
Miranda, Evaristo (Coord.). 2015. Matopiba: delimitação, caracterização, desafios e oportunidades para o desenvolvimento. Brasília: Ministério da Agricultura, Pecuária e Abastecimento.
Mittermeier, Russell A. *et al.* 2004. Hotspots revisited: earth's biologically richest and most endangered terrestrial ecoregions. Washington, D.C.: Cemex,
Mittermeier, Russell A.; Fonseca, G.A.B., Rylands, A.B.; Mittermeier, C.G. 1997. Brazil. In Mittermeier, R.A.; Robles G.P.; Mittermeier, C.G. (Eds.). Megadiversity: earth's biologically wealthiest nations. México: CEMEX, Agrupación Sierra Madre. p.39-49.
Miziara, F.; Ferreira, N.C. 2008. Expansão da fronteira agrícola e evolução da ocupação e uso do espaço no estado de Goiás: subsídios à política ambiental. In: Ferreira, Laerte G. (Org.). A encruzilhada socioambiental: biodiversidade, economia e sustentabilidade no Cerrado. Goiânia: Editora da UFG. 223pp.
MMA. 1999. Ações prioritárias para a conservação da biodiversidade do Cerrado e Pantanal. Brasília: MMA.
MMA . 2003. Programa Nacional de Conservação e Uso Sustentável do Bioma Cerrado: Programa Cerrado Sustentável.
MMA. 2004. Agenda 21 brasileira: ações prioritárias. 2ed. Brasília: Ministério do Meio Ambiente, Comissão de Políticas de Desenvolvimento Sustentável e da Agenda 21 Nacional.
MMA. 2004. Programa Cerrado Sustentável: Programa Nacional de Conservação e Uso Sustentável do Bioma Cerrado. Proposta elaborada pelo Grupo de Trabalho do Bioma Cerrado, instituído pela Portaria MMA n.361 de 12 de setembro de 2003.
MMA. 2004. Programa Nacional de Conservação e Uso Sustentável do Bioma Cerrado: Programa Cerrado Sustentável. Brasília: Ministério do Meio Ambiente.
MMA. 2007. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para conservação. Brasília: MMA.
MMA *et al.* 2007. Cadeias dos produtos da sociobiodiversidade: agregação de valor e consolidação do mercado sustentável. Goiânia: Ministério do Meio Ambiente, Ministério do Desenvolvimento Agrário, Ministério do Desenvolvimento Social.
MMA. 2008. Plano Amazônia Sustentável: diretrizes para o desenvolvimento sustentável da Amazônia Brasileira. Brasília: Ministério do Meio Ambiente.
MMA. 2011. Plano de ação para prevenção e controle do desmatamento e das queimadas do bioma Cerrado. Brasília: Ministério do Meio Ambiente.

MMA. 2012. Estratégia nacional para conservação e uso sustentável da biodiversidade brasileira: ampliação e consolidação do sistema nacional de unidades de conservação da natureza, 2012 – 2020. Brasília: MMA.
MMA. 2014. ProCerrado Federal. Brasília: Ministério do Meio Ambiente.
MMA. 2014. PPCerrado: Plano de Ação para Prevenção e Controle do Desmatamento e das Queimadas no Cerrado, 2ª fase (2014-2015). Brasília: Ministério do Meio Ambiente.
MMA. 2014. Projeto "Apoio a Estratégias Nacionais de Redução do Desmatamento e dos Incêndios Florestais no Cerrado Brasileiro": PROCERRADO Federal. Brasília: Ministério do Meio Ambiente.
MMA. 2015. Fifth National Report to the Convention on Biological Diversity: Brazil. Brasília: Ministério do Meio Ambiente.
MMA. 2015. Proposta de Plano Nacional de Recuperação da Vegetação Nativa: PLANAVEG. Brasília: Ministério do Meio Ambiente.
MMA. 2015. ZEE nos estados. Brasília: Ministério do Meio Ambiente.
Molion, Luiz Carlos Baldicero. 2003. Águas do Tocantins para o São Francisco. Ciência Hoje, v.33, n.197, p.58-61.
Monteiro, Fernanda Testa; Pereira, Doralice Barros; Del Gaudio, Rogata Soares. 2012. Os(as) apanhadores(as) de flores e o Parque Nacional das Sempre-Vivas: entre ideologias e territorialidades. Sociedade e Natureza, v.24, n.3, Sept./Dec.
Morato, R. G., Beisiegel, B. M., Ramalho, E. E., Campos, C. B., Boulhosa, R. L. P. 2013. Avaliação do risco de extinção da Onça-pintada. In: Avaliação do Estado de Conservação dos Carnívoros. Biodiversidade Brasileira, 3(1), 122-132.
Mosque, C.A.B. 2014. Nature as the greatest asset: challenges and prospects of voluntary conservation on private protected areas in Brazil. Rio de Janeiro: Forestry Institute, Federal Rural University of Rio de Janeiro. Doctoral thesis in Environmental Science and Forestry.
Motta, R.S. 2011. The national policy on climate change: regulatory and governance aspects. In: Motta, R.S. *et al.* (Eds.). Climate change in Brazil: economic, social and regulatory aspects. Brasília: IPEA, p.33-44.
Motta, Thiago. 2015. Presentation at the Seminar on the Cerrado Biome: Norms for Conservation and Sustainable Use, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.
MRE. 2015. Participação da Sociedade Civil no processo de preparação da contribuição nacionalmente determinada do Brasil ao novo acordo sob a Convenção-Quadro das Nações Unidas sobre Mudança do Clima. Brasília: Ministério das Relações Exteriores.
Mueller, Charles. 1983. Fronteira, frentes e a evolução recente da ocupação da força de trabalho rural no Centro-Oeste. Pesquisa e Planejamento Econômico, v.13, n.2, ago., p.619-660.
Mueller, Charles. 1993. Competitividade e potencial do crescimento da agricultura da região dos Cerrados. Brasília: Instituto Sociedade, População e Natureza; Departamento de Economia, Universidade de Brasilia.
Mueller, Charles. 1995. A sustentabilidade de expansão agrícola nos Cerrados. Brasília: ISPN. (Documento de Trabalho, 36).
Myers, Norman. 1988. Threatened biotas: 'Hotspots' in tropical forests. Environmentalist, v.8, p.187-208.
Myers, Norman. 1990. The biodiversity challenge: expanded Hotspots analysis. Environmentalist, v.10, p.243-256.

Myers, Norman. *et al.* 2000. Biodiversity Hotspots for conservation priorities. Nature, v. 403, p. 853-858.

Myrdal, Gunnar. 1957. Economic theory and underdeveloped regions. London: Methuen.

Nabout, J.C.; Oliveira, G.; Magalhães, M.R.; Terribile, L.C.; Almeida, F.A.S. 2011. Global climate change and the production of "pequi" fruits (Caryocar brasiliense) in the Brazilian Cerrado. Natureza and Conservação, v. 9, n. 1, p. 55-60.

Nascimento, Sander da Rocha; Nery, Jonas Teixeira. 2005. Variabilidade da precipitação pluvial e da temperatura do ar em Ribeirão Preto (SP). Anais do X Encontro de Geógrafos da América Latina, 20 a 26 de março, Universidade de São Paulo.

Nascimento, D.T. 2008. Fatores determinantes da gestão ambiental municipal: um estudo inicial. IV Encontro Nacional da ANPPAS, Brasília.

Nascimento, Diego T.F.; Araújo, Fernando M.; Ferreira Jr.; Laerte G. 2011. Análise dos padrões de distribuição espacial e temporal dos focos de calor no bioma Cerrado. Revista Brasileira de Cartografia, n.63, p.577-589.

Negret, A.; Taylor, J.; Soares, R.C.; Cavalcanti, R.B.; Johnson, C. 1984. Aves da região geopolítica do Distrito Federal (check list). Brasília: Ministério do Interior, Secretaria do Meio Ambiente.

Neiva, Ivany Câmara. 1984. O outro lado da Colônia: contradições e formas de resistência popular na colônia agrícola nacional de Goiás. 224p. Brasília: Universidade de Brasília, Departamento de Ciências Sociais. Dissertação de Mestrado.

Nepstad, D.; McGrath, D.; Stickler, C.; Alencar, A.; Azevedo, A.; Swette, B.; Bezerra, T. *et al.* 2014. Slowing Amazon deforestation through public policy and interventions in beef and soy supply chains. Science, v.344, n.6188, p.1118-1123.

Nepstad, D.; Schwartzman, S.; Bamberger, B.; Santilli, M.; Ray, D.; Schlesinger, P.; Lefebvre, R.; Alencar, A.; Prinz, E.; Fiske, G.; Rolla, A. 2006. Inhibition of Amazon deforestation and fire by parks and indigenous lands. Conservation Biology, n.20, p.65-73.

Nepstad, D.; Stickler, C.; Almeida, O. 2006. Globalization of the Amazon soy and beef industries: opportunities for conservation. Conservation Biology, v.20, n.6, p.1595-1603.

Nepstad, Daniel; *Stickler*, Cláudia M.; *Almeida*, Oriana T. 2008. *Globalização* das indústrias de soja e de gado na Amazônia: oportunidades para conservação. In: Rivero, S.; Jayme Jr., F.G. As Amazônias do Século XXI. Belém, Editora da UFPa, p.41-67.

Newton, Peter; Agrawal, Arun; Wollenberg, Lini. 2103. Enhancing the sustainability of commodity supply chains in tropical forest and agricultural landscapes. Global Environmental Change.

Nóbrega, Ig N.S.F. 2004. Crescimento e desenvolvimento da fruticultura irrigada no vale do São Francisco. Recife: Departamento de Economia e Adminstração, Universidade Católica de Pernambuco. Monografia.

Nobre, A.D. 2014. O futuro climático da Amazônia: relatório de avaliação científica. São José dos Campos: Articulación Regional Amazônica.

Nogueira, Mônica C.R. 2005. Quando o pequeno é grande: uma análise de projetos comunitários no Cerrado. São Paulo: Annablume.

Nogueira, Mônica C.R. 2009. Gerais a dentro e a fora: identidade e territorialidade entre Geraizeiros do Norte de Minas Gerais. Tese doutorado, Antropologia. Brasília: Universidade de Brasília.

Nogueira, Mônica; Fleischer, Soraya. 2005. Entre tradição e modernidade: potenciais e contradições da cadeia produtiva agroextrativista no Cerrado. Estudos Sociedade e Agricultura, v.13, n.1, abr., p.125-57.

Nogueira *et al.* 2010a. Diversidade de répteis Squamata e evolução do conhecimento científico faunístico no Cerrado. In: Diniz, I. R. *et al.* (Orgs.). Cerrado – conhecimento científico quantitativo como subsídio para ações de conservação. Brasília: Thesaurus. p. 333-375.

Nogueira, Cristiano *et al*. 2010b. Restricted-range fishes and the conservation of Brazilian freshwaters. PLoS ONE, v. 5, n. 6, e11390.

Noss Reed F., Platt William J., Sorrie Bruce A., Weakley Alan S., Means D. Bruce, Costanza Jennifer and Peet Robert K. 2015. How global biodiversity hotspots may go unrecognized: lessons from the North American Coastal Plain. Diversity and Distributions, (Diversity Distrib.) (2015) 21, 236–244

Nunes, M.R.; Philippi, Arlindo; Fernandes, V. 2012. Gestão Ambiental Municipal: objetivos, instrumentos e agentes. Revista Brasileira de Ciências Ambientais, n.23, p.66-72.

Observatório da Sociedade Civil. 2014. O dinheiro das ONGs: como as Organizações da Sociedade Civil sustentam suas atividades e porque isso é importante para o Brasil. Rio de Janeiro: Observatório da Sociedade Civil, ABONG.

Observatório do Código Florestal. 2015. Novo estudo mostra déficit de floresta nos biomas brasileiros.

OCDE. 2015. Governança dos recursos hídricos no Brasil. Paris: Organization for Economic Cooperation and Development.

OECD. 2015. OECD Environmental Performance Reviews: Brazil, 2015. Paris: OECD Publishing.

Oliveira-Filho, A.T.; Ratter, J.A. 1995. A study of the origin of central Brazilian forests by the analysis of plant species distribution patterns. Edinburgh Journal of Botany, v. 52, n. 2, p. 141-194.

Oliveira-Filho, A.T.; Ratter, James A. 2002. Vegetation physionomies and wood flora of the Cerrado Biome. In: Oliveira P.S.; Marquis, R.J. (Eds.). The Cerrados of Brazil: ecology and natural history of a neotropical savanna. New York: Columbia University Press, p.91-120.

Oliveira-Filho, Eduardo Cyrino de; Lima, Jorge Enoch Furquim Werneck. 2002. Potencial de impacto da agricultura sobre os recursos hídricos na região do Cerrado. Planaltina: EMBRAPA Cerrados.

Olivier, Eurico C. 2015. Salvem as bactérias! Extinção de biocompositores terá efeitos mais dramáticos do que o desaparecimento do urso panda ou do lobo-guará, diz biólogo. O Estado de São Paulo, 6 nov.Oliveira, Francisco. 2015. Dinâmica do desmatamento no Cerrado. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Oliveira, Guilherme *et al*. 2015. Conservation biogeography of the Cerrado's wild edible plants under climate change: linking biotic stability with agricultural expansion. American Journal of Botany, v.102, n.6, p.1-8.

Oliveira, Gustavo de L.T. 2015. Chinese and other foreign investments in the Brazilian soybean complex. Rotterdam: International Institute of Social Studies. (Bicas Working Paper, 9).

Oliveira, Gustavo de L.T. 2015. The geopolitics of Brazilian soybeans. Journal of Peasant Studies, 26 June.

Oliveira, Gustavo de L.T.; Schneider, Mindi. 2015. The politics of flexing soybeans in China and Brazil. Amsterdam: Transnational Institute Agrarian Justice Program. (Think Piece Series on Flex Crops and Commodities, 3).

Oliveira, Guilherme de C.; Fernandes Filho, E. I. 2013. Metodologia para delimitação de APPs em topos de morros segundo o novo Código Florestal brasileiro utilizando sistemas de informação geográfica. In: Simpósio Brasileiro de Sensoriamento Remoto - SBSR, 16, Foz do Iguaçu. Anais. Foz do Iguaçu: INPE, p.4443-4450.

Oliveira, G.; Lima-Ribeiro, M.S.; Terribile, L.C.; Dobrovolski, R.; Telles, M.P. D.C.; Diniz-Filho, J.A.F. 2015. Conservation biogeography of the cerrado's wild edible plants under climate change: linking biotic stability with agricultural expansion. American Journal of Botany 102:870–7.

Oliveira, P.S.: Marquis, R.J. (Eds.). 2002. The cerrados of Brazil: ecology and natural history of a neotropical savanna.

Olson, D. 2010. A decade of conservation by the Critical Ecosystem Partnership Fund 2001-2010: an independent evaluation of CEPF's global impact. Arlington: Conservation Earth for the Critical Ecosystem Partnership Fund.

Ondei, Vera. 2015. A nova onda do campo: a integração da lavoura com a pecuária e a floresta via revolucionar o agronegócio brasileiro. Dinheiro Rural, n.125, maio, p.34-42.

Ortega, Antonio César; Jesus, Clesio Marcelino de; Mouro, Marcela de Castro. 2009. Mecanização e emprego na cafeicultura do Cerrado Mineiro. Revista da ABET, v.8, n.2.

Osborne, Patrick L. 2000. Tropical Ecosystem and Ecological Concepts. Cambridge University Press.

Pádua, M.T.J. 1992. Conservação in situ: unidades de conservação. In: Alternativas de desenvolvimento dos Cerrados: manejo e conservação dos recursos naturais renováveis. Brasília: Funatura.

Paglia, A.P.; Fonseca, G.A.B.; Silva, J.M.C. 2008. A fauna brasileira ameaçada de extinção: síntese taxonômica e geográfica. In: Machado, A.B.M.; Drummond, G.M.; Paglia, A.P. (Orgs.). Livro vermelho da fauna brasileira ameaçada de extinção. Belo Horizonte: Ministério do Meio Ambiente; Fundação Biodiversitas, p.63-70.

Paglia, A.P. *et al.* 2012. Lista anotada dos mamíferos do Brasil. 2ed. Occasional Papers in Conservation Biology, n.6. Arlington: Conservation International.

Paiva, R. J. O.; Brites, R. S.; Machado, R. B. 2015. The role of protected areas in the avoidance of anthropogenic conversion in a high pressure region: a matching method analysis in the core region of the Brazilian Cerrado. PLoS One. Doi:10.1371/journal.pone.0132582.

Pauletti, Maucir; Schneider, Nereu; Mangolim, Olívio. 1997. Por que os guarani e os kaiová se suicidam: espaço e vida dos índios guarani e kaiová de Mato Grosso do Sul; histórico, contexto e análise do suicídio. Campo Grande: CIMI-MS.

PBMC. 2014. Primeiro relatório de avaliação nacional. Rio de Janeiro: Painel Brasileiro de Mudanças Climáticas.

PBMC. 2014. Impactos, vulnerabilidades e adaptação às mudanças climáticas. contribuição do grupo de trabalho 2 do painel brasileiro de mudanças climáticas ao primeiro relatório da avaliação nacional sobre mudanças climáticas. (E.D. Assad and A.R. Magalhães, Eds.). Universidade Federal do Rio de Janeiro, Rio de Janeiro.

Pereira, Ludivine Eloy Costa; Fernandes, Cecilia Ricardo. 2015. Manejo integrado do fogo (MIF) em sistemas agropastoris no Jalapão: primeiras considerações a partir de um trabalho de campo na comunidade quilombola de Mumbuca, Parque Estadual do Jalapão. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília.

Peron, A.J.; Evangelista, A.R. 2004. Degradação de pastagens em regiões do cerrado. Ciência e Agrotecnologia, v.28, n.3, p.655-661.

Perz, S., Brilhante, S.; Brown, F.; Caldas, M.; Ikeda, S.; Mendoza, E.; Overdevest, C.; Reis, V.; Reyes, J.F.; Rojas, D.; Schmink, M.; Souza, C.; Walker, R. 2008. Road building, land use and climate change: prospects for environmental governance in the Amazon. Philos Trans R Soc Lond B Biol Sci; 363(1498), p.1889-95.

Peres, J.R.R.; Oliveira, M.C.B.; Zoby, J.L. 2006. Eixo tecnológico da Ecorregião Centro-Oeste: agricultura familiar no Bioma Cerrado. In: Sousa, I.S.F. (Ed.). Agricultura familiar na dinâmica da pesquisa agropecuária. Brasília: EMBRAPA Informação Tecnológica, p.163-172.

Piccirillo, Antonio N. 1993. The metamorphosis: expected changes in the Brazilian debt-for-nature swap process and policy implications. Fordham International Law Journal, v.17, n.3, p.545-598.

Pinheiro-Machado, Cynthia *et al*. 2002. Brazilian bee surveys: state of knowledge, conservation and sustainable use. In: Kevan, P.; Imperatriz Fonseca, V.L. (Eds.). Pollinating bees: the conservation link between agriculture and nature. Brasília: Ministry of Environment, p.115-129.

Pinheiro, M.R. (Ed.). 2010. Recommendations for recognition and implementation of protected areas mosaics. Brasilia: GTZ.

Pinto, Maria Novaes (Org.). 1993. Cerrado: caracterização, ocupação e perspectivas. 2ed. Brasília: Editora UnB.

Pires, Mauro Oliveira. 1997. Desenvolvimento e sustentabilidade: um estudo sobre o Programa de Cooperação Nipo-Brasileira para o Desenvolvimento dos Cerrados (PRODECER). Brasília. Universidade de Brasília. Dissertação de Mestrado.

Pires, Mauro Oliveira; Scárdua, Fernando Paiva. 1998. Extrativismo vegetal no Cerrado. Brasília: Instituto Sociedade, População e Natureza.

Pires, Mauro Oliveira. 2014. A política de combate ao desmatamento na Amazônia e no Cerrado. In: Little, Paul E. (Org.). Os novos desafios da política ambiental brasileira. Brasília: Instituto Internacional de Educação do Brasil, p.206-235.

Pivello, Vânia Regina. 2005. Invasões biológicas no Cerrado brasileiro: efeitos da introdução de espécies exóticas sobre a biodiversidade. Brasília: Departamento de Ecologia, Universidade de Brasília.

Pivello, Vânia Regina. 2015. Critérios ecológicos para a proteção do Cerrado. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Pivello, V.R.; Coutinho, L.M. 1996. A qualitative successional model to assist in the management of Brazilian Cerrados. Forest Ecology and Management, 87, 127-138.

Pivello, V.R. 2005. Invasões biológicas no Cerrado brasileiro: efeitos da introdução de espécies exóticas sobre a biodiversidade. Ecologia. Info, n.33.

PBMC - Painel Brasileiro de Mudanças Climáticas. 2012. Sumário executivo do volume 1 – Base científica das mudanças climáticas. Contribuição do grupo de trabalho 1 para o 1º. Relatório de avaliação nacional do Painel Brasileiro de Mudanças Climáticas. Volume especial para a Rio+20. Rio de Janeiro: Painel Brasileiro de Mudanças Climáticas.

Prado, R.C.C. 2014. Dinâmica da migração e reprodução dos peixes na Região da Foz do Rio Abaeté, Alto São Francisco, MG. Lavras: Universidade Federal de Lavras. Dissertação de Mestrado em Ecologia Aplicada.

Porro, Roberto; Miccolis, Andrew. 2011. Políticas públicas para desenvolvimento agroflorestal no Brasil. Belém: ICRAF.

Portillo-Quintero, C.A.; Sánchez-Azofeifa, G.A. 2010. Extent and conservation of tropical dry forests in the Americas. Biological Conservation, n.143, p.144-155.

Proença, Carolyn E.B. *et al.* 2010. Regionalização, centros de endemismos e conservação com base em espécies de Angiospermas indicadoras da biodiversidade do Cerrado brasileiro. In: Diniz, I.R.; Marinho Filho, J.; Machado, R.B.; Cavalcante, R.B. (Ors.). Cerrado: conhecimento científico quantitativo com subsídio a sua conservação. Brasília: Editora Universidade de Brasília and Editora Thesaurus, v.1, p.88-146.

Pufal, Denise V. de Lima. 1999. Atividades agropecuárias e desenvolvimento sustentável no Cerrado. Brasília: Instituto Sociedade, População e Natureza.

Rada, Nicholas E. 2013. Assessing Brazil's Cerrado agricultural miracle: an update. Food Policy, v.38, p.146-155.

Rapini, A. *et al.* 2008. A flora dos campos rupestres da Cadeia do Espinhaço. Megadiversidade, v. 4, n. 1-2, p. 16-24.

Rasul, G.; Sharma, B. 2015. The nexus approach to water–energy–food security: an option for adaptation to climate change. Climate Policy, DOI: 10.1080/14693062.2015. 1029865.

Ratter, James A.; Ribeiro, José Felipe; Bridgewater, Sam. 1997. The Brazilian Cerrado vegetation and threats to its biodiversity. Annals of Botany, n.80, p.223-30.

Ratter, James A. *et al.* 2011. Analysis of the floristic composition of the Brazilian Cerrado vegetation IV: revision of the comparison of the woody vegetation of 367 areas and presentation of a revised data-base of 367 areas. Royal Botanic Garden Edinburgh. Disponível em: <http://cerrado.rbge.org.uk>. Acesso em: 30 abr. 2015

Raw, Anthony. 1998. Número de insetos, a riqueza de espécies e aspectos zoogeográficos nos Cerrados. Unpublished report for the Workshop - Ações Prioritárias para a Conservação do Cerrado e Pantanal. Brasília: Funatura, Conservation International, Universidade de Brasília, Fundação Biodiversitas.

Raw, Anthony 2007. A riqueza de espécies e aspectos zoogeográficos nos cerrados. In: MMA. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para conservação. Brasília: Ministério do Meio Ambiente, p.173-189.

Reatto, A., Correia, J. R., Spera, S. T., Sano, S. M. ; Almeida, S. P. de. 1998. Solos do bioma cerrado: aspectos pedológicos. Cerrado: ambiente e flora. Embrapa-CPAC Planaltina.

Reatto, A.; Martins, E.S. 2005. Classes de solo em relação aos controles da paisagem do bioma Cerrado. In: Scariot, Aldicir *et al.* (Orgs.). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente, p.47-59.

Rede Cerrado de Organizações Não Governamentais. 1999. Apoio à conservação e ao desenvolvimento do Cerrado: proposta de linhas de ação. Brasília.

Redford, K. 1994. The Edentates of the Cerrado. *Edetata 1:* (l).

Redford, K.H.; Fonseca, G.A.B. 1986. The role of gallery forests in the zoogeography of the Cerrado's non-volant mammalian fauna. Biotropica 18:125-135.

Rezende, G.C. 2003. Ocupação agrícola, estrutura agrária e mercado de trabalho rural no Cerrado: o papel do preço da terra, dos recursos naturais e das políticas públicas. In: Helfand, S.M.; Rezende G.C. (Orgs.). Região e espaço no desenvolvimento agrícola brasileiro. Rio de Janeiro : Instituto de Pesquisa Econômica Aplicada. p.173-212.

Ribeiro, José Felipe; Dias, T. (Orgs.). 2007. Diversidade e conservação da vegetação e da flora. In: MMA. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para conservação. Brasília: Ministério do Meio Ambiente. p.21-138.

Ribeiro, José Felipe; Walter, T.M.B. 1998. Fitofisionomias do bioma Cerrado. p.89-166. In: Sano, S.M.; Almeida, S.P. (Eds.). Cerrado: ambiente e flora. Embrapa Cerrados, Planaltina, DF.

Ribeiro, JoséFelipe; Walter, B.M.T. 2008. As principais fitofisionomias do bioma Cerrado. In: Sano, S.M.; Almeida, S.P.; Ribeiro, J.F. (Eds.). Cerrado: ecologia e flora. v.1. Brasília: Embrapa Informação Tecnológica. p.153-212.

Ribeiro, Ricardo Ferreira. 1999. Sistematização de experiências de ONGs relacionadas com práticas de desenvolvimento sustentável no Cerrado. Relatório preliminar para discussão. Brasília: Rede Cerrado de ONGs.

Ribeiro, Wagner Costa. 2008. Aqüífero Guarani: gestão compartilhada e soberania. Estudos Avançados, v.22, n.64.

Ribeiro-Silva, Suelma; Scariot, Aldicir; Medeiros, Marcelo Brilhante de. 2012. Uso e práticas de manejo de faveira (Dimorphandra gardneriana) na Região da Chapada do Araripe, Ceará: implicações ecológicas e sócio-econômicas. Biodiversidade Brasileira, v.2, n.2, 62-74

Rights and Resources Initiative. 2015. Protected areas and the land rights of indigenous peoples and local communities: current issues and future agenda.

Rocha, G.F. *et al.* 2011. Detecção de desmatamentos no bioma Cerrado entre 2002 e 2009: padrões, tendências e impactos. Revista Brasileira de Cartografia, 63(3), 341-349.

Rocha, G.F.; Ferreira, L.G.; Ferreira, N.C.; Ferreira, M.E. 2011. Deforestation detection in the Cerrado biome between 2002 and 2009: patterns, trends and impacts. Revista Brasileira de Cartografia, n. 63/03, p. 341-349.

Rocha, I.R.D.; Cavalcanti, R.B.; Marinho-Filho, J.S.; Araújo, A.B.; Kitayama, K. 1990. Fauna do Distrito Federal. In: Pinto, MariaNovaes (Ed.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília, p.185-191.

RODDEN M, F RODRIGUES, and S BESTELMEYER. 2004. Maned wolf (*Chrysocyon brachyurus*). Pp. 38-44, *in*: Canids: Foxes, Wolves, Jackals and Dogs. Status Survey and Conservation Action Plan (C Sillero-Zubiri, M Hoffmann and DW Macdonald, eds). IUCN/SSC Canid Specialist Group. Gland, Switzerland and Cambridge, UK.

Rodin, P. 2004. Distribuição da biomassa subterrânea e dinâmica de raízes finas em ecossistemas nativos e em pastagem plantada no Cerrado do Brasil Central. Brasília Universidade de Brasília. Dissertação de Mestrado em Ecologia.

Rodrigues, F. H. G., A. Hass, A. C. R. Lacerda, R. L. S. C. Grando, M. A. Bagno, A. M. R. Bezerra, and W. R. Silva. 2007. *Feeding habits of the maned wolf (Chrysocyon brachyurus) in the Brazilian cerrado*. Mastozoologia Neotropical 14: 37–51.

Rodrigues, D.M.T.; Miziara F. 2008. Expansão da fronteira agrícola: a intensificação da pecuária bovina no estado de Goiás. Pesquisa Agropecuária Tropical, 38(1), 14-20.

Rodrigues, Sílvio Carlos. 2003. Mapa geomorfológico do Cerrado aplicado a definição de ecorregiões. X Simpósio Brasileiro de Geografia Física Aplicada.

Roesler, *et al.* 2007. Atividade antioxidante de frutas do cerrado. Ciência e Tecnologia de Alimentos, v.27, n.1, p.53-60.

Romero, Simon. 2015. TIAA-CREF, U.S. investment giant, accused of land grabs in Brazil. New York Times, Nov. 16.Rosa, João Guimarães. 2001. Grande sertão: veredas. 19ed. Rio de Janeiro: Nova Fronteira.

RTRS. 2103. The Round Table on Responsible Soy (RTRS) High Conservation Value Area (HCVA) assessment and audit guide for category 2. Round Table on Responsible Soy.

Rudel, Thomas K.; Schneider, Laura; Uriarte, Marta. 2010. Forest transitions: an introduction. Land Use Policy, v.27, p.95-97.

Rylands, A.B.; Fonseca, M.T.; Machado, R.B.; Cavalcanti, R.B.B. 2004. Brazil. In: Spalding M.; Chape S.; Jenkins, M. (Eds.). The state of the world's protected areas. Cambridge: United Nations Environment Program; World Conservation Monitoring Centre.

Saaty, T.L. 1980. The Analytic Hierarchy Process. McGraw Hill International.

Salati, Enéas *et al.* 1978. Origem e distribuição das chuvas na Amazônia. Interciência, v.3, n.4, p.200-206.

Salati, Enéas (Coord.). 2009. Economia das mudanças climáticas no Brasil: estimativas da oferta de recursos hídricos no Brasil em cenários futuros de clima (2015-2100). Rio de Janeiro: Fundação Brasileira de Desenvolvimento Sustentável.

Salgado-Labouriau, M.L. 2005. Alguns aspectos sobre a Paleoecologia dos Cerrados. In: Scariot, A. *et al.* (Orgs.). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente, p.106-118.

Salgado, Gustavo S.M.; Galinkin, Maurício. 2004. Reserva da Biosfera do Cerrado, um patrimônio de Brasília: uma avaliação dos dez anos de criação da Reserva da Biosfera do Cerrado – DF. Brasília: Fundação Centro Brasileiro de Referência e Apoio Cultural (CEBRAC).

Salles, Paulo. 2015. O fortalecimento dos comitês de bacia hidrográfica e da gestão das águas do Cerrado. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Sampaio, Júlio. 2015. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.

Sanderson, E.W.; Redford, K.; Chetkiewicz, C.H.B.; Medellin, R.A.; Rabinowitz, A.; Robinson, J.G. and Taber, A.B. 2002. Planning to save a species: the jaguar as a model. Conservation Biology, 16: 58-72.

Santana, Sílvio. 2015. CNBB e o MROSC; notas para audiência sobre a MPC 684. 14 out.

Santilli, Juliana. 2009. Agrobiodiversidade e direitos dos agricultores. São Paulo: Peirópolis.

Sanderson, J. *et al.* 2003. Biodiversity Conservation Corridors: Considerations for Planning, Implementation and Monitoring of Sustainable Landscapes. Washington: Conservation International.

Sano, Edson E. *et al.* 2001. Assessing the spatial distribution of cultivated pastures in the Brazilian Savanna. Pasturas Tropicales, 22(3), 2-15.

Sano, Edson E. *et al.* 2008. Mapeamento semidetalhado (escala de 1:250.000) da cobertura vegetal antrópica do bioma Cerrado. Pesquisa Agropecuária Brasileira, 43(1), 153-156.

Sano, Edson E. *et al.* 2010. Land cover mapping of the tropical Savanna region in Brazil. Environmental Monitoring and Assessment, 166, 113-124.

Santos, P.R.; Pereira, G.; Rocha, L.C. 2014.Análise da distribuição espacial dos focos de queimadas para o bioma Cerrado (2002-2012). In: I Simpósio Mineiro de Geografia, 26 a 30 de maio de 2014, Alfenas, MG. Alfenas: Universidade Federal de Alfenas.

Santos, Michel. 2015. Presentation in the session on Development and Strengthening of Public Policies for the Cerrado, Seminar on Perspectives for a Sustainable Cerrado, Brasília, Ministry of Environment, June 18.

Sarmiento, G. 1983. The savannas of Tropical America. In Bourlière, F. (Ed.), Tropical Savannas. New York: Elsevier. (Ecosystems of the World Series, 13).
Saraiva, Nicholas Allain. 2010. Frutos do Cerrado: avaliação econômica do potencial produtivo. Brasília: Instituto Sociedade, População e Natureza (ISPN).
Sarney Filho, José. 2015. Presentation of the President of the Environment and Sustainable Development Commission of the Chamber of Deputies, Seminar on the Cerrado Biome: Norms for Conservation and Sustainable Use, Chamber of Deputies, National Congress, Brasília, Sept. 17-18.
Sawyer, Donald. 1997. Urbanization of the Brazilian frontier. In: Jones, Gavin W.; Visaria, Pravin (Eds.). Urbanization in large developing countries: China, Indonesia, Brazil, and India. Oxford: Clarendon Press. p.245-257.
Sawyer, Donald (Org.). 1999. Disponibilidade de água e fruticultura irrigada no Nordeste. Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald (Org.). 2001. Disponibilidade de água e fruticultura irrigada no Nordeste. Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald. 2002. População, meio ambiente e desenvolvimento sustentável no Cerrado. In: Hogan, Daniel *et al.* (Orgs.). Migração e meio ambiente no Centro-Oeste. Campinas: Núcleo de Estudos de População, UNICAMP, p.277-299.
Sawyer, Donald. 2004. Comercialização de produtos agroextrativistas: entradas e saídas. Apresentado no painel sobre Comercialização de Produtos Agroextrativistas, Semana do Meio Ambiente, Programa das Nações Unidas para o Desenvolvimento e Ministério do Meio Ambiente, Brasília, 2 jun.
Sawyer, Donald. 2007. Produtos florestais não madeireiros: verificação de realidade e de viés. Brasília: Centro de Desenvolvimento Sustentável, Universidade de Brasília.
Sawyer, Donald. (Coord.). 2007. Aspectos sócio-econômicos e políticas públicas. In: MMA. Biodiversidade do Cerrado e Pantanal: áreas e ações prioritárias para a conservação. Brasília: Ministério do Meio Ambiente. p.333-371. (Série Biodiversidade, 17).
Sawyer, Donald. 2008. Climate change, biofuels and eco-social impacts in the Brazilian Amazon and Cerrado. Philosophical Transactions of the Royal Society B, v.363, n.1498, p.1747-52.
Sawyer, Donald. 2009. Entraves regulatórios de atividades extrativistas na Amazônia: problemas, enfrentamento e soluções. Brasília. Nota Técnica elaborada para o Centro de Gestão de Estudos Estratégicos (CGEE), com apoio da Secretaria de Assuntos Estratégicos (SAE) da Presidência da República.
Sawyer, Donald. 2009. Fluxos de carbono na Amazônia e no Cerrado: um olhar socioecossistêmico. Sociedade e Estado, 24(1), 149-171.
Sawyer, Donald. 2009. Políticas públicas e impactos socioambientais no Cerrado. In: Galinkin, A..; Pondaag, M.C.M. (Orgs.). Capacitação de lideranças do Cerrado. 2ed. Brasília: TechnoPolitik, p.87-92.
Sawyer, Donald. 2011. Brazil, BRIC and BASIC positions on mitigation of global climate change. Brasília: ISPN. Textos Eco-Sociais 11-02.
Sawyer, Donald. 2011. O nome dos bois: lucratividade e legalidade da pecuária na fronteira.
Sawyer, Donald. 2011. A cooperação internacional na área ambiental no Brasil. Brasília: Instituto Sociedade, População e Natureza. (Texto Ecossocial 11-02).
Sawyer, Donald. 2011. Entraves regulatórios de atividades extrativistas na Amazônia: problemas, enfrentamentos e soluções. In: Pires, Tatiana de Carvalho; Bueno, Carmem (Eds.). Soerguimento tecnológico e econômico do extrativismo na Amazônia. Brasília: Centro de Gestão e Estudos Estratégicos. p.197-251.

Sawyer, Donald. 2013. Extrativismo e agroextrativismo: qual terminologia usar? Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald. 2013. Organização da produção ecossocial agroextrativa. Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald. 2014. Comercialização de produtos agroextrativistas: problemas e soluções. Sustentabilidade em Debate, v.5, n3, p.169-182.
Sawyer, Donald. 2015. REDD is dead. Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald. 2015. Ações ecossociais no Cerrado: compilação de propostas de processos participativos desde 1992. Brasília: Instituto Sociedade, População e Natureza.
Sawyer, Donald; Lobo, A.S. 2008. O papel da sociedade no estabelecimento de políticas públicas para as savanas. In: Faleiro, F.G.; Farias Neto, A.L. (Eds.). Savanas: desafios e estratégias para o equilíbrio entre sociedade, agronegócio e recursos naturais. Planaltina: Embrapa Cerrados, p.1153-1181.
Sawyer, Donald; Ree, Marco van der; Pires, Mauro. 1997. Comercialização de espécies vegetais nativas do Cerrado. In: Encontro Regional Centro-Oeste, 6. Os (des)caminhos do desenvolvimento rural brasileiro: anais. Brasília: APIPSA/UnB, p.149-169.
Scaramuzza, Carlos. 2015. Projeto Iniciativa Cerrado Sustentável (GEF Cerrado). Brasília: Secretaria de Biodiversidade e Florestas, Ministério do Meio Ambiente.
Scariot, Aldicir; Sousa-Silva, J.C.; Felfili, J.M. (Orgs). Cerrado: Ecologia, Biodiversidade e Conservação. Brasília: Ministério do Meio Ambiente, 2005.
Schlesinger, Sérgio. 2010. Onde pastar? O gado bovino no Brasil. Rio de Janeiro: FASE.
Schmidt, Isabel Belloni, Figueiredo, Isabel Benedetti; Sampaio, Maurício Bonesso (Orgs.). 2007. Capim dourado e buriti: práticas para garantir a sustentabilidade do artesanato. Brasília: PEQUI – Pesquisa e Conservação no Cerrado. 32p.
Schmidt, Isabel Belloni; Figueiredo, Isabel Benedetti; Scariot, Aldicir O. 2007. Ethnobotany and effects of harvesting on the population ecology of Syngonanthus nitens (Bong.) Ruhland (Eriocaulaceae), a NTFP from Jalapão Region, Central Brazil. Economic Botany, 61(1), p.73-85.
Schmitz, P.I. 1993. Caçadores e coletores antigos. In: Pinto, Maria Novaes (Org.). Cerrado: caracterização, ocupação e perspectivas. Brasília: Editora Universidade de Brasília.
Schubart, Herbert O.R. 1992. Planejando a ocupação sustentável do território nacional: o exemplo da Amazônia. Planejamento e Políticas Públicas, v.7, jun.
Segarra, D.V. 2011. Aportes ao conhecimento da flora e diversidade do bioma cerrado do Brasil e da Bolívia. 2011. 98 f. Dissertação (Mestrado em Botânica) -Universidade de Brasília, Brasília.
SFB. 2014. Relatório da Oficina "Promoção do manejo florestal comunitário e familiar no Cerrado Brasileiro". Brasília: Serviço Florestal Brasileiro, Ministério do Meio Ambiente.
Shames, S.; Clarvis, M.H.; Kissinger, G. (Eds.). 2014. Financing strategies for integrated landscape investment: synthesis report. Washington: EcoAgriculture Partners; Landscapes for People, Food and Nature Initiative.
Shiki, Shigeo *et al.* (Orgs.) 1997. Agricultura, meio ambiente e sustentabilidade do Cerrado brasileiro. Uberlândia: Universidade Federal de Uberlândia.
Silva, A.M.. 2008. Bases e fundamentos para a construção de uma metodologia participativa de capacitação para o agroextrativismo no Cerrado. In: Tokarski,

Donizete; Meirelles, Elisa M. Lima. (Orgs.). Metodologia participativa de capacitação em agroextrativismo no Cerrado. Brasília: ECODATA, v.1, p. 9-17.
Silva, A.M.; Aguiar, L. 2008. Avaliação coletiva do processo de construção da metodologia participativa de capacitação e sugestões para cursos em agroextrativismo no Cerrado. In: Tokarski, Donizete; Meirelles, E.M.L. (Orgs.). Metodologia participativa de capacitação em agroextrativismo no Cerrado. Brasília: ECODATA, v.1, p.67-92.
Silva, C.J. *et al.* 2015. Biodiversity and its drivers and pressures of change in the wetlands of the Upper Paraguay–Guaporé Ecotone, Mato Grosso (Brazil). Land Use Policy, n.47, p.163-178.
Silva, Daniel Lins *et al*. 2015. Diretrizes para a integração de dados de biodiversidade. Brasília: Ministério do Meio Ambiente.
Silva, J. 1995. Biogeographic analysis of the South American Cerrado avifauna. Steenstrupia 21:49–67.
Silva, J.A. *et al.* 2008. Identificação de áreas insubstituíveis para conservação da cadeia do Espinhaço, estados de Minas Gerais e Bahia, Brasil. Megadiversidade, v.4, n.1-2, p.248-270.
Silva, José Francisco Graziano da. 1981. Progresso técnico e relações de trabalho na agricultura. São Paulo: Hucitec.
Silva, José Maria Cardoso. 1997. Endemic bird species and conservation in the Cerrado region, South America. Biodiversity and Conservation, n.6, p.435-450
Silva, José Maria Cardoso; Bates, J.M. 2002. Biogeographic patterns and conservation in the South American Cerrado: a tropical savanna Hotspot. BioScience, v. 52, n. 3, p. 225-233.
Silva, José Maria Cardoso; Santos, M.P.D. 2005. A importância relativa dos processos biogeográficos na formação da avifauna do Cerrado e de outros biomas brasileiros. In: Scariot, Aldicir *et al.* (Orgs.). Cerrado: ecologia, biodiversidade e conservação. Brasília: Ministério do Meio Ambiente. p.219-233.
Silva, S.D.; Pietrafesa, J.P.; Franco, J.L.A.; Drummond, J. A.; Tavares, G.G. (Orgs.). 2013. Fronteira Cerrado: sociedade e natureza no Oeste do Brasil. Goiânia: Editora da PUC Goiás; Gráfica e Editora América.
Silva, Carlos Eduardo Mazzetto. 2009. O Cerrado em disputa: apropriação global e resistências locais. Brasília: CONFEA. 264p. (Série Pensar o Brasil e Construir o Futuro da Nação).
Silva, Elaine Barbosa da. 2013. A dinâmica socioespacial e as mudanças na cobertura e uso da terra no bioma Cerrado. Goiânia: Universidade Federal de Goiás. Tese de Doutorado.
Silveira, C.S.; Silva, V.V. 2010. Dinâmicas de regeneração, degeneração e desmatamento da vegetação provocadas por fatores climáticos e geomorfológicos: uma análise geoecológica através de SIG. Revista Árvore, 34(6), 1025-1034.
Simon, M. F., Grether, R., de Queiroz, L. P., Skema, C., Pennington, R. T., and Hughes, C. E. 2009. Recent assembly of the cerrado, a neotropical plant diversity Hotspot, by in situ evolution of adaptations to fire. Proceedings of the National Academy of Sciences of the United States of America 106:20359–64.
Siqueira, M.F.; Peterson, A.T. 2003. Consequences of global climate change for geographic distributions of cerrado tree species. Biota Neotropica, v. 3, n. 2.
Siqueira, Jaime Garcia. 2000. A organização Timbira e a "Rede Frutos do Cerrado". In: Ricardo, Carlos Alberto (Ed.). Povos indígenas do Brasil, 1996-2000. São Paulo: Instituto Socioambiental.

Smith, Paul *et al.* 2011. Nuevos registros de Gymnophthalmidae (reptilia: sauria) en la reserva Natural Laguna Blanca, Departamento San Pedro, Paraguay y una clave para las especies paraguayas. Nótulas Faunísticas - Segunda Serie (Fundación de Historia Natural Félix de Azara), n. 81, p. 1-6.

Smith, Paul *et al.* 2014. First record of the globally-threatened Cerrado endemic snake Philodryas livida (Amaral, 1923) (Serpentes, Dipsadidae) from Paraguay, and the importance of the Reserva Natural Laguna Blanca to its conservation. Cuad. herpetol., v. 28, n. 2, p. 169-171.

Sparovek, Gerd *et al.* 2011. A revisão do Código Florestal Brasileiro. Novos Estudos, v. 89, p.111-135.

Spichiger, Rodolphe *et al.* 2011. Claves de identificación para las familias de angiospermas de Paraguay. Flora del Paraguay, Serie especial n. 8, p. 1-247.

Soares-Filho, Britaldo *et al.*2010. Role of Brazilian Amazon protected areas in climate change mitigation. Proceedings of the National Academy of Sciences USA; Jun. 15; v.107,n.24, p.10821-10826.

Soares-Filho, Britaldo *et al.* 2014. Cracking Brazil's forest code. Science, v.344, n.6182, p.363-364.

Souza, Evie dos Santos de. 2006. Biodiversidade do bioma Cerrado. Brasília: Agência de Informação EMBRAPA.

Stern, David. 2004. The rise and fall of the environmental Kuznets curve. World Development, v.32, n.8, p.1419-1439.

Stolf, R.; Piedade, S.M.S.; Silva, J.R.; Silva, L.C.F.; Maneiro, M.A. 2012. Water transfer from São Francisco River to semiarid Northeast of Brazil: technical data, environmental impacts, survey of opinion about the amount to be transferred. Engenharia Agrícola, v.32, p.998-1010.

Strassburg, Bernardo B.N.; Latawiec, Agnieszka E.; Barioni, Luis G.; Nobre, Carlos A.; Silva, Vanderley P.; Valentim, Judson F.; Vianna, Murilo; Assad, Eduardo D. 2014. When enough should be enough: improving the use of current agricultural lands could meet production demands and spare natural habitats in Brazil. Global Environmental Change, v.28, p. 84-97.

Sudradjat, A.; Brubaker, K.L.; Dirmeyer, K.L. 2002. Precipitation source/sink connections between the Amazon and La Plata river basins. American Geophysical Union, Fall Meeting, Abstract #H11A-0830.

Supply Change/Forest Trends. 2015. Firm commitments: tracking company endorsers of the New York Declaration on Forests. Washington: Forest Trends.

Teixeira, Wellington. 2015. Companhia Nacional de Abastecimento. Presentation at the Seminário Bioma Cerrado: Normas de Conservação e Uso Sustentável, Câmara dos Deputados, Brasília, Sept. 17-18.

Thomas, C., *et al.* 2004. Extinction risk from climate change. Nature, n.427, p.145–148.

Tisdell, C. 2001. Globalisation and sustainability: environmental Kuznets curve and the WTO. Ecological Economics, v.39, n.2, p.185-196.

Torres, H.; Moreno, A.; Justiniano, H. Nomination of Noel Kempff Mercado National Park by the Republic of Bolivia for inclusion in the World Heritage List of Natural Site. La Paz: National Protected Area Service, 1999.

Ukkola, Anna M. *et al.* 2015. Reduced streamflow in water-stressed climates consistent with CO_2 effects on vegetation. Nature Climate Change, Oct. 19.

UnB.. 2010. O nutritivo sabor do Cerrado. Brasília: Universidade de Brasilia.

Unger, Roberto Mangabeira. 2015. Pôr a mão nas feridas: país precisa tomar decisões para mudar. Folha de São Paulo, 18 out.

Valdujo, Paula H. 2011. Diversidade e distribuição de anfíbios no Cerrado: o papel dos fatores históricos e dos gradientes ambientais. São Paulo: Instituto de Biociências, Universidade de São Paulo, Tese (Doutorado em Ciências, Área de Ecologia),

Vankrunkelsven, Luc. 2006. Navios que se cruzam na calada da noite: soja sobre o oceano. Curitiba: Editora Gráfica Popular.

Versieux, L.M. *et al.* 2008. Bromeliaceae da Cadeia do Espinhaço. Megadiversidade, v.4, n.1-2, p.98-110.

Viana, L.T. 2009. O Programa Cerrado Sustentável: construindo políticas públicas. In: Galinkin, A.L.; Pondaag, M.C.M. (Orgs.). Capacitação de lideranças do Cerrado. 2ed. Brasília: TechnoPolitik. p.51-58.

Vieira, R.M.S.P. *et al.* 2015. Identifying areas susceptible to desertification in the Brazilian northeast. Solid Earth, n.6, p.347-360.

Villarroel, D. *et al.* 2009. Relationship between the woody cover and herbs richness in three Cerrado sensu lato physiognomies (Cerro Mutún, Santa Cruz, Bolivia). Ecología en Bolivia, v.44, n.2, p.83-98.

Villaroel, D.; Faria, Jair Eustáquio Quintino; Proença, Carolyn Elinore Barnes. 2014. One new and one long-lost species of Eugenia (Myrtaceae) from the Bolivian Cerrado. Novon, v.23, p.244-249.

Villas-Bôas, Jerônimo. 2012. Manual tecnológico: mel de abelhas sem ferrão. Brasília: Instituto Sociedade, População e Natureza (ISPN).

Walter, Bruno M.T. 2006. Fitofisionomias do bioma Cerrado: síntese terminológica e relações florísticas. Brasília: Insituto de Ciências Biológicas,Universidade de Brasília. Tese de Doutorado em Ecologia.

Warren, Harris G. 1949. Paraguay: an informal history. Norman: University of Oklahoma Press.

Wehrmann, Magda Eva; Duarte, Laura Maria G. 2002. Sojicultor: agente de transformação nos cerrados brasileiros. In: Duarte, L.M.G.; Theodoro, S. (Orgs.). Dilemas do Cerrado: entre o ecologicamente (in)correto e o socialmente (in)justo. Rio de Janeiro: Garamond.

Werneck, F.P. *et al.* 2009. Phylogeny, biogeography and evolution of clutch size in South American lizards of the genus Kentropyx (Squamata: Teiidae). Molecular Ecology, v.18.

Wood, J.R.I. (Ed.). 2011. Guía Darwin de las plantas de los cerrados de la Chiquitania. Santa Cruz: Museo de Historia Natural "Noel Kempff Mercado".

World Bank. 2012. Climate Investment Funds, Forest Investment Program: Brazil Investment Plan. Brasília: World Bank.

World Bank. 2015. The long road toward consensus on safeguards. Washington: World Bank. Aug. 11.

WWF. 1997. WWF 2000: The living planet campaign. Washington: World Wildlife Fund.

WWF. 2012. Areas prioritárias para a conservação do Cerrado e Pantanal. Brasilia: WWF.

WWF Brasil. 2000. Expansão Agrícola e Perda da biodiversidade no Cerrado: origens históricas e o papel do comércio internacional. Brasília: Color.

APPENDICES UPDATED IN FEBRUARY 2017

APPENDIX 1. LIST OF TRIGGER SPECIES

The list of Trigger species consists of terrestrial and freshwater species classified as Critically Endangered, Endangered, or Vulnerable per the International Union for Conservation of Nature (IUCN) as globally threatened and by Brazilian environmental authorities as nationally threatened (summarizing 976 threatened species), as well as rare fish and rare plant species (summarizing 649 rare species). The full list comprises 1,593 trigger species (32 species are common to both lists- threatened and rare species).

Table 1.1 consists of the Threatened fauna and their taxonomic classification and threat level (from both national and international assessments), Table 1.2 consists of Threatened Flora and their taxonomic classification and threat level (from both national and international assessments), Table 1.3 consists of Rare Plants species and their taxonomic family and Table 1.4 of Rare Fish and their taxonomic family.

Table 1.1. Threatened fauna

	Group	Class	Order	Family	Specie	National Red List	IUCN Red List
1	Aves	Aves	Pelecaniformes	ARDEIDAE	*Agamia agami*	-	VU
2	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Aguarunichthys tocantinsensis*	EN	-
3	Aves	Aves	Passeriformes	TYRANNIDAE	*Alectrurus risora*	-	VU
4	Aves	Aves	Passeriformes	TYRANNIDAE	*Alectrurus tricolor*	VU	VU
5	Amphibia	Amphibia	Anura	AROMOBATIDAE	*Allobates brunneus*	CR	LC
6	Amphibia	Amphibia	Anura	AROMOBATIDAE	*Allobates goianus*	EN	DD
7	Mammalia	Mammalia	Primates	ATELIDAE	*Alouatta ululata*	EN	EN
8	Aves	Aves	Psittaciformes	PSITTACIDAE	*Amazona vinacea*	VU	EN
9	Reptilia	Reptilia	Squamata	TEIIDAE	*Ameiva parecis*	EN	-
10	Reptilia	Reptilia	Squamata	AMPHISBANIDAE	*Amphisbaena uroxena*	EN	-
11	Invertebrados	Arachnida	Scorpiones	BUTHIDAE	*Ananteris infuscata*	EN	-
12	Peixes	Actinopterygii	Siluriformes	ANCISTRINAE	*Ancistrus cryptophthalmus*	EN	
13	Peixes	Actinopterygii	Siluriformes	ANCISTRINAE	*Ancistrus formoso*	VU	
14	Peixes	Actinopterygii	Siluriformes	ANCISTRINAE	*Ancistrus minutus*	EN	
15	Reptilia	Reptilia	Squamata	LEIOSAURIDAE	*Anisolepis undulatus*	-	VU
16	Aves	Aves	Psittaciformes	PSITTACIDAE	*Anodorhynchus glaucus*	-	CR

17	Aves	Aves	Psittaciformes	PSITTACIDAE	*Anodorhynchus hyacinthinus*	-	VU
18	Aves	Aves	Passeriformes	MOTACILLIDAE	*Anthus nattereri*	VU	VU
19	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Aphyocheirodon hemigrammus*	VU	-
20	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Apostolepis serrana*	EN	-
21	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Apostolepis striata*	EN	-
22	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Astyanax trierythropterus*	-	VU
23	Invertebrados	Arachnida	Araneae	THERAPHOSIDAE	*Avicularia diversipes*	EN	-
24	Invertebrados	Arachnida	Araneae	THERAPHOSIDAE	*Avicularia gamba*	CR	-
25	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Bachia bresslaui*	-	VU
26	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Bachia didactyla*	EN	-
27	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Bachia psamophila*	CR	-
28	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Bagropsis reinhardti*	VU	
29	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Baryancistrus niveatus*	CR	-
30	Peixes	Chondrichthyes	Rajiformes	NARCINIDAE	*Benthobatis kreffti*	-	VU
31	Mammalia	Mammalia	Artiodacyla	CERVIDAE	*Blastocerus dichotomus*	VU	VU
32	Amphibia	Amphibia	Anura	HYLIDAE	*Bokermannohyla izecksohni*	-	CR
33	Invertebrados	Arachnida	Araneae	PRODIDOMIDAE	*Brasilomma enigmatica*	EN	-
34	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Brycon gouldingi*	EN	-
35	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Brycon nattereri*	VU	-
36	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Brycon orbignyanus*	EN	-
37	Peixes	Actinopterygii	Characiformes	BRYCONIDAE	*Brycon orthotaenia*	-	VU
38	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Calamodontophis ronaldoi*	EN	EN
39	Aves	Aves	Charadriiformes	SCOLOPACIDAE	*Calidris pusilla*	EN	NT
40	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Calyptommatus confusionibus*	-	EN
41	Invertebrados	Insecta	Ephemeroptera	BAETIDAE	*Camelobaetidius maranhensis*	VU	-
42	Invertebrados	Insecta	Ephemeroptera	BAETIDAE	*Camelobaetidius spinosus*	VU	-
43	Invertebrados	Insecta	Coleoptera	SCARABAEIDAE	*Canthon corpulentus*	VU	VU
44	Invertebrados	Insecta	Coleoptera	SCARABAEIDAE	*Canthon quadripunctatus*	VU	VU
45	Aves	Aves	Piciformes	CAPITONIDAE	*Capito dayi*	-	VU
46	Invertebrados	Bivalvia	Unionoida	HYRIIDAE	*Castalia martensi*	-	VU

47	Invertebrados	Insecta	Anisoptera	AESHNIDAE	*Castoraeschna januaria*	VU	-
48	Aves	Aves	Piciformes	PICIDAE	*Celeus obrieni*	VU	EN
49	Aves	Aves	Passeriformes	THAMNOPHILIDAE	*Cercomacra ferdinandi*	VU	VU
50	Invertebrados	Arachnida	Amblypygi	CHARINIDAE	*Charinus eleonorae*	CR	-
51	Invertebrados	Arachnida	Amblypygi	CHARINIDAE	*Charinus troglobius*	CR	-
52	Peixes	Actinopterygii	Siluriformes	HEPTAPTERIDAE	*Chasmocranus brachynema*	EN	
53	Mammalia	Mammalia	Carnivora	CANIDAE	*Chrysocyon brachyurus*	VU	NT
54	Invertebrados	Insecta	Coleoptera	CARABIDAE	*Coarazuphium bezerra*	VU	-
55	Invertebrados	Insecta	Coleoptera	CARABIDAE	*Coarazuphium pains*	EN	-
56	Invertebrados	Insecta	Coleoptera	CARABIDAE	*Coarazuphium tessai*	CR	-
57	Aves	Aves	Columbiformes	COLUMBIDAE	*Columbina cyanopis*	CR(PEX)	CR
58	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Conorhynchos conirostris*	EN	-
59	Aves	Aves	Passeriformes	THRAUPIDAE	*Conothraupis mesoleuca*	EN	CR
60	Peixes	Actinopterygii	Siluriformes	HYPOPTOPOMATINAE	*Corumbataia britskii*	VU	
61	Aves	Aves	Passeriformes	THRAUPIDAE	*Coryphaspiza melanotis*	EN	VU
62	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Creagrutus varii*	VU	
63	Peixes	Actinopterygii	Perciformes	CICHLIDAE	*Crenicichla cyclostoma*	CR	-
64	Peixes	Actinopterygii	Perciformes	CICHLIDAE	*Crenicichla jegui*	EN	-
65	Invertebrados	Malacostraca	Decapoda	PALAEMONIDAE	*Cryphiops brasiliensis*	-	CR
66	Aves	Aves	Tinamiformes	TINAMIDAE	*Crypturellus noctivagus zabele*	VU	-
67	Aves	Aves	Passeriformes	TYRANNIDAE	*Culicivora caudacuta*	-	VU
68	Invertebrados	Insecta	Lepidoptera	PIERIDAE	*Cunizza hirlanda planasia*	VU	-
69	Aves	Aves	Passeriformes	ICTERIDAE	*Curaeus forbesi*	VU	EN
70	Invertebrados	Insecta	Lepidoptera	LYCAENIDAE	*Cyanophrys bertha*	-	VU
71	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Cynolebias boitonei*	-	VU
72	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Cynolebias constanciae*	-	VU
73	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Cynolebias griseus*	CR	-
74	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Cynolebias leptocephalus*	CR	-
75	Aves	Aves	Passeriformes	DENDROCOLAPTIDAE	*Dendrocolaptes medius*	VU	-
76	Invertebrados	Insecta	Coleoptera	SCARABAEIDAE	*Dichotomius eucranioides*	EN	EN

77	Mammalia	Mammalia	Rodentia	DINOMYIDAE	*Dinomys branickii*	-	VU
78	Invertebrados	Diplopoda	Polydesmida	CHELODESMIDAE	*Dioplosternus salvatrix*	VU	-
79	Invertebrados	Bivalvia	Unionoida	HYRIIDAE	*Diplodon dunkerianus*	-	EN
80	Invertebrados	Bivalvia	Unionoida	HYRIIDAE	*Diplodon expansus*	-	VU
81	Invertebrados	Bivalvia	Unionoida	HYRIIDAE	*Diplodon fontaineanus*	-	EN
82	Invertebrados	Bivalvia	Unionoida	HYRIIDAE	*Diplodon pfeifferi*	-	VU
83	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Ditaxodon taeniatus*	VU	-
84	Invertebrados	Gastropoda	Stylommatophora	ORTHALICIDAE	*Drymaeus acervatus*	-	VU
85	Invertebrados	Gastropoda	Stylommatophora	ORTHALICIDAE	*Drymaeus henseli*	-	VU
86	Peixes	Actinopterygii	Gymnotiformes	STERNOPYGIDAE	*Eigenmannia vicentespelaea*	VU	
87	Invertebrados	Insecta	Anisoptera	LIBELLULIDAE	*Elasmothemis schubarti*	EN	-
88	Aves	Aves	Caprimulgiformes	CAPRIMULGIDAE	*Eleothreptus candicans*	-	EN
89	Invertebrados	Insecta	Odonata	LIBELLULIDAE	*Elga newtonsantosi*	-	CR
90	Invertebrados	Insecta	Odonata	LIBELLULIDAE	*Erythrodiplax acantha*	-	CR
91	Invertebrados	Arachnida	Palpigradi	EUKOENENIIDAE	*Eukoenenia maquinensis*	CR	-
92	Invertebrados	Arachnida	Palpigradi	EUKOENENIIDAE	*Eukoenenia sagarana*	CR	-
93	Invertebrados	Arachnida	Palpigradi	EUKOENENIIDAE	*Eukoenenia virgemdalapa*	EN	-
94	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Euryoryzomys lamia*	EN	EN
95	Invertebrados	Insecta	Lepidoptera	PAPILIONIDAE	*Eurytides iphitas*	-	VU
96	Mammalia	Mammalia	Chiroptera	FURIPTERIDAE	*Furipterus horrens*	VU	LC
97	Aves	Aves	Passeriformes	SCLERURIDAE	*Geositta poeciloptera*	EN	VU
98	Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Giupponia chagasi*	CR	-
99	Mammalia	Mammalia	Chiroptera	PHYLLOSTOMIDAE	*Glyphonycteris behnii*	VU	DD
100	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Gonyostomus gonyostomus*	-	CR
101	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Gyldenstolpia planaltensis*	EN	-
102	Invertebrados	Arachnida	Scorpiones	CHACTIDAE	*Hadrurochactas araripe*	CR	-
103	Invertebrados	Insecta	Lepidoptera	NYMPHALIDAE	*Hamadryas velutina browni*	EN	-
104	Aves	Aves	Accipitriformes	ACCIPITRIDAE	*Harpia harpyja*	VU	NT
105	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Hasemania crenuchoides*	VU	
106	Peixes	Actinopterygii	Siluriformes	DORADIDAE	*Hassar shewellkeimi*	VU	-

107	Invertebrados	Insecta	Lepidoptera	PAPILIONIDAE	*Heraclides himeros baia*	EN	-
108	Aves	Aves	Passeriformes	THAMNOPHILIDAE	*Herpsilochmus pectoralis*	-	VU
109	Invertebrados	Insecta	Zygoptera	HETERAGRIONIDAE	*Heteragrion petienses*	EN	-
110	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Heterodactylus lundii*	VU	-
111	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Hirinaba curytibana*	-	CR
112	Invertebrados	Insecta	Zygoptera	COENAGRIONIDAE	*Homeoura lindneri*	VU	-
113	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Hydrodynastes melanogigas*	EN	-
114	Reptilia	Reptilia	Testudines	CHELIDAE	*Hydromedusa maximiliani*	-	VU
115	Aves	Aves	Caprimulgiformes	CAPRIMULGIDAE	*Hydropsalis candicans*	VU	-
116	Aves	Aves	Passeriformes	DENDROCOLAPTIDAE	*Hylexetastes uniformis*	-	VU
117	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Hyphessobrycon coelestinus*	EN	
118	Invertebrados	Insecta	Coleoptera	VESPERIDAE	*Hypocephalus armatus*	VU	-
119	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias alternatus*	VU	-
120	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias auratus*	CR	-
121	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias brunoi*	VU	-
122	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias fasciatus*	VU	-
123	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias flammeus*	EN	-
124	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias fulminantis*	CR	-
125	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias ghisolfii*	CR	-
126	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias gibberatus*	VU	-
127	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias hellneri*	EN	-
128	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias magnificus*	EN	-
129	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias marginatus*	CR	-
130	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias multiradiatus*	CR	-
131	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias nielseni*	EN	-
132	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias notatus*	EN	-
133	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias rufus*	CR	-
134	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias similis*	VU	-
135	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias stellatus*	EN	-
136	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias tocantinensis*	CR	-

137	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias trilineatus*	VU	-
138	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias virgulatus*	CR	-
139	Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Iandumoema setimapocu*	EN	-
140	Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Iandumoema uai*	CR	-
141	Invertebrados	Arachnida	Araneae	CTENIDAE	*Isoctenus corymbus*	CR	-
142	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERINAE	*Ituglanis bambui*	CR	
143	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERINAE	*Ituglanis epikarsticus*	VU	
144	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Ituglanis mambai*	EN	-
145	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERINAE	*Ituglanis passensis*	VU	
146	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERINAE	*Ituglanis ramiroi*	VU	
147	Aves	Aves	Piciformes	GALBULIDAE	*Jacamaralcyon tridactyla*	-	VU
148	Invertebrados	Insecta	Lepidoptera	RIODINIDAE	*Joiceya praeclarus*	CR	EN
149	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Juscelinomys candango*	CR(PEX)	EX
150	Reptilia	Reptilia	Squamata	TEIIDAE	*Kentropyx vanzoi*	VU	-
151	Mammalia	Mammalia	Rodentia	CAVIIDAE	*Kerodon acrobata*	VU	DD
152	Mammalia	Mammalia	Rodentia	CAVIIDAE	*Kerodon rupestris*	VU	LC
153	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Kolpotocheirodon theloura*	VU	-
154	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Kunsia fronto*	-	EN
155	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Lamontichthys avacanoeiro*	EN	-
156	Aves	Aves	Gruiformes	RALLIDAE	*Laterallus xenopterus*	-	VU
157	Mammalia	Mammalia	Carnivora	FELIDAE	*Leopardus colocolo*	VU	NT
158	Mammalia	Mammalia	Carnivora	FELIDAE	*Leopardus guttulus*	VU	-
159	Mammalia	Mammalia	Carnivora	FELIDAE	*Leopardus tigrinus*	EN	VU
160	Mammalia	Mammalia	Carnivora	FELIDAE	*Leopardus wiedii*	VU	NT
161	Aves	Aves	Passeriformes	DENDROCOLAPTIDAE	*Lepidocolaptes wagleri*	EN	-
162	Reptilia	Reptilia	Squamata	AMPHISBANIDAE	*Leposternon kisteumacheri*	VU	-
163	Mammalia	Mammalia	Chiroptera	PHYLLOSTOMIDAE	*Lonchophylla dekeyseri*	EN	NT
164	Mammalia	Mammalia	Chiroptera	PHYLLOSTOMIDAE	*Lonchorhina aurita*	VU	LC
165	Peixes	Actinopterygii	Characiformes	GLANDULOCAUDINAE	*Lophiobrycon weitzmani*	EN	
166	Peixes	Actinopterygii	Siluriformes	PSEUDOPIMELODIDAE	*Lophiosilurus alexandri*	VU	-

167	Aves	Aves	Apodiformes	TROCHILIDAE	*Lophornis gouldii*	VU	VU
168	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Loricaria coximensis*	CR	-
169	Mammalia	Mammalia	Carnivora	CANIDAE	*Lycalopex vetulus*	VU	LC
170	Invertebrados	Arachnida	Araneae	PRODIDOMIDAE	*Lygromma ybyguara*	CR	-
171	Invertebrados	Insecta	Coleoptera	CERAMBYCIDAE	*Macrodontia cervicornis*	-	VU
172	Invertebrados	Insecta	Anisoptera	LIBELLULIDAE	*Macrothemis tessellata*	VU	-
173	Invertebrados	Insecta	Lepidoptera	LYCAENIDAE	*Magnastigma julia*	EN	-
174	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Maratecoara formosa*	VU	-
175	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Maratecoara splendida*	VU	
176	Invertebrados	Insecta	Coleoptera	DYTISCIDAE	*Megadytes ducalis*	-	EX
177	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Megalobulimus fragilion*	-	EN
178	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Megalobulimus grandis*	-	CR
179	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Megalobulimus lopesi*	-	EN
180	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Megalobulimus parafragilior*	-	EN
181	Invertebrados	Gastropoda	Stylommatophora	STROPHOCHEILIDAE	*Megalobulimus proclivis*	-	CR
182	Amphibia	Amphibia	Anura	BUFONIDAE	*Melanophryniscus peritus*	-	CR
183	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus crixas*	VU	-
184	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus illuminatus*	VU	-
185	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus karaja*	VU	-
186	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus kayapo*	VU	-
187	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus kunzei*	VU	-
188	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus litteratus*	VU	-
189	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus pindorama*	VU	-
190	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus pinima*	EN	-
191	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus planaltinus*	VU	-
192	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus rubromarginatus*	VU	-
193	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus rutilicaudus*	VU	-
194	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus salmonicaudus*	VU	-
195	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus scalaris*	EN	-
196	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus ubirajarai*	VU	-

197	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Melanorivulus vittatus*	EN	-
198	Invertebrados	Insecta	Hymenoptera	APIDAE	*Melipona (Michmelia) rufiventris*	EN	-
199	Aves	Aves	Anseriformes	ANATIDAE	*Mergus octosetaceus*	CR	CR
200	Invertebrados	Arachnida	Araneae	PHOLCIDAE	*Metagonia diamantina*	CR	-
201	Invertebrados	Arachnida	Araneae	PHOLCIDAE	*Metagonia potiguar*	CR	-
202	Invertebrados	Insecta	Anisoptera	LIBELLULIDAE	*Micrathyria divergens*	VU	VU
203	Invertebrados	Insecta	Odonata	LIBELLULIDAE	*Micrathyria kleerekoperi*	-	CR
204	Invertebrados	Insecta	Odonata	LIBELLULIDAE	*Micrathyria pseudhypodidyma*	-	VU
205	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Microakodontomys transitorius*	EN	EN
206	Peixes	Actinopterygii	Siluriformes	PSEUDOPIMELODIDAE	*Microglanis robustus*	CR	-
207	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Microlepidogaster perforatus*	CR	-
208	Mammalia	Mammalia	Didelphimorphia	DIDELPHIDAE	*Monodelphis umbristriatus*	-	VU
209	Mammalia	Mammalia	Didelphimorphia	DIDELPHIDAE	*Monodelphis unistriatus*	-	CR
210	Aves	Aves	Accipitriformes	ACCIPITRIDAE	*Morphnus guianensis*	VU	NT
211	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Mylesinus paucisquamatus*	EN	-
212	Peixes	Actinopterygii	Characiformes	SERRASALMIDAE	*Myleus tiete*	EN	-
213	Mammalia	Mammalia	Pilosa	MYRMECOPHAGIDAE	*Myrmecophaga tridactyla*	VU	VU
214	Mammalia	Mammalia	Chiroptera	NATALIDAE	*Natalus macrourus*	VU	-
215	Aves	Aves	Cuculiformes	CUCULIDAE	*Neomorphus geoffroyi*	VU	VU
216	Invertebrados	Insecta	Lepidoptera	RIODINIDAE	*Nirodia belphegor*	CR	EN
217	Aves	Aves	Tinamiformes	TINAMIDAE	*Nothura minor*	EN	VU
218	Aves	Aves	Charadriiformes	SCOLOPACIDAE	*Numenius borealis*	-	CR
219	Invertebrados	Insecta	Lepidoptera	SPHINGIDAE	*Nyceryx mielkei*	CR	-
220	Invertebrados	Arachnida	Araneae	OCHYROCERATIDAE	*Ochyrocera ibitipoca*	EN	-
221	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Oligoryzomys rupestris*	EN	DD
222	Invertebrados	Arachnida	Araneae	THERAPHOSIDAE	*Oligoxystre diamantinensis*	EN	-
223	Mammalia	Mammalia	Artiodacyla	CERVIDAE	*Ozotoceros bezoarticus bezoarticus*	VU	-
224	Mammalia	Mammalia	Artiodacyla	CERVIDAE	*Ozotoceros bezoarticus leucogaster*	VU	-
225	Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Pachylospeleus strinatii*	EN	-
226	Peixes	Actinopterygii	Cyprinodontiformes	POECILIIDAE	*Pamphorichthys pertapeh*	CR	-

227	Mammalia	Mammalia	Carnivora	FELIDAE	*Panthera onca*	VU	NT
228	Invertebrados	Entognatha	Collembola	SMINTHURIDAE	*Pararrhopalites papaveroi*	EN	-
229	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Pareiorhaphis mutuca*	EN	-
230	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Pareiorhaphis nasuta*	CR	-
231	Peixes	Actinopterygii	Siluriformes	LORICARIIDAE	*Pareiorhaphis scutula*	EN	-
232	Invertebrados	Insecta	Lepidoptera	PAPILIONIDAE	*Parides burchellanus*	CR	NT
233	Aves	Aves	Galliformes	CRACIDAE	*Penelope ochrogaster*	VU	VU
234	Peixes	Actinopterygii	Cyprinodontiformes	POECILIIDAE	*Phallotorynus jucundus*	EN	-
235	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Phalotris multipunctatus*	EN	-
236	Reptilia	Reptilia	Squamata	DIPSADIDAE	*Philodryas livida*	VU	VU
237	Amphibia	Amphibia	Anura	HYLIDAE	*Phyllomedusa ayeaye*	-	CR
238	Mammalia	Mammalia	Rodentia	ECHIMYIDAE	*Phyllomys brasiliensis*	EN	EN
239	Invertebrados	Gastropoda	Pulmonata	PHYSIDAE	*Physa marmorata*	VU	LC
240	Peixes	Actinopterygii	Siluriformes	HEPTAPTERIDAE	*Pimelodella spelaea*	EN	
241	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Pimelodus halisodous*	VU	-
242	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Pimelodus joannis*	VU	-
243	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Pimelodus stewarti*	VU	-
244	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Pituna brevirostrata*	VU	
245	Reptilia	Reptilia	Squamata	GYMNOPHTHALMIDAE	*Placosoma cipoense*	EN	-
246	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Plesiolebias canabravensis*	VU	
247	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Plesiolebias xavantei*	EN	
248	Invertebrados	Gastropoda	Pulmonata	PLANORBIDAE	*Plesiophysa dolichomastix*	CR	-
249	Aves	Aves	Passeriformes	EMBERIZIDAE	*Poospiza cinerea*	-	VU
250	Mammalia	Mammalia	Cingulata	DASYPODIDAE	*Priodontes maximus*	VU	VU
251	Amphibia	Amphibia	Anura	CYCLORAMPHIDAE	*Proceratophrys moratoi*	EN	CR
252	Amphibia	Amphibia	Anura	CYCLORAMPHIDAE	*Proceratophrys sanctaritae*	CR	-
253	Peixes	Actinopterygii	Characiformes	PROCHILODONTIDAE	*Prochilodus vimboides*	VU	-
254	Aves	Aves	Passeriformes	COTINGIDAE	*Procnias nudicollis*	-	VU
255	Invertebrados	Arachnida	Pseudoscorpiones	CHTHONIIDAE	*Pseudochthonius biseriatus*	CR	-
256	Invertebrados	Diplopoda	Spirostreptida	SPIROSTREPTIDAE	*Pseudonannolene ambuatinga*	EN	-

257	Invertebrados	Diplopoda	Spirostreptida	SPIROSTREPTIDAE	*Pseudonannolene imbirensis*	EN	-
258	Invertebrados	Diplopoda	Spirostreptida	SPIROSTREPTIDAE	*Pseudonannolene tocaiensis*	CR	-
259	Invertebrados	Arachnida	Araneae	THERAPHOSIDAE	*Pterinopelma sazimai*	VU	-
260	Mammalia	Mammalia	Carnivora	MUSTELIDAE	*Pteronura brasiliensis*	VU	EN
261	Invertebrados	Gastropoda	Stylommatophora	CHAROPIDAE	*Ptychodon schuppi*	-	EN
262	Mammalia	Mammalia	Carnivora	FELIDAE	*Puma concolor*	VU	LC
263	Mammalia	Mammalia	Carnivora	FELIDAE	*Puma yagouarondi*	VU	-
264	Aves	Aves	Psittaciformes	PSITTACIDAE	*Pyrrhura perlata*	-	VU
265	Aves	Aves	Psittaciformes	PSITTACIDAE	*Pyrrhura pfrimeri*	EN	EN
266	Invertebrados	Gastropoda	Stylommatophora	CHAROPIDAE	*Radioconus goeldi*	-	CR
267	Invertebrados	Gastropoda	Stylommatophora	CHAROPIDAE	*Radioconus riochcoensis*	-	EN
268	Invertebrados	Gastropoda	Stylommatophora	CHAROPIDAE	*Radiodiscus amdenus*	-	EN
269	Invertebrados	Gastropoda	Stylommatophora	CHAROPIDAE	*Radiodiscus compactus*	-	VU
270	Aves	Aves	Piciformes	RAMPHASTIDAE	*Ramphastos ariel*	-	EN
271	Aves	Aves	Piciformes	RAMPHASTIDAE	*Ramphastos culminatus*	-	VU
272	Aves	Aves	Piciformes	RAMPHASTIDAE	*Ramphastos vitellinus*	-	VU
273	Peixes	Actinopterygii	Siluriformes	HEPTAPTERIDAE	*Rhamdiopsis krugi*	VU	-
274	Invertebrados	Insecta	Coleoptera	DYTISCIDAE	*Rhantus orbignyi*	-	EX
275	Invertebrados	Insecta	Anisoptera	AESHNIDAE	*Rhionaeschna eduardoi*	EN	-
276	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Rhipidomys tribei*	EN	-
277	Invertebrados	Arachnida	Scorpiones	BUTHIDAE	*Rhopalurus lacrau*	EN	-
278	Peixes	Actinopterygii	Siluriformes	DORADIDAE	*Rhynchodoras xingui*	EN	-
279	Invertebrados	Diplopoda	Polydesmida	CHELODESMIDAE	*Sandalodesmus stramineus*	VU	-
280	Mammalia	Mammalia	Primates	CEBIDAE	*Sapajus cay*	VU	-
281	Invertebrados	Chilopoda	Scolopendromorpha	SCOLOPENDRIDAE	*Scolopendropsis duplicata*	CR	-
282	Aves	Aves	Passeriformes	RHINOCRYPTIDAE	*Scytalopus novacapitalis*	EN	NT
283	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys boitonei*	VU	-
284	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys cholopteryx*	EN	
285	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys nigromaculatus*	VU	-
286	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys parallelus*	VU	-

287	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys punctulatus*	VU	-
288	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys santanae*	CR	-
289	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys zonatus*	CR	-
290	Invertebrados	Arachnida	Opiliones	ESCADABIIDAE	*Spaeleoleptes spaeleus*	EN	-
291	Invertebrados	Arachnida	Pseudoscorpiones	BOCHICIDAE	*Spelaeobochica allodentatus*	CR	-
292	Invertebrados	Arachnida	Pseudoscorpiones	BOCHICIDAE	*Spelaeobochica iuiu*	CR	-
293	Mammalia	Mammalia	Carnivora	CANIDAE	*Speothos venaticus*	VU	NT
294	Invertebrados	Arachnida	Opiliones	CRYPTOGEOBIIDAE	*Spinopilar moria*	CR	-
295	Invertebrados	Gastropoda	Littorinimorpha	POMATIOPSIDAE	*Spiripockia punctata*	EN	-
296	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila hypoxantha*	VU	LC
297	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila maximiliani*	CR	-
298	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila melanogaster*	VU	NT
299	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila melanops*	-	CR
300	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila nigrorufa*	-	VU
301	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila palustris*	VU	EN
302	Aves	Aves	Passeriformes	THRAUPIDAE	*Sporophila ruficollis*	VU	NT
303	Peixes	Actinopterygii	Siluriformes	PIMELODIDAE	*Steindachneridion amblyurum*	CR	-
304	Reptilia	Reptilia	Squamata	TROPIDURIDAE	*Stenocercus dumerilii*	VU	-
305	Invertebrados	Insecta	Lepidoptera	LYCAENIDAE	*Strymon ohausi*	EN	-
306	Peixes	Actinopterygii	Characiformes	CHARACIDAE	*Stygichthys typhlops*	EN	DD
307	Reptilia	Reptilia	Squamata	COLUBRIDAE	*Tantilla boipiranga*	-	VU
308	Aves	Aves	Tinamiformes	TINAMIDAE	*Taoniscus nanus*	EN	VU
309	Mammalia	Mammalia	Perissodactyla	TAPIRIIDAE	*Tapirus terrestris*	VU	VU
310	Mammalia	Mammalia	Artiodacyla	TAYASSUIDAE	*Tayassu pecari*	VU	VU
311	Peixes	Actinopterygii	Perciformes	CICHLIDAE	*Teleocichla cinderella*	EN	-
312	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Thalpomys cerradensis*	VU	LC
313	Mammalia	Mammalia	Rodentia	CRICETIDAE	*Thalpomys lasiotis*	EN	LC
314	Invertebrados	Gastropoda	Pulmonata	BULIMULIDAE	*Thaumastus lundi*	CR	-
315	Mammalia	Mammalia	Didelphimorphia	DIDELPHIDAE	*Thylamys karimii*	-	VU
316	Mammalia	Mammalia	Didelphimorphia	DIDELPHIDAE	*Thylamys macrurus*	EN	NT

317	Mammalia	Mammalia	Didelphimorphia	DIDELPHIDAE	*Thylamys velutinus*	VU	LC
318	Aves	Aves	Pelecaniformes	ARDEIDAE	*Tigrisoma fasciatum*	VU	LC
319	Aves	Aves	Tinamiformes	TINAMIDAE	*Tinamus tao*	VU	VU
320	Invertebrados	Arachnida	Araneae	THERAPHOSIDAE	*Tmesiphantes hypogeus*	CR	-
321	Mammalia	Mammalia	Cingulata	DASYPODIDAE	*Tolypeutes tricinctus*	EN	VU
322	Invertebrados	Gastropoda	Stylommatophora	ORTHALICIDAE	*Tomigerus gibberulus*	-	EX
323	Invertebrados	Gastropoda	Stylommatophora	ORTHALICIDAE	*Tomigerus turbinatus*	-	EX
324	Invertebrados	Malacostraca	Decapoda	TRICHODACTYLIDAE	*Trichodactylus crassus*	-	EN
325	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Trichomycterus dali*	VU	-
326	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Trichomycterus itacarambiensis*	CR	-
327	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Trichomycterus novalimensis*	EN	-
328	Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Trichomycterus rubbioli*	VU	-
329	Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Trigonectes strigabundus*	EN	-
330	Mammalia	Mammalia	Rodentia	ECHIMYIDAE	*Trinomys moojeni*	EN	EN
331	Mammalia	Mammalia	Rodentia	ECHIMYIDAE	*Trinomys yonenagae*	EN	EN
332	Invertebrados	Arachnida	Scorpiones	BUTHIDAE	*Troglorhopalurus translucidus*	EN	-
333	Invertebrados	Maxillopoda	Cyclopoida	CYCLOPIDAE	*Tropocyclops federensis*	-	VU
334	Invertebrados	Maxillopoda	Cyclopoida	CYCLOPIDAE	*Tropocyclops nananae*	-	VU
335	Reptilia	Reptilia	Squamata	TYPHLOPIDAE	*Typhlops amoipira*	EN	DD
336	Aves	Aves	Accipitriformes	ACCIPITRIDAE	*Urubitinga coronata (Buteogallus coronatus)*	EN	EN
337	Aves	Aves	Passeriformes	DENDROCOLAPTIDAE	*Xiphocolaptes falcirostris*	VU	VU
338	Invertebrados	Gastropoda	Stylommatophora	HELICODISCIDAE	*Zilchogyra paulistana*	-	CR
339	Invertebrados	Insecta	Lepidoptera	HESPERIIDAE	*Zonia zonia diabo*	EN	-

Table 1.2. Threatened flora

	Group	Family	Specie	Brazilian Red List status	IUCN Red List status
1	Plantas	ACANTHACEAE	*Dyschoriste lavandulacea*	EN	
2	Plantas	ACANTHACEAE	*Justicia ramulosa*	VU	
3	Plantas	ACANTHACEAE	*Staurogyne elegans*	VU	
4	Plantas	ACANTHACEAE	*Stenandrium hatschbachii*	EN	
5	Plantas	ACANTHACEAE	*Stenandrium stenophyllum*	EN	
6	Plantas	ALISMATACEAE	*Sagittaria lancifolia*	VU	
7	Plantas	ALSTROEMERIACEAE	*Alstroemeria brasiliensis*	EN	
8	Plantas	ALSTROEMERIACEAE	*Alstroemeria orchidioides*	EN	
9	Plantas	ALSTROEMERIACEAE	*Alstroemeria penduliflora*	EN	
10	Plantas	AMARANTHACEAE	*Alternanthera decurrens*	EN	
11	Plantas	AMARANTHACEAE	*Alternanthera januarensis*	EN	
12	Plantas	AMARANTHACEAE	*Froelichiella grisea*	EN	
13	Plantas	AMARANTHACEAE	*Gomphrena paranensis*	VU	
14	Plantas	AMARANTHACEAE	*Pfaffia argyrea*	EN	
15	Plantas	AMARANTHACEAE	*Pfaffia minarum*	VU	
16	Plantas	AMARYLLIDACEAE	*Griffinia aracensis*	CR	
17	Plantas	AMARYLLIDACEAE	*Griffinia gardneriana*	EN	
18	Plantas	AMARYLLIDACEAE	*Griffinia liboniana*	EN	
19	Plantas	AMARYLLIDACEAE	*Griffinia nocturna*	CR	
20	Plantas	AMARYLLIDACEAE	*Habranthus irwinianus*	VU	
21	Plantas	AMARYLLIDACEAE	*Hippeastrum goianum*	EN	
22	Plantas	AMARYLLIDACEAE	*Hippeastrum leucobasis*	CR	
23	Plantas	AMARYLLIDACEAE	*Hippeastrum morelianum*	VU	
24	Plantas	AMARYLLIDACEAE	*Hippeastrum reginae*	EN	
25	Plantas	AMARYLLIDACEAE	*Zephyranthes candida*	EN	
26	Plantas	ANACARDIACEAE	*Schinopsis balansae*	EN	
27	Plantas	ANEMIACEAE	*Anemia trichorhiza*	VU	
28	Plantas	APIACEAE	*Eryngium scirpinum*	EN	
29	Plantas	APIACEAE	*Klotzschia rhizophylla*	EN	
30	Plantas	APOCYNACEAE	*Ditassa auriflora*	CR	
31	Plantas	APOCYNACEAE	*Ditassa cipoensis*	EN	
32	Plantas	APOCYNACEAE	*Ditassa cordeiroana*	EN	
33	Plantas	APOCYNACEAE	*Ditassa itambensis*	EN	
34	Plantas	APOCYNACEAE	*Gyrostelma oxypetaloides*	EN	
35	Plantas	APOCYNACEAE	*Hemipogon abietoides*	CR	
36	Plantas	APOCYNACEAE	*Hemipogon furlanii*	EN	
37	Plantas	APOCYNACEAE	*Hemipogon hatschbachii*	CR	
38	Plantas	APOCYNACEAE	*Hemipogon piranii*	CR	
39	Plantas	APOCYNACEAE	*Minaria bifurcata*	CR	
40	Plantas	APOCYNACEAE	*Minaria diamantinensis*	CR	
41	Plantas	APOCYNACEAE	*Minaria grazielae*	EN	
42	Plantas	APOCYNACEAE	*Minaria hemipogonoides*	CR	

43	Plantas	APOCYNACEAE	*Minaria inconspicua*	EN	
44	Plantas	APOCYNACEAE	*Minaria magisteriana*	EN	
45	Plantas	APOCYNACEAE	*Minaria polygaloides*	EN	
46	Plantas	APOCYNACEAE	*Minaria refractifolia*	VU	
47	Plantas	APOCYNACEAE	*Minaria semirii*	EN	
48	Plantas	APOCYNACEAE	*Oxypetalum ekblomii*	EN	
49	Plantas	APOCYNACEAE	*Prestonia solanifolia*	EN	
50	Plantas	AQUIFOLIACEAE	*Ilex prostrata*	CR	
51	Plantas	ARALIACEAE	*Schefflera gardneri*	EN	
52	Plantas	ARALIACEAE	*Schefflera glaziovii*	EN	
53	Plantas	ARAUCARIACEAE	*Araucaria angustifolia*	EN	CR
54	Plantas	ARECACEAE	*Acrocomia emensis*	VU	
55	Plantas	ARECACEAE	*Attalea barreirensis*	VU	
56	Plantas	ARECACEAE	*Attalea brasiliensis*	EN	
57	Plantas	ARECACEAE	*Butia capitata*	VU	
58	Plantas	ARECACEAE	*Butia leptospatha*	CR	
59	Plantas	ARECACEAE	*Butia microspadix*	VU	
60	Plantas	ARECACEAE	*Butia purpurascens*	EN	VU
61	Plantas	ARECACEAE	*Euterpe edulis*	VU	
62	Plantas	ARECACEAE	*Syagrus glaucescens*	VU	VU
63	Plantas	ARECACEAE	*Syagrus macrocarpa*	EN	EN
64	Plantas	ARECACEAE	*Syagrus mendanhensis*	CR	
65	Plantas	ASTERACEAE	*Acritopappus irwinii*	VU	
66	Plantas	ASTERACEAE	*Aldama corumbensis*	EN	
67	Plantas	ASTERACEAE	*Aldama filifolia*	EN	
68	Plantas	ASTERACEAE	*Aldama goyazii*	VU	
69	Plantas	ASTERACEAE	*Aldama linearifolia*	CR	
70	Plantas	ASTERACEAE	*Aldama vernonioides*	EN	
71	Plantas	ASTERACEAE	*Anteremanthus hatschbachii*	EN	
72	Plantas	ASTERACEAE	*Aspilia almasensis*	VU	
73	Plantas	ASTERACEAE	*Aspilia cordifolia*	EN	
74	Plantas	ASTERACEAE	*Aspilia cylindrocephala*	VU	
75	Plantas	ASTERACEAE	*Aspilia diamantinae*	EN	
76	Plantas	ASTERACEAE	*Aspilia diffusiflora*	VU	
77	Plantas	ASTERACEAE	*Aspilia eglerii*	CR	
78	Plantas	ASTERACEAE	*Aspilia espinhacensis*	EN	
79	Plantas	ASTERACEAE	*Aspilia jugata*	CR	
80	Plantas	ASTERACEAE	*Aspilia pereirae*	EN	
81	Plantas	ASTERACEAE	*Aspilia prostrata*	EN	
82	Plantas	ASTERACEAE	*Aspilia reticulata*	VU	
83	Plantas	ASTERACEAE	*Aspilia silphioides*	EN	
84	Plantas	ASTERACEAE	*Baccharis concinna*	VU	
85	Plantas	ASTERACEAE	*Baccharis elliptica*	EN	
86	Plantas	ASTERACEAE	*Baccharis lychnophora*	VU	
87	Plantas	ASTERACEAE	*Baccharis polyphylla*	VU	
88	Plantas	ASTERACEAE	*Baccharis pseudoalpestris*	VU	

89	Plantas	ASTERACEAE	*Calea abbreviata*	CR	
90	Plantas	ASTERACEAE	*Calea brittoniana*	CR	
91	Plantas	ASTERACEAE	*Calea gentianoides*	VU	
92	Plantas	ASTERACEAE	*Calea heteropappa*	EN	
93	Plantas	ASTERACEAE	*Chresta souzae*	EN	
94	Plantas	ASTERACEAE	*Chromolaena arrayana*	EN	
95	Plantas	ASTERACEAE	*Chromolaena costatipes*	EN	
96	Plantas	ASTERACEAE	*Chronopappus bifrons*	VU	
97	Plantas	ASTERACEAE	*Chrysolaena nicolackii*	VU	
98	Plantas	ASTERACEAE	*Dimerostemma annuum*	EN	
99	Plantas	ASTERACEAE	*Dimerostemma grazielae*	VU	
100	Plantas	ASTERACEAE	*Disynaphia ericoides*	EN	
101	Plantas	ASTERACEAE	*Disynaphia praeficta*	EN	
102	Plantas	ASTERACEAE	*Disynaphia variolata*	EN	
103	Plantas	ASTERACEAE	*Echinocoryne echinocephala*	EN	
104	Plantas	ASTERACEAE	*Eremanthus argenteus*	EN	
105	Plantas	ASTERACEAE	*Eremanthus polycephalus*	VU	
106	Plantas	ASTERACEAE	*Gochnatia rotundifolia*	VU	
107	Plantas	ASTERACEAE	*Gyptis vernoniopsis*	EN	
108	Plantas	ASTERACEAE	*Heterocondylus lysimachioides*	VU	
109	Plantas	ASTERACEAE	*Ichthyothere elliptica*	EN	
110	Plantas	ASTERACEAE	*Lepidaploa spixiana*	EN	
111	Plantas	ASTERACEAE	*Lessingianthus adenophyllus*	EN	
112	Plantas	ASTERACEAE	*Lessingianthus asteriflorus*	EN	
113	Plantas	ASTERACEAE	*Lessingianthus eitenii*	EN	
114	Plantas	ASTERACEAE	*Lessingianthus exiguus*	VU	
115	Plantas	ASTERACEAE	*Lessingianthus irwinii*	VU	
116	Plantas	ASTERACEAE	*Lessingianthus pumillus*	VU	
117	Plantas	ASTERACEAE	*Lessingianthus reitzianus*	VU	
118	Plantas	ASTERACEAE	*Lessingianthus rosmarinifolius*	EN	
119	Plantas	ASTERACEAE	*Lessingianthus souzae*	EN	
120	Plantas	ASTERACEAE	*Lessingianthus stoechas*	VU	
121	Plantas	ASTERACEAE	*Lessingianthus subcarduoides*	EN	
122	Plantas	ASTERACEAE	*Lessingianthus venosissimus*	EN	
123	Plantas	ASTERACEAE	*Lessingianthus westermanii*	EN	
124	Plantas	ASTERACEAE	*Lessingianthus zuccarinianus*	VU	
125	Plantas	ASTERACEAE	*Lomatozona artemisiifolia*	EN	
126	Plantas	ASTERACEAE	*Lulia nervosa*	EN	
127	Plantas	ASTERACEAE	*Lychnophora diamantinana*	EN	
128	Plantas	ASTERACEAE	*Lychnophora gardneri*	EN	
129	Plantas	ASTERACEAE	*Lychnophora granmogolensis*	EN	
130	Plantas	ASTERACEAE	*Lychnophora humillima*	CR	
131	Plantas	ASTERACEAE	*Lychnophora markgravii*	EN	
132	Plantas	ASTERACEAE	*Lychnophora martiana*	EN	
133	Plantas	ASTERACEAE	*Lychnophora mello-barretoi*	EN	
134	Plantas	ASTERACEAE	*Lychnophora pohlii*	EN	

135	Plantas	ASTERACEAE	*Lychnophora rosmarinifolia*	EN	
136	Plantas	ASTERACEAE	*Lychnophora sellowii*	EN	
137	Plantas	ASTERACEAE	*Lychnophora souzae*	CR	
138	Plantas	ASTERACEAE	*Lychnophora syncephala*	EN	
139	Plantas	ASTERACEAE	*Lychnophora tomentosa*	VU	
140	Plantas	ASTERACEAE	*Lychnophora villosissima*	EN	
141	Plantas	ASTERACEAE	*Lychnophoriopsis candelabrum*	EN	
142	Plantas	ASTERACEAE	*Lychnophoriopsis damazioi*	EN	
143	Plantas	ASTERACEAE	*Lychnophoriopsis hatschbachii*	EN	
144	Plantas	ASTERACEAE	*Mikania alvimii*	EN	
145	Plantas	ASTERACEAE	*Mikania argyreiae*	VU	
146	Plantas	ASTERACEAE	*Mikania cipoensis*	EN	
147	Plantas	ASTERACEAE	*Mikania glabra*	EN	
148	Plantas	ASTERACEAE	*Mikania glauca*	EN	
149	Plantas	ASTERACEAE	*Mikania hartbergii*	EN	
150	Plantas	ASTERACEAE	*Mikania hastato-cordata*	VU	
151	Plantas	ASTERACEAE	*Mikania itambana*	EN	
152	Plantas	ASTERACEAE	*Mikania neurocaula*	EN	
153	Plantas	ASTERACEAE	*Mikania premnifolia*	EN	
154	Plantas	ASTERACEAE	*Mikania viminea*	EN	
155	Plantas	ASTERACEAE	*Mikania warmingii*	EN	
156	Plantas	ASTERACEAE	*Minasia alpestris*	EN	
157	Plantas	ASTERACEAE	*Minasia pereirae*	EN	
158	Plantas	ASTERACEAE	*Minasia scapigera*	EN	
159	Plantas	ASTERACEAE	*Moquiniastrum hatschbachii*	VU	
160	Plantas	ASTERACEAE	*Moquiniastrum ramboi*	VU	
161	Plantas	ASTERACEAE	*Moquiniastrum sordidum*	VU	
162	Plantas	ASTERACEAE	*Piptolepis buxoides*	EN	
163	Plantas	ASTERACEAE	*Piptolepis imbricata*	CR	
164	Plantas	ASTERACEAE	*Piptolepis leptospermoides*	CR	
165	Plantas	ASTERACEAE	*Proteopsis argentea*	VU	
166	Plantas	ASTERACEAE	*Richterago angustifolia*	EN	
167	Plantas	ASTERACEAE	*Richterago arenaria*	VU	
168	Plantas	ASTERACEAE	*Richterago caulescens*	CR	
169	Plantas	ASTERACEAE	*Richterago conduplicata*	EN	
170	Plantas	ASTERACEAE	*Richterago elegans*	VU	
171	Plantas	ASTERACEAE	*Richterago hatschbachii*	EN	
172	Plantas	ASTERACEAE	*Richterago lanata*	EN	
173	Plantas	ASTERACEAE	*Richterago petiolata*	EN	
174	Plantas	ASTERACEAE	*Richterago polyphylla*	EN	
175	Plantas	ASTERACEAE	*Richterago riparia*	VU	
176	Plantas	ASTERACEAE	*Richterago stenophylla*	EN	
177	Plantas	ASTERACEAE	*Senecio gertii*	EN	
178	Plantas	ASTERACEAE	*Senecio hatschbachii*	EN	
179	Plantas	ASTERACEAE	*Stevia hilarii*	CR	
180	Plantas	ASTERACEAE	*Stevia leptophylla*	EN	

181	Plantas	ASTERACEAE	*Strophopappus bicolor*	EN	
182	Plantas	ASTERACEAE	*Strophopappus ferrugineus*	EN	
183	Plantas	ASTERACEAE	*Symphyopappus uncinatus*	EN	
184	Plantas	ASTERACEAE	*Wedelia macedoi*	CR	
185	Plantas	ASTERACEAE	*Wunderlichia cruelsiana*	EN	
186	Plantas	ASTERACEAE	*Wunderlichia senae*	EN	
187	Plantas	BEGONIACEAE	*Begonia apparicioi*	EN	
188	Plantas	BEGONIACEAE	*Begonia perdusenii*	EN	
189	Plantas	BIGNONIACEAE	*Adenocalymma dichilum*	EN	
190	Plantas	BIGNONIACEAE	*Anemopaegma arvense*	EN	
191	Plantas	BIGNONIACEAE	*Fridericia crassa*	VU	
192	Plantas	BIGNONIACEAE	*Handroanthus spongiosus*	EN	
193	Plantas	BIGNONIACEAE	*Jacaranda intricata*	CR	
194	Plantas	BIGNONIACEAE	*Tabebuia cassinoides*	EN	
195	Plantas	BIGNONIACEAE	*Zeyheria tuberculosa*	VU	VU
196	Plantas	BLECHNACEAE	*Blechnum heringeri*	VU	
197	Plantas	BROMELIACEAE	*Alcantarea duarteana*	EN	
198	Plantas	BROMELIACEAE	*Bromelia braunii*	CR	
199	Plantas	BROMELIACEAE	*Bromelia macedoi*	VU	
200	Plantas	BROMELIACEAE	*Deuterocohnia meziana*	VU	
201	Plantas	BROMELIACEAE	*Dyckia fosteriana*	EN	
202	Plantas	BROMELIACEAE	*Dyckia rariflora*	EN	
203	Plantas	BROMELIACEAE	*Dyckia reitzii*	EN	EN
204	Plantas	BROMELIACEAE	*Dyckia ursina*	CR	
205	Plantas	BROMELIACEAE	*Eduandrea selloana*	EN	
206	Plantas	BROMELIACEAE	*Encholirium biflorum*	CR	
207	Plantas	BROMELIACEAE	*Encholirium disjunctum*	CR	
208	Plantas	BROMELIACEAE	*Encholirium heloisae*	EN	
209	Plantas	BROMELIACEAE	*Encholirium irwinii*	CR	
210	Plantas	BROMELIACEAE	*Encholirium luxor*	EN	EN
211	Plantas	BROMELIACEAE	*Encholirium pedicellatum*	CR	
212	Plantas	BROMELIACEAE	*Encholirium scrutor*	EN	
213	Plantas	BROMELIACEAE	*Encholirium vogelii*	CR	
214	Plantas	BROMELIACEAE	*Lapanthus duartei*	EN	
215	Plantas	BROMELIACEAE	*Neoregelia leprosa*	VU	
216	Plantas	BROMELIACEAE	*Orthophytum humile*	CR	
217	Plantas	BROMELIACEAE	*Pitcairnia bradei*	CR	
218	Plantas	BROMELIACEAE	*Tillandsia crocata*	EN	
219	Plantas	BROMELIACEAE	*Vriesea diamantinensis*	EN	
220	Plantas	BROMELIACEAE	*Vriesea minarum*	EN	
221	Plantas	BROMELIACEAE	*Vriesea saxicola*	EN	
222	Plantas	CACTACEAE	*Arrojadoa eriocaulis*	EN	EN
223	Plantas	CACTACEAE	*Arthrocereus glaziovii*	EN	EN
224	Plantas	CACTACEAE	*Arthrocereus melanurus subsp. melanurus*	EN	
225	Plantas	CACTACEAE	*Arthrocereus melanurus subsp. odorus*	EN	
226	Plantas	CACTACEAE	*Arthrocereus rondonianus*	EN	

227	Plantas	CACTACEAE	*Brasilicereus markgrafii*	EN	VU
228	Plantas	CACTACEAE	*Cereus mirabella*	VU	EN
229	Plantas	CACTACEAE	*Cipocereus bradei*	VU	VU
230	Plantas	CACTACEAE	*Cipocereus crassisepalus*	EN	EN
231	Plantas	CACTACEAE	*Cipocereus minensis*	VU	
232	Plantas	CACTACEAE	*Coleocephalocereus buxbaumianus subsp. flavisetus*	VU	
233	Plantas	CACTACEAE	*Discocactus catingicola*	VU	
234	Plantas	CACTACEAE	*Discocactus horstii*	CR	VU
235	Plantas	CACTACEAE	*Discocactus pseudoinsignis*	CR	EN
236	Plantas	CACTACEAE	*Facheiroa cephaliomelana*	EN	VU
237	Plantas	CACTACEAE	*Facheiroa cephaliomelana subsp. estevesii*	EN	
238	Plantas	CACTACEAE	*Micranthocereus albicephalus*	EN	VU
239	Plantas	CACTACEAE	*Micranthocereus auriazureus*	EN	EN
240	Plantas	CACTACEAE	*Micranthocereus dolichospermaticus*	EN	
241	Plantas	CACTACEAE	*Micranthocereus violaciflorus*	EN	EN
242	Plantas	CACTACEAE	*Pereskia aureiflora*	VU	EN
243	Plantas	CACTACEAE	*Pilosocereus aurisetus subsp. aurilanatus*	EN	
244	Plantas	CACTACEAE	*Pilosocereus fulvilanatus*	EN	
245	Plantas	CACTACEAE	*Uebelmannia buiningii*	CR	CR
246	Plantas	CACTACEAE	*Uebelmannia gummifera*	VU	EN
247	Plantas	CACTACEAE	*Uebelmannia pectinifera*	EN	EN
248	Plantas	CELASTRACEAE	*Maytenus rupestris*	VU	
249	Plantas	CISTACEAE	*Helianthemum brasiliense*	EN	
250	Plantas	COMMELINACEAE	*Dichorisandra glaziovii*	VU	
251	Plantas	CONNARACEAE	*Rourea cnestidifolia*	EN	
252	Plantas	CONNARACEAE	*Rourea pseudospadicea*	EN	
253	Plantas	CONVOLVULACEAE	*Evolvulus glaziovii*	VU	
254	Plantas	CONVOLVULACEAE	*Evolvulus kramerioides*	VU	
255	Plantas	CONVOLVULACEAE	*Evolvulus rariflorus*	VU	
256	Plantas	CONVOLVULACEAE	*Evolvulus riedelii*	EN	
257	Plantas	CONVOLVULACEAE	*Evolvulus stellariifolius*	EN	
258	Plantas	CONVOLVULACEAE	*Ipomoea carajasensis*	VU	
259	Plantas	CONVOLVULACEAE	*Ipomoea macedoi*	CR	
260	Plantas	CONVOLVULACEAE	*Ipomoea subrevoluta*	VU	
261	Plantas	CONVOLVULACEAE	*Jacquemontia revoluta*	EN	
262	Plantas	CONVOLVULACEAE	*Merremia repens*	EN	
263	Plantas	CYPERACEAE	*Bulbostylis smithii*	EN	
264	Plantas	CYPERACEAE	*Lagenocarpus bracteosus*	EN	
265	Plantas	DICHAPETALACEAE	*Stephanopodium engleri*	EN	
266	Plantas	DICKSONIACEAE	*Dicksonia sellowiana*	EN	
267	Plantas	DIOSCOREACEAE	*Dioscorea asperula*	VU	
268	Plantas	DIOSCOREACEAE	*Dioscorea loefgrenii*	VU	
269	Plantas	DROSERACEAE	*Drosera graomogolensis*	EN	
270	Plantas	DRYOPTERIDACEAE	*Elaphoglossum acrocarpum*	VU	
271	Plantas	ERICACEAE	*Gaultheria sleumeriana*	CR	

272	Plantas	ERICACEAE	*Gaylussacia centunculifolia*	EN	
273	Plantas	ERICACEAE	*Gaylussacia oleifolia*	EN	
274	Plantas	ERIOCAULACEAE	*Actinocephalus cipoensis*	CR	
275	Plantas	ERIOCAULACEAE	*Actinocephalus claussenianus*	VU	
276	Plantas	ERIOCAULACEAE	*Comanthera elegans*	EN	
277	Plantas	ERIOCAULACEAE	*Leiothrix echinocephala*	VU	
278	Plantas	ERIOCAULACEAE	*Paepalanthus ater*	CR	
279	Plantas	ERIOCAULACEAE	*Paepalanthus hydra*	EN	
280	Plantas	ERIOCAULACEAE	*Syngonanthus laricifolius*	VU	
281	Plantas	EUPHORBIACEAE	*Astraea cincta*	EN	
282	Plantas	EUPHORBIACEAE	*Bernardia crassifolia*	EN	
283	Plantas	EUPHORBIACEAE	*Croton leptobotryus*	VU	
284	Plantas	EUPHORBIACEAE	*Euphorbia attastoma*	EN	
285	Plantas	EUPHORBIACEAE	*Euphorbia gymnoclada*	VU	
286	Plantas	EUPHORBIACEAE	*Manihot procumbens*	VU	
287	Plantas	FABACEAE	*Aeschynomene laca-buendiana*	EN	
288	Plantas	FABACEAE	*Apuleia leiocarpa*	VU	
289	Plantas	FABACEAE	*Calliandra carrascana*	EN	
290	Plantas	FABACEAE	*Centrosema carajasense*	VU	
291	Plantas	FABACEAE	*Chamaecrista cipoana*	VU	
292	Plantas	FABACEAE	*Chamaecrista fodinarum*	VU	
293	Plantas	FABACEAE	*Chamaecrista lagotois*	CR	
294	Plantas	FABACEAE	*Chamaecrista stillifera*	VU	
295	Plantas	FABACEAE	*Chamaecrista tephrosiifolia*	VU	
296	Plantas	FABACEAE	*Chamaecrista ulmea*	CR	
297	Plantas	FABACEAE	*Dalbergia nigra*	VU	VU
298	Plantas	FABACEAE	*Dimorphandra wilsonii*	CR	CR
299	Plantas	FABACEAE	*Harpalyce parvifolia*	EN	
300	Plantas	FABACEAE	*Hymenaea parvifolia*	VU	
301	Plantas	FABACEAE	*Leucochloron foederale*	EN	VU
302	Plantas	FABACEAE	*Leucochloron minarum*	EN	
303	Plantas	FABACEAE	*Lupinus coriaceus*	VU	
304	Plantas	FABACEAE	*Lupinus decurrens*	EN	
305	Plantas	FABACEAE	*Melanoxylon brauna*	VU	
306	Plantas	FABACEAE	*Mimosa acroconica*	EN	
307	Plantas	FABACEAE	*Mimosa adamantina*	EN	
308	Plantas	FABACEAE	*Mimosa barretoi*	EN	
309	Plantas	FABACEAE	*Mimosa bombycina*	EN	
310	Plantas	FABACEAE	*Mimosa chrysastra*	CR	
311	Plantas	FABACEAE	*Mimosa heringeri*	EN	
312	Plantas	FABACEAE	*Mimosa leprosa*	EN	
313	Plantas	FABACEAE	*Mimosa lithoreas*	EN	
314	Plantas	FABACEAE	*Mimosa macedoana*	EN	
315	Plantas	FABACEAE	*Mimosa montis-carasae*	EN	
316	Plantas	FABACEAE	*Mimosa paucifolia*	VU	
317	Plantas	FABACEAE	*Mimosa suburbana*	CR	

318	Plantas	FABACEAE	*Mimosa uniceps*	EN	
319	Plantas	FABACEAE	*Neptunia pubescens*	VU	
320	Plantas	FABACEAE	*Peltogyne maranhensis*	VU	
321	Plantas	GELSEMIACEAE	*Mostuea muricata*	VU	
322	Plantas	GENTIANACEAE	*Senaea coerulea*	EN	
323	Plantas	GENTIANACEAE	*Zygostigma australe*	EN	
324	Plantas	GESNERIACEAE	*Goyazia petraea*	EN	
325	Plantas	GESNERIACEAE	*Paliavana werdermannii*	VU	
326	Plantas	GESNERIACEAE	*Sinningia araneosa*	VU	
327	Plantas	GESNERIACEAE	*Sinningia defoliata*	VU	
328	Plantas	GESNERIACEAE	*Sinningia piresiana*	EN	
329	Plantas	GESNERIACEAE	*Sinningia rupicola*	EN	
330	Plantas	GESNERIACEAE	*Sphaerorrhiza burchellii*	EN	
331	Plantas	HYMENOPHYLLACEAE	*Hymenophyllum silveirae*	CR	
332	Plantas	HYPERICACEAE	*Hypericum mutilum*	VU	
333	Plantas	IRIDACEAE	*Pseudotrimezia brevistamina*	CR	
334	Plantas	IRIDACEAE	*Pseudotrimezia concava*	CR	
335	Plantas	IRIDACEAE	*Pseudotrimezia gracilis*	CR	
336	Plantas	IRIDACEAE	*Pseudotrimezia synandra*	EN	
337	Plantas	IRIDACEAE	*Pseudotrimezia tenuissima*	EN	
338	Plantas	IRIDACEAE	*Trimezia exillima*	EN	
339	Plantas	IRIDACEAE	*Trimezia fistulosa*	EN	
340	Plantas	IRIDACEAE	*Trimezia fistulosa var. longifolia*	CR	
341	Plantas	IRIDACEAE	*Trimezia plicatifolia*	EN	
342	Plantas	LAMIACEAE	*Cyanocephalus caprariifolius*	EN	
343	Plantas	LAMIACEAE	*Cyanocephalus digitatus*	EN	
344	Plantas	LAMIACEAE	*Cyanocephalus tagetifolius*	EN	
345	Plantas	LAMIACEAE	*Eriope crassipes subsp. cristalinae*	CR	
346	Plantas	LAMIACEAE	*Eriope machrisae*	EN	
347	Plantas	LAMIACEAE	*Hypenia aristulata*	CR	
348	Plantas	LAMIACEAE	*Hypenia crispata*	EN	
349	Plantas	LAMIACEAE	*Hypenia micrantha*	EN	
350	Plantas	LAMIACEAE	*Hypenia subrosea*	EN	
351	Plantas	LAMIACEAE	*Hyptidendron claussenii*	EN	
352	Plantas	LAMIACEAE	*Hyptidendron conspersum*	EN	
353	Plantas	LAMIACEAE	*Hyptis alpestris*	EN	
354	Plantas	LAMIACEAE	*Hyptis angustifolia*	EN	
355	Plantas	LAMIACEAE	*Hyptis arenaria*	VU	
356	Plantas	LAMIACEAE	*Hyptis colligata*	EN	
357	Plantas	LAMIACEAE	*Hyptis cruciformis*	EN	
358	Plantas	LAMIACEAE	*Hyptis frondosa*	VU	
359	Plantas	LAMIACEAE	*Hyptis hamatidens*	VU	
360	Plantas	LAMIACEAE	*Hyptis imbricatiformis*	EN	
361	Plantas	LAMIACEAE	*Hyptis pachyphylla*	VU	
362	Plantas	LAMIACEAE	*Hyptis penaeoides*	EN	
363	Plantas	LAMIACEAE	*Oocephalus piranii*	CR	

364	Plantas	LAURACEAE	*Aiouea bracteata*	VU	
365	Plantas	LAURACEAE	*Cinnamomum erythropus*	EN	
366	Plantas	LAURACEAE	*Cinnamomum quadrangulum*	VU	
367	Plantas	LAURACEAE	*Mezilaurus itauba*	VU	
368	Plantas	LAURACEAE	*Ocotea beulahiae*	EN	
369	Plantas	LAURACEAE	*Ocotea catharinensis*	VU	VU
370	Plantas	LAURACEAE	*Ocotea confertiflora*	VU	
371	Plantas	LAURACEAE	*Ocotea felix*	EN	
372	Plantas	LAURACEAE	*Ocotea odorifera*	EN	
373	Plantas	LAURACEAE	*Ocotea porosa*	EN	VU
374	Plantas	LAURACEAE	*Ocotea tabacifolia*	EN	
375	Plantas	LAURACEAE	*Persea pedunculosa*	EN	
376	Plantas	LECYTHIDACEAE	*Cariniana legalis*	EN	VU
377	Plantas	LECYTHIDACEAE	*Lecythis schwackei*	EN	VU
378	Plantas	LOGANIACEAE	*Spigelia aceifolia*	EN	
379	Plantas	LOGANIACEAE	*Spigelia cipoensis*	CR	
380	Plantas	LOGANIACEAE	*Spigelia lundiana*	EN	
381	Plantas	LOGANIACEAE	*Spigelia reitzii*	EN	
382	Plantas	LYCOPODIACEAE	*Diphasium jussiaei*	EN	
383	Plantas	LYCOPODIACEAE	*Phlegmariurus itambensis*	EN	
384	Plantas	LYCOPODIACEAE	*Phlegmariurus ruber*	CR	
385	Plantas	LYCOPODIACEAE	*Pseudolycopodiella benjaminiana*	EN	
386	Plantas	LYTHRACEAE	*Cuphea arenarioides*	VU	
387	Plantas	LYTHRACEAE	*Cuphea cipoensis*	EN	
388	Plantas	LYTHRACEAE	*Cuphea cuiabensis*	EN	
389	Plantas	LYTHRACEAE	*Cuphea rubro-virens*	CR	
390	Plantas	LYTHRACEAE	*Cuphea teleandra*	CR	
391	Plantas	LYTHRACEAE	*Diplusodon aggregatifolius*	EN	
392	Plantas	LYTHRACEAE	*Diplusodon ericoides*	CR	
393	Plantas	LYTHRACEAE	*Diplusodon glaziovii*	CR	
394	Plantas	LYTHRACEAE	*Diplusodon gracilis*	CR	
395	Plantas	LYTHRACEAE	*Diplusodon hatschbachii*	VU	
396	Plantas	LYTHRACEAE	*Diplusodon minasensis*	EN	
397	Plantas	LYTHRACEAE	*Diplusodon orbicularis*	VU	
398	Plantas	LYTHRACEAE	*Diplusodon ovatus*	EN	
399	Plantas	LYTHRACEAE	*Diplusodon panniculatus*	CR	
400	Plantas	LYTHRACEAE	*Diplusodon retroimbricatus*	CR	
401	Plantas	LYTHRACEAE	*Diplusodon villosissimus*	VU	
402	Plantas	LYTHRACEAE	*Lafoensia nummularifolia*	VU	
403	Plantas	MALPIGHIACEAE	*Banisteriopsis andersonii*	VU	
404	Plantas	MALPIGHIACEAE	*Banisteriopsis cipoensis*	EN	
405	Plantas	MALPIGHIACEAE	*Banisteriopsis hatschbachii*	EN	
406	Plantas	MALPIGHIACEAE	*Banisteriopsis hirsuta*	EN	
407	Plantas	MALPIGHIACEAE	*Byrsonima brachybotrya*	VU	
408	Plantas	MALPIGHIACEAE	*Byrsonima cipoensis*	EN	
409	Plantas	MALPIGHIACEAE	*Byrsonima fonsecae*	CR	

410	Plantas	MALPIGHIACEAE	*Byrsonima microphylla*	EN	
411	Plantas	MALPIGHIACEAE	*Byrsonima onishiana*	EN	
412	Plantas	MALPIGHIACEAE	*Camarea humifusa*	EN	
413	Plantas	MALPIGHIACEAE	*Camarea linearifolia*	CR	
414	Plantas	MALPIGHIACEAE	*Heladena multiflora*	EN	
415	Plantas	MALPIGHIACEAE	*Heteropterys aliciae*	CR	
416	Plantas	MALPIGHIACEAE	*Heteropterys dusenii*	VU	
417	Plantas	MALPIGHIACEAE	*Heteropterys hatschbachii*	CR	
418	Plantas	MALPIGHIACEAE	*Janusia linearifolia*	VU	
419	Plantas	MALPIGHIACEAE	*Janusia occhionii*	EN	
420	Plantas	MALPIGHIACEAE	*Peixotoa andersonii*	CR	
421	Plantas	MALPIGHIACEAE	*Peixotoa bahiana*	CR	
422	Plantas	MALPIGHIACEAE	*Peixotoa barnebyi*	EN	
423	Plantas	MALPIGHIACEAE	*Peixotoa cipoana*	EN	
424	Plantas	MALPIGHIACEAE	*Peixotoa psilophylla*	VU	
425	Plantas	MALPIGHIACEAE	*Stigmaphyllon harleyi*	EN	
426	Plantas	MALPIGHIACEAE	*Stigmaphyllon macedoanum*	CR	
427	Plantas	MALPIGHIACEAE	*Thryallis laburnum*	VU	
428	Plantas	MALPIGHIACEAE	*Thryallis parviflora*	EN	
429	Plantas	MALVACEAE	*Hochreutinera hasslerana*	EN	
430	Plantas	MALVACEAE	*Pavonia grazielae*	VU	
431	Plantas	MELASTOMATACEAE	*Cambessedesia atropurpurea*	VU	
432	Plantas	MELASTOMATACEAE	*Cambessedesia weddellii*	VU	
433	Plantas	MELASTOMATACEAE	*Huberia pirani*	EN	
434	Plantas	MELASTOMATACEAE	*Lavoisiera cordata*	VU	
435	Plantas	MELASTOMATACEAE	*Lithobium cordatum*	EN	
436	Plantas	MELASTOMATACEAE	*Marcetia hatschbachii*	EN	
437	Plantas	MELASTOMATACEAE	*Marcetia semiriana*	EN	
438	Plantas	MELASTOMATACEAE	*Miconia angelana*	CR	
439	Plantas	MELASTOMATACEAE	*Miconia cipoensis*	EN	
440	Plantas	MELASTOMATACEAE	*Microlicia canastrensis*	EN	
441	Plantas	MELASTOMATACEAE	*Microlicia flava*	EN	
442	Plantas	MELASTOMATACEAE	*Microlicia humilis*	VU	
443	Plantas	MELASTOMATACEAE	*Microlicia macedoi*	EN	
444	Plantas	MELASTOMATACEAE	*Microlicia microphylla*	CR	
445	Plantas	MELASTOMATACEAE	*Microlicia obtusifolia*	EN	
446	Plantas	MELASTOMATACEAE	*Microlicia psammophila*	EN	
447	Plantas	MELASTOMATACEAE	*Ossaea warmingiana*	VU	
448	Plantas	MELASTOMATACEAE	*Svitramia integerrima*	EN	
449	Plantas	MELASTOMATACEAE	*Svitramia minor*	VU	
450	Plantas	MELASTOMATACEAE	*Svitramia wurdackiana*	VU	
451	Plantas	MELASTOMATACEAE	*Tibouchina bergiana*	EN	
452	Plantas	MELASTOMATACEAE	*Tibouchina riedeliana*	EN	
453	Plantas	MELASTOMATACEAE	*Trembleya chamissoana*	EN	
454	Plantas	MELASTOMATACEAE	*Trembleya hatschbachii*	EN	
455	Plantas	MELIACEAE	*Cedrela fissilis*	VU	EN

456	Plantas	MELIACEAE	*Cedrela odorata*	VU	VU
457	Plantas	MELIACEAE	*Swietenia macrophylla*	VU	VU
458	Plantas	MELIACEAE	*Trichilia stellato-tomentosa*	VU	
459	Plantas	MORACEAE	*Dorstenia conceptionis*	EN	
460	Plantas	MYRISTICACEAE	*Virola surinamensis*	VU	EN
461	Plantas	MYRTACEAE	*Accara elegans*	EN	
462	Plantas	MYRTACEAE	*Eugenia blanda*	EN	
463	Plantas	MYRTACEAE	*Myrceugenia bracteosa*	EN	VU
464	Plantas	MYRTACEAE	*Myrceugenia franciscensis*	EN	VU
465	Plantas	MYRTACEAE	*Myrceugenia hatschbachii*	VU	
466	Plantas	MYRTACEAE	*Myrcia diaphana*	VU	
467	Plantas	MYRTACEAE	*Neomitranthes gracilis*	EN	
468	Plantas	MYRTACEAE	*Siphoneugena kuhlmannii*	VU	
469	Plantas	OCHNACEAE	*Luxemburgia angustifolia*	VU	
470	Plantas	OCHNACEAE	*Luxemburgia flexuosa*	VU	
471	Plantas	OCHNACEAE	*Ouratea hatschbachii*	EN	
472	Plantas	OLEACEAE	*Chionanthus subsessilis*	VU	CR
473	Plantas	ORCHIDACEAE	*Cattleya guttata*	VU	
474	Plantas	ORCHIDACEAE	*Cattleya intermedia*	VU	
475	Plantas	ORCHIDACEAE	*Cattleya walkeriana*	VU	
476	Plantas	ORCHIDACEAE	*Cleistes aphylla*	EN	
477	Plantas	ORCHIDACEAE	*Constantia cipoensis*	CR	
478	Plantas	ORCHIDACEAE	*Cycnoches pentadactylum*	EN	
479	Plantas	ORCHIDACEAE	*Cyrtopodium caiapoense*	VU	
480	Plantas	ORCHIDACEAE	*Cyrtopodium hatschbachii*	EN	
481	Plantas	ORCHIDACEAE	*Cyrtopodium latifolium*	CR	
482	Plantas	ORCHIDACEAE	*Cyrtopodium linearifolium*	CR	
483	Plantas	ORCHIDACEAE	*Cyrtopodium lissochiloides*	VU	
484	Plantas	ORCHIDACEAE	*Cyrtopodium palmifrons*	VU	
485	Plantas	ORCHIDACEAE	*Cyrtopodium triste*	VU	
486	Plantas	ORCHIDACEAE	*Dryadella lilliputiana*	VU	
487	Plantas	ORCHIDACEAE	*Epidendrum henschenii*	EN	
488	Plantas	ORCHIDACEAE	*Grandiphyllum hians*	VU	
489	Plantas	ORCHIDACEAE	*Grobya cipoensis*	CR	
490	Plantas	ORCHIDACEAE	*Habenaria achalensis*	VU	
491	Plantas	ORCHIDACEAE	*Habenaria galeandriformis*	CR	
492	Plantas	ORCHIDACEAE	*Habenaria piraquarensis*	EN	
493	Plantas	ORCHIDACEAE	*Hadrolaelia brevipedunculata*	VU	
494	Plantas	ORCHIDACEAE	*Hadrolaelia jongheana*	EN	
495	Plantas	ORCHIDACEAE	*Hadrolaelia pumila*	VU	
496	Plantas	ORCHIDACEAE	*Hoffmannseggella briegeri*	EN	
497	Plantas	ORCHIDACEAE	*Hoffmannseggella caulescens*	EN	
498	Plantas	ORCHIDACEAE	*Hoffmannseggella ghillanyi*	EN	
499	Plantas	ORCHIDACEAE	*Isabelia virginalis*	VU	
500	Plantas	ORCHIDACEAE	*Malaxis jaraguae*	VU	
501	Plantas	ORCHIDACEAE	*Phragmipedium vittatum*	VU	

502	Plantas	ORCHIDACEAE	*Phymatidium geiselii*	EN	
503	Plantas	ORCHIDACEAE	*Pseudolaelia cipoensis*	CR	
504	Plantas	ORCHIDACEAE	*Pteroglossa hilariana*	EN	
505	Plantas	ORCHIDACEAE	*Saundersia mirabilis*	EN	
506	Plantas	ORCHIDACEAE	*Scuticaria itirapinensis*	CR	
507	Plantas	ORCHIDACEAE	*Thysanoglossa jordanensis*	EN	
508	Plantas	OROBANCHACEAE	*Agalinis brachyphylla*	VU	
509	Plantas	OROBANCHACEAE	*Agalinis nana*	EN	
510	Plantas	OROBANCHACEAE	*Agalinis ramulifera*	EN	
511	Plantas	OROBANCHACEAE	*Agalinis schwackeana*	CR	
512	Plantas	OROBANCHACEAE	*Esterhazya caesarea*	VU	
513	Plantas	OXALIDACEAE	*Oxalis diamantinae*	CR	
514	Plantas	PASSIFLORACEAE	*Passiflora setulosa*	EN	
515	Plantas	PENTAPHYLACACEAE	*Ternstroemia cuneifolia*	VU	
516	Plantas	PHYLLANTHACEAE	*Phyllanthus gladiatus*	VU	
517	Plantas	PHYTOLACCACEAE	*Microtea papilosa*	VU	
518	Plantas	PIPERACEAE	*Peperomia cordigera*	VU	
519	Plantas	PIPERACEAE	*Peperomia hemmendorffii*	EN	
520	Plantas	PIPERACEAE	*Piper loefgrenii*	VU	
521	Plantas	PLANTAGINACEAE	*Angelonia alternifolia*	CR	
522	Plantas	POACEAE	*Agrostis longiberbis*	EN	
523	Plantas	POACEAE	*Altoparadisium chapadense*	CR	
524	Plantas	POACEAE	*Aristida brasiliensis*	EN	
525	Plantas	POACEAE	*Arthropogon xerachne*	CR	
526	Plantas	POACEAE	*Arundinella deppeana*	VU	
527	Plantas	POACEAE	*Axonopus fastigiatus*	VU	
528	Plantas	POACEAE	*Axonopus hydrolithicus*	CR	
529	Plantas	POACEAE	*Axonopus monticola*	EN	
530	Plantas	POACEAE	*Axonopus uninodis*	CR	
531	Plantas	POACEAE	*Canastra lanceolata*	CR	
532	Plantas	POACEAE	*Chusquea attenuata*	EN	
533	Plantas	POACEAE	*Chusquea heterophylla*	EN	
534	Plantas	POACEAE	*Chusquea tenuiglumis*	CR	
535	Plantas	POACEAE	*Digitaria neesiana*	EN	
536	Plantas	POACEAE	*Gymnopogon doellii*	CR	
537	Plantas	POACEAE	*Leersia ligularis*	VU	
538	Plantas	POACEAE	*Merostachys abadiana*	CR	
539	Plantas	POACEAE	*Paspalum repandum*	EN	
540	Plantas	POACEAE	*Setaria parviflora var. pilosissima*	CR	
541	Plantas	POACEAE	*Sporobolus apiculatus*	EN	
542	Plantas	POACEAE	*Triraphis devia*	EN	
543	Plantas	POACEAE	*Zizaniopsis bonariensis*	EN	
544	Plantas	PODOCARPACEAE	*Podocarpus barretoi*	CR	
545	Plantas	PODOCARPACEAE	*Podocarpus brasiliensis*	VU	
546	Plantas	PODOSTEMACEAE	*Mourera weddelliana*	VU	
547	Plantas	PODOSTEMACEAE	*Podostemum ovatum*	EN	

548	Plantas	POLYGALACEAE	*Polygala franchetii*	EN	
549	Plantas	POLYGALACEAE	*Polygala tamariscea*	VU	
550	Plantas	POLYPODIACEAE	*Pecluma hoehnii*	CR	
551	Plantas	PRIMULACEAE	*Myrsine congesta*	EN	
552	Plantas	PROTEACEAE	*Euplassa incana*	VU	
553	Plantas	PROTEACEAE	*Euplassa semicostata*	EN	
554	Plantas	PTERIDACEAE	*Adiantum tetragonum*	EN	
555	Plantas	PTERIDACEAE	*Cheilanthes regnelliana*	EN	
556	Plantas	PTERIDACEAE	*Doryopteris rufa*	EN	
557	Plantas	PTERIDACEAE	*Jamesonia cheilanthoides*	EN	
558	Plantas	PTERIDACEAE	*Jamesonia insignis*	EN	
559	Plantas	PTERIDACEAE	*Pellaea cymbiformis*	EN	
560	Plantas	PTERIDACEAE	*Pellaea gleichenioides*	EN	
561	Plantas	RHAMNACEAE	*Gouania inornata*	EN	
562	Plantas	RHAMNACEAE	*Scutia arenicola*	EN	
563	Plantas	RUBIACEAE	*Galianthe souzae*	EN	
564	Plantas	RUBIACEAE	*Melanopsidium nigrum*	VU	
565	Plantas	RUBIACEAE	*Mitracarpus eritrichoides*	EN	
566	Plantas	RUBIACEAE	*Psychotria microcarpa*	EN	
567	Plantas	RUBIACEAE	*Rudgea parquioides subsp. hirsutissima*	EN	
568	Plantas	RUBIACEAE	*Rudgea sessilis subsp. cipoana*	EN	
569	Plantas	RUBIACEAE	*Staelia hatschbachii*	EN	
570	Plantas	RUTACEAE	*Esenbeckia irwiniana*	EN	
571	Plantas	RUTACEAE	*Pilocarpus alatus*	VU	
572	Plantas	RUTACEAE	*Pilocarpus microphyllus*	EN	
573	Plantas	RUTACEAE	*Pilocarpus trachylophus*	EN	
574	Plantas	SAPINDACEAE	*Talisia subalbens*	VU	
575	Plantas	SAPOTACEAE	*Manilkara dardanoi*	VU	EN
576	Plantas	SAPOTACEAE	*Micropholis emarginata*	EN	EN
577	Plantas	SAPOTACEAE	*Pouteria bullata*	EN	VU
578	Plantas	SAPOTACEAE	*Pouteria furcata*	EN	VU
579	Plantas	SIMAROUBACEAE	*Castela tweedii*	EN	
580	Plantas	SIMAROUBACEAE	*Simaba glabra*	VU	
581	Plantas	SIMAROUBACEAE	*Simaba salubris*	CR	
582	Plantas	SIMAROUBACEAE	*Simaba warmingiana*	EN	
583	Plantas	SMILACACEAE	*Smilax lappacea*	EN	
584	Plantas	SMILACACEAE	*Smilax lutescens*	EN	
585	Plantas	SOLANACEAE	*Lycianthes repens*	EN	
586	Plantas	SOLANACEAE	*Schwenckia curviflora*	EN	
587	Plantas	THELYPTERIDACEAE	*Thelypteris multigemmifera*	CR	
588	Plantas	TROPAEOLACEAE	*Tropaeolum warmingianum*	EN	
589	Plantas	VELLOZIACEAE	*Barbacenia delicatula*	EN	
590	Plantas	VELLOZIACEAE	*Barbacenia glutinosa*	CR	
591	Plantas	VELLOZIACEAE	*Barbacenia longiscapa*	CR	
592	Plantas	VELLOZIACEAE	*Barbacenia paranaensis*	EN	
593	Plantas	VELLOZIACEAE	*Barbacenia pungens*	CR	

594	Plantas	VELLOZIACEAE	*Barbacenia riparia*	CR	
595	Plantas	VELLOZIACEAE	*Barbacenia rodriguesii*	EN	
596	Plantas	VELLOZIACEAE	*Barbacenia spiralis*	EN	
597	Plantas	VELLOZIACEAE	*Vellozia alata*	EN	
598	Plantas	VELLOZIACEAE	*Vellozia armata*	EN	
599	Plantas	VELLOZIACEAE	*Vellozia barbata*	EN	
600	Plantas	VELLOZIACEAE	*Vellozia gigantea*	EN	
601	Plantas	VELLOZIACEAE	*Vellozia glabra*	EN	
602	Plantas	VELLOZIACEAE	*Vellozia hatschbachii*	EN	
603	Plantas	VELLOZIACEAE	*Vellozia leptopetala*	EN	
604	Plantas	VELLOZIACEAE	*Vellozia lilacina*	EN	
605	Plantas	VELLOZIACEAE	*Vellozia metzgerae*	EN	
606	Plantas	VELLOZIACEAE	*Vellozia nuda*	EN	
607	Plantas	VELLOZIACEAE	*Vellozia patens*	EN	
608	Plantas	VELLOZIACEAE	*Vellozia piresiana*	EN	
609	Plantas	VELLOZIACEAE	*Vellozia sessilis*	EN	
610	Plantas	VELLOZIACEAE	*Vellozia streptophylla*	EN	
611	Plantas	VELLOZIACEAE	*Vellozia subalata*	EN	
612	Plantas	VERBENACEAE	*Lippia bradei*	VU	
613	Plantas	VERBENACEAE	*Lippia pumila*	EN	
614	Plantas	VERBENACEAE	*Lippia rhodocnemis*	EN	
615	Plantas	VERBENACEAE	*Stachytarpheta procumbens*	EN	
616	Plantas	VIOLACEAE	*Pombalia strigoides*	EN	
617	Plantas	VITACEAE	*Cissus inundata*	VU	
618	Plantas	VOCHYSIACEAE	*Vochysia pygmaea*	EN	
619	Plantas	XYRIDACEAE	*Xyris aurea*	EN	
620	Plantas	XYRIDACEAE	*Xyris blepharophylla*	EN	
621	Plantas	XYRIDACEAE	*Xyris cipoensis*	EN	
622	Plantas	XYRIDACEAE	*Xyris coutensis*	CR	
623	Plantas	XYRIDACEAE	*Xyris dardanoi*	CR	
624	Plantas	XYRIDACEAE	*Xyris hystrix*	CR	
625	Plantas	XYRIDACEAE	*Xyris longifolia*	EN	
626	Plantas	XYRIDACEAE	*Xyris nigricans*	CR	
627	Plantas	XYRIDACEAE	*Xyris obtusiuscula*	EN	
628	Plantas	XYRIDACEAE	*Xyris platystachya*	CR	
629	Plantas	XYRIDACEAE	*Xyris rigida*	CR	
630	Plantas	XYRIDACEAE	*Xyris sincorana*	EN	
631	Plantas	XYRIDACEAE	*Xyris sororia*	CR	
632	Plantas	XYRIDACEAE	*Xyris tortilis*	CR	
633	Plantas	XYRIDACEAE	*Xyris uninervis*	CR	
634	Plantas	XYRIDACEAE	*Xyris vacillans*	EN	
635	Plantas	XYRIDACEAE	*Xyris wawrae*	EN	
636	Plantas	ASTERACEAE	*Aspilia ovalifolia*	CR	
637	Plantas	CONVOLVULACEAE	*Jacquemontia cephalantha*	VU	

Table 1.3. Rare Plants

	Family	Species
1	ACANTHACEAE	*Justicia clivalis*
2	ACANTHACEAE	*Staurogyne minarum*
3	ACANTHACEAE	*Stenandrium goiasense*
4	ACANTHACEAE	*Stenandrium irwinii*
5	ALISMATACEAE	*Echinodorus lanceolatus*
6	ALSTROEMERIACEAE	*Alstroemeria chapadensis*
7	AMARANTHACEAE	*Gomphrena hermogenesii*
8	AMARANTHACEAE	*Gomphrena hillii*
9	AMARANTHACEAE	*Gomphrena marginata*
10	ANNONACEAE	*Duguetia rotundifolia*
11	APOCYNACEAE	*Barjonia grazielae*
12	APOCYNACEAE	*Blepharodon hatschbachii*
13	APOCYNACEAE	*Ditassa insignis*
14	APOCYNACEAE	*Ditassa obscura*
15	APOCYNACEAE	*Mandevilla rubra*
16	APOCYNACEAE	*Mandevilla semirii*
17	APOCYNACEAE	*Marsdenia neomanarae*
18	APOCYNACEAE	*Marsdenia virgultorum*
19	APOCYNACEAE	*Matelea matogrossensis*
20	APOCYNACEAE	*Matelea refracta*
21	APOCYNACEAE	*Minaria campanuliflora*
22	APOCYNACEAE	*Nephradenia filipes*
23	APOCYNACEAE	*Oxypetalum habrogynum*
24	APOCYNACEAE	*Oxypetalum helios*
25	APOCYNACEAE	*Rauvolfia ligustrina*
26	APOCYNACEAE	*Tassadia geniculata*
27	ARACEAE	*Anthurium megapetiolatum*
28	ARACEAE	*Philodendron cipoense*
29	ARACEAE	*Philodendron pachyphyllum*
30	ARACEAE	*Philodendron rhizomatosum*
31	ARALIACEAE	*Schefflera botumirimensis*
32	ARALIACEAE	*Schefflera cephalantha*
33	ARALIACEAE	*Schefflera fruticosa*
34	ASTERACEAE	*Aspilia discolor*
35	ASTERACEAE	*Aspilia goiazensis*
36	ASTERACEAE	*Aspilia hatschbachii*
37	ASTERACEAE	*Aspilia podophylla*
38	ASTERACEAE	*Aspilia pseudoyedaea*
39	ASTERACEAE	*Bidens edentula*
40	ASTERACEAE	*Calea irwinii*
41	ASTERACEAE	*Chrysolaena dusenii*
42	ASTERACEAE	*Dasyphyllum reticulatum*
43	ASTERACEAE	*Dasyphyllum retinens*
44	ASTERACEAE	*Dasyphyllum trichophyllum*
45	ASTERACEAE	*Eremanthus pabstii*
46	ASTERACEAE	*Ichthyothere mattogrossensis*
47	ASTERACEAE	*Lessingianthus arachniolepis*
48	ASTERACEAE	*Lessingianthus argenteus*
49	ASTERACEAE	*Lessingianthus caiapoensis*
50	ASTERACEAE	*Lessingianthus heringeri*
51	ASTERACEAE	*Lessingianthus rugulosus*
52	ASTERACEAE	*Lessingianthus scaposus*
53	ASTERACEAE	*Minasia cabralensis*

54	ASTERACEAE	*Minasia lewinsohnii*
55	ASTERACEAE	*Stenophalium heringeri*
56	ASTERACEAE	*Vernonanthura almedae*
57	ASTERACEAE	*Vernonanthura lindbergii*
58	ASTERACEAE	*Wedelia souzae*
59	BALANOPHORACEAE	*Lophophytum rizzoi*
60	BIGNONIACEAE	*Adenocalymma subspicatum*
61	BIGNONIACEAE	*Jacaranda racemosa*
62	BURSERACEAE	*Protium dawsonii*
63	CACTACEAE	*Cipocereus pleurocarpus*
64	CALOPHYLLACEAE	*Kielmeyera similis*
65	CALOPHYLLACEAE	*Kielmeyera trichophora*
66	CAMPANULACEAE	*Lobelia brasiliensis*
67	CHRYSOBALANACEAE	*Hirtella juruensis*
68	CHRYSOBALANACEAE	*Licania maguirei*
69	COMMELINACEAE	*Tripogandra elata*
70	COMMELINACEAE	*Tripogandra warmingiana*
71	CONNARACEAE	*Rourea chrysomalla*
72	CONNARACEAE	*Rourea prancei*
73	CONVOLVULACEAE	*Bonamia kuhlmannii*
74	CONVOLVULACEAE	*Evolvulus chapadensis*
75	CONVOLVULACEAE	*Evolvulus gnaphalioides*
76	CUCURBITACEAE	*Cayaponia rugosa*
77	CUNONIACEAE	*Lamanonia brasiliensis*
78	CYPERACEAE	*Bulbostylis lombardii*
79	CYPERACEAE	*Cryptangium humile*
80	CYPERACEAE	*Eleocharis loefgreniana*
81	CYPERACEAE	*Lagenocarpus adamantinus*
82	CYPERACEAE	*Rhynchospora tenuis*
83	CYPERACEAE	*Scleria cuyabensis*
84	ERIOCAULACEAE	*Actinocephalus nodifer*
85	ERIOCAULACEAE	*Actinocephalus robustus*
86	ERIOCAULACEAE	*Actinocephalus stereophyllus*
87	ERIOCAULACEAE	*Actinocephalus aggregatus*
88	ERIOCAULACEAE	*Actinocephalus compactus*
89	ERIOCAULACEAE	*Actinocephalus coutoensis*
90	ERIOCAULACEAE	*Actinocephalus deflexus*
91	ERIOCAULACEAE	*Actinocephalus diffusus*
92	ERIOCAULACEAE	*Actinocephalus fimbriatus*
93	ERIOCAULACEAE	*Actinocephalus graminifolius*
94	ERIOCAULACEAE	*Comanthera cipoensis*
95	ERIOCAULACEAE	*Comanthera circinnata*
96	ERIOCAULACEAE	*Eriocaulon aquatile*
97	ERIOCAULACEAE	*Eriocaulon burchellii*
98	ERIOCAULACEAE	*Eriocaulon cipoense*
99	ERIOCAULACEAE	*Eriocaulon griseum*
100	ERIOCAULACEAE	*Leiothrix cipoensis*
101	ERIOCAULACEAE	*Leiothrix crassifolia*
102	ERIOCAULACEAE	*Leiothrix fulgida var. milho-verdensis*
103	ERIOCAULACEAE	*Leiothrix luxurians*
104	ERIOCAULACEAE	*Leiothrix rupestris*
105	ERIOCAULACEAE	*Leiothrix sclerophylla*
106	ERIOCAULACEAE	*Leiothrix sinuosa*
107	ERIOCAULACEAE	*Leiothrix spiralis*
108	ERIOCAULACEAE	*Paepalanthus albidus*
109	ERIOCAULACEAE	*Paepalanthus anamariae*
110	ERIOCAULACEAE	*Paepalanthus argenteus*

111	ERIOCAULACEAE	*Paepalanthus aureus*
112	ERIOCAULACEAE	*Paepalanthus barbiger*
113	ERIOCAULACEAE	*Paepalanthus complanatus*
114	ERIOCAULACEAE	*Paepalanthus cordatus*
115	ERIOCAULACEAE	*Paepalanthus globulifer*
116	ERIOCAULACEAE	*Paepalanthus homomallus*
117	ERIOCAULACEAE	*Paepalanthus obtusifolius*
118	ERIOCAULACEAE	*Paepalanthus pulvinatus*
119	ERIOCAULACEAE	*Paepalanthus revolutus*
120	ERIOCAULACEAE	*Paepalanthus rupestris*
121	ERIOCAULACEAE	*Paepalanthus senaeanus*
122	ERIOCAULACEAE	*Paepalanthus stuetzelii*
123	ERIOCAULACEAE	*Paepalanthus superbus*
124	ERIOCAULACEAE	*Paepalanthus urbanianus*
125	ERIOCAULACEAE	*Syngonanthus bracteosus*
126	ERIOCAULACEAE	*Syngonanthus hygrotrichus*
127	ERIOCAULACEAE	*Syngonanthus latifolius*
128	FABACEAE	*Chamaecrista gymnothyrsa*
129	FABACEAE	*Aeschynomene graminoides*
130	FABACEAE	*Aeschynomene simplicifolia*
131	FABACEAE	*Bauhinia candelabriformis*
132	FABACEAE	*Bauhinia malacotrichoides*
133	FABACEAE	*Bocoa ratteri*
134	FABACEAE	*Calliandra gardneri*
135	FABACEAE	*Calliandra linearis*
136	FABACEAE	*Calliandra santosiana*
137	FABACEAE	*Chamaecrista adamantina*
138	FABACEAE	*Chamaecrista altoana*
139	FABACEAE	*Chamaecrista caiapo*
140	FABACEAE	*Chamaecrista caracensis*
141	FABACEAE	*Chamaecrista catapodia*
142	FABACEAE	*Chamaecrista catiarae*
143	FABACEAE	*Chamaecrista centiflora*
144	FABACEAE	*Chamaecrista coradinii*
145	FABACEAE	*Chamaecrista deltoidea*
146	FABACEAE	*Chamaecrista dumalis*
147	FABACEAE	*Chamaecrista ericifolia*
148	FABACEAE	*Chamaecrista fuscescens*
149	FABACEAE	*Chamaecrista geraldii*
150	FABACEAE	*Chamaecrista gumminans*
151	FABACEAE	*Chamaecrista hatschbachii*
152	FABACEAE	*Chamaecrista ixodes*
153	FABACEAE	*Chamaecrista lavradioides*
154	FABACEAE	*Chamaecrista leucopilis*
155	FABACEAE	*Chamaecrista macedoi*
156	FABACEAE	*Chamaecrista ochrosperma*
157	FABACEAE	*Chamaecrista pachyclada*
158	FABACEAE	*Chamaecrista phyllostachya*
159	FABACEAE	*Chamaecrista polymorpha*
160	FABACEAE	*Chamaecrista psoraleopsis*
161	FABACEAE	*Chamaecrista simplifacta*
162	FABACEAE	*Chamaecrista vauthieri*
163	FABACEAE	*Crotalaria goiasensis*
164	FABACEAE	*Crotalaria irwinii*
165	FABACEAE	*Crotalaria rufipila*
166	FABACEAE	*Desmodium glabrescens*
167	FABACEAE	*Desmodium juruenense*

168	FABACEAE	*Mimosa cryptothamnos*
169	FABACEAE	*Mimosa cyclophylla*
170	FABACEAE	*Mimosa decorticans*
171	FABACEAE	*Mimosa humivagans*
172	FABACEAE	*Mimosa laniceps*
173	FABACEAE	*Mimosa lepidophora*
174	FABACEAE	*Mimosa manidea*
175	FABACEAE	*Mimosa oligosperma*
176	FABACEAE	*Mimosa pycnocoma*
177	FABACEAE	*Mimosa pyrenea*
178	FABACEAE	*Mimosa regina*
179	FABACEAE	*Mimosa setosissima*
180	FABACEAE	*Mimosa splendida*
181	FABACEAE	*Mimosa ulbrichiana*
182	FABACEAE	*Mimosa ulei*
183	FABACEAE	*Mimosa virgula*
184	FABACEAE	*Moldenhawera acuminata*
185	FABACEAE	*Poiretia marginata*
186	FABACEAE	*Poiretia unifoliolata*
187	FABACEAE	*Zornia glaziovii*
188	FABACEAE	*Zornia subsessilis*
189	GENTIANACEAE	*Schultesia irwiniana*
190	GENTIANACEAE	*Schultesia piresiana*
191	GESNERIACEAE	*Paliavana plumerioides*
192	LAMIACEAE	*Eriope angustifolia*
193	LAMIACEAE	*Eriope filifolia*
194	LAMIACEAE	*Eriope xavantium*
195	LAMIACEAE	*Hypenia concinna*
196	LAMIACEAE	*Hypenia paradisi*
197	LAMIACEAE	*Hyptidendron dictiocalyx*
198	LAMIACEAE	*Hyptis asteroides*
199	LAMIACEAE	*Hyptis caduca*
200	LAMIACEAE	*Hyptis coriacea*
201	LAMIACEAE	*Hyptis dictyodea*
202	LAMIACEAE	*Hyptis heterophylla*
203	LAMIACEAE	*Hyptis humilis*
204	LAMIACEAE	*Hyptis loeseneriana*
205	LAMIACEAE	*Hyptis nivea*
206	LAMIACEAE	*Hyptis tenuifolia*
207	LENTIBULARIACEAE	*Utricularia huntii*
208	LORANTHACEAE	*Oryctina eubrachioides*
209	LORANTHACEAE	*Psittacanthus acinarius*
210	LORANTHACEAE	*Struthanthus microstylus*
211	LORANTHACEAE	*Struthanthus planaltinae*
212	LORANTHACEAE	*Struthanthus pusillifolius*
213	LORANTHACEAE	*Struthanthus rufo-furfuraceus*
214	LYTHRACEAE	*Diplusodon leucocalycinus*
215	LYTHRACEAE	*Diplusodon nigricans*
216	LYTHRACEAE	*Cuphea anamariae*
217	LYTHRACEAE	*Cuphea cunninghamiifolia*
218	LYTHRACEAE	*Cuphea disperma*
219	LYTHRACEAE	*Cuphea fuchsiifolia*
220	LYTHRACEAE	*Cuphea lucens*
221	LYTHRACEAE	*Cuphea potamophila*
222	LYTHRACEAE	*Cuphea sclerophylla*
223	LYTHRACEAE	*Cuphea warmingii*
224	LYTHRACEAE	*Cuphea xanthopetala*

225	LYTHRACEAE	*Diplusodon adpressipilus*
226	LYTHRACEAE	*Diplusodon alatus*
227	LYTHRACEAE	*Diplusodon appendiculosus*
228	LYTHRACEAE	*Diplusodon argenteus*
229	LYTHRACEAE	*Diplusodon bradei*
230	LYTHRACEAE	*Diplusodon canastrensis*
231	LYTHRACEAE	*Diplusodon capitalensis*
232	LYTHRACEAE	*Diplusodon capitatus*
233	LYTHRACEAE	*Diplusodon chapadensis*
234	LYTHRACEAE	*Diplusodon decussatus*
235	LYTHRACEAE	*Diplusodon floribundus*
236	LYTHRACEAE	*Diplusodon glocimarii*
237	LYTHRACEAE	*Diplusodon grahamae*
238	LYTHRACEAE	*Diplusodon heringeri*
239	LYTHRACEAE	*Diplusodon longipes*
240	LYTHRACEAE	*Diplusodon mattogrossensis*
241	LYTHRACEAE	*Diplusodon mononeuros*
242	LYTHRACEAE	*Diplusodon parvifolius*
243	LYTHRACEAE	*Diplusodon petiolatus*
244	LYTHRACEAE	*Diplusodon plumbeus*
245	LYTHRACEAE	*Diplusodon pygmaeus*
246	LYTHRACEAE	*Diplusodon rosmarinifolius*
247	LYTHRACEAE	*Diplusodon rotundifolius*
248	LYTHRACEAE	*Diplusodon rupestris*
249	LYTHRACEAE	*Diplusodon sigillatus*
250	LYTHRACEAE	*Diplusodon sordidus*
251	LYTHRACEAE	*Diplusodon thysanosepalus*
252	LYTHRACEAE	*Diplusodon trigintus*
253	MALPIGHIACEAE	*Acmanthera fernandesii*
254	MALPIGHIACEAE	*Banisteriopsis arborea*
255	MALPIGHIACEAE	*Banisteriopsis byssacea*
256	MALPIGHIACEAE	*Banisteriopsis goiana*
257	MALPIGHIACEAE	*Byrsonima cordifolia*
258	MALPIGHIACEAE	*Byrsonima hatschbachii*
259	MALPIGHIACEAE	*Janusia christianeae*
260	MALPIGHIACEAE	*Mascagnia aptera*
261	MALPIGHIACEAE	*Peixotoa anadenanthera*
262	MALPIGHIACEAE	*Peixotoa axillaris*
263	MALPIGHIACEAE	*Peixotoa gardneri*
264	MALPIGHIACEAE	*Peixotoa irwinii*
265	MALPIGHIACEAE	*Peixotoa octoflora*
266	MALPIGHIACEAE	*Pterandra hatschbachii*
267	MALPIGHIACEAE	*Pterandra viridiflora*
268	MELASTOMATACEAE	*Chaetostoma scoparium*
269	MELASTOMATACEAE	*Cambessedesia pityrophylla*
270	MELASTOMATACEAE	*Cambessedesia salviifolia*
271	MELASTOMATACEAE	*Cambessedesia semidecandra*
272	MELASTOMATACEAE	*Chaetostoma flavum*
273	MELASTOMATACEAE	*Chaetostoma selagineum*
274	MELASTOMATACEAE	*Chaetostoma stenocladon*
275	MELASTOMATACEAE	*Comolia edmundoi*
276	MELASTOMATACEAE	*Lavoisiera adamantium*
277	MELASTOMATACEAE	*Lavoisiera angustifolia*
278	MELASTOMATACEAE	*Lavoisiera bradeana*
279	MELASTOMATACEAE	*Lavoisiera caryophyllea*
280	MELASTOMATACEAE	*Lavoisiera firmula*
281	MELASTOMATACEAE	*Lavoisiera humilis*

282	MELASTOMATACEAE	*Lavoisiera macrocarpa*
283	MELASTOMATACEAE	*Lavoisiera mucorifera*
284	MELASTOMATACEAE	*Lavoisiera punctata*
285	MELASTOMATACEAE	*Lavoisiera senaei*
286	MELASTOMATACEAE	*Lavoisiera subulata*
287	MELASTOMATACEAE	*Microlicia cipoana*
288	MELASTOMATACEAE	*Microlicia crebropunctata*
289	MELASTOMATACEAE	*Microlicia ordinata*
290	MELASTOMATACEAE	*Microlicia scoparia*
291	MELASTOMATACEAE	*Microlicia tenuifolia*
292	MELASTOMATACEAE	*Microlicia vernicosa*
293	MORACEAE	*Ficus carautana*
294	MYRTACEAE	*Plinia nana*
295	MYRTACEAE	*Psidium firmum*
296	OCHNACEAE	*Luxemburgia ciliatibracteata*
297	OCHNACEAE	*Luxemburgia damazioana*
298	OCHNACEAE	*Luxemburgia hatschbachiana*
299	OCHNACEAE	*Luxemburgia speciosa*
300	OCHNACEAE	*Ouratea acicularis*
301	OCHNACEAE	*Sauvagesia lanceolata*
302	OROBANCHACEAE	*Esterhazya nanuzae*
303	OXALIDACEAE	*Oxalis areolata*
304	OXALIDACEAE	*Oxalis pretoensis*
305	OXALIDACEAE	*Oxalis veadeirosensis*
306	PASSIFLORACEAE	*Passiflora hypoglauca*
307	PIPERACEAE	*Peperomia warmingii*
308	PLANTAGINACEAE	*Angelonia pratensis*
309	PLANTAGINACEAE	*Philcoxia goiasensis*
310	PLANTAGINACEAE	*Philcoxia minensis*
311	POACEAE	*Axonopus aureus*
312	POACEAE	*Axonopus grandifolius*
313	POACEAE	*Dichanthelium sendulskyii*
314	POACEAE	*Digitaria pampinosa*
315	POACEAE	*Guadua magna*
316	POACEAE	*Mesosetum alatum*
317	POACEAE	*Mesosetum longiaristatum*
318	POACEAE	*Ophiochloa bryoides*
319	POACEAE	*Otachyrium piligerum*
320	POACEAE	*Panicum ephemeroides*
321	POACEAE	*Paspalum biaristatum*
322	POACEAE	*Paspalum brachytrichum*
323	POACEAE	*Paspalum burmanii*
324	POACEAE	*Paspalum filgueirasii*
325	POACEAE	*Paspalum longiaristatum*
326	POACEAE	*Paspalum petrense*
327	POACEAE	*Paspalum vallsii*
328	POACEAE	*Rheochloa scabrifolia*
329	POACEAE	*Sporobolus hians*
330	POACEAE	*Sporobolus paucifolius*
331	POLYGALACEAE	*Asemeia marquesiana*
332	POLYGALACEAE	*Asemeia pohliana*
333	POLYGALACEAE	*Polygala appariciοi*
334	POLYGALACEAE	*Polygala asperuloides*
335	POLYGALACEAE	*Polygala bevilacquai*
336	POLYGALACEAE	*Polygala grazielae*
337	POLYGALACEAE	*Polygala irwinii*
338	POLYGALACEAE	*Polygala juncea*

339	POLYGALACEAE	*Polygala malmeana*
340	POLYGALACEAE	*Polygala patens*
341	POLYGALACEAE	*Polygala pseudocoriacea*
342	POLYGALACEAE	*Polygala pseudoerica*
343	POLYGALACEAE	*Polygala suganumae*
344	POLYGONACEAE	*Coccoloba cereifera*
345	PRIMULACEAE	*Myrsine cipoensis*
346	RUBIACEAE	*Borreria burchellii*
347	RUBIACEAE	*Borreria gracillima*
348	RUBIACEAE	*Borreria guimaraesensis*
349	RUBIACEAE	*Borreria irwiniana*
350	RUBIACEAE	*Borreria paulista*
351	RUBIACEAE	*Borreria rosmarinifolia*
352	RUBIACEAE	*Borreria tocantinsiana*
353	RUBIACEAE	*Diodia macrophylla*
354	RUBIACEAE	*Galianthe macedoi*
355	RUBIACEAE	*Galianthe matogrossiana*
356	RUBIACEAE	*Mitracarpus pusillus*
357	RUBIACEAE	*Psyllocarpus schwackei*
358	RUBIACEAE	*Staelia tocantinsiana*
359	SANTALACEAE	*Phoradendron anamariae*
360	SANTALACEAE	*Phoradendron dimerostachys*
361	SANTALACEAE	*Phoradendron virens*
362	SCHOEPFIACEAE	*Schoepfia velutina*
363	SOLANACEAE	*Brunfelsia rupestris*
364	SOLANACEAE	*Solanum eitenii*
365	SYMPLOCACEAE	*Symplocos glaberrima*
366	SYMPLOCACEAE	*Symplocos insolita*
367	SYMPLOCACEAE	*Symplocos saxatilis*
368	TURNERACEAE	*Piriqueta araguaiana*
369	TURNERACEAE	*Piriqueta caiapoensis*
370	TURNERACEAE	*Piriqueta cristobaliae*
371	TURNERACEAE	*Piriqueta emasensis*
372	TURNERACEAE	*Piriqueta lourteigiae*
373	TURNERACEAE	*Turnera cipoensis*
374	TURNERACEAE	*Turnera coccinea*
375	TURNERACEAE	*Turnera collotricha*
376	TURNERACEAE	*Turnera coriacea*
377	TURNERACEAE	*Turnera elliptica*
378	TURNERACEAE	*Turnera foliosa*
379	TURNERACEAE	*Turnera gardneriana*
380	TURNERACEAE	*Turnera ignota*
381	TURNERACEAE	*Turnera pinifolia*
382	TURNERACEAE	*Turnera princeps*
383	TURNERACEAE	*Turnera reginae*
384	TURNERACEAE	*Turnera revoluta*
385	TURNERACEAE	*Turnera riedeliana*
386	VELLOZIACEAE	*Barbacenia andersonii*
387	VELLOZIACEAE	*Barbacenia blackii*
388	VELLOZIACEAE	*Barbacenia cylindrica*
389	VELLOZIACEAE	*Barbacenia fulva*
390	VELLOZIACEAE	*Barbacenia glabra*
391	VELLOZIACEAE	*Barbacenia hatschbachii*
392	VELLOZIACEAE	*Barbacenia lymansmithii*
393	VELLOZIACEAE	*Barbacenia minima*
394	VELLOZIACEAE	*Barbacenia reflexa*
395	VELLOZIACEAE	*Barbacenia umbrosa*

396	VELLOZIACEAE	*Vellozia bradei*
397	VELLOZIACEAE	*Vellozia costata*
398	VELLOZIACEAE	*Vellozia exilis*
399	VELLOZIACEAE	*Vellozia luteola*
400	VELLOZIACEAE	*Vellozia maxillarioides*
401	VELLOZIACEAE	*Vellozia prolifera*
402	VELLOZIACEAE	*Vellozia sellowii*
403	VELLOZIACEAE	*Vellozia spiralis*
404	VELLOZIACEAE	*Vellozia tillandsioides*
405	VELLOZIACEAE	*Vellozia torquata*
406	VERBENACEAE	*Lantana gracilis*
407	VERBENACEAE	*Lippia diamantinensis*
408	VERBENACEAE	*Lippia rubella*
409	VERBENACEAE	*Bouchea chascanoides*
410	VERBENACEAE	*Bouchea fluminensis*
411	VERBENACEAE	*Lippia ciliata*
412	VERBENACEAE	*Lippia duartei*
413	VERBENACEAE	*Lippia gardneriana*
414	VERBENACEAE	*Lippia grandiflora*
415	VERBENACEAE	*Lippia macedoi*
416	VERBENACEAE	*Stachytarpheta discolor*
417	VERBENACEAE	*Stachytarpheta integrifolia*
418	VERBENACEAE	*Stachytarpheta itambensis*
419	VERBENACEAE	*Stachytarpheta lacunosa*
420	VERBENACEAE	*Stachytarpheta monachinoi*
421	VERBENACEAE	*Stachytarpheta pohliana*
422	VOCHYSIACEAE	*Callisthene erythroclada*
423	VOCHYSIACEAE	*Qualea elegans*
424	VOCHYSIACEAE	*Vochysia petraea*
425	VOCHYSIACEAE	*Vochysia pygmaea*
426	VOCHYSIACEAE	*Vochysia rotundifolia*
427	XYRIDACEAE	*Xyris archeri*
428	XYRIDACEAE	*Xyris diaphanobracteata*
429	XYRIDACEAE	*Xyris goyazensis*
430	XYRIDACEAE	*Xyris itambensis*
431	XYRIDACEAE	*Xyris lanuginosa*
432	XYRIDACEAE	*Xyris obcordata*
433	XYRIDACEAE	*Xyris paradisiaca*
434	XYRIDACEAE	*Xyris pranceana*
435	XYRIDACEAE	*Xyris rupicola*
436	XYRIDACEAE	*Xyris spectabilis*
437	XYRIDACEAE	*Xyris subsetigera*
438	XYRIDACEAE	*Xyris veruina*
439	XYRIDACEAE	*Xyris vestita*

Table 1.4. Rare Fish

	Family	Species
1	ANCISTRINAE	*Ancistrus aguaboensis Fisch-Muller, Mazzoni and Weber 2001*
2	ANCISTRINAE	*Ancistrus claro Knaack 1999*
3	ANCISTRINAE	*Ancistrus cryptophthalmus Reis 1987*
4	ANCISTRINAE	*Ancistrus damasceni (Steindachner 1907)*
5	ANCISTRINAE	*Ancistrus formoso Sabino and Trajano 1997*
6	ANCISTRINAE	*Ancistrus jataiensis Fisch-Muller, Cardoso, da Silva and Bertaco 2005*
7	ANCISTRINAE	*Ancistrus minutus Fisch-Muller, Mazzoni and Weber 2001*
8	ANCISTRINAE	*Ancistrus parecis Fisch-Muller, Cardoso, Silva, Bertaco 2005*
9	ANCISTRINAE	*Ancistrus reisi Fisch-Muller, Cardoso, da Silva and Bertaco 2005*
10	ANCISTRINAE	*Megalancistrus barrae (Steindachner 1910)*
11	ANOSTOMIDAE	*Leporinus microphthalmus Garavello 1989*
12	ANOSTOMIDAE	*Leporinus sexstriatus Britski and Garavello 1980*
13	ANOSTOMIDAE	*Leporinus steindachneri Eigenmann 1907*
14	ANOSTOMIDAE	*Sartor respectus Myers and Carvalho 1959*
15	ANOSTOMIDAE	*Schizodon dissimilis (Garman 1890)*
16	ANOSTOMIDAE	*Schizodon rostratus (Borodin 1931)*
17	APTERONOTIDAE	*Sternarchorhynchus mesensis Campos-da-Paz 2000*
18	AUCHENIPTERIDAE	*Glanidium albescens LÂ• tken 1874*
19	CALLICHTHYIDAE	*Aspidoras albater Nijssen and IsbrÂ• cker 1976*
20	CALLICHTHYIDAE	*Aspidoras belenos Britto 1998*
21	CALLICHTHYIDAE	*Aspidoras eurycephalus Nijssen and IsbrÂ• cker 1976*
22	CALLICHTHYIDAE	*Aspidoras lakoi Miranda Ribeiro 1949*
23	CALLICHTHYIDAE	*Aspidoras microgalaeus Britto 1998*
24	CALLICHTHYIDAE	*Aspidoras pauciradiatus (Weitzman and Nijssen 1970)*
25	CALLICHTHYIDAE	*Aspidoras raimundi (Steindachner 1907)*
26	CALLICHTHYIDAE	*Aspidoras taurus Lima and Britto 2001*
27	CALLICHTHYIDAE	*Aspidoras velites Britto, Lima and Moreira 2002*
28	CALLICHTHYIDAE	*Corydoras difluviatilis Britto and Castro 2002*
29	CALLICHTHYIDAE	*Corydoras maculifer Nijssen and IsbrÂ• cker 1971*
30	CALLICHTHYIDAE	*Corydoras multimaculatus Steindachner 1907*
31	CALLICHTHYIDAE	*Corydoras treitlii Steindachner 1906*
32	CETOPSIDAE	*Cetopsis caiapo Vari, Ferraris and de Pinna 2005*
33	CETOPSIDAE	*Cetopsis sandrae Vari, Ferraris and de Pinna 2005*
34	CETOPSIDAE	*Cetopsis sarcodes Vari, Ferraris and de Pinna 2005*
35	CHARACINAE	*Acestrocephalus maculosus Menezes 2006*
36	CHARACINAE	*Phenacogaster jancupa Malabarba and Lucena 1995*
37	CICHLIDAE	*Aequidens plagiozonatus Kullander 1984*
38	CICHLIDAE	*Apistogramma piauiensis Kullander 1980*
39	CICHLIDAE	*Crenicichla compressiceps Ploeg 1986*
40	CRENUCHIDAE	*Characidium stigmosum Melo and Buckup 2002*
41	CRENUCHIDAE	*Melanocharacidium auroradiatum Costa and Vicente 1994*
42	CURIMATIDAE	*Curimata acutirostris Vari and Reis 1995*
43	CURIMATIDAE	*Cyphocharax signatus Vari 1992*
44	CURIMATIDAE	*Steindachnerina corumbae Pavanelli and Britski 1999*
45	DORADIDAE	*Franciscodoras marmoratus (Reinhardt 1874)*
46	DORADIDAE	*Hassar affinis (Steindachner 1881)*
47	GLANDULOCAUDINAE	*Lophiobrycon weitzmani Castro, Ribeiro, Benine and Melo 2003*
48	GLANDULOCAUDINAE	*Xenurobrycon coracoralinae Moreira 2005*
49	GYMNOTIDAE	*Gymnotus diamantinensis Campos-da-Paz 2002*
50	HEMIODONTIDAE	*Hemiodus parnaguae Eigenmann and Henn 1916*
51	HEPTAPTERIDAE	*Chasmocranus brachynema Gomes and Schubart 1958*
52	HEPTAPTERIDAE	*Imparfinis minutus (LÂ• tken 1874)*
53	HEPTAPTERIDAE	*Imparfinis schubarti (Gomes 1956)*
54	HEPTAPTERIDAE	*Phenacorhamdia somnians (Mees 1974)*

55	HEPTAPTERIDAE	*Phenacorhamdia unifasciata Britski 1993*
56	HEPTAPTERIDAE	*Pimelodella parnahybae Fowler 1941*
57	HEPTAPTERIDAE	*Pimelodella spelaea Trajano, Reis and Bichuette 2004*
58	HEPTAPTERIDAE	*Rhamdia enfurnada Bichuette and Trajano 2005*
59	HEPTAPTERIDAE	*Rhamdiopsis microcephala (LÂ• tken 1874)*
60	HYPOPTOPOMATINAE	*Corumbataia britskii Ferreira and Ribeiro 2007*
61	HYPOPTOPOMATINAE	*Corumbataia cuestae Britski 1997*
62	HYPOPTOPOMATINAE	*Corumbataia tocantinensis Britski 1997*
63	HYPOPTOPOMATINAE	*Otocinclus tapirape Britto and Moreira 2002*
64	HYPOPTOPOMATINAE	*Parotocinclus prata Ribeiro, Melo and Pereira 2002*
65	HYPOSTOMINAE	*Hypostomus ericae Hollanda Carvalho and Weber 2004*
66	HYPOSTOMINAE	*Hypostomus goyazensis (Regan 1908)*
67	HYPOSTOMINAE	*Hypostomus lima (LÂ• tken 1874)*
68	HYPOSTOMINAE	*Hypostomus macrops (Eigenmann and Eigenmann 1888)*
69	HYPOSTOMINAE	*Hypostomus mutucae Knaack 1999*
70	HYPOSTOMINAE	*Hypostomus paulinus (Ihering 1905)*
71	HYPOSTOMINAE	*Hypostomus vaillanti (Steindachner 1877)*
72	HYPOSTOMINAE	*Hypostomus variipictus (Ihering 1911)*
73	HYPOSTOMINAE	*Hypostomus variostictus (Miranda Ribeiro 1912)*
74	HYPOSTOMINAE	*Pareiorhaphis stephanus Oliveira and Oyakawa 1999*
75	INCERTAE	*Astyanacinus goyanensis Miranda Ribeiro 1944*
76	INCERTAE	*Astyanacinus moorii (Boulenger 1892)*
77	INCERTAE	*Astyanax elachylepis Bertaco and Lucinda 2005*
78	INCERTAE	*Astyanax kullanderi Costa 1995*
79	INCERTAE	*Astyanax turmalinensis Triques Â®et alÂ¯. 2003*
80	INCERTAE	*Astyanax unitaeniatus Garutti 1998*
81	INCERTAE	*Caiapobrycon tucurui Malabarba and Vari 2000*
82	INCERTAE	*Creagrutus atrisignum Myers 1927*
83	INCERTAE	*Creagrutus britskii Vari and Harold 2001*
84	INCERTAE	*Creagrutus ignotus Vari and Harold 2001*
85	INCERTAE	*Creagrutus molinus Vari and Harold 2001*
86	INCERTAE	*Creagrutus mucipu Vari and Harold 2001*
87	INCERTAE	*Creagrutus saxatilis Vari and Harold 2001*
88	INCERTAE	*Creagrutus seductus Vari and Harold 2001*
89	INCERTAE	*Creagrutus varii Ribeiro Â®et alÂ¯. 2004*
90	INCERTAE	*Hasemania crenuchoides Zarske and Gâ€šry 1999*
91	INCERTAE	*Hasemania nana (LÂ• tken 1875)*
92	INCERTAE	*Hemigrammus brevis Ellis 1911*
93	INCERTAE	*Hemigrammus skolioplatus Bertaco and Carvalho 2005*
94	INCERTAE	*Hyphessobrycon balbus Myers 1927*
95	INCERTAE	*Hyphessobrycon coelestinus Myers 1929*
96	INCERTAE	*Hyphessobrycon eylios Lima and Moreira 2003*
97	INCERTAE	*Hyphessobrycon hamatus Bertaco and Malabarba 2005*
98	INCERTAE	*Hyphessobrycon hexastichos Bertaco and Carvalho 2005*
99	INCERTAE	*Hyphessobrycon langeanii Lima and Moreira 2003*
100	INCERTAE	*Hyphessobrycon loweae Costa and Gâ€šry 1994*
101	INCERTAE	*Hyphessobrycon melanostichos Carvalho and Bertaco 2006*
102	INCERTAE	*Hyphessobrycon mutabilis Costa and Gâ€šry 1994*
103	INCERTAE	*Hyphessobrycon notidanos Carvalho and Bertaco 2006*
104	INCERTAE	*Hyphessobrycon stegemanni Gâ€šry 1961*
105	INCERTAE	*Hyphessobrycon weitzmanorum Lima and Moreira 2003*
106	INCERTAE	*Jupiaba yarina Zanata 1997*
107	INCERTAE	*Knodus geryi Lima, Britski and Machado 2004*
108	INCERTAE	*Microschemobrycon elongatus Gâ€šry 1973*
109	INCERTAE	*Moenkhausia bonita Benine, Castro and Sabino 2004*
110	INCERTAE	*Moenkhausia hysterosticta, Lucinda, Malabarba and Benine 2007*
111	INCERTAE	*Moenkhausia loweae Gâ€šry 1992*

112	INCERTAE	*Moenkhausia nigromarginata Costa 1994*
113	INCERTAE	*Moenkhausia pyrophthalma Costa 1994*
114	INCERTAE	*Moenkhausia tergimacula Lucena and Lucena 1999*
115	INCERTAE	*Oligosarcus planaltinae Menezes and Gâ€šry 1983*
116	INCERTAE	*Stygichthys typhlops Brittan and Bâ€• hlke 1965*
117	LORICARIINAE	*Farlowella henriquei Miranda Ribeiro 1918*
118	LORICARIINAE	*Harttia garavelloi Oyakawa 1993*
119	LORICARIINAE	*Rineloricaria hoehnei (Miranda Ribeiro 1912)*
120	NEOPLECOSTOMINAE	*Neoplecostomus paranensis Langeani 1990*
121	PARODONTIDAE	*Apareiodon argenteus Pavanelli and Britski 2003*
122	PARODONTIDAE	*Apareiodon cavalcante Pavanelli and Britski 2003*
123	PARODONTIDAE	*Apareiodon machrisi Travassos 1957*
124	PARODONTIDAE	*Apareiodon tigrinus Pavanelli and Britski 2003*
125	PIMELODIDAE	*Bagropsis reinhardti LÂ• tken, ex Reinhardt 1874*
126	PIMELODIDAE	*Brachyplatystoma parnahybae Steindachner 1908*
127	POECILIIDAE	*Cnesterodon hypselurus Lucinda and Garavello 2000*
128	POECILIIDAE	*Cnesterodon septentrionalis Rosa and Costa 1993*
129	POECILIIDAE	*Phalloceros zsp. D*
130	POECILIIDAE	*Phallotorynus jucundus von Ihering 1930*
131	PROCHILODONTIDAE	*Prochilodus lacustris Steindachner 1907*
132	PSEUDOPIMELODIDAE	*Batrocoglanis melanurus Shibatta and Pavanelli 2006*
133	PSEUDOPIMELODIDAE	*Microglanis leptostriatus Mori and Shibatta 2006*
134	RIVULIDAE	*Cynolebias altus Costa 2001*
135	RIVULIDAE	*Cynolebias attenuatus Costa 2001*
136	RIVULIDAE	*Cynolebias gibbus Costa 2001*
137	RIVULIDAE	*Cynolebias gilbertoi Costa 1998*
138	RIVULIDAE	*Cynolebias griseus Costa, Lacerda and Brasil 1990*
139	RIVULIDAE	*Maratecoara formosa Costa and Brasil 1995*
140	RIVULIDAE	*Maratecoara lacortei (Lazara 1991)*
141	RIVULIDAE	*Maratecoara splendida Costa 2007*
142	RIVULIDAE	*Neofundulus parvipinnis Costa 1988*
143	RIVULIDAE	*Pituna brevirostrata Costa 2007*
144	RIVULIDAE	*Pituna compacta (Myers 1927)*
145	RIVULIDAE	*Pituna obliquoseriata Costa 2007*
146	RIVULIDAE	*Pituna poranga Costa 1989*
147	RIVULIDAE	*Plesiolebias canabravensis Costa and Nielsen Â®inÂ¯ Costa 2007*
148	RIVULIDAE	*Plesiolebias filamentosus Costa and Brasil Â®inÂ¯ Costa 2007*
149	RIVULIDAE	*Plesiolebias fragilis Costa 2007*
150	RIVULIDAE	*Plesiolebias lacerdai Costa 1989*
151	RIVULIDAE	*Plesiolebias xavantei (Costa, Lacerda and Tanizaki 1988)*
152	RIVULIDAE	*Rivulus apiamici Costa 1989*
153	RIVULIDAE	*Rivulus dapazi Costa 2005*
154	RIVULIDAE	*Rivulus decoratus Costa 1989*
155	RIVULIDAE	*Rivulus egens Costa 2005*
156	RIVULIDAE	*Rivulus kayapo Costa 2006*
157	RIVULIDAE	*Rivulus litteratus Costa 2005*
158	RIVULIDAE	*Rivulus paracatuensis Costa 2003*
159	RIVULIDAE	*Rivulus pinima Costa 1989*
160	RIVULIDAE	*Rivulus rossoi Costa 2005*
161	RIVULIDAE	*Rivulus rutilicaudus Costa 2005*
162	RIVULIDAE	*Rivulus scalaris Costa 2005*
163	RIVULIDAE	*Rivulus violaceus Costa 1991*
164	RIVULIDAE	*Simpsonichthys adornatus Costa 2000*
165	RIVULIDAE	*Simpsonichthys alternatus (Costa and Brasil 1994)*
166	RIVULIDAE	*Simpsonichthys auratus Costa and Nielsen 2000*
167	RIVULIDAE	*Simpsonichthys boitonei Carvalho 1959*
168	RIVULIDAE	*Simpsonichthys brunoi Costa 2003*

169	RIVULIDAE	*Simpsonichthys cholopteryx Costa, Moreira and Lima 2003*
170	RIVULIDAE	*Simpsonichthys delucai Costa 2003*
171	RIVULIDAE	*Simpsonichthys fasciatus Costa and Brasil 2006*
172	RIVULIDAE	*Simpsonichthys flagellatus Costa 2003*
173	RIVULIDAE	*Simpsonichthys flammeus (Costa 1989)*
174	RIVULIDAE	*Simpsonichthys gibberatus Costa and Brasil 2006*
175	RIVULIDAE	*Simpsonichthys igneus Costa 2000*
176	RIVULIDAE	*Simpsonichthys janaubensis Costa 2006*
177	RIVULIDAE	*Simpsonichthys marginatus Costa and Brasil 1996*
178	RIVULIDAE	*Simpsonichthys multiradiatus (Costa and Brasil 1994)*
179	RIVULIDAE	*Simpsonichthys nielseni Costa 2005*
180	RIVULIDAE	*Simpsonichthys notatus (Costa, Lacerda and Brasil 1990)*
181	RIVULIDAE	*Simpsonichthys parallelus Costa 2000*
182	RIVULIDAE	*Simpsonichthys radiosus Costa and Brasil 2004*
183	RIVULIDAE	*Simpsonichthys rufus Costa, Nielsen and de Luca 2001*
184	RIVULIDAE	*Simpsonichthys santanae (Shibata and Garavello 1992)*
185	RIVULIDAE	*Simpsonichthys semiocellatus (Costa and Nielsen 1997)*
186	RIVULIDAE	*Simpsonichthys similis Costa and Hellner 1999*
187	RIVULIDAE	*Simpsonichthys stellatus (Costa and Brasil 1994)*
188	RIVULIDAE	*Simpsonichthys trilineatus (Costa and Brasil 1994)*
189	RIVULIDAE	*Simpsonichthys virgulatus Costa and Brasil 2006*
190	RIVULIDAE	*Simpsonichthys zonatus (Costa and Brasil 1990)*
191	RIVULIDAE	*Trigonectes rubromarginatus Costa 1990*
192	RIVULIDAE	*Trigonectes strigabundus Myers 1925*
193	SARCOGLANIDINAE	*Ammoglanis diaphanus Costa 1994*
194	STERNOPYGIDAE	*Eigenmannia microstoma (Reinhardt 1852)*
195	STERNOPYGIDAE	*Eigenmannia vicentespelaea Triques 1996*
196	TRICHOMYCTERINAE	*Ituglanis bambui Bichuette and Trajano 2004*
197	TRICHOMYCTERINAE	*Ituglanis epikarsticus Bichuette and Trajano 2004*
198	TRICHOMYCTERINAE	*Ituglanis herberti (Miranda Ribeiro 1940)*
199	TRICHOMYCTERINAE	*Ituglanis macuanima Datovo and Landim 2005*
200	TRICHOMYCTERINAE	*Ituglanis passensis FernÂ ndez and Bichuette 2002*
201	TRICHOMYCTERINAE	*Ituglanis ramiroi Bichuette and Trajano 2004*
202	TRICHOMYCTERINAE	*Trichomycterus brasiliensis LÂ• tken 1874*
203	TRICHOMYCTERINAE	*Trichomycterus concolor Costa 1992*
204	TRICHOMYCTERINAE	*Trichomycterus itacambirussu Triques and Vono 2004*
205	TRICHOMYCTERINAE	*Trichomycterus itacarambiensis Trajano and de Pinna 1996*
206	TRICHOMYCTERINAE	*Trichomycterus landinga Triques and Vono 2004*
207	TRICHOMYCTERINAE	*Trichomycterus punctatissimus Castelnau 1855*
208	TRICHOMYCTERINAE	*Trichomycterus reinhardti (Eigenmann 1917)*
209	TRICHOMYCTERINAE	*Trichomycterus santaeritae (Eigenmann 1918)*
210	TRICHOMYCTERINAE	*Trichomycterus variegatus Costa 1992*

APPENDIX 2. TERRESTRIAL KBA RAW DATA

The following four tables present raw information for each KBA used as basis for the prioritization process:

- Table 2.1 Terrestrial KBA Raw Data per country, area, Langhammer concept, number of rare fish and rare plants
- Table 2.2 Terrestrial KBA Raw Data for Threatened Fauna
- Table 2.3 Terrestrial KBA Raw Data for Threatened Flora
- Table 2.4 Terrestrial KBA Raw Data for irreplaceable species, natural vegetation cover, threat level, civil society capacity, water consumption demand, protected and priority areas.

Table 2.1. Terrestrial KBA Raw Data for country, area, Langhammer concept, number of rare fish and rare plants

KBA	COD	Name	Country	Area (hectar)	Langhamer concept		Number of Rare Plants	Number of Rare Fish
					Vulnerable Species	Irrepleaceble Species		
1	TO32	Goiatins	Brazil	20409,68	0	1	0	1
2	MA56	Tres Barras	Brazil	24316,96	0	1	0	1
3	BA1	Aguas do Paulista	Brazil	26818,87	0	1	0	1
4	MT65	Nova Nazare	Brazil	10118,73	0	1	0	1
5	MG63	Natalandia	Brazil	38419,34	0	2	0	2
6	MG132	Unai de Minas	Brazil	17237,81	0	1	0	1
7	GO29	Campinacu	Brazil	24369,09	0	1	0	1
8	GO44	Delgado	Brazil	22453,42	0	3	0	3
9	MT26	Canarana	Brazil	30284,75	0	1	0	1
10	MS1	Aldeia	Brazil	37909,95	0	1	0	1
11	MS15	PE Serra de Sonora	Brazil	120900,89	0	1	0	1
12	MT3	Agua Clara	Brazil	16787,69	0	1	0	1
13	MT68	Paranatinga	Brazil	55660,19	0	1	0	1
14	TO84	Sao Felipe	Brazil	18834,55	0	3	0	3
15	MT55	Man-Azde	Brazil	34638,41	0	1	0	1
16	TO10	Araguaia	Brazil	32662,89	0	1	0	1
17	TO85	Sao Valerio	Brazil	309340,19	0	1	0	1
18	GO38	Corriola	Brazil	134394,65	2	9	3	6
19	GO131	Sao Patricio	Brazil	197132,89	0	1	0	1
20	TO41	Lajeado	Brazil	10571,87	1	0	0	0
21	PA2	Santana do Araguaia	Brazil	10487,70	0	1	1	0
22	TO39	Lagoa da Confusao	Brazil	91147,77	1	0	0	0

23	TO37	Javaes	Brazil	18018,86	0	1	0	1
24	TO91	Terra Indigena Kraho-Kanela	Brazil	116541,97	0	1	0	1
25	MT92	Santa Terezinha	Brazil	9065,63	0	1	1	0
26	MT6	Aldeia Caraja	Brazil	8984,35	4	1	1	0
27	MT84	Rio das Mortes	Brazil	2921,86	1	0	0	0
28	MT75	Piabanha	Brazil	101997,33	2	6	5	1
29	MT85	Rio dos Patos	Brazil	121226,03	1	2	0	2
30	MT117	Zacarias	Brazil	128241,77	8	7	6	1
31	MT49	Insula	Brazil	82269,69	2	1	0	1
32	MT66	Nova Xavantina	Brazil	172151,71	12	5	4	1
33	MT98	Suspiro	Brazil	97067,22	0	1	0	1
34	MT74	Perdidos	Brazil	38347,83	0	1	0	1
35	MT13	APA Meandros do Rio Araguaia	Brazil	110095,23	1	1	0	1
36	GO107	Ribeirao Sao Domingos	Brazil	37878,44	0	1	0	1
37	MT32	Corixo do Cascavel	Brazil	143826,88	1	1	0	1
38	MT80	Registro do Araguaia	Brazil	18640,89	4	1	0	1
39	GO108	Rio Bonito	Brazil	195393,53	4	9	8	1
40	MG52	Joao Pinheiro	Brazil	647888,52	2	6	3	3
41	MG53	Josenopolis	Brazil	81726,03	0	1	0	1
42	MG71	Parque Estadual Grao Mogol	Brazil	508683,42	65	30	28	2
43	MT58	Mariana	Brazil	189520,63	0	1	1	0
44	MT97	Suiazinho	Brazil	350209,63	2	0	0	0
45	MT81	Ribeirao Agua Limpa	Brazil	128872,65	1	1	1	0
46	MT79	Queimada	Brazil	44928,56	1	0	0	0
47	MT96	Sete de Setembro	Brazil	49082,13	1	0	0	0
48	MT39	Culuene	Brazil	34759,78	0	1	0	1
49	MT34	Couto de Magalhaes	Brazil	53633,29	1	0	0	0
50	MT87	Rio Verde	Brazil	354115,89	0	1	1	0
51	MT9	APA do Salto Magessi	Brazil	624668,87	0	1	1	0
52	MT76	Piabas	Brazil	148104,02	1	0	0	0
53	MT100	Tapurah	Brazil	24697,02	1	3	0	3
54	MT57	Marape	Brazil	210395,98	1	0	0	0
55	MT23	Caju Doce	Brazil	23300,21	1	0	0	0
56	MT5	Agua Verde	Brazil	84324,43	2	0	0	0
57	MT64	Nova Mutum	Brazil	199499,11	1	0	0	0
58	MT115	Tres Lagoas	Brazil	44126,87	0	1	1	0
59	MT86	Rio Preto	Brazil	94090,36	0	2	2	0

60	MT17	Arinos	Brazil	96440,50	1	0	0	0
61	MT35	Cravari	Brazil	56975,36	0	1	0	1
62	MT24	Campo Novo do Parecis	Brazil	23603,45	0	2	2	0
63	MT113	Terra Indigena Utiariti	Brazil	438632,22	0	2	1	1
64	MT103	Terra Indigena Enawene-Nawe	Brazil	32097,23	1	0	0	0
65	MT44	Estacao Ecologica de Ique	Brazil	80588,11	1	0	0	0
66	MT109	Terra Indigena Pirineus de Souza	Brazil	246608,11	0	4	1	3
67	MT43	Estacao do Juruena	Brazil	261345,97	1	1	1	0
68	MT54	Juruena	Brazil	38885,20	1	0	0	0
69	MT25	Campos de Julio	Brazil	207209,98	0	1	0	1
70	MT107	Terra Indigena Parque do Aripuana	Brazil	586795,50	0	1	1	0
71	MA32	RESEX Extremo Norte do Estado do Tocantins	Brazil	496410,72	1	1	0	1
72	TO15	Cachoeira Santana	Brazil	10393,92	1	1	1	0
73	TO100	Xupe	Brazil	38622,26	3	1	1	0
74	MA13	Farinha	Brazil	66200,84	2	0	0	0
75	MA8	Cancela	Brazil	35850,51	2	1	1	0
76	MA28	Parque Nacional Chapada das Mesas	Brazil	82591,91	1	0	0	0
77	TO17	Carolina	Brazil	176908,71	2	2	2	0
78	TO97	Urupuchote	Brazil	45294,26	1	0	0	0
79	MA38	Rio Itapicuru	Brazil	3049,99	2	0	0	0
80	TO79	Salobro	Brazil	14187,56	1	0	0	0
81	MA36	Ribeirao do Maranhao	Brazil	7818,93	1	0	0	0
82	MA42	Santa Filomena	Brazil	20046,97	2	0	0	0
83	MA12	Estevao	Brazil	35225,43	1	0	0	0
84	TO69	Ribeirao Tabocas	Brazil	72244,30	1	1	1	0
85	TO70	Rio Bonito do Tocantins	Brazil	78559,69	0	1	1	0
86	TO47	Monumento Natural das Arvores Fossilizadas	Brazil	72926,25	1	0	0	0
87	TO16	Cana-brava	Brazil	44075,46	1	0	0	0
88	TO82	Santarosa	Brazil	17050,20	1	0	0	0
89	TO50	Nova Olinda	Brazil	40825,59	1	0	0	0
90	TO45	Mato Grande	Brazil	47763,26	0	1	1	0
91	TO53	Panela de Ferro	Brazil	67379,08	0	1	1	0
92	TO1	Agua Fria	Brazil	95182,48	1	0	0	0
93	TO94	Tranqueira	Brazil	115110,44	1	1	1	0
94	TO61	Perdida	Brazil	260603,92	2	0	0	0
95	TO65	Ponte Alta	Brazil	330253,92	2	1	1	0
96	TO62	Pindorama do Tocantins	Brazil	192561,65	1	0	0	0

97	TO3	Almas	Brazil	102710,49	3	1	1	0
98	TO87	Soninho	Brazil	198439,09	3	1	1	0
99	TO4	APA do Jalapao	Brazil	73141,52	0	1	1	0
100	TO54	Parque Estadual do Jalapao	Brazil	21481,73	7	0	0	0
101	TO13	Brejao do Jalapao	Brazil	78969,50	4	1	1	0
102	TO23	Desabuso	Brazil	8965,92	1	0	0	0
103	TO75	Rio Novo	Brazil	4015,70	1	0	0	0
104	TO28	Frito gado	Brazil	38650,67	3	0	0	0
105	TO21	Cortapena	Brazil	22225,35	0	1	1	0
106	TO93	Toca	Brazil	24825,51	7	1	1	0
107	TO26	Esteneu	Brazil	27075,35	6	1	1	0
108	TO38	Jorge	Brazil	36506,77	0	1	1	0
109	TO98	Verde do Tocantins	Brazil	23456,61	1	0	0	0
110	TO72	Rio da Volta	Brazil	24237,76	2	1	1	0
111	TO44	Mateiros	Brazil	11765,86	2	0	0	0
112	TO59	Pedra de Amolar	Brazil	36675,54	3	1	1	0
113	TO19	Come Assado	Brazil	67627,28	0	1	1	0
114	TO31	Galhao	Brazil	44864,13	0	1	1	0
115	TO55	Parque Estadual do Lajeado	Brazil	213205,26	1	0	0	0
116	TO81	Santa Luzia	Brazil	152876,90	1	0	0	0
117	TO90	Taquaracu	Brazil	106260,70	8	0	0	0
118	TO7	APA Lago de Palmas	Brazil	298606,41	2	3	3	0
119	TO66	Porto Nacional	Brazil	319932,12	4	4	4	0
120	TO76	Rio Tocantins	Brazil	70788,31	1	0	0	0
121	TO14	Brejinho de Nazare	Brazil	16306,56	1	2	0	2
122	TO2	Alianca do Tocantins	Brazil	88807,20	1	0	0	0
123	TO88	Surubim	Brazil	2206,26	0	2	2	0
124	TO9	Apinage	Brazil	114811,10	1	0	0	0
125	TO60	Pedras	Brazil	200598,96	2	0	0	0
126	TO78	Rocinha	Brazil	77575,99	0	4	4	0
127	TO49	Natividade	Brazil	235778,06	2	3	3	0
128	TO24	Dianopolis	Brazil	280050,18	0	1	1	0
129	TO36	Itaboca	Brazil	185664,72	0	2	2	0
130	TO43	Manuel Alves	Brazil	318737,89	1	1	1	0
131	TO83	Santo Antonio do Tocantins	Brazil	60307,71	0	1	1	0
132	TO89	Taipoca	Brazil	72416,42	0	1	1	0
133	GO140	Talisma	Brazil	399095,02	0	3	1	2

134	GO124	Santa Teresa	Brazil	176267,08	1	2	2	0
135	GO113	Rio do Ouro	Brazil	226070,91	1	0	0	0
136	TO5	APA Foz do Rio Santa Tereza	Brazil	19018,90	2	0	0	0
137	TO73	Rio das Almas	Brazil	134148,20	0	2	2	0
138	TO52	Palma	Brazil	317009,90	0	1	1	0
139	TO12	Arraias	Brazil	153214,24	1	3	3	0
140	TO57	Pau d'arco	Brazil	155302,07	0	1	1	0
141	TO51	Novo Jardim	Brazil	425536,22	3	3	3	0
142	TO20	Corcunda	Brazil	232621,63	0	1	1	0
143	TO86	Sobrado	Brazil	111106,84	3	1	1	0
144	TO42	Lavandeira	Brazil	223878,11	2	1	1	0
145	TO67	Quebra-coco	Brazil	208533,39	1	1	1	0
146	GO144	TQ Kalungas	Brazil	227943,78	1	0	0	0
147	TO46	Montes Claros	Brazil	198155,27	3	7	6	1
148	GO67	Maquine	Brazil	125085,42	15	17	17	0
149	GO139	Sucuri	Brazil	170243,13	5	12	12	0
150	GO125	Sao Bartolomeu	Brazil	99232,14	2	8	8	0
151	GO53	Floresta Nacional da Mata Grande	Brazil	102123,38	0	5	1	4
152	GO27	Calheiros	Brazil	126157,55	5	0	0	0
153	GO46	Divinopolis de Goias	Brazil	37562,80	0	1	1	0
154	GO76	Nova Roma	Brazil	17215,73	2	0	0	0
155	GO71	Morro Alto	Brazil	12331,27	1	0	0	0
156	GO81	Parque Estadual de Terra Ronca	Brazil	268560,46	6	6	3	3
157	GO56	Guatacaba	Brazil	36384,83	1	0	0	0
158	GO66	Macacao	Brazil	161833,11	30	44	44	0
159	GO121	Santa Maria	Brazil	222560,58	1	2	1	1
160	GO15	Baco Pari	Brazil	130908,96	4	6	4	2
161	GO110	Rio Corrente	Brazil	76422,79	0	1	1	0
162	GO24	Buriti	Brazil	119130,58	2	2	2	0
163	GO6	APA das Nascentes do Rio Vermelho	Brazil	74524,00	1	3	0	3
164	GO137	Sitio da Abadia	Brazil	155218,42	2	0	0	0
165	GO115	Rio dos Macacos	Brazil	135769,95	0	1	1	0
166	GO52	Flores de Goias	Brazil	7443,88	1	0	0	0
167	GO51	Extrema	Brazil	112390,82	0	2	1	1
168	GO117	Rio Paraim	Brazil	56113,35	1	0	0	0
169	GO128	Sao Joao d'Alianca	Brazil	20750,30	7	1	1	0
170	GO41	Crixas	Brazil	136248,60	2	3	3	0

171	GO50	Entorno de Brasilia	Brazil	56120,74	3	5	4	1
172	TO8	APA Lago de Peixe-Angical	Brazil	95647,95	0	2	2	0
173	GO30	Cana-brava de Minacu	Brazil	14793,71	1	0	0	0
174	GO32	Cavalcante	Brazil	17709,57	0	1	0	1
175	GO101	Ribeirao Bonito	Brazil	15747,04	1	0	0	0
176	GO69	Minacu	Brazil	25509,45	1	1	0	1
177	GO127	Sao Felix	Brazil	13872,18	1	1	1	0
178	GO64	Laranjal	Brazil	136670,50	1	4	4	0
179	GO95	Preto	Brazil	12972,02	0	1	1	0
180	GO135	Serra do Tombador	Brazil	37140,81	0	1	1	0
181	GO126	Sao Bento	Brazil	18056,59	3	0	0	0
182	GO82	Parque Nacional da Chapada dos Veadeiros	Brazil	132526,16	28	28	28	0
183	GO35	Corrego Areia	Brazil	21568,74	6	10	9	1
184	GO74	Muquem	Brazil	35175,29	11	17	17	0
185	GO106	Ribeirao Santana	Brazil	37822,39	19	8	7	1
186	GO109	Rio Claro	Brazil	65747,88	25	39	39	0
187	GO143	Tocantizinho	Brazil	108532,79	18	21	20	1
188	GO40	Couros	Brazil	47835,13	17	32	32	0
189	GO72	Morro Tira-chapeu	Brazil	94060,34	1	0	0	0
190	GO25	Cachoeirinha	Brazil	27125,32	0	1	0	1
191	GO89	Picarrao	Brazil	40859,84	33	46	46	0
192	GO119	RPPN Fazenda Branca Terra dos Anões	Brazil	66882,06	3	5	5	0
193	GO37	Corrego Roncador	Brazil	124638,72	12	16	15	1
194	GO94	Prata Grande	Brazil	19140,96	0	1	1	0
195	GO75	Niquelandia	Brazil	58259,64	3	3	3	0
196	GO14	Bacalhau	Brazil	61378,63	11	15	15	0
197	GO122	Santa Rita	Brazil	64397,41	0	2	2	0
198	GO102	Ribeirao Conceicao	Brazil	53991,01	1	0	0	0
199	GO134	Serra do Passanove	Brazil	44256,58	0	1	1	0
200	GO116	Rio Palmeira	Brazil	56931,77	0	2	0	2
201	GO19	Bilhagua	Brazil	115838,86	6	11	11	0
202	GO111	Rio da Mula	Brazil	129926,25	2	0	0	0
203	GO83	Passa-tres	Brazil	57344,56	1	1	1	0
204	GO26	Cafe	Brazil	9746,88	2	1	1	0
205	GO105	Ribeirao Ponte Alta	Brazil	42522,19	1	1	1	0
206	GO104	Ribeirao da Laguna	Brazil	19637,71	0	1	1	0
207	GO34	Cocal	Brazil	16325,24	1	0	0	0

208	GO84	Patos	Brazil	15397,06	0	1	0	1
209	GO55	Forquilha	Brazil	43294,11	1	1	1	0
210	GO88	Pensao Sao Miguel	Brazil	39506,66	1	1	1	0
211	GO58	Jacare	Brazil	38124,12	2	2	2	0
212	GO132	Sardinha	Brazil	25626,57	2	6	6	0
213	GO62	Joao Alves	Brazil	28478,41	1	2	2	0
214	GO120	RPPN Fazenda Cachoeirinha	Brazil	25278,42	2	1	1	0
215	GO77	Padre Bernardo	Brazil	5168,79	0	1	1	0
216	GO114	Rio dos Bois	Brazil	5206,40	1	0	0	0
217	GO73	Mucungo	Brazil	32231,66	1	0	0	0
218	GO11	Arraial Velho	Brazil	34434,68	0	3	3	0
219	GO7	APA de Cafuringa	Brazil	50313,96	2	1	1	0
220	GO36	Corrego Fundo	Brazil	19806,42	3	6	6	0
221	DF2	Monumento Natural do Conjunto Espeleologico do Morro da Pedreira	Brazil	41435,98	8	7	7	0
222	GO98	Reserva Biologica da Contagem	Brazil	91298,57	25	9	9	0
223	GO65	Lavrinha	Brazil	38022,26	1	0	0	0
224	GO63	Lajes	Brazil	76160,32	2	0	0	0
225	GO100	Rialma	Brazil	16734,43	0	1	1	0
226	GO57	Irmaos	Brazil	19551,35	0	1	1	0
227	GO133	Serra do Cocalzinho	Brazil	17618,93	1	0	0	0
228	GO31	Canastra	Brazil	70913,51	0	1	1	0
229	GO146	Uru	Brazil	73228,98	1	1	1	0
230	GO60	Jaragua	Brazil	12703,05	0	1	1	0
231	GO80	Parque Estadual da Serra de Jaragua	Brazil	101137,00	1	0	0	0
232	GO4	APA da Serra dos Pireneus	Brazil	51011,74	7	20	20	0
233	GO78	Padre Souza	Brazil	104204,09	0	2	2	0
234	TO63	Piranhas	Brazil	179955,58	1	0	0	0
235	TO40	Lagoa Preta	Brazil	57488,42	0	1	1	0
236	PA1	Jenipapo	Brazil	42463,20	1	0	0	0
237	TO6	APA Ilha do Bananal-Cantao	Brazil	5031,33	1	0	0	0
238	TO71	Rio Caiapo	Brazil	21675,37	1	0	0	0
239	TO33	Grotao	Brazil	88635,10	2	0	0	0
240	TO68	Ribeirao Grande	Brazil	64363,23	4	0	0	0
241	TO30	Furo do Coco	Brazil	13625,26	1	0	0	0
242	TO48	Murici	Brazil	29269,04	1	0	0	0
243	TO74	Rio do Coco	Brazil	18522,07	2	0	0	0
244	TO29	Furo da Gameleira	Brazil	9247,05	10	0	0	0

245	TO18	Cicice	Brazil	27875,40	2	0	0	0
246	TO56	Parque Nacional do Araguaia	Brazil	16212,80	10	0	0	0
247	TO11	Ariari	Brazil	35631,83	1	0	0	0
248	TO64	Pium	Brazil	5268,93	1	0	0	0
249	TO92	Terra Indigena Parque do Araguaia	Brazil	12356,31	1	0	0	0
250	TO35	Ipuca do Riozinho	Brazil	22953,18	1	0	0	0
251	TO34	Ilha de Santa Anna	Brazil	14159,57	0	1	1	0
252	TO77	Riozinho	Brazil	2003,17	2	0	0	0
253	TO22	Cristalandia	Brazil	6562,64	0	1	1	0
254	TO95	Urubu	Brazil	72097,98	2	0	0	0
255	TO80	Sandolandia	Brazil	17772,11	0	1	1	0
256	GO16	Baiao	Brazil	59581,92	1	0	0	0
257	TO96	Urubu Grande	Brazil	32614,43	1	0	0	0
258	TO99	Xavante	Brazil	23906,69	1	0	0	0
259	TO25	Escuro	Brazil	254537,78	0	1	0	1
260	MT116	Xavantinho	Brazil	214561,97	1	0	0	0
261	MT106	Terra Indigena Maraiwatsede	Brazil	114182,30	0	3	3	0
262	MT102	Terra Indigena Cacique Fontoura	Brazil	6278,12	0	1	1	0
263	MT91	Santa Izabel do Morro	Brazil	19075,20	1	2	2	0
264	MT67	Novo Santo Antonio	Brazil	10425,20	0	1	1	0
265	MT95	Sao Joao Grande	Brazil	8165,68	1	0	0	0
266	MT82	Ribeirao Cascalheira	Brazil	11112,58	1	0	0	0
267	MT108	Terra Indigena Pimentel Barbosa	Brazil	43647,20	1	0	0	0
268	MT89	RVS Quelonios do Araguaia	Brazil	5153,23	1	0	0	0
269	MT31	Cocalinho	Brazil	9081,51	4	0	0	0
270	MT8	Angico	Brazil	25062,68	0	1	1	0
271	MT101	Terra Indigena Areoes	Brazil	29425,24	0	1	1	0
272	MT77	Pindaiba	Brazil	15437,75	1	0	0	0
273	MT19	Barra do Garças	Brazil	11274,97	0	1	0	1
274	MT45	Galheiro	Brazil	39778,64	1	5	5	0
275	MT28	Cava Funda	Brazil	10050,37	1	0	0	0
276	MT71	PE da Serra Azul	Brazil	17434,47	0	1	1	0
277	MT33	Corrente	Brazil	5665,54	0	1	0	1
278	MT22	Cachoeira	Brazil	17590,71	1	0	0	0
279	MT53	Jau	Brazil	12169,06	1	0	0	0
280	MT2	Agua Boa	Brazil	19194,98	0	3	3	0
281	MT15	Areao	Brazil	13120,68	1	0	0	0

282	MT40	Dom Bosco	Brazil	39069,19	0	1	0	1
283	MT110	Terra Indigena Sao Marcos	Brazil	7084,43	4	1	1	0
284	MT69	Paredao Grande	Brazil	45600,42	2	0	0	0
285	MT46	General Carneiro	Brazil	136789,13	1	0	0	0
286	MT42	Engano	Brazil	23638,91	1	0	0	0
287	MT1	Agua Azul	Brazil	13086,55	1	0	0	0
288	TO58	PE do Araguaia	Brazil	28347,53	1	0	0	0
289	TO27	Formoso do Araguaia	Brazil	1734,43	1	0	0	0
290	MT10	APA dos Meandros do Rio Araguaia	Brazil	89447,90	1	0	0	0
291	MT30	Chapeu	Brazil	172095,28	1	0	0	0
292	MT36	Cristalino	Brazil	204221,33	1	1	1	0
293	MT60	Mata do Inferno	Brazil	157366,82	1	0	0	0
294	GO43	Crixas-mirim	Brazil	101053,89	1	0	0	0
295	GO91	Pintado	Brazil	97726,17	0	1	0	1
296	GO22	Bonopolis	Brazil	15196,93	2	0	0	0
297	GO17	Barreiro	Brazil	31343,98	0	1	1	0
298	GO103	Ribeirao d'Anta	Brazil	106454,48	1	0	0	0
299	GO42	Crixas-acu	Brazil	73679,01	0	1	1	0
300	GO142	Tesouras	Brazil	16222,11	1	0	0	0
301	GO2	Alagado	Brazil	76153,98	1	0	0	0
302	GO23	Braco do Mato	Brazil	19415,80	1	0	0	0
303	GO90	Pinguela	Brazil	43006,74	0	4	0	4
304	GO1	Alagadinho	Brazil	8346,95	0	1	1	0
305	GO33	Cavalo Queimado	Brazil	69285,14	0	1	1	0
306	GO12	Aruana	Brazil	11393,93	1	0	0	0
307	MT62	Medio Araguaia	Brazil	15978,43	1	0	0	0
308	MT20	Brejao	Brazil	40690,76	1	0	0	0
309	GO141	Terra Indigena Karaja de Aruana	Brazil	2753,08	1	0	0	0
310	GO118	RPPN Boca da Mata	Brazil	34322,19	2	1	0	1
311	GO68	Matrincha	Brazil	150683,33	0	1	0	1
312	GO5	APA da Serra Dourada	Brazil	77644,62	8	7	4	3
313	GO86	PE da Serra Dourada	Brazil	87703,78	6	7	7	0
314	GO47	Dom Bill	Brazil	46053,66	0	1	1	0
315	GO21	Bom Jardim	Brazil	154913,54	1	1	1	0
316	GO99	Retiro das Piranhas	Brazil	16162,78	1	1	1	0
317	GO79	Pantano	Brazil	129073,34	1	1	1	0
318	GO129	Sao Jose	Brazil	27881,49	1	0	0	0

319	MT12	APA Estadual Pe da Serra Azul	Brazil	45359,72	5	3	3	0
320	MT18	Bandeira	Brazil	11443,76	1	0	0	0
321	MT48	Guiratinga	Brazil	7584,52	0	1	1	0
322	MT7	Alto Garcas	Brazil	12313,29	0	1	0	1
323	GO138	Sucupira	Brazil	182229,89	1	0	0	0
324	MT94	Sao Joao	Brazil	48356,36	0	1	1	0
325	GO45	Diamantino	Brazil	38414,26	0	1	1	0
326	GO13	Babilonia	Brazil	27903,39	0	3	1	2
327	GO49	Empantanado	Brazil	26537,78	1	1	0	1
328	GO70	Mineiros	Brazil	45279,90	1	3	0	3
329	GO59	Jacu	Brazil	18166,34	2	0	0	0
330	GO3	Alto Araguaia	Brazil	1896,95	2	0	0	0
331	MT47	Gordura	Brazil	28030,34	2	0	0	0
332	GO123	Santa Rita do Araguaia	Brazil	24628,30	2	0	0	0
333	MT83	Ribeirao do Sapo	Brazil	27053,91	1	3	0	3
334	GO148	Zeca Nonato	Brazil	67894,57	4	1	0	1
335	GO96	Queixada	Brazil	23440,81	2	0	0	0
336	GO10	Araguainha	Brazil	48940,02	2	0	0	0
337	MA51	Terra Indigena Geralda Toco Preto	Brazil	521170,34	1	0	0	0
338	MA52	Terra Indigena Krikati	Brazil	352217,83	1	0	0	0
339	MA19	Ipixuna Acu	Brazil	320007,96	1	0	0	0
340	MA41	RPPN Fazenda Sao Francisco	Brazil	113104,82	0	1	1	0
341	MA31	Presidente Dutra	Brazil	88923,27	1	0	0	0
342	MA37	Rio das Flores	Brazil	144351,98	2	0	0	0
343	MA53	Terra Indigena Porquinhos	Brazil	45359,62	2	0	0	0
344	MA50	Terra Indigena Cana Brava/Guajajara	Brazil	17100,23	3	0	0	0
345	MA20	Itapecuru	Brazil	11813,97	1	0	0	0
346	MA55	TQ Santa Joana	Brazil	159724,29	2	0	0	0
347	MA30	PN dos Lençois Maranhenses	Brazil	21697,29	1	0	0	0
348	MA40	RPPN Fazenda Pantanal	Brazil	40041,31	1	0	0	0
349	MA21	Itapicuru	Brazil	297521,49	1	0	0	0
350	MA7	Cajazeira	Brazil	23903,66	1	0	0	0
351	MA18	Inhumas	Brazil	151246,93	0	1	1	0
352	MA5	Baixao do Bandeira	Brazil	27781,69	1	0	0	0
353	MA15	Fortuna	Brazil	42591,21	2	0	0	0
354	MA25	Mirador	Brazil	30144,31	1	0	0	0
355	MA1	Alpercatinha	Brazil	70241,64	1	0	0	0

356	MA29	PE de Mirador	Brazil	236416,73	1	0	0	0
357	MA3	APA dos Morros Garapenses	Brazil	238730,36	1	0	0	0
358	MA4	APA Upaon-Açu/Miritiba/Alto Preguicas	Brazil	137098,75	1	0	0	0
359	PI24	RPPN Fazenda Centro	Brazil	35188,54	1	1	0	1
360	MA9	Caraiba	Brazil	42674,35	1	0	0	0
361	MA33	Riachao	Brazil	75440,57	1	0	0	0
362	PI10	FN de Palmares	Brazil	57219,71	2	4	0	4
363	MA54	Timon	Brazil	30276,02	1	0	0	0
364	MA45	Sao Francisco do Maranhao	Brazil	76349,94	1	0	0	0
365	MA46	Sucupira do Riachao	Brazil	85245,43	0	1	1	0
366	PI5	Caninde	Brazil	20253,43	1	0	0	0
367	PI18	PN da Serra das Confusoes	Brazil	250528,43	2	2	2	0
368	PI9	Floriano	Brazil	5875,03	0	1	1	0
369	PI7	Coqueiro	Brazil	62547,75	1	0	0	0
370	PI22	Riacho de Sant'Ana	Brazil	45431,87	1	0	0	0
371	PI2	Baliza	Brazil	31259,88	3	0	0	0
372	PI16	Paraim	Brazil	239884,67	1	0	0	0
373	PI15	Matoes	Brazil	107363,96	3	0	0	0
374	PI11	Gurgueia	Brazil	137746,37	1	0	0	0
375	PI1	APA do Rangel	Brazil	34769,23	1	0	0	0
376	PI29	Vereda Uniao	Brazil	91359,16	1	0	0	0
377	PI23	Riacho Frio	Brazil	76019,72	2	0	0	0
378	PI17	Parnagua	Brazil	159093,89	1	0	0	0
379	PI14	Malhada da Barra	Brazil	75763,80	2	0	0	0
380	PI25	Sebastiao Barros	Brazil	164789,87	1	0	0	0
381	PI6	Cardoso	Brazil	137367,49	1	0	0	0
382	PI20	Prata	Brazil	33175,64	1	0	0	0
383	MA34	Riacho do Belem	Brazil	60149,99	3	0	0	0
384	MA11	Curimata	Brazil	4778,13	1	0	0	0
385	MA57	Urucui	Brazil	3771,91	1	0	0	0
386	MA43	Santa Isabel	Brazil	26178,61	0	1	1	0
387	MA6	Balsas	Brazil	16630,38	0	1	1	0
388	MA17	Gameleira	Brazil	32525,59	0	1	1	0
389	MA35	Riacho dos Picos	Brazil	34570,88	1	0	0	0
390	MA14	Fortaleza dos Nogueiras	Brazil	49771,93	1	0	0	0
391	MA10	Coite	Brazil	99901,15	1	0	0	0
392	MA39	Rio Maravilha	Brazil	196476,18	1	0	0	0

393	MA44	Santo Antonio de Balsas	Brazil	39360,10	1	2	0	2
394	MA16	Gado Bravo	Brazil	44570,61	1	0	0	0
395	MA26	Novo Recreio	Brazil	23018,83	1	0	0	0
396	MA49	Temerante	Brazil	20990,07	1	0	0	0
397	MA27	Parelhas	Brazil	20506,55	0	1	1	0
398	MA48	Tem medo	Brazil	12253,19	0	1	1	0
399	MA23	Mandacaru	Brazil	23154,07	0	1	1	0
400	MA47	Sul Maranhense	Brazil	49051,01	0	1	1	0
401	PI3	Benedito Leite	Brazil	7197,00	1	0	0	0
402	PI21	Riacho da Estiva	Brazil	306192,17	1	0	0	0
403	PI28	Urucui-preto	Brazil	605948,42	3	0	0	0
404	MA22	Loreto	Brazil	328118,64	1	1	1	0
405	PI27	Tasso Fragoso	Brazil	155667,56	1	0	0	0
406	PI8	EE de Urucui-Una	Brazil	26553,41	1	0	0	0
407	PI26	Sucuruju	Brazil	88438,62	0	2	2	0
408	MA24	Medonho	Brazil	34153,50	0	1	0	1
409	MA2	Alto Parnaiba	Brazil	56622,64	1	0	0	0
410	PI4	Cachoeira Pedra de Amolar	Brazil	71800,79	1	0	0	0
411	PI19	PN das Nascentes do Rio Parnaiba	Brazil	279146,20	3	3	0	3
412	PI12	Ilha Grande	Brazil	16805,03	2	0	0	0
413	PI13	Luis Correia	Brazil	29222,62	1	0	0	0
414	BA26	Ilha Mocambo dos Ventos	Brazil	42191,20	0	1	0	1
415	BA4	APA Dunas e Veredas do Baixo e Medio Sao Francisco	Brazil	66866,63	1	1	0	1
416	BA17	Cotegipe	Brazil	447915,55	0	1	1	0
417	BA18	EE Rio Preto	Brazil	790151,49	4	3	0	3
418	BA22	Formosa do Rio Preto	Brazil	223016,77	3	1	1	0
419	BA5	APA Rio Preto	Brazil	333804,30	0	1	1	0
420	BA54	Sapao	Brazil	671061,77	2	0	0	0
421	BA45	Rio Grande	Brazil	236693,91	1	0	0	0
422	BA31	Neves	Brazil	73541,55	0	1	1	0
423	BA42	Rio de Janeiro	Brazil	22856,73	3	0	0	0
424	BA35	Ponta d'agua	Brazil	63113,22	2	2	2	0
425	BA3	APA Bacia do Rio de Janeiro	Brazil	30565,97	1	2	2	0
426	BA19	Extremo Oeste Baiano	Brazil	5575,06	1	0	0	0
427	BA32	Ondas	Brazil	32669,17	2	3	3	0
428	BA11	Cabeceira das Lajes	Brazil	63431,96	5	7	6	1
429	BA57	Tabocas	Brazil	18415,96	1	0	0	0

430	BA12	Cabeceira de Pedras	Brazil	183637,98	2	0	0	0
431	BA10	Bora	Brazil	88487,94	0	1	1	0
432	BA9	Boa Sorte	Brazil	260778,31	2	3	3	0
433	BA21	FN de Cristopolis	Brazil	459146,44	2	1	1	0
434	BA63	Vereda Anastacio	Brazil	91985,42	2	0	0	0
435	BA53	Sao Desiderio	Brazil	43963,38	0	1	1	0
436	BA36	Porcos	Brazil	3962,71	1	0	0	0
437	BA61	Triste e Feio	Brazil	271692,55	1	1	1	0
438	BA25	Ilha da Pica Grande	Brazil	2969,61	1	0	0	0
439	BA64	Vereda da Canoa	Brazil	47269,28	0	1	0	1
440	BA55	Serra Dourada	Brazil	174817,78	1	0	0	0
441	BA24	Ilha da Bananeira	Brazil	29116,15	0	2	0	2
442	BA56	Sitio do Mato	Brazil	19815,79	1	0	0	0
443	BA58	Terra Indigena Vargem Alegre	Brazil	121951,67	1	0	0	0
444	BA33	Pedra Branca	Brazil	70757,44	1	0	0	0
445	BA50	Santana	Brazil	58635,33	2	0	0	0
446	BA15	Coribe	Brazil	48288,00	1	0	0	0
447	BA52	Sao Felix do Coribe	Brazil	7755,45	1	1	1	0
448	BA44	Rio Formoso	Brazil	96944,95	1	1	0	1
449	BA2	Alegre	Brazil	65188,30	5	0	0	0
450	BA28	Jaborandi	Brazil	204555,82	1	0	0	0
451	BA47	Rodeador	Brazil	228833,92	1	0	0	0
452	BA62	Vau	Brazil	85184,97	1	0	0	0
453	BA37	Pratudao	Brazil	109461,42	4	0	0	0
454	BA48	RVS das Veredas do Oeste Baiano	Brazil	113236,25	2	0	0	0
455	BA7	Arrojado	Brazil	219421,55	1	1	1	0
456	BA6	Arrojadinho	Brazil	128973,02	3	0	0	0
457	BA16	Correntina	Brazil	148151,87	4	3	3	0
458	BA49	Santa Maria da Vitoria	Brazil	21737,80	1	0	0	0
459	BA23	Guara	Brazil	129657,93	5	2	2	0
460	BA39	Riacho de Pedra	Brazil	17897,10	1	0	0	0
461	BA46	Rio Guara	Brazil	5953,18	1	0	0	0
462	BA51	Santo Antonio	Brazil	92016,74	2	1	1	0
463	BA43	Rio dos Angicos	Brazil	138051,90	2	0	0	0
464	BA40	Riacho do Mato	Brazil	29978,46	1	0	0	0
465	BA59	TQ Lagoa das Piranhas	Brazil	42362,91	0	2	0	2
466	BA60	TQ Nova Batalhinha	Brazil	93082,49	0	1	0	1

467	BA38	Riacho de Mariape	Brazil	36481,54	2	0	0	0
468	BA29	Lagoas	Brazil	114685,88	1	0	0	0
469	BA30	Madrugao	Brazil	18309,70	1	0	0	0
470	BA13	Cariranha	Brazil	76326,17	0	1	1	0
471	MG3	APA Cocha e Gibao	Brazil	315475,72	1	0	0	0
472	BA20	Feira da Mata	Brazil	38953,50	0	1	1	0
473	BA34	PN Grande Sertao Veredas	Brazil	611513,58	6	4	4	0
474	BA14	Cocos	Brazil	61313,22	4	0	0	0
475	BA41	Riacho do Meio	Brazil	110645,12	1	0	0	0
476	BA27	Itaguari	Brazil	456336,02	5	0	0	0
477	MG16	Calindo	Brazil	185255,28	2	0	0	0
478	BA8	Aurelio	Brazil	77275,83	1	0	0	0
479	MG39	Furado Novo	Brazil	146201,65	1	0	0	0
480	MG73	PE Caminho das Gerais	Brazil	358328,27	3	0	0	0
481	MG93	Porteirinha	Brazil	126450,15	2	0	0	0
482	MG41	Gorutuba	Brazil	218787,22	1	3	2	1
483	MG27	Corrego Escuro	Brazil	37256,83	0	1	0	1
484	MG58	Macaubas	Brazil	63257,20	2	0	0	0
485	MG139	Verde Grande	Brazil	28391,09	1	0	0	0
486	MG96	Quem-quem	Brazil	27092,27	3	1	1	0
487	MG1	Agua Limpa	Brazil	51581,92	1	0	0	0
488	MG20	Capitao Eneas	Brazil	95371,43	1	0	0	0
489	MG134	Vacabrava	Brazil	29244,15	8	1	1	0
490	MG54	Juramento	Brazil	150028,23	3	2	1	1
491	MG79	PE Lagoa do Cajueiro	Brazil	270550,49	1	1	0	1
492	MG98	RB Serra Azul	Brazil	92335,33	3	0	0	0
493	MG85	PE Veredas do Peruacu	Brazil	138748,80	9	1	1	0
494	MG89	PN Cavernas do Peruacu	Brazil	238615,50	5	2	2	0
495	MG25	Cochos	Brazil	93357,59	2	0	0	0
496	MG50	Japonvar	Brazil	114001,39	1	0	0	0
497	MG67	Pandeiros	Brazil	38822,12	2	0	0	0
498	MG5	APA Pandeiros	Brazil	108267,05	1	0	0	0
499	MG113	RVS Rio Pandeiros	Brazil	38431,58	6	2	2	0
500	MG117	Sao Joaquim	Brazil	14643,80	1	0	0	0
501	MG83	PE Serra das Araras	Brazil	52859,97	1	0	0	0
502	MG24	Chapada Gaucha	Brazil	18317,00	1	0	0	0
503	MG55	Lagoa da Vaqueta	Brazil	17765,77	0	1	0	1

504	MG116	Sao Francisco	Brazil	11481,28	2	0	0	0
505	MG87	Pintopolis	Brazil	23394,11	1	0	0	0
506	MG133	Urucuia	Brazil	286228,08	1	0	0	0
507	MG26	Conceicao	Brazil	307694,41	2	0	0	0
508	MG101	Ribeirao dos Confins	Brazil	447555,85	2	3	1	2
509	MG33	EE Sagarana	Brazil	331829,06	5	2	0	2
510	MG66	Pacari	Brazil	243748,96	5	0	0	0
511	MG37	Formoso	Brazil	234918,67	2	0	0	0
512	MG120	Serra da Sacada	Brazil	324642,82	2	2	2	0
513	MG119	Sao Romao	Brazil	4221,80	1	0	0	0
514	MG17	Campo Azul	Brazil	143501,97	2	1	1	0
515	MG40	Garitas	Brazil	74825,79	1	0	0	0
516	MG106	Roncador	Brazil	77203,80	1	0	0	0
517	MG131	Unai	Brazil	289479,47	6	3	3	0
518	GO18	Bezerra	Brazil	139122,85	2	0	0	0
519	DF1	APA do Planalto Central	Brazil	166754,34	3	2	2	0
520	MG141	Vereda Grande	Brazil	32390,79	1	0	0	0
521	MG127	TQ Amaros	Brazil	28981,38	1	0	0	0
522	MG99	Ribeirao Bezerra	Brazil	32031,77	1	0	0	0
523	MG112	RPPN Morro da Cruz das Almas	Brazil	53100,59	4	3	3	0
524	MG94	Presidente Olegario	Brazil	58305,88	0	1	0	1
525	MG102	Ribeirao Santa Catarina	Brazil	337167,45	2	3	2	1
526	MG77	PE de Paracatu	Brazil	204491,69	5	4	4	0
527	MG43	Guarda-mor	Brazil	77527,76	2	0	0	0
528	MG10	Barro	Brazil	91747,78	0	2	1	1
529	MG51	Jequitai	Brazil	99641,82	1	0	0	0
530	MG38	Francisco Dumont	Brazil	109113,78	5	2	2	0
531	MG9	Areia	Brazil	37997,57	1	0	0	0
532	MG44	Imbalacaia	Brazil	82238,24	26	15	15	0
533	MG92	PN das Sempre-Vivas	Brazil	151545,27	4	2	2	0
534	MG138	Velhas	Brazil	409807,79	12	5	5	0
535	MG12	Bicudo	Brazil	215480,27	4	2	2	0
536	MG74	PE da Serra do Cabral	Brazil	199002,96	26	20	20	0
537	MG49	Jabuticaba	Brazil	42369,40	0	3	3	0
538	MG70	Pardo Grande	Brazil	203131,55	64	34	34	0
539	MG115	Santo Hipolito	Brazil	50516,19	2	3	3	0
540	MG91	PN da Serra do Cipo	Brazil	449751,89	183	112	112	0

541	MG4	APA do Carste de Lagoa Santa	Brazil	1155436,39	93	65	55	10
542	MG88	Pirapora	Brazil	370669,54	10	2	1	1
543	MG128	Tres Marias	Brazil	119723,29	2	0	0	0
544	MG125	Tiros	Brazil	586827,90	4	0	0	0
545	MG109	RPPN Fazenda Lavagem	Brazil	38941,07	3	0	0	0
546	MG14	Borrachudo	Brazil	172383,66	1	0	0	0
547	MG32	EE de Pirapitinga	Brazil	98757,64	1	0	0	0
548	MG45	Indaia	Brazil	264564,50	1	0	0	0
549	MG107	RPPN Fazenda Barrão	Brazil	231621,58	1	0	0	0
550	MG34	Felixlandia	Brazil	182046,31	2	0	0	0
551	MG35	FN de Paraopeba	Brazil	238483,90	9	2	2	0
552	MG46	Inhauma	Brazil	86763,55	1	1	1	0
553	MG6	APA Vargem das Flores	Brazil	542949,61	2	1	1	0
554	MG56	Lambari	Brazil	195817,75	1	0	0	0
555	MG104	Rio Para	Brazil	46606,88	0	1	1	0
556	MG110	RPPN Fazenda Samoinho	Brazil	154882,77	1	0	0	0
557	MG64	Nova Serrana	Brazil	116063,74	1	0	0	0
558	MG100	Ribeirao Boa Vista	Brazil	214185,28	1	0	0	0
559	MG57	Luz	Brazil	477741,64	0	1	1	0
560	MG31	EE Corumba	Brazil	355602,37	3	0	0	0
561	MG136	Vargem Bonita	Brazil	82883,65	6	2	2	0
562	MG108	RPPN Fazenda do Lobo	Brazil	81463,37	18	8	8	0
563	MG76	PE de Montezuma	Brazil	631723,28	4	1	1	0
564	MG121	Setubal	Brazil	296992,28	1	0	0	0
565	MG11	Berilo	Brazil	240059,27	2	2	1	1
566	MG19	Capelinha	Brazil	129816,53	0	2	1	1
567	MG7	Aracai	Brazil	57325,63	1	0	0	0
568	MG81	PE Rio Preto	Brazil	464603,31	27	12	12	0
569	MG137	Vargem da Lapa	Brazil	9822,03	3	0	0	0
570	MG86	Peixe Bravo	Brazil	53440,71	1	1	1	0
571	MG135	Vacaria	Brazil	106564,31	0	1	1	0
572	MG30	EE Acaua	Brazil	336057,41	30	7	7	0
573	MG47	Itacambira	Brazil	105003,96	5	0	0	0
574	MG122	Tabatinga	Brazil	78456,53	1	1	1	0
575	MG65	Olhos d'agua	Brazil	139832,16	0	4	4	0
576	MG15	Caete-mirim	Brazil	41767,80	9	4	4	0
577	MG72	PE Biribiri	Brazil	211994,54	145	87	86	1

578	MG123	Tanque	Brazil	12899,25	2	0	0	0
579	MG78	PE do Limoeiro	Brazil	14411,10	1	1	1	0
580	MG103	Rio do Peixe	Brazil	21116,11	2	1	1	0
581	MG95	Preto do Itambe	Brazil	6858,91	4	2	2	0
582	MG62	Morro do Pilar	Brazil	12828,87	5	9	9	0
583	MG105	Rio Picao	Brazil	32849,81	6	7	7	0
584	MG84	PE Serra do Intendente	Brazil	20957,53	11	5	5	0
585	MG69	Parauninha	Brazil	16396,48	3	0	0	0
586	MG13	Bom Jesus do Amparo	Brazil	6419,45	0	1	1	0
587	MS10	Ivinheima	Brazil	638789,26	1	0	0	0
588	MS11	Nova Alvorada do Sul	Brazil	670436,25	0	3	3	0
589	MS33	Terra Indigena Jatayvari	Brazil	923802,25	6	1	1	0
590	MS20	Rio Brilhante	Brazil	428223,63	1	0	0	0
591	SP36	Laranja Doce	Brazil	115885,66	1	0	0	0
592	PR8	RPPN Fazenda Monte Alegre	Brazil	1132734,29	3	0	0	0
593	PR4	PE do Guartela	Brazil	301801,94	8	1	1	0
594	PR1	APA da Escarpa Devoniana	Brazil	165010,98	7	1	1	0
595	SP39	Paraguacu Paulista	Brazil	342102,51	4	0	0	0
596	PR9	Ventania	Brazil	329193,59	1	0	0	0
597	PR7	RPPN Fazenda do Tigre	Brazil	216010,98	12	0	0	0
598	SP16	EE de Assis	Brazil	92597,49	4	0	0	0
599	SP12	Campos Novos Paulista	Brazil	107567,60	1	0	0	0
600	SP1	Alambari	Brazil	426391,05	5	0	0	0
601	SP22	EE Santa Barbara	Brazil	148101,61	4	1	1	0
602	SP17	EE de Avare	Brazil	97069,61	1	0	0	0
603	SP26	FE Santa Barbara	Brazil	11147,01	2	0	0	0
604	SP13	Claro	Brazil	94700,88	3	1	1	0
605	SP48	Ribeirao das Pedras	Brazil	19934,55	0	1	1	0
606	SP11	Botucatu	Brazil	55928,61	5	1	1	0
607	SP30	Itaporanga	Brazil	204923,63	20	5	5	0
608	PR6	Pescaria	Brazil	61438,12	1	0	0	0
609	PR5	PE Vale do Codo	Brazil	159363,08	43	6	5	1
610	PR3	Jaguaricatu	Brazil	77922,34	14	2	2	0
611	PR2	Itarare	Brazil	88511,73	13	1	1	0
612	SP40	Paranapanema	Brazil	152323,56	1	0	0	0
613	SP18	EE de Itabera	Brazil	450705,83	6	2	2	0
614	SP21	EE Paranapanema	Brazil	123932,04	5	0	0	0

615	SP27	FN de Capao Bonito	Brazil	281472,99	2	0	0	0
616	SP29	Itapetininga	Brazil	262097,91	12	4	4	0
617	MS8	Inhandui	Brazil	1346930,61	13	6	5	1
618	MS13	Pardo	Brazil	865219,75	0	1	1	0
619	MS7	Botas	Brazil	31906,75	1	0	0	0
620	MS12	Parana	Brazil	45697,44	0	1	1	0
621	MS37	Verde	Brazil	243020,57	2	0	0	0
622	MS27	Sao Domingos	Brazil	25600,41	0	1	0	1
623	MS28	Sucuriu	Brazil	724212,32	6	3	1	2
624	SP4	APA Rio Batalha	Brazil	239452,10	4	0	0	0
625	SP52	Sao Lourenco	Brazil	115526,07	3	0	0	0
626	SP3	APA Ibitinga	Brazil	15971,91	1	0	0	0
627	SP31	Itaquere	Brazil	42612,81	2	0	0	0
628	SP32	Jacare-guacu	Brazil	58103,87	1	0	0	0
629	SP6	Araraquara	Brazil	47362,78	6	1	1	0
630	SP20	EE Itirapina	Brazil	142248,46	10	4	4	0
631	SP33	Jacare-pepira	Brazil	261427,32	5	0	0	0
632	SP7	Arealva	Brazil	105479,30	3	0	0	0
633	SP25	FE Pederneiras	Brazil	56369,28	4	0	0	0
634	SP37	Macatuba	Brazil	107831,92	1	0	0	0
635	SP5	Araqua	Brazil	87572,52	1	0	0	0
636	SP2	APA Corumbatai-Botucatu-Tejupa	Brazil	188651,84	14	1	0	1
637	SP14	Corumbatai	Brazil	163963,72	19	6	5	1
638	SP44	Piracicaba	Brazil	186079,96	2	0	0	0
639	SP9	Atibaia	Brazil	293119,35	2	0	0	0
640	SP8	ARIE Matao de Cosmopolis	Brazil	48859,81	2	0	0	0
641	SP45	Pirapitingui	Brazil	42869,24	1	0	0	0
642	SP34	Jaguari	Brazil	15006,39	1	0	0	0
643	SP55	Vitoria	Brazil	42347,78	4	1	1	0
644	SP49	Rio Alambari	Brazil	31319,10	1	0	0	0
645	SP15	EE Barreiro Rico	Brazil	32097,08	2	0	0	0
646	SP43	Peixe	Brazil	115001,18	2	0	0	0
647	SP51	Sao Jose dos Dourados	Brazil	231142,97	3	0	0	0
648	MS9	Inocencia	Brazil	10278,14	0	1	1	0
649	SP41	Parisi	Brazil	133079,62	1	0	0	0
650	SP38	Mirassolandia	Brazil	300855,82	1	0	0	0
651	MG140	Verde ou Feio	Brazil	278177,37	2	1	1	0

652	MG118	Sao Mateus	Brazil	380500,61	1	1	1	0
653	SP24	FE de Bebedouro	Brazil	518064,48	4	1	0	1
654	SP23	FE Cajuru	Brazil	1272296,91	16	8	4	4
655	SP46	RB de Sertaozinho	Brazil	129316,88	2	0	0	0
656	SP19	EE de Jatai	Brazil	105491,84	1	0	0	0
657	SP42	PE de Vassununga	Brazil	609999,22	17	4	3	1
658	SP35	Jaguari-mirim	Brazil	210186,33	1	0	0	0
659	SP47	RB e EE Mogi-Guaçu	Brazil	359072,05	13	1	1	0
660	MG129	Uberaba	Brazil	269121,56	3	3	3	0
661	SP53	Sapucai	Brazil	300475,03	4	0	0	0
662	SP10	Batatais	Brazil	35900,45	2	0	0	0
663	SP28	Franca	Brazil	13028,25	1	0	0	0
664	SP50	Santa Barbara	Brazil	94891,62	1	0	0	0
665	MG97	RB Sao Sebastiao do Paraiso	Brazil	53741,09	2	1	1	0
666	MG126	Tomba-perna	Brazil	111519,93	2	1	1	0
667	SP54	Solapao	Brazil	130194,75	2	0	0	0
668	MG75	PE das Furnas do Bom Jesus	Brazil	403475,42	10	3	3	0
669	MG114	Sacramento	Brazil	72306,86	0	1	0	1
670	MG90	PN da Serra da Canastra	Brazil	64170,90	16	18	17	1
671	MG23	Cassia	Brazil	50072,47	5	2	2	0
672	MG2	Alpinopolis	Brazil	304434,46	27	17	16	1
673	MG82	PE Serra da Boa Esperanca	Brazil	288828,16	0	1	1	0
674	MG42	Guape	Brazil	157168,41	1	1	1	0
675	MG36	Formiga	Brazil	223501,99	2	0	0	0
676	GO112	Rio da Prata	Brazil	696539,03	2	0	0	0
677	GO93	PN das Emas	Brazil	732349,03	28	4	3	1
678	GO136	Serranopolis	Brazil	1176832,28	12	3	2	1
679	GO61	Jatai	Brazil	1368429,45	11	10	9	1
680	MG48	Ituiutaba	Brazil	591229,68	10	3	3	0
681	MG124	Tijuco	Brazil	227150,47	3	2	2	0
682	MG60	Monte Alegre de Minas	Brazil	76231,84	0	1	1	0
683	MG28	Douradinho	Brazil	96685,46	7	7	7	0
684	GO87	PE de Parauna	Brazil	1280393,99	3	5	5	0
685	GO145	Turvo	Brazil	811849,32	0	1	1	0
686	GO9	APA Serra da Jiboia	Brazil	208479,37	0	1	1	0
687	GO28	Campanha	Brazil	143579,56	2	1	1	0
688	GO8	APA Joao Leite	Brazil	1241045,41	9	8	7	1

689	GO92	Piracanjuba	Brazil	457257,63	1	1	1	0
690	GO85	PE da Serra de Caldas Novas	Brazil	381097,87	4	7	6	1
691	GO20	Bois	Brazil	330565,73	1	0	0	0
692	GO54	FN de Silvania	Brazil	440992,78	1	4	4	0
693	GO39	Corumba	Brazil	195930,42	0	1	1	0
694	GO48	EE do Jardim Botanico	Brazil	535582,26	74	59	52	7
695	GO97	RB e PE do Descoberto	Brazil	905371,53	21	32	32	0
696	MG130	Uberabinha	Brazil	204845,96	2	3	3	0
697	MG80	PE Pau Furado	Brazil	389669,93	6	1	1	0
698	MG8	Araguari	Brazil	462663,80	9	2	0	2
699	MG111	RPPN Galheiros	Brazil	330681,88	12	3	3	0
700	MG21	Capivara	Brazil	133423,85	5	0	0	0
701	MG59	Misericordia	Brazil	298195,08	2	1	1	0
702	MG18	Campos Altos	Brazil	143420,48	0	2	2	0
703	GO147	Verissimo	Brazil	451851,69	2	1	1	0
704	MG22	Cascalho Rico	Brazil	480611,13	6	2	2	0
705	MG61	Monte Carmelo	Brazil	130623,31	1	1	1	0
706	MG29	Dourados	Brazil	234986,91	2	0	0	0
707	MG68	Paranaiba	Brazil	1052785,93	5	2	2	0
708	GO130	Sao Marcos	Brazil	1195052,39	21	16	15	1
709	MS3	Apa	Brazil	169622,85	5	0	0	0
710	MS22	Rio Perdido	Brazil	328133,80	4	1	1	0
711	MS35	Terra Indigena Nande Ru Marangatu	Brazil	135116,05	1	0	0	0
712	MS18	Progresso	Brazil	144260,37	1	0	0	0
713	MS31	Taruma	Brazil	255330,23	4	0	0	0
714	MS19	Rio Branco	Brazil	264320,28	5	1	1	0
715	MS34	Terra Indigena Kadiweu	Brazil	347362,13	0	1	1	0
716	MS26	RPPN Tupaciara	Brazil	789120,97	1	0	0	0
717	MS17	PN da Serra da Bodoquena	Brazil	2008714,06	22	8	5	3
718	MS24	RPPN Estancia Caiman	Brazil	206695,82	3	0	0	0
719	MS6	Aquidauana	Brazil	159267,13	4	1	1	0
720	MS30	Taquarucu	Brazil	242048,48	0	1	1	0
721	MS4	APA Estadual Estrada-Parque Piraputanga	Brazil	264593,92	3	1	1	0
722	MS32	Terra Indigena Buriti	Brazil	305354,27	2	2	2	0
723	MS25	RPPN Fazenda Lageado	Brazil	772628,09	2	0	0	0
724	MS36	TQ Furnas da Boa Sorte	Brazil	350564,84	2	0	0	0
725	MS21	Rio Negro	Brazil	327655,98	2	0	0	0

726	MS2	Anhuma	Brazil	366568,47	5	2	2	0
727	MS29	Taquari	Brazil	196867,77	5	1	0	1
728	MS14	PE das Nascentes do Rio Taquari	Brazil	1176513,93	9	4	3	1
729	MS23	Rio Verde de Mato Grosso	Brazil	143760,33	0	2	2	0
730	MS5	APA Estadual Rio Cenico Rotas Moncoeiras-Rio Coxim	Brazil	735614,44	1	0	0	0
731	MT50	Itiquira	Brazil	1038157,94	3	2	1	1
732	MS16	Piquiri	Brazil	447788,18	2	0	0	0
733	MT51	Jaciara	Brazil	753507,46	5	1	1	0
734	MT72	PE Dom Osorio Stoffel	Brazil	94982,13	2	2	2	0
735	MT111	Terra Indigena Tadarimana	Brazil	252433,56	1	0	0	0
736	MT105	Terra Indigena Jarudore	Brazil	613692,75	1	0	0	0
737	MT93	Santo Antonio do Leverger	Brazil	35286,19	2	0	0	0
738	MT16	Arica-acu	Brazil	169275,31	8	9	9	0
739	MT78	PN da Chapada dos Guimaraes	Brazil	576667,35	11	13	10	3
740	MT37	Cuiaba	Brazil	134196,81	2	1	0	1
741	MT73	PE Gruta da Lagoa Azul	Brazil	56300,36	1	0	0	0
742	MT88	Rosario Oeste	Brazil	83835,28	0	1	0	1
743	MT59	Marzagao	Brazil	59503,57	1	1	0	1
744	MT4	Agua Fina	Brazil	48197,38	1	0	0	0
745	MT70	PE Aguas de Cuiaba	Brazil	31382,91	1	0	0	0
746	MT38	Cuiaba do Bonito	Brazil	43330,73	1	0	0	0
747	MT56	Manso	Brazil	142520,29	6	0	0	0
748	MT63	Nova Brasilandia	Brazil	417384,47	2	1	1	0
749	MT11	APA Estadual da Chapada dos Guimaraes	Brazil	166913,93	19	14	14	0
750	MT27	Casca	Brazil	115965,82	1	0	0	0
751	MT52	Jangada	Brazil	62248,63	0	1	1	0
752	MT29	Chapada dos Guimaraes	Brazil	86793,21	1	0	0	0
753	MT114	TQ Mata Cavalo	Brazil	521067,24	1	0	0	0
754	MT61	Mata Grande	Brazil	111828,60	1	0	0	0
755	MT90	Sangradouro	Brazil	227833,06	2	0	0	0
756	MT104	Terra Indigena Figueiras	Brazil	420511,40	0	1	1	0
757	MT21	Cabacal	Brazil	57422,19	0	1	0	1
758	MT99	Tangara da Serra	Brazil	61661,56	0	1	1	0
759	MT41	EE Serra das Araras	Brazil	410257,03	4	0	0	0
760	MT112	Terra Indigena Umutina	Brazil	16753,22	0	1	1	0
761	MT14	APA Nascentes do Rio Paraguai	Brazil	373149,65	3	0	0	0
762	BO020	Noel Kempff Mercado	Bolivia	2251080,00	7	0	0	0

763	PY013	Cerrados de Concepción	Paraguay	129805,00	7	0	0	0
764	PY012	Estancia Estrella	Paraguay	10954,00	1	0	0	0
765	PY014	Arroyo Tagatiya	Paraguay	31566,00	5	0	0	0

Table 2.2. Terrestrial KBA Raw Data for Threatened Fauna

KBA	COD	Name	Threatened Fauna #					
			National Brazil List- MMA			IUCN		
			Vulnerable	Endangered	Critically Endangered	Vulnerable	Endangered	Critically Endangered
1	TO32	Goiatins	0	0	0	0	0	0
2	MA56	Tres Barras	0	0	0	0	0	0
3	BA1	Aguas do Paulista	0	0	0	0	0	0
4	MT65	Nova Nazare	0	0	0	0	0	0
5	MG63	Natalandia	0	0	0	0	0	0
6	MG132	Unai de Minas	0	0	0	0	0	0
7	GO29	Campinacu	0	0	0	0	0	0
8	GO44	Delgado	0	0	0	0	0	0
9	MT26	Canarana	0	0	0	0	0	0
10	MS1	Aldeia	0	0	0	0	0	0
11	MS15	PE Serra de Sonora	0	0	0	0	0	0
12	MT3	Agua Clara	0	0	0	0	0	0
13	MT68	Paranatinga	0	0	0	0	0	0
14	TO84	Sao Felipe	0	0	0	0	0	0
15	MT55	Man-Azde	0	0	0	0	0	0
16	TO10	Araguaia	0	0	0	0	0	0
17	TO85	Sao Valerio	0	0	0	0	0	0
18	GO38	Corriola	0	0	1	0	0	0
19	GO131	Sao Patricio	0	0	0	0	0	0
20	TO41	Lajeado	1	0	0	0	0	0
21	PA2	Santana do Araguaia	0	0	0	0	0	0
22	TO39	Lagoa da Confusao	1	0	0	0	0	0
23	TO37	Javaes	0	0	0	0	0	0
24	TO91	Terra Indigena Kraho-Kanela	0	0	0	0	0	0
25	MT92	Santa Terezinha	0	0	0	0	0	0
26	MT6	Aldeia Caraja	2	0	0	1	0	0
27	MT84	Rio das Mortes	1	0	0	0	0	0

28	MT75	Piabanha	0	0	0	0	0	0
29	MT85	Rio dos Patos	1	0	0	0	0	0
30	MT117	Zacarias	1	0	0	1	0	0
31	MT49	Insula	0	0	0	0	0	0
32	MT66	Nova Xavantina	4	1	0	1	1	0
33	MT98	Suspiro	0	0	0	0	0	0
34	MT74	Perdidos	0	0	0	0	0	0
35	MT13	APA Meandros do Rio Araguaia	0	0	0	0	0	0
36	GO107	Ribeirao Sao Domingos	0	0	0	0	0	0
37	MT32	Corixo do Cascavel	1	0	0	0	0	0
38	MT80	Registro do Araguaia	1	0	0	1	1	1
39	GO108	Rio Bonito	0	0	0	0	0	0
40	MG52	Joao Pinheiro	0	1	0	0	0	0
41	MG53	Josenopolis	0	0	0	0	0	0
42	MG71	Parque Estadual Grao Mogol	0	0	0	1	0	0
43	MT58	Mariana	0	0	0	0	0	0
44	MT97	Suiazinho	0	0	0	0	0	0
45	MT81	Ribeirao Agua Limpa	0	0	0	0	1	0
46	MT79	Queimada	0	0	0	0	0	0
47	MT96	Sete de Setembro	0	0	0	1	0	0
48	MT39	Culuene	0	0	0	0	0	0
49	MT34	Couto de Magalhaes	1	0	0	0	0	0
50	MT87	Rio Verde	0	0	0	0	0	0
51	MT9	APA do Salto Magessi	0	0	0	0	0	0
52	MT76	Piabas	0	0	0	0	0	0
53	MT100	Tapurah	0	0	0	0	0	0
54	MT57	Marape	0	0	0	0	0	0
55	MT23	Caju Doce	0	0	0	0	0	0
56	MT5	Agua Verde	0	0	0	0	0	0
57	MT64	Nova Mutum	0	0	0	0	0	0
58	MT115	Tres Lagoas	0	0	0	0	0	0
59	MT86	Rio Preto	0	0	0	0	0	0
60	MT17	Arinos	0	0	0	0	0	0
61	MT35	Cravari	0	0	0	0	0	0
62	MT24	Campo Novo do Parecis	0	0	0	0	0	0
63	MT113	Terra Indigena Utiariti	0	0	0	0	0	0
64	MT103	Terra Indigena Enawene-Nawe	1	0	0	0	0	0

65	MT44	Estacao Ecologica de Ique	0	1	0	0	0	0
66	MT109	Terra Indigena Pirineus de Souza	0	0	0	0	0	0
67	MT43	Estacao do Juruena	0	1	0	0	0	0
68	MT54	Juruena	0	0	0	0	0	0
69	MT25	Campos de Julio	0	0	0	0	0	0
70	MT107	Terra Indigena Parque do Aripuana	0	0	0	0	0	0
71	MA32	RESEX Extremo Norte do Estado do Tocantins	0	0	0	0	0	0
72	TO15	Cachoeira Santana	1	0	0	0	0	0
73	TO100	Xupe	1	0	0	0	0	0
74	MA13	Farinha	0	1	0	1	0	0
75	MA8	Cancela	0	0	0	0	0	0
76	MA28	Parque Nacional Chapada das Mesas	1	0	0	0	0	0
77	TO17	Carolina	1	0	0	0	0	0
78	TO97	Urupuchote	0	0	0	1	0	0
79	MA38	Rio Itapicuru	0	0	0	1	1	0
80	TO79	Salobro	0	0	0	1	0	0
81	MA36	Ribeirao do Maranhao	1	0	0	0	0	0
82	MA42	Santa Filomena	0	0	0	0	0	0
83	MA12	Estevao	0	0	0	0	0	0
84	TO69	Ribeirao Tabocas	0	0	0	1	0	0
85	TO70	Rio Bonito do Tocantins	0	0	0	0	0	0
86	TO47	Monumento Natural das Arvores Fossilizadas	0	0	0	1	0	0
87	TO16	Cana-brava	1	0	0	0	0	0
88	TO82	Santarosa	1	0	0	0	0	0
89	TO50	Nova Olinda	1	0	0	0	0	0
90	TO45	Mato Grande	0	0	0	0	0	0
91	TO53	Panela de Ferro	0	0	0	0	0	0
92	TO1	Agua Fria	0	0	0	0	0	0
93	TO94	Tranqueira	0	0	0	0	0	0
94	TO61	Perdida	1	1	0	0	0	0
95	TO65	Ponte Alta	0	0	0	0	1	0
96	TO62	Pindorama do Tocantins	0	0	0	0	0	0
97	TO3	Almas	0	0	0	1	0	0
98	TO87	Soninho	0	1	0	2	0	0
99	TO4	APA do Jalapao	0	0	0	0	0	0
100	TO54	Parque Estadual do Jalapao	3	2	1	1	0	0
101	TO13	Brejao do Jalapao	0	1	1	1	1	0

102	TO23	Desabuso	0	0	1	0	0	0
103	TO75	Rio Novo	0	0	1	0	0	0
104	TO28	Frito gado	0	1	1	0	1	0
105	TO21	Cortapena	0	0	0	0	0	0
106	TO93	Toca	0	2	1	2	1	0
107	TO26	Esteneu	3	0	1	1	1	0
108	TO38	Jorge	0	0	0	0	0	0
109	TO98	Verde do Tocantins	0	0	0	0	0	0
110	TO72	Rio da Volta	0	0	0	1	1	0
111	TO44	Mateiros	0	0	1	0	1	0
112	TO59	Pedra de Amolar	0	0	1	1	1	0
113	TO19	Come Assado	0	0	0	0	0	0
114	TO31	Galhao	0	0	0	0	0	0
115	TO55	Parque Estadual do Lajeado	0	0	0	0	0	0
116	TO81	Santa Luzia	0	0	0	0	0	0
117	TO90	Taquaracu	4	1	0	2	1	0
118	TO7	APA Lago de Palmas	0	0	0	0	0	0
119	TO66	Porto Nacional	0	1	0	2	1	0
120	TO76	Rio Tocantins	1	0	0	0	0	0
121	TO14	Brejinho de Nazare	1	0	0	0	0	0
122	TO2	Alianca do Tocantins	0	0	0	1	0	0
123	TO88	Surubim	0	0	0	0	0	0
124	TO9	Apinage	0	0	0	1	0	0
125	TO60	Pedras	0	0	0	0	0	0
126	TO78	Rocinha	0	0	0	0	0	0
127	TO49	Natividade	0	0	0	0	0	0
128	TO24	Dianopolis	0	0	0	0	0	0
129	TO36	Itaboca	0	0	0	0	0	0
130	TO43	Manuel Alves	0	0	0	0	1	0
131	TO83	Santo Antonio do Tocantins	0	0	0	0	0	0
132	TO89	Taipoca	0	0	0	0	0	0
133	GO140	Talisma	0	0	0	0	0	0
134	GO124	Santa Teresa	0	1	0	0	0	0
135	GO113	Rio do Ouro	0	0	0	0	0	0
136	TO5	APA Foz do Rio Santa Tereza	1	0	0	1	0	0
137	TO73	Rio das Almas	0	0	0	0	0	0
138	TO52	Palma	0	0	0	0	0	0

139	TO12	Arraias	0	0	0	1	0	0
140	TO57	Pau d'arco	0	0	0	0	0	0
141	TO51	Novo Jardim	1	0	0	0	0	0
142	TO20	Corcunda	0	0	0	0	0	0
143	TO86	Sobrado	1	0	0	1	0	0
144	TO42	Lavandeira	1	0	0	0	0	0
145	TO67	Quebra-coco	1	0	0	0	0	0
146	GO144	TQ Kalungas	0	0	0	1	0	0
147	TO46	Montes Claros	0	0	0	0	0	0
148	GO67	Maquine	0	0	0	0	1	0
149	GO139	Sucuri	1	0	0	0	0	0
150	GO125	Sao Bartolomeu	0	0	1	0	0	0
151	GO53	Floresta Nacional da Mata Grande	0	0	0	0	0	0
152	GO27	Calheiros	2	0	1	1	1	0
153	GO46	Divinopolis de Goias	0	0	0	0	0	0
154	GO76	Nova Roma	0	0	2	0	0	0
155	GO71	Morro Alto	1	0	0	0	0	0
156	GO81	Parque Estadual de Terra Ronca	0	0	1	0	1	0
157	GO56	Guatacaba	0	0	1	0	0	0
158	GO66	Macacao	0	1	2	0	1	0
159	GO121	Santa Maria	0	0	0	0	0	0
160	GO15	Baco Pari	0	0	1	0	0	0
161	GO110	Rio Corrente	0	0	0	0	0	0
162	GO24	Buriti	1	0	0	0	0	0
163	GO6	APA das Nascentes do Rio Vermelho	0	0	0	0	0	0
164	GO137	Sitio da Abadia	0	0	0	1	0	0
165	GO115	Rio dos Macacos	0	0	0	0	0	0
166	GO52	Flores de Goias	1	0	0	0	0	0
167	GO51	Extrema	0	0	0	0	0	0
168	GO117	Rio Paraim	0	0	0	0	0	0
169	GO128	Sao Joao d'Alianca	0	0	0	0	0	0
170	GO41	Crixas	0	0	0	0	0	0
171	GO50	Entorno de Brasilia	0	0	0	0	0	0
172	TO8	APA Lago de Peixe-Angical	0	0	0	0	0	0
173	GO30	Cana-brava de Minacu	1	0	0	0	0	0
174	GO32	Cavalcante	0	0	0	0	0	0
175	GO101	Ribeirao Bonito	0	0	0	1	0	0

176	GO69	Minacu	0	0	0	0	0	0
177	GO127	Sao Felix	0	1	0	0	0	0
178	GO64	Laranjal	0	0	0	0	1	0
179	GO95	Preto	0	0	0	0	0	0
180	GO135	Serra do Tombador	0	0	0	0	0	0
181	GO126	Sao Bento	0	0	0	0	0	0
182	GO82	Parque Nacional da Chapada dos Veadeiros	2	4	1	4	2	0
183	GO35	Corrego Areia	0	0	0	0	0	0
184	GO74	Muquem	0	0	0	0	0	0
185	GO106	Ribeirao Santana	5	3	1	2	2	0
186	GO109	Rio Claro	0	0	0	0	0	0
187	GO143	Tocantizinho	0	0	1	1	0	0
188	GO40	Couros	0	0	1	0	0	0
189	GO72	Morro Tira-chapeu	0	0	0	0	0	0
190	GO25	Cachoeirinha	0	0	0	0	0	0
191	GO89	Picarrao	0	0	0	0	0	0
192	GO119	RPPN Fazenda Branca Terra dos Anões	0	0	0	0	1	0
193	GO37	Corrego Roncador	2	0	0	0	1	0
194	GO94	Prata Grande	0	0	0	0	0	0
195	GO75	Niquelandia	0	0	0	0	0	0
196	GO14	Bacalhau	0	0	0	1	0	0
197	GO122	Santa Rita	0	0	0	0	0	0
198	GO102	Ribeirao Conceicao	0	0	0	0	0	0
199	GO134	Serra do Passanove	0	0	0	0	0	0
200	GO116	Rio Palmeira	0	0	0	0	0	0
201	GO19	Bilhagua	0	0	0	0	0	0
202	GO111	Rio da Mula	0	0	0	0	0	0
203	GO83	Passa-tres	0	0	0	1	0	0
204	GO26	Cafe	0	0	0	1	0	0
205	GO105	Ribeirao Ponte Alta	0	0	0	0	0	0
206	GO104	Ribeirao da Laguna	0	0	0	0	0	0
207	GO34	Cocal	0	0	0	0	0	0
208	GO84	Patos	0	0	0	0	0	0
209	GO55	Forquilha	0	0	0	0	0	0
210	GO88	Pensao Sao Miguel	0	0	0	0	0	0
211	GO58	Jacare	0	0	0	0	0	0
212	GO132	Sardinha	0	1	0	0	0	0

213	GO62	Joao Alves	0	0	0	0	0	0
214	GO120	RPPN Fazenda Cachoeirinha	0	1	0	0	0	0
215	GO77	Padre Bernardo	0	0	0	0	0	0
216	GO114	Rio dos Bois	0	0	0	0	0	0
217	GO73	Mucungo	0	0	0	0	0	0
218	GO11	Arraial Velho	0	0	0	0	0	0
219	GO7	APA de Cafuringa	0	1	0	0	0	0
220	GO36	Corrego Fundo	0	0	0	0	0	0
221	DF2	Monumento Natural do Conjunto Espeleologico do Morro da Pedreira	0	1	0	0	0	0
222	GO98	Reserva Biologica da Contagem	3	4	0	2	2	0
223	GO65	Lavrinha	0	0	0	1	0	0
224	GO63	Lajes	0	1	0	1	0	0
225	GO100	Rialma	0	0	0	0	0	0
226	GO57	Irmaos	0	0	0	0	0	0
227	GO133	Serra do Cocalzinho	0	0	0	0	0	0
228	GO31	Canastra	0	0	0	0	0	0
229	GO146	Uru	0	0	1	0	0	0
230	GO60	Jaragua	0	0	0	0	0	0
231	GO80	Parque Estadual da Serra de Jaragua	0	0	0	0	1	0
232	GO4	APA da Serra dos Pireneus	0	0	0	0	0	0
233	GO78	Padre Souza	0	0	0	0	0	0
234	TO63	Piranhas	1	0	0	0	0	0
235	TO40	Lagoa Preta	0	0	0	0	0	0
236	PA1	Jenipapo	1	0	0	0	0	0
237	TO6	APA Ilha do Bananal-Cantao	0	0	0	1	0	0
238	TO71	Rio Caiapo	1	0	0	0	0	0
239	TO33	Grotao	1	0	0	0	1	0
240	TO68	Ribeirao Grande	4	0	0	0	0	0
241	TO30	Furo do Coco	1	0	0	0	0	0
242	TO48	Murici	1	0	0	0	0	0
243	TO74	Rio do Coco	2	0	0	0	0	0
244	TO29	Furo da Gameleira	7	0	2	1	0	0
245	TO18	Cicice	2	0	0	0	0	0
246	TO56	Parque Nacional do Araguaia	7	1	0	2	0	0
247	TO11	Ariari	1	0	0	0	0	0
248	TO64	Pium	1	0	0	0	0	0
249	TO92	Terra Indigena Parque do Araguaia	1	0	0	0	0	0

250	TO35	Ipuca do Riozinho	1	0	0	0	0	0
251	TO34	Ilha de Santa Anna	0	0	0	0	0	0
252	TO77	Riozinho	2	0	0	0	0	0
253	TO22	Cristalandia	0	0	0	0	0	0
254	TO95	Urubu	1	0	0	0	0	0
255	TO80	Sandolandia	0	0	0	0	0	0
256	GO16	Baiao	0	0	0	0	0	0
257	TO96	Urubu Grande	1	0	0	0	0	0
258	TO99	Xavante	1	0	0	0	0	0
259	TO25	Escuro	0	0	0	0	0	0
260	MT116	Xavantinho	0	0	0	0	0	0
261	MT106	Terra Indigena Maraiwatsede	0	0	0	0	0	0
262	MT102	Terra Indigena Cacique Fontoura	0	0	0	0	0	0
263	MT91	Santa Izabel do Morro	0	0	0	1	0	0
264	MT67	Novo Santo Antonio	0	0	0	0	0	0
265	MT95	Sao Joao Grande	1	0	0	0	0	0
266	MT82	Ribeirao Cascalheira	1	0	0	0	0	0
267	MT108	Terra Indigena Pimentel Barbosa	0	0	0	1	0	0
268	MT89	RVS Quelonios do Araguaia	1	0	0	0	0	0
269	MT31	Cocalinho	4	0	0	0	0	0
270	MT8	Angico	0	0	0	0	0	0
271	MT101	Terra Indigena Areoes	0	0	0	0	0	0
272	MT77	Pindaiba	1	0	0	0	0	0
273	MT19	Barra do Garças	0	0	0	0	0	0
274	MT45	Galheiro	0	0	0	0	0	0
275	MT28	Cava Funda	0	0	0	0	0	0
276	MT71	PE da Serra Azul	0	0	0	0	0	0
277	MT33	Corrente	0	0	0	0	0	0
278	MT22	Cachoeira	1	0	0	0	0	0
279	MT53	Jau	1	0	0	0	0	0
280	MT2	Agua Boa	0	0	0	0	0	0
281	MT15	Areao	0	0	0	0	0	0
282	MT40	Dom Bosco	0	0	0	0	0	0
283	MT110	Terra Indigena Sao Marcos	0	0	0	0	0	0
284	MT69	Paredao Grande	0	0	0	0	0	0
285	MT46	General Carneiro	1	0	0	0	0	0
286	MT42	Engano	0	0	0	0	0	0

287	MT1	Agua Azul	0	0	0	0	0	0
288	TO58	PE do Araguaia	1	0	0	0	0	0
289	TO27	Formoso do Araguaia	1	0	0	0	0	0
290	MT10	APA dos Meandros do Rio Araguaia	1	0	0	0	0	0
291	MT30	Chapeu	1	0	0	0	0	0
292	MT36	Cristalino	1	0	0	0	0	0
293	MT60	Mata do Inferno	1	0	0	0	0	0
294	GO43	Crixas-mirim	0	0	0	1	0	0
295	GO91	Pintado	0	0	0	0	0	0
296	GO22	Bonopolis	2	0	0	0	0	0
297	GO17	Barreiro	0	0	0	0	0	0
298	GO103	Ribeirao d'Anta	0	0	0	1	0	0
299	GO42	Crixas-acu	0	0	0	0	0	0
300	GO142	Tesouras	0	0	0	1	0	0
301	GO2	Alagado	0	0	0	1	0	0
302	GO23	Braco do Mato	0	0	0	0	0	0
303	GO90	Pinguela	0	0	0	0	0	0
304	GO1	Alagadinho	0	0	0	0	0	0
305	GO33	Cavalo Queimado	0	0	0	0	0	0
306	GO12	Aruana	1	0	0	0	0	0
307	MT62	Medio Araguaia	1	0	0	0	0	0
308	MT20	Brejao	0	0	0	1	0	0
309	GO141	Terra Indigena Karaja de Aruana	1	0	0	0	0	0
310	GO118	RPPN Boca da Mata	1	0	0	1	0	0
311	GO68	Matrincha	0	0	0	0	0	0
312	GO5	APA da Serra Dourada	1	0	1	2	1	0
313	GO86	PE da Serra Dourada	0	0	0	0	0	0
314	GO47	Dom Bill	0	0	0	0	0	0
315	GO21	Bom Jardim	0	0	0	0	0	0
316	GO99	Retiro das Piranhas	0	0	0	0	0	0
317	GO79	Pantano	0	0	0	0	0	0
318	GO129	Sao Jose	0	0	0	0	0	0
319	MT12	APA Estadual Pe da Serra Azul	1	0	0	0	0	0
320	MT18	Bandeira	0	0	0	0	0	0
321	MT48	Guiratinga	0	0	0	0	0	0
322	MT7	Alto Garcas	0	0	0	0	0	0
323	GO138	Sucupira	1	0	0	0	0	0

324	MT94	Sao Joao	0	0	0	0	0	0
325	GO45	Diamantino	0	0	0	0	0	0
326	GO13	Babilonia	0	0	0	0	0	0
327	GO49	Empantanado	0	0	0	0	1	0
328	GO70	Mineiros	0	0	0	0	0	0
329	GO59	Jacu	2	0	0	0	0	0
330	GO3	Alto Araguaia	0	1	0	0	1	0
331	MT47	Gordura	0	0	0	0	0	0
332	GO123	Santa Rita do Araguaia	1	0	0	0	1	0
333	MT83	Ribeirao do Sapo	1	0	0	0	0	0
334	GO148	Zeca Nonato	3	0	0	0	1	0
335	GO96	Queixada	2	0	0	0	0	0
336	GO10	Araguainha	2	0	0	0	0	0
337	MA51	Terra Indigena Geralda Toco Preto	0	0	0	0	0	0
338	MA52	Terra Indigena Krikati	0	0	0	0	0	0
339	MA19	Ipixuna Acu	0	0	0	0	0	0
340	MA41	RPPN Fazenda Sao Francisco	0	0	0	0	0	0
341	MA31	Presidente Dutra	1	0	0	0	0	0
342	MA37	Rio das Flores	0	0	0	0	0	0
343	MA53	Terra Indigena Porquinhos	1	0	0	0	0	0
344	MA50	Terra Indigena Cana Brava/Guajajara	0	0	0	0	0	0
345	MA20	Itapecuru	1	0	0	0	0	0
346	MA55	TQ Santa Joana	1	0	0	0	0	0
347	MA30	PN dos Lençois Maranhenses	0	0	0	0	1	0
348	MA40	RPPN Fazenda Pantanal	1	0	0	0	0	0
349	MA21	Itapicuru	1	0	0	0	0	0
350	MA7	Cajazeira	1	0	0	0	0	0
351	MA18	Inhumas	0	0	0	0	0	0
352	MA5	Baixao do Bandeira	0	0	0	0	0	0
353	MA15	Fortuna	0	0	0	0	0	0
354	MA25	Mirador	0	0	0	0	0	0
355	MA1	Alpercatinha	0	0	0	0	1	0
356	MA29	PE de Mirador	1	0	0	0	0	0
357	MA3	APA dos Morros Garapenses	0	0	0	0	0	0
358	MA4	APA Upaon-Açu/Miritiba/Alto Preguicas	0	1	0	0	0	0
359	PI24	RPPN Fazenda Centro	0	0	0	0	0	0
360	MA9	Caraiba	0	0	0	0	0	0

361	MA33	Riachao	0	0	0	0	0	0
362	PI10	FN de Palmares	2	0	0	0	0	0
363	MA54	Timon	0	0	0	0	0	0
364	MA45	Sao Francisco do Maranhao	1	0	0	0	0	0
365	MA46	Sucupira do Riachao	0	0	0	0	0	0
366	PI5	Caninde	1	0	0	0	0	0
367	PI18	PN da Serra das Confusoes	2	0	0	0	0	0
368	PI9	Floriano	0	0	0	0	0	0
369	PI7	Coqueiro	1	0	0	0	0	0
370	PI22	Riacho de Sant'Ana	0	0	0	1	0	0
371	PI2	Baliza	0	0	0	0	0	0
372	PI16	Paraim	0	0	0	1	0	0
373	PI15	Matoes	0	0	0	0	0	0
374	PI11	Gurgueia	0	0	0	1	0	0
375	PI1	APA do Rangel	0	0	0	0	0	0
376	PI29	Vereda Uniao	0	0	0	0	0	0
377	PI23	Riacho Frio	2	0	0	0	0	0
378	PI17	Parnagua	1	0	0	0	0	0
379	PI14	Malhada da Barra	1	0	0	1	0	0
380	PI25	Sebastiao Barros	0	0	0	1	0	0
381	PI6	Cardoso	0	0	0	0	0	0
382	PI20	Prata	0	0	0	1	0	0
383	MA34	Riacho do Belem	1	0	0	0	1	0
384	MA11	Curimata	0	0	0	0	0	0
385	MA57	Urucui	1	0	0	0	0	0
386	MA43	Santa Isabel	0	0	0	0	0	0
387	MA6	Balsas	0	0	0	0	0	0
388	MA17	Gameleira	0	0	0	0	0	0
389	MA35	Riacho dos Picos	1	0	0	0	0	0
390	MA14	Fortaleza dos Nogueiras	0	0	0	0	0	0
391	MA10	Coite	1	0	0	0	0	0
392	MA39	Rio Maravilha	0	0	0	0	0	0
393	MA44	Santo Antonio de Balsas	0	0	0	0	1	0
394	MA16	Gado Bravo	0	0	0	1	0	0
395	MA26	Novo Recreio	0	0	0	0	0	0
396	MA49	Temerante	0	0	0	1	0	0
397	MA27	Parelhas	0	0	0	0	0	0

398	MA48	Tem medo	0	0	0	0	0	0
399	MA23	Mandacaru	0	0	0	0	0	0
400	MA47	Sul Maranhense	0	0	0	0	0	0
401	PI3	Benedito Leite	0	0	0	0	0	0
402	PI21	Riacho da Estiva	0	0	0	0	0	0
403	PI28	Urucui-preto	1	1	0	1	0	0
404	MA22	Loreto	0	0	0	1	0	0
405	PI27	Tasso Fragoso	0	0	0	1	0	0
406	PI8	EE de Urucui-Una	0	0	0	1	0	0
407	PI26	Sucuruju	0	0	0	0	0	0
408	MA24	Medonho	0	0	0	0	0	0
409	MA2	Alto Parnaiba	0	0	0	1	0	0
410	PI4	Cachoeira Pedra de Amolar	0	0	0	1	0	0
411	PI19	PN das Nascentes do Rio Parnaiba	3	0	0	0	0	0
412	PI12	Ilha Grande	1	0	0	1	0	0
413	PI13	Luis Correia	1	0	0	0	0	0
414	BA26	Ilha Mocambo dos Ventos	0	0	0	0	0	0
415	BA4	APA Dunas e Veredas do Baixo e Medio Sao Francisco	1	0	0	0	0	0
416	BA17	Cotegipe	0	0	0	0	0	0
417	BA18	EE Rio Preto	1	0	0	0	1	0
418	BA22	Formosa do Rio Preto	0	0	0	0	0	0
419	BA5	APA Rio Preto	0	0	0	0	0	0
420	BA54	Sapao	0	0	0	0	1	0
421	BA45	Rio Grande	0	0	0	0	0	0
422	BA31	Neves	0	0	0	0	0	0
423	BA42	Rio de Janeiro	1	0	1	1	0	0
424	BA35	Ponta d'agua	1	0	1	0	0	0
425	BA3	APA Bacia do Rio de Janeiro	0	0	0	0	0	0
426	BA19	Extremo Oeste Baiano	0	0	1	0	0	0
427	BA32	Ondas	0	0	0	0	0	0
428	BA11	Cabeceira das Lajes	0	0	0	0	0	0
429	BA57	Tabocas	0	0	0	0	0	0
430	BA12	Cabeceira de Pedras	0	0	1	1	0	0
431	BA10	Bora	0	0	0	0	0	0
432	BA9	Boa Sorte	0	0	0	0	0	0
433	BA21	FN de Cristopolis	0	0	0	0	0	0
434	BA63	Vereda Anastacio	0	0	1	0	0	0

435	BA53	Sao Desiderio	0	0	0	0	0	0
436	BA36	Porcos	0	0	1	0	0	0
437	BA61	Triste e Feio	0	0	0	0	0	0
438	BA25	Ilha da Pica Grande	0	0	0	0	0	0
439	BA64	Vereda da Canoa	0	0	0	0	0	0
440	BA55	Serra Dourada	0	0	0	0	0	0
441	BA24	Ilha da Bananeira	0	0	0	0	0	0
442	BA56	Sitio do Mato	0	1	0	0	0	0
443	BA58	Terra Indigena Vargem Alegre	0	0	0	0	0	0
444	BA33	Pedra Branca	0	0	0	0	0	0
445	BA50	Santana	0	0	1	0	0	0
446	BA15	Coribe	0	0	0	0	0	0
447	BA52	Sao Felix do Coribe	0	0	1	0	0	0
448	BA44	Rio Formoso	0	0	0	0	0	0
449	BA2	Alegre	1	0	1	0	0	0
450	BA28	Jaborandi	0	1	0	0	0	0
451	BA47	Rodeador	0	0	1	0	0	0
452	BA62	Vau	0	0	1	0	0	0
453	BA37	Pratudao	1	1	1	0	0	0
454	BA48	RVS das Veredas do Oeste Baiano	1	0	1	0	0	0
455	BA7	Arrojado	0	0	0	0	0	0
456	BA6	Arrojadinho	2	1	0	0	0	0
457	BA16	Correntina	0	1	1	1	1	0
458	BA49	Santa Maria da Vitoria	0	0	0	0	0	0
459	BA23	Guara	0	0	1	1	1	0
460	BA39	Riacho de Pedra	0	0	0	0	0	0
461	BA46	Rio Guara	0	0	0	0	0	0
462	BA51	Santo Antonio	0	0	0	0	0	0
463	BA43	Rio dos Angicos	0	0	0	0	0	0
464	BA40	Riacho do Mato	0	0	0	0	0	0
465	BA59	TQ Lagoa das Piranhas	0	0	0	0	0	0
466	BA60	TQ Nova Batalhinha	0	0	0	0	0	0
467	BA38	Riacho de Mariape	0	0	0	0	0	0
468	BA29	Lagoas	0	0	0	0	0	0
469	BA30	Madrugao	0	0	0	0	0	0
470	BA13	Cariranha	0	0	0	0	0	0
471	MG3	APA Cocha e Gibao	0	0	0	0	0	0

472	BA20	Feira da Mata	0	0	0	0	0	0
473	BA34	PN Grande Sertao Veredas	3	2	0	0	0	0
474	BA14	Cocos	0	0	1	0	0	0
475	BA41	Riacho do Meio	0	0	0	0	0	0
476	BA27	Itaguari	0	0	1	0	0	0
477	MG16	Calindo	1	0	0	0	0	0
478	BA8	Aurelio	0	0	0	0	0	0
479	MG39	Furado Novo	0	1	0	0	0	0
480	MG73	PE Caminho das Gerais	0	0	0	0	0	0
481	MG93	Porteirinha	1	0	0	0	0	0
482	MG41	Gorutuba	0	0	0	0	0	0
483	MG27	Corrego Escuro	0	0	0	0	0	0
484	MG58	Macaubas	0	0	0	0	0	0
485	MG139	Verde Grande	0	0	0	0	0	0
486	MG96	Quem-quem	0	0	0	0	0	0
487	MG1	Agua Limpa	0	0	0	0	0	0
488	MG20	Capitao Eneas	0	0	0	0	0	0
489	MG134	Vacabrava	0	0	0	0	0	0
490	MG54	Juramento	0	0	0	0	0	0
491	MG79	PE Lagoa do Cajueiro	1	0	0	0	0	0
492	MG98	RB Serra Azul	2	1	0	0	0	0
493	MG85	PE Veredas do Peruacu	2	1	0	0	0	0
494	MG89	PN Cavernas do Peruacu	1	1	0	1	0	0
495	MG25	Cochos	0	0	0	1	0	0
496	MG50	Japonvar	0	0	0	0	0	0
497	MG67	Pandeiros	0	1	0	0	0	0
498	MG5	APA Pandeiros	0	0	0	0	0	0
499	MG113	RVS Rio Pandeiros	0	0	0	0	0	0
500	MG117	Sao Joaquim	0	1	0	0	0	0
501	MG83	PE Serra das Araras	0	0	0	0	0	0
502	MG24	Chapada Gaucha	1	0	0	0	0	0
503	MG55	Lagoa da Vaqueta	0	0	0	0	0	0
504	MG116	Sao Francisco	0	0	0	1	0	0
505	MG87	Pintopolis	0	0	0	0	0	0
506	MG133	Urucuia	0	0	0	0	0	0
507	MG26	Conceicao	1	1	0	0	0	0
508	MG101	Ribeirao dos Confins	1	0	0	1	0	0

509	MG33	EE Sagarana	2	1	0	1	1	0
510	MG66	Pacari	1	0	0	1	0	0
511	MG37	Formoso	0	0	0	1	0	0
512	MG120	Serra da Sacada	0	0	0	1	0	0
513	MG119	Sao Romao	0	0	0	1	0	0
514	MG17	Campo Azul	0	0	0	0	0	0
515	MG40	Garitas	0	0	0	0	0	0
516	MG106	Roncador	0	0	0	0	0	0
517	MG131	Unai	1	0	0	1	1	0
518	GO18	Bezerra	2	0	0	0	0	0
519	DF1	APA do Planalto Central	0	0	0	0	1	0
520	MG141	Vereda Grande	0	0	0	1	0	0
521	MG127	TQ Amaros	0	1	0	0	0	0
522	MG99	Ribeirao Bezerra	0	1	0	0	0	0
523	MG112	RPPN Morro da Cruz das Almas	0	1	0	1	0	0
524	MG94	Presidente Olegario	0	0	0	0	0	0
525	MG102	Ribeirao Santa Catarina	1	0	0	0	1	0
526	MG77	PE de Paracatu	0	0	0	0	0	0
527	MG43	Guarda-mor	0	0	1	0	0	0
528	MG10	Barro	0	0	0	0	0	0
529	MG51	Jequitai	0	1	0	0	0	0
530	MG38	Francisco Dumont	0	1	0	0	0	0
531	MG9	Areia	0	1	0	0	0	0
532	MG44	Imbalacaia	0	0	0	1	0	0
533	MG92	PN das Sempre-Vivas	1	0	0	0	0	0
534	MG138	Velhas	2	1	0	0	0	0
535	MG12	Bicudo	0	0	0	0	0	0
536	MG74	PE da Serra do Cabral	0	0	0	0	0	0
537	MG49	Jabuticaba	0	0	0	0	0	0
538	MG70	Pardo Grande	0	0	0	0	0	0
539	MG115	Santo Hipolito	0	0	0	0	0	0
540	MG91	PN da Serra do Cipo	3	2	0	2	0	0
541	MG4	APA do Carste de Lagoa Santa	5	6	1	1	2	1
542	MG88	Pirapora	3	1	0	3	0	0
543	MG128	Tres Marias	0	1	0	0	0	0
544	MG125	Tiros	0	0	0	0	0	0
545	MG109	RPPN Fazenda Lavagem	3	0	0	0	0	0

546	MG14	Borrachudo	0	0	0	1	0	0
547	MG32	EE de Pirapitinga	0	0	0	1	0	0
548	MG45	Indaia	0	0	0	0	0	0
549	MG107	RPPN Fazenda Barrão	0	0	0	0	0	0
550	MG34	Felixlandia	0	1	0	0	0	0
551	MG35	FN de Paraopeba	0	0	0	0	0	0
552	MG46	Inhauma	0	1	0	0	0	0
553	MG6	APA Vargem das Flores	0	0	0	0	0	0
554	MG56	Lambari	0	0	0	0	0	0
555	MG104	Rio Para	0	0	0	0	0	0
556	MG110	RPPN Fazenda Samoinho	0	0	0	0	0	0
557	MG64	Nova Serrana	0	0	0	0	0	0
558	MG100	Ribeirao Boa Vista	0	0	0	0	0	0
559	MG57	Luz	0	0	0	0	0	0
560	MG31	EE Corumba	0	1	0	0	0	0
561	MG136	Vargem Bonita	1	0	0	1	0	0
562	MG108	RPPN Fazenda do Lobo	3	3	1	1	1	1
563	MG76	PE de Montezuma	0	0	0	0	0	0
564	MG121	Setubal	0	0	0	0	0	0
565	MG11	Berilo	0	0	0	0	0	0
566	MG19	Capelinha	0	0	0	0	0	0
567	MG7	Aracai	0	0	0	0	0	0
568	MG81	PE Rio Preto	1	1	0	0	0	0
569	MG137	Vargem da Lapa	0	0	0	0	0	0
570	MG86	Peixe Bravo	0	0	0	0	0	0
571	MG135	Vacaria	0	0	0	0	0	0
572	MG30	EE Acaua	1	0	0	0	0	0
573	MG47	Itacambira	0	0	0	0	0	0
574	MG122	Tabatinga	0	0	0	0	0	0
575	MG65	Olhos d'agua	0	0	0	0	0	0
576	MG15	Caete-mirim	0	0	0	0	0	0
577	MG72	PE Biribiri	1	1	0	0	0	0
578	MG123	Tanque	0	0	0	0	0	0
579	MG78	PE do Limoeiro	0	0	0	0	0	0
580	MG103	Rio do Peixe	0	0	0	0	0	0
581	MG95	Preto do Itambe	0	1	0	1	1	0
582	MG62	Morro do Pilar	0	2	0	0	0	0

583	MG105	Rio Picao	0	3	0	0	0	0
584	MG84	PE Serra do Intendente	0	0	0	0	0	0
585	MG69	Parauninha	0	0	0	0	0	0
586	MG13	Bom Jesus do Amparo	0	0	0	0	0	0
587	MS10	Ivinheima	0	0	0	0	0	0
588	MS11	Nova Alvorada do Sul	0	0	0	0	0	0
589	MS33	Terra Indigena Jatayvari	1	0	0	1	0	0
590	MS20	Rio Brilhante	0	1	0	0	0	0
591	SP36	Laranja Doce	0	1	0	0	0	0
592	PR8	RPPN Fazenda Monte Alegre	0	0	0	0	0	0
593	PR4	PE do Guartela	2	0	0	1	1	0
594	PR1	APA da Escarpa Devoniana	0	0	0	0	0	0
595	SP39	Paraguacu Paulista	0	0	0	0	0	0
596	PR9	Ventania	0	0	0	0	0	0
597	PR7	RPPN Fazenda do Tigre	2	1	0	1	1	0
598	SP16	EE de Assis	0	0	0	0	0	0
599	SP12	Campos Novos Paulista	1	0	0	0	0	0
600	SP1	Alambari	2	1	0	0	0	0
601	SP22	EE Santa Barbara	1	1	0	0	0	0
602	SP17	EE de Avare	0	1	0	0	0	0
603	SP26	FE Santa Barbara	0	1	0	0	0	0
604	SP13	Claro	0	0	0	0	1	0
605	SP48	Ribeirao das Pedras	0	0	0	0	0	0
606	SP11	Botucatu	1	1	0	0	0	0
607	SP30	Itaporanga	0	0	0	0	0	0
608	PR6	Pescaria	0	0	0	0	0	0
609	PR5	PE Vale do Codo	1	1	0	1	1	0
610	PR3	Jaguaricatu	0	0	0	0	1	0
611	PR2	Itarare	1	3	1	0	1	1
612	SP40	Paranapanema	0	0	0	0	1	0
613	SP18	EE de Itabera	0	0	0	0	0	0
614	SP21	EE Paranapanema	0	0	0	0	0	0
615	SP27	FN de Capao Bonito	0	1	0	0	1	0
616	SP29	Itapetininga	3	3	0	1	0	0
617	MS8	Inhandui	2	2	1	1	1	0
618	MS13	Pardo	0	0	0	0	0	0
619	MS7	Botas	0	0	0	0	0	0

620	MS12	Parana	0	0	0	0	0	0
621	MS37	Verde	0	0	0	0	0	0
622	MS27	Sao Domingos	0	0	0	0	0	0
623	MS28	Sucuriu	1	1	0	1	2	0
624	SP4	APA Rio Batalha	0	0	0	0	0	0
625	SP52	Sao Lourenco	1	0	0	0	0	0
626	SP3	APA Ibitinga	0	0	0	0	0	0
627	SP31	Itaquere	0	0	0	0	0	0
628	SP32	Jacare-guacu	1	0	0	0	0	0
629	SP6	Araraquara	0	0	0	0	0	0
630	SP20	EE Itirapina	3	3	0	2	0	0
631	SP33	Jacare-pepira	0	1	0	0	0	0
632	SP7	Arealva	0	0	0	1	1	0
633	SP25	FE Pederneiras	0	0	0	0	0	0
634	SP37	Macatuba	0	0	0	0	0	0
635	SP5	Araqua	0	0	0	0	0	1
636	SP2	APA Corumbatai-Botucatu-Tejupa	0	1	0	0	0	0
637	SP14	Corumbatai	3	1	0	2	0	0
638	SP44	Piracicaba	0	0	0	0	0	0
639	SP9	Atibaia	0	0	0	0	0	0
640	SP8	ARIE Matao de Cosmopolis	0	0	0	0	0	0
641	SP45	Pirapitingui	0	1	0	0	0	0
642	SP34	Jaguari	0	0	0	0	0	0
643	SP55	Vitoria	1	1	0	0	0	1
644	SP49	Rio Alambari	0	0	0	0	0	0
645	SP15	EE Barreiro Rico	0	0	0	0	0	0
646	SP43	Peixe	0	0	0	0	0	0
647	SP51	Sao Jose dos Dourados	0	0	0	0	0	0
648	MS9	Inocencia	0	0	0	0	0	0
649	SP41	Parisi	0	0	0	0	0	0
650	SP38	Mirassolandia	0	0	0	0	0	0
651	MG140	Verde ou Feio	0	0	0	0	0	0
652	MG118	Sao Mateus	0	0	0	0	0	0
653	SP24	FE de Bebedouro	0	0	0	0	1	0
654	SP23	FE Cajuru	2	4	0	0	2	0
655	SP46	RB de Sertaozinho	0	0	0	0	1	0
656	SP19	EE de Jatai	0	0	0	0	0	0

657	SP42	PE de Vassununga	4	1	0	1	1	0
658	SP35	Jaguari-mirim	0	0	0	0	0	0
659	SP47	RB e EE Mogi-Guaçu	0	3	0	0	1	0
660	MG129	Uberaba	1	0	0	0	0	0
661	SP53	Sapucai	0	2	0	1	1	0
662	SP10	Batatais	0	1	0	1	0	0
663	SP28	Franca	0	0	0	1	0	0
664	SP50	Santa Barbara	0	0	0	0	0	0
665	MG97	RB Sao Sebastiao do Paraiso	0	0	0	0	0	0
666	MG126	Tomba-perna	0	0	0	0	0	0
667	SP54	Solapao	0	0	0	0	0	0
668	MG75	PE das Furnas do Bom Jesus	1	0	1	1	1	1
669	MG114	Sacramento	0	0	0	0	0	0
670	MG90	PN da Serra da Canastra	4	3	1	1	1	0
671	MG23	Cassia	0	0	0	0	0	0
672	MG2	Alpinopolis	2	1	0	0	0	0
673	MG82	PE Serra da Boa Esperanca	0	0	0	0	0	0
674	MG42	Guape	0	0	0	0	0	0
675	MG36	Formiga	0	0	0	0	0	0
676	GO112	Rio da Prata	0	0	0	1	1	0
677	GO93	PN das Emas	13	5	1	4	3	0
678	GO136	Serranopolis	1	3	0	1	3	0
679	GO61	Jatai	1	0	0	0	0	0
680	MG48	Ituiutaba	0	0	0	0	0	0
681	MG124	Tijuco	0	0	0	0	0	0
682	MG60	Monte Alegre de Minas	0	0	0	0	0	0
683	MG28	Douradinho	0	0	0	0	0	0
684	GO87	PE de Parauna	2	0	1	0	0	0
685	GO145	Turvo	0	0	0	0	0	0
686	GO9	APA Serra da Jiboia	0	0	0	0	0	0
687	GO28	Campanha	0	0	0	0	0	0
688	GO8	APA Joao Leite	1	3	0	1	0	0
689	GO92	Piracanjuba	0	0	0	0	0	0
690	GO85	PE da Serra de Caldas Novas	1	1	0	0	0	0
691	GO20	Bois	0	0	0	0	0	0
692	GO54	FN de Silvania	0	1	0	0	0	0
693	GO39	Corumba	0	0	0	0	0	0

694	GO48	EE do Jardim Botanico	7	6	1	3	2	0
695	GO97	RB e PE do Descoberto	1	2	0	0	1	0
696	MG130	Uberabinha	0	0	0	1	0	0
697	MG80	PE Pau Furado	0	0	0	1	1	0
698	MG8	Araguari	0	1	0	1	1	0
699	MG111	RPPN Galheiros	1	1	0	2	0	0
700	MG21	Capivara	1	1	0	0	0	0
701	MG59	Misericordia	0	0	1	1	0	0
702	MG18	Campos Altos	0	0	0	0	0	0
703	GO147	Verissimo	0	0	0	0	0	0
704	MG22	Cascalho Rico	1	2	0	1	1	0
705	MG61	Monte Carmelo	0	0	0	1	0	0
706	MG29	Dourados	0	1	0	1	0	0
707	MG68	Paranaiba	0	1	0	2	0	0
708	GO130	Sao Marcos	1	2	0	1	1	0
709	MS3	Apa	5	0	0	0	0	0
710	MS22	Rio Perdido	0	0	0	2	0	0
711	MS35	Terra Indigena Nande Ru Marangatu	0	0	0	0	0	0
712	MS18	Progresso	0	0	0	0	0	0
713	MS31	Taruma	4	0	0	0	0	0
714	MS19	Rio Branco	0	0	0	1	0	0
715	MS34	Terra Indigena Kadiweu	0	0	0	0	0	0
716	MS26	RPPN Tupaciara	0	0	0	0	0	0
717	MS17	PN da Serra da Bodoquena	7	3	0	4	0	0
718	MS24	RPPN Estancia Caiman	2	0	0	1	0	0
719	MS6	Aquidauana	1	0	0	1	0	0
720	MS30	Taquarucu	0	0	0	0	0	0
721	MS4	APA Estadual Estrada-Parque Piraputanga	0	0	0	1	0	0
722	MS32	Terra Indigena Buriti	0	1	0	0	0	0
723	MS25	RPPN Fazenda Lageado	0	1	0	0	0	0
724	MS36	TQ Furnas da Boa Sorte	1	0	0	1	0	0
725	MS21	Rio Negro	1	0	0	1	0	0
726	MS2	Anhuma	1	0	0	0	0	0
727	MS29	Taquari	2	1	0	2	0	0
728	MS14	PE das Nascentes do Rio Taquari	3	1	0	1	1	0
729	MS23	Rio Verde de Mato Grosso	0	0	0	0	0	0
730	MS5	APA Estadual Rio Cenico Rotas Moncoeiras-Rio Coxim	0	0	0	0	0	0

731	MT50	Itiquira	0	0	0	0	0	0
732	MS16	Piquiri	2	0	0	0	0	0
733	MT51	Jaciara	0	1	0	1	1	0
734	MT72	PE Dom Osorio Stoffel	0	0	0	1	0	0
735	MT111	Terra Indigena Tadarimana	1	0	0	0	0	0
736	MT105	Terra Indigena Jarudore	1	0	0	0	0	0
737	MT93	Santo Antonio do Leverger	0	0	0	0	0	0
738	MT16	Arica-acu	2	0	0	0	1	0
739	MT78	PN da Chapada dos Guimaraes	3	0	1	0	1	0
740	MT37	Cuiaba	0	1	0	0	0	0
741	MT73	PE Gruta da Lagoa Azul	0	0	0	0	0	0
742	MT88	Rosario Oeste	0	0	0	0	0	0
743	MT59	Marzagao	0	0	0	0	0	0
744	MT4	Agua Fina	0	0	0	0	0	0
745	MT70	PE Aguas de Cuiaba	0	0	0	0	0	0
746	MT38	Cuiaba do Bonito	0	0	0	0	0	0
747	MT56	Manso	4	0	0	0	0	0
748	MT63	Nova Brasilandia	0	0	0	0	0	0
749	MT11	APA Estadual da Chapada dos Guimaraes	4	2	0	2	1	0
750	MT27	Casca	0	0	0	0	0	0
751	MT52	Jangada	0	0	0	0	0	0
752	MT29	Chapada dos Guimaraes	0	0	0	0	0	0
753	MT114	TQ Mata Cavalo	0	0	0	1	0	0
754	MT61	Mata Grande	1	0	0	0	0	0
755	MT90	Sangradouro	1	0	0	1	0	0
756	MT104	Terra Indigena Figueiras	0	0	0	0	0	0
757	MT21	Cabacal	0	0	0	0	0	0
758	MT99	Tangara da Serra	0	0	0	0	0	0
759	MT41	EE Serra das Araras	0	1	1	2	0	0
760	MT112	Terra Indigena Umutina	0	0	0	0	0	0
761	MT14	APA Nascentes do Rio Paraguai	0	0	0	0	0	0
762	BO020	Noel Kempff Mercado	0	0	0	7	0	0
763	PY013	Cerrados de Concepción	0	0	0	5	2	0
764	PY012	Estancia Estrella	0	0	0	1	0	0
765	PY014	Arroyo Tagatiya	0	0	0	4	1	0

Table 2.3. Terrestrial KBA Raw Data for Threatened Flora

KBA	COD	Name	Threatened Flora #					
			National Brazil List- CNC Flora/Jardim Botanico			IUCN		
			Vulnerable	Endangered	Critically Endangered	Vulnerable	Endangered	Critically Endangered
1	TO32	Goiatins	0	0	0	0	0	0
2	MA56	Tres Barras	0	0	0	0	0	0
3	BA1	Aguas do Paulista	0	0	0	0	0	0
4	MT65	Nova Nazare	0	0	0	0	0	0
5	MG63	Natalandia	0	0	0	0	0	0
6	MG132	Unai de Minas	0	0	0	0	0	0
7	GO29	Campinacu	0	0	0	0	0	0
8	GO44	Delgado	0	0	0	0	0	0
9	MT26	Canarana	0	0	0	0	0	0
10	MS1	Aldeia	0	0	0	0	0	0
11	MS15	PE Serra de Sonora	0	0	0	0	0	0
12	MT3	Agua Clara	0	0	0	0	0	0
13	MT68	Paranatinga	0	0	0	0	0	0
14	TO84	Sao Felipe	0	0	0	0	0	0
15	MT55	Man-Azde	0	0	0	0	0	0
16	TO10	Araguaia	0	0	0	0	0	0
17	TO85	Sao Valerio	0	0	0	0	0	0
18	GO38	Corriola	1	0	0	0	0	0
19	GO131	Sao Patricio	0	0	0	0	0	0
20	TO41	Lajeado	0	0	0	0	0	0
21	PA2	Santana do Araguaia	0	0	0	0	0	0
22	TO39	Lagoa da Confusao	0	0	0	0	0	0
23	TO37	Javaes	0	0	0	0	0	0
24	TO91	Terra Indigena Kraho-Kanela	0	0	0	0	0	0
25	MT92	Santa Terezinha	0	0	0	0	0	0
26	MT6	Aldeia Caraja	1	0	0	0	0	0
27	MT84	Rio das Mortes	0	0	0	0	0	0
28	MT75	Piabanha	1	1	0	0	0	0
29	MT85	Rio dos Patos	0	0	0	0	0	0
30	MT117	Zacarias	4	2	0	0	0	0

31	MT49	Insula	1	1	0	0	0	0
32	MT66	Nova Xavantina	3	2	0	0	0	0
33	MT98	Suspiro	0	0	0	0	0	0
34	MT74	Perdidos	0	0	0	0	0	0
35	MT13	APA Meandros do Rio Araguaia	1	0	0	0	0	0
36	GO107	Ribeirao Sao Domingos	0	0	0	0	0	0
37	MT32	Corixo do Cascavel	0	0	0	0	0	0
38	MT80	Registro do Araguaia	0	0	0	0	0	0
39	GO108	Rio Bonito	3	1	0	0	0	0
40	MG52	Joao Pinheiro	0	0	0	0	1	0
41	MG53	Josenopolis	0	0	0	0	0	0
42	MG71	Parque Estadual Grao Mogol	17	30	10	3	4	0
43	MT58	Mariana	0	0	0	0	0	0
44	MT97	Suiazinho	1	1	0	0	0	0
45	MT81	Ribeirao Agua Limpa	0	0	0	0	0	0
46	MT79	Queimada	0	1	0	0	0	0
47	MT96	Sete de Setembro	0	0	0	0	0	0
48	MT39	Culuene	0	0	0	0	0	0
49	MT34	Couto de Magalhaes	0	0	0	0	0	0
50	MT87	Rio Verde	0	0	0	0	0	0
51	MT9	APA do Salto Magessi	0	0	0	0	0	0
52	MT76	Piabas	0	1	0	0	0	0
53	MT100	Tapurah	1	0	0	0	0	0
54	MT57	Marape	1	0	0	0	0	0
55	MT23	Caju Doce	1	0	0	0	0	0
56	MT5	Agua Verde	0	1	0	1	0	0
57	MT64	Nova Mutum	0	1	0	0	0	0
58	MT115	Tres Lagoas	0	0	0	0	0	0
59	MT86	Rio Preto	0	0	0	0	0	0
60	MT17	Arinos	0	1	0	0	0	0
61	MT35	Cravari	0	0	0	0	0	0
62	MT24	Campo Novo do Parecis	0	0	0	0	0	0
63	MT113	Terra Indigena Utiariti	0	0	0	0	0	0
64	MT103	Terra Indigena Enawene-Nawe	0	0	0	0	0	0
65	MT44	Estacao Ecologica de Ique	0	0	0	0	0	0
66	MT109	Terra Indigena Pirineus de Souza	0	0	0	0	0	0
67	MT43	Estacao do Juruena	0	0	0	0	0	0

68	MT54	Juruena	1	0	0	0	0	0
69	MT25	Campos de Julio	0	0	0	0	0	0
70	MT107	Terra Indigena Parque do Aripuana	0	0	0	0	0	0
71	MA32	RESEX Extremo Norte do Estado do Tocantins	0	1	0	0	0	0
72	TO15	Cachoeira Santana	0	0	0	0	0	0
73	TO100	Xupe	2	0	0	0	0	0
74	MA13	Farinha	0	0	0	0	0	0
75	MA8	Cancela	1	1	0	0	0	0
76	MA28	Parque Nacional Chapada das Mesas	0	0	0	0	0	0
77	TO17	Carolina	1	0	0	0	0	0
78	TO97	Urupuchote	0	0	0	0	0	0
79	MA38	Rio Itapicuru	0	0	0	0	0	0
80	TO79	Salobro	0	0	0	0	0	0
81	MA36	Ribeirao do Maranhao	0	0	0	0	0	0
82	MA42	Santa Filomena	0	1	0	0	1	0
83	MA12	Estevao	0	0	0	0	1	0
84	TO69	Ribeirao Tabocas	0	0	0	0	0	0
85	TO70	Rio Bonito do Tocantins	0	0	0	0	0	0
86	TO47	Monumento Natural das Arvores Fossilizadas	0	0	0	0	0	0
87	TO16	Cana-brava	0	0	0	0	0	0
88	TO82	Santarosa	0	0	0	0	0	0
89	TO50	Nova Olinda	0	0	0	0	0	0
90	TO45	Mato Grande	0	0	0	0	0	0
91	TO53	Panela de Ferro	0	0	0	0	0	0
92	TO1	Agua Fria	0	0	0	0	1	0
93	TO94	Tranqueira	1	0	0	0	0	0
94	TO61	Perdida	0	0	0	0	0	0
95	TO65	Ponte Alta	0	1	0	0	0	0
96	TO62	Pindorama do Tocantins	1	0	0	0	0	0
97	TO3	Almas	1	1	0	0	0	0
98	TO87	Soninho	0	0	0	0	0	0
99	TO4	APA do Jalapao	0	0	0	0	0	0
100	TO54	Parque Estadual do Jalapao	0	0	0	0	0	0
101	TO13	Brejao do Jalapao	0	0	0	0	0	0
102	TO23	Desabuso	0	0	0	0	0	0
103	TO75	Rio Novo	0	0	0	0	0	0
104	TO28	Frito gado	0	0	0	0	0	0

105	TO21	Cortapena	0	0	0	0	0	0
106	TO93	Toca	0	1	0	0	0	0
107	TO26	Esteneu	0	0	0	0	0	0
108	TO38	Jorge	0	0	0	0	0	0
109	TO98	Verde do Tocantins	1	0	0	0	0	0
110	TO72	Rio da Volta	0	0	0	0	0	0
111	TO44	Mateiros	0	0	0	0	0	0
112	TO59	Pedra de Amolar	0	0	0	0	0	0
113	TO19	Come Assado	0	0	0	0	0	0
114	TO31	Galhao	0	0	0	0	0	0
115	TO55	Parque Estadual do Lajeado	1	0	0	0	0	0
116	TO81	Santa Luzia	1	0	0	0	0	0
117	TO90	Taquaracu	0	0	0	0	0	0
118	TO7	APA Lago de Palmas	0	1	0	0	1	0
119	TO66	Porto Nacional	0	0	0	0	0	0
120	TO76	Rio Tocantins	0	0	0	0	0	0
121	TO14	Brejinho de Nazare	0	0	0	0	0	0
122	TO2	Alianca do Tocantins	0	0	0	0	0	0
123	TO88	Surubim	0	0	0	0	0	0
124	TO9	Apinage	0	0	0	0	0	0
125	TO60	Pedras	1	0	1	0	0	0
126	TO78	Rocinha	0	0	0	0	0	0
127	TO49	Natividade	0	0	2	0	0	0
128	TO24	Dianopolis	0	0	0	0	0	0
129	TO36	Itaboca	0	0	0	0	0	0
130	TO43	Manuel Alves	0	0	0	0	0	0
131	TO83	Santo Antonio do Tocantins	0	0	0	0	0	0
132	TO89	Taipoca	0	0	0	0	0	0
133	GO140	Talisma	0	0	0	0	0	0
134	GO124	Santa Teresa	0	0	0	0	0	0
135	GO113	Rio do Ouro	0	1	0	0	0	0
136	TO5	APA Foz do Rio Santa Tereza	0	0	0	0	0	0
137	TO73	Rio das Almas	0	0	0	0	0	0
138	TO52	Palma	0	0	0	0	0	0
139	TO12	Arraias	0	0	0	0	0	0
140	TO57	Pau d'arco	0	0	0	0	0	0
141	TO51	Novo Jardim	1	0	1	0	0	0

142	TO20	Corcunda	0	0	0	0	0	0
143	TO86	Sobrado	0	1	0	0	0	0
144	TO42	Lavandeira	0	0	0	0	1	0
145	TO67	Quebra-coco	0	0	0	0	0	0
146	GO144	TQ Kalungas	0	0	0	0	0	0
147	TO46	Montes Claros	1	1	1	0	0	0
148	GO67	Maquine	4	10	0	0	0	0
149	GO139	Sucuri	0	4	0	0	0	0
150	GO125	Sao Bartolomeu	0	1	0	0	0	0
151	GO53	Floresta Nacional da Mata Grande	0	0	0	0	0	0
152	GO27	Calheiros	0	0	0	0	0	0
153	GO46	Divinopolis de Goias	0	0	0	0	0	0
154	GO76	Nova Roma	0	0	0	0	0	0
155	GO71	Morro Alto	0	0	0	0	0	0
156	GO81	Parque Estadual de Terra Ronca	2	1	1	0	0	0
157	GO56	Guatacaba	0	0	0	0	0	0
158	GO66	Macacao	6	19	1	0	0	0
159	GO121	Santa Maria	0	1	0	0	0	0
160	GO15	Baco Pari	3	0	0	0	0	0
161	GO110	Rio Corrente	0	0	0	0	0	0
162	GO24	Buriti	0	0	0	0	1	0
163	GO6	APA das Nascentes do Rio Vermelho	1	0	0	0	0	0
164	GO137	Sitio da Abadia	1	0	0	0	0	0
165	GO115	Rio dos Macacos	0	0	0	0	0	0
166	GO52	Flores de Goias	0	0	0	0	0	0
167	GO51	Extrema	0	0	0	0	0	0
168	GO117	Rio Paraim	1	0	0	0	0	0
169	GO128	Sao Joao d'Alianca	2	5	0	0	0	0
170	GO41	Crixas	0	1	1	0	0	0
171	GO50	Entorno de Brasilia	1	1	1	0	0	0
172	TO8	APA Lago de Peixe-Angical	0	0	0	0	0	0
173	GO30	Cana-brava de Minacu	0	0	0	0	0	0
174	GO32	Cavalcante	0	0	0	0	0	0
175	GO101	Ribeirao Bonito	0	0	0	0	0	0
176	GO69	Minacu	0	1	0	0	0	0
177	GO127	Sao Felix	0	0	0	0	0	0
178	GO64	Laranjal	0	0	0	0	0	0

179	GO95	Preto	0	0	0	0	0	0
180	GO135	Serra do Tombador	0	0	0	0	0	0
181	GO126	Sao Bento	1	2	0	0	0	0
182	GO82	Parque Nacional da Chapada dos Veadeiros	5	9	1	0	0	0
183	GO35	Corrego Areia	2	4	0	0	0	0
184	GO74	Muquem	4	5	2	0	0	0
185	GO106	Ribeirao Santana	2	4	0	0	0	0
186	GO109	Rio Claro	5	19	1	0	0	0
187	GO143	Tocantizinho	5	9	2	0	0	0
188	GO40	Couros	6	10	0	0	0	0
189	GO72	Morro Tira-chapeu	0	1	0	0	0	0
190	GO25	Cachoeirinha	0	0	0	0	0	0
191	GO89	Picarrao	10	20	3	0	0	0
192	GO119	RPPN Fazenda Branca Terra dos Anões	0	2	0	0	0	0
193	GO37	Corrego Roncador	4	4	1	0	0	0
194	GO94	Prata Grande	0	0	0	0	0	0
195	GO75	Niquelandia	1	1	1	0	0	0
196	GO14	Bacalhau	3	5	2	0	0	0
197	GO122	Santa Rita	0	0	0	0	0	0
198	GO102	Ribeirao Conceicao	0	1	0	0	0	0
199	GO134	Serra do Passanove	0	0	0	0	0	0
200	GO116	Rio Palmeira	0	0	0	0	0	0
201	GO19	Bilhagua	1	3	2	0	0	0
202	GO111	Rio da Mula	2	0	0	0	0	0
203	GO83	Passa-tres	0	0	0	0	0	0
204	GO26	Cafe	1	0	0	0	0	0
205	GO105	Ribeirao Ponte Alta	1	0	0	0	0	0
206	GO104	Ribeirao da Laguna	0	0	0	0	0	0
207	GO34	Cocal	0	1	0	0	0	0
208	GO84	Patos	0	0	0	0	0	0
209	GO55	Forquilha	0	0	0	0	1	0
210	GO88	Pensao Sao Miguel	0	1	0	0	0	0
211	GO58	Jacare	0	1	0	0	1	0
212	GO132	Sardinha	0	1	0	0	0	0
213	GO62	Joao Alves	0	1	0	0	0	0
214	GO120	RPPN Fazenda Cachoeirinha	1	0	0	0	0	0
215	GO77	Padre Bernardo	0	0	0	0	0	0

216	GO114	Rio dos Bois	1	0	0	0	0	0
217	GO73	Mucungo	0	1	0	0	0	0
218	GO11	Arraial Velho	0	0	0	0	0	0
219	GO7	APA de Cafuringa	0	0	0	0	1	0
220	GO36	Corrego Fundo	0	3	0	0	0	0
221	DF2	Monumento Natural do Conjunto Espeleologico do Morro da Pedreira	1	5	0	1	0	0
222	GO98	Reserva Biologica da Contagem	5	5	0	2	2	0
223	GO65	Lavrinha	0	0	0	0	0	0
224	GO63	Lajes	0	0	0	0	0	0
225	GO100	Rialma	0	0	0	0	0	0
226	GO57	Irmaos	0	0	0	0	0	0
227	GO133	Serra do Cocalzinho	0	0	0	0	1	0
228	GO31	Canastra	0	0	0	0	0	0
229	GO146	Uru	0	0	0	0	0	0
230	GO60	Jaragua	0	0	0	0	0	0
231	GO80	Parque Estadual da Serra de Jaragua	0	0	0	0	0	0
232	GO4	APA da Serra dos Pireneus	3	4	0	0	0	0
233	GO78	Padre Souza	0	0	0	0	0	0
234	TO63	Piranhas	0	0	0	0	0	0
235	TO40	Lagoa Preta	0	0	0	0	0	0
236	PA1	Jenipapo	0	0	0	0	0	0
237	TO6	APA Ilha do Bananal-Cantao	0	0	0	0	0	0
238	TO71	Rio Caiapo	0	0	0	0	0	0
239	TO33	Grotao	0	0	0	0	0	0
240	TO68	Ribeirao Grande	0	0	0	0	0	0
241	TO30	Furo do Coco	0	0	0	0	0	0
242	TO48	Murici	0	0	0	0	0	0
243	TO74	Rio do Coco	0	0	0	0	0	0
244	TO29	Furo da Gameleira	0	0	0	0	0	0
245	TO18	Cicice	0	0	0	0	0	0
246	TO56	Parque Nacional do Araguaia	0	0	0	0	0	0
247	TO11	Ariari	0	0	0	0	0	0
248	TO64	Pium	0	0	0	0	0	0
249	TO92	Terra Indigena Parque do Araguaia	0	0	0	0	0	0
250	TO35	Ipuca do Riozinho	0	0	0	0	0	0
251	TO34	Ilha de Santa Anna	0	0	0	0	0	0
252	TO77	Riozinho	0	0	0	0	0	0

253	TO22	Cristalandia	0	0	0	0	0	0
254	TO95	Urubu	1	0	0	0	0	0
255	TO80	Sandolandia	0	0	0	0	0	0
256	GO16	Baiao	1	0	0	0	0	0
257	TO96	Urubu Grande	0	0	0	0	0	0
258	TO99	Xavante	0	0	0	0	0	0
259	TO25	Escuro	0	0	0	0	0	0
260	MT116	Xavantinho	1	0	0	0	0	0
261	MT106	Terra Indigena Maraiwatsede	0	0	0	0	0	0
262	MT102	Terra Indigena Cacique Fontoura	0	0	0	0	0	0
263	MT91	Santa Izabel do Morro	0	0	0	0	0	0
264	MT67	Novo Santo Antonio	0	0	0	0	0	0
265	MT95	Sao Joao Grande	0	0	0	0	0	0
266	MT82	Ribeirao Cascalheira	0	0	0	0	0	0
267	MT108	Terra Indigena Pimentel Barbosa	0	0	0	0	0	0
268	MT89	RVS Quelonios do Araguaia	0	0	0	0	0	0
269	MT31	Cocalinho	0	0	0	0	0	0
270	MT8	Angico	0	0	0	0	0	0
271	MT101	Terra Indigena Areoes	0	0	0	0	0	0
272	MT77	Pindaiba	0	0	0	0	0	0
273	MT19	Barra do Garças	0	0	0	0	0	0
274	MT45	Galheiro	1	0	0	0	0	0
275	MT28	Cava Funda	0	1	0	0	0	0
276	MT71	PE da Serra Azul	0	0	0	0	0	0
277	MT33	Corrente	0	0	0	0	0	0
278	MT22	Cachoeira	0	0	0	0	0	0
279	MT53	Jau	0	0	0	0	0	0
280	MT2	Agua Boa	0	0	0	0	0	0
281	MT15	Areao	0	1	0	0	0	0
282	MT40	Dom Bosco	0	0	0	0	0	0
283	MT110	Terra Indigena Sao Marcos	3	0	0	0	1	0
284	MT69	Paredao Grande	1	1	0	0	0	0
285	MT46	General Carneiro	0	0	0	0	0	0
286	MT42	Engano	1	0	0	0	0	0
287	MT1	Agua Azul	0	1	0	0	0	0
288	TO58	PE do Araguaia	0	0	0	0	0	0
289	TO27	Formoso do Araguaia	0	0	0	0	0	0

290	MT10	APA dos Meandros do Rio Araguaia	0	0	0	0	0	0
291	MT30	Chapeu	0	0	0	0	0	0
292	MT36	Cristalino	0	0	0	0	0	0
293	MT60	Mata do Inferno	0	0	0	0	0	0
294	GO43	Crixas-mirim	0	0	0	0	0	0
295	GO91	Pintado	0	0	0	0	0	0
296	GO22	Bonopolis	0	0	0	0	0	0
297	GO17	Barreiro	0	0	0	0	0	0
298	GO103	Ribeirao d'Anta	0	0	0	0	0	0
299	GO42	Crixas-acu	0	0	0	0	0	0
300	GO142	Tesouras	0	0	0	0	0	0
301	GO2	Alagado	0	0	0	0	0	0
302	GO23	Braco do Mato	0	1	0	0	0	0
303	GO90	Pinguela	0	0	0	0	0	0
304	GO1	Alagadinho	0	0	0	0	0	0
305	GO33	Cavalo Queimado	0	0	0	0	0	0
306	GO12	Aruana	0	0	0	0	0	0
307	MT62	Medio Araguaia	0	0	0	0	0	0
308	MT20	Brejao	0	0	0	0	0	0
309	GO141	Terra Indigena Karaja de Aruana	0	0	0	0	0	0
310	GO118	RPPN Boca da Mata	0	0	0	0	0	0
311	GO68	Matrincha	0	0	0	0	0	0
312	GO5	APA da Serra Dourada	0	3	0	0	0	0
313	GO86	PE da Serra Dourada	1	5	0	0	0	0
314	GO47	Dom Bill	0	0	0	0	0	0
315	GO21	Bom Jardim	0	1	0	0	0	0
316	GO99	Retiro das Piranhas	1	0	0	0	0	0
317	GO79	Pantano	1	0	0	0	0	0
318	GO129	Sao Jose	1	0	0	0	0	0
319	MT12	APA Estadual Pe da Serra Azul	4	0	0	0	0	0
320	MT18	Bandeira	0	1	0	0	0	0
321	MT48	Guiratinga	0	0	0	0	0	0
322	MT7	Alto Garcas	0	0	0	0	0	0
323	GO138	Sucupira	0	0	0	0	0	0
324	MT94	Sao Joao	0	0	0	0	0	0
325	GO45	Diamantino	0	0	0	0	0	0
326	GO13	Babilonia	0	0	0	0	0	0

327	GO49	Empantanado	0	0	0	0	0	0
328	GO70	Mineiros	0	0	0	0	1	0
329	GO59	Jacu	0	0	0	0	0	0
330	GO3	Alto Araguaia	0	0	0	0	0	0
331	MT47	Gordura	1	1	0	0	0	0
332	GO123	Santa Rita do Araguaia	0	0	0	0	0	0
333	MT83	Ribeirao do Sapo	0	0	0	0	0	0
334	GO148	Zeca Nonato	0	0	0	0	0	0
335	GO96	Queixada	0	0	0	0	0	0
336	GO10	Araguainha	0	0	0	0	0	0
337	MA51	Terra Indigena Geralda Toco Preto	1	0	0	0	0	0
338	MA52	Terra Indigena Krikati	0	0	0	1	0	0
339	MA19	Ipixuna Acu	1	0	0	0	0	0
340	MA41	RPPN Fazenda Sao Francisco	0	0	0	0	0	0
341	MA31	Presidente Dutra	0	0	0	0	0	0
342	MA37	Rio das Flores	1	0	0	1	0	0
343	MA53	Terra Indigena Porquinhos	0	0	0	1	0	0
344	MA50	Terra Indigena Cana Brava/Guajajara	1	2	0	0	0	0
345	MA20	Itapecuru	0	0	0	0	0	0
346	MA55	TQ Santa Joana	1	0	0	0	0	0
347	MA30	PN dos Lençois Maranhenses	0	0	0	0	0	0
348	MA40	RPPN Fazenda Pantanal	0	0	0	0	0	0
349	MA21	Itapicuru	0	0	0	0	0	0
350	MA7	Cajazeira	0	0	0	0	0	0
351	MA18	Inhumas	0	0	0	0	0	0
352	MA5	Baixao do Bandeira	1	0	0	0	0	0
353	MA15	Fortuna	0	0	0	2	0	0
354	MA25	Mirador	0	0	0	1	0	0
355	MA1	Alpercatinha	0	0	0	0	0	0
356	MA29	PE de Mirador	0	0	0	0	0	0
357	MA3	APA dos Morros Garapenses	0	1	0	0	0	0
358	MA4	APA Upaon-Açu/Miritiba/Alto Preguicas	0	0	0	0	0	0
359	PI24	RPPN Fazenda Centro	0	1	0	0	0	0
360	MA9	Caraiba	0	1	0	0	0	0
361	MA33	Riachao	1	0	0	0	0	0
362	PI10	FN de Palmares	0	0	0	0	0	0
363	MA54	Timon	1	0	0	0	0	0

364	MA45	Sao Francisco do Maranhao	0	0	0	0	0	0
365	MA46	Sucupira do Riachao	0	0	0	0	0	0
366	PI5	Caninde	0	0	0	0	0	0
367	PI18	PN da Serra das Confusoes	0	0	0	0	0	0
368	PI9	Floriano	0	0	0	0	0	0
369	PI7	Coqueiro	0	0	0	0	0	0
370	PI22	Riacho de Sant'Ana	0	0	0	0	0	0
371	PI2	Baliza	1	1	0	1	0	0
372	PI16	Paraim	0	0	0	0	0	0
373	PI15	Matoes	2	0	0	1	0	0
374	PI11	Gurgueia	0	0	0	0	0	0
375	PI1	APA do Rangel	1	0	0	0	0	0
376	PI29	Vereda Uniao	0	1	0	0	0	0
377	PI23	Riacho Frio	0	0	0	0	0	0
378	PI17	Parnagua	0	0	0	0	0	0
379	PI14	Malhada da Barra	0	0	0	0	0	0
380	PI25	Sebastiao Barros	0	0	0	0	0	0
381	PI6	Cardoso	0	0	0	0	1	0
382	PI20	Prata	0	0	0	0	0	0
383	MA34	Riacho do Belem	0	0	0	1	0	0
384	MA11	Curimata	1	0	0	0	0	0
385	MA57	Urucui	0	0	0	0	0	0
386	MA43	Santa Isabel	0	0	0	0	0	0
387	MA6	Balsas	0	0	0	0	0	0
388	MA17	Gameleira	0	0	0	0	0	0
389	MA35	Riacho dos Picos	0	0	0	0	0	0
390	MA14	Fortaleza dos Nogueiras	1	0	0	0	0	0
391	MA10	Coite	0	0	0	0	0	0
392	MA39	Rio Maravilha	1	0	0	0	0	0
393	MA44	Santo Antonio de Balsas	0	0	0	0	0	0
394	MA16	Gado Bravo	0	0	0	0	0	0
395	MA26	Novo Recreio	0	1	0	0	0	0
396	MA49	Temerante	0	0	0	0	0	0
397	MA27	Parelhas	0	0	0	0	0	0
398	MA48	Tem medo	0	0	0	0	0	0
399	MA23	Mandacaru	0	0	0	0	0	0
400	MA47	Sul Maranhense	0	0	0	0	0	0

401	PI3	Benedito Leite	1	0	0	0	0	0
402	PI21	Riacho da Estiva	1	0	0	0	0	0
403	PI28	Urucui-preto	0	0	0	0	0	0
404	MA22	Loreto	0	0	0	0	0	0
405	PI27	Tasso Fragoso	0	0	0	0	0	0
406	PI8	EE de Urucui-Una	0	0	0	0	0	0
407	PI26	Sucuruju	0	0	0	0	0	0
408	MA24	Medonho	0	0	0	0	0	0
409	MA2	Alto Parnaiba	0	0	0	0	0	0
410	PI4	Cachoeira Pedra de Amolar	0	0	0	0	0	0
411	PI19	PN das Nascentes do Rio Parnaiba	0	0	0	0	0	0
412	PI12	Ilha Grande	0	0	0	0	0	0
413	PI13	Luis Correia	0	0	0	0	0	0
414	BA26	Ilha Mocambo dos Ventos	0	0	0	0	0	0
415	BA4	APA Dunas e Veredas do Baixo e Medio Sao Francisco	0	0	0	0	0	0
416	BA17	Cotegipe	0	0	0	0	0	0
417	BA18	EE Rio Preto	1	0	0	0	1	0
418	BA22	Formosa do Rio Preto	0	2	0	0	1	0
419	BA5	APA Rio Preto	0	0	0	0	0	0
420	BA54	Sapao	0	0	0	1	0	0
421	BA45	Rio Grande	0	0	0	0	1	0
422	BA31	Neves	0	0	0	0	0	0
423	BA42	Rio de Janeiro	0	0	0	0	0	0
424	BA35	Ponta d'agua	0	0	0	0	0	0
425	BA3	APA Bacia do Rio de Janeiro	1	0	0	0	0	0
426	BA19	Extremo Oeste Baiano	0	0	0	0	0	0
427	BA32	Ondas	1	0	1	0	0	0
428	BA11	Cabeceira das Lajes	2	0	1	1	1	0
429	BA57	Tabocas	1	0	0	0	0	0
430	BA12	Cabeceira de Pedras	0	0	0	0	0	0
431	BA10	Bora	0	0	0	0	0	0
432	BA9	Boa Sorte	2	0	0	0	0	0
433	BA21	FN de Cristopolis	0	0	1	0	1	0
434	BA63	Vereda Anastacio	1	0	0	0	0	0
435	BA53	Sao Desiderio	0	0	0	0	0	0
436	BA36	Porcos	0	0	0	0	0	0
437	BA61	Triste e Feio	1	0	0	0	0	0

438	BA25	Ilha da Pica Grande	0	1	0	0	0	0
439	BA64	Vereda da Canoa	0	0	0	0	0	0
440	BA55	Serra Dourada	1	0	0	0	0	0
441	BA24	Ilha da Bananeira	0	0	0	0	0	0
442	BA56	Sitio do Mato	0	0	0	0	0	0
443	BA58	Terra Indigena Vargem Alegre	0	1	0	0	0	0
444	BA33	Pedra Branca	1	0	0	0	0	0
445	BA50	Santana	1	0	0	0	0	0
446	BA15	Coribe	0	1	0	0	0	0
447	BA52	Sao Felix do Coribe	0	0	0	0	0	0
448	BA44	Rio Formoso	0	0	0	0	1	0
449	BA2	Alegre	3	0	0	0	0	0
450	BA28	Jaborandi	0	0	0	0	0	0
451	BA47	Rodeador	0	0	0	0	0	0
452	BA62	Vau	0	0	0	0	0	0
453	BA37	Pratudao	1	0	0	0	0	0
454	BA48	RVS das Veredas do Oeste Baiano	0	0	0	0	0	0
455	BA7	Arrojado	0	0	1	0	0	0
456	BA6	Arrojadinho	0	0	0	0	0	0
457	BA16	Correntina	0	0	0	0	0	0
458	BA49	Santa Maria da Vitoria	0	0	0	1	0	0
459	BA23	Guara	0	1	1	0	0	0
460	BA39	Riacho de Pedra	0	0	0	1	0	0
461	BA46	Rio Guara	0	0	0	1	0	0
462	BA51	Santo Antonio	0	0	1	0	1	0
463	BA43	Rio dos Angicos	2	0	0	0	0	0
464	BA40	Riacho do Mato	1	0	0	0	0	0
465	BA59	TQ Lagoa das Piranhas	0	0	0	0	0	0
466	BA60	TQ Nova Batalhinha	0	0	0	0	0	0
467	BA38	Riacho de Mariape	0	1	0	1	0	0
468	BA29	Lagoas	0	1	0	0	0	0
469	BA30	Madrugao	0	0	0	0	1	0
470	BA13	Cariranha	0	0	0	0	0	0
471	MG3	APA Cocha e Gibao	0	1	0	0	0	0
472	BA20	Feira da Mata	0	0	0	0	0	0
473	BA34	PN Grande Sertao Veredas	1	0	0	0	0	0
474	BA14	Cocos	2	0	1	0	0	0

475	BA41	Riacho do Meio	1	0	0	0	0	0
476	BA27	Itaguari	0	1	1	1	1	0
477	MG16	Calindo	1	0	0	0	0	0
478	BA8	Aurelio	0	1	0	0	0	0
479	MG39	Furado Novo	0	0	0	0	0	0
480	MG73	PE Caminho das Gerais	1	0	0	1	1	0
481	MG93	Porteirinha	0	0	0	0	1	0
482	MG41	Gorutuba	0	1	0	0	0	0
483	MG27	Corrego Escuro	0	0	0	0	0	0
484	MG58	Macaubas	0	0	0	1	1	0
485	MG139	Verde Grande	0	1	0	0	0	0
486	MG96	Quem-quem	0	3	0	0	0	0
487	MG1	Agua Limpa	0	0	0	0	1	0
488	MG20	Capitao Eneas	1	0	0	0	0	0
489	MG134	Vacabrava	2	5	0	0	1	0
490	MG54	Juramento	0	3	0	0	0	0
491	MG79	PE Lagoa do Cajueiro	0	0	0	0	0	0
492	MG98	RB Serra Azul	0	0	0	0	0	0
493	MG85	PE Veredas do Peruacu	1	4	0	1	0	0
494	MG89	PN Cavernas do Peruacu	0	2	0	0	0	0
495	MG25	Cochos	0	0	0	1	0	0
496	MG50	Japonvar	0	0	0	0	1	0
497	MG67	Pandeiros	0	0	0	0	1	0
498	MG5	APA Pandeiros	0	0	0	1	0	0
499	MG113	RVS Rio Pandeiros	1	2	0	2	1	0
500	MG117	Sao Joaquim	0	0	0	0	0	0
501	MG83	PE Serra das Araras	0	1	0	0	0	0
502	MG24	Chapada Gaucha	0	0	0	0	0	0
503	MG55	Lagoa da Vaqueta	0	0	0	0	0	0
504	MG116	Sao Francisco	0	1	0	0	0	0
505	MG87	Pintopolis	0	1	0	0	0	0
506	MG133	Urucuia	1	0	0	0	0	0
507	MG26	Conceicao	0	0	0	0	0	0
508	MG101	Ribeirao dos Confins	0	0	0	0	0	0
509	MG33	EE Sagarana	0	0	0	0	0	0
510	MG66	Pacari	1	1	0	1	0	0
511	MG37	Formoso	1	0	0	0	0	0

512	MG120	Serra da Sacada	0	0	0	1	0	0
513	MG119	Sao Romao	0	0	0	0	0	0
514	MG17	Campo Azul	0	2	0	0	0	0
515	MG40	Garitas	1	0	0	0	0	0
516	MG106	Roncador	1	0	0	0	0	0
517	MG131	Unai	1	0	0	1	1	0
518	GO18	Bezerra	0	0	0	0	0	0
519	DF1	APA do Planalto Central	0	2	0	0	0	0
520	MG141	Vereda Grande	0	0	0	0	0	0
521	MG127	TQ Amaros	0	0	0	0	0	0
522	MG99	Ribeirao Bezerra	0	0	0	0	0	0
523	MG112	RPPN Morro da Cruz das Almas	2	0	0	0	0	0
524	MG94	Presidente Olegario	0	0	0	0	0	0
525	MG102	Ribeirao Santa Catarina	0	0	0	0	0	0
526	MG77	PE de Paracatu	3	1	0	1	0	0
527	MG43	Guarda-mor	1	0	0	0	0	0
528	MG10	Barro	0	0	0	0	0	0
529	MG51	Jequitai	0	0	0	0	0	0
530	MG38	Francisco Dumont	1	2	0	1	0	0
531	MG9	Areia	0	0	0	0	0	0
532	MG44	Imbalacaia	12	12	0	1	0	0
533	MG92	PN das Sempre-Vivas	2	1	0	0	0	0
534	MG138	Velhas	5	3	0	1	0	0
535	MG12	Bicudo	0	4	0	0	0	0
536	MG74	PE da Serra do Cabral	9	15	0	2	0	0
537	MG49	Jabuticaba	0	0	0	0	0	0
538	MG70	Pardo Grande	15	39	8	2	0	0
539	MG115	Santo Hipolito	0	1	0	0	1	0
540	MG91	PN da Serra do Cipo	40	105	29	2	0	0
541	MG4	APA do Carste de Lagoa Santa	25	40	2	6	2	2
542	MG88	Pirapora	1	0	0	2	0	0
543	MG128	Tres Marias	0	1	0	0	0	0
544	MG125	Tiros	2	2	0	0	0	0
545	MG109	RPPN Fazenda Lavagem	0	0	0	0	0	0
546	MG14	Borrachudo	0	0	0	0	0	0
547	MG32	EE de Pirapitinga	0	0	0	0	0	0
548	MG45	Indaia	0	1	0	0	0	0

549	MG107	RPPN Fazenda Barrão	0	0	0	0	1	0
550	MG34	Felixlandia	0	1	0	0	0	0
551	MG35	FN de Paraopeba	0	4	1	2	1	1
552	MG46	Inhauma	0	0	0	0	0	0
553	MG6	APA Vargem das Flores	0	1	0	0	0	1
554	MG56	Lambari	1	0	0	0	0	0
555	MG104	Rio Para	0	0	0	0	0	0
556	MG110	RPPN Fazenda Samoinho	1	0	0	0	0	0
557	MG64	Nova Serrana	1	0	0	0	0	0
558	MG100	Ribeirao Boa Vista	1	0	0	0	0	0
559	MG57	Luz	0	0	0	0	0	0
560	MG31	EE Corumba	0	1	0	1	0	0
561	MG136	Vargem Bonita	0	3	1	0	0	0
562	MG108	RPPN Fazenda do Lobo	4	2	2	0	0	0
563	MG76	PE de Montezuma	0	2	0	1	1	0
564	MG121	Setubal	1	0	0	0	0	0
565	MG11	Berilo	1	1	0	0	0	0
566	MG19	Capelinha	0	0	0	0	0	0
567	MG7	Aracai	0	0	0	0	1	0
568	MG81	PE Rio Preto	8	9	2	3	2	1
569	MG137	Vargem da Lapa	0	0	0	2	1	0
570	MG86	Peixe Bravo	0	1	0	0	0	0
571	MG135	Vacaria	0	0	0	0	0	0
572	MG30	EE Acaua	11	14	1	1	2	0
573	MG47	Itacambira	2	2	1	0	0	0
574	MG122	Tabatinga	1	0	0	0	0	0
575	MG65	Olhos d'agua	0	0	0	0	0	0
576	MG15	Caete-mirim	1	7	0	0	1	0
577	MG72	PE Biribiri	36	86	17	1	3	0
578	MG123	Tanque	0	1	1	0	0	0
579	MG78	PE do Limoeiro	0	1	0	0	0	0
580	MG103	Rio do Peixe	1	1	0	0	0	0
581	MG95	Preto do Itambe	0	1	0	0	0	0
582	MG62	Morro do Pilar	1	2	0	0	0	0
583	MG105	Rio Picao	2	1	0	0	0	0
584	MG84	PE Serra do Intendente	6	4	0	1	0	0
585	MG69	Parauninha	0	1	2	0	0	0

586	MG13	Bom Jesus do Amparo	0	0	0	0	0	0
587	MS10	Ivinheima	0	1	0	0	0	0
588	MS11	Nova Alvorada do Sul	0	0	0	0	0	0
589	MS33	Terra Indigena Jatayvari	1	1	2	0	0	0
590	MS20	Rio Brilhante	0	0	0	0	0	0
591	SP36	Laranja Doce	0	0	0	0	0	0
592	PR8	RPPN Fazenda Monte Alegre	1	0	0	0	1	1
593	PR4	PE do Guartela	3	1	0	0	0	0
594	PR1	APA da Escarpa Devoniana	4	2	0	1	0	0
595	SP39	Paraguacu Paulista	0	1	0	2	1	0
596	PR9	Ventania	0	1	0	0	0	0
597	PR7	RPPN Fazenda do Tigre	3	3	1	0	0	0
598	SP16	EE de Assis	0	1	0	2	1	0
599	SP12	Campos Novos Paulista	0	0	0	0	0	0
600	SP1	Alambari	1	0	0	1	0	0
601	SP22	EE Santa Barbara	0	2	0	0	0	0
602	SP17	EE de Avare	0	0	0	0	0	0
603	SP26	FE Santa Barbara	1	0	0	0	0	0
604	SP13	Claro	1	0	0	1	0	0
605	SP48	Ribeirao das Pedras	0	0	0	0	0	0
606	SP11	Botucatu	0	2	0	0	1	0
607	SP30	Itaporanga	4	10	2	2	1	1
608	PR6	Pescaria	0	0	0	1	0	0
609	PR5	PE Vale do Codo	17	16	2	2	2	0
610	PR3	Jaguaricatu	6	7	0	0	0	0
611	PR2	Itarare	2	2	0	2	0	0
612	SP40	Paranapanema	0	0	0	0	0	0
613	SP18	EE de Itabera	3	3	0	0	0	0
614	SP21	EE Paranapanema	1	2	1	0	1	0
615	SP27	FN de Capao Bonito	0	0	0	0	0	0
616	SP29	Itapetininga	0	4	0	1	0	0
617	MS8	Inhandui	0	2	2	1	1	0
618	MS13	Pardo	0	0	0	0	0	0
619	MS7	Botas	1	0	0	0	0	0
620	MS12	Parana	0	0	0	0	0	0
621	MS37	Verde	0	0	0	1	1	0
622	MS27	Sao Domingos	0	0	0	0	0	0

623	MS28	Sucuriu	0	1	0	0	0	0
624	SP4	APA Rio Batalha	0	0	0	3	1	0
625	SP52	Sao Lourenco	0	2	0	0	0	0
626	SP3	APA Ibitinga	0	1	0	0	0	0
627	SP31	Itaquere	0	0	0	1	1	0
628	SP32	Jacare-guacu	0	0	0	0	0	0
629	SP6	Araraquara	4	1	0	0	1	0
630	SP20	EE Itirapina	1	1	0	0	0	0
631	SP33	Jacare-pepira	0	2	1	1	0	0
632	SP7	Arealva	1	0	0	0	0	0
633	SP25	FE Pederneiras	1	0	0	2	1	0
634	SP37	Macatuba	0	0	0	1	0	0
635	SP5	Araqua	0	0	0	0	0	0
636	SP2	APA Corumbatai-Botucatu-Tejupa	3	4	0	4	1	1
637	SP14	Corumbatai	4	4	3	1	1	0
638	SP44	Piracicaba	0	2	0	0	0	0
639	SP9	Atibaia	1	1	0	0	0	0
640	SP8	ARIE Matao de Cosmopolis	0	2	0	0	0	0
641	SP45	Pirapitingui	0	0	0	0	0	0
642	SP34	Jaguari	0	1	0	0	0	0
643	SP55	Vitoria	0	1	0	0	0	0
644	SP49	Rio Alambari	0	0	0	1	0	0
645	SP15	EE Barreiro Rico	0	1	0	1	0	0
646	SP43	Peixe	1	0	0	0	1	0
647	SP51	Sao Jose dos Dourados	2	0	0	1	0	0
648	MS9	Inocencia	0	0	0	0	0	0
649	SP41	Parisi	0	0	0	0	1	0
650	SP38	Mirassolandia	0	0	0	0	1	0
651	MG140	Verde ou Feio	0	2	0	0	0	0
652	MG118	Sao Mateus	0	1	0	0	0	0
653	SP24	FE de Bebedouro	1	0	0	1	1	0
654	SP23	FE Cajuru	3	2	0	2	1	0
655	SP46	RB de Sertaozinho	0	0	0	0	1	0
656	SP19	EE de Jatai	0	0	0	1	0	0
657	SP42	PE de Vassununga	7	2	0	0	1	0
658	SP35	Jaguari-mirim	1	0	0	0	0	0
659	SP47	RB e EE Mogi-Guaçu	3	4	0	2	0	0

660	MG129	Uberaba	0	2	0	0	0	0
661	SP53	Sapucai	0	0	0	0	0	0
662	SP10	Batatais	0	0	0	0	0	0
663	SP28	Franca	0	0	0	0	0	0
664	SP50	Santa Barbara	0	1	0	0	0	0
665	MG97	RB Sao Sebastiao do Paraiso	1	1	0	0	0	0
666	MG126	Tomba-perna	1	1	0	0	0	0
667	SP54	Solapao	1	1	0	0	0	0
668	MG75	PE das Furnas do Bom Jesus	1	3	0	0	1	0
669	MG114	Sacramento	0	0	0	0	0	0
670	MG90	PN da Serra da Canastra	2	4	0	0	0	0
671	MG23	Cassia	3	2	0	0	0	0
672	MG2	Alpinopolis	8	11	5	0	0	0
673	MG82	PE Serra da Boa Esperanca	0	0	0	0	0	0
674	MG42	Guape	0	1	0	0	0	0
675	MG36	Formiga	0	2	0	0	0	0
676	GO112	Rio da Prata	0	0	0	0	0	0
677	GO93	PN das Emas	1	1	0	0	0	0
678	GO136	Serranopolis	1	2	1	0	0	0
679	GO61	Jatai	4	5	0	1	0	0
680	MG48	Ituiutaba	4	2	2	1	1	0
681	MG124	Tijuco	1	2	0	0	0	0
682	MG60	Monte Alegre de Minas	0	0	0	0	0	0
683	MG28	Douradinho	3	3	0	1	0	0
684	GO87	PE de Parauna	0	0	0	0	0	0
685	GO145	Turvo	0	0	0	0	0	0
686	GO9	APA Serra da Jiboia	0	0	0	0	0	0
687	GO28	Campanha	1	0	1	0	0	0
688	GO8	APA Joao Leite	2	2	0	0	0	0
689	GO92	Piracanjuba	0	1	0	0	0	0
690	GO85	PE da Serra de Caldas Novas	1	0	0	1	0	0
691	GO20	Bois	1	0	0	0	0	0
692	GO54	FN de Silvania	0	0	0	0	0	0
693	GO39	Corumba	0	0	0	0	0	0
694	GO48	EE do Jardim Botanico	18	26	5	4	2	0
695	GO97	RB e PE do Descoberto	6	8	1	1	1	0
696	MG130	Uberabinha	0	1	0	0	0	0

697	MG80	PE Pau Furado	2	1	0	0	1	0
698	MG8	Araguari	2	1	0	2	1	0
699	MG111	RPPN Galheiros	5	2	0	1	0	0
700	MG21	Capivara	1	1	1	0	0	0
701	MG59	Misericordia	0	0	0	0	0	0
702	MG18	Campos Altos	0	0	0	0	0	0
703	GO147	Verissimo	1	1	0	0	0	0
704	MG22	Cascalho Rico	0	1	0	0	0	0
705	MG61	Monte Carmelo	0	0	0	0	0	0
706	MG29	Dourados	0	0	0	0	0	0
707	MG68	Paranaiba	1	1	0	0	0	0
708	GO130	Sao Marcos	5	7	3	1	0	0
709	MS3	Apa	0	0	0	0	0	0
710	MS22	Rio Perdido	0	2	0	0	0	0
711	MS35	Terra Indigena Nande Ru Marangatu	0	1	0	0	0	0
712	MS18	Progresso	1	0	0	0	0	0
713	MS31	Taruma	0	0	0	0	0	0
714	MS19	Rio Branco	2	2	0	0	0	0
715	MS34	Terra Indigena Kadiweu	0	0	0	0	0	0
716	MS26	RPPN Tupaciara	0	1	0	0	0	0
717	MS17	PN da Serra da Bodoquena	5	2	0	0	1	0
718	MS24	RPPN Estancia Caiman	0	0	0	0	0	0
719	MS6	Aquidauana	1	1	0	0	0	0
720	MS30	Taquarucu	0	0	0	0	0	0
721	MS4	APA Estadual Estrada-Parque Piraputanga	1	1	0	0	0	0
722	MS32	Terra Indigena Buriti	1	0	0	0	0	0
723	MS25	RPPN Fazenda Lageado	0	1	0	0	0	0
724	MS36	TQ Furnas da Boa Sorte	0	0	0	0	0	0
725	MS21	Rio Negro	0	0	0	0	0	0
726	MS2	Anhuma	0	3	1	0	0	0
727	MS29	Taquari	0	0	0	0	0	0
728	MS14	PE das Nascentes do Rio Taquari	1	1	1	0	0	0
729	MS23	Rio Verde de Mato Grosso	0	0	0	0	0	0
730	MS5	APA Estadual Rio Cenico Rotas Moncoeiras-Rio Coxim	0	1	0	0	0	0
731	MT50	Itiquira	1	2	0	0	0	0
732	MS16	Piquiri	0	0	0	0	0	0
733	MT51	Jaciara	1	1	0	0	0	0

734	MT72	PE Dom Osorio Stoffel	0	1	0	0	0	0
735	MT111	Terra Indigena Tadarimana	0	0	0	0	0	0
736	MT105	Terra Indigena Jarudore	0	0	0	0	0	0
737	MT93	Santo Antonio do Leverger	1	1	0	0	0	0
738	MT16	Arica-acu	2	3	0	0	0	0
739	MT78	PN da Chapada dos Guimaraes	2	4	0	0	0	0
740	MT37	Cuiaba	0	1	0	0	0	0
741	MT73	PE Gruta da Lagoa Azul	0	1	0	0	0	0
742	MT88	Rosario Oeste	0	0	0	0	0	0
743	MT59	Marzagao	0	1	0	0	0	0
744	MT4	Agua Fina	0	1	0	0	0	0
745	MT70	PE Aguas de Cuiaba	0	1	0	0	0	0
746	MT38	Cuiaba do Bonito	0	1	0	0	0	0
747	MT56	Manso	2	0	0	0	0	0
748	MT63	Nova Brasilandia	1	1	0	0	0	0
749	MT11	APA Estadual da Chapada dos Guimaraes	4	5	0	0	1	0
750	MT27	Casca	0	1	0	0	0	0
751	MT52	Jangada	0	0	0	0	0	0
752	MT29	Chapada dos Guimaraes	1	0	0	0	0	0
753	MT114	TQ Mata Cavalo	0	0	0	0	0	0
754	MT61	Mata Grande	0	0	0	0	0	0
755	MT90	Sangradouro	0	0	0	0	0	0
756	MT104	Terra Indigena Figueiras	0	0	0	0	0	0
757	MT21	Cabacal	0	0	0	0	0	0
758	MT99	Tangara da Serra	0	0	0	0	0	0
759	MT41	EE Serra das Araras	0	0	0	0	0	0
760	MT112	Terra Indigena Umutina	0	0	0	0	0	0
761	MT14	APA Nascentes do Rio Paraguai	0	2	0	1	0	0
762	BO020	Noel Kempff Mercado	0	0	0	0	0	0
763	PY013	Cerrados de Concepción	0	0	0	0	0	0
764	PY012	Estancia Estrella	0	0	0	0	0	0
765	PY014	Arroyo Tagatiya	0	0	0	0	0	0

Table 2.4. Terrestrial KBA Raw Data for irrepleaceble species, natural vegetation cover, threat level, civil society capacity, water consumption demand, protected and priority areas

KBA	COD	Irreplaceable Species (occur in only 1 KBA)	Natural Vegetation Cover (%)	Threat Level (IPA index)	Civil Society Capacity	Water Comsuption Demand	Protected Areas (hectar)	Protected Areas (%)	Priority Areas (hectar)	Priority Areas (%)
1	TO32	1	99,98	0,5	2	0,0000	20409,68	100,00	20409,68	100,00
2	MA56	1	71,01	0,6	3	0,0039	0,00	0,00	24316,96	100,00
3	BA1	1	22,89	0,4	2	0,0008	0,00	0,00	0,00	0,00
4	MT65	1	58,72	0,5	3	0,0016	989,24	9,78	7720,18	76,30
5	MG63	2	53,55	0,6	5	0,0155	0,00	0,00	25240,90	65,70
6	MG132	1	52,04	0,6	5	0,0437	0,00	0,00	619,14	3,59
7	GO29	1	39,16	0,6	3	0,0032	0,00	0,00	22712,94	93,20
8	GO44	3	37,98	0,6	3	0,0030	0,00	0,00	22026,18	98,10
9	MT26	1	21,08	0,6	3	0,0037	0,00	0,00	29002,52	95,77
10	MS1	1	28,06	0,5	2	0,0071	0,00	0,00	19206,95	50,66
11	MS15	1	19,96	0,6	2	0,0283	4432,66	3,67	102254,02	84,58
12	MT3	1	53,69	0,6	3	0,0067	0,00	0,00	12386,13	73,78
13	MT68	1	73,67	0,6	3	0,0014	2041,23	3,67	54626,29	98,14
14	TO84	3	69,87	0,5	2	0,0008	0,00	0,00	11218,39	59,56
15	MT55	1	70,73	0,6	3	0,0033	20306,70	62,17	26394,21	80,81
16	TO10	1	50,64	0,5	2	0,0073	4442,24	1,44	264205,60	85,41
17	TO85	1	63,97	0,5	2	0,0071	54179,58	40,31	89085,21	66,29
18	GO38	6	79,11	0,5	3	0,0016	1692,91	0,86	4033,14	2,05
19	GO131	1	19,42	0,6	3	0,0190	10571,87	100,00	10571,87	100,00
20	TO41	0	74,85	0,5	2	0,0022	3496,52	33,34	6092,23	58,09
21	PA2	0	22,01	0,5	2	0,0021	0,00	0,00	15686,29	17,21
22	TO39	0	49,77	0,5	3	0,1120	8139,92	45,17	18018,32	100,00
23	TO37	1	73,50	0,4	3	0,0392	3154,60	2,71	57443,71	49,29
24	TO91	1	74,06	0,6	2	0,1687	4884,92	53,88	6116,82	67,47
25	MT92	0	65,49	0,4	3	0,0044	3864,57	43,01	8493,40	94,54
26	MT6	0	71,49	0,4	3	0,0053	0,00	0,00	2524,87	86,41
27	MT84	0	80,82	0,5	5	0,0003	0,00	0,00	75322,69	73,85
28	MT75	2	67,12	0,5	3	0,0027	62860,63	51,85	107756,44	88,89
29	MT85	2	80,67	0,5	3	0,0032	0,00	0,00	79950,33	62,34
30	MT117	1	26,75	0,6	3	0,0080	0,00	0,00	80934,49	98,38
31	MT49	1	34,98	0,6	4	0,0040	11,06	0,01	62817,94	36,49

32	MT66	3	38,28	0,6	3	0,0055	0,00	0,00	6007,36	6,19
33	MT98	1	23,90	0,6	2	0,0384	0,00	0,00	36827,36	96,04
34	MT74	1	15,50	0,6	2	0,0354	102212,15	92,84	98452,86	89,43
35	MT13	1	88,37	0,5	3	0,0150	5,24	0,01	6093,38	16,09
36	GO107	1	25,98	0,6	3	0,0098	0,00	0,00	143826,89	100,00
37	MT32	1	55,46	0,4	3	0,0037	0,00	0,00	17341,96	93,03
38	MT80	2	22,78	0,5	3	0,0050	0,00	0,00	152327,10	77,96
39	GO108	1	42,25	0,8	3	0,0093	0,00	0,00	204665,67	31,59
40	MG52	3	41,42	0,6	5	0,0234	0,00	0,00	0,00	0,00
41	MG53	1	70,77	0,4	5	0,0011	33591,29	6,60	65281,79	12,83
42	MG71	27	51,21	0,4	5	0,0047	0,00	0,00	0,00	0,00
43	MT58	0	8,44	0,6	3	0,0091	0,00	0,00	1086,23	0,31
44	MT97	0	0,97	0,6	3	0,0030	77,85	0,06	10648,68	8,26
45	MT81	0	25,59	0,6	5	0,0034	0,00	0,00	0,00	0,00
46	MT79	0	38,22	0,6	3	0,0067	0,00	0,00	1502,27	3,06
47	MT96	0	20,65	0,6	3	0,0177	0,00	0,00	0,00	0,00
48	MT39	1	18,04	0,5	5	0,0011	21135,61	39,41	51999,74	96,95
49	MT34	0	55,42	0,5	3	0,0049	0,00	0,00	0,00	0,00
50	MT87	0	19,02	0,6	3	0,0071	7845,62	1,26	251811,33	40,31
51	MT9	0	33,58	0,6	3	0,0173	88571,11	59,80	6758,48	4,56
52	MT76	0	55,30	0,4	3	0,0034	0,00	0,00	0,00	0,00
53	MT100	1	37,61	0,6	3	0,0051	0,00	0,00	0,00	0,00
54	MT57	0	33,53	0,6	3	0,0092	0,00	0,00	0,00	0,00
55	MT23	0	28,80	0,6	3	0,0047	0,00	0,00	18054,55	21,41
56	MT5	0	21,09	0,6	3	0,0487	0,00	0,00	17675,26	8,86
57	MT64	0	32,85	0,6	3	0,0230	0,00	0,00	1646,12	3,73
58	MT115	0	34,79	0,6	3	0,0440	0,00	0,00	74770,78	79,47
59	MT86	4	46,29	0,6	3	0,0098	6979,51	7,24	96440,51	100,00
60	MT17	0	50,52	0,6	3	0,0135	0,00	0,00	12660,62	22,22
61	MT35	1	22,52	0,6	3	0,0150	0,00	0,00	819,91	3,47
62	MT24	0	14,43	0,6	3	0,0112	354879,79	80,91	376924,57	85,93
63	MT113	1	85,84	0,6	3	0,0145	26979,11	84,05	26976,33	84,05
64	MT103	0	99,99	0,5	3	0,0002	79261,95	98,35	79261,49	98,35
65	MT44	0	99,42	0,5	3	0,0000	124825,29	92,08	124830,54	92,08
66	MT109	3	79,91	0,6	3	0,0012	188820,46	76,57	188845,94	76,58
67	MT43	0	70,51	0,6	3	0,0072	1100,65	0,42	3679,82	1,41
68	MT54	0	40,80	0,6	3	0,0158	0,00	0,00	0,00	0,00

69	MT25	1	47,58	0,6	3	0,0176	0,00	0,00	23585,47	11,38
70	MT107	0	40,26	0,5	3	0,0008	316044,50	53,86	346550,19	59,06
71	MA32	1	19,43	0,7	3	0,0107	9124,98	1,84	1167,90	0,24
72	TO15	0	40,69	0,6	5	0,0022	0,00	0,00	0,00	0,00
73	TO100	2	44,61	0,6	5	0,0036	0,00	0,00	0,00	0,00
74	MA13	0	89,12	0,6	5	0,0019	14720,77	22,24	47394,97	71,59
75	MA8	0	96,86	0,5	5	0,0006	23374,11	65,20	35850,51	100,00
76	MA28	0	92,35	0,6	5	0,0021	37307,25	45,17	37079,53	44,89
77	TO17	0	87,65	0,6	5	0,0013	327,49	0,19	176294,03	99,65
78	TO97	0	75,05	0,5	5	0,0034	576,65	1,27	45294,26	100,00
79	MA38	0	91,50	0,5	5	0,0004	0,00	0,00	3049,23	99,97
80	TO79	0	81,79	0,5	2	0,0004	0,00	0,00	242,77	1,71
81	MA36	0	87,82	0,5	5	0,0010	0,00	0,00	0,00	0,00
82	MA42	0	81,03	0,5	5	0,0009	0,00	0,00	0,00	0,00
83	MA12	0	62,78	0,5	5	0,0008	0,00	0,00	0,00	0,00
84	TO69	0	91,44	0,6	2	0,0003	0,00	0,00	982,34	1,36
85	TO70	0	95,83	0,5	2	0,0004	0,00	0,00	71740,18	91,32
86	TO47	0	80,70	0,6	5	0,0015	13669,84	18,74	48440,73	66,42
87	TO16	0	90,49	0,6	5	0,0026	0,00	0,00	0,00	0,00
88	TO82	0	80,96	0,5	2	0,0005	0,00	0,00	0,00	0,00
89	TO50	0	45,80	0,7	5	0,0157	0,00	0,00	813,36	1,99
90	TO45	0	38,08	0,7	5	0,0203	0,00	0,00	0,00	0,00
91	TO53	0	70,63	0,6	2	0,0021	0,00	0,00	9907,85	14,70
92	TO1	0	60,07	0,6	2	0,0236	0,00	0,00	66237,82	69,59
93	TO94	0	58,51	0,6	2	0,0169	0,00	0,00	73490,57	63,84
94	TO61	1	95,60	0,4	2	0,0002	0,00	0,00	255417,16	98,01
95	TO65	0	97,28	0,4	4	0,0005	134931,62	40,86	330253,98	100,00
96	TO62	1	90,73	0,4	2	0,0009	0,00	0,00	166069,71	86,24
97	TO3	0	95,13	0,4	2	0,0003	58904,99	57,35	101260,75	98,59
98	TO87	0	97,52	0,4	4	0,0006	69840,78	35,20	198297,46	99,93
99	TO4	0	98,34	0,4	4	0,0004	45813,18	62,64	55663,27	76,10
100	TO54	0	100,00	0,5	4	0,0000	21481,73	100,00	21481,73	100,00
101	TO13	0	99,34	0,5	4	0,0002	78780,45	99,76	76188,39	96,48
102	TO23	0	99,47	0,5	4	0,0002	8962,28	99,96	8965,92	100,00
103	TO75	0	100,00	0,5	4	0,0001	4013,70	99,95	4015,69	100,00
104	TO28	0	97,67	0,5	4	0,0003	38650,67	100,00	38644,19	99,98
105	TO21	0	99,97	0,5	4	0,0000	22222,16	99,99	22218,93	99,97

106	TO93	0	100,00	0,5	4	0,0000	24823,21	99,99	24825,51	100,00
107	TO26	0	100,00	0,5	4	0,0001	27075,27	100,00	27075,35	100,00
108	TO38	0	100,00	0,5	4	0,0000	36506,77	100,00	36506,77	100,00
109	TO98	0	99,99	0,5	4	0,0000	23456,61	100,00	23456,61	100,00
110	TO72	0	100,00	0,5	4	0,0003	24229,66	99,97	24151,01	99,64
111	TO44	0	98,73	0,5	4	0,0010	11765,86	100,00	1441,53	12,25
112	TO59	0	99,78	0,5	4	0,0001	36675,54	100,00	35336,85	96,35
113	TO19	0	91,84	0,5	4	0,0005	33173,85	49,05	65766,79	97,25
114	TO31	0	94,82	0,5	4	0,0018	1092,22	2,43	44815,71	99,89
115	TO55	0	53,44	0,6	2	0,0099	76552,59	35,91	75913,35	35,61
116	TO81	0	50,46	0,6	2	0,0148	21198,83	13,87	20213,98	13,22
117	TO90	1	51,47	0,7	2	0,0386	55509,75	52,24	55162,74	51,91
118	TO7	2	45,26	0,6	2	0,0232	21357,36	7,15	13044,62	4,37
119	TO66	1	56,01	0,7	2	0,0333	460,75	0,14	75084,14	23,47
120	TO76	0	56,50	0,6	2	0,0726	0,00	0,00	31696,48	44,78
121	TO14	2	43,49	0,6	2	0,1036	0,00	0,00	1822,67	11,18
122	TO2	0	39,96	0,6	2	0,0120	0,00	0,00	1801,41	2,03
123	TO88	0	58,53	0,6	2	0,0157	0,00	0,00	1719,42	77,93
124	TO9	0	59,52	0,5	2	0,0019	0,00	0,00	18646,13	16,24
125	TO60	1	79,23	0,5	2	0,0048	0,00	0,00	71364,97	35,58
126	TO78	0	82,98	0,5	2	0,0008	0,00	0,00	72374,79	93,30
127	TO49	3	85,19	0,4	2	0,0018	0,00	0,00	72189,83	30,62
128	TO24	0	90,88	0,4	2	0,0006	0,00	0,00	132597,73	47,35
129	TO36	2	95,34	0,4	2	0,0064	0,00	0,00	21895,89	11,79
130	TO43	0	92,33	0,5	2	0,0075	38126,61	11,96	112543,49	35,31
131	TO83	0	44,86	0,6	2	0,0159	0,00	0,00	2529,61	4,19
132	TO89	0	32,61	0,6	2	0,0261	0,00	0,00	0,00	0,00
133	GO140	2	29,69	0,6	3	0,0038	0,00	0,00	200214,70	50,17
134	GO124	0	41,38	0,6	3	0,0025	0,00	0,00	0,00	0,00
135	GO113	0	25,38	0,6	3	0,0041	0,00	0,00	0,00	0,00
136	TO5	0	39,36	0,6	2	0,0092	12347,77	64,92	18638,58	98,00
137	TO73	0	76,49	0,5	2	0,0008	588,71	0,44	1952,63	1,46
138	TO52	0	91,29	0,4	2	0,0013	1819,65	0,57	280129,94	88,37
139	TO12	0	88,93	0,4	2	0,0026	0,00	0,00	78475,18	51,22
140	TO57	0	89,32	0,4	2	0,0017	0,00	0,00	139057,33	89,54
141	TO51	3	83,17	0,5	2	0,0067	132,61	0,03	329569,88	77,45
142	TO20	0	79,49	0,5	2	0,0027	0,00	0,00	189437,57	81,44

143	TO86	1	59,12	0,5	2	0,0026	0,00	0,00	68518,41	61,67
144	TO42	0	54,62	0,6	2	0,0036	0,00	0,00	107868,05	48,18
145	TO67	0	94,13	0,4	2	0,0020	905,75	0,43	208533,39	100,00
146	GO144	0	95,34	0,4	3	0,0015	123736,13	54,28	194362,43	85,27
147	TO46	1	81,47	0,5	2	0,0057	28880,10	14,57	39797,73	20,08
148	GO67	2	90,92	0,4	1	0,0019	125085,42	100,00	124972,49	99,91
149	GO139	0	87,17	0,5	3	0,0028	62399,63	36,65	166500,37	97,80
150	GO125	0	96,66	0,5	3	0,0018	61512,89	61,99	81929,94	82,56
151	GO53	4	54,53	0,5	3	0,0039	39588,30	38,77	34347,46	33,63
152	GO27	0	70,07	0,5	3	0,0033	6569,72	5,21	82349,20	65,27
153	GO46	1	68,73	0,6	3	0,0022	0,00	0,00	3704,72	9,86
154	GO76	0	25,49	0,6	3	0,0031	0,00	0,00	4634,71	26,92
155	GO71	0	29,75	0,6	3	0,0043	0,00	0,00	1555,43	12,61
156	GO81	4	54,64	0,5	3	0,0043	58426,32	21,76	140451,06	52,30
157	GO56	0	32,74	0,6	3	0,0032	0,00	0,00	6780,19	18,63
158	GO66	1	74,65	0,6	3	0,0066	92281,82	57,02	106522,49	65,82
159	GO121	1	63,03	0,6	3	0,0220	0,00	0,00	172208,08	77,38
160	GO15	2	37,45	0,6	3	0,0062	3426,44	2,62	125218,15	95,65
161	GO110	1	45,58	0,6	3	0,0087	0,00	0,00	74478,29	97,46
162	GO24	0	71,66	0,5	3	0,0029	83033,73	69,70	118771,95	99,70
163	GO6	3	70,68	0,5	3	0,0024	72655,21	97,49	74489,58	99,95
164	GO137	0	64,24	0,6	3	0,0015	18667,47	12,03	139908,05	90,14
165	GO115	0	51,51	0,6	3	0,0237	0,00	0,00	6008,44	4,43
166	GO52	0	46,77	0,6	3	0,0099	0,00	0,00	93,01	1,25
167	GO51	1	49,74	0,7	3	0,0149	0,00	0,00	86139,33	76,64
168	GO117	0	35,04	0,6	3	0,0050	0,00	0,00	35324,04	62,95
169	GO128	0	74,80	0,6	3	0,0035	0,00	0,00	20750,30	100,00
170	GO41	0	52,40	0,6	3	0,0051	0,00	0,00	87347,69	64,11
171	GO50	3	33,86	0,6	3	0,0072	407,50	0,73	2099,96	3,74
172	TO8	0	80,64	0,4	2	0,0005	19651,53	20,55	47203,74	49,35
173	GO30	0	36,57	0,6	3	0,0007	0,00	0,00	13104,62	88,58
174	GO32	1	85,25	0,5	1	0,0008	13,01	0,07	12937,68	73,05
175	GO101	0	69,33	0,6	3	0,0028	0,00	0,00	15564,86	98,84
176	GO69	1	67,04	0,6	3	0,0024	0,00	0,00	23285,30	91,28
177	GO127	0	87,43	0,5	3	0,0010	2,79	0,02	13872,18	100,00
178	GO64	1	98,41	0,4	1	0,0010	60571,13	44,32	20574,98	15,05
179	GO95	1	71,54	0,4	1	0,0005	10368,09	79,93	11138,79	85,87

180	GO135	0	93,95	0,4	1	0,0006	37140,81	100,00	4858,09	13,08
181	GO126	0	88,64	0,4	3	0,0017	18056,59	100,00	3374,25	18,69
182	GO82	1	81,76	0,4	1	0,0006	132516,41	99,99	127684,84	96,35
183	GO35	1	96,00	0,4	1	0,0008	21568,74	100,00	19682,76	91,26
184	GO74	0	88,66	0,4	1	0,0005	35175,29	100,00	11089,20	31,53
185	GO106	1	94,96	0,4	1	0,0011	37822,39	100,00	36311,92	96,01
186	GO109	0	94,82	0,4	1	0,0022	65747,88	100,00	65660,91	99,87
187	GO143	3	84,84	0,5	3	0,0021	50409,96	46,45	98309,30	90,58
188	GO40	2	93,33	0,5	1	0,0004	47832,45	99,99	47835,13	100,00
189	GO72	0	71,32	0,6	3	0,0136	0,00	0,00	1941,98	2,06
190	GO25	1	96,53	0,5	1	0,0032	15183,01	55,97	25625,27	94,47
191	GO89	2	65,75	0,5	1	0,0008	40859,84	100,00	24269,75	59,40
192	GO119	0	55,62	0,6	3	0,0056	34466,02	51,53	8612,05	12,88
193	GO37	3	62,39	0,6	3	0,0115	0,00	0,00	96670,29	77,56
194	GO94	0	70,92	0,6	3	0,0019	0,00	0,00	15505,69	81,01
195	GO75	0	46,87	0,6	3	0,0057	0,00	0,00	58259,67	100,00
196	GO14	1	62,30	0,6	3	0,0057	0,00	0,00	61378,63	100,00
197	GO122	0	81,48	0,6	3	0,0052	0,00	0,00	52358,89	81,31
198	GO102	0	88,63	0,6	3	0,0044	0,00	0,00	926,12	1,72
199	GO134	0	87,59	0,6	3	0,0015	0,00	0,00	755,68	1,71
200	GO116	2	60,09	0,6	3	0,0018	0,00	0,00	51746,19	90,89
201	GO19	0	52,81	0,6	3	0,0039	0,00	0,00	115093,30	99,36
202	GO111	0	31,68	0,6	3	0,0040	0,00	0,00	39036,54	30,05
203	GO83	0	63,98	0,6	3	0,0078	0,00	0,00	54007,05	94,18
204	GO26	0	37,46	0,6	3	0,0122	0,00	0,00	9727,91	99,81
205	GO105	0	55,82	0,6	3	0,0024	0,00	0,00	29410,87	69,17
206	GO104	0	46,69	0,6	3	0,0107	0,00	0,00	914,49	4,66
207	GO34	0	39,72	0,6	3	0,0035	0,00	0,00	2190,75	13,42
208	GO84	1	30,49	0,6	3	0,0030	0,00	0,00	297,55	1,93
209	GO55	0	29,23	0,7	3	0,0024	0,00	0,00	2473,07	5,71
210	GO88	0	25,66	0,7	3	0,0025	0,00	0,00	4567,78	11,56
211	GO58	0	41,62	0,8	3	0,0028	0,00	0,00	34894,85	91,53
212	GO132	0	20,22	0,8	3	0,0035	0,00	0,00	25207,76	98,37
213	GO62	0	31,46	0,8	3	0,0037	1222,16	4,29	28227,58	99,12
214	GO120	0	12,55	0,8	3	0,0041	0,00	0,00	12091,96	47,84
215	GO77	0	17,42	0,8	3	0,0017	0,00	0,00	2582,03	49,95
216	GO114	0	32,03	0,8	3	0,0017	0,00	0,00	4255,88	81,74

217	GO73	0	84,35	0,8	3	0,0100	0,00	0,00	30095,48	93,37
218	GO11	0	39,44	0,7	3	0,0202	0,00	0,00	1265,44	3,67
219	GO7	0	80,23	0,8	3	0,0158	26957,99	53,58	49970,26	99,32
220	GO36	0	72,73	0,8	3	0,0045	17608,15	88,90	17673,43	89,23
221	DF2	0	79,89	0,8	1	0,0299	41409,85	99,94	40551,53	97,87
222	GO98	1	62,22	0,8	3	0,0216	75394,08	82,58	79005,45	86,54
223	GO65	0	23,65	0,6	3	0,0034	0,00	0,00	588,18	1,55
224	GO63	0	36,60	0,7	3	0,0047	0,00	0,00	2660,61	3,49
225	GO100	0	11,56	0,6	3	0,0185	0,00	0,00	0,00	0,00
226	GO57	0	63,15	0,8	5	0,0063	46,21	0,24	19390,74	99,18
227	GO133	0	71,18	0,8	5	0,0037	0,00	0,00	16456,20	93,40
228	GO31	0	12,29	0,6	3	0,0063	0,00	0,00	0,00	0,00
229	GO146	0	20,21	0,7	3	0,0117	3340,56	4,56	65789,98	89,84
230	GO60	0	13,31	0,8	3	0,0033	0,00	0,00	0,00	0,00
231	GO80	0	11,74	0,7	3	0,0101	2828,82	2,80	2225,02	2,20
232	GO4	1	44,26	0,8	5	0,0055	11624,66	22,79	50350,19	98,70
233	GO78	0	24,96	0,7	5	0,0082	345,12	0,33	5283,07	5,07
234	TO63	0	50,21	0,5	5	0,0018	89,16	0,05	1961,55	1,09
235	TO40	0	66,25	0,5	2	0,0036	0,00	0,00	55757,67	96,99
236	PA1	0	0,00	0,4	2	0,0050	0,00	0,00	560,66	1,32
237	TO6	0	70,04	0,4	2	0,0008	5031,33	100,00	5031,33	100,00
238	TO71	0	49,00	0,4	3	0,0031	21675,37	100,00	10511,58	48,50
239	TO33	0	44,92	0,4	3	0,0043	88635,10	100,00	12121,85	13,68
240	TO68	0	33,70	0,5	2	0,0035	64363,23	100,00	214,40	0,33
241	TO30	0	55,29	0,4	3	0,0032	13602,38	99,83	13625,26	100,00
242	TO48	0	56,97	0,4	3	0,0488	29269,04	100,00	25744,35	87,96
243	TO74	0	28,77	0,5	2	0,0264	18522,07	100,00	9054,41	48,88
244	TO29	1	93,54	0,4	3	0,0000	9237,25	99,89	9238,48	99,91
245	TO18	0	53,06	0,5	3	0,0033	16634,38	59,67	16822,74	60,35
246	TO56	0	99,32	0,4	3	0,0000	16212,80	100,00	16212,86	100,00
247	TO11	0	98,06	0,4	3	0,0000	35631,83	100,00	35631,83	100,00
248	TO64	0	100,00	0,4	3	0,0000	5268,93	100,00	5268,93	100,00
249	TO92	0	100,00	0,5	3	0,0000	12356,31	100,00	12356,31	100,00
250	TO35	0	99,97	0,5	3	0,0000	22953,18	100,00	22953,18	100,00
251	TO34	0	98,82	0,5	3	0,0000	14159,57	100,00	14159,57	100,00
252	TO77	0	99,36	0,5	3	0,0000	2003,17	100,00	2003,17	100,00
253	TO22	0	68,23	0,5	2	0,0131	0,00	0,00	967,13	14,74

254	TO95	0	99,51	0,5	3	0,0000	72097,98	100,00	72097,99	100,00
255	TO80	0	64,64	0,5	2	0,0031	794,35	4,47	14951,04	84,13
256	GO16	0	21,43	0,6	3	0,0107	0,00	0,00	3250,20	5,46
257	TO96	0	39,70	0,5	3	0,1998	0,00	0,00	23051,71	70,68
258	TO99	0	46,32	0,5	3	0,1440	0,00	0,00	0,00	0,00
259	TO25	0	41,07	0,5	3	0,1427	0,00	0,00	97240,40	38,20
260	MT116	0	82,72	0,4	3	0,0016	12493,48	5,82	21420,80	9,98
261	MT106	0	50,30	0,5	3	0,0021	40675,94	35,62	52085,62	45,62
262	MT102	0	74,70	0,5	5	0,0009	3110,82	49,55	3112,91	49,58
263	MT91	1	71,79	0,5	5	0,0125	10995,88	57,64	19075,18	100,00
264	MT67	0	90,70	0,5	5	0,0015	22,09	0,21	6204,60	59,52
265	MT95	0	66,80	0,5	3	0,0018	0,00	0,00	0,00	0,00
266	MT82	0	71,11	0,4	3	0,0009	7240,08	65,15	11112,42	100,00
267	MT108	0	99,96	0,5	3	0,0000	43647,20	100,00	43647,20	100,00
268	MT89	0	85,06	0,4	3	0,0003	2345,09	45,51	4993,16	96,89
269	MT31	0	74,82	0,4	3	0,0009	2663,76	29,33	8817,24	97,09
270	MT8	0	37,29	0,5	3	0,0037	0,00	0,00	1241,91	4,96
271	MT101	0	93,02	0,5	3	0,0081	9142,35	31,07	27440,86	93,26
272	MT77	0	40,23	0,6	4	0,0102	0,00	0,00	10162,02	65,83
273	MT19	1	25,94	0,6	4	0,0034	0,00	0,00	10315,29	91,49
274	MT45	0	60,14	0,6	4	0,0039	0,00	0,00	39610,69	99,58
275	MT28	0	19,03	0,6	4	0,0067	0,00	0,00	10050,37	100,00
276	MT71	0	49,94	0,6	4	0,0044	4219,40	24,20	17434,43	100,00
277	MT33	1	16,68	0,6	4	0,0030	0,00	0,00	5665,54	100,00
278	MT22	0	32,80	0,6	3	0,0068	0,00	0,00	0,00	0,00
279	MT53	0	50,73	0,6	3	0,0044	0,00	0,00	0,00	0,00
280	MT2	1	21,31	0,6	3	0,0172	0,00	0,00	0,00	0,00
281	MT15	0	35,49	0,6	3	0,0049	0,00	0,00	13120,68	100,00
282	MT40	1	57,21	0,6	3	0,0018	13691,59	35,04	18102,81	46,34
283	MT110	1	100,00	0,6	4	0,0000	7084,43	100,00	7084,43	100,00
284	MT69	0	48,50	0,6	2	0,0016	69,60	0,15	817,69	1,79
285	MT46	0	25,81	0,6	2	0,0016	1,75	0,00	12735,47	9,31
286	MT42	0	14,53	0,6	2	0,0054	0,00	0,00	1831,41	7,75
287	MT1	0	11,23	0,6	2	0,0078	0,00	0,00	375,32	2,87
288	TO58	0	91,60	0,5	3	0,0000	27127,18	95,70	28347,53	100,00
289	TO27	0	81,08	0,5	3	0,0000	1734,00	99,98	1734,43	100,00
290	MT10	0	86,84	0,4	3	0,0028	52692,03	58,91	89447,90	100,00

291	MT30	0	74,18	0,4	3	0,0285	0,00	0,00	46426,20	26,98
292	MT36	0	78,03	0,4	3	0,0102	0,00	0,00	119565,63	58,55
293	MT60	0	77,92	0,4	3	0,0098	0,00	0,00	135981,24	86,41
294	GO43	0	21,14	0,6	3	0,0082	0,00	0,00	0,00	0,00
295	GO91	1	23,51	0,6	3	0,0065	0,00	0,00	88274,37	90,33
296	GO22	0	16,59	0,6	3	0,0164	0,00	0,00	0,00	0,00
297	GO17	0	40,96	0,6	3	0,0026	0,00	0,00	0,00	0,00
298	GO103	0	41,26	0,5	3	0,0040	0,00	0,00	2212,64	2,08
299	GO42	0	31,25	0,6	3	0,0024	0,00	0,00	0,00	0,00
300	GO142	0	39,49	0,6	3	0,0211	0,00	0,00	15290,20	94,26
301	GO2	0	17,55	0,5	3	0,0153	0,00	0,00	57021,51	74,88
302	GO23	0	96,22	0,6	3	0,0045	86,97	0,45	18828,66	96,98
303	GO90	4	32,07	0,6	3	0,0093	764,77	1,78	5269,95	12,25
304	GO1	0	5,50	0,5	3	0,0038	0,00	0,00	0,00	0,00
305	GO33	0	16,43	0,6	3	0,0024	0,00	0,00	445,03	0,64
306	GO12	0	74,45	0,5	3	0,0050	0,00	0,00	10847,57	95,20
307	MT62	0	24,60	0,4	3	0,0047	0,00	0,00	15978,43	100,00
308	MT20	0	35,27	0,4	3	0,0068	0,00	0,00	40690,77	100,00
309	GO141	0	53,84	0,5	3	0,0016	821,22	29,83	2653,61	96,39
310	GO118	1	28,84	0,6	3	0,0065	3,94	0,01	23056,17	67,18
311	GO68	1	20,85	0,6	3	0,0132	0,00	0,00	60517,24	40,16
312	GO5	3	36,15	0,6	3	0,0078	21113,21	27,19	70952,69	91,38
313	GO86	1	14,82	0,6	3	0,0074	10388,65	11,85	11224,27	12,80
314	GO47	1	13,09	0,6	3	0,0226	0,00	0,00	3694,03	8,02
315	GO21	0	43,84	0,6	3	0,0070	0,00	0,00	153012,33	98,77
316	GO99	0	30,42	0,6	3	0,0090	0,00	0,00	15972,71	98,82
317	GO79	0	42,04	0,7	3	0,0095	0,00	0,00	114823,03	88,96
318	GO129	0	77,19	0,8	3	0,0038	0,00	0,00	27881,49	100,00
319	MT12	0	46,64	0,5	4	0,0071	8167,34	18,01	45359,72	100,00
320	MT18	0	51,25	0,6	2	0,0008	0,00	0,00	0,00	0,00
321	MT48	0	59,30	0,6	2	0,0007	0,00	0,00	0,00	0,00
322	MT7	1	42,00	0,5	2	0,0045	0,00	0,00	0,00	0,00
323	GO138	0	43,08	0,8	3	0,0050	0,00	0,00	123619,23	67,84
324	MT94	0	63,40	0,4	2	0,0009	0,00	0,00	23,83	0,05
325	GO45	0	37,59	0,8	3	0,0017	0,00	0,00	0,00	0,00
326	GO13	2	23,44	0,8	3	0,0009	0,00	0,00	26556,07	95,17
327	GO49	0	36,42	0,8	4	0,0022	0,00	0,00	24708,34	93,11

328	GO70	0	31,91	0,8	4	0,0017	0,00	0,00	10681,42	23,59
329	GO59	0	46,39	0,8	4	0,0024	0,00	0,00	1523,81	8,39
330	GO3	0	7,22	0,7	3	0,0004	0,00	0,00	1896,95	100,00
331	MT47	1	25,87	0,5	2	0,0010	0,00	0,00	27129,84	96,79
332	GO123	3	30,19	0,7	3	0,0029	0,00	0,00	24569,29	99,76
333	MT83	3	25,36	0,4	2	0,0013	0,00	0,00	7212,62	26,66
334	GO148	1	39,78	0,6	4	0,0024	0,00	0,00	54930,42	80,91
335	GO96	0	40,29	0,8	4	0,0041	0,00	0,00	17239,27	73,54
336	GO10	0	21,01	0,7	4	0,0019	889,65	1,82	30905,72	63,15
337	MA51	0	27,94	0,7	3	0,0031	43109,34	8,27	59517,50	11,42
338	MA52	0	61,83	0,6	3	0,0028	29952,25	8,50	29937,28	8,50
339	MA19	0	33,53	0,8	4	0,0115	0,00	0,00	0,00	0,00
340	MA41	0	22,25	0,8	4	0,0152	0,00	0,00	0,00	0,00
341	MA31	0	43,84	0,7	3	0,0106	0,00	0,00	0,00	0,00
342	MA37	0	76,96	0,7	3	0,0042	0,00	0,00	0,00	0,00
343	MA53	0	93,33	0,5	3	0,0007	30083,75	66,32	45359,60	100,00
344	MA50	0	73,25	0,6	3	0,0018	4369,35	25,55	9417,61	55,07
345	MA20	0	66,95	0,7	3	0,0053	0,00	0,00	0,00	0,00
346	MA55	0	68,87	0,6	3	0,0027	1109,91	0,69	26845,24	16,81
347	MA30	1	69,22	0,5	3	0,0032	21697,29	100,00	6246,46	28,79
348	MA40	0	67,87	0,6	3	0,0148	0,00	0,00	517,98	1,29
349	MA21	0	86,00	0,6	3	0,0127	0,00	0,00	0,00	0,00
350	MA7	0	69,18	0,7	3	0,0067	0,00	0,00	18,07	0,08
351	MA18	0	69,47	0,6	3	0,0013	0,00	0,00	0,00	0,00
352	MA5	0	68,05	0,7	3	0,0135	0,00	0,00	0,00	0,00
353	MA15	0	75,37	0,7	3	0,0036	0,00	0,00	0,00	0,00
354	MA25	0	99,96	0,6	3	0,0000	30144,31	100,00	30144,31	100,00
355	MA1	0	99,77	0,6	3	0,0000	70229,14	99,98	70226,79	99,98
356	MA29	0	87,21	0,6	3	0,0019	141686,06	59,93	200267,94	84,71
357	MA3	0	72,92	0,7	3	0,0094	47567,11	19,93	237619,62	99,53
358	MA4	1	91,81	0,5	3	0,0013	137098,75	100,00	1963,51	1,43
359	PI24	2	13,63	0,7	3	0,0274	0,00	0,00	0,00	0,00
360	MA9	0	77,96	0,6	3	0,0217	0,00	0,00	42674,34	100,00
361	MA33	0	89,66	0,7	3	0,0091	0,00	0,00	1085,79	1,44
362	PI10	4	38,45	0,7	2	0,0830	148,39	0,26	32905,13	57,51
363	MA54	0	42,79	0,7	3	0,0023	0,00	0,00	24659,99	81,45
364	MA45	0	90,98	0,6	3	0,0026	0,00	0,00	0,00	0,00

365	MA46	0	81,57	0,6	3	0,0024	0,00	0,00	0,00	0,00
366	PI5	0	0,92	0,4	2	0,0019	0,00	0,00	0,00	0,00
367	PI18	1	61,56	0,4	2	0,0018	168690,41	67,33	172458,81	68,84
368	PI9	0	98,57	0,4	2	0,0023	0,00	0,00	0,00	0,00
369	PI7	0	78,10	0,4	2	0,0006	0,00	0,00	53645,56	85,77
370	PI22	0	89,10	0,4	2	0,0127	0,00	0,00	45189,85	99,47
371	PI2	0	99,50	0,4	2	0,0008	21392,61	68,43	31216,76	99,86
372	PI16	0	83,13	0,5	2	0,0617	547,06	0,23	85244,00	35,54
373	PI15	0	73,04	0,5	2	0,0788	0,00	0,00	76918,67	71,64
374	PI11	0	96,77	0,4	2	0,0005	34505,59	25,05	36457,72	26,47
375	PI1	0	82,93	0,4	2	0,0003	3955,34	11,38	0,00	0,00
376	PI29	0	71,98	0,4	2	0,0006	0,00	0,00	1231,22	1,35
377	PI23	0	89,46	0,4	2	0,0007	0,00	0,00	0,00	0,00
378	PI17	0	72,83	0,5	2	0,0011	0,00	0,00	227,16	0,14
379	PI14	0	73,78	0,5	2	0,0013	16394,97	21,64	12485,63	16,48
380	PI25	0	69,07	0,5	2	0,0019	18,11	0,01	821,47	0,50
381	PI6	0	93,16	0,4	2	0,0016	0,00	0,00	0,00	0,00
382	PI20	0	70,53	0,4	2	0,0018	0,00	0,00	0,00	0,00
383	MA34	0	71,24	0,6	3	0,0009	0,00	0,00	0,00	0,00
384	MA11	0	99,12	0,4	3	0,0002	0,00	0,00	0,00	0,00
385	MA57	0	68,28	0,5	2	0,0105	0,00	0,00	0,00	0,00
386	MA43	0	82,06	0,5	3	0,0007	0,00	0,00	824,31	3,15
387	MA6	1	87,52	0,5	3	0,0045	0,00	0,00	0,00	0,00
388	MA17	0	97,23	0,5	3	0,0019	0,00	0,00	202,56	0,62
389	MA35	0	89,62	0,5	3	0,0011	0,00	0,00	108,90	0,31
390	MA14	0	75,96	0,6	3	0,0037	0,00	0,00	7599,76	15,27
391	MA10	0	77,94	0,5	3	0,0013	0,00	0,00	8502,86	8,51
392	MA39	0	58,39	0,6	3	0,0064	0,00	0,00	7844,54	3,99
393	MA44	2	68,34	0,6	3	0,0238	0,00	0,00	33767,84	85,79
394	MA16	0	75,39	0,6	3	0,0049	0,00	0,00	35791,88	80,30
395	MA26	0	90,96	0,6	3	0,0048	0,00	0,00	21511,29	93,45
396	MA49	0	66,48	0,6	3	0,0051	0,00	0,00	15455,73	73,63
397	MA27	0	93,73	0,6	3	0,0029	0,00	0,00	19964,99	97,36
398	MA48	0	82,98	0,6	3	0,0112	0,00	0,00	11069,82	90,34
399	MA23	0	24,73	0,6	3	0,0211	0,00	0,00	6407,00	27,67
400	MA47	0	82,95	0,6	3	0,0073	0,00	0,00	38740,73	78,98
401	PI3	0	86,13	0,5	2	0,0002	0,00	0,00	0,00	0,00

402	PI21	0	71,00	0,5	2	0,0008	0,00	0,00	1580,23	0,52
403	PI28	0	80,69	0,5	2	0,0253	64842,40	10,70	109243,23	18,03
404	MA22	0	82,57	0,5	3	0,0013	0,00	0,00	271328,97	82,69
405	PI27	0	78,67	0,6	2	0,0002	0,00	0,00	141500,87	90,90
406	PI8	0	97,96	0,5	2	0,0000	26553,41	100,00	26553,41	100,00
407	PI26	1	85,98	0,5	2	0,0001	0,00	0,00	88438,84	100,00
408	MA24	1	71,12	0,6	2	0,0004	0,00	0,00	33355,82	97,66
409	MA2	0	97,03	0,6	2	0,0001	0,00	0,00	3845,83	6,79
410	PI4	0	90,85	0,5	2	0,0001	10838,39	15,10	71800,78	100,00
411	PI19	3	99,36	0,5	2	0,0000	261980,07	93,85	262787,42	94,14
412	PI12	0	77,62	0,6	3	0,0310	0,00	0,00	0,00	0,00
413	PI13	0	21,01	0,6	3	0,0021	0,00	0,00	0,00	0,00
414	BA26	1	51,99	0,4	2	0,0307	41343,89	97,99	15888,97	37,66
415	BA4	1	30,63	0,4	2	0,0374	66356,16	99,24	276,68	0,41
416	BA17	1	88,27	0,4	2	0,0049	73184,91	16,34	315496,43	70,44
417	BA18	3	74,43	0,5	3	0,0105	290763,53	36,80	615012,07	77,83
418	BA22	1	56,98	0,6	3	0,0330	123660,42	55,45	138233,95	61,98
419	BA5	0	63,65	0,6	3	0,0319	196350,60	58,82	222692,67	66,71
420	BA54	0	65,51	0,6	3	0,0635	416725,87	62,10	419856,03	62,57
421	BA45	0	56,53	0,4	2	0,0088	0,00	0,00	68396,86	28,90
422	BA31	0	52,86	0,6	2	0,0055	0,00	0,00	3546,57	4,82
423	BA42	0	76,99	0,6	4	0,1434	21885,74	95,75	22703,10	99,33
424	BA35	0	42,47	0,7	4	0,2763	60846,89	96,41	5844,47	9,26
425	BA3	0	67,99	0,6	4	0,1918	22921,86	74,99	20810,89	68,09
426	BA19	0	54,38	0,6	4	0,0512	0,00	0,00	257,27	4,61
427	BA32	0	76,15	0,6	4	0,0716	0,00	0,00	26907,98	82,37
428	BA11	1	70,59	0,6	4	0,0942	4279,37	6,75	46444,86	73,22
429	BA57	0	88,19	0,6	4	0,1157	0,00	0,00	18404,35	99,94
430	BA12	0	40,27	0,7	4	0,0408	2314,37	1,26	69160,84	37,66
431	BA10	0	33,24	0,8	4	0,0016	0,00	0,00	305,62	0,35
432	BA9	0	73,28	0,5	2	0,1015	1776,31	0,68	178309,46	68,38
433	BA21	0	77,39	0,6	2	0,0247	22144,47	4,82	150174,77	32,71
434	BA63	0	85,17	0,6	3	0,0908	0,00	0,00	34277,28	37,26
435	BA53	0	77,37	0,6	3	0,0215	0,00	0,00	29646,51	67,43
436	BA36	0	81,58	0,6	3	0,0115	0,00	0,00	3945,00	99,55
437	BA61	0	41,65	0,6	3	0,2318	0,00	0,00	1483,80	0,55
438	BA25	0	34,68	0,4	2	0,0043	0,00	0,00	2079,43	70,02

439	BA64	1	74,22	0,4	2	0,0122	0,00	0,00	1161,33	2,46
440	BA55	0	39,52	0,5	2	0,0232	0,00	0,00	9241,63	5,29
441	BA24	2	35,66	0,4	2	0,0277	0,00	0,00	12958,89	44,51
442	BA56	0	43,92	0,4	2	0,0247	2144,19	10,82	5,63	0,03
443	BA58	0	47,58	0,6	2	0,0230	980,91	0,80	1721,65	1,41
444	BA33	0	67,34	0,5	2	0,0125	0,00	0,00	40802,59	57,67
445	BA50	0	58,68	0,6	2	0,0199	0,00	0,00	18906,35	32,24
446	BA15	0	55,78	0,6	2	0,0252	0,00	0,00	6434,80	13,33
447	BA52	0	26,62	0,6	2	0,0399	0,00	0,00	1055,40	13,61
448	BA44	1	51,20	0,6	2	0,0123	0,00	0,00	58779,15	60,63
449	BA2	0	64,21	0,6	2	0,0081	0,00	0,00	53525,84	82,11
450	BA28	0	83,18	0,5	2	0,0130	18,78	0,01	148242,91	72,47
451	BA47	0	62,49	0,4	2	0,0407	10729,91	4,69	105763,04	46,22
452	BA62	0	60,04	0,5	2	0,1148	17699,23	20,78	31391,99	36,85
453	BA37	0	71,12	0,5	2	0,1569	18024,67	16,47	31125,16	28,43
454	BA48	0	65,48	0,5	2	0,1141	46982,42	41,49	98522,60	87,01
455	BA7	0	68,90	0,5	3	0,0097	0,00	0,00	87197,85	39,74
456	BA6	0	51,70	0,5	2	0,1236	0,00	0,00	78452,05	60,83
457	BA16	0	54,60	0,5	3	0,0383	0,00	0,00	86996,83	58,72
458	BA49	0	67,29	0,6	2	0,0150	0,00	0,00	16218,87	74,61
459	BA23	0	83,20	0,5	3	0,0098	0,00	0,00	119651,67	92,28
460	BA39	0	25,97	0,5	3	0,0098	0,00	0,00	5104,33	28,52
461	BA46	0	11,54	0,6	2	0,0050	0,00	0,00	981,41	16,49
462	BA51	0	78,33	0,5	3	0,0619	0,00	0,00	91349,04	99,27
463	BA43	0	82,48	0,6	2	0,0477	0,00	0,00	17547,61	12,71
464	BA40	0	79,99	0,5	3	0,0087	0,00	0,00	29978,46	100,00
465	BA59	2	19,14	0,4	2	0,0454	7327,15	17,30	2027,74	4,79
466	BA60	1	42,21	0,5	2	0,0170	27891,39	29,96	21898,14	23,53
467	BA38	0	3,15	0,5	2	0,0237	0,00	0,00	3241,00	8,88
468	BA29	0	52,85	0,6	2	0,0246	0,00	0,00	11511,56	10,04
469	BA30	0	66,29	0,6	2	0,0064	0,00	0,00	3426,90	18,72
470	BA13	1	62,04	0,6	2	0,0105	0,00	0,00	65597,68	85,94
471	MG3	1	76,67	0,5	5	0,0095	121664,17	38,57	61760,88	19,58
472	BA20	0	46,50	0,5	2	0,0064	0,00	0,00	16804,42	43,14
473	BA34	0	87,00	0,5	2	0,0031	302952,22	49,54	465510,08	76,12
474	BA14	0	42,26	0,5	2	0,0078	0,00	0,00	26946,60	43,95
475	BA41	0	74,98	0,4	2	0,0042	0,00	0,00	4997,92	4,52

476	BA27	0	84,12	0,4	2	0,0023	58840,97	12,89	362664,41	79,47
477	MG16	0	44,60	0,6	5	0,0503	2154,71	1,16	2226,37	1,20
478	BA8	1	19,65	0,5	2	0,0324	0,00	0,00	19802,03	25,63
479	MG39	0	26,99	0,6	5	0,0706	0,00	0,00	2853,71	1,95
480	MG73	0	18,26	0,6	5	0,0183	46708,75	13,04	179310,64	50,04
481	MG93	0	30,91	0,6	5	0,0381	11142,44	8,81	78648,58	62,20
482	MG41	1	44,53	0,6	5	0,0395	0,00	0,00	68020,99	31,09
483	MG27	1	18,59	0,6	5	0,0553	10950,19	29,39	0,00	0,00
484	MG58	0	21,27	0,6	5	0,0121	25,05	0,04	18863,24	29,82
485	MG139	1	20,91	0,6	5	0,0163	0,00	0,00	5710,81	20,11
486	MG96	1	35,15	0,7	5	0,0018	0,00	0,00	15634,87	57,71
487	MG1	0	44,87	0,6	5	0,0288	0,00	0,00	324,00	0,63
488	MG20	0	34,82	0,7	5	0,0114	0,00	0,00	63391,53	66,47
489	MG134	1	36,98	0,7	1	0,0172	0,00	0,00	28750,51	98,31
490	MG54	1	28,19	0,7	5	0,0075	0,00	0,00	138221,81	92,13
491	MG79	1	39,81	0,6	5	0,0556	87474,64	32,33	110277,31	40,76
492	MG98	0	43,23	0,6	5	0,0467	64624,54	69,99	8575,13	9,29
493	MG85	0	72,34	0,5	5	0,0105	135364,15	97,56	113946,17	82,12
494	MG89	3	52,81	0,5	5	0,0114	39520,39	16,56	51576,04	21,61
495	MG25	0	54,96	0,5	5	0,0134	2447,69	2,62	23597,23	25,28
496	MG50	0	54,14	0,7	5	0,0165	0,00	0,00	97405,03	85,44
497	MG67	0	82,23	0,5	5	0,0138	27083,64	69,76	31297,97	80,62
498	MG5	0	97,16	0,5	5	0,0024	105715,84	97,64	81571,42	75,34
499	MG113	0	73,29	0,5	5	0,0107	7646,27	19,90	32214,06	83,82
500	MG117	0	85,37	0,5	5	0,0087	505,18	3,45	70,73	0,48
501	MG83	0	92,94	0,6	1	0,0021	10147,19	19,20	51162,93	96,79
502	MG24	0	74,39	0,6	1	0,0041	0,00	0,00	13554,28	74,00
503	MG55	1	34,00	0,6	5	0,0051	0,00	0,00	6028,69	33,93
504	MG116	0	38,98	0,6	5	0,0049	0,00	0,00	6418,04	55,90
505	MG87	0	58,63	0,6	5	0,0023	0,00	0,00	18408,50	78,69
506	MG133	0	82,78	0,5	5	0,0032	0,00	0,00	193813,93	67,71
507	MG26	0	67,96	0,5	5	0,0277	0,00	0,00	233446,80	75,87
508	MG101	2	67,47	0,5	5	0,0066	10001,68	2,23	220243,29	49,21
509	MG33	2	46,33	0,6	5	0,0289	2319,07	0,70	135289,06	40,77
510	MG66	0	66,54	0,5	5	0,0028	408,73	0,17	133783,44	54,89
511	MG37	0	68,55	0,5	5	0,0063	16382,36	6,97	200832,48	85,49
512	MG120	0	47,34	0,6	5	0,0079	0,00	0,00	43517,25	13,40

513	MG119	0	50,98	0,5	5	0,0064	0,00	0,00	0,00	0,00
514	MG17	1	47,47	0,7	5	0,0181	0,00	0,00	92104,25	64,18
515	MG40	0	61,20	0,5	5	0,0043	0,00	0,00	54370,01	72,66
516	MG106	0	34,63	0,6	5	0,0322	0,00	0,00	2024,27	2,62
517	MG131	1	45,66	0,6	5	0,0280	12257,60	4,23	122320,47	42,26
518	GO18	0	59,41	0,7	3	0,0105	0,00	0,00	86798,43	62,39
519	DF1	0	26,54	0,7	1	0,0319	123391,46	74,00	73057,82	43,81
520	MG141	0	8,52	0,7	5	0,0513	0,00	0,00	0,00	0,00
521	MG127	0	50,59	0,7	5	0,0182	2880,16	9,94	28058,17	96,81
522	MG99	0	17,48	0,7	5	0,0307	0,00	0,00	6859,20	21,41
523	MG112	0	52,86	0,7	5	0,0351	953,93	1,80	45405,22	85,51
524	MG94	1	58,65	0,6	5	0,0118	0,00	0,00	52732,49	90,44
525	MG102	1	52,13	0,6	5	0,0091	0,00	0,00	118601,96	35,18
526	MG77	0	46,98	0,7	5	0,0338	4765,24	2,33	31899,38	15,60
527	MG43	0	43,57	0,8	5	0,0305	0,00	0,00	76772,12	99,03
528	MG10	1	35,55	0,6	5	0,0094	0,00	0,00	60322,44	65,75
529	MG51	0	39,14	0,5	5	0,0142	0,00	0,00	39171,49	39,31
530	MG38	0	39,72	0,4	5	0,0055	0,00	0,00	66844,82	61,26
531	MG9	0	59,54	0,4	5	0,0052	0,00	0,00	37997,57	100,00
532	MG44	4	50,30	0,5	5	0,0029	6709,50	8,16	70107,59	85,25
533	MG92	0	56,23	0,5	5	0,0007	40799,14	26,92	119444,19	78,82
534	MG138	2	50,59	0,5	5	0,0160	268,09	0,07	316112,19	77,14
535	MG12	1	46,64	0,4	5	0,0019	0,00	0,00	83644,76	38,82
536	MG74	1	56,71	0,5	5	0,0020	38448,39	19,32	129939,62	65,30
537	MG49	0	7,77	0,4	5	0,0046	0,00	0,00	3,00	0,01
538	MG70	11	72,78	0,4	5	0,0013	0,00	0,00	169661,57	83,52
539	MG115	0	15,26	0,5	5	0,0058	0,00	0,00	1176,10	2,33
540	MG91	92	70,20	0,5	5	0,0017	67783,38	15,07	392658,37	87,31
541	MG4	28	37,45	0,6	1	0,0479	60446,29	5,23	530549,58	45,92
542	MG88	1	43,04	0,5	5	0,0202	0,00	0,00	216964,56	58,53
543	MG128	0	45,17	0,4	5	0,0018	0,00	0,00	116196,29	97,05
544	MG125	1	65,92	0,7	5	0,0077	0,00	0,00	315996,22	53,85
545	MG109	0	57,09	0,4	5	0,0115	0,00	0,00	19658,24	50,48
546	MG14	0	75,69	0,6	5	0,0073	0,00	0,00	168893,70	97,98
547	MG32	0	48,39	0,4	5	0,0044	1384,49	1,40	32082,49	32,49
548	MG45	0	68,63	0,6	5	0,0086	0,00	0,00	236516,22	89,40
549	MG107	0	34,75	0,4	5	0,0128	0,00	0,00	34830,61	15,04

550	MG34	0	43,26	0,4	5	0,0031	0,00	0,00	74253,53	40,79
551	MG35	2	31,16	0,6	5	0,0168	203,29	0,09	37138,34	15,57
552	MG46	0	39,19	0,6	5	0,0231	49,75	0,06	75295,49	86,78
553	MG6	1	9,50	0,6	5	0,0379	12065,35	2,22	104525,01	19,25
554	MG56	0	21,89	0,6	5	0,0061	0,00	0,00	65525,20	33,46
555	MG104	0	29,96	0,6	5	0,0063	0,00	0,00	10770,01	23,11
556	MG110	0	6,84	0,6	5	0,0382	0,00	0,00	6634,99	4,28
557	MG64	0	24,18	0,7	5	0,0092	0,00	0,00	59660,53	51,40
558	MG100	0	9,42	0,6	5	0,0173	0,00	0,00	13190,00	6,16
559	MG57	0	16,08	0,6	5	0,0166	0,00	0,00	9444,27	1,98
560	MG31	1	8,87	0,6	5	0,0060	5911,46	1,66	89531,63	25,18
561	MG136	2	32,74	0,5	5	0,0013	27193,78	32,81	27061,46	32,65
562	MG108	3	43,35	0,5	5	0,0015	25968,22	31,88	35995,65	44,19
563	MG76	0	34,36	0,5	5	0,0061	16990,26	2,69	271067,36	42,91
564	MG121	0	11,77	0,5	5	0,0026	0,00	0,00	0,00	0,00
565	MG11	3	59,65	0,5	5	0,0012	0,00	0,00	0,00	0,00
566	MG19	2	49,01	0,5	5	0,0025	0,00	0,00	0,00	0,00
567	MG7	1	54,13	0,5	5	0,0026	4383,38	7,65	4391,84	7,66
568	MG81	7	53,22	0,4	5	0,0007	12527,91	2,70	14558,32	3,13
569	MG137	0	55,47	0,4	5	0,0008	0,00	0,00	0,00	0,00
570	MG86	0	71,91	0,5	5	0,0085	5416,60	10,14	5397,78	10,10
571	MG135	1	61,68	0,5	5	0,0018	1436,59	1,35	2012,64	1,89
572	MG30	0	74,54	0,4	5	0,0076	2071,94	0,62	2063,40	0,61
573	MG47	1	86,65	0,4	5	0,0007	0,00	0,00	664,84	0,63
574	MG122	0	32,05	0,4	5	0,0005	0,00	0,00	1905,09	2,43
575	MG65	0	85,95	0,4	5	0,0004	47121,40	33,70	128254,68	91,72
576	MG15	1	92,04	0,4	5	0,0005	12650,19	30,29	41767,80	100,00
577	MG72	51	72,74	0,4	5	0,0010	18229,71	8,60	164260,73	77,48
578	MG123	1	57,80	0,6	5	0,0016	11301,84	87,62	12250,03	94,97
579	MG78	0	29,90	0,6	5	0,0031	1955,74	13,57	10692,00	74,19
580	MG103	0	56,85	0,4	5	0,0006	8242,56	39,03	17938,92	84,95
581	MG95	0	91,89	0,4	5	0,0008	6649,13	96,94	6858,91	100,00
582	MG62	1	66,38	0,4	5	0,0010	6940,56	54,10	10071,15	78,50
583	MG105	0	33,41	0,4	5	0,0011	4131,97	12,58	18233,67	55,51
584	MG84	1	70,84	0,4	5	0,0005	8841,04	42,19	19051,16	90,90
585	MG69	1	47,45	0,4	5	0,0003	4989,15	30,43	8442,05	51,49
586	MG13	0	40,23	0,8	5	0,0050	0,00	0,00	4638,68	72,26

587	MS10	0	5,01	0,6	2	0,0100	0,00	0,00	21710,77	3,40
588	MS11	0	13,96	0,7	3	0,0159	10,19	0,00	225241,63	33,60
589	MS33	3	6,94	0,8	3	0,0089	8830,20	0,96	43614,58	4,72
590	MS20	0	15,67	0,8	3	0,0307	535,19	0,12	2261,67	0,53
591	SP36	0	8,46	0,6	1	0,0183	0,00	0,00	0,00	0,00
592	PR8	1	0,35	0,6	1	0,0085	1480,12	0,13	3751,03	0,33
593	PR4	0	17,06	0,7	1	0,0070	97847,93	32,42	76576,42	25,37
594	PR1	1	1,62	0,6	1	0,0013	47937,51	29,05	1285,79	0,78
595	SP39	0	4,12	0,6	1	0,0140	293,51	0,09	677,91	0,20
596	PR9	0	0,14	0,6	1	0,0122	0,00	0,00	174,34	0,05
597	PR7	0	10,08	0,6	1	0,0071	45722,74	21,17	37015,45	17,14
598	SP16	0	5,39	0,6	1	0,0055	993,80	1,07	1089,30	1,18
599	SP12	0	5,35	0,6	1	0,0047	0,00	0,00	0,00	0,00
600	SP1	0	6,99	0,7	1	0,0033	1854,08	0,43	90189,03	21,15
601	SP22	0	1,87	0,6	1	0,0334	1267,20	0,86	1593,15	1,08
602	SP17	0	5,36	0,6	1	0,0139	4833,31	4,98	720,09	0,74
603	SP26	0	3,95	0,5	1	0,0021	3122,75	28,01	2108,92	18,92
604	SP13	0	6,57	0,5	1	0,0111	0,00	0,00	1228,41	1,30
605	SP48	0	0,47	0,5	1	0,0185	4348,97	21,82	0,00	0,00
606	SP11	0	7,60	0,5	1	0,0077	8531,57	15,25	133,98	0,24
607	SP30	6	3,58	0,6	1	0,0102	0,00	0,00	173,79	0,08
608	PR6	0	0,74	0,7	1	0,0147	0,00	0,00	0,00	0,00
609	PR5	14	7,56	0,6	1	0,0035	49594,39	31,12	28181,28	17,68
610	PR3	3	9,73	0,6	1	0,0052	28928,41	37,12	1906,86	2,45
611	PR2	2	20,74	0,6	1	0,0046	8558,67	9,67	18318,22	20,70
612	SP40	0	1,60	0,7	1	0,0336	0,00	0,00	0,00	0,00
613	SP18	1	5,67	0,6	1	0,0273	282,56	0,06	611,25	0,14
614	SP21	2	0,98	0,7	1	0,0094	8984,96	7,25	1427,14	1,15
615	SP27	0	0,96	0,6	1	0,0219	3924,61	1,39	0,00	0,00
616	SP29	1	2,13	0,6	1	0,0508	0,00	0,00	755,14	0,29
617	MS8	3	17,08	0,7	5	0,0224	42,97	0,00	254114,02	18,87
618	MS13	0	16,84	0,6	2	0,0053	0,00	0,00	60719,31	7,02
619	MS7	1	13,53	0,6	2	0,0048	0,00	0,00	0,00	0,00
620	MS12	0	1,37	0,6	2	0,0302	403,16	0,88	0,00	0,00
621	MS37	0	17,14	0,6	2	0,0077	478,25	0,20	88661,54	36,48
622	MS27	1	14,26	0,6	2	0,0051	0,00	0,00	23467,64	91,67
623	MS28	2	18,31	0,6	2	0,0088	4962,64	0,69	425862,15	58,80

624	SP4	0	8,06	0,7	1	0,0043	225664,76	94,24	52303,32	21,84
625	SP52	1	6,99	0,5	1	0,0104	9340,13	8,08	337,68	0,29
626	SP3	0	4,66	0,6	1	0,0378	15867,03	99,34	10487,06	65,66
627	SP31	0	8,57	0,5	1	0,0038	0,90	0,00	2920,20	6,85
628	SP32	0	9,36	0,5	1	0,0152	0,00	0,00	37430,08	64,42
629	SP6	2	10,31	0,6	1	0,0539	0,00	0,00	3096,57	6,54
630	SP20	0	14,49	0,5	1	0,0700	48488,94	34,09	44971,61	31,61
631	SP33	2	12,90	0,5	1	0,0076	57028,30	21,81	150351,54	57,51
632	SP7	2	2,89	0,7	1	0,0137	1243,92	1,18	397,58	0,38
633	SP25	0	4,74	0,7	1	0,0493	2280,32	4,05	1194,35	2,12
634	SP37	0	1,65	0,6	1	0,0546	1144,87	1,06	0,00	0,00
635	SP5	1	7,10	0,4	1	0,0270	21934,22	25,05	39562,32	45,18
636	SP2	5	11,00	0,6	1	0,0100	93155,20	49,38	123640,92	65,54
637	SP14	4	8,77	0,6	1	0,0583	110794,70	67,57	47151,71	28,76
638	SP44	0	0,62	0,6	1	0,1355	0,00	0,00	159,09	0,09
639	SP9	0	0,34	0,7	1	0,0855	25,08	0,01	0,00	0,00
640	SP8	0	3,35	0,8	1	0,0277	91,72	0,19	0,00	0,00
641	SP45	0	2,90	0,7	1	0,0191	137,72	0,32	0,00	0,00
642	SP34	0	4,44	0,6	1	0,0673	0,00	0,00	0,00	0,00
643	SP55	1	16,68	0,5	1	0,0138	19879,89	46,94	3513,24	8,30
644	SP49	0	15,98	0,5	1	0,0045	12292,95	39,25	25670,03	81,96
645	SP15	1	10,11	0,5	1	0,0058	278,65	0,87	31064,90	96,78
646	SP43	0	4,18	0,6	1	0,0050	32652,42	28,39	733,42	0,64
647	SP51	1	4,18	0,5	1	0,0055	0,00	0,00	66406,18	28,73
648	MS9	0	12,48	0,5	2	0,0036	0,00	0,00	0,00	0,00
649	SP41	0	0,34	0,5	1	0,0107	0,00	0,00	1860,07	1,40
650	SP38	0	4,11	0,6	1	0,0081	0,00	0,00	64494,56	21,44
651	MG140	0	15,92	0,6	5	0,0037	0,00	0,00	100325,25	36,07
652	MG118	0	5,09	0,6	5	0,0094	0,00	0,00	1942,19	0,51
653	SP24	1	8,08	0,5	1	0,0311	103,05	0,02	114397,86	22,08
654	SP23	5	8,15	0,6	1	0,0601	3196,68	0,25	297734,51	23,40
655	SP46	0	5,86	0,5	1	0,1327	738,81	0,57	37107,34	28,69
656	SP19	0	11,71	0,5	1	0,0342	2266,50	2,15	11660,34	11,05
657	SP42	3	12,58	0,5	1	0,0427	10967,07	1,80	268541,95	44,02
658	SP35	0	6,37	0,6	1	0,0784	0,00	0,00	0,00	0,00
659	SP47	1	5,84	0,6	1	0,0486	5187,32	1,44	1523,19	0,42
660	MG129	0	15,94	0,7	5	0,0135	0,00	0,00	9416,77	3,50

661	SP53	0	5,67	0,5	1	0,0475	0,00	0,00	153822,14	51,19
662	SP10	0	5,05	0,5	1	0,0415	727,22	2,03	3339,72	9,30
663	SP28	0	6,94	0,6	1	0,0098	0,00	0,00	9002,18	69,10
664	SP50	0	11,66	0,6	1	0,0199	0,00	0,00	1783,80	1,88
665	MG97	0	11,59	0,6	5	0,0023	372,77	0,69	3012,39	5,61
666	MG126	1	19,69	0,5	1	0,0069	0,00	0,00	108827,45	97,59
667	SP54	0	5,68	0,5	1	0,0224	14,43	0,01	474,82	0,36
668	MG75	0	16,16	0,6	5	0,0252	2134,07	0,53	74174,39	18,38
669	MG114	1	43,20	0,6	5	0,0038	4095,95	5,66	39029,91	53,98
670	MG90	2	83,56	0,6	5	0,0004	51512,06	80,27	51649,54	80,49
671	MG23	0	21,58	0,6	5	0,0036	6501,22	12,98	6613,43	13,21
672	MG2	7	27,06	0,7	5	0,0053	62198,89	20,43	140911,08	46,29
673	MG82	0	11,88	0,6	5	0,0081	2805,02	0,97	79752,07	27,61
674	MG42	0	21,88	0,6	5	0,0081	0,00	0,00	30032,65	19,11
675	MG36	1	3,85	0,5	5	0,0068	0,00	0,00	1954,54	0,87
676	GO112	0	14,92	0,5	3	0,0176	0,00	0,00	281910,07	40,47
677	GO93	3	33,47	0,6	3	0,0122	127033,58	17,35	518987,46	70,87
678	GO136	2	25,32	0,7	3	0,0117	0,00	0,00	700837,01	59,55
679	GO61	5	20,19	0,7	3	0,0149	0,00	0,00	493400,89	36,06
680	MG48	1	20,27	0,7	5	0,0043	0,00	0,00	409187,89	69,21
681	MG124	0	14,87	0,7	5	0,0340	0,00	0,00	72017,71	31,70
682	MG60	0	12,40	0,8	5	0,0359	0,00	0,00	1782,44	2,34
683	MG28	1	18,82	0,9	5	0,0200	0,00	0,00	88004,44	91,02
684	GO87	1	16,07	0,7	3	0,0404	42197,66	3,30	304070,28	23,75
685	GO145	0	16,07	0,6	3	0,0219	0,00	0,00	243388,78	29,98
686	GO9	0	11,15	0,7	3	0,0154	9109,70	4,37	43582,93	20,91
687	GO28	0	3,58	0,7	3	0,0109	0,00	0,00	494,85	0,34
688	GO8	1	12,27	0,7	3	0,0272	74417,39	6,00	455469,19	36,70
689	GO92	0	12,08	0,8	3	0,0177	6419,08	1,40	9348,98	2,04
690	GO85	1	23,24	0,8	3	0,0111	5739,96	1,51	100294,75	26,32
691	GO20	0	25,77	0,6	3	0,0241	0,00	0,00	107420,75	32,50
692	GO54	0	19,69	0,7	3	0,0163	486,37	0,11	105300,11	23,88
693	GO39	0	46,68	0,8	3	0,0196	0,00	0,00	156193,79	79,72
694	GO48	17	38,23	0,8	1	0,0757	228854,45	42,73	370653,22	69,21
695	GO97	0	23,30	0,8	3	0,0219	114359,15	12,63	495943,29	54,78
696	MG130	0	16,34	0,9	5	0,0712	0,00	0,00	90571,50	44,21
697	MG80	1	13,12	0,8	5	0,0388	2181,81	0,56	246424,32	63,24

698	MG8	3	48,56	0,7	5	0,0307	14774,86	3,19	330629,64	71,46
699	MG111	1	20,07	0,7	5	0,0248	0,00	0,00	183763,69	55,57
700	MG21	1	21,50	0,7	5	0,0235	0,00	0,00	109233,24	81,87
701	MG59	1	25,57	0,7	5	0,0397	0,00	0,00	60407,67	20,26
702	MG18	0	26,96	0,7	5	0,0227	0,00	0,00	3720,13	2,59
703	GO147	0	35,78	0,7	3	0,0246	0,00	0,00	306201,08	67,77
704	MG22	1	15,19	0,7	5	0,0706	0,00	0,00	104,52	0,02
705	MG61	0	10,51	0,7	5	0,0496	0,00	0,00	0,00	0,00
706	MG29	0	15,73	0,7	5	0,0263	0,00	0,00	0,00	0,00
707	MG68	1	21,45	0,7	5	0,0215	0,00	0,00	213868,14	20,31
708	GO130	5	34,54	0,7	5	0,0395	8401,69	0,70	290616,49	24,32
709	MS3	0	14,21	0,5	3	0,0030	0,00	0,00	2156,99	1,27
710	MS22	0	41,60	0,5	3	0,0069	30932,35	9,43	250602,40	76,37
711	MS35	1	10,18	0,7	3	0,0083	9322,32	6,90	47931,21	35,47
712	MS18	0	12,57	0,5	3	0,0042	0,00	0,00	7060,10	4,89
713	MS31	0	17,06	0,5	3	0,0034	0,00	0,00	197199,21	77,23
714	MS19	2	32,64	0,5	3	0,0064	998,08	0,38	161709,05	61,18
715	MS34	0	54,45	0,5	3	0,0044	169113,48	48,69	317764,40	91,48
716	MS26	1	6,15	0,6	3	0,0052	0,00	0,00	212735,60	26,96
717	MS17	8	29,92	0,6	5	0,0143	76927,97	3,83	1313714,76	65,40
718	MS24	0	16,58	0,5	3	0,0088	22507,91	10,89	179585,62	86,88
719	MS6	1	9,37	0,5	3	0,0167	3708,52	2,33	98972,48	62,14
720	MS30	0	27,65	0,6	3	0,0119	0,00	0,00	103775,05	42,87
721	MS4	1	26,08	0,5	3	0,0093	11648,35	4,40	63930,17	24,16
722	MS32	2	23,91	0,7	3	0,0129	17177,58	5,63	100221,51	32,82
723	MS25	0	26,47	0,7	3	0,0076	1099,86	0,14	438466,15	56,75
724	MS36	0	28,55	0,5	3	0,0051	1403,84	0,40	260603,40	74,34
725	MS21	0	31,07	0,6	3	0,0059	0,00	0,00	121095,79	36,96
726	MS2	2	10,30	0,6	2	0,0195	0,00	0,00	24360,82	6,65
727	MS29	1	20,63	0,6	2	0,0289	0,00	0,00	133095,06	67,61
728	MS14	3	36,24	0,6	2	0,0062	30362,65	2,58	624645,30	53,09
729	MS23	0	27,09	0,6	2	0,0088	0,00	0,00	83944,44	58,39
730	MS5	0	30,16	0,6	2	0,0074	16786,25	2,28	238744,31	32,46
731	MT50	1	19,27	0,6	2	0,0128	0,00	0,00	315703,22	30,41
732	MS16	0	25,59	0,6	2	0,0151	0,00	0,00	222894,86	49,78
733	MT51	1	32,80	0,7	2	0,0096	0,00	0,00	340194,67	45,15
734	MT72	0	17,13	0,8	2	0,0146	1231,72	1,30	10904,29	11,48

735	MT111	0	33,55	0,7	2	0,0109	4262,65	1,69	64473,59	25,54
736	MT105	0	46,15	0,6	2	0,0151	4769,13	0,78	316871,32	51,63
737	MT93	0	55,58	0,6	4	0,0028	0,00	0,00	29549,98	83,74
738	MT16	1	42,91	0,6	4	0,0065	50056,16	29,57	136712,08	80,76
739	MT78	8	45,32	0,6	4	0,0235	72801,98	12,62	351399,27	60,94
740	MT37	1	56,08	0,5	4	0,0053	9197,60	6,85	101853,83	75,90
741	MT73	0	58,42	0,6	3	0,0088	433,40	0,77	55866,54	99,23
742	MT88	1	65,65	0,5	4	0,0047	94,37	0,11	83741,32	99,89
743	MT59	0	53,82	0,4	4	0,0022	35394,03	59,48	59503,57	100,00
744	MT4	0	84,09	0,4	4	0,0020	48197,38	100,00	48197,38	100,00
745	MT70	0	88,12	0,5	4	0,0044	31382,91	100,00	31382,92	100,00
746	MT38	0	84,80	0,4	4	0,0025	43330,73	100,00	43271,55	99,86
747	MT56	1	77,94	0,5	4	0,0031	352,03	0,25	138190,54	96,96
748	MT63	0	58,01	0,5	3	0,0031	59836,25	14,34	307826,85	73,75
749	MT11	2	47,90	0,7	4	0,0026	95239,68	57,06	119704,02	71,72
750	MT27	1	34,24	0,7	4	0,0096	6375,86	5,50	111024,39	95,74
751	MT52	0	58,33	0,7	4	0,0083	0,00	0,00	49333,35	79,25
752	MT29	0	52,53	0,7	4	0,0110	0,00	0,00	68054,38	78,41
753	MT114	0	11,90	0,5	4	0,0040	14758,84	2,83	491207,04	94,27
754	MT61	0	9,88	0,6	4	0,0044	0,00	0,00	97810,25	87,46
755	MT90	0	47,40	0,6	4	0,0037	0,00	0,00	174890,36	76,76
756	MT104	0	35,52	0,5	4	0,0057	12533,16	2,98	168198,05	40,00
757	MT21	1	56,30	0,4	4	0,0028	0,00	0,00	42115,74	73,34
758	MT99	0	0,00	0,6	4	0,0039	0,00	0,00	0,00	0,00
759	MT41	0	20,24	0,6	4	0,0045	24418,29	5,95	79092,54	19,28
760	MT112	0	85,33	0,6	4	0,0017	7662,29	45,74	16753,22	100,00
761	MT14	0	26,97	0,5	4	0,0054	53512,85	14,34	144490,93	38,72
762	BO020	Unknown	Unknown	Unknown	Unknown	Unknown	2251080,00	100,00	Unknown	Unknown
763	PY013	Unknown	Unknown	Unknown	Unknown	Unknown	103885,00	80,03	Unknown	Unknown
764	PY012	Unknown	Unknown	Unknown	Unknown	Unknown	0,00	0,00	Unknown	Unknown
765	PY014	Unknown	Unknown	Unknown	Unknown	Unknown	0,00	0,00	Unknown	Unknown

APPENDIX 3. RANKING KBAS AHP DATA

This appendix is composed by intermediate steps of the KBA prioritization, generated by AHP method. Table 3.1 contains the variables' description, while the final table is broken down into two tables (3.2 and 3.3) to present the values per KBA. The last column of Table 3.3 is the final result of the prioritization.

Table 3.1. Variables' description

Variable Name	Description
P_P_Ra	Rare Plants
P_Pe_Ra	Rare Fish
Fa_VU	National RedList of Fauna- Vulnerable
Fa_EN	National RedList of Fauna- Endangered
Fa_CR	National RedList of Fauna- Critically Endangered
Fa_I_VU	IUCN RedList of Fauna- Vulnerable
Fa_I_EN	IUCN RedList of Fauna- Endangered
Fa_I_CR	IUCN RedList of Fauna- Critically Endangered
Flo_VU	National RedList of Flora- Vulnerable
Flo_EN	National RedList of Flora- Endangered
Flo_CR	National RedList of Flora- Critically Endangered
Irre_TT	Irreapleaceable Species
Flo_I_VU	IUCN RedList of Flora- Vulnerable
Flo_I_EN	IUCN RedList of Flora- Endangered
Flo_I_CR	IUCN RedList of Flora- Critically Endangered
PC_P_Ra	Weight Rare Plants
PC_Pe_Ra	Weight Rare Fish
PC_Fa_VU	Weight National RedList of Fauna- Vulnerable
PC_Fa_CR	Weight National RedList of Fauna- Endangered
PC_Fa_EN	Weight National RedList of Fauna- Critically Endangered
G_Fa_MMA	Degree of National RedList of Fauna
PC_G_Fa_MM	Weight + Degree of National RedList of Fauna
PC_I_Fa_VU	Weight of IUCN RedList of Fauna- Vulnerable
PC_I_Fa_CR	Weight of IUCN RedList of Fauna- Critically Endangered
PC_I_Fa_EN	Weight of IUCN RedList of Fauna- Endangered
G_Fa_IUCN	Degree of IUCN RedList of Fauna
PC_G_Fa_IU	Weight + Degree of IUCN RedList of Fauna
G_Fa_MM_IU	Degree of IUCN and National RedList of Fauna
PC_G_MM_IU	Weight + Degree of IUCN and National RedList of Fauna
PC_Fl_VU	Weight National RedList of Flora- Vulnerable
PC_Fl_EN	Weight National RedList of Flora- Endangered
PC_Fl_CR	Weight National RedList of Flora- Critically Endangered
G_Fl_CNC	Degree of National RedList of Flora
PC_G_Fl_CN	Weight + Degree of National RedList of Flora
PC_I_Fl_VU	Weight IUCN RedList of Flora- Vulnerable
PC_I_Fl_EN	Weight IUCN RedList of Flora- Endangered
PC_I_Fl_CR	Weight IUCN RedList of Flora- Critically Endangered
G_Fl_IUCN	Degree of IUCN RedList of Flora
PC_G_Fl_IU	Weight + Degree of IUCN RedList of Flora
G_Fl_CN_IU	Degree of IUCN and National RedList of Flora
PC_G_CN_IU	Weight + Degree of IUCN and National RedList of Flora
PC_Irre	Weight Irreapleaceable Species
Biologico	AHP Biological Criteria
P_Biologic	Weight Biological Criteria
Reman	Percentage of Natural Vegetation Cover
IPA	Threat Level (IPA index)

CSC	Civil Society Capacity
Agua	Consumptive Water demand
PC_Reman	Weight of Natural Vegetation Cover
PC_IPA	Weight Threat Level (IPA index)
PC_CSC	Weight Civil Society Capacity
PC_Agua	Weight Consumptive Water demand
G_Pro_Pri	Degree of Protected Areas and Priority Areas (Alignment with National Policies criteria)
PC_Pro_Pri	Weight + Degree of Protected Areas and Priority Areas (Alignment with National Policies criteria)
Paisagem	AHP Landscape
P_Paisagem	Weight Landscape
G_Bio_Pais	Degree AHP Biological + Landscape
FIM_BIO_PA	5 Final Classes of KBA Prioritization

Table 3.2. Part 1

	COD	Nome	P_P_Ra	P_Pe_Ra	Fa_VU	Fa_EN	Fa_CR	Fa_I_VU	Fa_I_EN	Fa_I_CR	Flo_VU	Flo_EN	Flo_CR	Irre_TT	Flo_I_VU	Flo_I_EN	Flo_I_CR	PC_P_Ra	PC_Pe_Ra	PC_Fa_VU	PC_Fa_CR	PC_Fa_EN	G_Fa_MMA	PC_G_Fa_MM	PC_I_Fa_VU	PC_I_Fa_CR	PC_I_Fa_EN	G_Fa_IUCN	PC_G_Fa_IU	G_Fa_MM_IU	PC_G_MM_IU
1	TO32	Goiatins	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
2	MA56	Tres Barras	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
3	BA1	Aguas do Paulista	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
4	MT65	Nova Nazare	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
5	MG63	Natalandia	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
6	MG132	Unai de Minas	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
7	GO29	Campinacu	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
8	GO44	Delgado	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
9	MT26	Canarana	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
10	MS1	Aldeia	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
11	MS15	PE Serra de Sonora	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
12	MT3	Agua Clara	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
13	MT68	Paranatinga	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
14	TO84	Sao Felipe	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
15	MT55	Man-Azde	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
16	TO10	Araguaia	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
17	TO85	Sao Valerio	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
18	GO38	Corriola	3,00	6,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	6,00	0,00	0,00	0,00	0,18	0,47	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
19	GO131	Sao Patricio	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
20	TO41	Lajeado	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
21	PA2	Santana do Araguaia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
22	TO39	Lagoa da Confusao	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
23	TO37	Javaes	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
24	TO91	Terra Indigena Kraho-Kanela	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
25	MT92	Santa Terezinha	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
26	MT6	Aldeia Caraja	1,00	0,00	2,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,17	0,05	0,03	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
27	MT84	Rio das Mortes	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
28	MT75	Piabanha	5,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	2,00	0,00	0,00	0,00	0,18	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
29	MT85	Rio dos Patos	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
30	MT117	Zacarias	6,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	4,00	2,00	0,00	1,00	0,00	0,00	0,00	0,27	0,20	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15

31	MT49	Insula	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
32	MT66	Nova Xavantina	4,00	1,00	4,00	1,00	0,00	1,00	1,00	0,00	3,00	2,00	0,00	3,00	0,00	0,00	0,00	0,18	0,20	0,27	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
33	MT98	Suspiro	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
34	MT74	Perdidos	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
35	MT13	APA Meandros do Rio Araguaia	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
36	GO107	Ribeirao Sao Domingos	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
37	MT32	Corixo do Cascavel	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
38	MT80	Registro do Araguaia	0,00	1,00	1,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,20	0,12	0,05	0,03	0,02	0,07	0,37	0,90	0,37	0,23	0,46	0,12	0,46
39	GO108	Rio Bonito	8,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	1,00	0,00	1,00	0,00	0,00	0,00	0,27	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
40	MG52	Joao Pinheiro	3,00	3,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	1,00	0,00	0,18	0,30	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
41	MG53	Josenopolis	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
42	MG71	Parque Estadual Grao Mogol	28,00	2,00	0,00	0,00	0,00	1,00	0,00	0,00	17,00	30,00	10,00	27,00	3,00	4,00	0,00	0,42	0,30	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
43	MT58	Mariana	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
44	MT97	Suiazinho	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
45	MT81	Ribeirao Agua Limpa	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
46	MT79	Queimada	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
47	MT96	Sete de Setembro	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
48	MT39	Culuene	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
49	MT34	Couto de Magalhaes	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
50	MT87	Rio Verde	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
51	MT9	APA do Salto Magessi	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
52	MT76	Piabas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
53	MT100	Tapurah	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
54	MT57	Marape	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
55	MT23	Caju Doce	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
56	MT5	Agua Verde	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
57	MT64	Nova Mutum	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
58	MT115	Tres Lagoas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
59	MT86	Rio Preto	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
60	MT17	Arinos	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
61	MT35	Cravari	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
62	MT24	Campo Novo do Parecis	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
63	MT113	Terra Indigena Utiariti	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
64	MT103	Terra Indigena Enawene-Nawe	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
65	MT44	Estacao Ecologica de Ique	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
66	MT109	Terra Indigena Pirineus de Souza	1,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,11	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
67	MT43	Estacao do Juruena	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15

68	MT54	Juruena	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
69	MT25	Campos de Julio	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
70	MT107	Terra Indigena Parque do Aripuana	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
71	MA32	RESEX Extremo Norte do Estado do Tocantins	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
72	TO15	Cachoeira Santana	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
73	TO100	Xupe	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
74	MA13	Farinha	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
75	MA8	Cancela	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
76	MA28	Parque Nacional Chapada das Mesas	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
77	TO17	Carolina	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
78	TO97	Urupuchote	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
79	MA38	Rio Itapicuru	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,37	0,07	0,30	0,07	0,30
80	TO79	Salobro	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
81	MA36	Ribeirao do Maranhao	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
82	MA42	Santa Filomena	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
83	MA12	Estevao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
84	TO69	Ribeirao Tabocas	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
85	TO70	Rio Bonito do Tocantins	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
86	TO47	Monumento Natural das Arvores Fossilizadas	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
87	TO16	Cana-brava	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
88	TO82	Santarosa	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
89	TO50	Nova Olinda	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
90	TO45	Mato Grande	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
91	TO53	Panela de Ferro	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
92	TO1	Agua Fria	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
93	TO94	Tranqueira	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
94	TO61	Perdida	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
95	TO65	Ponte Alta	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
96	TO62	Pindorama do Tocantins	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
97	TO3	Almas	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
98	TO87	Soninho	1,00	0,00	0,00	1,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,58	0,10	0,05	0,04	0,15	0,07	0,30
99	TO4	APA do Jalapao	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
100	TO54	Parque Estadual do Jalapao	0,00	0,00	3,00	2,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,37	0,17	0,10	0,46	0,37	0,10	0,05	0,04	0,07	0,14	0,46
101	TO13	Brejao do Jalapao	1,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,12	0,09	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
102	TO23	Desabuso	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
103	TO75	Rio Novo	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
104	TO28	Frito gado	0,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,12	0,09	0,46	0,05	0,10	0,37	0,06	0,30	0,19	0,46

105	TO21	Cortapena	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
106	TO93	Toca	1,00	0,00	0,00	2,00	1,00	2,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,17	0,09	0,46	0,58	0,10	0,37	0,07	0,46	0,23	0,46
107	TO26	Esteneu	1,00	0,00	3,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,17	0,37	0,03	0,08	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
108	TO38	Jorge	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
109	TO98	Verde do Tocantins	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
110	TO72	Rio da Volta	1,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,37	0,07	0,30	0,07	0,30
111	TO44	Mateiros	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,37	0,06	0,30	0,15	0,46
112	TO59	Pedra de Amolar	1,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,03	0,08	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
113	TO19	Come Assado	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
114	TO31	Galhao	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
115	TO55	Parque Estadual do Lajeado	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
116	TO81	Santa Luzia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
117	TO90	Taquaracu	0,00	0,00	4,00	1,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,12	0,03	0,30	0,58	0,10	0,37	0,07	0,46	0,18	0,46
118	TO7	APA Lago de Palmas	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	2,00	0,00	1,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
119	TO66	Porto Nacional	4,00	0,00	0,00	1,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,12	0,02	0,15	0,58	0,10	0,37	0,07	0,46	0,14	0,46
120	TO76	Rio Tocantins	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
121	TO14	Brejinho de Nazare	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
122	TO2	Alianca do Tocantins	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
123	TO88	Surubim	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
124	TO9	Apinage	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
125	TO60	Pedras	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
126	TO78	Rocinha	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
127	TO49	Natividade	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	3,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
128	TO24	Dianopolis	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
129	TO36	Itaboca	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
130	TO43	Manuel Alves	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
131	TO83	Santo Antonio do Tocantins	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
132	TO89	Taipoca	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
133	GO140	Talisma	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
134	GO124	Santa Teresa	2,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
135	GO113	Rio do Ouro	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
136	TO5	APA Foz do Rio Santa Tereza	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
137	TO73	Rio das Almas	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
138	TO52	Palma	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
139	TO12	Arraias	3,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
140	TO57	Pau d'arco	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
141	TO51	Novo Jardim	3,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	3,00	0,00	0,00	0,00	0,18	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
142	TO20	Corcunda	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

143	TO86	Sobrado	1,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
144	TO42	Lavandeira	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
145	TO67	Quebra-coco	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
146	GO144	TQ Kalungas	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
147	TO46	Montes Claros	6,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,27	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
148	GO67	Maquine	17,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	4,00	10,00	0,00	2,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
149	GO139	Sucuri	12,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,42	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
150	GO125	Sao Bartolomeu	8,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,27	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
151	GO53	Floresta Nacional da Mata Grande	1,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,11	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
152	GO27	Calheiros	0,00	0,00	2,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,37	0,03	0,08	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
153	GO46	Divinopolis de Goias	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
154	GO76	Nova Roma	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,58	0,03	0,12	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
155	GO71	Morro Alto	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
156	GO81	Parque Estadual de Terra Ronca	3,00	3,00	0,00	0,00	1,00	0,00	1,00	0,00	2,00	1,00	1,00	4,00	0,00	0,00	0,00	0,18	0,30	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,37	0,06	0,30	0,15	0,46
157	GO56	Guatacaba	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
158	GO66	Macacao	44,00	0,00	0,00	1,00	2,00	0,00	1,00	0,00	6,00	19,00	1,00	1,00	0,00	0,00	0,00	0,42	0,04	0,03	0,58	0,12	0,13	0,46	0,05	0,10	0,37	0,06	0,30	0,19	0,46
159	GO121	Santa Maria	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
160	GO15	Baco Pari	4,00	2,00	0,00	0,00	1,00	0,00	0,00	0,00	3,00	0,00	0,00	2,00	0,00	0,00	0,00	0,18	0,30	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
161	GO110	Rio Corrente	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
162	GO24	Buriti	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
163	GO6	APA das Nascentes do Rio Vermelho	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
164	GO137	Sitio da Abadia	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
165	GO115	Rio dos Macacos	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
166	GO52	Flores de Goias	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
167	GO51	Extrema	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
168	GO117	Rio Paraim	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
169	GO128	Sao Joao d'Alianca	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	5,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
170	GO41	Crixas	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
171	GO50	Entorno de Brasilia	4,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	3,00	0,00	0,00	0,00	0,18	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
172	TO8	APA Lago de Peixe-Angical	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
173	GO30	Cana-brava de Minacu	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
174	GO32	Cavalcante	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
175	GO101	Ribeirao Bonito	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
176	GO69	Minacu	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
177	GO127	Sao Felix	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
178	GO64	Laranjal	4,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30

179	GO95	Preto	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
180	GO135	Serra do Tombador	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
181	GO126	Sao Bento	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
182	GO82	Parque Nacional da Chapada dos Veadeiros	28,00	0,00	2,00	4,00	1,00	4,00	2,00	0,00	5,00	9,00	1,00	1,00	0,00	0,00	0,00	0,42	0,04	0,17	0,37	0,41	0,12	0,46	0,58	0,10	0,58	0,09	0,46	0,23	0,46
183	GO35	Corrego Areia	9,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	4,00	0,00	1,00	0,00	0,00	0,00	0,27	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
184	GO74	Muquem	17,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	5,00	2,00	0,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
185	GO106	Ribeirao Santana	7,00	1,00	5,00	3,00	1,00	2,00	2,00	0,00	2,00	4,00	0,00	1,00	0,00	0,00	0,00	0,27	0,20	0,27	0,37	0,27	0,11	0,46	0,58	0,10	0,58	0,09	0,46	0,23	0,46
186	GO109	Rio Claro	39,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	5,00	19,00	1,00	0,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
187	GO143	Tocantizinho	20,00	1,00	0,00	0,00	1,00	1,00	0,00	0,00	5,00	9,00	2,00	3,00	0,00	0,00	0,00	0,42	0,20	0,03	0,37	0,03	0,08	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
188	GO40	Couros	32,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	6,00	10,00	0,00	2,00	0,00	0,00	0,00	0,42	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
189	GO72	Morro Tira-chapeu	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
190	GO25	Cachoeirinha	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
191	GO89	Picarrao	46,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	10,00	20,00	3,00	2,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
192	GO119	RPPN Fazenda Branca Terra dos Anões	5,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
193	GO37	Corrego Roncador	15,00	1,00	2,00	0,00	0,00	0,00	1,00	0,00	4,00	4,00	1,00	3,00	0,00	0,00	0,00	0,42	0,20	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,37	0,06	0,30	0,11	0,46
194	GO94	Prata Grande	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
195	GO75	Niquelandia	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
196	GO14	Bacalhau	15,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	3,00	5,00	2,00	1,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
197	GO122	Santa Rita	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
198	GO102	Ribeirao Conceicao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
199	GO134	Serra do Passanove	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
200	GO116	Rio Palmeira	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
201	GO19	Bilhagua	11,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	3,00	2,00	0,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
202	GO111	Rio da Mula	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
203	GO83	Passa-tres	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
204	GO26	Cafe	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
205	GO105	Ribeirao Ponte Alta	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
206	GO104	Ribeirao da Laguna	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
207	GO34	Cocal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
208	GO84	Patos	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
209	GO55	Forquilha	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
210	GO88	Pensao Sao Miguel	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
211	GO58	Jacare	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
212	GO132	Sardinha	6,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,27	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
213	GO62	Joao Alves	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
214	GO120	RPPN Fazenda Cachoeirinha	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15

215	GO77	Padre Bernardo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
216	GO114	Rio dos Bois	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
217	GO73	Mucungo	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
218	GO11	Arraial Velho	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
219	GO7	APA de Cafuringa	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
220	GO36	Corrego Fundo	6,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,27	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
221	DF2	Monumento Natural do Conjunto Espeleologico do Morro da Pedreira	7,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	5,00	0,00	0,00	1,00	0,00	0,00	0,27	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
222	GO98	Reserva Biologica da Contagem	9,00	0,00	3,00	4,00	0,00	2,00	2,00	0,00	5,00	5,00	0,00	1,00	2,00	2,00	0,00	0,27	0,04	0,17	0,05	0,41	0,06	0,30	0,58	0,10	0,58	0,09	0,46	0,18	0,46
223	GO65	Lavrinha	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
224	GO63	Lajes	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
225	GO100	Rialma	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
226	GO57	Irmaos	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
227	GO133	Serra do Cocalzinho	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
228	GO31	Canastra	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
229	GO146	Uru	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
230	GO60	Jaragua	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
231	GO80	Parque Estadual da Serra de Jaragua	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
232	GO4	APA da Serra dos Pireneus	20,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	4,00	0,00	1,00	0,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
233	GO78	Padre Souza	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
234	TO63	Piranhas	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
235	TO40	Lagoa Preta	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
236	PA1	Jenipapo	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
237	TO6	APA Ilha do Bananal-Cantao	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
238	TO71	Rio Caiapo	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
239	TO33	Grotao	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,37	0,06	0,30	0,08	0,30
240	TO68	Ribeirao Grande	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
241	TO30	Furo do Coco	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
242	TO48	Murici	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
243	TO74	Rio do Coco	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
244	TO29	Furo da Gameleira	0,00	0,00	7,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,27	0,58	0,03	0,13	0,46	0,37	0,10	0,05	0,04	0,07	0,14	0,46
245	TO18	Cicice	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
246	TO56	Parque Nacional do Araguaia	0,00	0,00	7,00	1,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,12	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
247	TO11	Ariari	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
248	TO64	Pium	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
249	TO92	Terra Indigena Parque do Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07

250	TO35	Ipuca do Riozinho	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
251	TO34	Ilha de Santa Anna	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
252	TO77	Riozinho	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
253	TO22	Cristalandia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
254	TO95	Urubu	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
255	TO80	Sandolandia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
256	GO16	Baiao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
257	TO96	Urubu Grande	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
258	TO99	Xavante	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
259	TO25	Escuro	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
260	MT116	Xavantinho	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
261	MT106	Terra Indigena Maraiwatsede	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
262	MT102	Terra Indigena Cacique Fontoura	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
263	MT91	Santa Izabel do Morro	2,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
264	MT67	Novo Santo Antonio	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
265	MT95	Sao Joao Grande	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
266	MT82	Ribeirao Cascalheira	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
267	MT108	Terra Indigena Pimentel Barbosa	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
268	MT89	RVS Quelonios do Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
269	MT31	Cocalinho	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
270	MT8	Angico	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
271	MT101	Terra Indigena Areoes	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
272	MT77	Pindaiba	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
273	MT19	Barra do Garças	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
274	MT45	Galheiro	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
275	MT28	Cava Funda	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
276	MT71	PE da Serra Azul	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
277	MT33	Corrente	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
278	MT22	Cachoeira	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
279	MT53	Jau	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
280	MT2	Agua Boa	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
281	MT15	Areao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
282	MT40	Dom Bosco	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
283	MT110	Terra Indigena Sao Marcos	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	1,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
284	MT69	Paredao Grande	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
285	MT46	General Carneiro	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
286	MT42	Engano	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

287	MT1	Agua Azul	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
288	TO58	PE do Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
289	TO27	Formoso do Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
290	MT10	APA dos Meandros do Rio Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
291	MT30	Chapeu	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
292	MT36	Cristalino	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
293	MT60	Mata do Inferno	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
294	GO43	Crixas-mirim	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
295	GO91	Pintado	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
296	GO22	Bonopolis	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
297	GO17	Barreiro	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
298	GO103	Ribeirao d'Anta	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
299	GO42	Crixas-acu	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
300	GO142	Tesouras	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
301	GO2	Alagado	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
302	GO23	Braco do Mato	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
303	GO90	Pinguela	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
304	GO1	Alagadinho	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
305	GO33	Cavalo Queimado	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
306	GO12	Aruana	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
307	MT62	Medio Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
308	MT20	Brejao	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
309	GO141	Terra Indigena Karaja de Aruana	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
310	GO118	RPPN Boca da Mata	0,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
311	GO68	Matrincha	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
312	GO5	APA da Serra Dourada	4,00	3,00	1,00	0,00	1,00	2,00	1,00	0,00	0,00	3,00	0,00	3,00	0,00	0,00	0,00	0,18	0,30	0,12	0,37	0,03	0,08	0,46	0,58	0,10	0,37	0,07	0,46	0,23	0,46
313	GO86	PE da Serra Dourada	7,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	5,00	0,00	1,00	0,00	0,00	0,00	0,27	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
314	GO47	Dom Bill	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
315	GO21	Bom Jardim	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
316	GO99	Retiro das Piranhas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
317	GO79	Pantano	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
318	GO129	Sao Jose	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
319	MT12	APA Estadual Pe da Serra Azul	3,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
320	MT18	Bandeira	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
321	MT48	Guiratinga	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
322	MT7	Alto Garcas	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
323	GO138	Sucupira	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
324	MT94	Sao Joao	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

325	GO45	Diamantino	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
326	GO13	Babilonia	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
327	GO49	Empantanado	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
328	GO70	Mineiros	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
329	GO59	Jacu	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
330	GO3	Alto Araguaia	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,37	0,06	0,30	0,11	0,46
331	MT47	Gordura	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
332	GO123	Santa Rita do Araguaia	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,37	0,06	0,30	0,08	0,30
333	MT83	Ribeirao do Sapo	0,00	3,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,30	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
334	GO148	Zeca Nonato	0,00	1,00	3,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,37	0,06	0,30	0,11	0,46
335	GO96	Queixada	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
336	GO10	Araguainha	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
337	MA51	Terra Indigena Geralda Toco Preto	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
338	MA52	Terra Indigena Krikati	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
339	MA19	Ipixuna Acu	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
340	MA41	RPPN Fazenda Sao Francisco	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
341	MA31	Presidente Dutra	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
342	MA37	Rio das Flores	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
343	MA53	Terra Indigena Porquinhos	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
344	MA50	Terra Indigena Cana Brava/Guajajara	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
345	MA20	Itapecuru	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
346	MA55	TQ Santa Joana	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
347	MA30	PN dos Lençois Maranhenses	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
348	MA40	RPPN Fazenda Pantanal	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
349	MA21	Itapicuru	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
350	MA7	Cajazeira	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
351	MA18	Inhumas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
352	MA5	Baixao do Bandeira	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
353	MA15	Fortuna	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
354	MA25	Mirador	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
355	MA1	Alpercatinha	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
356	MA29	PE de Mirador	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
357	MA3	APA dos Morros Garapenses	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
358	MA4	APA Upaon-Açu/Miritiba/Alto Preguicas	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
359	PI24	RPPN Fazenda Centro	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	2,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

360	MA9	Caraiba	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
361	MA33	Riachao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
362	PI10	FN de Palmares	0,00	4,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	0,00	0,00	0,03	0,30	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
363	MA54	Timon	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
364	MA45	Sao Francisco do Maranhao	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
365	MA46	Sucupira do Riachao	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
366	PI5	Caninde	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
367	PI18	PN da Serra das Confusoes	2,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
368	PI9	Floriano	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
369	PI7	Coqueiro	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
370	PI22	Riacho de Sant'Ana	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
371	PI2	Baliza	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
372	PI16	Paraim	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
373	PI15	Matoes	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
374	PI11	Gurgueia	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
375	PI1	APA do Rangel	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
376	PI29	Vereda Uniao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
377	PI23	Riacho Frio	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
378	PI17	Parnagua	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
379	PI14	Malhada da Barra	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
380	PI25	Sebastiao Barros	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
381	PI6	Cardoso	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
382	PI20	Prata	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
383	MA34	Riacho do Belem	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,37	0,06	0,30	0,08	0,30
384	MA11	Curimata	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
385	MA57	Urucui	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
386	MA43	Santa Isabel	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
387	MA6	Balsas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
388	MA17	Gameleira	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
389	MA35	Riacho dos Picos	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
390	MA14	Fortaleza dos Nogueiras	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
391	MA10	Coite	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
392	MA39	Rio Maravilha	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
393	MA44	Santo Antonio de Balsas	0,00	2,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
394	MA16	Gado Bravo	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
395	MA26	Novo Recreio	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
396	MA49	Temerante	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
397	MA27	Parelhas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
398	MA48	Tem medo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

399	MA23	Mandacaru	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
400	MA47	Sul Maranhense	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
401	PI3	Benedito Leite	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
402	PI21	Riacho da Estiva	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
403	PI28	Urucui-preto	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,12	0,03	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
404	MA22	Loreto	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
405	PI27	Tasso Fragoso	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
406	PI8	EE de Urucui-Una	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
407	PI26	Sucuruju	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
408	MA24	Medonho	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
409	MA2	Alto Parnaiba	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
410	PI4	Cachoeira Pedra de Amolar	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
411	PI19	PN das Nascentes do Rio Parnaiba	0,00	3,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,03	0,30	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
412	PI12	Ilha Grande	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
413	PI13	Luis Correia	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
414	BA26	Ilha Mocambo dos Ventos	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
415	BA4	APA Dunas e Veredas do Baixo e Medio Sao Francisco	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
416	BA17	Cotegipe	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
417	BA18	EE Rio Preto	0,00	3,00	1,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	3,00	0,00	1,00	0,00	0,03	0,30	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,37	0,06	0,30	0,08	0,30
418	BA22	Formosa do Rio Preto	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	1,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
419	BA5	APA Rio Preto	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
420	BA54	Sapao	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
421	BA45	Rio Grande	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
422	BA31	Neves	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
423	BA42	Rio de Janeiro	0,00	0,00	1,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,37	0,03	0,08	0,46	0,37	0,10	0,05	0,04	0,07	0,14	0,46
424	BA35	Ponta d'agua	2,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,37	0,03	0,08	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
425	BA3	APA Bacia do Rio de Janeiro	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
426	BA19	Extremo Oeste Baiano	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
427	BA32	Ondas	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
428	BA11	Cabeceira das Lajes	6,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	1,00	1,00	1,00	1,00	0,00	0,27	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
429	BA57	Tabocas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
430	BA12	Cabeceira de Pedras	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
431	BA10	Bora	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
432	BA9	Boa Sorte	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
433	BA21	FN de Cristopolis	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
434	BA63	Vereda Anastacio	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
435	BA53	Sao Desiderio	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

436	BA36	Porcos	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
437	BA61	Triste e Feio	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
438	BA25	Ilha da Pica Grande	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
439	BA64	Vereda da Canoa	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
440	BA55	Serra Dourada	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
441	BA24	Ilha da Bananeira	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
442	BA56	Sitio do Mato	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
443	BA58	Terra Indigena Vargem Alegre	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
444	BA33	Pedra Branca	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
445	BA50	Santana	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
446	BA15	Coribe	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
447	BA52	Sao Felix do Coribe	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
448	BA44	Rio Formoso	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
449	BA2	Alegre	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,37	0,03	0,08	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
450	BA28	Jaborandi	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
451	BA47	Rodeador	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
452	BA62	Vau	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
453	BA37	Pratudao	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,37	0,12	0,09	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
454	BA48	RVS das Veredas do Oeste Baiano	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,37	0,03	0,08	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
455	BA7	Arrojado	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
456	BA6	Arrojadinho	0,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
457	BA16	Correntina	3,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,37	0,12	0,09	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
458	BA49	Santa Maria da Vitoria	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
459	BA23	Guara	2,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,03	0,08	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
460	BA39	Riacho de Pedra	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
461	BA46	Rio Guara	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
462	BA51	Santo Antonio	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
463	BA43	Rio dos Angicos	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
464	BA40	Riacho do Mato	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
465	BA59	TQ Lagoa das Piranhas	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
466	BA60	TQ Nova Batalhinha	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
467	BA38	Riacho de Mariape	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
468	BA29	Lagoas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
469	BA30	Madrugao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
470	BA13	Cariranha	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
471	MG3	APA Cocha e Gibao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
472	BA20	Feira da Mata	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
473	BA34	PN Grande Sertao Veredas	4,00	0,00	3,00	2,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,17	0,05	0,17	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
474	BA14	Cocos	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30

475	BA41	Riacho do Meio	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
476	BA27	Itaguari	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	1,00	1,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
477	MG16	Calindo	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
478	BA8	Aurelio	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
479	MG39	Furado Novo	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
480	MG73	PE Caminho das Gerais	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
481	MG93	Porteirinha	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
482	MG41	Gorutuba	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
483	MG27	Corrego Escuro	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
484	MG58	Macaubas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
485	MG139	Verde Grande	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
486	MG96	Quem-quem	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
487	MG1	Agua Limpa	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
488	MG20	Capitao Eneas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
489	MG134	Vacabrava	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	5,00	0,00	1,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
490	MG54	Juramento	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
491	MG79	PE Lagoa do Cajueiro	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
492	MG98	RB Serra Azul	0,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
493	MG85	PE Veredas do Peruacu	1,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	1,00	4,00	0,00	0,00	1,00	0,00	0,00	0,11	0,04	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
494	MG89	PN Cavernas do Peruacu	2,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	2,00	0,00	3,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,12	0,03	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
495	MG25	Cochos	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
496	MG50	Japonvar	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
497	MG67	Pandeiros	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
498	MG5	APA Pandeiros	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
499	MG113	RVS Rio Pandeiros	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	0,00	2,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
500	MG117	Sao Joaquim	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
501	MG83	PE Serra das Araras	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
502	MG24	Chapada Gaucha	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
503	MG55	Lagoa da Vaqueta	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
504	MG116	Sao Francisco	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
505	MG87	Pintopolis	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
506	MG133	Urucuia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
507	MG26	Conceicao	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
508	MG101	Ribeirao dos Confins	1,00	2,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,30	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
509	MG33	EE Sagarana	0,00	2,00	2,00	1,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,30	0,17	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
510	MG66	Pacari	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
511	MG37	Formoso	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
512	MG120	Serra da Sacada	2,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
513	MG119	Sao Romao	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
514	MG17	Campo Azul	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

515	MG40	Garitas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
516	MG106	Roncador	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
517	MG131	Unai	3,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	1,00	1,00	1,00	0,00	0,18	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,37	0,07	0,30	0,08	0,30
518	GO18	Bezerra	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
519	DF1	APA do Planalto Central	2,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
520	MG141	Vereda Grande	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
521	MG127	TQ Amaros	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
522	MG99	Ribeirao Bezerra	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
523	MG112	RPPN Morro da Cruz das Almas	3,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
524	MG94	Presidente Olegario	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
525	MG102	Ribeirao Santa Catarina	2,00	1,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,37	0,06	0,30	0,08	0,30
526	MG77	PE de Paracatu	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	1,00	0,00	0,00	1,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
527	MG43	Guarda-mor	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,03	0,08	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
528	MG10	Barro	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
529	MG51	Jequitai	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
530	MG38	Francisco Dumont	2,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	0,00	1,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
531	MG9	Areia	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
532	MG44	Imbalacaia	15,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	12,00	12,00	0,00	4,00	1,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
533	MG92	PN das Sempre-Vivas	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
534	MG138	Velhas	5,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	5,00	3,00	0,00	2,00	1,00	0,00	0,00	0,18	0,04	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
535	MG12	Bicudo	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
536	MG74	PE da Serra do Cabral	20,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	9,00	15,00	0,00	1,00	2,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
537	MG49	Jabuticaba	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
538	MG70	Pardo Grande	34,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	15,00	39,00	8,00	11,00	2,00	0,00	0,00	0,42	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
539	MG115	Santo Hipolito	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
540	MG91	PN da Serra do Cipo	112,00	0,00	3,00	2,00	0,00	2,00	0,00	0,00	40,00	105,00	29,00	92,00	2,00	0,00	0,00	0,42	0,04	0,17	0,05	0,17	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
541	MG4	APA do Carste de Lagoa Santa	55,00	10,00	5,00	6,00	1,00	1,00	2,00	1,00	25,00	40,00	2,00	28,00	6,00	2,00	2,00	0,42	0,47	0,27	0,37	0,41	0,12	0,46	0,37	0,90	0,58	0,25	0,46	0,23	0,46
542	MG88	Pirapora	1,00	1,00	3,00	1,00	0,00	3,00	0,00	0,00	1,00	0,00	0,00	1,00	2,00	0,00	0,00	0,11	0,20	0,17	0,05	0,12	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
543	MG128	Tres Marias	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
544	MG125	Tiros	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	2,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
545	MG109	RPPN Fazenda Lavagem	0,00	0,00	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
546	MG14	Borrachudo	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
547	MG32	EE de Pirapitinga	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
548	MG45	Indaia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
549	MG107	RPPN Fazenda Barrão	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
550	MG34	Felixlandia	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15

551	MG35	FN de Paraopeba	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	1,00	2,00	2,00	1,00	1,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
552	MG46	Inhauma	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
553	MG6	APA Vargem das Flores	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	1,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
554	MG56	Lambari	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
555	MG104	Rio Para	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
556	MG110	RPPN Fazenda Samoinho	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
557	MG64	Nova Serrana	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
558	MG100	Ribeirao Boa Vista	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
559	MG57	Luz	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
560	MG31	EE Corumba	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
561	MG136	Vargem Bonita	2,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	3,00	1,00	2,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
562	MG108	RPPN Fazenda do Lobo	8,00	0,00	3,00	3,00	1,00	1,00	1,00	1,00	4,00	2,00	2,00	3,00	0,00	0,00	0,00	0,27	0,04	0,17	0,37	0,27	0,11	0,46	0,37	0,90	0,37	0,23	0,46	0,23	0,46
563	MG76	PE de Montezuma	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	1,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
564	MG121	Setubal	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
565	MG11	Berilo	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	3,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
566	MG19	Capelinha	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
567	MG7	Aracai	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
568	MG81	PE Rio Preto	12,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	8,00	9,00	2,00	7,00	3,00	2,00	1,00	0,42	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
569	MG137	Vargem da Lapa	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
570	MG86	Peixe Bravo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
571	MG135	Vacaria	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
572	MG30	EE Acaua	7,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	11,00	14,00	1,00	0,00	1,00	2,00	0,00	0,27	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
573	MG47	Itacambira	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	2,00	1,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
574	MG122	Tabatinga	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
575	MG65	Olhos d'agua	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
576	MG15	Caete-mirim	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	7,00	0,00	1,00	0,00	1,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
577	MG72	PE Biribiri	86,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	36,00	86,00	17,00	51,00	1,00	3,00	0,00	0,42	0,20	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
578	MG123	Tanque	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
579	MG78	PE do Limoeiro	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
580	MG103	Rio do Peixe	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
581	MG95	Preto do Itambe	2,00	0,00	0,00	1,00	0,00	1,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,37	0,07	0,30	0,11	0,46
582	MG62	Morro do Pilar	9,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	1,00	0,00	0,00	0,00	0,27	0,04	0,03	0,05	0,17	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
583	MG105	Rio Picao	7,00	0,00	0,00	3,00	0,00	0,00	0,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	0,00	0,27	0,04	0,03	0,05	0,27	0,04	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
584	MG84	PE Serra do Intendente	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	6,00	4,00	0,00	1,00	1,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
585	MG69	Parauninha	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
586	MG13	Bom Jesus do Amparo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
587	MS10	Ivinheima	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
588	MS11	Nova Alvorada do Sul	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
589	MS33	Terra Indigena Jatayvari	1,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	2,00	3,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15

590	MS20	Rio Brilhante	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
591	SP36	Laranja Doce	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
592	PR8	RPPN Fazenda Monte Alegre	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	1,00	1,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
593	PR4	PE do Guartela	1,00	0,00	2,00	0,00	0,00	1,00	1,00	0,00	3,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,17	0,05	0,03	0,02	0,15	0,37	0,10	0,37	0,07	0,30	0,11	0,46
594	PR1	APA da Escarpa Devoniana	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	2,00	0,00	1,00	1,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
595	SP39	Paraguacu Paulista	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
596	PR9	Ventania	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
597	PR7	RPPN Fazenda do Tigre	0,00	0,00	2,00	1,00	0,00	1,00	1,00	0,00	3,00	3,00	1,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
598	SP16	EE de Assis	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
599	SP12	Campos Novos Paulista	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
600	SP1	Alambari	0,00	0,00	2,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
601	SP22	EE Santa Barbara	1,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
602	SP17	EE de Avare	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
603	SP26	FE Santa Barbara	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
604	SP13	Claro	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
605	SP48	Ribeirao das Pedras	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
606	SP11	Botucatu	1,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	1,00	0,00	0,11	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
607	SP30	Itaporanga	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	10,00	2,00	6,00	2,00	1,00	1,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
608	PR6	Pescaria	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
609	PR5	PE Vale do Codo	5,00	1,00	1,00	1,00	0,00	1,00	1,00	0,00	17,00	16,00	2,00	14,00	2,00	2,00	0,00	0,18	0,20	0,12	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
610	PR3	Jaguaricatu	2,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	6,00	7,00	0,00	3,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
611	PR2	Itarare	1,00	0,00	1,00	3,00	1,00	0,00	1,00	1,00	2,00	2,00	0,00	2,00	2,00	0,00	0,00	0,11	0,04	0,12	0,37	0,27	0,10	0,46	0,05	0,90	0,37	0,22	0,46	0,23	0,46
612	SP40	Paranapanema	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
613	SP18	EE de Itabera	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	3,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
614	SP21	EE Paranapanema	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	1,00	2,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
615	SP27	FN de Capao Bonito	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,37	0,06	0,30	0,11	0,46
616	SP29	Itapetininga	4,00	0,00	3,00	3,00	0,00	1,00	0,00	0,00	0,00	4,00	0,00	1,00	1,00	0,00	0,00	0,18	0,04	0,17	0,05	0,27	0,04	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
617	MS8	Inhandui	5,00	1,00	2,00	2,00	1,00	1,00	1,00	0,00	0,00	2,00	2,00	3,00	1,00	1,00	0,00	0,18	0,20	0,17	0,37	0,17	0,10	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
618	MS13	Pardo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
619	MS7	Botas	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
620	MS12	Parana	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
621	MS37	Verde	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
622	MS27	Sao Domingos	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
623	MS28	Sucuriu	1,00	2,00	1,00	1,00	0,00	1,00	2,00	0,00	0,00	1,00	0,00	2,00	0,00	0,00	0,00	0,11	0,30	0,12	0,05	0,12	0,03	0,30	0,37	0,10	0,58	0,09	0,46	0,18	0,46
624	SP4	APA Rio Batalha	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
625	SP52	Sao Lourenco	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
626	SP3	APA Ibitinga	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

627	SP31	Itaquere	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
628	SP32	Jacare-guacu	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
629	SP6	Araraquara	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	1,00	0,00	2,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
630	SP20	EE Itirapina	4,00	0,00	3,00	3,00	0,00	2,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,17	0,05	0,27	0,04	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
631	SP33	Jacare-pepira	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	2,00	1,00	2,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
632	SP7	Arealva	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	2,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,37	0,07	0,30	0,07	0,30
633	SP25	FE Pederneiras	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	2,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
634	SP37	Macatuba	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
635	SP5	Araqua	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,90	0,05	0,19	0,46	0,11	0,46
636	SP2	APA Corumbatai-Botucatu-Tejupa	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	3,00	4,00	0,00	5,00	4,00	1,00	1,00	0,03	0,20	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
637	SP14	Corumbatai	5,00	1,00	3,00	1,00	0,00	2,00	0,00	0,00	4,00	4,00	3,00	4,00	1,00	1,00	0,00	0,18	0,20	0,17	0,05	0,12	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
638	SP44	Piracicaba	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
639	SP9	Atibaia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
640	SP8	ARIE Matao de Cosmopolis	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
641	SP45	Pirapitingui	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
642	SP34	Jaguari	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
643	SP55	Vitoria	1,00	0,00	1,00	1,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,90	0,05	0,19	0,46	0,18	0,46
644	SP49	Rio Alambari	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
645	SP15	EE Barreiro Rico	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
646	SP43	Peixe	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
647	SP51	Sao Jose dos Dourados	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	1,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
648	MS9	Inocencia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
649	SP41	Parisi	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
650	SP38	Mirassolandia	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
651	MG140	Verde ou Feio	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
652	MG118	Sao Mateus	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
653	SP24	FE de Bebedouro	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	1,00	1,00	1,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
654	SP23	FE Cajuru	4,00	4,00	2,00	4,00	0,00	0,00	2,00	0,00	3,00	2,00	0,00	5,00	2,00	1,00	0,00	0,18	0,30	0,17	0,05	0,41	0,06	0,30	0,05	0,10	0,58	0,08	0,46	0,18	0,46
655	SP46	RB de Sertaozinho	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,37	0,06	0,30	0,07	0,30
656	SP19	EE de Jatai	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
657	SP42	PE de Vassununga	3,00	1,00	4,00	1,00	0,00	1,00	1,00	0,00	7,00	2,00	0,00	3,00	0,00	1,00	0,00	0,18	0,20	0,27	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
658	SP35	Jaguari-mirim	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
659	SP47	RB e EE Mogi-Guaçu	1,00	0,00	0,00	3,00	0,00	0,00	1,00	0,00	3,00	4,00	0,00	1,00	2,00	0,00	0,00	0,11	0,04	0,03	0,05	0,27	0,04	0,30	0,05	0,10	0,37	0,06	0,30	0,15	0,46
660	MG129	Uberaba	3,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
661	SP53	Sapucai	0,00	0,00	0,00	2,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,17	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
662	SP10	Batatais	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
663	SP28	Franca	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
664	SP50	Santa Barbara	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
665	MG97	RB Sao Sebastiao do	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

		Paraiso																												
666	MG126	Tomba-perna	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
667	SP54	Solapao	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
668	MG75	PE das Furnas do Bom Jesus	3,00	0,00	1,00	0,00	1,00	1,00	1,00	1,00	1,00	3,00	0,00	0,00	0,00	1,00	0,00	0,18	0,04	0,12	0,37	0,03	0,08	0,46	0,37	0,90	0,37	0,23	0,46	0,23	0,46
669	MG114	Sacramento	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
670	MG90	PN da Serra da Canastra	17,00	1,00	4,00	3,00	1,00	1,00	1,00	0,00	2,00	4,00	0,00	2,00	0,00	0,00	0,00	0,42	0,20	0,27	0,37	0,27	0,11	0,46	0,37	0,10	0,37	0,07	0,30	0,19	0,46
671	MG23	Cassia	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
672	MG2	Alpinopolis	16,00	1,00	2,00	1,00	0,00	0,00	0,00	0,00	8,00	11,00	5,00	7,00	0,00	0,00	0,00	0,42	0,20	0,17	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
673	MG82	PE Serra da Boa Esperanca	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
674	MG42	Guape	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
675	MG36	Formiga	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
676	GO112	Rio da Prata	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,37	0,07	0,30	0,07	0,30
677	GO93	PN das Emas	3,00	1,00	13,00	5,00	1,00	4,00	3,00	0,00	1,00	1,00	0,00	3,00	0,00	0,00	0,00	0,18	0,20	0,41	0,37	0,41	0,13	0,46	0,58	0,10	0,58	0,09	0,46	0,23	0,46
678	GO136	Serranopolis	2,00	1,00	1,00	3,00	0,00	1,00	3,00	0,00	1,00	2,00	1,00	2,00	0,00	0,00	0,00	0,11	0,20	0,12	0,05	0,27	0,04	0,30	0,37	0,10	0,58	0,09	0,46	0,18	0,46
679	GO61	Jatai	9,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	4,00	5,00	0,00	5,00	1,00	0,00	0,00	0,27	0,20	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
680	MG48	Ituiutaba	3,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	4,00	2,00	2,00	1,00	1,00	1,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
681	MG124	Tijuco	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
682	MG60	Monte Alegre de Minas	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
683	MG28	Douradinho	7,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	3,00	0,00	1,00	1,00	0,00	0,00	0,27	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
684	GO87	PE de Parauna	5,00	0,00	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,18	0,04	0,17	0,37	0,03	0,08	0,46	0,05	0,10	0,05	0,03	0,03	0,14	0,46
685	GO145	Turvo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
686	GO9	APA Serra da Jiboia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
687	GO28	Campanha	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
688	GO8	APA Joao Leite	7,00	1,00	1,00	3,00	0,00	1,00	0,00	0,00	2,00	2,00	0,00	1,00	0,00	0,00	0,00	0,27	0,20	0,12	0,05	0,27	0,04	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30
689	GO92	Piracanjuba	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
690	GO85	PE da Serra de Caldas Novas	6,00	1,00	1,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	0,00	0,27	0,20	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
691	GO20	Bois	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
692	GO54	FN de Silvania	4,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
693	GO39	Corumba	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
694	GO48	EE do Jardim Botanico	52,00	7,00	7,00	6,00	1,00	3,00	2,00	0,00	18,00	26,00	5,00	17,00	4,00	2,00	0,00	0,42	0,47	0,27	0,37	0,41	0,12	0,46	0,58	0,10	0,58	0,09	0,46	0,23	0,46
695	GO97	RB e PE do Descoberto	32,00	0,00	1,00	2,00	0,00	0,00	1,00	0,00	6,00	8,00	1,00	0,00	1,00	1,00	0,00	0,42	0,04	0,12	0,05	0,17	0,03	0,30	0,05	0,10	0,37	0,06	0,30	0,15	0,46
696	MG130	Uberabinha	3,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,18	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
697	MG80	PE Pau Furado	1,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	2,00	1,00	0,00	1,00	0,00	1,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,37	0,07	0,30	0,07	0,30
698	MG8	Araguari	0,00	2,00	0,00	1,00	0,00	1,00	1,00	0,00	2,00	1,00	0,00	3,00	2,00	1,00	0,00	0,03	0,30	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,37	0,07	0,30	0,11	0,46
699	MG111	RPPN Galheiros	3,00	0,00	1,00	1,00	0,00	2,00	0,00	0,00	5,00	2,00	0,00	1,00	1,00	0,00	0,00	0,18	0,04	0,12	0,05	0,12	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
700	MG21	Capivara	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	1,00	1,00	1,00	1,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,12	0,03	0,30	0,05	0,10	0,05	0,03	0,03	0,09	0,30
701	MG59	Misericordia	1,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,37	0,03	0,08	0,30	0,37	0,10	0,05	0,04	0,07	0,10	0,30

702	MG18	Campos Altos	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
703	GO147	Verissimo	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
704	MG22	Cascalho Rico	2,00	0,00	1,00	2,00	0,00	1,00	1,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,17	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
705	MG61	Monte Carmelo	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
706	MG29	Dourados	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
707	MG68	Paranaiba	2,00	0,00	0,00	1,00	0,00	2,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,58	0,10	0,05	0,04	0,15	0,07	0,30
708	GO130	Sao Marcos	15,00	1,00	1,00	2,00	0,00	1,00	1,00	0,00	5,00	7,00	3,00	5,00	1,00	0,00	0,00	0,42	0,20	0,12	0,05	0,17	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
709	MS3	Apa	0,00	0,00	5,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
710	MS22	Rio Perdido	1,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,58	0,10	0,05	0,04	0,15	0,04	0,15
711	MS35	Terra Indigena Nande Ru Marangatu	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
712	MS18	Progresso	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
713	MS31	Taruma	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
714	MS19	Rio Branco	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	2,00	0,00	2,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
715	MS34	Terra Indigena Kadiweu	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
716	MS26	RPPN Tupaciara	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
717	MS17	PN da Serra da Bodoquena	5,00	3,00	7,00	3,00	0,00	4,00	0,00	0,00	5,00	2,00	0,00	8,00	0,00	1,00	0,00	0,18	0,30	0,27	0,05	0,27	0,04	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
718	MS24	RPPN Estancia Caiman	0,00	0,00	2,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,37	0,10	0,05	0,04	0,07	0,06	0,15
719	MS6	Aquidauana	1,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
720	MS30	Taquarucu	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
721	MS4	APA Estadual Estrada-Parque Piraputanga	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
722	MS32	Terra Indigena Buriti	2,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	2,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
723	MS25	RPPN Fazenda Lageado	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
724	MS36	TQ Furnas da Boa Sorte	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
725	MS21	Rio Negro	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
726	MS2	Anhuma	2,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	3,00	1,00	2,00	0,00	0,00	0,00	0,11	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
727	MS29	Taquari	0,00	1,00	2,00	1,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,17	0,05	0,12	0,03	0,30	0,58	0,10	0,05	0,04	0,15	0,11	0,46
728	MS14	PE das Nascentes do Rio Taquari	3,00	1,00	3,00	1,00	0,00	1,00	1,00	0,00	1,00	1,00	1,00	3,00	0,00	0,00	0,00	0,18	0,20	0,17	0,05	0,12	0,03	0,30	0,37	0,10	0,37	0,07	0,30	0,15	0,46
729	MS23	Rio Verde de Mato Grosso	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
730	MS5	APA Estadual Rio Cenico Rotas Moncoeiras-Rio Coxim	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
731	MT50	Itiquira	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	2,00	0,00	1,00	0,00	0,00	0,00	0,11	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
732	MS16	Piquiri	0,00	0,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
733	MT51	Jaciara	1,00	0,00	0,00	1,00	0,00	1,00	1,00	0,00	1,00	1,00	0,00	1,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,12	0,02	0,15	0,37	0,10	0,37	0,07	0,30	0,11	0,46
734	MT72	PE Dom Osorio Stoffel	2,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
735	MT111	Terra Indigena Tadarimana	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
736	MT105	Terra Indigena Jarudore	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
737	MT93	Santo Antonio do Leverger	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
738	MT16	Arica-acu	9,00	0,00	2,00	0,00	0,00	0,00	1,00	0,00	2,00	3,00	0,00	1,00	0,00	0,00	0,00	0,27	0,04	0,17	0,05	0,03	0,02	0,15	0,05	0,10	0,37	0,06	0,30	0,11	0,46

739	MT78	PN da Chapada dos Guimaraes	10,00	3,00	3,00	0,00	1,00	0,00	1,00	0,00	2,00	4,00	0,00	8,00	0,00	0,00	0,00	0,27	0,30	0,17	0,37	0,03	0,08	0,46	0,05	0,10	0,37	0,06	0,30	0,19	0,46
740	MT37	Cuiaba	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,12	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
741	MT73	PE Gruta da Lagoa Azul	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
742	MT88	Rosario Oeste	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
743	MT59	Marzagao	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
744	MT4	Agua Fina	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
745	MT70	PE Aguas de Cuiaba	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
746	MT38	Cuiaba do Bonito	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
747	MT56	Manso	0,00	0,00	4,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,27	0,05	0,03	0,02	0,15	0,05	0,10	0,05	0,03	0,03	0,05	0,15
748	MT63	Nova Brasilandia	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	1,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
749	MT11	APA Estadual da Chapada dos Guimaraes	14,00	0,00	4,00	2,00	0,00	2,00	1,00	0,00	4,00	5,00	0,00	2,00	0,00	1,00	0,00	0,42	0,04	0,27	0,05	0,17	0,04	0,30	0,58	0,10	0,37	0,07	0,46	0,18	0,46
750	MT27	Casca	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	1,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
751	MT52	Jangada	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
752	MT29	Chapada dos Guimaraes	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
753	MT114	TQ Mata Cavalo	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,37	0,10	0,05	0,04	0,07	0,02	0,07
754	MT61	Mata Grande	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,05	0,10	0,05	0,03	0,03	0,03	0,07
755	MT90	Sangradouro	0,00	0,00	1,00	0,00	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,12	0,05	0,03	0,02	0,07	0,37	0,10	0,05	0,04	0,07	0,03	0,15
756	MT104	Terra Indigena Figueiras	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
757	MT21	Cabacal	0,00	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00	0,00	0,00	0,00	0,03	0,20	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
758	MT99	Tangara da Serra	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
759	MT41	EE Serra das Araras	0,00	0,00	0,00	1,00	1,00	2,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,37	0,12	0,09	0,46	0,58	0,10	0,05	0,04	0,15	0,16	0,46
760	MT112	Terra Indigena Umutina	1,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,11	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03
761	MT14	APA Nascentes do Rio Paraguai	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	2,00	0,00	0,00	1,00	0,00	0,00	0,03	0,04	0,03	0,05	0,03	0,01	0,03	0,05	0,10	0,05	0,03	0,03	0,02	0,03

Table 3.3. Part 2

	COD	Nome	PC_Fl_VU	PC_Fl_EN	PC_Fl_CR	G_Fl_CNC	PC_G_Fl_CN	PC_I_Fl_VU	PC_I_Fl_EN	PC_I_Fl_CR	G_Fl_IUCN	PC_G_Fl_IU	G_Fl_CN_IU	PC_G_CN_IU	PC_Irre	Biologico	P_Biologic	Reman	IPA	CSC	Agua	PC_Reman	PC_IPA	PC_CSC	PC_Agua	G_Pro_Pri	PC_Pro_Pri	Paisagem	P_Paisagem	G_Bio_Pais	FIM_BIO_PA
1	TO32	Goiatins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	99,98	0,50	2,00	0,00	0,46	0,26	0,03	0,09	0,22	0,44	0,06	0,44	0,14	High
2	MA56	Tres Barras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	71,01	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,08	Lowest
3	BA1	Aguas do Paulista	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	22,89	0,40	2,00	0,00	0,07	0,42	0,03	0,09	0,01	0,03	0,03	0,10	0,07	Lowest
4	MT65	Nova Nazare	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	58,72	0,50	3,00	0,00	0,29	0,26	0,27	0,09	0,09	0,17	0,05	0,29	0,11	Medium
5	MG63	Natalandia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,16	53,55	0,60	5,00	0,02	0,29	0,16	0,35	0,25	0,05	0,06	0,04	0,14	0,08	Lowest
6	MG132	Unai de Minas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	52,04	0,60	5,00	0,04	0,29	0,16	0,35	0,36	0,01	0,03	0,04	0,29	0,11	Medium

7	GO29	Campinacu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	39,16	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,07	0,17	0,03	0,10	0,07	Lowest
8	GO44	Delgado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,27	0,02	0,30	37,98	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,07	0,17	0,03	0,10	0,11	Medium
9	MT26	Canarana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	21,08	0,60	3,00	0,00	0,07	0,16	0,27	0,12	0,07	0,17	0,03	0,10	0,07	Lowest
10	MS1	Aldeia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	28,06	0,52	2,00	0,01	0,14	0,26	0,03	0,18	0,03	0,03	0,03	0,10	0,07	Lowest
11	MS15	PE Serra de Sonora	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	19,96	0,60	2,00	0,03	0,07	0,16	0,03	0,36	0,09	0,17	0,03	0,10	0,07	Lowest
12	MT3	Agua Clara	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	53,69	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,05	0,06	0,04	0,14	0,08	Lowest
13	MT68	Paranatinga	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	73,67	0,60	3,00	0,00	0,29	0,10	0,27	0,09	0,12	0,30	0,04	0,14	0,08	Lowest
14	TO84	Sao Felipe	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,27	0,02	0,30	69,87	0,50	2,00	0,00	0,29	0,26	0,03	0,09	0,03	0,03	0,04	0,14	0,12	High
15	MT55	Man-Azde	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	70,73	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,22	0,44	0,05	0,29	0,11	Medium
16	TO10	Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	50,64	0,47	2,00	0,01	0,29	0,42	0,03	0,18	0,20	0,44	0,06	0,44	0,14	High
17	TO85	Sao Valerio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	63,97	0,54	2,00	0,01	0,29	0,26	0,03	0,18	0,08	0,17	0,04	0,29	0,11	Medium
18	GO38	Corriola	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,42	0,05	0,45	79,11	0,54	3,00	0,00	0,46	0,26	0,27	0,09	0,15	0,30	0,06	0,44	0,22	Very High
19	GO131	Sao Patricio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	19,42	0,59	3,00	0,02	0,07	0,16	0,27	0,25	0,04	0,06	0,03	0,10	0,07	Lowest
20	TO41	Lajeado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	74,85	0,50	2,00	0,00	0,29	0,26	0,03	0,12	0,22	0,44	0,05	0,29	0,07	Lowest
21	PA2	Santana do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	22,01	0,54	2,00	0,00	0,07	0,16	0,03	0,12	0,12	0,30	0,03	0,10	0,04	Lower
22	TO39	Lagoa da Confusao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	49,77	0,48	3,00	0,11	0,14	0,42	0,27	0,36	0,02	0,03	0,05	0,29	0,07	Lowest
23	TO37	Javaes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	73,50	0,41	3,00	0,04	0,29	0,42	0,27	0,36	0,17	0,44	0,07	0,44	0,14	High
24	TO91	Terra Indigena Kraho-Kanela	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	74,06	0,56	2,00	0,17	0,29	0,16	0,03	0,36	0,07	0,17	0,04	0,29	0,11	Medium
25	MT92	Santa Terezinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	65,49	0,44	3,00	0,00	0,29	0,42	0,27	0,18	0,15	0,30	0,06	0,44	0,11	High
26	MT6	Aldeia Caraja	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,04	0,07	0,01	0,15	0,03	0,02	0,30	71,49	0,45	3,00	0,01	0,29	0,42	0,27	0,18	0,17	0,44	0,07	0,44	0,18	Very High
27	MT84	Rio das Mortes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	80,82	0,48	5,00	0,00	0,46	0,42	0,35	0,09	0,07	0,17	0,07	0,44	0,11	Medium
28	MT75	Piabanha	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,18	0,03	0,30	67,12	0,50	3,00	0,00	0,29	0,26	0,27	0,12	0,05	0,06	0,04	0,14	0,12	High
29	MT85	Rio dos Patos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,30	80,67	0,46	3,00	0,00	0,46	0,42	0,27	0,12	0,17	0,44	0,08	0,44	0,18	Very High
30	MT117	Zacarias	0,27	0,30	0,05	0,05	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,11	0,04	0,45	26,75	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,03	0,03	0,03	0,10	0,15	High
31	MT49	Insula	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,11	0,02	0,30	34,98	0,57	4,00	0,00	0,14	0,16	0,31	0,12	0,07	0,17	0,03	0,14	0,12	High
32	MT66	Nova Xavantina	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,07	0,30	0,03	0,46	0,27	0,07	0,45	38,28	0,58	3,00	0,01	0,14	0,16	0,27	0,18	0,05	0,06	0,03	0,10	0,15	High
33	MT98	Suspiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	23,90	0,60	2,00	0,04	0,07	0,16	0,03	0,36	0,01	0,03	0,02	0,03	0,05	Lowest
34	MT74	Perdidos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	15,50	0,60	2,00	0,04	0,07	0,16	0,03	0,36	0,07	0,17	0,03	0,10	0,07	Lowest
35	MT13	APA Meandros do Rio Araguaia	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,02	0,16	88,37	0,46	3,00	0,02	0,46	0,42	0,27	0,25	0,22	0,44	0,08	0,44	0,14	High
36	GO107	Ribeirao Sao Domingos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	25,98	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,05	0,06	0,03	0,10	0,07	Lowest
37	MT32	Corixo do Cascavel	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	55,46	0,40	3,00	0,00	0,29	0,42	0,27	0,12	0,07	0,17	0,05	0,29	0,11	Medium
38	MT80	Registro do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,23	0,46	0,06	0,46	0,18	0,06	0,45	22,78	0,54	3,00	0,00	0,07	0,16	0,27	0,18	0,07	0,17	0,03	0,10	0,15	High
39	GO108	Rio Bonito	0,17	0,20	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,04	0,45	42,25	0,79	3,00	0,01	0,14	0,06	0,27	0,25	0,05	0,06	0,03	0,10	0,15	High
40	MG52	Joao Pinheiro	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,27	0,03	0,30	41,42	0,60	5,00	0,02	0,14	0,16	0,35	0,36	0,02	0,03	0,03	0,14	0,12	High
41	MG53	Josenopolis	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	70,77	0,42	5,00	0,00	0,29	0,42	0,35	0,09	0,01	0,03	0,05	0,29	0,11	Medium

42	MG71	Parque Estadual Grao Mogol	0,41	0,47	0,58	0,18	0,46	0,63	0,63	0,05	0,04	0,07	0,06	0,46	0,42	0,06	0,45	51,21	0,40	5,00	0,00	0,29	0,42	0,35	0,18	0,05	0,06	0,05	0,29	0,19	Very High
43	MT58	Mariana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	8,44	0,60	3,00	0,01	0,04	0,16	0,27	0,25	0,01	0,03	0,02	0,03	0,02	Lower
44	MT97	Suiazinho	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	0,97	0,56	3,00	0,00	0,04	0,16	0,27	0,12	0,01	0,03	0,02	0,03	0,02	Lower
45	MT81	Ribeirao Agua Limpa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	25,59	0,60	5,00	0,00	0,14	0,16	0,35	0,12	0,04	0,06	0,03	0,10	0,15	High
46	MT79	Queimada	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	38,22	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,01	0,03	0,03	0,10	0,04	Lower
47	MT96	Sete de Setembro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	20,65	0,60	3,00	0,02	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,01	Lower
48	MT39	Culuene	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	18,04	0,49	5,00	0,00	0,07	0,26	0,35	0,09	0,01	0,03	0,03	0,10	0,07	Lowest
49	MT34	Couto de Magalhaes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	55,42	0,54	3,00	0,00	0,29	0,26	0,27	0,18	0,17	0,44	0,06	0,44	0,11	Medium
50	MT87	Rio Verde	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	19,02	0,60	3,00	0,01	0,07	0,16	0,27	0,18	0,01	0,03	0,02	0,03	0,02	Lower
51	MT9	APA do Salto Magessi	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	33,58	0,62	3,00	0,02	0,14	0,10	0,27	0,25	0,06	0,06	0,03	0,10	0,04	Lower
52	MT76	Piabas	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	55,30	0,40	3,00	0,00	0,29	0,42	0,27	0,12	0,11	0,30	0,06	0,44	0,11	High
53	MT100	Tapurah	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,02	0,30	37,61	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,01	0,03	0,03	0,10	0,11	Medium
54	MT57	Marape	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	33,53	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,01	0,03	0,03	0,10	0,03	Lower
55	MT23	Caju Doce	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	28,80	0,60	3,00	0,00	0,14	0,16	0,27	0,18	0,01	0,03	0,03	0,10	0,03	Lower
56	MT5	Agua Verde	0,03	0,20	0,05	0,03	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	21,09	0,60	3,00	0,05	0,07	0,16	0,27	0,36	0,02	0,03	0,03	0,10	0,04	Lower
57	MT64	Nova Mutum	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	32,85	0,60	3,00	0,02	0,14	0,16	0,27	0,36	0,01	0,03	0,03	0,10	0,04	Lower
58	MT115	Tres Lagoas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	34,79	0,60	3,00	0,04	0,14	0,16	0,27	0,36	0,01	0,03	0,03	0,10	0,04	Lower
59	MT86	Rio Preto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,42	0,01	0,16	46,29	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,05	0,06	0,03	0,10	0,07	Lowest
60	MT17	Arinos	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	50,52	0,60	3,00	0,01	0,29	0,16	0,27	0,25	0,12	0,30	0,05	0,29	0,08	Medium
61	MT35	Cravari	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	22,52	0,60	3,00	0,02	0,07	0,16	0,27	0,25	0,02	0,03	0,03	0,03	0,05	Lowest
62	MT24	Campo Novo do Parecis	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	14,43	0,60	3,00	0,01	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,02	Lower
63	MT113	Terra Indigena Utiariti	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	85,84	0,60	3,00	0,01	0,46	0,16	0,27	0,25	0,22	0,44	0,07	0,44	0,14	High
64	MT103	Terra Indigena Enawene-Nawe	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	99,99	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,20	0,44	0,07	0,44	0,11	Medium
65	MT44	Estacao Ecologica de Ique	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	99,42	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	High
66	MT109	Terra Indigena Pirineus de Souza	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,27	0,02	0,30	79,91	0,60	3,00	0,00	0,46	0,16	0,27	0,09	0,20	0,44	0,06	0,44	0,18	Very High
67	MT43	Estacao do Juruena	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	70,51	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,04	0,06	0,04	0,14	0,08	Lowest
68	MT54	Juruena	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	40,80	0,60	3,00	0,02	0,14	0,16	0,27	0,25	0,01	0,03	0,03	0,10	0,03	Lower
69	MT25	Campos de Julio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	47,58	0,60	3,00	0,02	0,14	0,16	0,27	0,25	0,01	0,03	0,03	0,10	0,07	Lowest
70	MT107	Terra Indigena Parque do Aripuana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	40,26	0,50	3,00	0,00	0,14	0,26	0,27	0,09	0,12	0,30	0,04	0,14	0,05	Lowest
71	MA32	RESEX Extremo Norte do Estado do Tocantins	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,02	0,30	19,43	0,66	3,00	0,01	0,07	0,10	0,27	0,25	0,05	0,06	0,02	0,03	0,09	Medium
72	TO15	Cachoeira Santana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	40,69	0,56	5,00	0,00	0,14	0,16	0,35	0,12	0,01	0,03	0,03	0,10	0,04	Lower
73	TO100	Xupe	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,18	0,01	0,16	44,61	0,60	5,00	0,00	0,14	0,16	0,35	0,12	0,01	0,03	0,03	0,10	0,07	Lowest
74	MA13	Farinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	89,12	0,57	5,00	0,00	0,46	0,16	0,35	0,12	0,15	0,30	0,06	0,44	0,14	High
75	MA8	Cancela	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,02	0,16	96,86	0,50	5,00	0,00	0,46	0,26	0,35	0,09	0,22	0,44	0,07	0,44	0,14	High

76	MA28	Parque Nacional Chapada das Mesas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	92,35	0,55	5,00	0,00	0,46	0,16	0,35	0,12	0,12	0,30	0,06	0,44	0,11	Medium
77	TO17	Carolina	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,16	87,65	0,56	5,00	0,00	0,46	0,16	0,35	0,09	0,10	0,17	0,05	0,29	0,11	Medium
78	TO97	Urupuchote	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	75,05	0,54	5,00	0,00	0,46	0,16	0,35	0,12	0,10	0,17	0,05	0,29	0,07	Lowest
79	MA38	Rio Itapicuru	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,03	0,30	91,50	0,50	5,00	0,00	0,46	0,26	0,35	0,09	0,07	0,17	0,06	0,44	0,18	Very High
80	TO79	Salobro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	81,79	0,53	2,00	0,00	0,46	0,26	0,03	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
81	MA36	Ribeirao do Maranhao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	87,82	0,50	5,00	0,00	0,46	0,26	0,35	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
82	MA42	Santa Filomena	0,03	0,20	0,05	0,03	0,14	0,05	0,32	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	81,03	0,50	5,00	0,00	0,46	0,26	0,35	0,09	0,01	0,03	0,05	0,29	0,08	Medium
83	MA12	Estevao	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	62,78	0,50	5,00	0,00	0,29	0,26	0,35	0,09	0,01	0,03	0,04	0,14	0,04	Lower
84	TO69	Ribeirao Tabocas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	91,44	0,60	2,00	0,00	0,46	0,16	0,03	0,09	0,01	0,03	0,04	0,14	0,08	Lowest
85	TO70	Rio Bonito do Tocantins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	95,83	0,47	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,11	High
86	TO47	Monumento Natural das Arvores Fossilizadas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	80,70	0,60	5,00	0,00	0,46	0,16	0,35	0,09	0,09	0,17	0,05	0,29	0,07	Lowest
87	TO16	Cana-brava	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	90,49	0,60	5,00	0,00	0,46	0,10	0,35	0,12	0,01	0,03	0,04	0,29	0,07	Lowest
88	TO82	Santarosa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	80,96	0,55	2,00	0,00	0,46	0,16	0,03	0,09	0,01	0,03	0,04	0,14	0,04	Lower
89	TO50	Nova Olinda	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	45,80	0,69	5,00	0,02	0,14	0,06	0,35	0,25	0,01	0,03	0,03	0,10	0,03	Lower
90	TO45	Mato Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	38,08	0,68	5,00	0,02	0,14	0,10	0,35	0,36	0,01	0,03	0,03	0,10	0,04	Lower
91	TO53	Panela de Ferro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	70,63	0,58	2,00	0,00	0,29	0,16	0,03	0,12	0,02	0,03	0,03	0,10	0,04	Lower
92	TO1	Agua Fria	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	60,07	0,60	2,00	0,02	0,29	0,16	0,03	0,36	0,05	0,06	0,04	0,14	0,04	Lower
93	TO94	Tranqueira	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	58,51	0,59	2,00	0,02	0,29	0,16	0,03	0,25	0,05	0,06	0,04	0,14	0,05	Lowest
94	TO61	Perdida	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,30	95,60	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,18	Very High
95	TO65	Ponte Alta	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	97,28	0,41	4,00	0,00	0,46	0,42	0,31	0,09	0,17	0,44	0,08	0,44	0,22	Very High
96	TO62	Pindorama do Tocantins	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,01	0,03	90,73	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,11	Medium
97	TO3	Almas	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,03	0,02	0,30	95,13	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,17	0,44	0,07	0,44	0,18	Very High
98	TO87	Soninho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,14	0,01	0,15	0,03	0,03	0,30	97,52	0,42	4,00	0,00	0,46	0,42	0,31	0,09	0,17	0,44	0,08	0,44	0,18	Very High
99	TO4	APA do Jalapao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	98,34	0,41	4,00	0,00	0,46	0,42	0,31	0,09	0,20	0,44	0,08	0,44	0,11	High
100	TO54	Parque Estadual do Jalapao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,03	0,30	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,18	Very High
101	TO13	Brejao do Jalapao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,05	0,45	99,34	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
102	TO23	Desabuso	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	99,47	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,18	Very High
103	TO75	Rio Novo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,18	Very High
104	TO28	Frito gado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	97,67	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
105	TO21	Cortapena	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	99,97	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,11	High

106	TO93	Toca	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,07	0,46	0,02	0,46	0,03	0,05	0,45	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
107	TO26	Esteneu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,05	0,45	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
108	TO38	Jorge	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,11	High
109	TO98	Verde do Tocantins	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	99,99	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,11	Medium
110	TO72	Rio da Volta	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,04	0,45	100,00	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
111	TO44	Mateiros	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	98,73	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,16	0,30	0,06	0,44	0,22	Very High
112	TO59	Pedra de Amolar	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,05	0,45	99,78	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,22	0,44	0,07	0,44	0,22	Very High
113	TO19	Come Assado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	91,84	0,50	4,00	0,00	0,46	0,26	0,31	0,09	0,17	0,44	0,07	0,44	0,11	High
114	TO31	Galhao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	94,82	0,50	4,00	0,00	0,46	0,26	0,31	0,12	0,12	0,30	0,06	0,44	0,11	High
115	TO55	Parque Estadual do Lajeado	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	53,44	0,62	2,00	0,01	0,29	0,10	0,03	0,25	0,12	0,30	0,04	0,14	0,04	Lower
116	TO81	Santa Luzia	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	50,46	0,61	2,00	0,01	0,29	0,10	0,03	0,25	0,05	0,06	0,03	0,10	0,03	Lower
117	TO90	Taquaracu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,46	0,02	0,30	0,11	0,04	0,45	51,47	0,70	2,00	0,04	0,29	0,06	0,03	0,36	0,12	0,30	0,04	0,29	0,19	Very High
118	TO7	APA Lago de Palmas	0,03	0,20	0,05	0,03	0,14	0,05	0,32	0,05	0,03	0,03	0,01	0,15	0,18	0,02	0,30	45,26	0,60	2,00	0,02	0,14	0,16	0,03	0,36	0,05	0,06	0,03	0,10	0,11	Medium
119	TO66	Porto Nacional	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,46	0,02	0,30	0,11	0,05	0,45	56,01	0,69	2,00	0,03	0,29	0,06	0,03	0,36	0,05	0,06	0,03	0,14	0,16	Very High
120	TO76	Rio Tocantins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	56,50	0,62	2,00	0,07	0,29	0,10	0,03	0,36	0,03	0,03	0,03	0,14	0,04	Lower
121	TO14	Brejinho de Nazare	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,30	43,49	0,60	2,00	0,10	0,14	0,16	0,03	0,36	0,01	0,03	0,03	0,10	0,11	Medium
122	TO2	Alianca do Tocantins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	39,96	0,60	2,00	0,01	0,14	0,16	0,03	0,25	0,01	0,03	0,03	0,03	0,01	Lower
123	TO88	Surubim	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	58,53	0,56	2,00	0,02	0,29	0,16	0,03	0,25	0,05	0,06	0,04	0,14	0,05	Lowest
124	TO9	Apinage	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	59,52	0,50	2,00	0,00	0,29	0,26	0,03	0,12	0,02	0,03	0,04	0,14	0,04	Lower
125	TO60	Pedras	0,12	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,03	0,30	79,23	0,47	2,00	0,00	0,46	0,42	0,03	0,18	0,02	0,03	0,06	0,29	0,15	High
126	TO78	Rocinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	82,98	0,47	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,14	High
127	TO49	Natividade	0,03	0,04	0,58	0,12	0,46	0,05	0,05	0,05	0,03	0,03	0,04	0,46	0,27	0,04	0,45	85,19	0,42	2,00	0,00	0,46	0,42	0,03	0,12	0,02	0,03	0,05	0,29	0,19	Very High
128	TO24	Dianopolis	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	90,88	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,03	0,03	0,05	0,29	0,08	Medium
129	TO36	Itaboca	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,01	0,06	95,34	0,42	2,00	0,01	0,46	0,42	0,03	0,18	0,01	0,03	0,06	0,29	0,08	Medium
130	TO43	Manuel Alves	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	92,33	0,46	2,00	0,01	0,46	0,42	0,03	0,18	0,07	0,17	0,06	0,44	0,22	Very High
131	TO83	Santo Antonio do Tocantins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	44,86	0,60	2,00	0,02	0,14	0,16	0,03	0,25	0,01	0,03	0,03	0,03	0,02	Lower
132	TO89	Taipoca	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	32,61	0,60	2,00	0,03	0,14	0,16	0,03	0,36	0,01	0,03	0,03	0,10	0,04	Lower
133	GO140	Talisma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,30	29,69	0,62	3,00	0,00	0,14	0,10	0,27	0,12	0,03	0,03	0,02	0,03	0,09	Medium
134	GO124	Santa Teresa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	41,38	0,59	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,07	Lowest
135	GO113	Rio do Ouro	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	25,38	0,59	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
136	TO5	APA Foz do Rio Santa Tereza	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	39,36	0,60	2,00	0,01	0,14	0,16	0,03	0,25	0,22	0,44	0,04	0,14	0,08	Lowest

137	TO73	Rio das Almas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	76,49	0,52	2,00	0,00	0,46	0,26	0,03	0,09	0,04	0,06	0,05	0,29	0,08	Medium
138	TO52	Palma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	91,29	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,10	0,17	0,06	0,44	0,11	High
139	TO12	Arraias	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,02	0,16	88,93	0,40	2,00	0,00	0,46	0,42	0,03	0,12	0,03	0,03	0,05	0,29	0,11	Medium
140	TO57	Pau d'arco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	89,32	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,11	High
141	TO51	Novo Jardim	0,12	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,27	0,04	0,45	83,17	0,46	2,00	0,01	0,46	0,42	0,03	0,18	0,08	0,17	0,06	0,44	0,22	Very High
142	TO20	Corcunda	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	79,49	0,50	2,00	0,00	0,46	0,26	0,03	0,12	0,05	0,06	0,05	0,29	0,08	Medium
143	TO86	Sobrado	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,11	0,03	0,30	59,12	0,53	2,00	0,00	0,29	0,26	0,03	0,12	0,03	0,03	0,04	0,14	0,12	High
144	TO42	Lavandeira	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	54,62	0,58	2,00	0,00	0,29	0,16	0,03	0,12	0,03	0,03	0,03	0,10	0,04	Lower
145	TO67	Quebra-coco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	94,13	0,40	2,00	0,00	0,46	0,42	0,03	0,12	0,10	0,17	0,06	0,44	0,11	High
146	GO144	TQ Kalungas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	95,34	0,40	3,00	0,00	0,46	0,42	0,27	0,09	0,15	0,30	0,07	0,44	0,11	Medium
147	TO46	Montes Claros	0,12	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,05	0,45	81,47	0,46	2,00	0,01	0,46	0,42	0,03	0,18	0,07	0,17	0,06	0,44	0,22	Very High
148	GO67	Maquine	0,27	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,06	0,30	0,03	0,46	0,18	0,06	0,45	90,92	0,41	1,00	0,00	0,46	0,42	0,03	0,12	0,22	0,44	0,07	0,44	0,22	Very High
149	GO139	Sucuri	0,03	0,47	0,05	0,06	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	87,17	0,47	3,00	0,00	0,46	0,42	0,27	0,12	0,17	0,44	0,08	0,44	0,22	Very High
150	GO125	Sao Bartolomeu	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,04	0,45	96,66	0,54	3,00	0,00	0,46	0,16	0,27	0,12	0,15	0,30	0,06	0,44	0,22	Very High
151	GO53	Floresta Nacional da Mata Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,42	0,02	0,30	54,53	0,50	3,00	0,00	0,29	0,26	0,27	0,12	0,12	0,30	0,05	0,29	0,15	High
152	GO27	Calheiros	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,04	0,45	70,07	0,52	3,00	0,00	0,29	0,26	0,27	0,12	0,09	0,17	0,05	0,29	0,19	Very High
153	GO46	Divinopolis de Goias	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	68,73	0,56	3,00	0,00	0,29	0,16	0,27	0,12	0,01	0,03	0,04	0,14	0,05	Lowest
154	GO76	Nova Roma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,03	0,30	25,49	0,55	3,00	0,00	0,14	0,16	0,27	0,12	0,02	0,03	0,03	0,10	0,11	Medium
155	GO71	Morro Alto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	29,75	0,56	3,00	0,00	0,14	0,16	0,27	0,18	0,01	0,03	0,03	0,10	0,03	Lower
156	GO81	Parque Estadual de Terra Ronca	0,17	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,06	0,30	0,04	0,46	0,42	0,07	0,45	54,64	0,53	3,00	0,00	0,29	0,26	0,27	0,18	0,12	0,30	0,05	0,29	0,19	Very High
157	GO56	Guatacaba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	32,74	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,02	0,03	0,03	0,10	0,11	Medium
158	GO66	Macacao	0,41	0,47	0,37	0,13	0,46	0,05	0,05	0,05	0,06	0,30	0,05	0,46	0,11	0,07	0,45	74,65	0,56	3,00	0,01	0,29	0,16	0,27	0,18	0,15	0,30	0,05	0,29	0,19	Very High
159	GO121	Santa Maria	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,02	0,30	63,03	0,60	3,00	0,02	0,29	0,10	0,27	0,36	0,05	0,06	0,04	0,14	0,12	High
160	GO15	Baco Pari	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,18	0,04	0,45	37,45	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,12	0,30	0,04	0,14	0,16	Very High
161	GO110	Rio Corrente	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	45,58	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,07	0,17	0,03	0,14	0,05	Lowest
162	GO24	Buriti	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	71,66	0,52	3,00	0,00	0,29	0,26	0,27	0,12	0,22	0,44	0,06	0,44	0,11	High
163	GO6	APA das Nascentes do Rio Vermelho	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,27	0,02	0,30	70,68	0,49	3,00	0,00	0,29	0,42	0,27	0,12	0,22	0,44	0,07	0,44	0,18	Very High
164	GO137	Sitio da Abadia	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,04	0,07	0,01	0,15	0,03	0,01	0,16	64,24	0,60	3,00	0,00	0,29	0,16	0,27	0,09	0,12	0,30	0,05	0,29	0,11	Medium
165	GO115	Rio dos Macacos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	51,51	0,60	3,00	0,02	0,29	0,10	0,27	0,36	0,01	0,03	0,04	0,14	0,05	Lowest
166	GO52	Flores de Goias	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	46,77	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,01	0,03	0,03	0,10	0,03	Lower
167	GO51	Extrema	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	49,74	0,67	3,00	0,01	0,14	0,10	0,27	0,25	0,05	0,06	0,03	0,10	0,07	Lowest
168	GO117	Rio Paraim	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	35,04	0,60	3,00	0,01	0,14	0,10	0,27	0,18	0,05	0,06	0,03	0,03	0,01	Lower

169	GO128	Sao Joao d'Alianca	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	74,80	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,12	High
170	GO41	Crixas	0,03	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,04	0,30	52,40	0,61	3,00	0,01	0,29	0,10	0,27	0,18	0,05	0,06	0,04	0,14	0,12	High
171	GO50	Entorno de Brasilia	0,12	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,27	0,04	0,45	33,86	0,60	3,00	0,01	0,14	0,10	0,27	0,18	0,04	0,06	0,03	0,03	0,13	High
172	TO8	APA Lago de Peixe-Angical	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	80,64	0,42	2,00	0,00	0,46	0,42	0,03	0,09	0,12	0,30	0,06	0,44	0,11	High
173	GO30	Cana-brava de Minacu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	36,57	0,60	3,00	0,00	0,14	0,16	0,27	0,09	0,07	0,17	0,03	0,10	0,03	Lower
174	GO32	Cavalcante	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	85,25	0,46	1,00	0,00	0,46	0,42	0,03	0,09	0,08	0,17	0,06	0,44	0,14	High
175	GO101	Ribeirao Bonito	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	69,33	0,55	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,04	Lower
176	GO69	Minacu	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,02	0,30	67,04	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,12	High
177	GO127	Sao Felix	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	87,43	0,52	3,00	0,00	0,46	0,26	0,27	0,09	0,10	0,17	0,06	0,29	0,11	Medium
178	GO64	Laranjal	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,11	0,04	0,45	98,41	0,40	1,00	0,00	0,46	0,42	0,03	0,09	0,12	0,30	0,06	0,44	0,22	Very High
179	GO95	Preto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	71,54	0,43	1,00	0,00	0,29	0,42	0,03	0,09	0,22	0,44	0,06	0,44	0,11	High
180	GO135	Serra do Tombador	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	93,95	0,40	1,00	0,00	0,46	0,42	0,03	0,09	0,16	0,30	0,06	0,44	0,11	High
181	GO126	Sao Bento	0,12	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	88,64	0,40	3,00	0,00	0,46	0,42	0,27	0,09	0,17	0,44	0,08	0,44	0,18	Very High
182	GO82	Parque Nacional da Chapada dos Veadeiros	0,27	0,47	0,37	0,13	0,46	0,05	0,05	0,05	0,09	0,46	0,06	0,46	0,11	0,07	0,45	81,76	0,42	1,00	0,00	0,46	0,42	0,03	0,09	0,22	0,44	0,07	0,44	0,22	Very High
183	GO35	Corrego Areia	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,04	0,45	96,00	0,40	1,00	0,00	0,46	0,42	0,03	0,09	0,22	0,44	0,07	0,44	0,22	Very High
184	GO74	Muquem	0,27	0,47	0,58	0,17	0,46	0,05	0,05	0,05	0,03	0,03	0,05	0,46	0,03	0,04	0,45	88,66	0,40	1,00	0,00	0,46	0,42	0,03	0,09	0,17	0,44	0,07	0,44	0,22	Very High
185	GO106	Ribeirao Santana	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,09	0,46	0,04	0,46	0,11	0,07	0,45	94,96	0,40	1,00	0,00	0,46	0,42	0,03	0,09	0,22	0,44	0,07	0,44	0,22	Very High
186	GO109	Rio Claro	0,27	0,47	0,37	0,13	0,46	0,05	0,05	0,05	0,03	0,03	0,04	0,46	0,03	0,04	0,45	94,82	0,40	1,00	0,00	0,46	0,42	0,03	0,12	0,22	0,44	0,07	0,44	0,22	Very High
187	GO143	Tocantizinho	0,27	0,47	0,58	0,17	0,46	0,05	0,05	0,05	0,04	0,07	0,06	0,46	0,27	0,07	0,45	84,84	0,52	3,00	0,00	0,46	0,26	0,27	0,12	0,17	0,44	0,07	0,44	0,22	Very High
188	GO40	Couros	0,41	0,47	0,05	0,07	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,18	0,06	0,45	93,33	0,50	1,00	0,00	0,46	0,26	0,03	0,09	0,22	0,44	0,06	0,44	0,22	Very High
189	GO72	Morro Tira-chapeu	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	71,32	0,64	3,00	0,01	0,29	0,10	0,27	0,25	0,01	0,03	0,04	0,14	0,05	Lowest
190	GO25	Cachoeirinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	96,53	0,54	1,00	0,00	0,46	0,16	0,03	0,12	0,17	0,44	0,06	0,44	0,14	High
191	GO89	Picarrao	0,41	0,47	0,58	0,18	0,46	0,05	0,05	0,05	0,03	0,03	0,06	0,46	0,18	0,05	0,45	65,75	0,50	1,00	0,00	0,29	0,26	0,03	0,09	0,17	0,44	0,05	0,29	0,19	Very High
192	GO119	RPPN Fazenda Branca Terra dos Anões	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,06	0,30	0,02	0,46	0,03	0,05	0,45	55,62	0,56	3,00	0,01	0,29	0,16	0,27	0,18	0,11	0,30	0,05	0,29	0,19	Very High
193	GO37	Corrego Roncador	0,27	0,47	0,37	0,13	0,46	0,05	0,05	0,05	0,06	0,30	0,05	0,46	0,27	0,08	0,45	62,39	0,63	3,00	0,01	0,29	0,10	0,27	0,25	0,05	0,06	0,04	0,14	0,16	Very High
194	GO94	Prata Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	70,92	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,05	0,06	0,04	0,14	0,05	Lowest
195	GO75	Niquelandia	0,12	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,04	0,30	46,87	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,07	0,17	0,03	0,14	0,12	High
196	GO14	Bacalhau	0,17	0,47	0,58	0,17	0,46	0,05	0,05	0,05	0,04	0,07	0,06	0,46	0,11	0,05	0,45	62,30	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,07	0,17	0,04	0,14	0,16	Very High
197	GO122	Santa Rita	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	81,48	0,60	3,00	0,01	0,46	0,16	0,27	0,18	0,05	0,06	0,05	0,29	0,08	Medium
198	GO102	Ribeirao Conceicao	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	88,63	0,60	3,00	0,00	0,46	0,16	0,27	0,18	0,01	0,03	0,05	0,29	0,08	Medium

199	GO134	Serra do Passanove	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	87,59	0,61	3,00	0,00	0,46	0,10	0,27	0,09	0,01	0,03	0,04	0,14	0,05	Lowest
200	GO116	Rio Palmeira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,16	60,09	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,08	Lowest
201	GO19	Bilhagua	0,12	0,30	0,58	0,15	0,46	0,05	0,05	0,05	0,03	0,03	0,05	0,46	0,03	0,04	0,45	52,81	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,07	0,17	0,04	0,14	0,16	Very High
202	GO111	Rio da Mula	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	31,68	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,02	0,03	0,03	0,10	0,03	Lower
203	GO83	Passa-tres	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	63,98	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,07	0,17	0,04	0,14	0,08	Lowest
204	GO26	Cafe	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,04	0,07	0,01	0,15	0,03	0,02	0,16	37,46	0,60	3,00	0,01	0,14	0,10	0,27	0,25	0,07	0,17	0,03	0,10	0,07	Lowest
205	GO105	Ribeirao Ponte Alta	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	55,82	0,62	3,00	0,00	0,29	0,10	0,27	0,12	0,05	0,06	0,03	0,14	0,05	Lowest
206	GO104	Ribeirao da Laguna	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	46,69	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,01	0,03	0,03	0,10	0,04	Lower
207	GO34	Cocal	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	39,72	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
208	GO84	Patos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	30,49	0,64	3,00	0,00	0,14	0,10	0,27	0,12	0,01	0,03	0,02	0,03	0,05	Lowest
209	GO55	Forquilha	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	29,23	0,71	3,00	0,00	0,14	0,06	0,27	0,12	0,01	0,03	0,02	0,03	0,02	Lower
210	GO88	Pensao Sao Miguel	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	25,66	0,71	3,00	0,00	0,14	0,06	0,27	0,12	0,01	0,03	0,02	0,03	0,05	Lowest
211	GO58	Jacare	0,03	0,20	0,05	0,03	0,14	0,05	0,32	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	41,62	0,80	3,00	0,00	0,14	0,06	0,27	0,12	0,07	0,17	0,03	0,10	0,07	Lowest
212	GO132	Sardinha	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,03	0,30	20,22	0,80	3,00	0,00	0,07	0,06	0,27	0,12	0,07	0,17	0,02	0,03	0,09	Medium
213	GO62	Joao Alves	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	31,46	0,79	3,00	0,00	0,14	0,06	0,27	0,12	0,12	0,30	0,03	0,10	0,07	Lowest
214	GO120	RPPN Fazenda Cachoeirinha	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,16	12,55	0,80	3,00	0,00	0,07	0,06	0,27	0,12	0,03	0,03	0,02	0,03	0,05	Lowest
215	GO77	Padre Bernardo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	17,42	0,80	3,00	0,00	0,07	0,06	0,27	0,09	0,03	0,03	0,02	0,03	0,02	Lower
216	GO114	Rio dos Bois	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	32,03	0,80	3,00	0,00	0,14	0,06	0,27	0,09	0,05	0,06	0,02	0,03	0,01	Lower
217	GO73	Mucungo	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	84,35	0,76	3,00	0,01	0,46	0,06	0,27	0,25	0,07	0,17	0,05	0,29	0,08	Medium
218	GO11	Arraial Velho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	39,44	0,70	3,00	0,02	0,14	0,06	0,27	0,25	0,01	0,03	0,03	0,03	0,05	Lowest
219	GO7	APA de Cafuringa	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	80,23	0,80	3,00	0,02	0,46	0,06	0,27	0,25	0,17	0,44	0,06	0,44	0,14	High
220	GO36	Corrego Fundo	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,03	0,30	72,73	0,80	3,00	0,00	0,29	0,06	0,27	0,18	0,22	0,44	0,05	0,29	0,15	High
221	DF2	Monumento Natural do Conjunto Espeleologico do Morro da Pedreira	0,12	0,47	0,05	0,06	0,46	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	79,89	0,80	1,00	0,03	0,46	0,06	0,03	0,36	0,22	0,44	0,06	0,44	0,22	Very High
222	GO98	Reserva Biologica da Contagem	0,27	0,47	0,05	0,06	0,46	0,63	0,63	0,05	0,09	0,46	0,04	0,46	0,11	0,06	0,45	62,22	0,80	3,00	0,02	0,29	0,06	0,27	0,36	0,22	0,44	0,05	0,29	0,19	Very High
223	GO65	Lavrinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	23,65	0,63	3,00	0,00	0,07	0,10	0,27	0,12	0,01	0,03	0,02	0,03	0,01	Lower
224	GO63	Lajes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	36,60	0,65	3,00	0,00	0,14	0,10	0,27	0,18	0,01	0,03	0,03	0,03	0,05	Lowest
225	GO100	Rialma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	11,56	0,60	3,00	0,02	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,02	Lower
226	GO57	Irmaos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	63,15	0,80	5,00	0,01	0,29	0,06	0,35	0,18	0,10	0,17	0,04	0,14	0,05	Lowest
227	GO133	Serra do Cocalzinho	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	71,18	0,80	5,00	0,00	0,29	0,06	0,35	0,12	0,07	0,17	0,04	0,14	0,04	Lower
228	GO31	Canastra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	12,29	0,60	3,00	0,01	0,07	0,10	0,27	0,18	0,01	0,03	0,02	0,03	0,02	Lower
229	GO146	Uru	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	20,21	0,65	3,00	0,01	0,07	0,10	0,27	0,25	0,12	0,30	0,03	0,14	0,12	High
230	GO60	Jaragua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	13,31	0,80	3,00	0,00	0,07	0,06	0,27	0,12	0,01	0,03	0,02	0,03	0,02	Lower
231	GO80	Parque Estadual da Serra de Jaragua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	11,74	0,74	3,00	0,01	0,07	0,06	0,27	0,25	0,05	0,06	0,02	0,03	0,09	Medium
232	GO4	APA da Serra dos Pireneus	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,04	0,45	44,26	0,80	5,00	0,01	0,14	0,06	0,35	0,18	0,17	0,44	0,04	0,14	0,16	Very High

233	GO78	Padre Souza	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	24,96	0,74	5,00	0,01	0,07	0,06	0,35	0,18	0,04	0,06	0,02	0,03	0,02	Lower
234	TO63	Piranhas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	50,21	0,49	5,00	0,00	0,29	0,42	0,35	0,12	0,04	0,06	0,05	0,29	0,07	Lowest
235	TO40	Lagoa Preta	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	66,25	0,51	2,00	0,00	0,29	0,26	0,03	0,12	0,07	0,17	0,04	0,14	0,05	Lowest
236	PA1	Jenipapo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	0,00	0,40	2,00	0,01	0,04	0,42	0,03	0,18	0,01	0,03	0,03	0,10	0,03	Lower
237	TO6	APA Ilha do Bananal-Cantao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	70,04	0,40	2,00	0,00	0,29	0,42	0,03	0,09	0,22	0,44	0,06	0,44	0,11	Medium
238	TO71	Rio Caiapo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	49,00	0,40	3,00	0,00	0,14	0,42	0,27	0,12	0,17	0,44	0,06	0,44	0,11	Medium
239	TO33	Grotao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	44,92	0,45	3,00	0,00	0,14	0,42	0,27	0,18	0,16	0,30	0,05	0,29	0,15	High
240	TO68	Ribeirao Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	33,70	0,49	2,00	0,00	0,14	0,26	0,03	0,12	0,16	0,30	0,04	0,14	0,05	Lowest
241	TO30	Furo do Coco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	55,29	0,41	3,00	0,00	0,29	0,42	0,27	0,12	0,22	0,44	0,07	0,44	0,11	Medium
242	TO48	Murici	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	56,97	0,40	3,00	0,05	0,29	0,42	0,27	0,36	0,22	0,44	0,07	0,44	0,11	Medium
243	TO74	Rio do Coco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	28,77	0,46	2,00	0,03	0,14	0,42	0,03	0,36	0,17	0,44	0,06	0,44	0,11	High
244	TO29	Furo da Gameleira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,11	0,03	0,30	93,54	0,40	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,18	Very High
245	TO18	Cicice	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	53,06	0,48	3,00	0,00	0,29	0,42	0,27	0,12	0,12	0,30	0,06	0,44	0,11	High
246	TO56	Parque Nacional do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,14	0,01	0,15	0,03	0,03	0,30	99,32	0,40	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,18	Very High
247	TO11	Ariari	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	98,06	0,44	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,11	Medium
248	TO64	Pium	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	100,00	0,40	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,11	Medium
249	TO92	Terra Indigena Parque do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	100,00	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium
250	TO35	Ipuca do Riozinho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	99,97	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium
251	TO34	Ilha de Santa Anna	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	98,82	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	High
252	TO77	Riozinho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	99,36	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	High
253	TO22	Cristalandia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	68,23	0,50	2,00	0,01	0,29	0,26	0,03	0,25	0,02	0,03	0,04	0,14	0,05	Lowest
254	TO95	Urubu	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	99,51	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium
255	TO80	Sandolandia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	64,64	0,50	2,00	0,00	0,29	0,26	0,03	0,12	0,09	0,17	0,04	0,14	0,05	Lowest
256	GO16	Baiao	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	21,43	0,60	3,00	0,01	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,01	Lower
257	TO96	Urubu Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	39,70	0,50	3,00	0,20	0,14	0,26	0,27	0,36	0,05	0,06	0,04	0,14	0,04	Lower
258	TO99	Xavante	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	46,32	0,53	3,00	0,14	0,14	0,26	0,27	0,36	0,01	0,03	0,04	0,14	0,04	Lower
259	TO25	Escuro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	41,07	0,52	3,00	0,14	0,14	0,26	0,27	0,36	0,02	0,03	0,04	0,14	0,08	Lowest
260	MT116	Xavantinho	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	82,72	0,41	3,00	0,00	0,46	0,42	0,27	0,09	0,05	0,06	0,06	0,44	0,11	Medium
261	MT106	Terra Indigena Maraiwatsede	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	50,30	0,50	3,00	0,00	0,29	0,26	0,27	0,12	0,12	0,30	0,05	0,29	0,11	Medium
262	MT102	Terra Indigena Cacique Fontoura	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	74,70	0,50	5,00	0,00	0,29	0,26	0,35	0,09	0,12	0,30	0,05	0,29	0,08	Medium
263	MT91	Santa Izabel do Morro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,11	0,01	0,16	71,79	0,50	5,00	0,01	0,29	0,26	0,35	0,25	0,17	0,44	0,06	0,44	0,14	High
264	MT67	Novo Santo Antonio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	90,70	0,48	5,00	0,00	0,46	0,42	0,35	0,09	0,06	0,06	0,06	0,44	0,11	High
265	MT95	Sao Joao Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	66,80	0,50	3,00	0,00	0,29	0,26	0,27	0,12	0,01	0,03	0,04	0,14	0,04	Lower
266	MT82	Ribeirao Cascalheira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	71,11	0,44	3,00	0,00	0,29	0,42	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium

267	MT108	Terra Indigena Pimentel Barbosa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	99,96	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium
268	MT89	RVS Quelonios do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	85,06	0,43	3,00	0,00	0,46	0,42	0,27	0,09	0,17	0,44	0,08	0,44	0,11	Medium
269	MT31	Cocalinho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	74,82	0,43	3,00	0,00	0,29	0,42	0,27	0,09	0,17	0,44	0,07	0,44	0,11	High
270	MT8	Angico	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	37,29	0,54	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
271	MT101	Terra Indigena Areoes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	93,02	0,50	3,00	0,01	0,46	0,26	0,27	0,18	0,17	0,44	0,07	0,44	0,11	High
272	MT77	Pindaiba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	40,23	0,60	4,00	0,01	0,14	0,16	0,31	0,25	0,05	0,06	0,03	0,10	0,03	Lower
273	MT19	Barra do Garças	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	25,94	0,60	4,00	0,00	0,14	0,16	0,31	0,12	0,07	0,17	0,03	0,14	0,08	Lowest
274	MT45	Galheiro	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,16	60,14	0,60	4,00	0,00	0,29	0,16	0,31	0,12	0,07	0,17	0,04	0,14	0,08	Lowest
275	MT28	Cava Funda	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	19,03	0,60	4,00	0,01	0,07	0,16	0,31	0,18	0,07	0,17	0,03	0,10	0,04	Lower
276	MT71	PE da Serra Azul	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	49,94	0,60	4,00	0,00	0,14	0,16	0,31	0,18	0,17	0,44	0,05	0,29	0,08	Medium
277	MT33	Corrente	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	16,68	0,60	4,00	0,00	0,07	0,16	0,31	0,12	0,07	0,17	0,03	0,10	0,07	Lowest
278	MT22	Cachoeira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	32,80	0,57	3,00	0,01	0,14	0,16	0,27	0,18	0,01	0,03	0,03	0,10	0,03	Lower
279	MT53	Jau	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	50,73	0,60	3,00	0,00	0,29	0,16	0,27	0,18	0,01	0,03	0,04	0,14	0,04	Lower
280	MT2	Agua Boa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	21,31	0,60	3,00	0,02	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,05	Lowest
281	MT15	Areao	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	35,49	0,60	3,00	0,00	0,14	0,16	0,27	0,18	0,07	0,17	0,03	0,14	0,05	Lowest
282	MT40	Dom Bosco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	57,21	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,12	0,30	0,05	0,29	0,11	Medium
283	MT110	Terra Indigena Sao Marcos	0,17	0,04	0,05	0,02	0,14	0,05	0,32	0,05	0,03	0,03	0,01	0,07	0,11	0,01	0,06	100,00	0,60	4,00	0,00	0,46	0,16	0,31	0,09	0,22	0,44	0,06	0,44	0,11	High
284	MT69	Paredao Grande	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	48,50	0,60	2,00	0,00	0,14	0,16	0,03	0,09	0,04	0,06	0,02	0,03	0,02	Lower
285	MT46	General Carneiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	25,81	0,60	2,00	0,00	0,14	0,16	0,03	0,09	0,04	0,06	0,02	0,03	0,01	Lower
286	MT42	Engano	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	14,53	0,60	2,00	0,01	0,07	0,16	0,03	0,18	0,01	0,03	0,02	0,03	0,01	Lower
287	MT1	Agua Azul	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	11,23	0,60	2,00	0,01	0,07	0,16	0,03	0,18	0,01	0,03	0,02	0,03	0,02	Lower
288	TO58	PE do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	91,60	0,47	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,11	Medium
289	TO27	Formoso do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	81,08	0,47	3,00	0,00	0,46	0,42	0,27	0,09	0,22	0,44	0,08	0,44	0,11	Medium
290	MT10	APA dos Meandros do Rio Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	86,84	0,40	3,00	0,00	0,46	0,42	0,27	0,12	0,17	0,44	0,08	0,44	0,11	Medium
291	MT30	Chapeu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	74,18	0,40	3,00	0,03	0,29	0,42	0,27	0,36	0,02	0,03	0,06	0,29	0,07	Lowest
292	MT36	Cristalino	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	78,03	0,41	3,00	0,01	0,46	0,42	0,27	0,25	0,03	0,03	0,06	0,44	0,11	High
293	MT60	Mata do Inferno	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	77,92	0,45	3,00	0,01	0,46	0,42	0,27	0,25	0,07	0,17	0,07	0,44	0,11	Medium
294	GO43	Crixas-mirim	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	21,14	0,60	3,00	0,01	0,07	0,16	0,27	0,18	0,01	0,03	0,02	0,03	0,01	Lower
295	GO91	Pintado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	23,51	0,60	3,00	0,01	0,07	0,16	0,27	0,18	0,07	0,17	0,03	0,10	0,07	Lowest
296	GO22	Bonopolis	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	16,59	0,60	3,00	0,02	0,07	0,16	0,27	0,25	0,01	0,03	0,03	0,03	0,02	Lower
297	GO17	Barreiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	40,96	0,60	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
298	GO103	Ribeirao d'Anta	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	41,26	0,53	3,00	0,00	0,14	0,26	0,27	0,12	0,01	0,03	0,03	0,10	0,03	Lower
299	GO42	Crixas-acu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	31,25	0,57	3,00	0,00	0,14	0,16	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
300	GO142	Tesouras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	39,49	0,56	3,00	0,02	0,14	0,16	0,27	0,36	0,07	0,17	0,04	0,14	0,04	Lower
301	GO2	Alagado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	17,55	0,55	3,00	0,02	0,07	0,16	0,27	0,25	0,05	0,06	0,03	0,10	0,03	Lower

302	GO23	Braco do Mato	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	96,22	0,55	3,00	0,00	0,46	0,16	0,27	0,18	0,10	0,17	0,05	0,29	0,08	Medium
303	GO90	Pinguela	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,42	0,02	0,30	32,07	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,04	0,06	0,03	0,10	0,11	Medium
304	GO1	Alagadinho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	5,50	0,50	3,00	0,00	0,04	0,26	0,27	0,12	0,01	0,03	0,03	0,03	0,02	Lower
305	GO33	Cavalo Queimado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	16,43	0,60	3,00	0,00	0,07	0,16	0,27	0,12	0,01	0,03	0,02	0,03	0,02	Lower
306	GO12	Aruana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	74,45	0,49	3,00	0,01	0,29	0,42	0,27	0,18	0,07	0,17	0,06	0,29	0,07	Lowest
307	MT62	Medio Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	24,60	0,40	3,00	0,00	0,07	0,42	0,27	0,18	0,07	0,17	0,04	0,14	0,04	Lower
308	MT20	Brejao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	35,27	0,40	3,00	0,01	0,14	0,42	0,27	0,18	0,07	0,17	0,05	0,29	0,07	Lowest
309	GO141	Terra Indigena Karaja de Aruana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	53,84	0,53	3,00	0,00	0,29	0,26	0,27	0,09	0,17	0,44	0,06	0,44	0,11	Medium
310	GO118	RPPN Boca da Mata	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,11	0,02	0,30	28,84	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,08	0,17	0,03	0,14	0,12	High
311	GO68	Matrincha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	20,85	0,60	3,00	0,01	0,07	0,16	0,27	0,25	0,03	0,03	0,03	0,03	0,05	Lowest
312	GO5	APA da Serra Dourada	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,07	0,46	0,03	0,46	0,27	0,07	0,45	36,15	0,60	3,00	0,01	0,14	0,16	0,27	0,18	0,17	0,44	0,05	0,29	0,19	Very High
313	GO86	PE da Serra Dourada	0,12	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,03	0,30	14,82	0,60	3,00	0,01	0,07	0,16	0,27	0,18	0,05	0,06	0,02	0,03	0,09	Medium
314	GO47	Dom Bill	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	13,09	0,60	3,00	0,02	0,07	0,16	0,27	0,36	0,01	0,03	0,03	0,10	0,04	Lower
315	GO21	Bom Jardim	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	43,84	0,60	3,00	0,01	0,14	0,10	0,27	0,18	0,07	0,17	0,03	0,10	0,07	Lowest
316	GO99	Retiro das Piranhas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	30,42	0,60	3,00	0,01	0,14	0,16	0,27	0,25	0,07	0,17	0,04	0,14	0,05	Lowest
317	GO79	Pantano	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	42,04	0,73	3,00	0,01	0,14	0,06	0,27	0,25	0,07	0,17	0,03	0,10	0,04	Lower
318	GO129	Sao Jose	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	77,19	0,80	3,00	0,00	0,46	0,06	0,27	0,12	0,07	0,17	0,05	0,29	0,07	Lowest
319	MT12	APA Estadual Pe da Serra Azul	0,27	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,16	46,64	0,52	4,00	0,01	0,14	0,26	0,31	0,18	0,12	0,30	0,05	0,29	0,11	Medium
320	MT18	Bandeira	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	51,25	0,60	2,00	0,00	0,29	0,16	0,03	0,09	0,01	0,03	0,03	0,10	0,04	Lower
321	MT48	Guiratinga	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	59,30	0,60	2,00	0,00	0,29	0,16	0,03	0,09	0,01	0,03	0,03	0,10	0,04	Lower
322	MT7	Alto Garcas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	42,00	0,50	2,00	0,00	0,14	0,26	0,03	0,18	0,01	0,03	0,03	0,10	0,07	Lowest
323	GO138	Sucupira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	43,08	0,79	3,00	0,01	0,14	0,06	0,27	0,18	0,05	0,06	0,02	0,03	0,01	Lower
324	MT94	Sao Joao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	63,40	0,45	2,00	0,00	0,29	0,42	0,03	0,09	0,01	0,03	0,04	0,14	0,05	Lowest
325	GO45	Diamantino	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	37,59	0,80	3,00	0,00	0,14	0,06	0,27	0,09	0,01	0,03	0,02	0,03	0,02	Lower
326	GO13	Babilonia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,30	23,44	0,80	3,00	0,00	0,07	0,06	0,27	0,09	0,07	0,17	0,02	0,03	0,09	Medium
327	GO49	Empantanado	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	36,42	0,80	4,00	0,00	0,14	0,06	0,31	0,12	0,07	0,17	0,03	0,10	0,15	High
328	GO70	Mineiros	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	31,91	0,80	4,00	0,00	0,14	0,06	0,31	0,09	0,02	0,03	0,02	0,03	0,05	Lowest
329	GO59	Jacu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	46,39	0,80	4,00	0,00	0,14	0,06	0,31	0,12	0,01	0,03	0,02	0,03	0,02	Lower
330	GO3	Alto Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	7,22	0,68	3,00	0,00	0,04	0,06	0,27	0,09	0,07	0,17	0,02	0,03	0,13	High
331	MT47	Gordura	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,11	0,01	0,16	25,87	0,50	2,00	0,00	0,14	0,26	0,03	0,09	0,07	0,17	0,03	0,10	0,07	Lowest
332	GO123	Santa Rita do Araguaia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,27	0,04	0,45	30,19	0,68	3,00	0,00	0,14	0,06	0,27	0,12	0,07	0,17	0,03	0,10	0,15	High
333	MT83	Ribeirao do Sapo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,27	0,02	0,30	25,36	0,44	2,00	0,00	0,14	0,42	0,03	0,09	0,02	0,03	0,03	0,14	0,12	High
334	GO148	Zeca Nonato	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,11	0,05	0,45	39,78	0,57	4,00	0,00	0,14	0,16	0,31	0,12	0,05	0,06	0,03	0,10	0,15	High
335	GO96	Queixada	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	40,29	0,80	4,00	0,00	0,14	0,06	0,31	0,12	0,05	0,06	0,02	0,03	0,02	Lower
336	GO10	Araguainha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	21,01	0,65	4,00	0,00	0,07	0,10	0,31	0,12	0,08	0,17	0,03	0,03	0,02	Lower
337	MA51	Terra Indigena Geralda	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	27,94	0,65	3,00	0,00	0,14	0,10	0,27	0,12	0,05	0,06	0,02	0,03	0,01	Lower

		Toco Preto																													
338	MA52	Terra Indigena Krikati	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	61,83	0,56	3,00	0,00	0,29	0,16	0,27	0,12	0,05	0,06	0,04	0,14	0,04	Lower
339	MA19	Ipixuna Acu	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	33,53	0,76	4,00	0,01	0,14	0,06	0,31	0,25	0,01	0,03	0,03	0,03	0,01	Lower
340	MA41	RPPN Fazenda Sao Francisco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	22,25	0,75	4,00	0,02	0,07	0,06	0,31	0,25	0,01	0,03	0,02	0,03	0,02	Lower
341	MA31	Presidente Dutra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	43,84	0,70	3,00	0,01	0,14	0,06	0,27	0,25	0,01	0,03	0,03	0,03	0,01	Lower
342	MA37	Rio das Flores	0,12	0,04	0,05	0,02	0,07	0,32	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	76,96	0,70	3,00	0,00	0,46	0,06	0,27	0,12	0,01	0,03	0,04	0,14	0,04	Lower
343	MA53	Terra Indigena Porquinhos	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	93,33	0,53	3,00	0,00	0,46	0,26	0,27	0,09	0,22	0,44	0,07	0,44	0,11	Medium
344	MA50	Terra Indigena Cana Brava/Guajajara	0,12	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	73,25	0,60	3,00	0,00	0,29	0,16	0,27	0,12	0,12	0,30	0,05	0,29	0,15	High
345	MA20	Itapecuru	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	66,95	0,67	3,00	0,01	0,29	0,10	0,27	0,18	0,01	0,03	0,03	0,14	0,04	Lower
346	MA55	TQ Santa Joana	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	68,87	0,60	3,00	0,00	0,29	0,10	0,27	0,12	0,05	0,06	0,03	0,14	0,04	Lower
347	MA30	PN dos Lençois Maranhenses	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,11	0,03	0,30	69,22	0,50	3,00	0,00	0,29	0,26	0,27	0,12	0,17	0,44	0,06	0,44	0,18	Very High
348	MA40	RPPN Fazenda Pantanal	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	67,87	0,60	3,00	0,01	0,29	0,16	0,27	0,25	0,01	0,03	0,04	0,14	0,04	Lower
349	MA21	Itapicuru	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	86,00	0,63	3,00	0,01	0,46	0,10	0,27	0,25	0,01	0,03	0,05	0,29	0,07	Lowest
350	MA7	Cajazeira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	69,18	0,70	3,00	0,01	0,29	0,06	0,27	0,18	0,01	0,03	0,03	0,10	0,03	Lower
351	MA18	Inhumas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	69,47	0,61	3,00	0,00	0,29	0,10	0,27	0,09	0,01	0,03	0,03	0,10	0,04	Lower
352	MA5	Baixao do Bandeira	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	68,05	0,70	3,00	0,01	0,29	0,06	0,27	0,25	0,01	0,03	0,03	0,14	0,04	Lower
353	MA15	Fortuna	0,03	0,04	0,05	0,01	0,03	0,63	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	75,37	0,70	3,00	0,00	0,46	0,06	0,27	0,12	0,01	0,03	0,04	0,14	0,04	Lower
354	MA25	Mirador	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	99,96	0,60	3,00	0,00	0,46	0,16	0,27	0,09	0,22	0,44	0,06	0,44	0,11	Medium
355	MA1	Alpercatinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	99,77	0,60	3,00	0,00	0,46	0,16	0,27	0,09	0,22	0,44	0,06	0,44	0,18	Very High
356	MA29	PE de Mirador	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	87,21	0,56	3,00	0,00	0,46	0,16	0,27	0,12	0,15	0,30	0,06	0,44	0,11	Medium
357	MA3	APA dos Morros Garapenses	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	72,92	0,68	3,00	0,01	0,29	0,06	0,27	0,25	0,17	0,44	0,05	0,29	0,08	Medium
358	MA4	APA Upaon-Açu/Miritiba/Alto Preguicas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	91,81	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,16	0,30	0,06	0,44	0,14	High
359	PI24	RPPN Fazenda Centro	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,18	0,02	0,30	13,63	0,69	3,00	0,03	0,07	0,06	0,27	0,36	0,01	0,03	0,02	0,03	0,09	Medium
360	MA9	Caraiba	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	77,96	0,60	3,00	0,02	0,46	0,10	0,27	0,36	0,07	0,17	0,05	0,29	0,08	Medium
361	MA33	Riachao	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	89,66	0,70	3,00	0,01	0,46	0,06	0,27	0,25	0,01	0,03	0,04	0,29	0,07	Lowest
362	PI10	FN de Palmares	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,42	0,03	0,30	38,45	0,69	2,00	0,08	0,14	0,06	0,03	0,36	0,06	0,06	0,02	0,03	0,09	Medium
363	MA54	Timon	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	42,79	0,70	3,00	0,00	0,14	0,06	0,27	0,12	0,05	0,06	0,02	0,03	0,01	Lower
364	MA45	Sao Francisco do Maranhao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	90,98	0,58	3,00	0,00	0,46	0,16	0,27	0,12	0,01	0,03	0,05	0,29	0,07	Lowest
365	MA46	Sucupira do Riachao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	81,57	0,60	3,00	0,00	0,46	0,16	0,27	0,12	0,01	0,03	0,05	0,29	0,08	Medium
366	PI5	Caninde	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	0,92	0,40	2,00	0,00	0,04	0,42	0,03	0,12	0,01	0,03	0,03	0,10	0,03	Lower
367	PI18	PN da Serra das Confusoes	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	61,56	0,44	2,00	0,00	0,29	0,42	0,03	0,12	0,20	0,44	0,06	0,44	0,14	High
368	PI9	Floriano	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	98,57	0,40	2,00	0,00	0,46	0,42	0,03	0,12	0,01	0,03	0,05	0,29	0,08	Medium

369	PI7	Coqueiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	78,10	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,07	0,17	0,06	0,44	0,11	Medium
370	PI22	Riacho de Sant'Ana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	89,10	0,40	2,00	0,01	0,46	0,42	0,03	0,25	0,07	0,17	0,06	0,44	0,11	Medium
371	PI2	Baliza	0,12	0,20	0,05	0,03	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	99,50	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,22	0,44	0,07	0,44	0,11	High
372	PI16	Paraim	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	83,13	0,50	2,00	0,06	0,46	0,26	0,03	0,36	0,05	0,06	0,05	0,29	0,07	Lowest
373	PI15	Matoes	0,17	0,04	0,05	0,02	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	73,04	0,50	2,00	0,08	0,29	0,26	0,03	0,36	0,05	0,06	0,04	0,29	0,07	Lowest
374	PI11	Gurgueia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	96,77	0,44	2,00	0,00	0,46	0,42	0,03	0,09	0,12	0,30	0,06	0,44	0,11	Medium
375	PI1	APA do Rangel	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	82,93	0,40	2,00	0,00	0,46	0,42	0,03	0,09	0,05	0,06	0,05	0,29	0,07	Lowest
376	PI29	Vereda Uniao	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	71,98	0,40	2,00	0,00	0,29	0,42	0,03	0,09	0,01	0,03	0,04	0,14	0,05	Lowest
377	PI23	Riacho Frio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	89,46	0,43	2,00	0,00	0,46	0,42	0,03	0,09	0,01	0,03	0,05	0,29	0,08	Medium
378	PI17	Parnagua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	72,83	0,46	2,00	0,00	0,29	0,42	0,03	0,09	0,01	0,03	0,04	0,14	0,04	Lower
379	PI14	Malhada da Barra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	73,78	0,50	2,00	0,00	0,29	0,26	0,03	0,09	0,12	0,30	0,05	0,29	0,11	Medium
380	PI25	Sebastiao Barros	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	69,07	0,49	2,00	0,00	0,29	0,42	0,03	0,12	0,04	0,06	0,05	0,29	0,07	Lowest
381	PI6	Cardoso	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	93,16	0,36	2,00	0,00	0,46	0,42	0,03	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
382	PI20	Prata	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	70,53	0,42	2,00	0,00	0,29	0,42	0,03	0,12	0,01	0,03	0,04	0,29	0,07	Lowest
383	MA34	Riacho do Belem	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	71,24	0,57	3,00	0,00	0,29	0,16	0,27	0,09	0,01	0,03	0,03	0,14	0,12	High
384	MA11	Curimata	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	99,12	0,45	3,00	0,00	0,46	0,42	0,27	0,09	0,01	0,03	0,06	0,44	0,11	Medium
385	MA57	Urucui	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	68,28	0,46	2,00	0,01	0,29	0,42	0,03	0,25	0,01	0,03	0,05	0,29	0,07	Lowest
386	MA43	Santa Isabel	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	82,06	0,46	3,00	0,00	0,46	0,42	0,27	0,09	0,01	0,03	0,06	0,44	0,11	High
387	MA6	Balsas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	87,52	0,50	3,00	0,00	0,46	0,26	0,27	0,18	0,01	0,03	0,05	0,29	0,08	Medium
388	MA17	Gameleira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	97,23	0,50	3,00	0,00	0,46	0,26	0,27	0,12	0,01	0,03	0,05	0,29	0,08	Medium
389	MA35	Riacho dos Picos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	89,62	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
390	MA14	Fortaleza dos Nogueiras	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	75,96	0,56	3,00	0,00	0,46	0,16	0,27	0,12	0,02	0,03	0,05	0,29	0,07	Lowest
391	MA10	Coite	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	77,94	0,50	3,00	0,00	0,46	0,26	0,27	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
392	MA39	Rio Maravilha	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	58,39	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,01	0,03	0,04	0,14	0,04	Lower
393	MA44	Santo Antonio de Balsas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,18	0,05	0,45	68,34	0,60	3,00	0,02	0,29	0,16	0,27	0,36	0,07	0,17	0,05	0,29	0,19	Very High
394	MA16	Gado Bravo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	75,39	0,60	3,00	0,00	0,46	0,16	0,27	0,18	0,05	0,06	0,05	0,29	0,07	Lowest
395	MA26	Novo Recreio	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	90,96	0,60	3,00	0,00	0,46	0,16	0,27	0,18	0,07	0,17	0,05	0,29	0,08	Medium
396	MA49	Temerante	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	66,48	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,05	0,06	0,04	0,14	0,04	Lower
397	MA27	Parelhas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	93,73	0,60	3,00	0,00	0,46	0,16	0,27	0,12	0,07	0,17	0,05	0,29	0,08	Medium
398	MA48	Tem medo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	82,98	0,60	3,00	0,01	0,46	0,16	0,27	0,25	0,07	0,17	0,06	0,29	0,08	Medium
399	MA23	Mandacaru	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	24,73	0,60	3,00	0,02	0,07	0,16	0,27	0,36	0,02	0,03	0,03	0,10	0,04	Lower
400	MA47	Sul Maranhense	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	82,95	0,60	3,00	0,01	0,46	0,16	0,27	0,18	0,05	0,06	0,05	0,29	0,08	Medium
401	PI3	Benedito Leite	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	86,13	0,48	2,00	0,00	0,46	0,42	0,03	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
402	PI21	Riacho da Estiva	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	71,00	0,49	2,00	0,00	0,29	0,42	0,03	0,09	0,01	0,03	0,04	0,14	0,04	Lower
403	PI28	Urucui-preto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,02	0,30	80,69	0,50	2,00	0,03	0,46	0,26	0,03	0,36	0,07	0,17	0,06	0,44	0,18	Very High
404	MA22	Loreto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	82,57	0,49	3,00	0,00	0,46	0,42	0,27	0,09	0,05	0,06	0,06	0,44	0,14	High

405	PI27	Tasso Fragoso	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	78,67	0,55	2,00	0,00	0,46	0,16	0,03	0,09	0,07	0,17	0,05	0,29	0,07	Lowest
406	PI8	EE de Urucui-Una	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	97,96	0,50	2,00	0,00	0,46	0,26	0,03	0,09	0,22	0,44	0,06	0,44	0,11	Medium
407	PI26	Sucuruju	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	85,98	0,50	2,00	0,00	0,46	0,26	0,03	0,09	0,07	0,17	0,05	0,29	0,08	Medium
408	MA24	Medonho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	71,12	0,60	2,00	0,00	0,29	0,16	0,03	0,09	0,07	0,17	0,04	0,14	0,08	Lowest
409	MA2	Alto Parnaiba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	97,03	0,60	2,00	0,00	0,46	0,16	0,03	0,09	0,01	0,03	0,04	0,14	0,04	Lower
410	PI4	Cachoeira Pedra de Amolar	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	90,85	0,54	2,00	0,00	0,46	0,26	0,03	0,09	0,12	0,30	0,06	0,29	0,07	Lowest
411	PI19	PN das Nascentes do Rio Parnaiba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,27	0,03	0,30	99,36	0,45	2,00	0,00	0,46	0,42	0,03	0,09	0,22	0,44	0,07	0,44	0,18	Very High
412	PI12	Ilha Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	77,62	0,63	3,00	0,03	0,46	0,10	0,27	0,36	0,01	0,03	0,05	0,29	0,11	Medium
413	PI13	Luis Correia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	21,01	0,60	3,00	0,00	0,07	0,16	0,27	0,12	0,01	0,03	0,02	0,03	0,01	Lower
414	BA26	Ilha Mocambo dos Ventos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	51,99	0,40	2,00	0,03	0,29	0,42	0,03	0,36	0,17	0,44	0,07	0,44	0,14	High
415	BA4	APA Dunas e Veredas do Baixo e Medio Sao Francisco	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	30,63	0,40	2,00	0,04	0,14	0,42	0,03	0,36	0,16	0,30	0,05	0,29	0,11	Medium
416	BA17	Cotegipe	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	88,27	0,42	2,00	0,00	0,46	0,42	0,03	0,18	0,09	0,17	0,06	0,44	0,11	High
417	BA18	EE Rio Preto	0,12	0,04	0,05	0,02	0,07	0,05	0,32	0,05	0,06	0,30	0,02	0,30	0,27	0,05	0,45	74,43	0,50	3,00	0,01	0,29	0,26	0,27	0,25	0,15	0,30	0,06	0,29	0,19	Very High
418	BA22	Formosa do Rio Preto	0,03	0,30	0,05	0,04	0,30	0,05	0,32	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	56,98	0,60	3,00	0,03	0,29	0,16	0,27	0,36	0,12	0,30	0,05	0,29	0,15	High
419	BA5	APA Rio Preto	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	63,65	0,60	3,00	0,03	0,29	0,16	0,27	0,36	0,15	0,30	0,05	0,29	0,08	Medium
420	BA54	Sapao	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	65,51	0,60	3,00	0,06	0,29	0,16	0,27	0,36	0,15	0,30	0,05	0,29	0,15	High
421	BA45	Rio Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	56,53	0,44	2,00	0,01	0,29	0,42	0,03	0,25	0,02	0,03	0,05	0,29	0,07	Lowest
422	BA31	Neves	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	52,86	0,60	2,00	0,01	0,29	0,16	0,03	0,18	0,01	0,03	0,03	0,10	0,04	Lower
423	BA42	Rio de Janeiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,03	0,30	76,99	0,60	4,00	0,14	0,46	0,16	0,31	0,36	0,22	0,44	0,07	0,44	0,18	Very High
424	BA35	Ponta d'agua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,03	0,30	42,47	0,68	4,00	0,28	0,14	0,06	0,31	0,36	0,16	0,30	0,04	0,14	0,12	High
425	BA3	APA Bacia do Rio de Janeiro	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	67,99	0,60	4,00	0,19	0,29	0,16	0,31	0,36	0,20	0,44	0,06	0,44	0,11	High
426	BA19	Extremo Oeste Baiano	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	54,38	0,60	4,00	0,05	0,29	0,16	0,31	0,36	0,01	0,03	0,04	0,14	0,12	High
427	BA32	Ondas	0,12	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,04	0,30	76,15	0,60	4,00	0,07	0,46	0,16	0,31	0,36	0,05	0,06	0,05	0,29	0,15	High
428	BA11	Cabeceira das Lajes	0,17	0,04	0,37	0,08	0,46	0,32	0,32	0,05	0,03	0,03	0,03	0,46	0,11	0,05	0,45	70,59	0,60	4,00	0,09	0,29	0,16	0,31	0,36	0,09	0,17	0,05	0,29	0,19	Very High
429	BA57	Tabocas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	88,19	0,60	4,00	0,12	0,46	0,16	0,31	0,36	0,07	0,17	0,06	0,44	0,11	Medium
430	BA12	Cabeceira de Pedras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,02	0,30	40,27	0,71	4,00	0,04	0,14	0,06	0,31	0,36	0,05	0,06	0,03	0,10	0,11	Medium
431	BA10	Bora	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	33,24	0,80	4,00	0,00	0,14	0,06	0,31	0,09	0,01	0,03	0,02	0,03	0,02	Lower
432	BA9	Boa Sorte	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,16	73,28	0,49	2,00	0,10	0,29	0,26	0,03	0,36	0,08	0,17	0,05	0,29	0,11	Medium
433	BA21	FN de Cristopolis	0,03	0,04	0,37	0,08	0,46	0,05	0,32	0,05	0,03	0,03	0,03	0,46	0,03	0,03	0,30	77,39	0,57	2,00	0,02	0,46	0,16	0,03	0,36	0,07	0,17	0,05	0,29	0,15	High
434	BA63	Vereda Anastacio	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,30	85,17	0,60	3,00	0,09	0,46	0,16	0,27	0,36	0,02	0,03	0,05	0,29	0,15	High
435	BA53	Sao Desiderio	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	77,37	0,60	3,00	0,02	0,46	0,16	0,27	0,36	0,05	0,06	0,05	0,29	0,08	Medium
436	BA36	Porcos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	81,58	0,60	3,00	0,01	0,46	0,16	0,27	0,25	0,07	0,17	0,06	0,29	0,15	High
437	BA61	Triste e Feio	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	41,65	0,60	3,00	0,23	0,14	0,16	0,27	0,36	0,01	0,03	0,03	0,10	0,04	Lower

438	BA25	Ilha da Pica Grande	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	34,68	0,40	2,00	0,00	0,14	0,42	0,03	0,18	0,05	0,06	0,04	0,14	0,05	Lowest
439	BA64	Vereda da Canoa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	74,22	0,40	2,00	0,01	0,29	0,42	0,03	0,25	0,01	0,03	0,05	0,29	0,11	Medium
440	BA55	Serra Dourada	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	39,52	0,54	2,00	0,02	0,14	0,16	0,03	0,36	0,01	0,03	0,03	0,10	0,03	Lower
441	BA24	Ilha da Bananeira	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,16	35,66	0,40	2,00	0,03	0,14	0,42	0,03	0,36	0,03	0,03	0,04	0,14	0,08	Lowest
442	BA56	Sitio do Mato	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	43,92	0,40	2,00	0,02	0,14	0,42	0,03	0,36	0,05	0,06	0,04	0,14	0,05	Lowest
443	BA58	Terra Indigena Vargem Alegre	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	47,58	0,56	2,00	0,02	0,14	0,16	0,03	0,36	0,04	0,06	0,03	0,10	0,04	Lower
444	BA33	Pedra Branca	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	67,34	0,54	2,00	0,01	0,29	0,16	0,03	0,25	0,03	0,03	0,03	0,14	0,04	Lower
445	BA50	Santana	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,30	58,68	0,60	2,00	0,02	0,29	0,16	0,03	0,25	0,02	0,03	0,03	0,14	0,12	High
446	BA15	Coribe	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	55,78	0,60	2,00	0,03	0,29	0,16	0,03	0,36	0,01	0,03	0,04	0,14	0,05	Lowest
447	BA52	Sao Felix do Coribe	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	26,62	0,60	2,00	0,04	0,14	0,16	0,03	0,36	0,01	0,03	0,03	0,10	0,11	Medium
448	BA44	Rio Formoso	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	51,20	0,57	2,00	0,01	0,29	0,16	0,03	0,25	0,03	0,03	0,03	0,14	0,08	Lowest
449	BA2	Alegre	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,03	0,30	64,21	0,60	2,00	0,01	0,29	0,16	0,03	0,18	0,05	0,06	0,03	0,14	0,12	High
450	BA28	Jaborandi	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	83,18	0,52	2,00	0,01	0,46	0,26	0,03	0,25	0,08	0,17	0,06	0,29	0,08	Medium
451	BA47	Rodeador	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	62,49	0,44	2,00	0,04	0,29	0,42	0,03	0,36	0,07	0,17	0,06	0,29	0,15	High
452	BA62	Vau	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	60,04	0,50	2,00	0,11	0,29	0,26	0,03	0,36	0,12	0,30	0,05	0,29	0,15	High
453	BA37	Pratudao	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,03	0,30	71,12	0,50	2,00	0,16	0,29	0,26	0,03	0,36	0,07	0,17	0,05	0,29	0,15	High
454	BA48	RVS das Veredas do Oeste Baiano	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,03	0,30	65,48	0,50	2,00	0,11	0,29	0,26	0,03	0,36	0,17	0,44	0,06	0,44	0,18	Very High
455	BA7	Arrojado	0,03	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,03	0,30	68,90	0,50	3,00	0,01	0,29	0,26	0,27	0,25	0,03	0,03	0,04	0,29	0,15	High
456	BA6	Arrojadinho	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	51,70	0,50	2,00	0,12	0,29	0,26	0,03	0,36	0,03	0,03	0,04	0,14	0,12	High
457	BA16	Correntina	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,05	0,45	54,60	0,50	3,00	0,04	0,29	0,26	0,27	0,36	0,03	0,03	0,05	0,29	0,19	Very High
458	BA49	Santa Maria da Vitoria	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	67,29	0,60	2,00	0,01	0,29	0,16	0,03	0,25	0,05	0,06	0,04	0,14	0,04	Lower
459	BA23	Guara	0,03	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,07	0,30	0,04	0,46	0,03	0,05	0,45	83,20	0,50	3,00	0,01	0,46	0,26	0,27	0,25	0,07	0,17	0,06	0,44	0,22	Very High
460	BA39	Riacho de Pedra	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	25,97	0,54	3,00	0,01	0,14	0,16	0,27	0,25	0,02	0,03	0,03	0,10	0,03	Lower
461	BA46	Rio Guara	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	11,54	0,57	2,00	0,00	0,07	0,16	0,03	0,18	0,02	0,03	0,02	0,03	0,01	Lower
462	BA51	Santo Antonio	0,03	0,04	0,37	0,08	0,46	0,05	0,32	0,05	0,03	0,03	0,03	0,46	0,03	0,03	0,30	78,33	0,50	3,00	0,06	0,46	0,26	0,27	0,36	0,07	0,17	0,06	0,44	0,18	Very High
463	BA43	Rio dos Angicos	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	82,48	0,60	2,00	0,05	0,46	0,16	0,03	0,36	0,01	0,03	0,05	0,29	0,07	Lowest
464	BA40	Riacho do Mato	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	79,99	0,54	3,00	0,01	0,46	0,26	0,27	0,18	0,07	0,17	0,06	0,44	0,11	Medium
465	BA59	TQ Lagoa das Piranhas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,16	19,14	0,45	2,00	0,05	0,07	0,42	0,03	0,36	0,05	0,06	0,04	0,14	0,08	Lowest
466	BA60	TQ Nova Batalhinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	42,21	0,52	2,00	0,02	0,14	0,26	0,03	0,25	0,12	0,30	0,04	0,14	0,08	Lowest
467	BA38	Riacho de Mariape	0,03	0,20	0,05	0,03	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	3,15	0,50	2,00	0,02	0,04	0,26	0,03	0,36	0,01	0,03	0,03	0,10	0,04	Lower
468	BA29	Lagoas	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	52,85	0,57	2,00	0,02	0,29	0,16	0,03	0,36	0,01	0,03	0,04	0,14	0,05	Lowest
469	BA30	Madrugao	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	66,29	0,60	2,00	0,01	0,29	0,16	0,03	0,18	0,02	0,03	0,03	0,10	0,03	Lower
470	BA13	Cariranha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	62,04	0,55	2,00	0,01	0,29	0,16	0,03	0,25	0,07	0,17	0,04	0,14	0,05	Lowest
471	MG3	APA Cocha e Gibao	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	76,67	0,55	5,00	0,01	0,46	0,16	0,35	0,25	0,12	0,30	0,06	0,44	0,14	High
472	BA20	Feira da Mata	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	46,50	0,52	2,00	0,01	0,14	0,26	0,03	0,18	0,03	0,03	0,03	0,10	0,04	Lower

473	BA34	PN Grande Sertao Veredas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,03	0,30	87,00	0,48	2,00	0,00	0,46	0,42	0,03	0,12	0,15	0,30	0,07	0,44	0,18	Very High
474	BA14	Cocos	0,17	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,04	0,45	42,26	0,47	2,00	0,01	0,14	0,42	0,03	0,18	0,03	0,03	0,04	0,14	0,16	Very High
475	BA41	Riacho do Meio	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	74,98	0,40	2,00	0,00	0,29	0,42	0,03	0,18	0,01	0,03	0,05	0,29	0,07	Lowest
476	BA27	Itaguari	0,03	0,20	0,37	0,10	0,46	0,32	0,32	0,05	0,03	0,03	0,03	0,46	0,03	0,04	0,45	84,12	0,40	2,00	0,00	0,46	0,42	0,03	0,12	0,09	0,17	0,06	0,44	0,22	Very High
477	MG16	Calindo	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	44,60	0,65	5,00	0,05	0,14	0,10	0,35	0,36	0,04	0,06	0,03	0,10	0,03	Lower
478	BA8	Aurelio	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	19,65	0,51	2,00	0,03	0,07	0,26	0,03	0,36	0,02	0,03	0,03	0,10	0,07	Lowest
479	MG39	Furado Novo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	26,99	0,60	5,00	0,07	0,14	0,16	0,35	0,36	0,01	0,03	0,03	0,14	0,05	Lowest
480	MG73	PE Caminho das Gerais	0,12	0,04	0,05	0,02	0,07	0,32	0,32	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	18,26	0,60	5,00	0,02	0,07	0,16	0,35	0,25	0,07	0,17	0,03	0,14	0,04	Lower
481	MG93	Porteirinha	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	30,91	0,61	5,00	0,04	0,14	0,10	0,35	0,36	0,07	0,17	0,04	0,14	0,04	Lower
482	MG41	Gorutuba	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,02	0,30	44,53	0,63	5,00	0,04	0,14	0,10	0,35	0,36	0,02	0,03	0,03	0,10	0,11	Medium
483	MG27	Corrego Escuro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	18,59	0,60	5,00	0,06	0,07	0,16	0,35	0,36	0,11	0,30	0,04	0,14	0,08	Lowest
484	MG58	Macaubas	0,03	0,04	0,05	0,01	0,03	0,32	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	21,27	0,60	5,00	0,01	0,07	0,16	0,35	0,25	0,05	0,06	0,03	0,10	0,03	Lower
485	MG139	Verde Grande	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	20,91	0,60	5,00	0,02	0,07	0,16	0,35	0,25	0,02	0,03	0,03	0,10	0,07	Lowest
486	MG96	Quem-quem	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	35,15	0,70	5,00	0,00	0,14	0,06	0,35	0,12	0,03	0,03	0,02	0,03	0,09	Medium
487	MG1	Agua Limpa	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	44,87	0,64	5,00	0,03	0,14	0,10	0,35	0,36	0,01	0,03	0,03	0,10	0,03	Lower
488	MG20	Capitao Eneas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	34,82	0,72	5,00	0,01	0,14	0,06	0,35	0,25	0,05	0,06	0,03	0,10	0,03	Lower
489	MG134	Vacabrava	0,17	0,47	0,05	0,06	0,46	0,05	0,32	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	36,98	0,70	1,00	0,02	0,14	0,06	0,03	0,25	0,07	0,17	0,03	0,10	0,11	Medium
490	MG54	Juramento	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,03	0,30	28,19	0,70	5,00	0,01	0,14	0,06	0,35	0,18	0,07	0,17	0,03	0,10	0,11	Medium
491	MG79	PE Lagoa do Cajueiro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	39,81	0,62	5,00	0,06	0,14	0,10	0,35	0,36	0,12	0,30	0,04	0,14	0,08	Lowest
492	MG98	RB Serra Azul	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	43,23	0,55	5,00	0,05	0,14	0,16	0,35	0,36	0,16	0,30	0,05	0,29	0,15	High
493	MG85	PE Veredas do Peruacu	0,12	0,47	0,05	0,06	0,46	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	72,34	0,50	5,00	0,01	0,29	0,26	0,35	0,25	0,20	0,44	0,06	0,44	0,22	Very High
494	MG89	PN Cavernas do Peruacu	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,27	0,04	0,45	52,81	0,53	5,00	0,01	0,29	0,26	0,35	0,25	0,07	0,17	0,05	0,29	0,19	Very High
495	MG25	Cochos	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	54,96	0,53	5,00	0,01	0,29	0,26	0,35	0,25	0,07	0,17	0,05	0,29	0,07	Lowest
496	MG50	Japonvar	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	54,14	0,67	5,00	0,02	0,29	0,10	0,35	0,25	0,05	0,06	0,04	0,14	0,04	Lower
497	MG67	Pandeiros	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	82,23	0,50	5,00	0,01	0,46	0,26	0,35	0,25	0,20	0,44	0,07	0,44	0,11	High
498	MG5	APA Pandeiros	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	97,16	0,50	5,00	0,00	0,46	0,26	0,35	0,12	0,20	0,44	0,07	0,44	0,11	Medium
499	MG113	RVS Rio Pandeiros	0,12	0,30	0,05	0,04	0,30	0,63	0,32	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	73,29	0,50	5,00	0,01	0,29	0,26	0,35	0,25	0,15	0,30	0,06	0,44	0,18	Very High
500	MG117	Sao Joaquim	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	85,37	0,50	5,00	0,01	0,46	0,26	0,35	0,18	0,05	0,06	0,06	0,29	0,08	Medium
501	MG83	PE Serra das Araras	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	92,94	0,55	1,00	0,00	0,46	0,16	0,03	0,12	0,12	0,30	0,05	0,29	0,08	Medium
502	MG24	Chapada Gaucha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	74,39	0,60	1,00	0,00	0,29	0,16	0,03	0,12	0,05	0,06	0,03	0,10	0,03	Lower
503	MG55	Lagoa da Vaqueta	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	34,00	0,60	5,00	0,01	0,14	0,16	0,35	0,18	0,02	0,03	0,03	0,10	0,07	Lowest
504	MG116	Sao Francisco	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,03	0,02	0,30	38,98	0,60	5,00	0,00	0,14	0,16	0,35	0,18	0,03	0,03	0,03	0,10	0,11	Medium
505	MG87	Pintopolis	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	58,63	0,60	5,00	0,00	0,29	0,16	0,35	0,12	0,05	0,06	0,04	0,14	0,05	Lowest
506	MG133	Urucuia	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	82,78	0,54	5,00	0,00	0,46	0,16	0,35	0,12	0,05	0,06	0,05	0,29	0,07	Lowest

507	MG26	Conceicao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,30	67,96	0,54	5,00	0,03	0,29	0,16	0,35	0,36	0,05	0,06	0,04	0,29	0,15	High
508	MG101	Ribeirao dos Confins	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,18	0,03	0,30	67,47	0,54	5,00	0,01	0,29	0,16	0,35	0,18	0,07	0,17	0,04	0,29	0,15	High
509	MG33	EE Sagarana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,18	0,05	0,45	46,33	0,57	5,00	0,03	0,14	0,16	0,35	0,36	0,06	0,06	0,04	0,14	0,16	Very High
510	MG66	Pacari	0,12	0,20	0,05	0,03	0,30	0,32	0,05	0,05	0,04	0,07	0,02	0,30	0,03	0,03	0,30	66,54	0,50	5,00	0,00	0,29	0,26	0,35	0,12	0,06	0,06	0,04	0,29	0,15	High
511	MG37	Formoso	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,04	0,07	0,01	0,15	0,03	0,01	0,16	68,55	0,50	5,00	0,01	0,29	0,26	0,35	0,18	0,09	0,17	0,05	0,29	0,11	Medium
512	MG120	Serra da Sacada	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	47,34	0,63	5,00	0,01	0,14	0,10	0,35	0,18	0,01	0,03	0,03	0,10	0,07	Lowest
513	MG119	Sao Romao	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	50,98	0,54	5,00	0,01	0,29	0,26	0,35	0,18	0,01	0,03	0,04	0,29	0,07	Lowest
514	MG17	Campo Azul	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	47,47	0,69	5,00	0,02	0,14	0,06	0,35	0,25	0,05	0,06	0,03	0,10	0,11	Medium
515	MG40	Garitas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	61,20	0,50	5,00	0,00	0,29	0,26	0,35	0,18	0,05	0,06	0,05	0,29	0,07	Lowest
516	MG106	Roncador	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	34,63	0,64	5,00	0,03	0,14	0,10	0,35	0,36	0,01	0,03	0,03	0,10	0,03	Lower
517	MG131	Unai	0,12	0,04	0,05	0,02	0,07	0,32	0,32	0,05	0,07	0,30	0,02	0,30	0,11	0,04	0,45	45,66	0,63	5,00	0,03	0,14	0,10	0,35	0,36	0,07	0,17	0,04	0,14	0,16	Very High
518	GO18	Bezerra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	59,41	0,65	3,00	0,01	0,29	0,10	0,27	0,25	0,03	0,03	0,04	0,14	0,05	Lowest
519	DF1	APA do Planalto Central	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,06	0,30	0,02	0,46	0,03	0,05	0,45	26,54	0,75	1,00	0,03	0,14	0,06	0,03	0,36	0,17	0,44	0,04	0,14	0,16	Very High
520	MG141	Vereda Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	8,52	0,70	5,00	0,05	0,04	0,06	0,35	0,36	0,01	0,03	0,02	0,03	0,01	Lower
521	MG127	TQ Amaros	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	50,59	0,70	5,00	0,02	0,29	0,06	0,35	0,25	0,12	0,30	0,05	0,29	0,08	Medium
522	MG99	Ribeirao Bezerra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	17,48	0,68	5,00	0,03	0,07	0,06	0,35	0,36	0,02	0,03	0,03	0,03	0,02	Lower
523	MG112	RPPN Morro da Cruz das Almas	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,04	0,07	0,01	0,15	0,03	0,02	0,30	52,86	0,70	5,00	0,04	0,29	0,06	0,35	0,36	0,10	0,17	0,04	0,29	0,15	High
524	MG94	Presidente Olegario	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	58,65	0,63	5,00	0,01	0,29	0,10	0,35	0,25	0,07	0,17	0,04	0,29	0,11	Medium
525	MG102	Ribeirao Santa Catarina	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,11	0,04	0,45	52,13	0,63	5,00	0,01	0,29	0,10	0,35	0,25	0,02	0,03	0,04	0,14	0,16	Very High
526	MG77	PE de Paracatu	0,17	0,20	0,05	0,04	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,03	0,30	46,98	0,71	5,00	0,03	0,14	0,06	0,35	0,36	0,07	0,17	0,04	0,14	0,12	High
527	MG43	Guarda-mor	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,30	43,57	0,80	5,00	0,03	0,14	0,06	0,35	0,36	0,07	0,17	0,04	0,14	0,12	High
528	MG10	Barro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,02	0,16	35,55	0,57	5,00	0,01	0,14	0,16	0,35	0,25	0,05	0,06	0,03	0,10	0,07	Lowest
529	MG51	Jequitai	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	39,14	0,50	5,00	0,01	0,14	0,26	0,35	0,25	0,03	0,03	0,04	0,14	0,05	Lowest
530	MG38	Francisco Dumont	0,12	0,30	0,05	0,04	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,03	0,30	39,72	0,43	5,00	0,01	0,14	0,42	0,35	0,18	0,03	0,03	0,04	0,14	0,12	High
531	MG9	Areia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	59,54	0,43	5,00	0,01	0,29	0,42	0,35	0,18	0,07	0,17	0,06	0,44	0,11	High
532	MG44	Imbalacaia	0,41	0,47	0,05	0,07	0,46	0,32	0,05	0,05	0,04	0,07	0,03	0,46	0,42	0,05	0,45	50,30	0,47	5,00	0,00	0,29	0,42	0,35	0,12	0,09	0,17	0,06	0,29	0,19	Very High
533	MG92	PN das Sempre-Vivas	0,17	0,20	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	56,23	0,50	5,00	0,00	0,29	0,26	0,35	0,09	0,15	0,30	0,05	0,29	0,15	High
534	MG138	Velhas	0,27	0,30	0,05	0,05	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,18	0,04	0,45	50,59	0,48	5,00	0,02	0,29	0,42	0,35	0,25	0,08	0,17	0,06	0,44	0,22	Very High
535	MG12	Bicudo	0,03	0,47	0,05	0,06	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	46,64	0,42	5,00	0,00	0,14	0,42	0,35	0,12	0,03	0,03	0,04	0,14	0,12	High
536	MG74	PE da Serra do Cabral	0,41	0,47	0,05	0,07	0,46	0,63	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,05	0,45	56,71	0,50	5,00	0,00	0,29	0,26	0,35	0,12	0,15	0,30	0,05	0,29	0,19	Very High
537	MG49	Jabuticaba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	7,77	0,41	5,00	0,00	0,04	0,42	0,35	0,18	0,01	0,03	0,04	0,14	0,08	Lowest
538	MG70	Pardo Grande	0,41	0,47	0,58	0,18	0,46	0,63	0,05	0,05	0,03	0,03	0,06	0,46	0,42	0,05	0,45	72,78	0,43	5,00	0,00	0,29	0,42	0,35	0,09	0,05	0,06	0,05	0,29	0,19	Very High
539	MG115	Santo Hipolito	0,03	0,20	0,05	0,03	0,14	0,05	0,32	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	15,26	0,49	5,00	0,01	0,07	0,42	0,35	0,18	0,01	0,03	0,04	0,14	0,08	Lowest

540	MG91	PN da Serra do Cipo	0,41	0,47	0,58	0,18	0,46	0,63	0,05	0,05	0,04	0,14	0,06	0,46	0,42	0,07	0,45	70,20	0,50	5,00	0,00	0,29	0,26	0,35	0,09	0,12	0,30	0,05	0,29	0,19	Very High
541	MG4	APA do Carste de Lagoa Santa	0,41	0,47	0,58	0,18	0,46	0,63	0,63	0,63	0,25	0,46	0,11	0,46	0,42	0,09	0,45	37,45	0,58	1,00	0,05	0,14	0,16	0,03	0,36	0,07	0,17	0,03	0,14	0,16	Very High
542	MG88	Pirapora	0,12	0,04	0,05	0,02	0,07	0,63	0,05	0,05	0,04	0,14	0,01	0,15	0,11	0,05	0,45	43,04	0,49	5,00	0,02	0,14	0,42	0,35	0,36	0,03	0,03	0,05	0,29	0,19	Very High
543	MG128	Tres Marias	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	45,17	0,40	5,00	0,00	0,14	0,42	0,35	0,12	0,07	0,17	0,05	0,29	0,11	Medium
544	MG125	Tiros	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	65,92	0,66	5,00	0,01	0,29	0,10	0,35	0,18	0,03	0,03	0,04	0,14	0,12	High
545	MG109	RPPN Fazenda Lavagem	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	57,09	0,44	5,00	0,01	0,29	0,42	0,35	0,25	0,03	0,03	0,05	0,29	0,08	Medium
546	MG14	Borrachudo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	75,69	0,56	5,00	0,01	0,46	0,16	0,35	0,18	0,07	0,17	0,05	0,29	0,07	Lowest
547	MG32	EE de Pirapitinga	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	48,39	0,40	5,00	0,00	0,14	0,42	0,35	0,18	0,05	0,06	0,04	0,29	0,07	Lowest
548	MG45	Indaia	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	68,63	0,58	5,00	0,01	0,29	0,16	0,35	0,18	0,07	0,17	0,04	0,29	0,08	Medium
549	MG107	RPPN Fazenda Barrão	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	34,75	0,41	5,00	0,01	0,14	0,42	0,35	0,25	0,02	0,03	0,04	0,29	0,07	Lowest
550	MG34	Felixlandia	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	43,26	0,44	5,00	0,00	0,14	0,42	0,35	0,12	0,03	0,03	0,04	0,14	0,08	Lowest
551	MG35	FN de Paraopeba	0,03	0,47	0,37	0,12	0,46	0,63	0,32	0,32	0,03	0,03	0,04	0,46	0,18	0,03	0,30	31,16	0,59	5,00	0,02	0,14	0,16	0,35	0,25	0,05	0,06	0,03	0,10	0,11	Medium
552	MG46	Inhauma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	39,19	0,61	5,00	0,02	0,14	0,10	0,35	0,36	0,10	0,17	0,04	0,14	0,08	Lowest
553	MG6	APA Vargem das Flores	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,32	0,03	0,03	0,01	0,15	0,11	0,02	0,16	9,50	0,57	5,00	0,04	0,04	0,16	0,35	0,36	0,07	0,17	0,03	0,14	0,08	Lowest
554	MG56	Lambari	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	21,89	0,57	5,00	0,01	0,07	0,16	0,35	0,18	0,02	0,03	0,03	0,03	0,01	Lower
555	MG104	Rio Para	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	29,96	0,61	5,00	0,01	0,14	0,10	0,35	0,18	0,02	0,03	0,03	0,10	0,04	Lower
556	MG110	RPPN Fazenda Samoinho	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	6,84	0,58	5,00	0,04	0,04	0,16	0,35	0,36	0,01	0,03	0,03	0,10	0,03	Lower
557	MG64	Nova Serrana	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	24,18	0,67	5,00	0,01	0,07	0,10	0,35	0,25	0,03	0,03	0,02	0,03	0,01	Lower
558	MG100	Ribeirao Boa Vista	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	9,42	0,58	5,00	0,02	0,04	0,16	0,35	0,25	0,01	0,03	0,03	0,03	0,01	Lower
559	MG57	Luz	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	16,08	0,63	5,00	0,02	0,07	0,10	0,35	0,25	0,01	0,03	0,02	0,03	0,02	Lower
560	MG31	EE Corumba	0,03	0,20	0,05	0,03	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,02	0,16	8,87	0,59	5,00	0,01	0,04	0,16	0,35	0,18	0,05	0,06	0,02	0,03	0,05	Lowest
561	MG136	Vargem Bonita	0,03	0,30	0,37	0,10	0,46	0,05	0,05	0,05	0,04	0,07	0,04	0,46	0,18	0,04	0,45	32,74	0,55	5,00	0,00	0,14	0,16	0,35	0,09	0,12	0,30	0,04	0,14	0,16	Very High
562	MG108	RPPN Fazenda do Lobo	0,27	0,30	0,58	0,16	0,46	0,05	0,05	0,05	0,23	0,46	0,09	0,46	0,27	0,06	0,45	43,35	0,50	5,00	0,00	0,14	0,26	0,35	0,09	0,12	0,30	0,04	0,29	0,19	Very High
563	MG76	PE de Montezuma	0,03	0,30	0,05	0,04	0,30	0,32	0,32	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	34,36	0,52	5,00	0,01	0,14	0,26	0,35	0,18	0,07	0,17	0,04	0,14	0,12	High
564	MG121	Setubal	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	11,77	0,50	5,00	0,00	0,07	0,26	0,35	0,12	0,01	0,03	0,03	0,10	0,03	Lower
565	MG11	Berilo	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,27	0,02	0,30	59,65	0,48	5,00	0,00	0,29	0,42	0,35	0,09	0,01	0,03	0,05	0,29	0,15	High
566	MG19	Capelinha	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,18	0,02	0,16	49,01	0,51	5,00	0,00	0,14	0,26	0,35	0,12	0,01	0,03	0,03	0,14	0,08	Lowest
567	MG7	Aracai	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,03	54,13	0,50	5,00	0,00	0,29	0,26	0,35	0,12	0,05	0,06	0,04	0,29	0,07	Lowest
568	MG81	PE Rio Preto	0,41	0,47	0,58	0,18	0,46	0,63	0,63	0,32	0,03	0,03	0,06	0,46	0,42	0,06	0,45	53,22	0,44	5,00	0,00	0,29	0,42	0,35	0,09	0,05	0,06	0,05	0,29	0,19	Very High
569	MG137	Vargem da Lapa	0,03	0,04	0,05	0,01	0,03	0,63	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	55,47	0,40	5,00	0,00	0,29	0,42	0,35	0,09	0,01	0,03	0,05	0,29	0,07	Lowest
570	MG86	Peixe Bravo	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	71,91	0,53	5,00	0,01	0,29	0,26	0,35	0,18	0,05	0,06	0,05	0,29	0,11	Medium
571	MG135	Vacaria	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,06	61,68	0,50	5,00	0,00	0,29	0,26	0,35	0,12	0,04	0,06	0,04	0,29	0,08	Medium
572	MG30	EE Acaua	0,41	0,47	0,37	0,13	0,46	0,32	0,63	0,05	0,03	0,03	0,04	0,46	0,03	0,04	0,45	74,54	0,44	5,00	0,01	0,29	0,42	0,35	0,18	0,04	0,06	0,05	0,29	0,19	Very

																															High
573	MG47	Itacambira	0,17	0,30	0,37	0,11	0,46	0,05	0,05	0,05	0,03	0,03	0,04	0,46	0,11	0,03	0,30	86,65	0,43	5,00	0,00	0,46	0,42	0,35	0,09	0,01	0,03	0,06	0,44	0,18	Very High
574	MG122	Tabatinga	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,06	32,05	0,43	5,00	0,00	0,14	0,42	0,35	0,09	0,01	0,03	0,04	0,14	0,05	Lowest
575	MG65	Olhos d'agua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	85,95	0,40	5,00	0,00	0,46	0,42	0,35	0,09	0,17	0,44	0,08	0,44	0,14	High
576	MG15	Caete-mirim	0,12	0,47	0,05	0,06	0,46	0,05	0,32	0,05	0,03	0,03	0,02	0,30	0,11	0,03	0,30	92,04	0,40	5,00	0,00	0,46	0,42	0,35	0,09	0,17	0,44	0,08	0,44	0,18	Very High
577	MG72	PE Biribiri	0,41	0,47	0,58	0,18	0,46	0,32	0,63	0,05	0,03	0,03	0,06	0,46	0,42	0,07	0,45	72,74	0,43	5,00	0,00	0,29	0,42	0,35	0,09	0,09	0,17	0,06	0,29	0,19	Very High
578	MG123	Tanque	0,03	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,03	0,30	57,80	0,60	5,00	0,00	0,29	0,16	0,35	0,09	0,22	0,44	0,05	0,29	0,15	High
579	MG78	PE do Limoeiro	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	29,90	0,60	5,00	0,00	0,14	0,10	0,35	0,12	0,09	0,17	0,03	0,10	0,07	Lowest
580	MG103	Rio do Peixe	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,02	0,16	56,85	0,42	5,00	0,00	0,29	0,42	0,35	0,09	0,15	0,30	0,06	0,44	0,14	High
581	MG95	Preto do Itambe	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,07	0,30	0,02	0,46	0,03	0,05	0,45	91,89	0,44	5,00	0,00	0,46	0,42	0,35	0,09	0,22	0,44	0,08	0,44	0,22	Very High
582	MG62	Morro do Pilar	0,12	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,04	0,45	66,38	0,41	5,00	0,00	0,29	0,42	0,35	0,09	0,15	0,30	0,06	0,44	0,22	Very High
583	MG105	Rio Picao	0,17	0,20	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	33,41	0,40	5,00	0,00	0,14	0,42	0,35	0,09	0,07	0,17	0,05	0,29	0,19	Very High
584	MG84	PE Serra do Intendente	0,41	0,47	0,05	0,07	0,46	0,32	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,04	0,45	70,84	0,41	5,00	0,00	0,29	0,42	0,35	0,09	0,17	0,44	0,07	0,44	0,22	Very High
585	MG69	Parauninha	0,03	0,20	0,58	0,14	0,46	0,05	0,05	0,05	0,03	0,03	0,04	0,46	0,11	0,03	0,30	47,45	0,40	5,00	0,00	0,14	0,42	0,35	0,09	0,12	0,30	0,05	0,29	0,15	High
586	MG13	Bom Jesus do Amparo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	40,23	0,77	5,00	0,01	0,14	0,06	0,35	0,18	0,05	0,06	0,03	0,03	0,02	Lower
587	MS10	Ivinheima	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	5,01	0,56	2,00	0,01	0,04	0,16	0,03	0,25	0,01	0,03	0,02	0,03	0,02	Lower
588	MS11	Nova Alvorada do Sul	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,16	13,96	0,74	3,00	0,02	0,07	0,06	0,27	0,25	0,05	0,06	0,02	0,03	0,05	Lowest
589	MS33	Terra Indigena Jatayvari	0,12	0,20	0,58	0,14	0,46	0,05	0,05	0,05	0,04	0,07	0,05	0,46	0,27	0,04	0,45	6,94	0,78	3,00	0,01	0,04	0,06	0,27	0,25	0,04	0,06	0,02	0,03	0,13	High
590	MS20	Rio Brilhante	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	15,67	0,79	3,00	0,03	0,07	0,06	0,27	0,36	0,04	0,06	0,02	0,03	0,02	Lower
591	SP36	Laranja Doce	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	8,46	0,61	1,00	0,02	0,04	0,10	0,03	0,25	0,01	0,03	0,02	0,03	0,02	Lower
592	PR8	RPPN Fazenda Monte Alegre	0,12	0,04	0,05	0,02	0,07	0,05	0,32	0,32	0,03	0,03	0,01	0,07	0,11	0,01	0,03	0,35	0,62	1,00	0,01	0,04	0,10	0,03	0,18	0,04	0,06	0,02	0,03	0,01	Lower
593	PR4	PE do Guartela	0,17	0,20	0,05	0,04	0,30	0,05	0,05	0,05	0,07	0,30	0,02	0,46	0,03	0,05	0,45	17,06	0,65	1,00	0,01	0,07	0,10	0,03	0,18	0,12	0,30	0,03	0,10	0,15	High
594	PR1	APA da Escarpa Devoniana	0,27	0,30	0,05	0,05	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	1,62	0,63	1,00	0,00	0,04	0,10	0,03	0,09	0,11	0,30	0,02	0,03	0,09	Medium
595	SP39	Paraguacu Paulista	0,03	0,20	0,05	0,03	0,14	0,63	0,32	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	4,12	0,62	1,00	0,01	0,04	0,10	0,03	0,25	0,04	0,06	0,02	0,03	0,02	Lower
596	PR9	Ventania	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	0,14	0,62	1,00	0,01	0,04	0,10	0,03	0,25	0,01	0,03	0,02	0,03	0,02	Lower
597	PR7	RPPN Fazenda do Tigre	0,17	0,30	0,37	0,11	0,46	0,05	0,05	0,05	0,07	0,30	0,05	0,46	0,03	0,05	0,45	10,08	0,61	1,00	0,01	0,07	0,10	0,03	0,18	0,12	0,30	0,03	0,10	0,15	High
598	SP16	EE de Assis	0,03	0,20	0,05	0,03	0,14	0,63	0,32	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	5,39	0,55	1,00	0,01	0,04	0,16	0,03	0,18	0,04	0,06	0,02	0,03	0,02	Lower
599	SP12	Campos Novos Paulista	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	5,35	0,59	1,00	0,00	0,04	0,16	0,03	0,18	0,01	0,03	0,02	0,03	0,01	Lower
600	SP1	Alambari	0,12	0,04	0,05	0,02	0,07	0,32	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,02	0,30	6,99	0,66	1,00	0,00	0,04	0,10	0,03	0,12	0,05	0,06	0,01	0,03	0,09	Medium
601	SP22	EE Santa Barbara	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	1,87	0,63	1,00	0,03	0,04	0,10	0,03	0,36	0,04	0,06	0,02	0,03	0,13	High
602	SP17	EE de Avare	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	5,36	0,58	1,00	0,01	0,04	0,16	0,03	0,25	0,05	0,06	0,02	0,03	0,02	Lower
603	SP26	FE Santa Barbara	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,16	3,95	0,54	1,00	0,00	0,04	0,16	0,03	0,12	0,12	0,30	0,03	0,10	0,07	Lowest

604	SP13	Claro	0,12	0,04	0,05	0,02	0,07	0,32	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	6,57	0,54	1,00	0,01	0,04	0,16	0,03	0,25	0,01	0,03	0,02	0,03	0,13	High
605	SP48	Ribeirao das Pedras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	0,47	0,51	1,00	0,02	0,04	0,26	0,03	0,25	0,11	0,30	0,04	0,14	0,05	Lowest
606	SP11	Botucatu	0,03	0,30	0,05	0,04	0,30	0,05	0,32	0,05	0,03	0,03	0,02	0,30	0,03	0,04	0,45	7,60	0,52	1,00	0,01	0,04	0,26	0,03	0,18	0,05	0,06	0,02	0,03	0,13	High
607	SP30	Itaporanga	0,27	0,47	0,58	0,17	0,46	0,63	0,32	0,32	0,03	0,03	0,05	0,46	0,42	0,04	0,45	3,58	0,60	1,00	0,01	0,04	0,10	0,03	0,25	0,01	0,03	0,02	0,03	0,13	High
608	PR6	Pescaria	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	0,74	0,66	1,00	0,01	0,04	0,10	0,03	0,25	0,01	0,03	0,02	0,03	0,01	Lower
609	PR5	PE Vale do Codo	0,41	0,47	0,58	0,18	0,46	0,63	0,63	0,05	0,07	0,30	0,06	0,46	0,42	0,07	0,45	7,56	0,60	1,00	0,00	0,04	0,16	0,03	0,12	0,12	0,30	0,03	0,10	0,15	High
610	PR3	Jaguaricatu	0,41	0,47	0,05	0,07	0,46	0,05	0,05	0,05	0,06	0,30	0,03	0,46	0,27	0,05	0,45	9,73	0,60	1,00	0,01	0,04	0,16	0,03	0,18	0,11	0,30	0,03	0,10	0,15	High
611	PR2	Itarare	0,17	0,30	0,05	0,04	0,30	0,63	0,05	0,05	0,22	0,46	0,06	0,46	0,18	0,06	0,45	20,74	0,60	1,00	0,00	0,07	0,16	0,03	0,18	0,07	0,17	0,02	0,03	0,13	High
612	SP40	Paranapanema	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	1,60	0,67	1,00	0,03	0,04	0,10	0,03	0,36	0,01	0,03	0,02	0,03	0,09	Medium
613	SP18	EE de Itabera	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	5,67	0,62	1,00	0,03	0,04	0,10	0,03	0,36	0,04	0,06	0,02	0,03	0,09	Medium
614	SP21	EE Paranapanema	0,12	0,30	0,37	0,11	0,46	0,05	0,32	0,05	0,03	0,03	0,04	0,46	0,18	0,03	0,30	0,98	0,73	1,00	0,01	0,04	0,06	0,03	0,25	0,05	0,06	0,02	0,03	0,09	Medium
615	SP27	FN de Capao Bonito	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,06	0,30	0,02	0,30	0,03	0,04	0,45	0,96	0,57	1,00	0,02	0,04	0,16	0,03	0,36	0,04	0,06	0,02	0,03	0,13	High
616	SP29	Itapetininga	0,03	0,47	0,05	0,06	0,30	0,32	0,05	0,05	0,04	0,07	0,02	0,46	0,11	0,05	0,45	2,13	0,61	1,00	0,05	0,04	0,10	0,03	0,36	0,01	0,03	0,02	0,03	0,13	High
617	MS8	Inhandui	0,03	0,30	0,58	0,15	0,46	0,32	0,32	0,05	0,07	0,30	0,06	0,46	0,27	0,07	0,45	17,08	0,71	5,00	0,02	0,07	0,06	0,35	0,36	0,05	0,06	0,03	0,10	0,15	High
618	MS13	Pardo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	16,84	0,60	2,00	0,01	0,07	0,16	0,03	0,18	0,01	0,03	0,02	0,03	0,02	Lower
619	MS7	Botas	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,01	0,03	13,53	0,60	2,00	0,00	0,07	0,16	0,03	0,18	0,01	0,03	0,02	0,03	0,01	Lower
620	MS12	Parana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	1,37	0,55	2,00	0,03	0,04	0,16	0,03	0,36	0,04	0,06	0,02	0,03	0,02	Lower
621	MS37	Verde	0,03	0,04	0,05	0,01	0,03	0,32	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	17,14	0,60	2,00	0,01	0,07	0,16	0,03	0,18	0,05	0,06	0,02	0,03	0,01	Lower
622	MS27	Sao Domingos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	14,26	0,60	2,00	0,01	0,07	0,16	0,03	0,18	0,07	0,17	0,02	0,03	0,05	Lowest
623	MS28	Sucuriu	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,09	0,46	0,03	0,46	0,18	0,07	0,45	18,31	0,57	2,00	0,01	0,07	0,16	0,03	0,25	0,06	0,06	0,02	0,03	0,13	High
624	SP4	APA Rio Batalha	0,03	0,04	0,05	0,01	0,03	0,63	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	8,06	0,69	1,00	0,00	0,04	0,06	0,03	0,18	0,17	0,44	0,03	0,10	0,03	Lower
625	SP52	Sao Lourenco	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	6,99	0,51	1,00	0,01	0,04	0,26	0,03	0,25	0,05	0,06	0,03	0,03	0,09	Medium
626	SP3	APA Ibitinga	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	4,66	0,60	1,00	0,04	0,04	0,16	0,03	0,36	0,20	0,44	0,04	0,14	0,05	Lowest
627	SP31	Itaquere	0,03	0,04	0,05	0,01	0,03	0,32	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	8,57	0,50	1,00	0,00	0,04	0,26	0,03	0,12	0,04	0,06	0,02	0,03	0,01	Lower
628	SP32	Jacare-guacu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	9,36	0,51	1,00	0,02	0,04	0,26	0,03	0,25	0,05	0,06	0,03	0,03	0,01	Lower
629	SP6	Araraquara	0,27	0,20	0,05	0,04	0,30	0,05	0,32	0,05	0,03	0,03	0,02	0,30	0,18	0,02	0,30	10,31	0,60	1,00	0,05	0,07	0,16	0,03	0,36	0,01	0,03	0,02	0,03	0,09	Medium
630	SP20	EE Itirapina	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,04	0,14	0,02	0,30	0,03	0,05	0,45	14,49	0,54	1,00	0,07	0,07	0,26	0,03	0,36	0,12	0,30	0,04	0,14	0,16	Very High
631	SP33	Jacare-pepira	0,03	0,30	0,37	0,10	0,46	0,32	0,05	0,05	0,03	0,03	0,04	0,46	0,18	0,04	0,45	12,90	0,49	1,00	0,01	0,07	0,42	0,03	0,18	0,12	0,30	0,04	0,29	0,19	Very High
632	SP7	Arealva	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,18	0,04	0,30	2,89	0,65	1,00	0,01	0,04	0,10	0,03	0,25	0,04	0,06	0,02	0,03	0,09	Medium
633	SP25	FE Pederneiras	0,12	0,04	0,05	0,02	0,07	0,63	0,32	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	4,74	0,68	1,00	0,05	0,04	0,10	0,03	0,36	0,05	0,06	0,02	0,03	0,01	Lower
634	SP37	Macatuba	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	1,65	0,59	1,00	0,05	0,04	0,16	0,03	0,36	0,04	0,06	0,02	0,03	0,01	Lower
635	SP5	Araqua	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,19	0,46	0,05	0,46	0,11	0,05	0,45	7,10	0,45	1,00	0,03	0,04	0,42	0,03	0,36	0,12	0,30	0,05	0,29	0,19	Very High
636	SP2	APA Corumbatai-Botucatu-Tejupa	0,17	0,47	0,05	0,06	0,46	0,63	0,32	0,32	0,03	0,03	0,02	0,30	0,42	0,04	0,45	11,00	0,61	1,00	0,01	0,07	0,10	0,03	0,25	0,15	0,30	0,03	0,10	0,15	High
637	SP14	Corumbatai	0,27	0,47	0,58	0,17	0,46	0,32	0,32	0,05	0,04	0,14	0,06	0,46	0,42	0,07	0,45	8,77	0,61	1,00	0,06	0,04	0,10	0,03	0,36	0,17	0,44	0,04	0,14	0,16	Very High
638	SP44	Piracicaba	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	0,62	0,61	1,00	0,14	0,04	0,10	0,03	0,36	0,01	0,03	0,02	0,03	0,09	Medium

639	SP9	Atibaia	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	0,34	0,69	1,00	0,09	0,04	0,06	0,03	0,36	0,04	0,06	0,02	0,03	0,02	Lower
640	SP8	ARIE Matao de Cosmopolis	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	3,35	0,76	1,00	0,03	0,04	0,06	0,03	0,36	0,04	0,06	0,02	0,03	0,09	Medium
641	SP45	Pirapitingui	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	2,90	0,66	1,00	0,02	0,04	0,10	0,03	0,25	0,04	0,06	0,02	0,03	0,02	Lower
642	SP34	Jaguari	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	4,44	0,58	1,00	0,07	0,04	0,16	0,03	0,36	0,01	0,03	0,02	0,03	0,02	Lower
643	SP55	Vitoria	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,19	0,46	0,05	0,46	0,11	0,05	0,45	16,68	0,50	1,00	0,01	0,07	0,26	0,03	0,25	0,11	0,30	0,04	0,14	0,16	Very High
644	SP49	Rio Alambari	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	15,98	0,51	1,00	0,00	0,07	0,26	0,03	0,18	0,15	0,30	0,04	0,14	0,04	Lower
645	SP15	EE Barreiro Rico	0,03	0,20	0,05	0,03	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	10,11	0,50	1,00	0,01	0,07	0,26	0,03	0,18	0,10	0,17	0,03	0,10	0,07	Lowest
646	SP43	Peixe	0,12	0,04	0,05	0,02	0,07	0,05	0,32	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	4,18	0,62	1,00	0,00	0,04	0,10	0,03	0,18	0,11	0,30	0,03	0,03	0,01	Lower
647	SP51	Sao Jose dos Dourados	0,17	0,04	0,05	0,02	0,14	0,32	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,01	0,03	4,18	0,46	1,00	0,01	0,04	0,42	0,03	0,18	0,02	0,03	0,03	0,10	0,03	Lower
648	MS9	Inocencia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	12,48	0,50	2,00	0,00	0,07	0,26	0,03	0,12	0,01	0,03	0,02	0,03	0,02	Lower
649	SP41	Parisi	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	0,34	0,49	1,00	0,01	0,04	0,26	0,03	0,25	0,01	0,03	0,02	0,03	0,01	Lower
650	SP38	Mirassolandia	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	4,11	0,61	1,00	0,01	0,04	0,10	0,03	0,18	0,02	0,03	0,01	0,03	0,01	Lower
651	MG140	Verde ou Feio	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	15,92	0,65	5,00	0,00	0,07	0,10	0,35	0,12	0,02	0,03	0,02	0,03	0,09	Medium
652	MG118	Sao Mateus	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	5,09	0,61	5,00	0,01	0,04	0,10	0,35	0,25	0,01	0,03	0,02	0,03	0,05	Lowest
653	SP24	FE de Bebedouro	0,12	0,04	0,05	0,02	0,07	0,32	0,32	0,05	0,06	0,30	0,02	0,30	0,11	0,04	0,45	8,08	0,46	1,00	0,03	0,04	0,42	0,03	0,36	0,05	0,06	0,04	0,14	0,16	Very High
654	SP23	FE Cajuru	0,17	0,30	0,05	0,04	0,30	0,63	0,32	0,05	0,08	0,46	0,03	0,46	0,42	0,07	0,45	8,15	0,59	1,00	0,06	0,04	0,16	0,03	0,36	0,05	0,06	0,02	0,03	0,13	High
655	SP46	RB de Sertaozinho	0,03	0,04	0,05	0,01	0,03	0,05	0,32	0,05	0,06	0,30	0,02	0,30	0,03	0,03	0,30	5,86	0,53	1,00	0,13	0,04	0,26	0,03	0,36	0,05	0,06	0,03	0,10	0,11	Medium
656	SP19	EE de Jatai	0,03	0,04	0,05	0,01	0,03	0,32	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	11,71	0,53	1,00	0,03	0,07	0,26	0,03	0,36	0,05	0,06	0,03	0,10	0,03	Lower
657	SP42	PE de Vassununga	0,41	0,30	0,05	0,05	0,30	0,05	0,32	0,05	0,07	0,30	0,03	0,46	0,27	0,07	0,45	12,58	0,55	1,00	0,04	0,07	0,16	0,03	0,36	0,06	0,06	0,03	0,03	0,13	High
658	SP35	Jaguari-mirim	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	6,37	0,61	1,00	0,08	0,04	0,10	0,03	0,36	0,01	0,03	0,02	0,03	0,01	Lower
659	SP47	RB e EE Mogi-Guaçu	0,17	0,47	0,05	0,06	0,46	0,63	0,05	0,05	0,06	0,30	0,03	0,46	0,11	0,05	0,45	5,84	0,59	1,00	0,05	0,04	0,16	0,03	0,36	0,04	0,06	0,02	0,03	0,13	High
660	MG129	Uberaba	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,03	0,30	15,94	0,66	5,00	0,01	0,07	0,10	0,35	0,25	0,01	0,03	0,02	0,03	0,09	Medium
661	SP53	Sapucai	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,04	0,45	5,67	0,52	1,00	0,05	0,04	0,26	0,03	0,36	0,03	0,03	0,03	0,10	0,15	High
662	SP10	Batatais	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	5,05	0,49	1,00	0,04	0,04	0,42	0,03	0,36	0,05	0,06	0,04	0,14	0,08	Lowest
663	SP28	Franca	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	6,94	0,60	1,00	0,01	0,04	0,16	0,03	0,25	0,05	0,06	0,02	0,03	0,01	Lower
664	SP50	Santa Barbara	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	11,66	0,61	1,00	0,02	0,07	0,10	0,03	0,25	0,01	0,03	0,02	0,03	0,02	Lower
665	MG97	RB Sao Sebastiao do Paraiso	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,02	0,16	11,59	0,58	5,00	0,00	0,07	0,16	0,35	0,12	0,04	0,06	0,03	0,03	0,05	Lowest
666	MG126	Tomba-perna	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,11	0,02	0,16	19,69	0,52	1,00	0,01	0,07	0,26	0,03	0,18	0,07	0,17	0,03	0,10	0,07	Lowest
667	SP54	Solapao	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	5,68	0,51	1,00	0,02	0,04	0,26	0,03	0,36	0,04	0,06	0,03	0,10	0,04	Lower
668	MG75	PE das Furnas do Bom Jesus	0,12	0,30	0,05	0,04	0,30	0,05	0,32	0,05	0,23	0,46	0,06	0,46	0,03	0,06	0,45	16,16	0,60	5,00	0,03	0,07	0,16	0,35	0,36	0,05	0,06	0,03	0,10	0,15	High
669	MG114	Sacramento	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	43,20	0,62	5,00	0,00	0,14	0,10	0,35	0,12	0,07	0,17	0,03	0,10	0,07	Lowest
670	MG90	PN da Serra da Canastra	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,07	0,30	0,03	0,46	0,18	0,08	0,45	83,56	0,55	5,00	0,00	0,46	0,16	0,35	0,09	0,20	0,44	0,06	0,44	0,22	Very High
671	MG23	Cassia	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	21,58	0,65	5,00	0,00	0,07	0,10	0,35	0,12	0,05	0,06	0,02	0,03	0,09	Medium
672	MG2	Alpinopolis	0,41	0,47	0,58	0,18	0,46	0,05	0,05	0,05	0,03	0,03	0,06	0,46	0,42	0,07	0,45	27,06	0,66	5,00	0,01	0,14	0,10	0,35	0,18	0,12	0,30	0,04	0,14	0,16	Very High

673	MG82	PE Serra da Boa Esperanca	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	11,88	0,63	5,00	0,01	0,07	0,10	0,35	0,18	0,05	0,06	0,02	0,03	0,02	Lower
674	MG42	Guape	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	21,88	0,63	5,00	0,01	0,07	0,10	0,35	0,18	0,02	0,03	0,02	0,03	0,05	Lowest
675	MG36	Formiga	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,02	0,30	3,85	0,52	5,00	0,01	0,04	0,26	0,35	0,18	0,01	0,03	0,03	0,10	0,11	Medium
676	GO112	Rio da Prata	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,07	0,30	0,02	0,30	0,03	0,03	0,30	14,92	0,54	3,00	0,02	0,07	0,26	0,27	0,25	0,03	0,03	0,03	0,10	0,11	Medium
677	GO93	PN das Emas	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,09	0,46	0,03	0,46	0,27	0,07	0,45	33,47	0,61	3,00	0,01	0,14	0,10	0,27	0,25	0,09	0,17	0,03	0,10	0,15	High
678	GO136	Serranopolis	0,12	0,30	0,37	0,11	0,46	0,05	0,05	0,05	0,09	0,46	0,05	0,46	0,18	0,06	0,45	25,32	0,67	3,00	0,01	0,14	0,10	0,27	0,25	0,03	0,03	0,03	0,10	0,15	High
679	GO61	Jatai	0,27	0,47	0,05	0,06	0,46	0,32	0,05	0,05	0,03	0,03	0,02	0,46	0,42	0,05	0,45	20,19	0,74	3,00	0,01	0,07	0,06	0,27	0,25	0,02	0,03	0,02	0,03	0,13	High
680	MG48	Ituiutaba	0,27	0,30	0,58	0,16	0,46	0,32	0,32	0,05	0,03	0,03	0,05	0,46	0,11	0,04	0,45	20,27	0,71	5,00	0,00	0,07	0,06	0,35	0,18	0,05	0,06	0,02	0,03	0,13	High
681	MG124	Tijuco	0,12	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	14,87	0,67	5,00	0,03	0,07	0,10	0,35	0,36	0,02	0,03	0,03	0,10	0,11	Medium
682	MG60	Monte Alegre de Minas	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	12,40	0,83	5,00	0,04	0,07	0,06	0,35	0,36	0,01	0,03	0,03	0,03	0,02	Lower
683	MG28	Douradinho	0,17	0,30	0,05	0,04	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,03	0,30	18,82	0,89	5,00	0,02	0,07	0,06	0,35	0,25	0,07	0,17	0,03	0,10	0,11	Medium
684	GO87	PE de Parauna	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,04	0,45	16,07	0,74	3,00	0,04	0,07	0,06	0,27	0,36	0,07	0,17	0,03	0,10	0,15	High
685	GO145	Turvo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	16,07	0,60	3,00	0,02	0,07	0,16	0,27	0,36	0,02	0,03	0,03	0,10	0,04	Lower
686	GO9	APA Serra da Jiboia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	11,15	0,70	3,00	0,02	0,07	0,06	0,27	0,25	0,07	0,17	0,03	0,10	0,04	Lower
687	GO28	Campanha	0,12	0,04	0,37	0,08	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,03	0,03	0,30	3,58	0,65	3,00	0,01	0,04	0,10	0,27	0,25	0,01	0,03	0,02	0,03	0,09	Medium
688	GO8	APA Joao Leite	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,11	0,05	0,45	12,27	0,74	3,00	0,03	0,07	0,06	0,27	0,36	0,07	0,17	0,03	0,10	0,15	High
689	GO92	Piracanjuba	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	12,08	0,79	3,00	0,02	0,07	0,06	0,27	0,25	0,04	0,06	0,02	0,03	0,05	Lowest
690	GO85	PE da Serra de Caldas Novas	0,12	0,04	0,05	0,02	0,07	0,32	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,04	0,45	23,24	0,75	3,00	0,01	0,07	0,06	0,27	0,25	0,05	0,06	0,02	0,03	0,13	High
691	GO20	Bois	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	25,77	0,63	3,00	0,02	0,14	0,10	0,27	0,36	0,02	0,03	0,03	0,10	0,03	Lower
692	GO54	FN de Silvania	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,02	0,16	19,69	0,66	3,00	0,02	0,07	0,10	0,27	0,25	0,05	0,06	0,02	0,03	0,05	Lowest
693	GO39	Corumba	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	46,68	0,78	3,00	0,02	0,14	0,06	0,27	0,25	0,05	0,06	0,03	0,10	0,04	Lower
694	GO48	EE do Jardim Botanico	0,41	0,47	0,58	0,18	0,46	0,63	0,63	0,05	0,09	0,46	0,07	0,46	0,42	0,09	0,45	38,23	0,80	1,00	0,08	0,14	0,06	0,03	0,36	0,15	0,30	0,03	0,14	0,16	Very High
695	GO97	RB e PE do Descoberto	0,41	0,47	0,37	0,13	0,46	0,32	0,32	0,05	0,06	0,30	0,05	0,46	0,03	0,07	0,45	23,30	0,78	3,00	0,02	0,07	0,06	0,27	0,36	0,07	0,17	0,03	0,10	0,15	High
696	MG130	Uberabinha	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,03	0,03	0,30	16,34	0,85	5,00	0,07	0,07	0,06	0,35	0,36	0,03	0,03	0,03	0,03	0,09	Medium
697	MG80	PE Pau Furado	0,17	0,20	0,05	0,04	0,30	0,05	0,32	0,05	0,07	0,30	0,02	0,46	0,11	0,05	0,45	13,12	0,76	5,00	0,04	0,07	0,06	0,35	0,36	0,08	0,17	0,03	0,10	0,15	High
698	MG8	Araguari	0,17	0,20	0,05	0,04	0,30	0,63	0,32	0,05	0,07	0,30	0,02	0,46	0,27	0,06	0,45	48,56	0,65	5,00	0,03	0,14	0,10	0,35	0,36	0,09	0,17	0,04	0,14	0,16	Very High
699	MG111	RPPN Galheiros	0,27	0,30	0,05	0,05	0,30	0,32	0,05	0,05	0,04	0,14	0,02	0,30	0,11	0,05	0,45	20,07	0,75	5,00	0,02	0,07	0,06	0,35	0,36	0,03	0,03	0,03	0,03	0,13	High
700	MG21	Capivara	0,12	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,03	0,46	0,11	0,04	0,45	21,50	0,73	5,00	0,02	0,07	0,06	0,35	0,36	0,05	0,06	0,03	0,10	0,15	High
701	MG59	Misericordia	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,11	0,03	0,30	25,57	0,71	5,00	0,04	0,14	0,06	0,35	0,36	0,02	0,03	0,03	0,10	0,11	Medium
702	MG18	Campos Altos	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	26,96	0,66	5,00	0,02	0,14	0,10	0,35	0,36	0,01	0,03	0,03	0,10	0,04	Lower
703	GO147	Verissimo	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,02	0,16	35,78	0,73	3,00	0,02	0,14	0,06	0,27	0,36	0,05	0,06	0,03	0,10	0,07	Lowest
704	MG22	Cascalho Rico	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,07	0,30	0,02	0,46	0,11	0,05	0,45	15,19	0,73	5,00	0,07	0,07	0,06	0,35	0,36	0,01	0,03	0,03	0,03	0,13	High
705	MG61	Monte Carmelo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	10,51	0,68	5,00	0,05	0,07	0,06	0,35	0,36	0,01	0,03	0,03	0,03	0,05	Lowest
706	MG29	Dourados	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	15,73	0,69	5,00	0,03	0,07	0,06	0,35	0,36	0,01	0,03	0,03	0,03	0,05	Lowest
707	MG68	Paranaiba	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,04	0,14	0,02	0,30	0,11	0,04	0,45	21,45	0,71	5,00	0,02	0,07	0,06	0,35	0,36	0,02	0,03	0,03	0,03	0,13	High

708	GO130	Sao Marcos	0,27	0,47	0,58	0,17	0,46	0,32	0,05	0,05	0,07	0,30	0,06	0,46	0,42	0,08	0,45	34,54	0,73	5,00	0,04	0,14	0,06	0,35	0,36	0,05	0,06	0,03	0,10	0,15	High
709	MS3	Apa	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	14,21	0,50	3,00	0,00	0,07	0,26	0,27	0,12	0,01	0,03	0,03	0,10	0,04	Lower
710	MS22	Rio Perdido	0,03	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,04	0,14	0,02	0,30	0,03	0,03	0,30	41,60	0,55	3,00	0,01	0,14	0,16	0,27	0,18	0,09	0,17	0,03	0,14	0,12	High
711	MS35	Terra Indigena Nande Ru Marangatu	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	10,18	0,72	3,00	0,01	0,07	0,06	0,27	0,18	0,07	0,17	0,02	0,03	0,05	Lowest
712	MS18	Progresso	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	12,57	0,50	3,00	0,00	0,07	0,26	0,27	0,18	0,01	0,03	0,03	0,10	0,03	Lower
713	MS31	Taruma	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	17,06	0,50	3,00	0,00	0,07	0,26	0,27	0,12	0,05	0,06	0,03	0,10	0,04	Lower
714	MS19	Rio Branco	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,18	0,03	0,30	32,64	0,50	3,00	0,01	0,14	0,26	0,27	0,18	0,06	0,06	0,03	0,14	0,12	High
715	MS34	Terra Indigena Kadiweu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	54,45	0,50	3,00	0,00	0,29	0,26	0,27	0,18	0,17	0,44	0,06	0,44	0,11	High
716	MS26	RPPN Tupaciara	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	6,15	0,59	3,00	0,01	0,04	0,16	0,27	0,18	0,02	0,03	0,02	0,03	0,05	Lowest
717	MS17	PN da Serra da Bodoquena	0,27	0,30	0,05	0,05	0,30	0,05	0,32	0,05	0,04	0,14	0,02	0,30	0,42	0,06	0,45	29,92	0,58	5,00	0,01	0,14	0,16	0,35	0,25	0,09	0,17	0,04	0,14	0,16	Very High
718	MS24	RPPN Estancia Caiman	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	16,58	0,50	3,00	0,01	0,07	0,26	0,27	0,25	0,12	0,30	0,04	0,14	0,08	Lowest
719	MS6	Aquidauana	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,11	0,03	0,30	9,37	0,52	3,00	0,02	0,04	0,26	0,27	0,25	0,07	0,17	0,03	0,14	0,12	High
720	MS30	Taquarucu	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	27,65	0,64	3,00	0,01	0,14	0,10	0,27	0,25	0,03	0,03	0,03	0,10	0,04	Lower
721	MS4	APA Estadual Estrada-Parque Piraputanga	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,11	0,03	0,30	26,08	0,52	3,00	0,01	0,14	0,26	0,27	0,25	0,07	0,17	0,04	0,14	0,12	High
722	MS32	Terra Indigena Buriti	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,18	0,02	0,16	23,91	0,74	3,00	0,01	0,07	0,06	0,27	0,25	0,07	0,17	0,03	0,10	0,07	Lowest
723	MS25	RPPN Fazenda Lageado	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,16	26,47	0,67	3,00	0,01	0,14	0,10	0,27	0,18	0,06	0,06	0,03	0,03	0,05	Lowest
724	MS36	TQ Furnas da Boa Sorte	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	28,55	0,53	3,00	0,01	0,14	0,26	0,27	0,18	0,08	0,17	0,04	0,14	0,08	Lowest
725	MS21	Rio Negro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	31,07	0,59	3,00	0,01	0,14	0,16	0,27	0,18	0,02	0,03	0,03	0,10	0,07	Lowest
726	MS2	Anhuma	0,03	0,30	0,37	0,10	0,46	0,05	0,05	0,05	0,03	0,03	0,04	0,46	0,18	0,04	0,30	10,30	0,60	2,00	0,02	0,07	0,16	0,03	0,25	0,01	0,03	0,02	0,03	0,09	Medium
727	MS29	Taquari	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,14	0,01	0,15	0,11	0,04	0,45	20,63	0,60	2,00	0,03	0,07	0,16	0,03	0,36	0,05	0,06	0,03	0,03	0,13	High
728	MS14	PE das Nascentes do Rio Taquari	0,12	0,20	0,37	0,10	0,46	0,05	0,05	0,05	0,07	0,30	0,04	0,46	0,27	0,07	0,45	36,24	0,56	2,00	0,01	0,14	0,16	0,03	0,18	0,07	0,17	0,03	0,10	0,15	High
729	MS23	Rio Verde de Mato Grosso	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	27,09	0,60	2,00	0,01	0,14	0,16	0,03	0,25	0,03	0,03	0,03	0,03	0,02	Lower
730	MS5	APA Estadual Rio Cenico Rotas Moncoeiras-Rio Coxim	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	30,16	0,60	2,00	0,01	0,14	0,10	0,03	0,18	0,07	0,17	0,03	0,03	0,02	Lower
731	MT50	Itiquira	0,12	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,30	0,11	0,03	0,30	19,27	0,58	2,00	0,01	0,07	0,16	0,03	0,25	0,02	0,03	0,02	0,03	0,09	Medium
732	MS16	Piquiri	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	25,59	0,60	2,00	0,02	0,14	0,16	0,03	0,25	0,03	0,03	0,03	0,03	0,02	Lower
733	MT51	Jaciara	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,07	0,30	0,02	0,46	0,11	0,05	0,45	32,80	0,71	2,00	0,01	0,14	0,06	0,03	0,25	0,03	0,03	0,02	0,03	0,13	High
734	MT72	PE Dom Osorio Stoffel	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,04	0,07	0,02	0,30	0,03	0,02	0,30	17,13	0,80	2,00	0,01	0,07	0,06	0,03	0,25	0,04	0,06	0,02	0,03	0,09	Medium
735	MT111	Terra Indigena Tadarimana	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	33,55	0,71	2,00	0,01	0,14	0,06	0,03	0,25	0,05	0,06	0,02	0,03	0,01	Lower
736	MT105	Terra Indigena Jarudore	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	46,15	0,62	2,00	0,02	0,14	0,10	0,03	0,25	0,06	0,06	0,02	0,03	0,01	Lower
737	MT93	Santo Antonio do Leverger	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,01	0,06	55,58	0,60	4,00	0,00	0,29	0,16	0,31	0,12	0,05	0,06	0,04	0,14	0,05	Lowest
738	MT16	Arica-acu	0,17	0,30	0,05	0,04	0,30	0,05	0,05	0,05	0,06	0,30	0,03	0,46	0,11	0,06	0,45	42,91	0,60	4,00	0,01	0,14	0,10	0,31	0,18	0,15	0,30	0,04	0,14	0,16	Very High

739	MT78	PN da Chapada dos Guimaraes	0,17	0,47	0,05	0,06	0,46	0,05	0,05	0,05	0,06	0,30	0,03	0,46	0,42	0,08	0,45	45,32	0,58	4,00	0,02	0,14	0,16	0,31	0,36	0,07	0,17	0,04	0,14	0,16	Very High
740	MT37	Cuiaba	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,03	0,30	56,08	0,48	4,00	0,01	0,29	0,42	0,31	0,18	0,09	0,17	0,06	0,29	0,15	High
741	MT73	PE Gruta da Lagoa Azul	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	58,42	0,60	3,00	0,01	0,29	0,16	0,27	0,18	0,10	0,17	0,04	0,14	0,05	Lowest
742	MT88	Rosario Oeste	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	65,65	0,47	4,00	0,00	0,29	0,42	0,31	0,18	0,10	0,17	0,06	0,29	0,11	Medium
743	MT59	Marzagao	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,02	0,30	53,82	0,41	4,00	0,00	0,29	0,42	0,31	0,12	0,17	0,44	0,07	0,44	0,18	Very High
744	MT4	Agua Fina	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	84,09	0,40	4,00	0,00	0,46	0,42	0,31	0,12	0,22	0,44	0,08	0,44	0,11	High
745	MT70	PE Aguas de Cuiaba	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	88,12	0,49	4,00	0,00	0,46	0,42	0,31	0,18	0,22	0,44	0,08	0,44	0,11	High
746	MT38	Cuiaba do Bonito	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,03	0,01	0,06	84,80	0,40	4,00	0,00	0,46	0,42	0,31	0,12	0,22	0,44	0,08	0,44	0,11	High
747	MT56	Manso	0,17	0,04	0,05	0,02	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,11	0,01	0,16	77,94	0,51	4,00	0,00	0,46	0,26	0,31	0,12	0,10	0,17	0,06	0,44	0,14	High
748	MT63	Nova Brasilandia	0,12	0,20	0,05	0,03	0,30	0,05	0,05	0,05	0,03	0,03	0,02	0,15	0,03	0,02	0,16	58,01	0,49	3,00	0,00	0,29	0,42	0,27	0,12	0,09	0,17	0,05	0,29	0,11	Medium
749	MT11	APA Estadual da Chapada dos Guimaraes	0,27	0,47	0,05	0,06	0,46	0,05	0,32	0,05	0,07	0,46	0,03	0,46	0,18	0,07	0,45	47,90	0,70	4,00	0,00	0,14	0,06	0,31	0,12	0,15	0,30	0,03	0,14	0,16	Very High
750	MT27	Casca	0,03	0,20	0,05	0,03	0,14	0,05	0,05	0,05	0,03	0,03	0,01	0,15	0,11	0,01	0,16	34,24	0,67	4,00	0,01	0,14	0,10	0,31	0,25	0,12	0,30	0,04	0,14	0,08	Lowest
751	MT52	Jangada	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	58,33	0,67	4,00	0,01	0,29	0,10	0,31	0,18	0,05	0,06	0,04	0,14	0,05	Lowest
752	MT29	Chapada dos Guimaraes	0,12	0,04	0,05	0,02	0,07	0,05	0,05	0,05	0,03	0,03	0,01	0,07	0,03	0,01	0,03	52,53	0,66	4,00	0,01	0,29	0,10	0,31	0,25	0,05	0,06	0,04	0,14	0,04	Lower
753	MT114	TQ Mata Cavalo	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,03	11,90	0,52	4,00	0,00	0,07	0,26	0,31	0,12	0,12	0,30	0,04	0,14	0,04	Lower
754	MT61	Mata Grande	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,03	9,88	0,60	4,00	0,00	0,04	0,16	0,31	0,18	0,07	0,17	0,03	0,10	0,03	Lower
755	MT90	Sangradouro	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,07	0,01	0,07	0,03	0,01	0,16	47,40	0,55	4,00	0,00	0,14	0,16	0,31	0,12	0,05	0,06	0,03	0,10	0,07	Lowest
756	MT104	Terra Indigena Figueiras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	35,52	0,54	4,00	0,01	0,14	0,16	0,31	0,18	0,07	0,17	0,03	0,14	0,05	Lowest
757	MT21	Cabacal	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,11	0,01	0,16	56,30	0,42	4,00	0,00	0,29	0,42	0,31	0,12	0,05	0,06	0,05	0,29	0,11	Medium
758	MT99	Tangara da Serra	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	0,00	0,60	4,00	0,00	0,04	0,16	0,31	0,12	0,01	0,03	0,02	0,03	0,02	Lower
759	MT41	EE Serra das Araras	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,04	0,14	0,01	0,15	0,03	0,03	0,30	20,24	0,60	4,00	0,00	0,07	0,16	0,31	0,18	0,07	0,17	0,03	0,10	0,11	Medium
760	MT112	Terra Indigena Umutina	0,03	0,04	0,05	0,01	0,03	0,05	0,05	0,05	0,03	0,03	0,01	0,03	0,03	0,01	0,06	85,33	0,60	4,00	0,00	0,46	0,16	0,31	0,09	0,17	0,44	0,06	0,44	0,11	High
761	MT14	APA Nascentes do Rio Paraguai	0,03	0,30	0,05	0,04	0,30	0,32	0,05	0,05	0,03	0,03	0,02	0,30	0,03	0,02	0,30	26,97	0,52	4,00	0,01	0,14	0,26	0,31	0,18	0,07	0,17	0,04	0,14	0,12	High

APPENDIX 4. KBA PRIORITIZATION AND METHODOLOGY

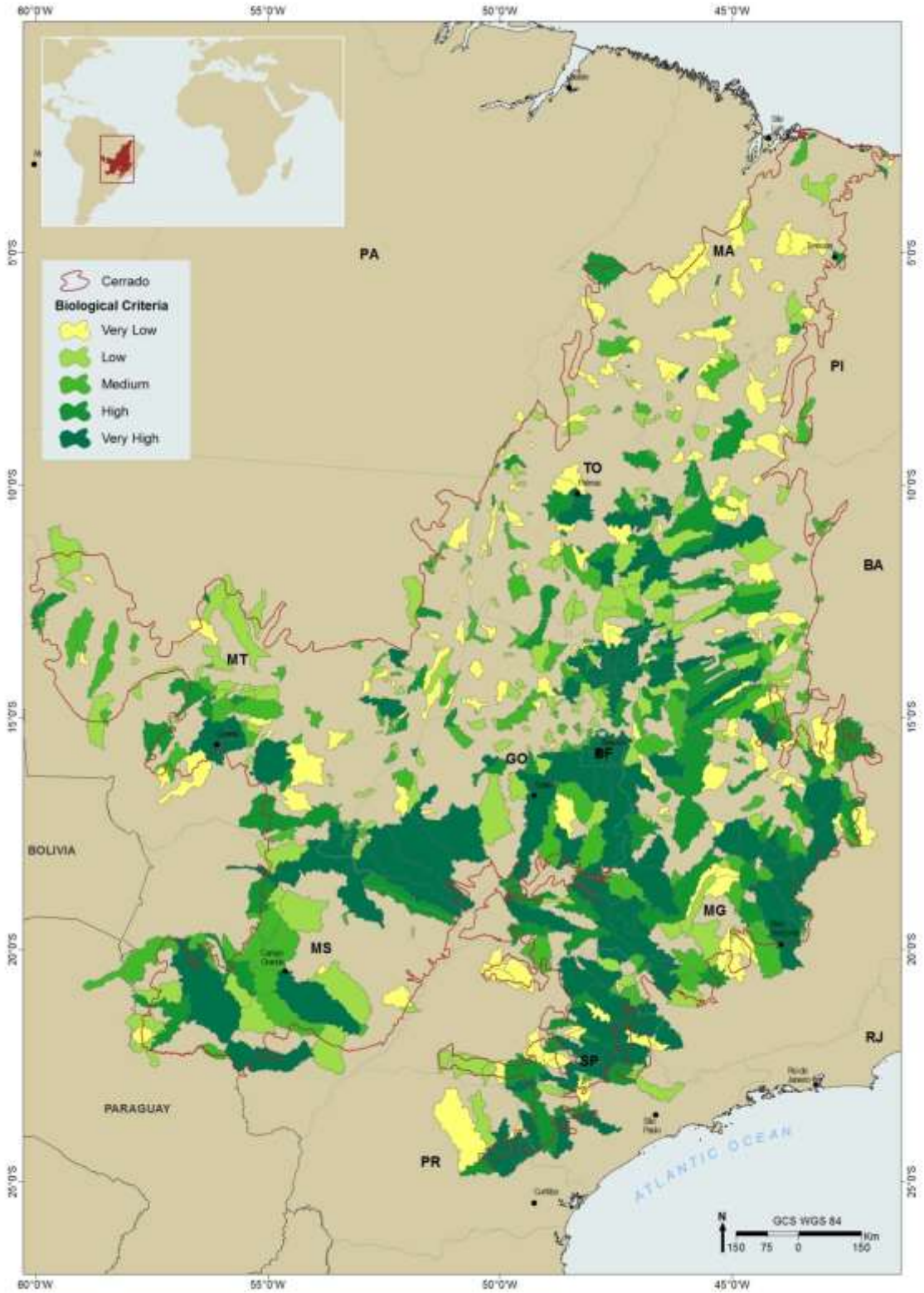
Criteria description

1- Biological Priority: the relative importance of biodiversity in each KBA was determined by two sub criteria according to Langhammer (2007): *irreplaceability*, meaning the presence of restricted range species (plants and fishes- see chapter 5, for species outcomes details), and also the site irreplaceability; and *vulnerability*, meaning the presence of threatened species, weighted by the status on the Brazilian National RedList and IUCN Redlist, The final result of all the sub criteria combined is showed in Figure 1.

i. Irrepleaceability: restricted range species (geographic area < 10Km2)
   - Number of Restricted Range Fishes (Rare Plants species, Giulietti *et al.* 2010; Martinelli *et al*. 2014) in each KBA
   - Number of Restricted Range Plants (Rare Fish species, Nogueira *et al.* 2010) in each KBA;
   - Site Irreplaceability: number of species that occur in only one KBA, per each KBA.

ii. Vulnerability: species from de International and National RedLists (IUCN and MMA 2014).
   - Number of Threatened Fauna species (in each KBA) (National RedList MMA,2014 and International RedList IUCN - different weights according to the threat level: vulnerable, endangered, critically endangered)
   - Number of Threatened Flora species (in each KBA) (National RedList MMA/ CNCFlora 2014 - different weights according to the threat level: vulnerable, endangered, critically endangered).

Figure 1: Final Result of Biological Criteria Prioritization



2- Level of Threat: it was used IPA- *Indice de Pressão Antrópica* or Antropic Pressure Index. IPA is a synthetic index of economic and demographic pressures under environment. It is a combination between agriculture and pasture pressure, population growth, stock and flow, at municipal level, and then analyzed by each KBA.

Due to lack of recent data on antropic pressure on the Biome, it was used, as a first approach in the project, the projected deforesting data for the year 2050 (area of each KBA that would be deforested in 2050). This is a model produced by Federal University of Goias, that synthesizes the pressure for land use (agriculture and pasture) and infrastructure and project the deforestation according to the past pressure data. But the participants from the last workshop criticize the model and suggested another database for it.

So, we worked in an index created by Donald Sawyer: IPA- *Indice de Pressão Antrópica* or Antropic Pressure Index), which encompasses the biggest anthropic pressures in the hotspot: cattle and crops. The index is composed by:

I) Demographic dimension: PAU + PAR = PAD (Pressure index Anthropic Population)

a) Urban areas:

TAU (absolute size of the urban population) + CAU (absolute growth of urban population)

↓

PAU (Urban Anthropic Pressure)

b) Rural Areas:

DPR (density of the rural population) + DCR (Growth density of the rural population)

↓

PAR (Rural Anthropic Pressure)

II) Economic Dimension: PAL + PAB = IPAA (Economic Pressure index)

a) Crops:

DLA (crops area: corn, rice, beans, soy bean, weat) + DCL (Growth Density Absolute Crops)

↓

PAL (Anthropic Pressure Crops)

b) Livestock:

BOD (Cattle area) + DCB (Bovine Growth Density)

↓

PAB (Cattle Anthropic Pressure)

IPA = Arithmetic Average of the PAU / PAR / PAL / PAB values

IPA is expressed in a scale that ranges from 0.2 to 1.0, resulting in the following categories: Low, Medium, High and Very High (Figure 2a). After the data was produced at a municipality level, it was carried out an analysis per each KBA (Figure 2b).

Figure 2a: Threat Level Per Municipality (IPA index)

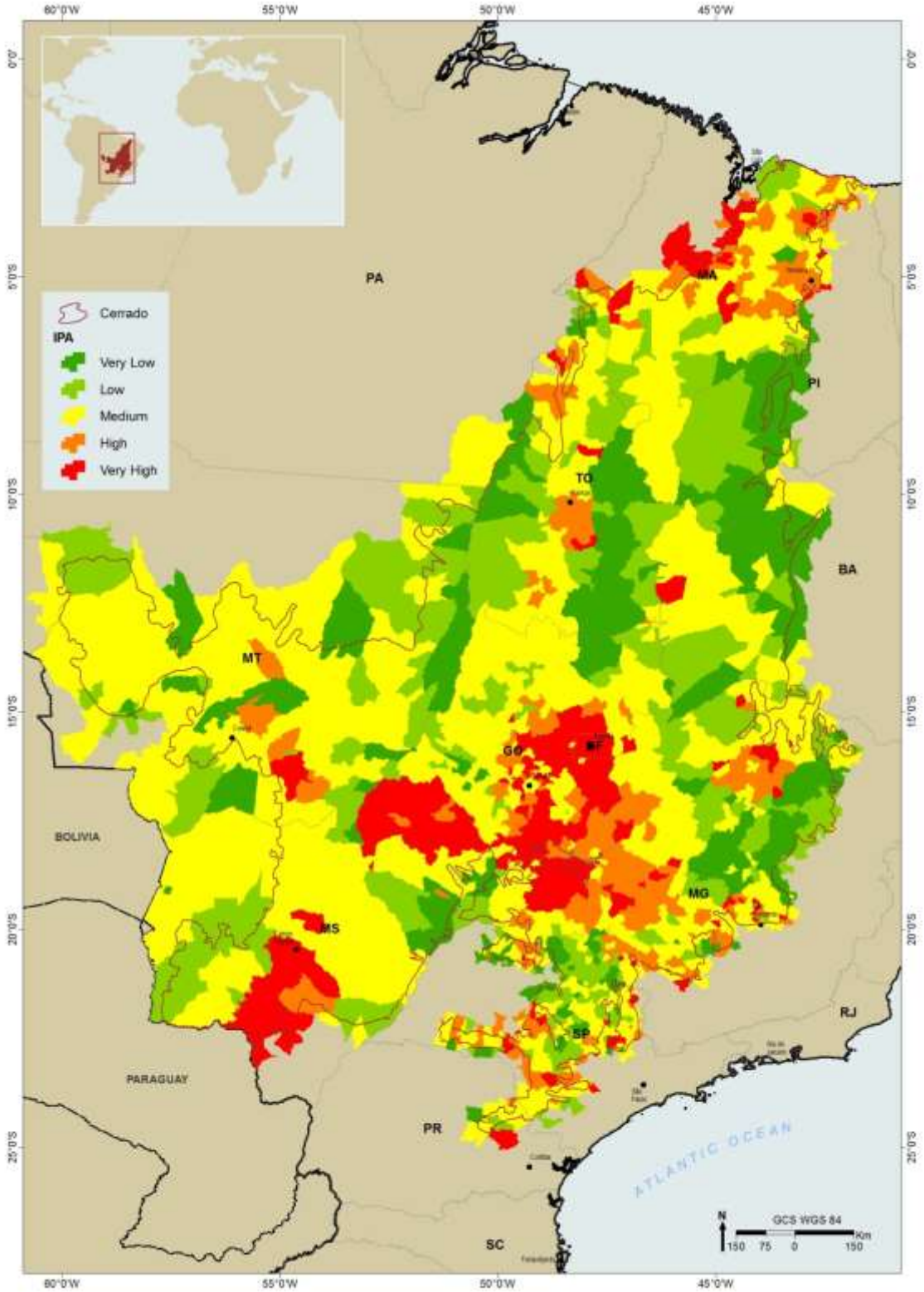
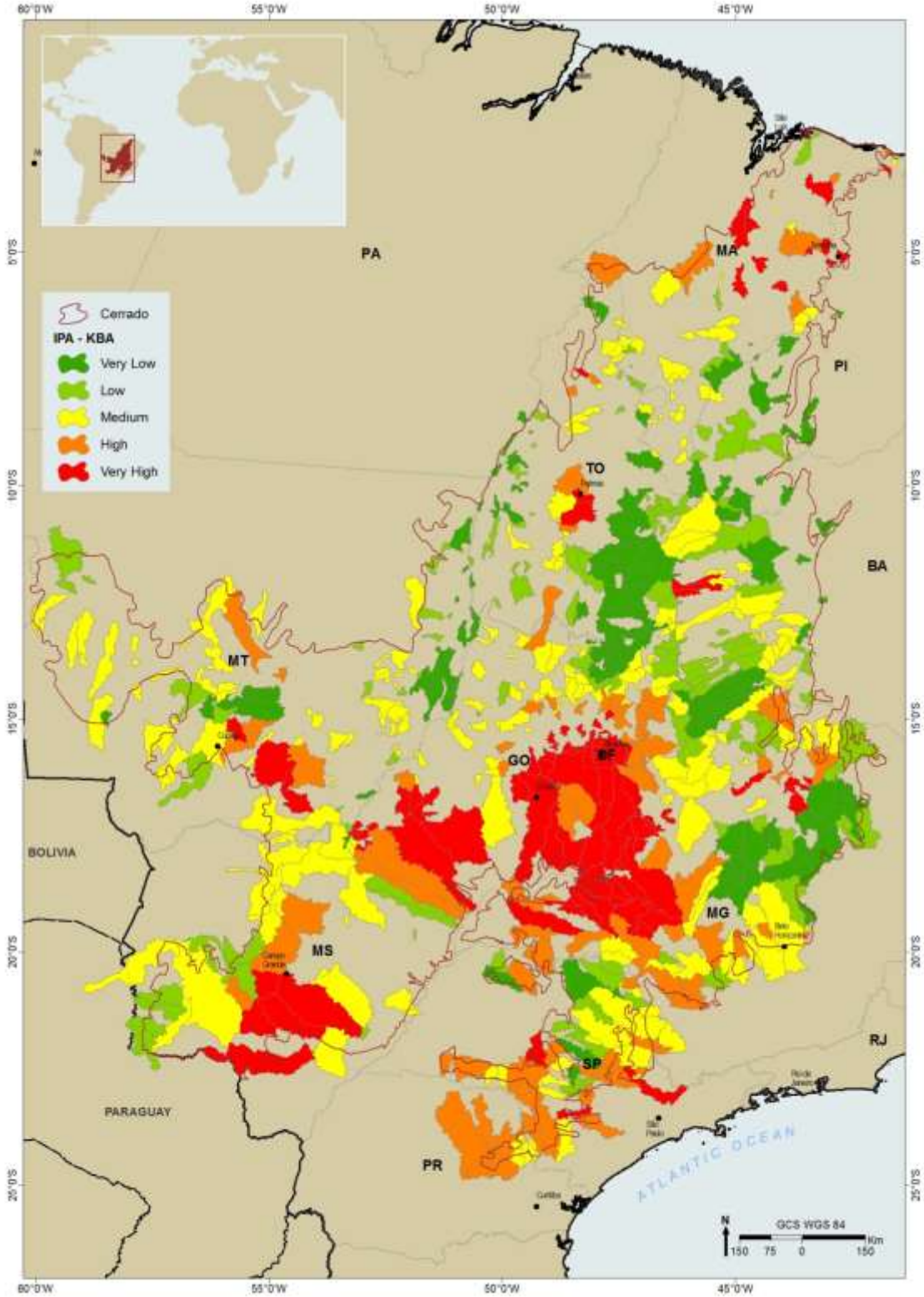


Figure 2b: Threat Level Per Each KBA.



3- Alignment with National Priorities: meaning the potential of that KBA to offer an important opportunity to engage with key public sector stakeholders to sustain, leverage, and/or amplify a CEPF best practice and/or conservation achievement. It was used a combination between official database on protected areas (conservation units, indigenous lands and quilombola lands- afrodescendents from slaves lands) and official priority areas for conservation (both are official through federal government).

It was used different data sources for the Protected Areas database (Figure 3a) and then carried out an analysis per each KBA (Figure 3b), where the superposition were removed and the area of protected areas were then calculated.

- Conservation Units: Observatório de Areas Protegidas- WWF database;
- Indigenous Lands: Fundação Nacional do Indio –FUNAI database;
- Quilombolas Lands: Palmares Foundation database.

Figure 3a: Protected Areas In The Hotspot

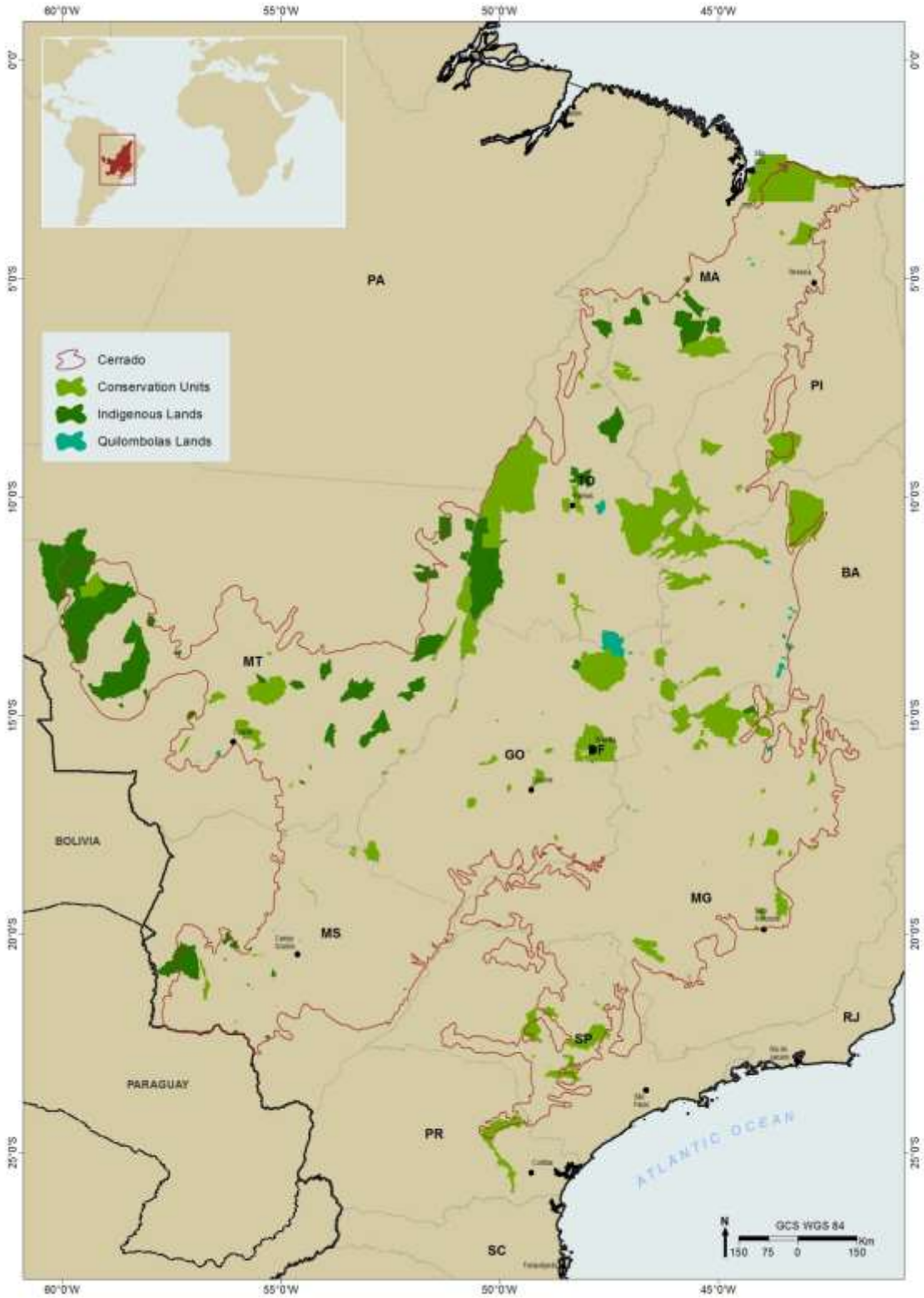
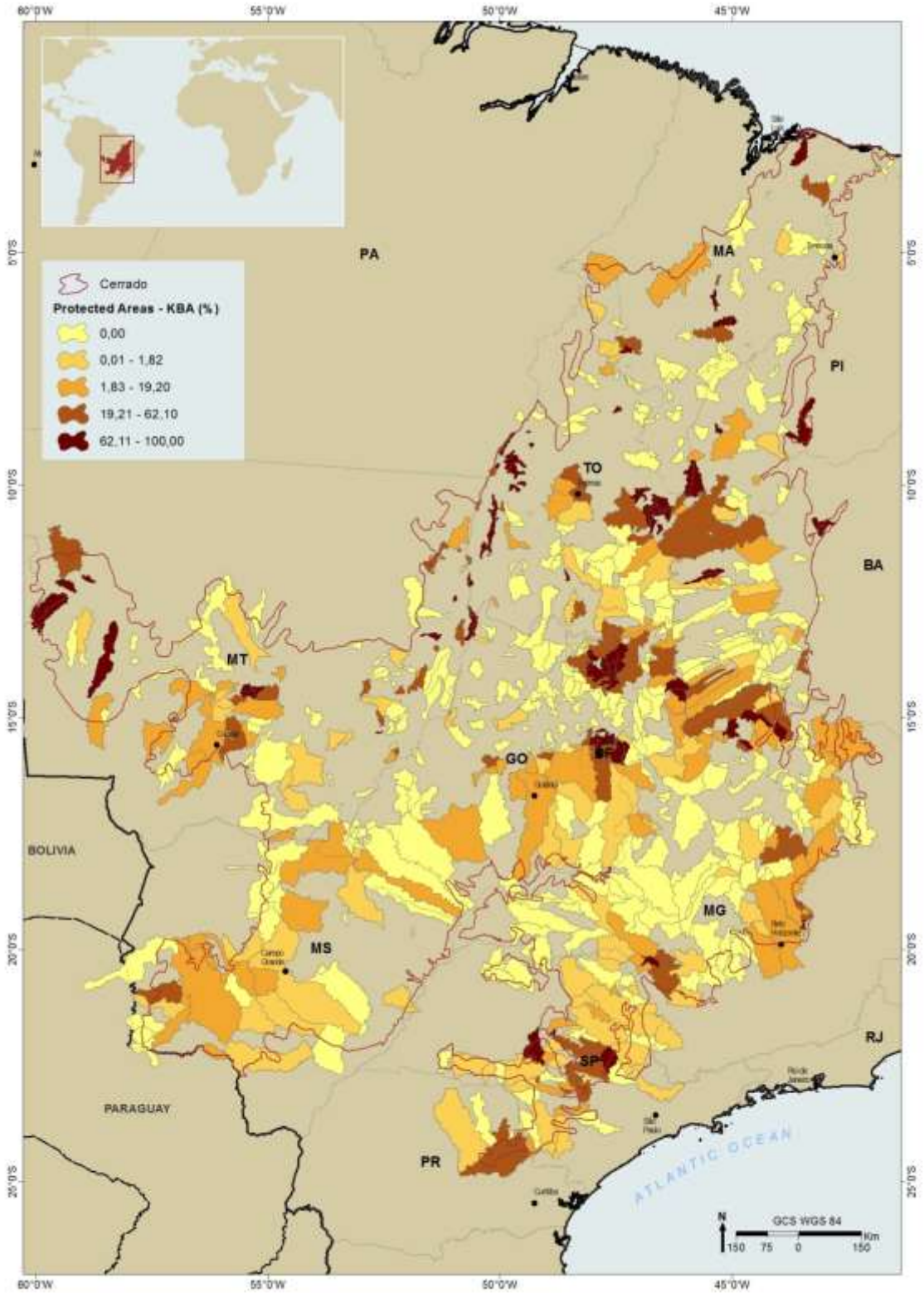


Figure 3b: Percentage Of Protected Areas Per KBA



The setting of priority areas for conservation has been an official and strategic exercise since 1998, when the federal government assumed this responsibility. The first exercise, developed in 1998, was based on the model of biodiversity workshops to identify priority areas for conservation actions, especially considering the occurrence and distribution of endemic and endangered species in the Cerrado. Biodiversity workshops were part of the Project for Conservation and Sustainable Use of Brazilian Biological Diversity under the National Biodiversity Program. A number of studies have been conducted in all Brazilian biomes, from the mid-90s to the mid-2000s, for the identification and diagnosis of priority areas and actions for the conservation, in compliance with the country's obligations to the Convention on Biological Diversity biological. The best information and summaries were produced for the Cerrado, with the identification of 87 priority areas for biodiversity conservation, also including areas in the Pantanal (MMA 1999; 2007).

Recently, MMA started the review of priority areas in all Brazilian biomes, one by one. The Cerrado has had its review conducted in conjunction with the Pantanal, under the leadership of WWF, with report issued in 2012. The conservation targets were defined in accordance with scientific researchers, biodiversity specialists and the government for the main taxonomic groups: plants, fishes, reptiles, mammals, birds and invertebrates. GIS specialists modeled the species occurrence for all these groups, and also combined them with other conservation targets as ecosystems, environmental services, and special environments to stablish conservation targets for each one of them. Then it was set a conservation cost based on infrastructure, land cost, deforesting tendency and run out the Gap analysis in the Marxan software, and scenario calculation in C-Plan software. The final result was discussed and validated with scientific researchers, biodiversity specialists and the government.

It was recommended the creation of protected areas in 42 polygons in three different classes of priorities. In addition, the exercise also provides various recommendations of conservation actions (CAR and Good Practice 1- 2- Recovery, 3- Compensation Legal Reserve, 4- Promotion of sustainable use, 5- Corridor Creation or Mosaic) in 48 polygons also in three different priority classes (Figure 4a). The analysis per each KBA was done using by intersecting all these types of recommendations and priority classes with the KBA area (Figure 4b).

Figure 4a: Priority Areas In The Hotspot

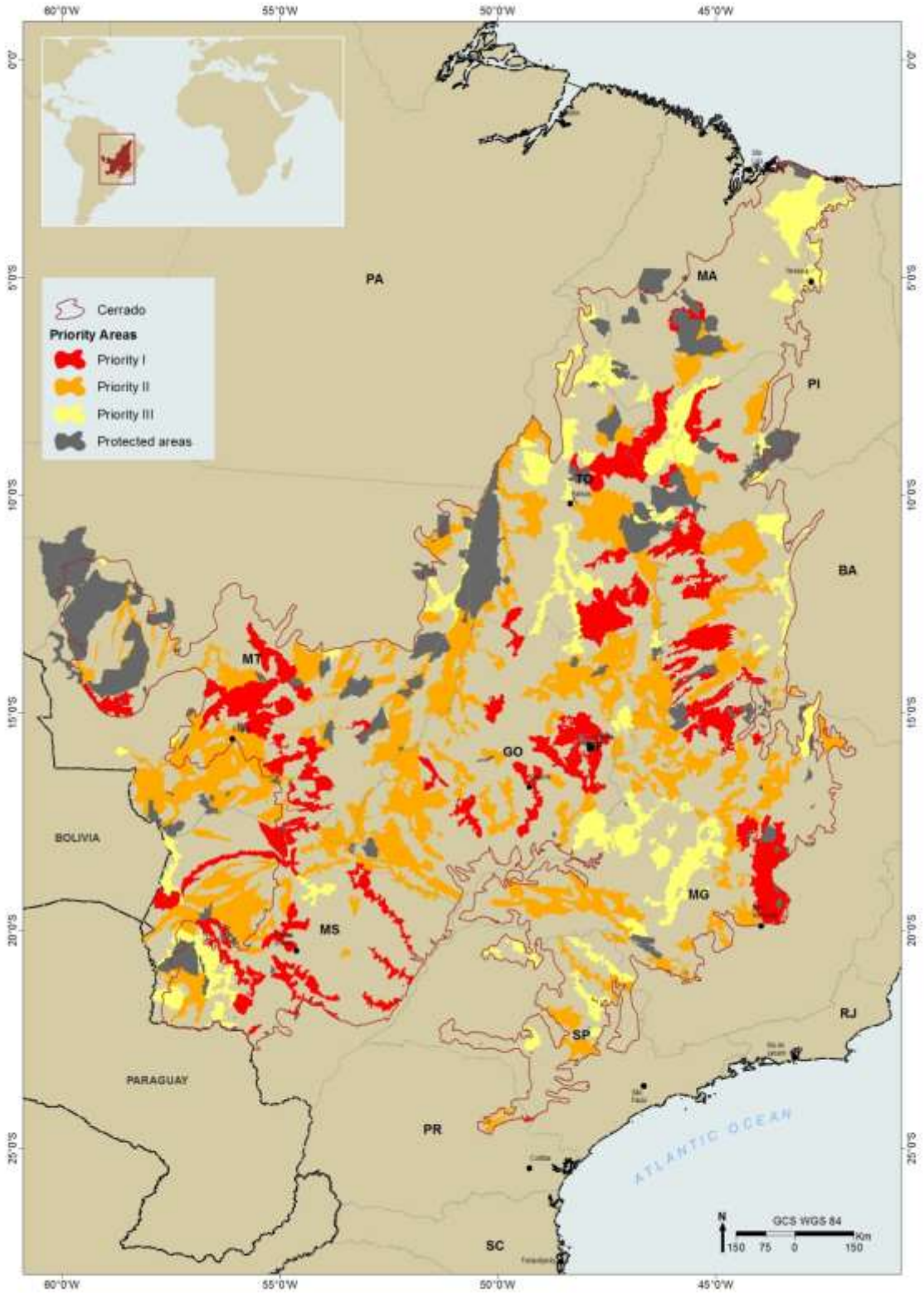
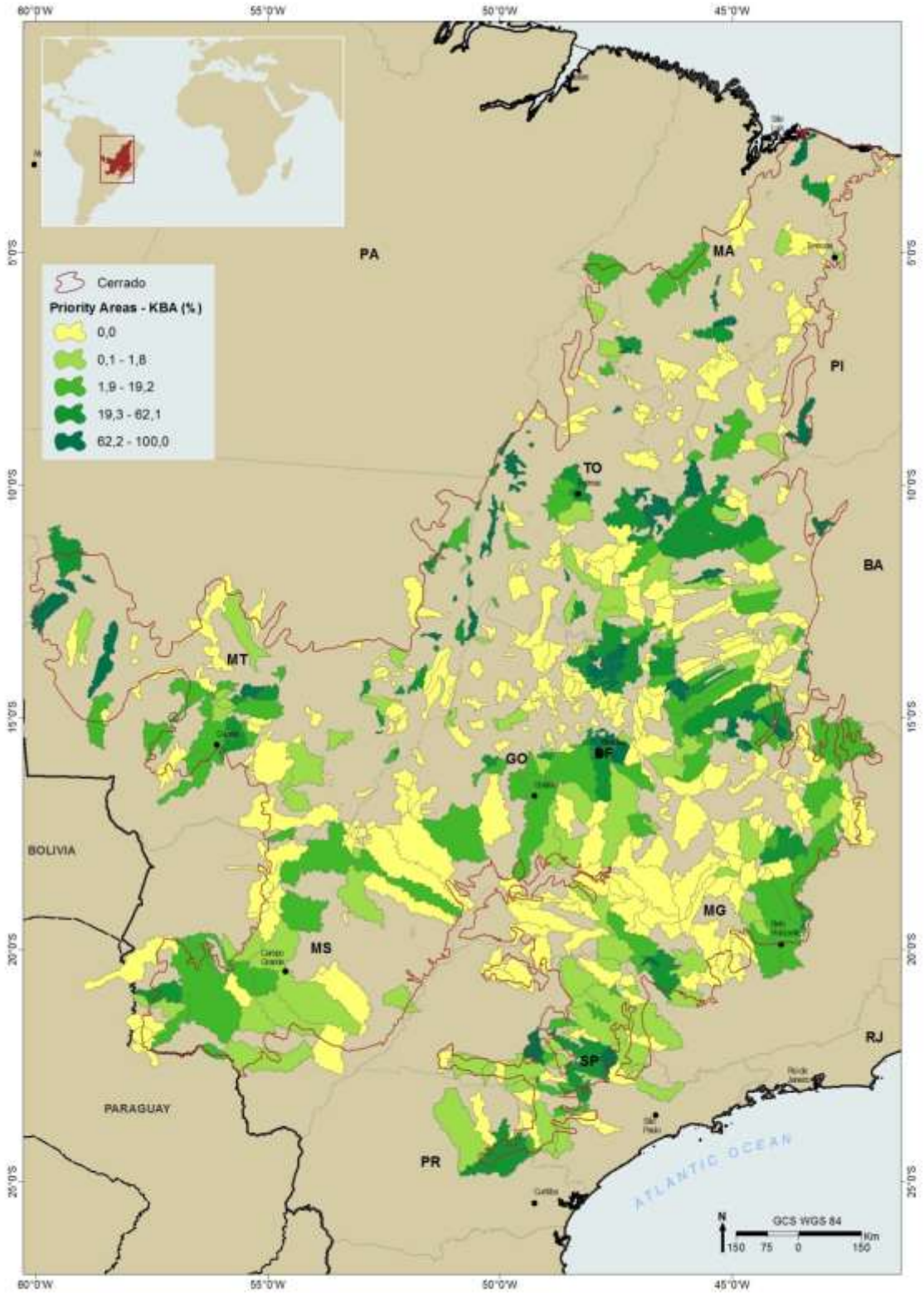


Figure 4b: Percentage Of Priority Areas Per KBA



4- Civil Society Capacity: for the diagnosis of civil society capacity in the Cerrado biome, it was conducted a broad survey of organizations with regional or national presence in each Ecosocial Territory Cerrado (*TEC- Territórios Ecossociais*). Organizations were initially identified from the database of the Small Ecosocial Grants Program (*PPEcos- Programa de Pequenos Projetos Ecossociais*), managed by ISPN since 95´s, which has a database with more than 200 community-based organizations, NGOs and social movements. From this list, it was selected the organizations that have: regional or national presence (it was excluded associations representing only one community or settlement); wroking on theme related to the objectives of CEPF and current active. This list of organizations was presented in the three consultation workshops, which was complemented by the participants.

Then the diagnosis was complemented from a survey of the organizations presented in the National Register of Environmental Entities (*CNEA- Cadastro Nacional de Entidades Ambientalistas*), verifying those that meeting the criteria for regional or national presence; working on theme related to the objectives of CEPF and current active. To check this information, all organizations were surveyed on the Internet regarding the presence of sites, social networking profile and recent related news.

For each organization identified, it was described its main actions and place of work. Institution categories were created according to its type ("tipo_instit") and actions ("tipo_ação"), to facilitate further analysis (see annex 5 for the entire list per each TEC and with each category mentioned above).

From the number of environmental organizations and initiatives present, each TEC was classified according to five categories (Figure 5a):
1 - Civil society is not organized - few or no civil society organization present.
2 - Presence of a few civil society organizations and low project management capacity.
3 - Presence of trained civil society organizations, but with little capacity for regional coordination and resource mobilization.
4- Presence of civil society organizations trained and coordinated regionally, but with little resource mobilization capacity.
5- Presence of large number of very qualified civil society organizations already influencing public policies and mobilizing considerable resources.

Subsequently, the KBAs of each TEC occurring in municipalities with the highest number of initiatives and civil society organizations identified were re-categorized in order to improve the map of organized civil society (Figure 5b). For KBA prioritization, the categories 1 and 5 were considered as low priority, assuming that they were not part of the CEPF niche investment.

Figure 5a: Civil Society Capacity In The Hotspot

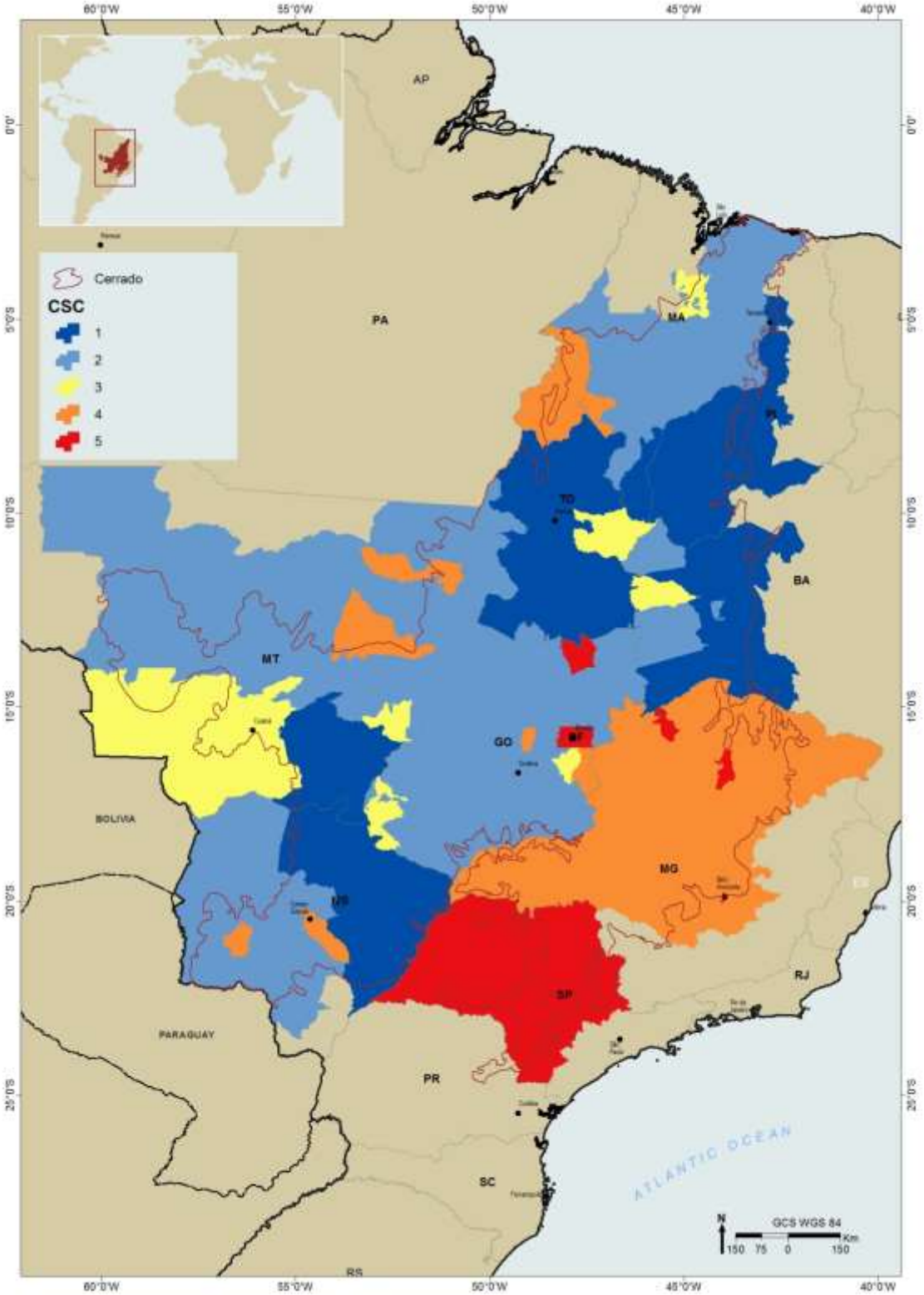
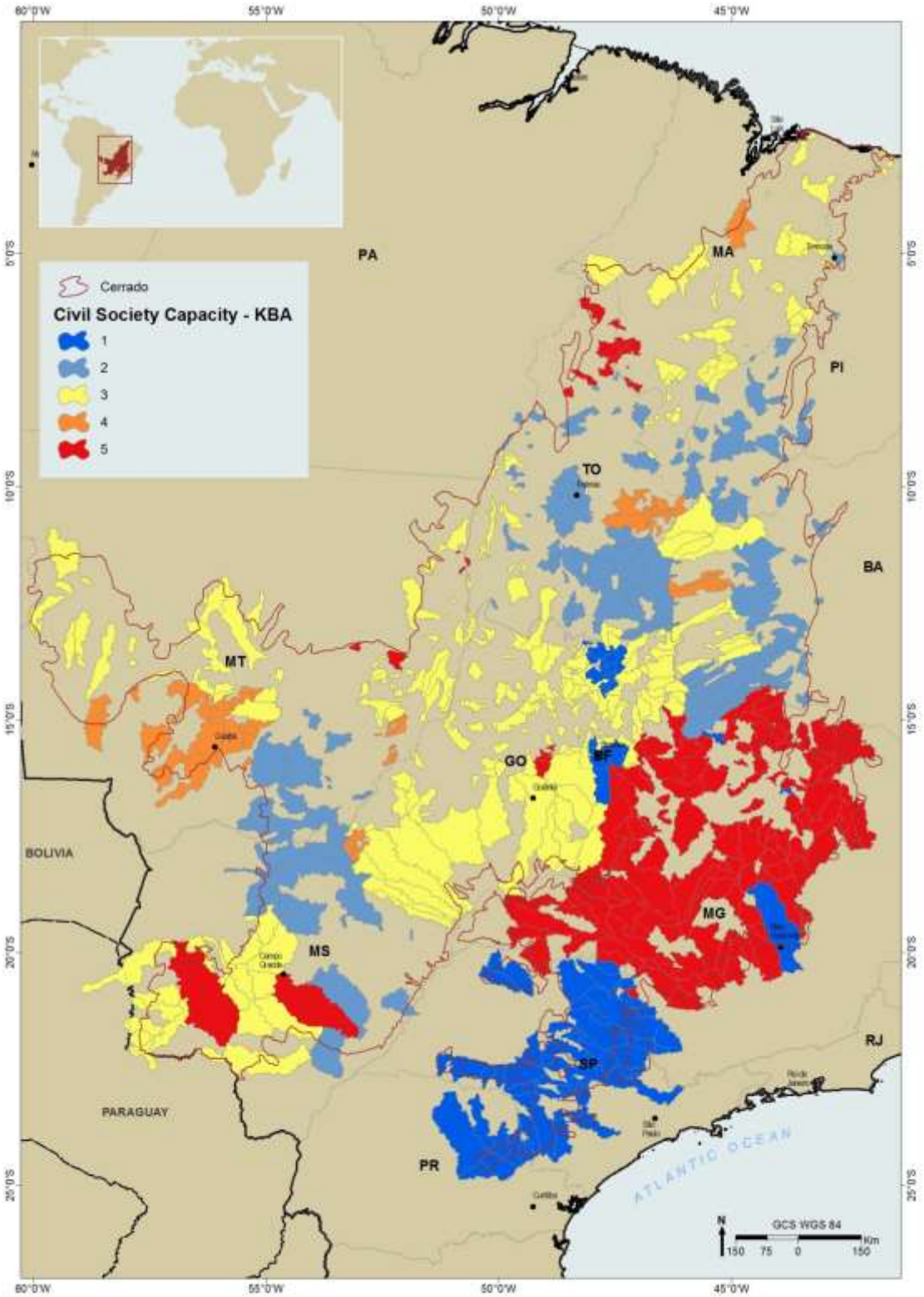


Figure 5b: Civil Society Capacity Per KBA (with the modification for classes 1 and 5)



5- Original vegetation cover: By recommendation from the workshop, the percentage of KBA cover by original vegetation cover (remnants) should be included as additional criteria of KBA prioritization, to emphasize the need for conservation on the last big vegetation covers on the Cerrado and ensure conservation actions in the most intact and pristine areas.

The database recommended was the last updated and available one (from Federal Government- Probio 2009, see Figure 6a). Unfortunately there is no updated database for it. There is some specific places that have updated this information through image satellite analysis (e.g. Mato Grosso do Sul state and Legal Amazonia region), but mixed these data were mixed with the 2009, it will cause a problem in the analysis standardization. After GIS experts worked in the original image to correct topology problems, it was calculated the percentage of remnants in each KBA.

The remnants were not first used to delineate KBA for two reasons:

1- The database is not recent, and we decided that this could cause comission and omisson errors (according to the biodiversity points of occurrence).

2- Following this, and adding the information that the database of species occurrence are up to date (points of occurrence with reference with more than 10 years were not considered) we decided that remnants could be used to help in determining the conservation strategy for the KBA (increase restoration or protection, depending on the % of remnants inside the KBA).

Figure 6a: Original Vegetation Cover In The Hotspot (2009)

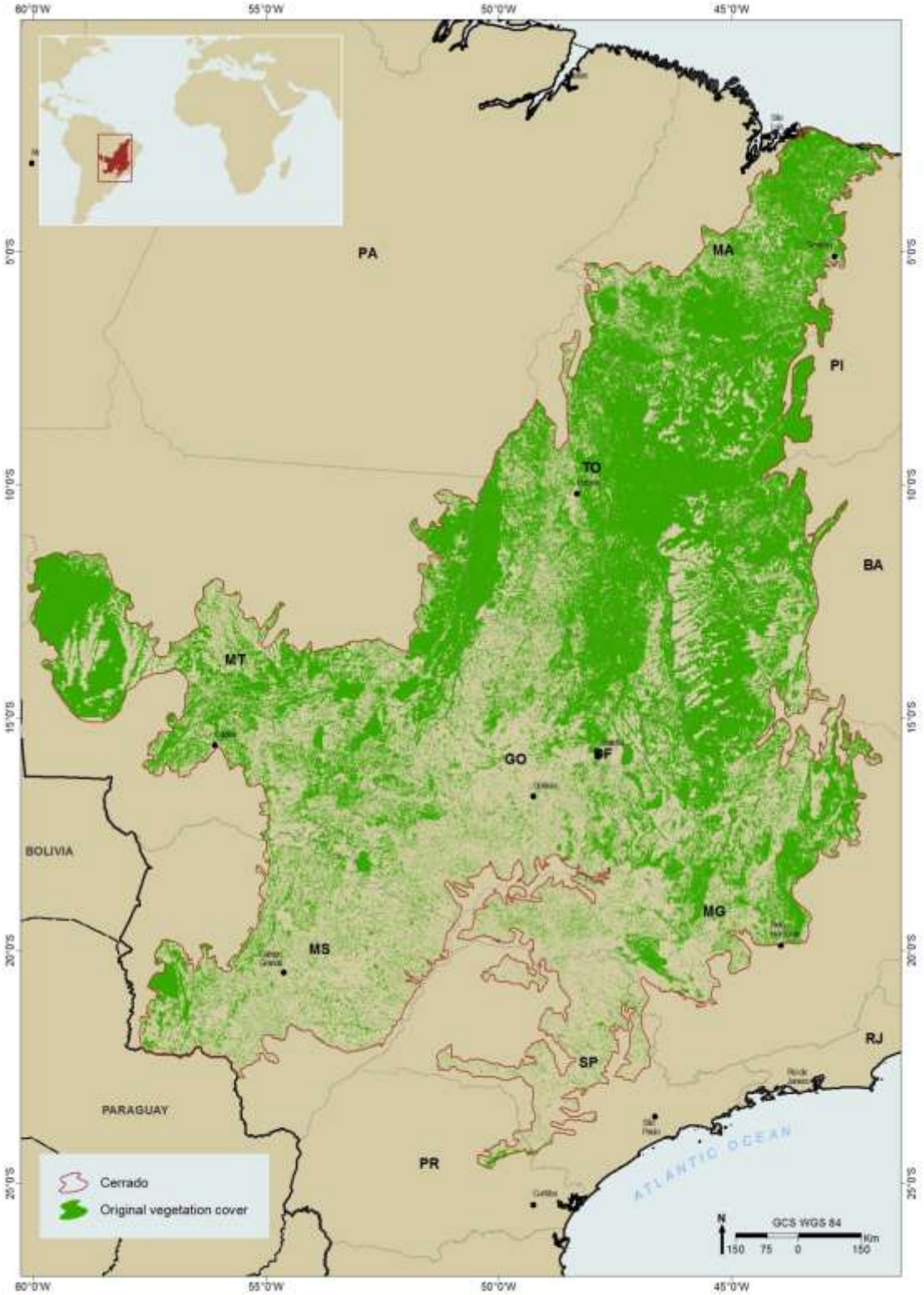
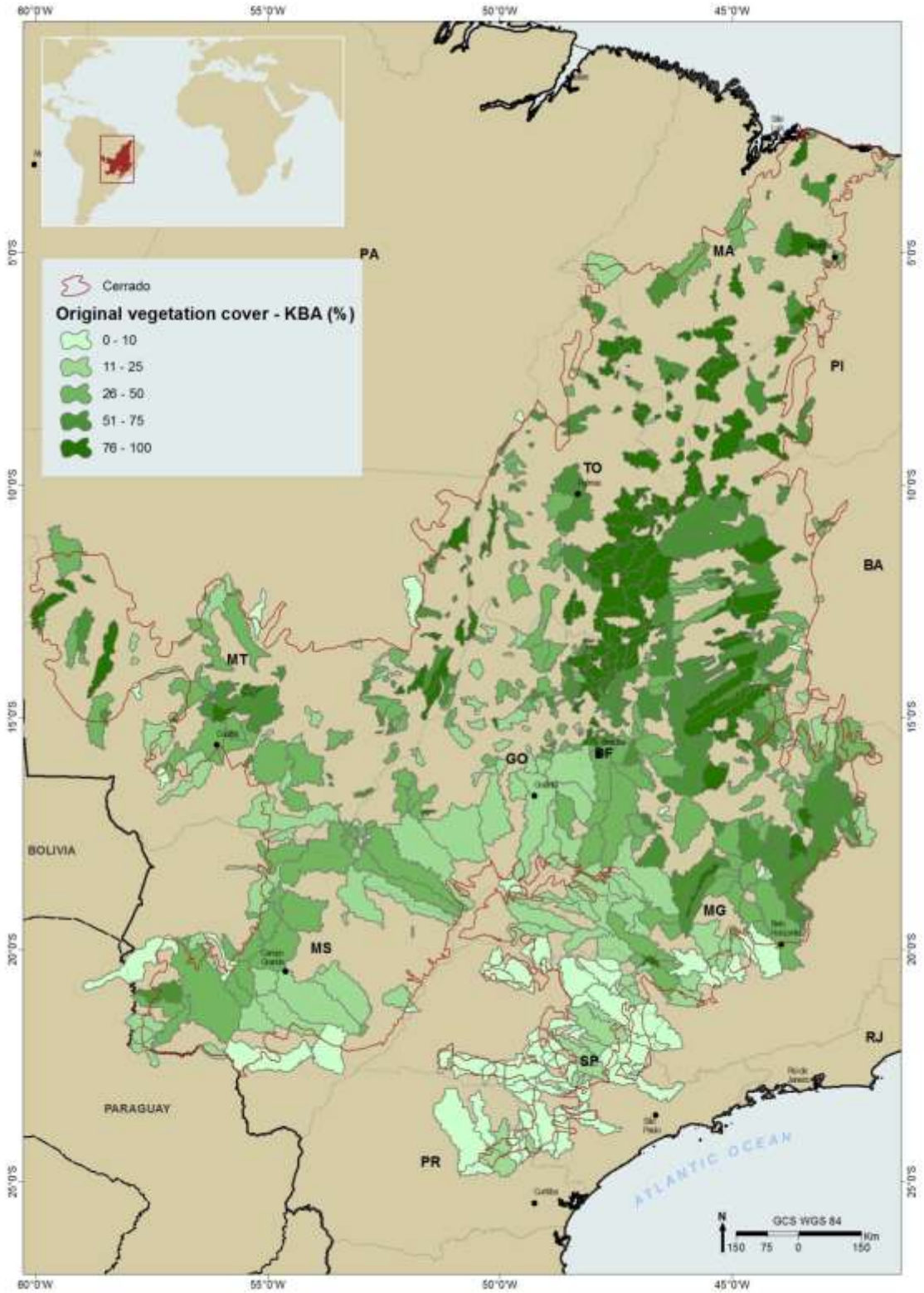


Figure 6b: Percentage Of Original Vegetation Cover Per KBA



6- Ecosystem services: ranking the role that KBAs play on the provision of water services to people.

The understanding of the role that KBAs play on the provision of services that are important to people, particularly to the poor, is named as KBA+. The framework was developed by Conservation International's Betty and Gordon Moore Center for Science and Oceans (MCSO) with the support and partnership of CEPF and CI-Madagascar

The KBA+ methodology includes seven steps, which were followed by CI Brasil and ISPN on this study, including engagement with different stakeholders, a cross-cutting component of this methodology. For the Cerrado ecosystem profile some adjustments to the methodology were performed, and the main one was to focus on specific ecosystem services regarding "water" (especially provision for hydropower generation, irrigation and urban supply). There were some approaches used to determine the KBA+ in Madagascar that we discussed and found that were not applicable to the Cerrado biome (eg. available data sources or surrogates for fisheries, hunting, disasters risk) or had a severe database biased problem, despite as being important ES indicators (eg. food supply, based on non-timber and timber forest products; and tourism).

As in the framework adopted in Madagascar, ecosystem services identified in KBA+ will not be "valued" in economic terms, but ranked as to their relative importance for water supply.

The data were provided by the National Agency of Water and includes demand for water use in five categories: animal, industrial, irrigation, rural and urban use (Figure 7a), all in small basin scale. The analysis were performed for each KBA (average weighted per area) and the result were ranked in five categories (Figure 7b) regarding their relative importance of ecosystem services in terms of providing water for different types of use.

Figure 7a: Demand For Water Consumption In The Hotspot

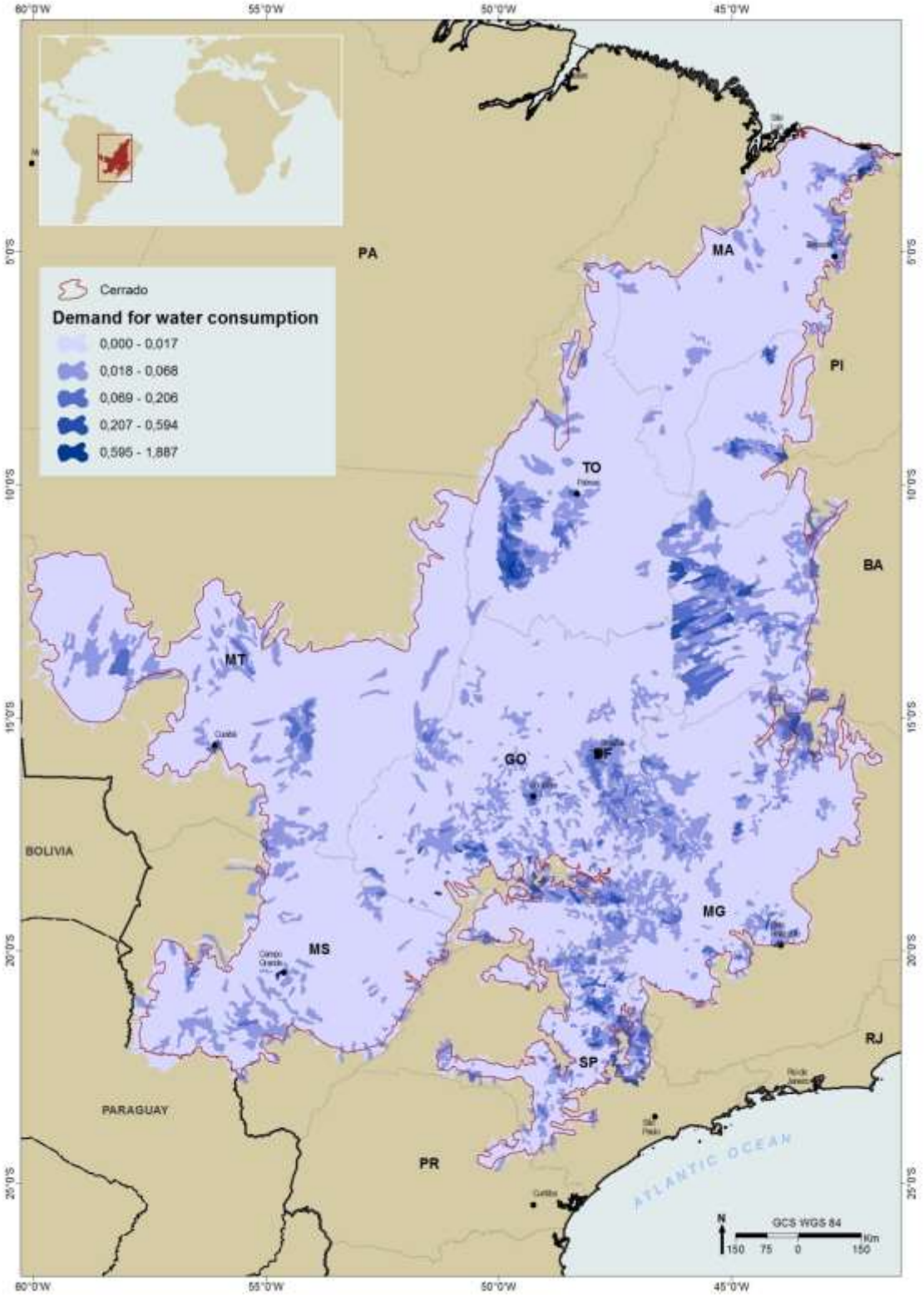
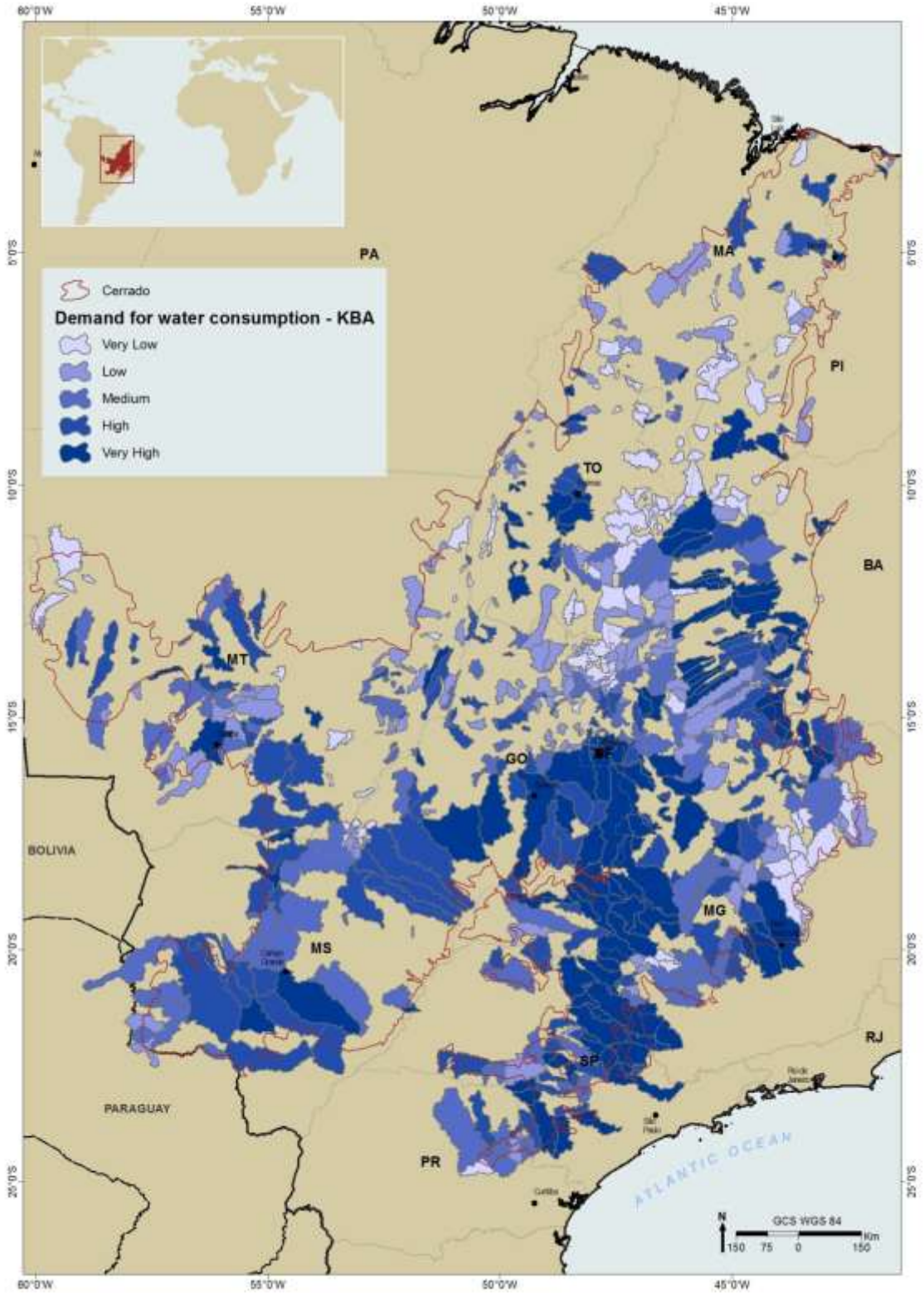


Figure 7b: Average Of Demand For Water Consumption Per KBA



Prioritization methodology

The weight (or set of weight factors) is the relative importance of a relevant category over another. It is noteworthy that the weight term is associated with a concept of importance that is not directly related to the chosen scale. The weighting may be considered the relative importance assigned to each sub criterion of a set to constitute an evaluation criterion. In other words, the weighting is the result of the preferences of the decision maker, based on concrete facts and subjective (not perfectly modeled).

The literature shows a wide variety of weighting methodologies for criteria and is best known methodologies of direct weighting, the simple classification and the AHP.

In the method of successive comparisons, the evaluator classifies criteria and evaluates according to a cardinal scale, systematically comparing the criteria between them. Then, they check the consistency of the cardinal values previously assigned by modifying the values until the weights are consistent.

Among these, a wide application in science, best known for its American nomenclature, Hierarchical Analytical Process (Saaty 1980), based on binary comparisons of the criteria, carried out according to a scale of importance (see Table 1 below) then calculates the dominant own vector matrix assessments of the criteria. And finally, the weights are evaluated on an inconsistency rate.

Table 1: Primary Scale Saaty (adapted from Saaty 1980).

Intensity	Score	Rating
1	Equal importance	Both activities equally contribute to the goal
3	Small importance of one over another 's	Experience and judgment favor one activity over another
5	large or vital importance	Experience and judgment strongly favor one activity over another
7	very great importance or demonstrated	One activity is very strongly favored over the other. It could be demonstrated in practice.
9	absolute Importance	Evidence favors one activity over another , with the highest degree of safety.
2, 4, 6, 8	Intermediate values	When looking for a compromise condition between two settings.

For KBA prioritization we decided to use AHP methodology because:

- The large number of KBAs
- The huge variation between the criteria´s range (for example, the number of species for one category range from zero to 10, and another from zero to 176)
- In order to normalize the ranges
- For the possibility of using weights to determine the importance between one criteria under another

The KBA prioritization process was done in three main steps:

1- Combining all the species data to have the *Biological Criteria* done called Biological AHP. The biological criteri was considered the most important during this process, assuming that the basis of the whole prioritization process is to invest in the higher biological importance areas.
2- All the other criteria (civil society capacity, alignment with national priorities, original vegetation cover, ecosystem services, level of threat) were called as *Landscape Criteria* and were combined in the Landscape AHP.
3- The Biological AHP was combined with Landscape AHP to produce the final AHP results.

Weights and AHP process

For the integration of data according to the Analytical Process Method Hierarchy (AHP), it was necessary to reclassify the values of each column by statistical "quantile" generating from three (high, medium, low) to five classes (Very High, High, Media, low and very low). Then it was given numerical values (weights) for each one of the classes of information according to level of importance. Later, the pair comparisons were carried along by the AHP method. See annex 3 for entire scorecard for each step described below.

1- Biological AHP

Depending on the weights assigned to each class it was obtained:

Rare Plants

# KBA	Class	Interval	Weight
431	Very Low	0	0.027
226	Low	0 - 2	0.106
55	Medium	2 - 5	0.182
22	High	5 - 10	0.270
27	Very High	> 10	0.415

Rare Fishes

# KBA	Class	Interval	Weight
626	Very Low	0	0.035
99	Low	1	0.199
33	Medium	1 - 4	0.296
3	High	4 - 10	0.470

Threatened Fauna (National Redlist)

- National RedList of Fauna- Critically Endangered

# KBA	Class	Interval	Weight
707	Low	0	0.052
51	Medium	1	0.368
3	High	2	0.579

- National RedList of Fauna- Endangered

# KBA	Class	Interval	Weight
649	Very Low	0	0.027
84	Low	1	0.123
11	Medium	2	0.174
11	High	3	0.265
6	Very High	>4	0.411

- National RedList of Fauna- Vulnerable

# KBA	Class	Interval	Weight
562	Very Low	0	0.027
136	Low	1	0.123
46	Medium	3	0.174
16	High	7	0.265
1	Very High	13	0.411

Degree of National RedList of Fauna

Class	Weight
Critically Endangered	0.619
Endangered	0.284
Vulnerable	0.096

Weight + Degree of National RedList of Fauna

# KBA	Class	Interval	Weight
478	Very Low	0.014149	0.034
109	Low	0.017221	0.065
73	Medium	0.023237	0.146
72	High	0.079351	0.295
29	Very High	0.131975	0.460

Threatened Fauna (IUCN Redlist)

- IUCN RedList of Fauna- Critically Endangered

# KBA	Class	Interval	Weight
754	Low	0	0.1
7	High	1	0.9

- IUCN RedList of Fauna- Endangered

# KBA	Class	Interval	Weight
681	Low	0	0.052
71	Medium	1	0.368
9	High	3	0.579

- IUCN RedList of Fauna- Vulnerable

# KBA	Class	Interval	Weight
622	Low	0	0.052
117	Medium	1	0.368
22	High	4	0.579

Degree of IUCN RedList of Fauna

Class	Weight
Critically Endangered	0.619
Endangered	0.284
Vulnerable	0.096

Weight + Degree of IUCN RedList of Fauna

# KBA	Class	Interval	Weight
583	Very Low	0.027220	0.034
84	Low	0.037332	0.065
12	Medium	0.044084	0.146
62	High	0.067247	0.295
20	Very High	0.252288	0.460

Threatened Fauna (National and IUCN RedList)

-National RedList of Fauna

# KBA	Class	Interval	Weight
478	Very Low	0.014647	0.034
109	Low	0.017125	0.065
73	Medium	0.025691	0.146
72	High	0.087327	0.295
29	Muito Alta	0.146901	0.460

-IUCN RedList of Fauna

# KBA	Class	Interval	Weight
583	Very Low	0.028373	0.034
84	Low	0.034588	0.065
12	Medium	0.038738	0.146
62	High	0.061027	0.295
20	Very High	0.262680	0.460

Degree of IUCN and National RedList of Fauna

Class	Weight
National	0.556
IUCN	0.444

Weight + Degree of IUCN and National RedList of Fauna

# KBA	Class	Interval	Weight
400	Very Low	0.017000	0.034
141	Low	0.025618	0.065
76	Medium	0.055018	0.146
73	High	0.096440	0.295
71	Very High	0.230000	0.460

Threatened Flora (National Redlist)

- National RedList of Flora- Critically Endangered

# KBA	Class	Interval	Weight
705	Low	0	0.052
33	Medium	1	0.368
23	High	29	0.579

- National RedList of Flora- Endangered

# KBA	Class	Interval	Weight
532	Very Low	0	0.035
126	Low	1	0.199
55	Medium	3	0.296
48	High	105	0.470

- National RedList of Flora- Vulnerable

# KBA	Class	Interval	Weight
545	Very Low	0	0.027
133	Low	1	0.123
43	Medium	3	0.174
21	High	5	0.265
19	Very High	40	0.411

Degree of National RedList of Flora

Class	Weight
Critically Endangered	0.619
Endangered	0.284
Vulnerable	0.096

Weight + Degree of National RedList of Flora

# KBA	Class	Interval	Weight
426	Very Low	0.014907	0.034
84	Low	0.017979	0.065
94	Medium	0.030432	0.144
79	High	0.056087	0.295
78	Very High	0.177112	0.460

Threatened Flora (IUCN Redlist)

- IUCN RedList of Flora- Critically Endangered

# KBA	Class	Interval	Weight
754	Low	0	0.052
6	Medium	1	0.316
1	High	2	0.632

- IUCN RedList of Flora- Endangered

# KBA	Class	Interval	Weight
686	Low	0	0.052
67	Medium	1	0.316
8	High	4	0.632

- IUCN RedList of Flora- Vulnerable

# KBA	Class	Interval	Weight
680	Low	0	0.052
57	Medium	1	0.316
24	High	6	0.632

Degree of IUCN RedList of Flora

Class	Weight
Critically Endangered	0.619
Endangered	0.284
Vulnerable	0.096

Weight + Degree of IUCN RedList of Flora

# KBA	Class	Interval	Weight
583	Very Low	0.027220	0.034
84	Low	0.037332	0.065
12	Medium	0.044084	0.144
62	High	0.067247	0.295
20	Very High	0.252288	0.460

Threatened Flora (National and IUCN RedList)

-National RedList of Flora

# KBA	Class	Interval	Weight
426	Very Low	0.014907	0.034
84	Low	0.017979	0.065
94	Medium	0.030432	0.146
79	High	0.056087	0.295
78	Muito Alta	0.177112	0.460

-IUCN RedList of Fauna

# KBA	Class	Interval	Weight
583	Very Low	0.027220	0.034
84	Low	0.037332	0.065
12	Medium	0.044084	0.146
62	High	0.067247	0.295
20	Very High	0.252288	0.460

Degree of IUCN and National RedList of Flora

Class	Weight
National	0.556
IUCN	0.444

Weight + Degree of IUCN RedList of Flora

# KBA	Class	Interval	Weight
328	Very Low	0.010187	0.034
145	Low	0.012432	0.065
98	Medium	0.015357	0.146
99	High	0.022943	0.295
91	Very High	0.105245	0.460

Irreapleaceable Species

# KBA	Class	Interval	Weight
519	Very Low	0	0.027
155	Low	1	0.106
37	Medium	2	0.182
26	High	3	0.270
24	Very High	92	0.415

To combine all the sub criteria and get the final map of Biological AHP, it was considered the following weights:

Subcriteria	Weight	Final Weight
Rare Plants	0.21	0.42
Rare Fishes	0.21	
Threatened Fauna	0.26	0.52
Threatened Flora	0.26	
Irreapleaceable Species	0.06	0.06

2- Landscape AHP

Depending on the weights assigned to each class it was obtained:

- Alignment with national priorities
- Natural Vegetation Cover (MMA 2009)

# KBA	Class	Interval	Weight
74	Very Low	<10	0.036
123	Low	10 – 25	0.069
194	Medium	25 – 50	0.143
191	High	50 – 75	0.292
179	Very High	75 - 100	0.460

- Ecosystem Services: Consumptive Water demand (ANA 2009)

# KBA	Class	Interval	Weight
153	Very Low	0.001742	0.086
152	Low	0.004158	0.123
152	Medium	0.008787	0.177
152	High	0.020170	0.253
152	Very High	0.276296	0.361

- Threat Level (IPA index, IBGE 2000-2010)

# KBA	Class	Interval	Weight
153	Very Low	0.491532	0.416
152	Low	0.538981	0.262
256	Medium	0.600000	0.161
100	High	0.680059	0.099
100	Very High	0.889293	0.062

- Civil Society Capacity (ISPN,2015)

# KBA	Class	Interval	Weight
85	Very Low	1	0.034
157	Low	2	0.034
287	Medium	3	0.270
67	High	4	0.307
165	Very High	5	0.354

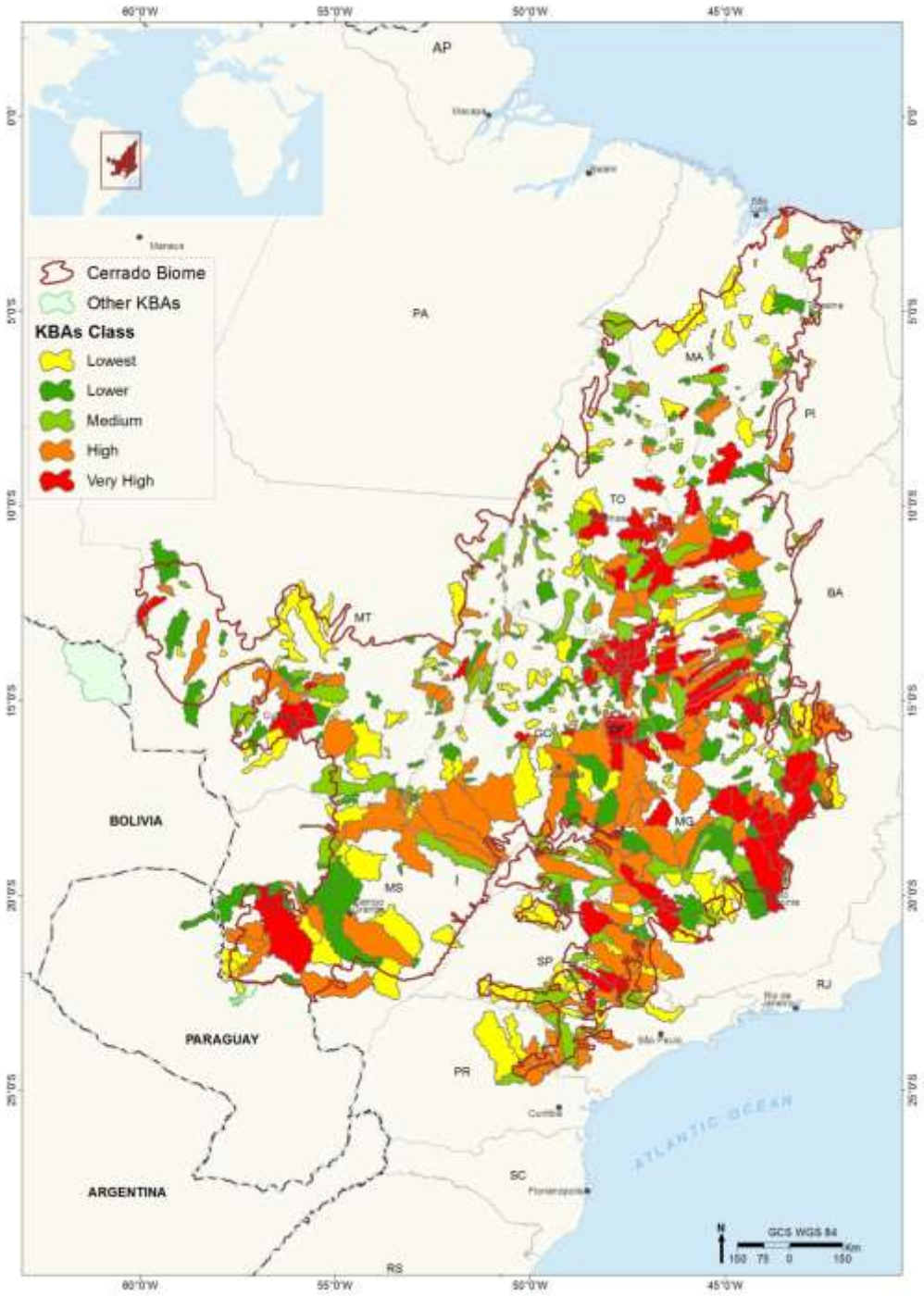
To combine all the criteria and get the final map of Landscape AHP, it was considered the following weights:

Criteria	Weight
Original Vegetation cover	0.300
Level of threat	0.255
Alignment with National Priorities	0.212
Ecosystem Services	0.134
Civil Society Capacity	0.099

3- Final AHP: Biological + Landscape

To combine Biological and Landscape AHP the following weights were considered and finally got the final results in five classes (Very Low, Low, Medium, High and Very High), see Figure 8 for more details.

Figure 8. AHP prioritization results in five classes (Very Low, Low, Medium, High and Very High)



APPENDIX 5. KBAS OF “VERY HIGH” RELATIVE CONSERVATION IMPORTANCE

Code	Name	Status	Corridor	KBA Area (ha)	Inside Protected Area (ha)	% Protected	Priority
BA11	Cabeceira das Lajes	Inside Priority Corridor	Central de Matopiba	63,431.96	4,279.37	6.7	CEPF Priority
BA14	Côcos	Inside Priority Corridor	Sertão Veredas - Peruaçu	61,313.22	0	0	CEPF Priority
BA16	Correntina	Inside Priority Corridor	Sertão Veredas - Peruaçu	148,151.87	0	0	CEPF Priority
BA18	EE Rio Preto	Inside Priority Corridor	Central de Matopiba	790,151.49	290,763.53	36.8	CEPF Priority
BA23	Guará	Inside Priority Corridor	Sertão Veredas - Peruaçu	129,657.93	0	0	CEPF Priority
BA27	Itaguari	Inside Priority Corridor	Sertão Veredas - Peruaçu	456,336.02	58,840.97	12.9	CEPF Priority
BA34	PN Grande Sertão Veredas	Inside Priority Corridor	Sertão Veredas - Peruaçu	611,513.58	302,952.22	49.5	CEPF Priority
BA42	Rio de Janeiro	Inside Priority Corridor	Central de Matopiba	22,856.73	21,885.74	95.8	CEPF Priority
BA48	RVS das Veredas do Oeste Baiano	Inside Priority Corridor	Sertão Veredas - Peruaçu	113,236.25	46,982.42	41.5	CEPF Priority
BA51	Santo Antônio	Inside Priority Corridor	Sertão Veredas - Peruaçu	92,016.74	0	0	CEPF Priority
DF1	APA do Planalto Central	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	166,754.34	123,391.46	74	
DF2	Monumento Natural do Conjunto Espeleológico do Morro da Pedreira	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	41,435.98	41,409.85	99.9	
GO106	Ribeirao Santana	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	37,822.39	37,822.39	100	CEPF Priority
GO109	Rio Claro	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	65,747.88	65,747.88	100	CEPF Priority
GO119	RPPN Fazenda Branca Terra dos Anões	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	66,882.06	34,466.02	51.5	CEPF Priority
GO125	São Bartolomeu	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	99,232.14	61,512.89	62	CEPF Priority
GO126	São Bento	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	18,056.59	18,056.59	100	CEPF Priority
GO139	Sucuri	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	170,243.13	62,399.63	36.7	CEPF Priority

GO14	Bacalhau	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	61,378.63	0	0	CEPF Priority
GO143	Tocantizinho	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	108,532.79	50,409.96	46.4	CEPF Priority
GO15	Baco Pari	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	130,908.96	3,426.44	2.6	CEPF Priority
GO19	Bilhagua	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	115,838.86	0	0	CEPF Priority
GO27	Calheiros	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	126,157.55	6,569.72	5.2	CEPF Priority
GO35	Córrego Areia	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	21,568.74	21,568.74	100	CEPF Priority
GO37	Córrego Roncador	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	124,638.72	0	0	CEPF Priority
GO38	Corriola	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	134,394.65	54,179.58	40.3	CEPF Priority
GO4	APA da Serra dos Pireneus	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	51,011.74	11,624.66	22.8	
GO40	Couros	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	47,835.13	47,832.45	100	CEPF Priority
GO48	EE do Jardim Botânico	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	535,582.26	228,854.45	42.7	
GO5	APA da Serra Dourada	Outside Corridor		77,644.62	21,113.21	27.2	
GO6	APA das Nascentes do Rio Vermelho	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	74,524.00	72,655.21	97.5	CEPF Priority
GO64	Laranjal	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	136,670.50	60,571.13	44.3	CEPF Priority
GO66	Macacão	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	161,833.11	92,281.82	57	CEPF Priority
GO67	Maquiné	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	125,085.42	125,085.42	100	CEPF Priority
GO74	Muquém	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	35,175.29	35,175.29	100	CEPF Priority
GO81	Parque Estadual de Terra Ronca	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	268,560.46	58,426.32	21.8	CEPF Priority
GO82	Parque Nacional da Chapada dos	Inside Priority Corridor	Veadeiros - Pouso Alto -	132,526.16	132,516.41	100	CEPF Priority

	Veadeiros		Kalungas				
GO89	Picarrão	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	40,859.84	40,859.84	100	CEPF Priority
GO98	Reserva Biológica da Contagem	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	91,298.57	75,394.08	82.6	
MA1	Alpercatinha	Inside Priority Corridor	Mirador- Mesas	70,241.64	70,229.14	100	CEPF Priority
MA30	PN dos Lençóis Maranhenses	Inside Other Corridors	Lençóis Maranhenses	21,697.29	21,697.29	100	
MA38	Rio Itapicuru	Inside Priority Corridor	Mirador- Mesas	3,049.99	0	0	CEPF Priority
MA44	Santo Antônio de Balsas	Inside Priority Corridor	Mirador- Mesas	39,360.10	0	0	CEPF Priority
MG102	Ribeirão Santa Catarina	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	337,167.45	0	0	
MG105	Rio Picão	Inside Other Corridors	Serra do Espinhaço	32,849.81	4,131.97	12.6	
MG108	RPPN Fazenda do Lobo	Inside Other Corridors	Serra da Canastra	81,463.37	25,968.22	31.9	
MG113	RVS Rio Pandeiros	Inside Priority Corridor	Sertão Veredas - Peruaçu	38,431.58	7,646.27	19.9	CEPF Priority
MG131	Unaí	Inside Other Corridors	RIDE DF - Parnaíba -Abaeté	289,479.47	12,257.60	4.2	
MG136	Vargem Bonita	Inside Other Corridors	Serra da Canastra	82,883.65	27,193.78	32.8	
MG138	Velhas	Inside Other Corridors	Serra do Espinhaço	409,807.79	268.09	0.1	
MG15	Caeté-mirim	Inside Other Corridors	Serra do Espinhaço	41,767.80	12,650.19	30.3	
MG2	Alpinópolis	Inside Other Corridors	Serra da Canastra	304,434.46	62,198.89	20.4	
MG30	EE Acaua	Inside Other Corridors	Serra do Espinhaço	336,057.41	2,071.94	0.6	
MG33	EE Sagarana	Inside Priority Corridor	Sertão Veredas - Peruaçu	331,829.06	2,319.07	0.7	CEPF Priority
MG4	APA do Carste de Lagoa Santa	Inside Other Corridors	Serra do Espinhaço	1,155,436.39	60,446.29	5.2	
MG44	Imbalacaia	Inside Other Corridors	Serra do Espinhaço	82,238.24	6,709.50	8.2	
MG47	Itacambira	Inside Other Corridors	Serra do Espinhaço	105,003.96	0	0	
MG62	Morro do Pilar	Inside Other Corridors	Serra do Espinhaço	12,828.87	6,940.56	54.1	
MG70	Pardo Grande	Inside Other Corridors	Serra do Espinhaço	203,131.55	0	0	
MG71	Parque Estadual Grão Mogol	Inside Other Corridors	Serra do Espinhaço	508,683.42	33,591.29	6.6	
MG72	PE Biribiri	Inside Other Corridors	Serra do Espinhaço	211,994.54	18,229.71	8.6	
MG74	PE da Serra do Cabral	Inside Other Corridors	Serra do Espinhaço	199,002.96	38,448.39	19.3	

MG8	Araguari	Inside Other Corridors	Serra da Canastra	462,663.80	14,774.86	3.2	
MG81	PE Rio Preto	Inside Other Corridors	Serra do Espinhaço	464,603.31	12,527.91	2.7	
MG84	PE Serra do Intendente	Inside Other Corridors	Serra do Espinhaço	20,957.53	8,841.04	42.2	
MG85	PE Veredas do Peruaçu	Inside Priority Corridor	Sertão Veredas - Peruaçu	138,748.80	135,364.15	97.6	CEPF Priority
MG88	Pirapora	Inside Other Corridors	Serra do Espinhaço	370,669.54	0	0	
MG89	PN Cavernas do Peruaçu	Inside Priority Corridor	Sertão Veredas - Peruaçu	238,615.50	39,520.39	16.6	CEPF Priority
MG90	PN da Serra da Canastra	Inside Other Corridors	Serra da Canastra	64,170.90	51,512.06	80.3	
MG91	PN da Serra do Cipó	Inside Other Corridors	Serra do Espinhaço	449,751.89	67,783.38	15.1	
MG95	Preto do Itambé	Inside Other Corridors	Serra do Espinhaço	6,858.91	6,649.13	96.9	
MS17	PN da Serra da Bodoquena	Inside Other Corridors	Miranda- Bodoquena	2,008,714.06	76,927.97	3.8	
MT109	Terra Indígena Pirineus de Souza	Inside Other Corridors	Alto Juruena	246,608.11	188,820.46	76.6	
MT11	APA Estadual da Chapada dos Guimaraes	Inside Other Corridors	Chapada dos Guimarães	166,913.93	95,239.68	57.1	
MT16	Arica-açu	Inside Other Corridors	Chapada dos Guimarães	169,275.31	50,056.16	29.6	
MT59	Marzagão	Inside Other Corridors	Chapada dos Guimarães	59,503.57	35,394.03	59.5	
MT6	Aldeia Carajá	Inside Other Corridors	Araguaia	8,984.35	3,864.57	43	
MT78	PN da Chapada dos Guimãraes	Inside Other Corridors	Chapada dos Guimarães	576,667.35	72,801.98	12.6	
MT85	Rio dos Patos	Inside Other Corridors	Araguaia	121,226.03	62,860.63	51.9	
PI19	PN das Nascentes do Rio Parnaíba	Inside Priority Corridor	Central de Matopiba	279,146.20	261,980.07	93.9	CEPF Priority
PI28	Uruçuí-preto	Inside Priority Corridor	Mirador- Mesas	605,948.42	64,842.40	10.7	CEPF Priority
SP14	Corumbatai	Outside Corridor		163,963.72	110,794.70	67.6	
SP20	EE Itirapina	Outside Corridor		142,248.46	48,488.94	34.1	
SP24	FE de Bebedouro	Outside Corridor		518,064.48	103.05	0	
SP33	Jacaré-pepira	Outside Corridor		261,427.32	57,028.30	21.8	
SP5	Araqua	Outside Corridor		87,572.52	21,934.22	25	
SP55	Vitória	Outside Corridor		42,347.78	19,879.89	46.9	
TO13	Brejão do Jalapao	Inside Priority Corridor	Central de Matopiba	78,969.50	78,780.45	99.8	CEPF Priority

TO23	Desabuso	Inside Priority Corridor	Central de Matopiba	8,965.92	8,962.28	100	CEPF Priority
TO26	Esteneu	Inside Priority Corridor	Central de Matopiba	27,075.35	27,075.27	100	CEPF Priority
TO28	Frito Gado	Inside Priority Corridor	Central de Matopiba	38,650.67	38,650.67	100	CEPF Priority
TO29	Furo da Gameleira	Inside Other Corridors	Araguaia	9,247.05	9,237.25	99.9	
TO3	Almas	Inside Priority Corridor	Central de Matopiba	102,710.49	58,904.99	57.4	CEPF Priority
TO43	Manuel Alves	Inside Priority Corridor	Central de Matopiba	318,737.89	38,126.61	12	CEPF Priority
TO44	Mateiros	Inside Priority Corridor	Central de Matopiba	11,765.86	11,765.86	100	CEPF Priority
TO46	Montes Claros	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	198,155.27	28,880.10	14.6	CEPF Priority
TO49	Natividade	Inside Priority Corridor	Veadeiros - Pouso Alto - Kalungas	235,778.06	0	0	CEPF Priority
TO51	Novo Jardim	Inside Priority Corridor	Central de Matopiba	425,536.22	132.61	0	CEPF Priority
TO54	Parque Estadual do Jalapão	Inside Priority Corridor	Central de Matopiba	21,481.73	21,481.73	100	CEPF Priority
TO56	Parque Nacional do Araguaia	Inside Other Corridors	Araguaia	16,212.80	16,212.80	100	
TO59	Pedra de Amolar	Inside Priority Corridor	Central de Matopiba	36,675.54	36,675.54	100	CEPF Priority
TO61	Perdida	Inside Priority Corridor	Central de Matopiba	260,603.92	0	0	CEPF Priority
TO65	Ponte Alta	Inside Priority Corridor	Central de Matopiba	330,253.92	134,931.62	40.9	CEPF Priority
TO66	Porto Nacional	Inside Priority Corridor	Central de Matopiba	319,932.12	460.75	0.1	CEPF Priority
TO72	Rio da Volta	Inside Priority Corridor	Central de Matopiba	24,237.76	24,229.66	100	CEPF Priority
TO75	Rio Novo	Inside Priority Corridor	Central de Matopiba	4,015.70	4,013.70	100	CEPF Priority
TO87	Soninho	Inside Priority Corridor	Central de Matopiba	198,439.09	69,840.78	35.2	CEPF Priority
TO90	Taquaraçu	Inside Priority Corridor	Central de Matopiba	106,260.70	55,509.75	52.2	CEPF Priority
TO93	Toca	Inside Priority Corridor	Central de Matopiba	24,825.51	24,823.21	100	CEPF Priority

APPENDIX 6. CIVIL SOCIETY ORGANIZATIONS

For the diagnosis of civil society capacity in the Cerrado biome, a broad survey of organizations with regional or national presence in each Ecosocial Territory Cerrado (*TEC- Territórios Ecossociais*) was conducted. Organizations were initially identified from the database of the Ecosocial Small Grants Program (*PPP-ECOS- Programa de Pequenos Projetos Ecossociais*), managed by ISPN since 1995, which has a database of more than 200 community-based organizations, NGOs and social movements. From this list, organizations were selected based on the following criteria: regional or national presence (excluding associations representing only one community or settlement); working on themes related to the objectives of CEPF and currently active. This list of organizations was presented in the three consultation workshops, and was complemented by the participants.

Then the diagnosis was complemented by a survey of the organizations presented in the National Register of Environmental Entities (*CNEA- Cadastro Nacional de Entidades Ambientalistas*), verifying those that met the criteria for regional or national presence; working on themes related to the objectives of CEPF and being currently active. To check this information, all organizations were surveyed on the Internet regarding the presence of sites, social networking profile and recent related news.

For each organization identified, its main actions and geographical location (including states) were described. Institutional categories were created according to types and actions to facilitate further analysis. The Ecosocial Region associated with each institution is also listed.

Institution Name	Type	Action	Main geographical location	State	Ecosocial Region
A Casa Verde - Cultura e Meio Ambiente	national NGO	productive chains of local products,	Based in DF, action in MT, MS and MG	DF	Distrito Feofral
Agência Brasileira de Meio Ambiente e Tecnologia da Informação- Ecodata	regional NGO	public policy	High Tocantins River Basin and DF	GO, DF	Northeast of Goiás, Distrito Feofral
Alternativas para Pequena Agricultura - APA-TO	regional NGO	Techincal assistance anda rural extension	Bico do Papagiao, Jalapão	TO	Tocantins north and east
Animação Pastoral e Social no Meio Rural	regional social movement	Agroecology, techincal assistance anda rural extension	Monte Carmelo, Iturama	MG	Minas Gerais
Articulação Pacari	network	Popular reaserch, technical assistance network and public policies influence	Minas Gerais, Goiás, Tocantins e Maranhão	MG, GO, TO, MA	
Articulação Xingu Araguaia - AXA	network	Valorization of the forest products, social mobilization	Araguaia Xingu, MT	MT	Northeast of Mato Grosso
Associação Agroextrativista dos Pequenos Produtores de Carolina - AAPPC	local association	Agroecology, agroextractivism	Carolina, Chapada das Mesas	MA	West of Maranhão
Associação Aliança dos Povos do Roncador	local NGO	Enviromental management in indigenous lands	Água Boa	MT	Southeast of Mato Grosso
Associação Ambientalista de Marília – ORIGEM	local NGO	Recovery and environmental protection; environmental education	Marília	SP	Cerrado of São Paulo state
Associação Barco Escola da Natureza	local NGO	Recovery and environmental protection; environmental education	Americana	SP	Cerrado of São Paulo state
Associação Brasileira de Agricultura Biodinâmica - Instituto Biodinâmico	local NGO	agroecology, recovery and environmental protection; research, certification	Botucatu	SP	Cerrado of São Paulo state
Associacao Camponesa da Regiao Noroeste de Goias - ASCANG	regional social movement	Agroecology, technical assistance anda rural extension	norwest de Goiás	GO	Norwest of Goiás

Associação Cultural e Ecologica Pau Brasil - ACEPB	local NGO	Water, environmental education	Ribeirão Preto	SP	Cerrado of São Paulo state
Associação de Educação e Assistência Social Nossa Senhora da Assunção - ANSA	regional NGO	Agroextractivism, environmental education	Araguaia Xingu (4 municipios ao redor de Sao felix do Araguaia)	MT	Northeast of Mato Grosso
Associação de Recuperação Florestal do Médio Tietê - FLORA TIETÊ	local NGO	Seedling production, environmental education, recovery of degraded areas	Penápolis e São José do Rio Preto	SP	Cerrado Paulista
Associação de Reposição Florestal do Pardo Grande - Verde Tambaú	local NGO	Seedling production, environmental education, recovery of degraded areas	Tambaú	SP	Cerrado Paulista
Associação do Desenvolvimento Solidário e Sustentável - ADES – 10envolvimento	regional NGO	Public policy, agroextractivism, traditional communities	Bacia do Rio Grande, west da Bahia (municípios de Barreiras, Formosa do Rio Preto e Santa Rita de Cássia)	BA	West of Bahia
Associação do Grupamento Ambientalista - AGA	local NGO	environmental education	Birigui	SP	Cerrado of São Paulo state
Associação dos Apicultores de Nova Olinda - AAPINO	regional association	beekeeping, native fruit pulp production	Nova Olinda, Wanderlândia, Araguaína, Palmeirante (TO)	TO	North of Tocantins
Associação dos Proprietários de Reservas Particulares do Patrimônio Natural de Mato Grosso do Sul - REPAMS	regional NGO	Protected areas	MS	MS	West and east of Mato Grosso do Sul
Associação dos Trabalhadores Rurais do Vale da Corda - ATRVC	regional association	beekeeping, agroecology	Vale do Corda (TO)	TO	North of Tocantins
Associação em Áreas de Assentamento no Estado do Maranhão - ASSEMA	regional NGO	Agroecology and fair trade	18 municipalities of Médio Mearim, region, Maranhão	MA	East of Maranhão
Associação Indígena Xavante Norö Tsu'rã	regional association	environmental management of indigenous territories	Nova Xavantina, Campinápolis	MT	Sudoste of Mato Grosso

Associação Maranhense para a Conservação da Natureza - AMAVIDA	regional NGO	native beekeeping	Urbano Santos and region, MA	MA	East of Maranhão
Associação Mineira das Escolas Familias Agricolas	regional social movement	agroecology	Minas Gerais	MG	Minas Gerais
Associação Mineira de Defesa do Ambiente - AMDA	regional NGO	wild animals conservation, fire management, recovery of degraded areas	Belo Horizonte, Minas Gerais	MG	Minas Gerais
Associação para a Gestão Socioambiental do Triângulo Mineiro - ANGÁ	local NGO	environmental education, conservation	Triângulo Mineiro (Uberlândia)	MG	West of Minas Gerais
Associação para proteção Ambiental de São Carlos - APASC	local NGO	Organic agriculture	São Carlos	SP	Cerrado of São Paulo state
Associação Protetora dos Animais Silvestres de Assis - APASS	local NGO	wild animals conservation	Assis	SP	Cerrado of São Paulo state
Associação Regional das Mulheres Trabalhadoras Rurais do Bico do Papagaio - ASMUPIB	regional social movement	agroecology, gender	Bico do Papagaio	TO	North of Tocantins
Associação Regional das Produtoras Extrativista do Pantanal - ARPEP	regional association	agroextractivism productive chain	Cáceres e região	MT	Southwest of Mato Grosso
Associação Terra Indígena Xingu - ATIX	regional association	native beekeeping	Xingu	MT	Northeast of Mato Grosso
Associação Wyty-Catë das Comunidades Timbira do Maranhão e Tocantins	regional social movement	networking among the Timbira people, agroextractivism	south of Maranhão (Carolina) and north of Tocantins	MA, TO	West of Maranhão and north of Tocantins
Associação Terra Viva de Agricultura Alternativa e Educação Ambiental - ATV	regional NGO	Agroecology, environmental recovery	Porto Alegre do Norte, MT	MT	Northeast of Mato Grosso

Cáritas Brasileira	national NGO	fair trade, water and land management, agroecology	all Brazil, in Cerrado in MA and MG	MA, MG	East of Maranhão and north of Minas Gerais
Cavaleiro de São Jorge	local NGO	Cultural Feast, medicinal plants	Chapada dos Veadeiros, GO	GO	Northeast of Goiás
Central do Cerrado	cooperative	Promotion and marketing of Cerrado biodiversity products, technical assistance for management and products improvement	35 community based organization of seven states (MA, TO, PA, MG, MS, MT e GO)	MA, TO, PA, MG, MS, MT e GO	
Centro de Agricultura Alternativa do Norte de Minas - CAA/NM	regional NGO	Techincal assistance and rural extension	39 municipalities of north of Minas Gerais	MG	North of Minas Gerais
Centro de Agricultura Alternativa Vicente Nica - CAV	regional NGO	Water management and access, agroecology and recovery of degraded land	Alto, Médio e Baixo Jequitinhonha (sobretudo Berilo, Chapada do north, Minas Novas, Turmalina e Veredinha)	MG	North of Minas Gerais
Centro de Desenvolvimento Agroecológico do Cerrado - CEDAC	regional NGO	agroecology, agroextractivism	São Domingos, GO	GO	Northeast of Goiás
Centro de Documentação Eloy Ferreira da Silva	regional NGO	quilombolas and indigenous peoples rights, territories	Minas Gerais	MG	Centro, north and west of Minas Gerais
Centro de Tecnologia Agroecológica de Pequenos Agricultores - AGROTEC	local NGO	agroextractivism productive chain, medicinal plants	Diorama region, GO	GO	Norwest of Goiás
Centro de Trabalho Indigenista - CTI	national NGO	Integraded land management of indigenous territories of Timbira people, education, agroextractivism	8 Timbira Indigenous Territories (TO, MA)	MA, TO	West of Maranhão and north of Tocantins
Centro Nacional de Conservação da Flora - CNCFLORA	regional NGO	National Action Plan (PAN) for the Espinhaço Meridional species	Espinhaço Meridional – Serra do Cipó – Diamantina	MG	North of Minas Gerais
Comissão Pastoral da Terra - CPT	national social movement	Social mobilization for land rights, agroecology	Tocantins, Goiás, Maranhão, Bahia, Mato Grosso (representação regional)	TO, GO, MA, BA, MT	North of Tocantins, Norwest of Goiás, West and East of Maranhão, West of Bahia, Northeast of

					Mato Grosso
Conselho Indigenista Missionário - Cimi	national social movement	Indigenous technical assistance - land rights, health.	Maranhão, Goiás, Tocantins, Mato Grosso, Mato Gorsso do Sul, Minas Gerais	MA, TO, MT, MG, MS	East of Maranhão, east and west of Tocantins, Southwest of Mato Grosso, Minas Gerais and west of Mato Grosso do Sul
Conservation International - CI	international NGO	promotion of sustainable agriculture landscapes ; ecosystems recovery; support for protected areas management.	Região de Matopiba	BA, TO, PI, MA	West of Bahia
Cooperativa Agroecológica pela Vida - COOPEVIDA	cooperative	agroecology, agroextractivism	São Raimundo das Mangabeiras, MA	MA	West of Maranhão
Cooperativa Cooperfrutos do Paraíso	regional NGO	agroecology, local seeds	São João da Aliança, Alto Paraíso, Colinas do Sul, Cavalcante, Terezina	GO	Northeast of Goiás
Cooperativa dos Agricultores Familiares Ecológicos do Cerrado - Cooperativa Rede Terra	cooperative	agroecology, marketing	Cristalina, GO and DF surroundings	GO, DF	Northeast of Goiás, Distrito Federal
Cooperativa Grande Sertão	cooperative	agroextractivism, processing biodiversity fruits and marketing	north of Minas Gerais	MG	North of Minas Gerais
Cooperativa Mista de Agricultores e Agricultoras Rurais de Poconé - COMPRUP	cooperative	agroextractivism productive chain	Poconé	MT	Sudwest of Mato Grosso
Cooperativa Regional de Produtores Agrissilviextrativista Sertão Veredas - SERTÃO VEREDAS	cooperative	agroextractivism, processing biodiversity fruits and marketing	Chapada Gaúcha	MG	North of Minas Gerais
Coordenação das Comunidades Quilombolas do TO - COEQTO	network	Political networking for quilombolas rights in Tocantins state	Tocantins	TO	North, east and west of Tocantins

COPABASE	cooperative	Agriculture, fair trade	Arinos, Bonfinópolis de Minas, Buritis, Formoso, Pintópolis, Riachinho, Urucuia e Uruana de Minas	MG	West of Minas Gerais
Ecologia e Ação - ECOA	regional NGO	Valorization of the forest products, social mobilization	Corumbá, Miranda e Nioaque	MS	West of Mato Grosso do Sul
Entidade Ecológica e Educacional do Vale do Paranapanema - ENVAPA	local NGO	Recovery and protection of the Paranapanema river	Assis	SP	Cerrado of São Paulo state
Federação das Comunidades Quilombolas do Estado de Minas Gerais – N'Golo	regional social movement	Political networking for quilombolas rights in Minas Gerais state	Minas Gerais	MG	West, north and Centre of Minas Gerais
Federação de Órgãos para Assistência Social e Educacional - FASE	national NGO	Technical assistance for agroecology and agroextractivism	Sudwest do Mato Grosso e nos municípios da Baixada Cuiabana	MT	Sudwest of Mato Grosso
Fórum Carajás	regional NGO	agroecology, small farmers, population affected by big enterprises	Maranhão, Pará e Tocantins	MA	East of Maranhão
FrutaSã	company	Cerrado biodiversity fruits processing and marketing involving small farmers and indigenous	south of Maranhão (Carolina)	MA	West of Maranhão
Fudação Neotrópica do Brasil	local NGO	biodiversity conservation, environmental education, protected areas ecotourism	Bonito - MS	MS	West of Mato Grosso do Sul
Funatura	regional NGO	Support to reduction of deforestation and forest fires in the Cerrado, agroecology	Chapada dos Veadeiros, GO, Bacia do São Bartolomeu - DF, Mosaico Grande Sertão Veredas Peruaçu - MG	GO, DF, MG	Northeast of Goiás, Distritio Federal, north of Minas Gerais
Fundação Biodiversitas para a Conservação da Diversidade Biológica - FUNDAÇÃO BIODIVERSITAS	regional NGO	biodiversity conservation and research	Serra do Rola Moça, Serra do Espinhaço	MG	Centro of Minas Gerais
Fundação de Apoio a Vida nos Trópicos - ECOTROPICA	international NGO	biodiversity conservation	Cuiabá	MT	Sudwest of Mato Grosso

Fundação Grupo Boticário	national NGO	Research and management of Reserva Natural Serra do Tombador	Cavalcante, GO	GO	Northeast of Goiás
Instituto Bertran Fleury	local NGO	Cerrado history and culture	Distrito Federal	DF	Distrito Federal
Instituto Ambiental Vidágua	regional NGO	environment conservation, water	região de Bauru	SP	Cerrado of São Paulo state
Instituto Bioeste	local NGO	biodiversity conservation	west da Bahia	BA	West of Bahia
Instituto Brasil Central - IBRACE	national NGO	Water, social mobilization, public policy	Northeast de Goias ; Território da Chapada dos Veadeiros, Vale do Paranã e da Serra da Mesa; Território do Médio Araguaia, north of Goiás, Vale do Rio Vermelho, Vale do São Patrício e Vale do Araguaia; Emas, Estrada de Ferro, Médio Araguaia, Southwest Goiano, Vale do Araguaia	GO	Northeast, Northwest and south of Goiás
Instituto Centro de Vida - ICV	regional NGO	Advocacy for deforestation reduction, rural development and forest management	Cotriguaçu, Lucas do Rio Verde e bacia do Alto Paraguai	MT	Northwest and southwest of Mato Grosso
Instituto das Águas da Serra da Bodoquena - IASB	local NGO	environmental education, water and public policies	Bonito - MS	MS	West of Mato Grosso do Sul
Instituto de Permacultura e Ecovilas do Cerrado - IPEC	local NGO	agroecology, permaculture	Pirenópolis, GO	GO	Northeast of Goiás
Instituto de Pesquisas Ecológicas - IPÊ	national NGO	Cerrado Waters Platform: collaborative platform among companies, civil society and government for water conservation	Uberlândia, Indianópolis e Monte Carmelo	MG	West of Minas Gerais
Instituto Gea - Etica e Meio Ambiente	local NGO	Solid wast management, environmental education	Paraíso e São José do Rio Preto	SP	Cerrado of São Paulo state
Instituto Guaicuy - SOS Rio das Velhas	local NGO	Sustainable development, Environmental education, recovery and water conservation	Velhas River Basin, Ouro Preto	MG	Centro of Minas Gerais

Instituto Lina Galvani	local NGO	environment education, biodiversity conservation	Luis Eduardo Magalhães	BA	West of Bahia
Instituto Marista de Solidariedade - IMS	national NGO	Fair trade, agroecology, agroextractivism	Many locations in Cerrado - GO, MS, DF	MS	West of Mato Grosso do Sul
Instituto OCA Brasil	regional NGO	Creation and management of Protected Areas, recovery of degraded areas, agroecology	Alto Paraíso	GO	Northeast of Goiás
Instituto Onça Pintada	national NGO	Research for jaguar conservation	PN Araguaia, PE do Cantão - TO; Parque Nacional das Emas – GO, Estação Ecológica Uruçuí-Una e Parque Nacional Nascentes do Rio Parnaíba	TO, GO	West of Tocantins and south of Goiás
Instituto Ouro Verde	regional NGO	agroecology and agroextractivism chains	Alta Floresta e outros no estado do MT	MT	Northwest of Mato Grosso
Instituto Rosa e Sertão	regional NGO	Culture and agroextractivism	Região do Grande Sertão Veredas	MG	North of Minas Gerais
Instituto Sálvia de Soluções Socioambientais - ISSA	local NGO	Agroecology, recovery of degraded areas	Distrito Federal	DF	Distrito Federal
Instituto Sociedade, População e Natureza - ISPN	national NGO	Support for small grants (Small Grants Program, SGP) for biodiversity conservation, climate change mitigation and recovery of degraded land. Public policies influence, agroextractivism, agroecology	All Cerrado	MA, PI, TO, BA, MT, GO, DF, MG, MS, SP	Cerrado
Instituto Socioambiental - ISA	national NGO	Xingu Program: support for small farmers and indigenous peoples, recovery of degraded land, water	Mato Grosso (bacia do Xingu)	MT	Northeast of Mato Grosso
Instituto Terra Brasilis de Desenvolvimento Sócioambiental	regional NGO	biodiversity conservation and research	Belo Horizonte, Serra da Canastra	MG	Centro of Minas Gerais
IPOEMA	local NGO	permaculture	Distrito Federal	DF	Distrito Federal
Mais Cerrado	regional	advocacy for Cerrado conservation	Chapada dos Veadeiros, GO	GO	Northeast of Goiás

	NGO				
Missão Verde	regional NGO	Agroextractivism, environmental education	Parque Estadual do Cantão	TO	West do Tocantins
Mobilização dos Povos Indigenas do Cerrado (MOPIC)	national social movement	Advocacy for Cerrado Indigenous peoples	Todo do Cerrado	MA, PI, TO, BA, MG, MS, MT e GO	
Movimento Amparo Ecológico - MÃE NATUREZA	local NGO	Water resources	Barra Bonita	SP	Cerrado of São Paulo state
Movimento dos Atingidos por Barragens - MAB	national social movement	networking and sensibilization about communities affected by dams	Bacia do Rio Grande, west da Bahia	BA	West of Bahia
Movimento dos Trabalhadores do Campo- MTC	national NGO	Social mobilization	Difuso Brasil, Cerrado: presença maior no north de MG e Northeast	MG	North of Minas Gerais
Movimento Interestadual das Quebradeiras de Babaçus - MIQCB	regional social movement	Women Networking for Babaçu Criackers right to access the resource and better productive conditions for the babaçu chain	Região dos Cocais (sede em Esperantina, PI); Bico do Papagaio (sede na cidade São Miguel do Tocantins - TO); Médio Mearim/Cocais (sede na cidade de Pedreiras - MA) e na região Tocantinia (sede na cidde de Imperatriz - MA)	MA, PI, TO,	East and west of Maranhão, west of Piauí, north of Tocantins
Mutirão Agroflorestal	regional NGO	Technical assistance in agroecology and Agroforestry Systems	São Paulo, Goiás e DF	GO, DF, SP	
Núcleo do Pequi	regional NGO	Network for improvement of the pequi productive chain in Minas Gerais state	north of MG	MG	North of Minas Gerais
Onça D'Água	regional NGO	protected areas management and support for local small farmers	Jalapão, Cantão	TO	East and west of Tocantins
ONG Verdenovo Rio das Velhas	local NGO	environamental education about water	Nova Lima, MG	MG	Centro of Minas Gerais
OPAN Operação Amazônia Nativa	regional NGO	Support for Indigenous Groups	several regions in Cerrado, but also um the Amazon	MT	Northeast of Mato Grosso

Oréades Núcleo de Geoprocessamento	local NGO	Mapping, technical assistance	Mineiros, GO, Parque Estadual das Nascentes do Rio Taquari (PENT) e Parque Nacional das Emas (PNE)	GO	South of Goiás
Organização Ponto Terra	local NGO	environamental education about water	Ouro Preto, Três Marias, Sete Lagoas	MG	Centro of Minas Gerais
Pequi - Pesquisa e Conservação do Cerrado	regional NGO	research for biodiversity management and conservation	Jalapão	TO	East do Tocantins
Pratiquecologia	local NGO	environamental education about water and recovery of degraded areas	Campo Grande - MS	MS	West of Mato Grosso do Sul
Pro Vida Brasil	regional NGO	Management of Parque da Serra do Mirador; biodiversity research	Parque Estadual da Serra do Mirador (municipio de Mirador)	PI	West of Piaui
Pró-carnivoros	national NGO	Protection and research of wild animals	Parque Nacional das Emas, GO	GO	South of Goiás
Rede Ambiental do Piauí	regional NGO	Social mobilization for conservation in Piauí	Piauí	PI	West of Piaui
Rede Cerrado	network	Advocacy for Cerrado conservation, Cerrado peoples rights	All Cerrado	MA, PI, TO, DF, BA, MG, MS, MT, GO	
Rede de sementes do Cerrado	regional NGO	Research for Cerrado plant species, knowledge management, recovery of degraded areas and capacity building	Rio Pardo de Minas/MG, Goiânia, Alto Paraíso de Goiás e Cavalcante/GO e Brasília/DF	GO	Northeast of Goiás
Rede Jalapão de Produtos Artesanais	local NGO	Support for processing biodiversity products of Jalapão region	São Félix , Mateiros, Novo Acordo	TO	East of Tocantins
Slow Food Cerrado	regional NGO	Promotion of the use of biodiversity products from local communities in gastronomy	All Cerrado	GO	Northeast of Goiás
The Green Initiative - TGI	national NGO	Seedling production, environmental education, recovery degraded areas	Americana, Patrocínio Paulista, Gabriel Monteiro, Jaú, Araras	SP	Cerrado of São Paulo state

The Nature Conservancy - TNC	international NGO	Sustanable production, technical assistance for farmers to comply with environmental legislation, recovery of degraded areas	west da Bahia: São Desidério, Riachão das Neves, Barreiras, Luis Eduardo Magalhães, São Desidério, Correntina, Jaborandi e Cocos. Lucas do Rio Verde - MT; Chapada dos Veadeiros - GO; PSA: Bacia do Ribeirão Pipiripau (DF, divisa com Formosa-GO)	BA, MT, GO, DF	west of Bahia, Norwest of Mato Grosso, Northeast of MT, Northeast of Goiás, Distrito Federal
Unicafes União Nacional das Cooperativas da Agricultura Familiar e Economia solidária	network	Network for fair trade, cooperation and small farmers support	all the country		
WWF	international NGO	Sustanable agriculture production to comply with environmental legislation, water, environmental education, support to protected areas management, biodiversity conservation	Mosaico Sertão Veredas Peruaçu (MG), Bacia do São Bartolomeu (GO), Bacia Guariroba, Campo Grande (MS)	GO, DF, MG, MS	Northeast of Goiás, Distrito Federal, north of Minas Gerais, west of Mato Grosso do south

APPENDIX 7. CANDIDATE PRIORITY SPECIES

One of the criteria for species prioritization was the existence of National Action Plans for the Conservation of Endangered Species or Speleological Heritage (Planos de Ação Nacional para a Conservação das Espécies Ameaçadas de Extinção ou do Patrimônio Espeleológico – PAN) focused on species, or sites which contain the species. PANs are public policies that identify and guide priority actions against threats to populations of species and natural environments. PANs are developed with researchers and experts in the field, through consultations and workshops that culminate in the publication of a planning matrix with clear objectives, actions, products, deadlines and possible collaborators.

There are 80 additional species considered potential candidates for CEPF priority investments, 63 being plant species (Table 7.1) and 17 fauna species (Table 7.2). They are all endemic to the Cerrado Hostpot, have PAN or are part of one and are listed as critically endangered on the national Red List but not on the international Red List. They could become eligible for CEPF funds should their status be revised to critically endangered on the international Red List.

Three important PANs already exist for these plant species not yet listed on the international Red List as Critically Endangered. Two of those PANs are for the region of Grão Mogol and Serra do Espinhaço Meridional, and the other is for Alto Tocantins Basin. The regions of Grand Mogol State Park and Grão Mogol/Francisco Sá, in central Minas Gerais, and the Serra do Espinhaço are three priority areas for biodiversity conservation (MMA 2007), and are within Serra do Espinhaço Corridor delimited on this ecosystem profile. There are 12 critically endangered species in the Grão Mogol region and 45 in Serra do Espinhaço (one species is also found in the Alto Tocantins Basin), according to the Red Book of Flora of Brazil (Martinelli and Moraes 2013). These two regions have high species diversity and a high degree of endemism. The Serra do Espinhaço has entire botanical families that are endemic to the region. However, it is seriously threatened by anthropic activities such as mining (mainly diamonds and iron), agriculture, urban expansion and monocrop plantations (mainly *Eucalyptus*), meaning that conservation actions are urgently needed. The Alto Tocantins Basin is part of two CEPF Cerrado corridors: RIDE DF-Parnaiba-Abaeté and Veadeiros-Pouso Alto-Kalungas. This basin has high species richness. The Chapada dos Veadeiros National Park is considered the core area of biological diversity and is recognized as an important flora endemism center. However, the river basin covers an area with high economic interest arising mainly from the agricultural sector and mining. This is where the last six of the 63 candidate plant species are found to be listed as critically endangered species, according to the Red Book of Flora of Brazil (Martinelli and Moraes 2013). Therefore, there is an urgent need for conservation actions to reduce the effects of these factors on endangered species.

The 17 fauna species potentially candidate for CEPF investements can be found in four different PANs: Rivulideos, São Francisco Cave, Lepidopteras, São Francisco basin, and have their prior actions listed here (Table 7.2).

Table 7.1: Candidate priority species- Plants

Family	*Species*	Endemic to Brazil	PAN	Brazilian National Red List	IUCN-Redlist	Priority Conservation Strategies
ERIOCAULACEAE	*Actinocephalus cipoensis*	*Yes*	Espinhaço Meridional	CR		1- Support direct or indirect actions for the management of populations, species, habitats and landscapes, to promote the conservation of threatened species. 2- Develop human and institutional capacities and raise awareness, focused on implementing actions for endangered species conservation. 3- Support research that generates knowledge, innovation and technology transfer to implement actions for endangered species conservation. 4- Support actions that foster the creation, establishment and implementation of public policies for the conservation of endangered species.
ERIOCAULACEAE	*Paepalanthus ater*	*Yes*	Espinhaço Meridional	CR		
OROBANCHACEAE	*Agalinis schwackeana*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Aspilia eglerii*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Aspilia jugata*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Aspilia ovalifolia*	*Yes*	Espinhaço Meridional	CR		
VELLOZIACEAE	*Barbacenia glutinosa*	*Yes*	Espinhaço Meridional	CR		
VELLOZIACEAE	*Barbacenia longiscapa*	*Yes*	Espinhaço Meridional	CR		
VELLOZIACEAE	*Barbacenia pungens*	*Yes*	Espinhaço Meridional	CR		
MALPIGHIACEAE	*Byrsonima fonsecae*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Calea abbreviata*	*Yes*	Espinhaço Meridional	CR		
FABACEAE	*Chamaecrista lagotois*	*Yes*	Espinhaço Meridional	CR		
ORCHIDACEAE	*Constantia cipoensis*	*Yes*	Espinhaço Meridional	CR		
LYTHRACEAE	*Diplusodon glaziovii*	*Yes*	Espinhaço Meridional	CR		
BROMELIACEAE	*Dyckia ursina*	*Yes*	Espinhaço Meridional	CR		
BROMELIACEAE	*Encholirium biflorum*	*Yes*	Espinhaço Meridional	CR		
BROMELIACEAE	*Encholirium pedicellatum*	*Yes*	Espinhaço Meridional	CR		
BROMELIACEAE	*Encholirium vogelii*	*Yes*	Espinhaço Meridional	CR		
ORCHIDACEAE	*Grobya cipoensis*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Hemipogon abietoides*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Hemipogon hatschbachii*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Hemipogon piranii*	*Yes*	Espinhaço Meridional	CR		
AQUIFOLIACEAE	*Ilex prostrata*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Lychnophora humillima*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Lychnophora souzae*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Minaria bifurcata*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Minaria diamantinensis*	*Yes*	Espinhaço Meridional	CR		
APOCYNACEAE	*Minaria hemipogonoides*	*Yes*	Espinhaço Meridional	CR		
OXALIDACEAE	*Oxalis diamantinae*	*Yes*	Espinhaço Meridional	CR		
MALPIGHIACEAE	*Peixotoa andersonii*	*Yes*	Espinhaço Meridional	CR		
LYCOPODIACEAE	*Phlegmariurus ruber*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Piptolepis leptospermoides*	*Yes*	Espinhaço Meridional	CR		
ORCHIDACEAE	*Pseudolaelia cipoensis*	*Yes*	Espinhaço Meridional	CR		

IRIDACEAE	*Pseudotrimezia brevistamina*	*Yes*	Espinhaço Meridional	CR		
IRIDACEAE	*Pseudotrimezia gracilis*	*Yes*	Espinhaço Meridional	CR		
ASTERACEAE	*Richterago caulescens*	*Yes*	Espinhaço Meridional	CR		
LOGANIACEAE	*Spigelia cipoensis*	*Yes*	Espinhaço Meridional	CR		
ARECACEAE	*Syagrus mendanhensis*	*Yes*	Espinhaço Meridional	CR		
IRIDACEAE	*Trimezia fistulosa var. longifolia*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris dardanoi*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris hystrix*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris nigricans*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris platystachya*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris sororia*	*Yes*	Espinhaço Meridional	CR		
XYRIDACEAE	*Xyris tortilis*	*Yes*	Espinhaço Meridional	CR		
VELLOZIACEAE	*Barbacenia riparia*	*Yes*	Grão Mogol	CR		1- Support actions that foster the creation, establishment and implementation of public policies for the conservation of endangered species. 2- Develop human and institutional capital, in order to implement conservation actions for endangered species. 3- Support research to generate knowledge, innovation and technology transfer to implement actions for endangered species conservation. 4- Support direct or indirect actions for the management of populations, species, habitats and landscapes, to promote the conservation of threatened species.
FABACEAE	*Chamaecrista ulmea*	*Yes*	Grão Mogol	CR		
LYTHRACEAE	*Cuphea rubro-virens*	*Yes*	Grão Mogol	CR		
LYTHRACEAE	*Cuphea teleandra*	*Yes*	Grão Mogol	CR		
CACTACEAE	*Discocactus pseudoinsignis*	*Yes*	Grão Mogol	CR	EN	
CACTACEAE	*Discocactus horstti*	*Yes*	Grão Mogol	CR	VU	
APOCYNACEAE	*Ditassa auriflora*	*Yes*	Grão Mogol	CR		
BROMELIACEAE	*Encholirium irwinii*	*Yes*	Grão Mogol	CR		
LAMIACEAE	*Oocephalus piranii*	*Yes*	Grão Mogol	CR		
BROMELIACEAE	*Orthophytum humile*	*Yes*	Grão Mogol	CR		
BROMELIACEAE	*Pitcairnia bradei*	*Yes*	Grão Mogol	CR		
IRIDACEAE	*Pseudotrimezia concava*	*Yes*	Grão Mogol	CR		
POACEAE	*Altoparadisium chapadense*	*Yes*	Alto Tocantins	CR		** still under major discussion and public consultation process
ORCHIDACEAE	*Cyrtopodium linearifolium*	*Yes*	Alto Tocantins	CR		
LYTHRACEAE	*Diplusodon ericoides*	*Yes*	Alto Tocantins	CR		
AMARYLLIDACEAE	*Griffinia nocturna*	*Yes*	Alto Tocantins	CR		
LAMIACEAE	*Hypenia aristulata*	*Yes*	Alto Tocantins	CR		
PODOCARPACEAE	*Podocarpus barretoi*	*Yes*	Alto Tocantins	CR		

Table 7.2: Candidate priority species- Fauna

Group	Class	Order	Family	Specie	Endemic to Brazil	PAN	Priority Conservation Strategies
Invertebrados	Arachnida	Amblypygi	CHARINIDAE	*Charinus troglobius*	*yes*	PAN Cavernas São Francisco	I- Systematization and dissemination of information on the Speleological Heritage and karstic region. II- Expansion of the knowledge about the Speleological Heritage and karstic region, taking advantage of the sources of financing and fomentation for the research. III- Elaboration of procedures, mechanisms and protocols, based on technical-scientific studies, to define the area of protection and use of the cavities. IV- Improvement of the public management for the articulation of actors (governmental and non-governmental) and integration of public policies. V- Improvement, intensification and integration of the actions and organs involved in the inspection of Speleological Heritage. VI- Review and elaboration of territorial planning and management instruments for the management of the use of Speleological Heritage and karst areas. VII- Creation and maintenance of protected areas for the conservation of Speleological Heritage. VIII- Strengthening the articulation and integration of efforts between public, private and civil society initiatives to regulate the sustainable use of tourist caves. IX- Elaboration of a draft law for the conservation and sustainable use of Speleological Heritage based on discussions involving public, private and civil society initiatives. X- Review of IN nº 2/2009-MMA, taking into account the socioeconomic aspects. XI- Implementation of strategies for the training of personnel directly involved with the theme Speleology, aiming management, study and sustainable use.
Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Giupponia chagasi*	*yes*	PAN Cavernas São Francisco	
Invertebrados	Arachnida	Opiliones	GONYLEPTIDAE	*Iandumoema uai*	*yes*	PAN Cavernas São Francisco	
Invertebrados	Arachnida	Palpigradi	EUKOENENIIDAE	*Eukoenenia maquinensis*	*yes*	PAN Cavernas São Francisco	

Peixes	Actinopterygii	Siluriformes	TRICHOMYCTERIDAE	*Trichomycterus itacarambiensis*	*yes*	PAN Cavernas São Francisco	XII- Creation and expansion of university courses, research and extension activities related to the subject of Speleology. XIII - Awareness raising and mobilization of the public power and society in general (especially the communities located in areas of occurrence of caves) on the importance of the Speleological Patrimony. XIV- Structuring of the tourist use of caves in the São Francisco River basin and surroundings.
Invertebrados	Insecta	Lepidoptera	PAPILIONIDAE	*Parides burchellanus*	*yes*	PAN Lepidoptera	The most important is the conservation and recovery of habitats where the species occurs, including watercourses. Basic scientific research on taxonomy, biology and ecology, as well as environmental education, are essential. Fieldwork is also needed to clarify its real geographical distribution.
Invertebrados	Insecta	Lepidoptera	RIODINIDAE	*Nirodia belphegor*	*yes*	PAN Lepidoptera	Identification of more localities with occurrence of the species and immediate preservation of the habitats where it occurs.
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Cynolebias leptocephalus*	*yes*	PAN Rivulideos	1. Protect remaining biotopes in the distribution region of the focal rivulid fish species of the PAN, preventing them from being altered or suppressed as a result of agroforestry activities, the implementation of projects (such as dams, dams, highways, wind farms, ports, hotel complexes and others) and urbanization 2. To carry out technical and scientific studies, in situ and ex situ, applied to the conservation of focal species of rivulids and their habitats 3. Disseminate knowledge about the focal species of rivulids, sensitizing society on the importance of wetlands for their conservation 4. Introduce the theme of rivulids in environmental management, subsidizing environmental agencies (federal, state and municipal) to include measures to protect species and their habitats in planning, licensing, monitoring, monitoring and control
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias auratus*	*yes*	PAN Rivulideos	
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias fulminantis*	*yes*	PAN Rivulideos	
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias ghisolfii*	*yes*	PAN Rivulideos	
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias marginatus*	*yes*	PAN Rivulideos	
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias multiradiatus*	*yes*	PAN Rivulideos	
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Hypsolebias rufus*	*yes*	PAN Rivulideos	

Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys santanae*	*yes*	PAN Bacia do São Francisco	Produce, foment and integrate information on fishing and fishing resources for the development of management strategies in the São Francisco river basin. To expand knowledge on the introduction of exotic species and related activities and to ensure compliance with the current legislation on this theme, in the São Francisco river basin. To systematize, make available and seek for the integration of the executive actions of the existing plans, programs and projects on the environmental issues of the São Francisco river basin To avoid further fragmentation in the gutter and tributaries of the São Francisco river basin and to reconcile the dams' defluent flows also with the needs of the aquatic fauna and the reproductive period. To control the load of fine sediments originating mainly from mining activities and the contribution of organic matter, nutrients and agrochemicals in the São Francisco river basin. To control the deforestation of riparian vegetation in the São Francisco river basin and ensure its recovery with native species of the region.
Peixes	Actinopterygii	Cyprinodontiformes	RIVULIDAE	*Simpsonichthys zonatus*	*yes*	PAN Bacia do São Francisco	
Peixes	Actinopterygii	Cyprinodontiformes	POECILIIDAE	*Pamphorichthys pertapeh*	*yes*	PAN Bacia do São Francisco	