MANAGING CEPF'S OUTCOMES DATABASE FOR THE EASTERN ARC MOUNTAINS AND COASTAL FORESTS (EACF) OF TANZANIA AND KENYA BIODIVERSITY HOTSPOT.

Final report for the period January and February 2005

By

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Introduction

The following is a report on progress made during the last reporting period, in the management of the Eastern Arc Mountains and Coastal Forests Biodiversity Database. The main objective of this project was to provide continuity from the outcome definition process to the implementation of the strategic directions without creating a gap in responding to species distribution gaps and queries identified by partners and stakeholders working in the region.

Much of the work done since the last reporting period in December for the database management project was mainly concentrated on updating the species-site linkages. The digitization of site outcomes into polygons and rectification of the GIS points for site outcomes had been achieved with the help of satellite data from TRAFIC, GIS database on World Database on Protected Areas and input from the National Museums of Kenya.

This report summarizes activities in the species-site linkages, GIS data and contacts made in the period between January and February 2005. The report also gives a cumulative account of the changes effected and developments made on the database since the first reporting quarter in 2004. A financial statement for January and February 2005 is also included.

Species-Site Linkages

The six excel files on distribution of amphibians, birds, reptiles, mammals and coastal forest sites which were received from Dr. Neil Burgess and Kim Howell have been very useful. Some of these files had important information on species distributions and the database manager has continued to use them to evaluate the distributions and update the database as appropriate. Updated versions of these files have been received and subsequently used to update the database.

The following changes on species-site linkages have been made to the database:

- *Nectophrynoides viviparus* (vulnerable) and *Nectophrynoides poyntoni* (critically endangered) which are both amphibians were added to Rubeho, Udzungwa and Uluguru mountains. The amphibians, were new additions to the database;

- *Afrixalus uluguruensis* was added to Mahenge, Nguru and Nguu mountains, Pangani District coastal forests, Udzungwa mountains, Udzungwa National Park and Ukaguru mountains. These were contributions from Neil and Kim Howell.

- *Nectophrynoides viviparus* was added to the Rubeho, Udzungwa and Uluguru mountains as per data supplied by Neil and information from the Red List.

- *Leptopelis vermiculatus* was added to Mahenge, Mpanga village forest reserve, Nguru and Nguu mountains, Shimba Hills and Ukaguru mountains courtesy of data from Neil and print references.

- *Nectophrynoides tornieri* was added to Mpanga Village Forest Reserve while *Phrynobatrachus uzungwensis* to Udzungwa National Park.

- *Loxodonta Africana* was added to Rubeho Mountains, Udzungwa National Park and Ukaguru mountains

- *Afrixalus morerei* was added to Udzungwa Mountains as per information from the Red List.

Other cumulative changes that have been effected on the database since the publishing of the Ecosystem Profile in July 2003 are as follows:

- *Hyliota usambarae* added to West Usambara Mountains site;

- *Beamys hindei,* a vulnerable mammal, added to South Pare, Nguu, Rubeho and Ukaguru Mountains sites;

- *Cephalophus spadix,* a vulnerable mammal, added to South Pare, West & East Usambara, Nguu, Nguru, Uluguru, Ukaguru, Rubeho Mountains and Mahenge sites;

- *Crocidura monax,* a vulnerable mammal, added to the Nguu and Ukaguru Mountains;

- *Crocidura usambarae,* a vulnerable mammal as well, added to the East Usambara Mountains;

- *Dendrohyrax validus,* a vulnerable mammal, added to Taita Hills Forests, hence, increasing the number of sites in Kenya with globally threatened mammals from 9 to 10. This species was also added to West Usambara, Nguru, Uluguru and Ruhebo Mountains;

- *Myonycteris relicta, a* vulnerable mammal, was added to Uluguru Mountains;

- *Paraxerus vexillarius, a* vulnerable mammal, added to East Usambara, Nguru and Uluguru Mountains;

- *Procolobus gornorum, a* vulnerable mammal, added to the Rubeho mountains;

- *Rhyncocyon,* an endangered mammal, added to Nguru and Uluguru mountains;

- *Sylvisorex howelli, a* vulnerable mammal, added to the Nguu and Ukaguru mountains;

- *Arthroleptides martiensseni,* which is an endangered amphibian, added to Uluguru mountains;

- *Hoplophryne rogersi,* an endangered amphibian, addded to Uluguru mountains;

- *Nectophrynoides minutus* also an endangered amphibian, added to Rubeho mountains;

- *Phrynobatrachus kreffti,* an endangered amphibian, added to North Pare mountains; and,

- *Phrynobatrachus uzungwensis,* an endangered amphibian as well, added to Nguru Mountains.

- Ngosi Crater which was important for *Crocidura usambarae* was deleted from the database because it is not within the EACF hotspot;

- Numbering of sites in the Ecosystem Profile was readjusted from number 65 to 160 to correspond with the sites labeling on the map;

- Duplication of 2 species in Shimba Hills (*C. pseudoverticillatum* and *C. kilifiense*) was corrected to reflect one species per site;

- *Otomops martienseni* added to Udzungwa Mountains courtesy of information from Nobby (University of Illinois);

- *Rhyncocyon petersi* added to Udzungwas courtesy of Nobby's information;

- *Zosterops silvanus* added to Mt. Kasigau;

- *Dendrohyrax validus*, *Anthreptes rubritorques*, *Rhyncocyon petersi* added to Nguu Mountains;

- *Dendrohyrax validus*, *Nectophrynoides tornieri*, and *Beamys hindei* added to North Pare Mountains;

- *Dendrohyrax validus* added to South Pare Mountains;

- *Angylocalyx braunii* added to Lower Tana River forests, after merging Lango ya Simba with Lower Tana River forests; and,

- Addition of *Cephalophus adersi* to Dodori Forest reserve, courtesy of information from Tim Wacher.

Identification of tentative sites for *Lanistes farleri* as Magila & Zanzibar and *Lanistes stuhlmanni* as Dar es salaam & a place near Ifakara was done with the help of Mr. Musobi Kiberenge, a research scientist at the Department of Invertebrate Zoology at the National Museums of Kenya. Other reports indicate that *L. farleri* occurs in Muheza as well. This however needs to be confirmed by the resource persons operating in the field so as to update the database appropriately. No sites had been identified for these two species due to lack of information at the time the Ecosystem Profile was compiled.

Some clarifications on the species of Udzungwa Mountains and Udzungwa National Park were received from Dr. Kim Howell and Dr. Michele Menegon. This is also

expected to be done for the data supplied by Dr. Neil Burgess for amphibians, birds, reptiles and mammals because the distinction between the Udzungwa Mountains and Udzungwa National Park was initially not made. However, work continues to be done to find out the distribution of the species within the Udzungwas. In addition to this, clarifications, in collaboration with Neil Burgess and John Salehe of WWF also continue to be sought for the specific coastal forest(s) where the individual species occur.

Thirteen plant species in the Outcomes database have been identified to have a "widespread" distribution and thus may not qualify as threatened. However, after consultations with Dr. Quentin Luke, it was agreed that this anomaly will be best sorted out once the review of the plants in the IUCN Red Lists has been completed. This will give a more complete picture on the status of the "widespread species". Nevertheless, any errors on species-site linkages continue to be corrected as information becomes available. For instance, *Prunus africana* was deleted from Shimba Hills.

The 13 species identified to have "widespread" distribution are as follows:

1. *Uariodendron kirkii* (South Pare mountains, Taita Hills forests, West Usambara mountains),
2. *Mildbraedia carpinifolia* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
3. *Prunus africana(East Usambara mountains, North Pare mountains, South Pare mountains, Taita Hills forests, West Usambara mountains),*
4. *Cynometra suaheliensis* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, West Usambara mountains),
5. *Cynometra webberi* (Arabuko-Sokoke forest, East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, West Usambara mountains),
6. *Dialium holtzii* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
7. *Julbernardia magnistipulata* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
8. *Dalbergia vacciniifolia* (Boni forest, Diani forest, Kisarawe District coastal forests, Shimba Hills, Tanga (Pangani),
9. *Erythrina sacleuxii* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
10. *Vepris sansibarensis* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
11. *Zanthoxylum holtzianum* (East Usambara mountains, North Pare mountains, Shimba Hills, South Pare mountains, Taita Hills forests, West Usambara mountains),
12. *Diospyros greenwayi* (Diani forest, Handeni District coastal forests, Mafia Island, Pangani (Mwera), Shimba Hills, Taita Hills forests, Uluguru mountains),

13. *Psydrax faulknerae* (Bagamoyo District coastal forests, Diani forest, Lindi District coastal forests, Selous game reserve, Shimba Hills, South Pare mountains, Taita Hills forests, Tanga (Morongo).

The total number of sites dropped to 159 from 160 because Lango ya Simba which is one of the Lower Tana River forests was merged to the latter. All the changes done on the Master List were effected through all the respective layers so that the tables and appendices are updated accordingly.

The GIS Data

In addition to the 60 sites that were already digitized, a total of 25 sites have been digitized as new polygons and forwarded to CI for inclusion in the new large scale map for the hotspot. The digitized sites so far are as follows:

1. Dakatcha woodlands
2. Diani forest
3. Gongoni forest reserve
4. Kaya Fungo
5. Kaya Gandini
6. Kaya Gonja
7. Kaya Jibana
8. Kaya Kivara
9. Kaya Muhaka
10. Kaya Teleza
11. Kilombero valley
12. Kisiju
13. Lindi (Nyangao River)
14. Lindi Creek
15. Mahenge (Nambiga forest reserve)
16. Mahenge (Sali)
17. Mangea Hill
18. Marafa
19. Masasi
20. Mikindani Mnima
21. Mount Kasigau
22. Newala (Kitama)
23. Newala (Mahuta)
24. Tanga South
25. Uvindunda Mountains

The site “Mahenge (Nambiga forest reserve)”, previously “Mahenge” was modified to reflect the exact location which is Nambiga forest reserve in Mahenge. The species data for this site have been shifted as appropriate. Some of these sites were digitized using satellite images while others were compiled from the World Database on Protected Areas (WDPA) GIS database and other data sources from partners. Twenty five points have been adjusted in accordance with the newly digitized polygons as shown in table 1.

Table 1. Points adjusted in accordance with the newly digitized polygons.

	Old values		New values	
Site	**Lat**	**Long**	**Lat**	**Long**

1.	Baricho (near Arabuko Sokoke)			-3.1	39.78
2.	Gongoni forest reserve	-4.42	39.47	-4.44	39.47
3.	Kaya Fungo	-3.78	39.50	3.8	39.51
4.	Kaya Gandini	-4.02	39.5	-4.03	39.51
5.	Kaya Muhaka	-4.33	39.53	4.33	39.52
6.	Kaya Teleza	-4.13	39.50	-4.14	39.5
7.	Kisiju	-7.4	39.33	-7.38	39.33
8.	Lindi (Nyangao River)	-10.00	39.00	-10.25	39.29
9.	Lindi Creek	-10.00	39.00	-10.06	39.68
10.	Mahenge (Nambiga forest reserve)	-	-	-8.58	36.49
11.	Mahenge (Sali)	-8.97	36.68	-8.93	36.66
12.	Mahuta	-10.87	39.44	-10.93	39.6
13.	Masasi	-10.83	38.58	-10.68	38.82
14.	Mount Kasigau	-3.83	38.67	-3.79	38.7
15.	Newala (Kitama)	-10.75	39.5	-10.74	39.67
16.	Newala (Mahuta)	-10.87	39.44	-10.93	39.6
17.	Tanga South	-5.25	39.07	-5.27	39.07
18.	Lindi (Ngongo)			-10.07	39.62
19.	Tanga (Sigi River)			-4.92	38.7
20.	Tanga (Pangani)			-5.38	38.33
21.	Pande and Dondwe Coastal forests			-6.7	39.08
22.	Lower Tana river forests			-1.98	40.14
23.	Kaya Gonja			-4.57	39.12
24	Kaya Mtswakara			-4.02	39.52
25.	Kambe Rocks			-3.86	39.65

A total of 77 sites are yet to be digitized as polygons. Forty-seven of these sites are in Tanzania while 30 are in Kenya. The sites need to be verified to establish their boundaries and also determine whether some of them could be merged together as one site. This would require some financial support so as to facilitate the personnel to work on the ground and get the actual GPS points for the polygons/sites in question. The database management is optimistic that the undigitized sites will be finalized once the “mapping for forest cover” activities start in the hotspot during the implementation of the Birdlife Monitoring Project.

The following changes so far have been made for various polygons or sites:

- Duplication for Nyumburuni forest reserve corrected.
- Pande and Dondwe coastal forests polygons corrected. Pande is a Game reserve north-west of Dar es salaam while Dondwe forest is in the South-west. The two are combined to form one IBA under the name “Pande and Dondwe Coastal Forests”. A polygon for Dondwe has not been found yet.

- Ngosi crater and Lango ya Simba deleted from GIS layer.

The following GIS datasets were received from different partners:

- Mr. John Salehe (WWF) provided GIS data on coastal forests.

- Mr. David Knox (CI) provided a CD of the World Database on Protected Areas.
- Dr. Harrison Ong'anda (KMFRI) provided GIS data on Arabuko Sokoke forest (boundaries, elephant paths and water points etc).

- Mr. Dan Omolo (ILRI) provided GIS data from the Africa Mammalian database. We hope to share more GIS products through this collaboration.

- Mr. Meshack Nyabenge, Head of the GIS unit at ICRAF provided some data and technical input on satellite images.

- Landsat satellite images for Kenya and Tanzania were obtained from the Tropical Rain Forest Information Centre of Michigan State University.

Contacts

The contacts database continues to grow, and constitutes institutions as well individuals. The database manager continues to liaise with institutions and research scientists to verify or clarify issues that pertain to species-site linkages. The research departments at the National Museums of Kenya (NMK), the Kenya Wildlife Service KWS), Royal Society for the Protection of Birds (RSPB), California Academy of Sciences, the Wildlife Biologist Zoological Society of London, as well as researchers who have worked or are working in the hotspot, have been very instrumental in this process.

At the herpetology department of the NMK, Mrs Damaris Rotich, Mr Patrick Malonza, Mr. Victor Wasonga have collaborated with the database officer in verifying data on amphibians and reptiles. Mr Charles Lange and Mr Musobi Kiberenge of Invertebrate Zoology department also participated in the data compilation process by helping to verify records on invertebrates. Mr. Paul Webala of mammalogy department has also been helpful in verifying records on mammals.

Records on distribution of small mammals (*B. hindei, R. petersi, D. validus,* and *N. tonieri*) were received from Nobby (University of Illinois, Chicago), Dr. Galen Rathbun of California Academy of Sciences, Dr. Tom Butynski (birds and mammals), Tim Wacher (Wildlife Biologist Zoological Society), Dr. Kim Howell (University of Dar es salaam) and Dr. Sam Ndanje (KWS). Further contacts with Galen Rathbun on literature for small mammals were made and through this we were able to download some important information on distribution of small mammals in the Tanzanian part of the hotspot.

Quentin Luke of East African Herbarium was very helpful in providing information on plant records and sorting out plant references.

On GIS data, Paul Buckley of Royal Society of Protection of Birds (RSPB) provided a copy of GIS data for IBAs of Kenya that was very useful in comparing point and polygon data for sites. Some polygon data was extracted from this IBA GIS database

for Kenya, e.g. Dakatcha woodlands and Gongoni forest reserve. Mr. Milewa of NMK prepared the map for the EACF hotspot. However, the NMK GIS unit requires some capacity building to be able to undertake full GIS functions for the sites in Kenya and by extension in Tanzania.

Database Development

Nature Kenya received a trial version of the Access database from David Knox, based on Ghana. The database manager has been evaluating this version as he awaits the new system for the EACF hotspot to be finalized and installed.

Library database/Published papers

Many references for the species records, especially for plants, were initially entered as abbreviations. The abbreviations were verified with papers sent by resource people, libraries in the National Museums of Kenya as well as Missouri Botanical Gardens TROPICOS database and obtained the full citations. All e-mails that forwarded any information that is not yet published were and continue to be filed for purposes of documentation and follow up.

The internet facility has been very useful to the database. Online information on EACF hotspot has become easily accessible as well as making contacts with stakeholders who have worked in the hotspot. The connection has been used to as well access any new information, for example, in the IUCN Red List and the TROPICOS databases. A number of discrepancies have been detected between IUCN Red List/TROPICOS and Outcomes Database. These ones include change of the conservation status and use of varied names of the species. These ones have been well highlighted in the Outcomes Database.

Donors/Projects database

The following funded projects have been entered into the projects and donors 'database':

1. Managing CEPF's outcomes database for the eastern arc mountains and coastal forests of Kenya and Tanzania biodiversity (EACF) hotspot.
2. Chytrid distribution and pathogenecity among frogs of Udzungwa Mountains.
3. Promoting Sustainable Community Livelihood Through Forest Landscape Restoration and Public Awareness: Forest Landscape Restoration around Shimba Hills National Reserve
4. Field Guide to the Moist Forest Trees of Tanzania
5. Do Payments For Environmental Services Offer the Potential For Long Term Sustainable Financing
6. CEPF Investment Coordination and Sustainability in the Eastern Arc / Coastal Forests Hotspot
7. Conservation Ecology of the Endangered Endemic Sanje Mangabey, *Cercocebus sanjei* of the Udzungwa Mountains, Tanzania
8. Preventing Unsustainable Timber Trade from the Coastal Forests of Southeast Tanzania Following Completion of the Mkapa Bridge
9. "Scientific Advisor" for the Eastern Arc Mountains and Coastal Forests of Tanzania and Kenya Hotspot
10. Capacity Building to Empower Community Conservation
11. Kaya Kinondo Community Ecotourism Project

12. Baseline Carbon Storage Assessment of Kenya?s Coastal ForestsBaseline Carbon Storage Assessment of Kenya's Coastal Forests
13. Conserving coastal and Eastern Arc forests through community access to retail markets for Good Wood wood carvings on the south coast of Kenya
14. Rapid Environmental Impact Assessment of the Rehabilitation of theTana Delta Irrigation Project with Design of Critical Primate Habitat Improvement, Increased Indigenous Forest Connectivity and Community Woodlots
15. Facilitating the Process of Designing CEPF/GCF Connectivity Interventions in the Udzungwa Mountains Area
16. Assessment of the conservation status of the newly-discovered mangabey Lophocebus sp. in the Udzungwa Mountains of Tanzania
17. Primates on Mt. Kasigau, Kaya Rubai and Along the Tana River, Kenya: Preparing for Red List Assessments and Conservation Action
18. Facilitating a Process of Stakeholders Consultations on the Interventions Required to Restore and Increase the Connectivity of Forest Patches in Taita Hills

Enquiries to institutions that have conservation interests within the hotspot continue to be made so as to add more projects and their details to this list.

Planned activities

The database has been incorporated in the Birdlife Monitoring Project as one of the project outputs. The database management views this as a great opportunity to realize its objectives and consolidate further the achievements so far made. The following activities are scheduled to take place.

- Update of species-site linkages to continue as records become available.
- Continue compilation of outcomes data and liaise with CI to acquire the undigitized polygons.
- Continue compilation of contacts database.
- Continue compilation of database on published papers and other relevant literature on species and/or sites in the hotspot.
- Continue to seek clarification of various entries as necessitated by data received.
- Transfer of some data to WCST database management after an orientation of the personnel concerned
- Harmonization of naming of the species between the IUCN Red List and the Outcomes database
- Harmonization of the conservation status of the species between the IUCN Red List and the Outcomes Database
- Upload of data into the web based facility when it becomes available through the CI

ORGANIZATION: NATURE KENYA

RE: FINANCIAL REPORT FOR THE PERIOD 1 JANUARY 2005 TO 31 MARCH 2005

PROJECT: GRANT FOR MANAGING THE CEPF'S OUTCOMES DATABASE FOR EASTERN ARC MOUNTAINS AND COASTAL FORESTS OF TANZANIA AND KENYA.

Budget Summary			Actual Expenditure		Actual Expenditure		Total Actual Expenditure	
Item	Ksh	US$	1 April to 31 Dec-04	1 April to 31 Dec-04	1 Jan to 31 Mar-05	1 Jan to 31 Mar-05	1 April'04 to 31 Mar-05	1 April'04 to 31 Mar-05
			Kshs	1 USD=Kshs 76.6	Kshs	1 USD=Kshs 76.6	Kshs	1 USD=Kshs 76.6
		1 US$=Kshs 74						
Equipment	80,000	1,081	90,865	1,186		0	90,865	1,186
Stationery	24,000	324	7,474	98	764	9.97	8,238	108
Communication	44,000	595	26,846	350	9,193	120	36,039	470
Travel	35,000	473	16,910	221	2,640	34.46	19,550	255
Technical support and st	444,000	6,000	427,590	5,582	145,869	1,904	573,459	7,486
Nature Kenya Overhead	94,050	1,271	85,453	1,116	16,270	212	101,723	1,328
Contingencies @ 3%	18,810	254	0	0	0	0	0	0
Grand Total	**739,860**	**9,998**	**655,138**	**8,553**	**174,736**	**2,281**	**829,874**	**10,834**
SUMMARY	**Kshs**	**US$**						
Receipts	765,847	9,998						
Total Expenses	829,874	10834						
Deficit	**-64,027**	**-836**						

Paul Matiku
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