CEPF FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	Strand Life Sciences Pvt. Ltd.
Project Title:	Western Ghats Biodiversity Open Collaborative Information System
Date of Report:	8th September 2013
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CEPF Region: Western Ghats and Sri Lanka Biodiversity Hotspot

Strategic Direction: Strategic Direction 2. Improve the conservation of globally threatened species through systematic conservation planning and action.

Grant Amount: 207183.0

Project Dates: 2010/11/1 End Date: 2013/6/30

Implementation Partners for this Project (please explain the level of involvement for each partner):

The Project was jointly implemented with the French Institute of Pondicherry (IFP). This was a collaborative project between Strand Life Sciences (SLS) and IFP. The project has also forged scientific partnerships with various agencies based on multiple criteria like geographical areas of study, thematic orientation, access to large biodiversity datasets and capacities to mobilize the second rung of contributors to the portal. The following organizations: Care Earth, Chennai; Zoo Outreach, Coimbatore; Research and Action in Natural Wealth Administration (RANWA), Pune; Asia Biodiversity Conservation Trust, Trivandrum and the India Biodiversity Portal have participated and contributed to the project.

Project partners curated and contributed their own datasets to the portal and will actively mobilized datasets from the second rung of potential contributors. The overall responsibility of curating such collected data was with the formal partners, while IFP would monitor and evaluate the data curation. Sub grants were provided to partners for human resources to curate data, cover travel costs and for basic equipment. Other CEPF grantees were also be requested to contribute data from their projects to the portal. All such partners who contribute to this long term initiative will form the consortium of partners who will own the portal initiative, which we hope will ensure the future growth and sustainability of the portal. The team attended all CEPF coordination and evaluation meetings during the project period and presented the portal. They requested data to be shared on the portal with follow ups. Over 40 CEPF grantees and all the project sub-grantees have contributed data to the portal as of date.

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile.

Please summarize the overall results/impact of your project.

Planned Long-term Impacts - 3+ years (as stated in the approved proposal):

1. Provide the information base for motivating informed action on biodiversity and conservation of the Western Ghats.
2. Facilitate (Develop) mechanisms for citizen stakeholder participation in the policy for conservation of the Western Ghats.
3. Encourage a spectrum of research on biodiversity, from citizen science initiatives, school and education projects, to academic and action research on the Western Ghats, enabled and articulated by the gaps as reflected in the portal.
4. Explore and encourage newer initiatives for conservation like payment of ecosystem services by providing monitoring and valuation of biodiversity in Western Ghats
5. Drive awareness and public opinion towards the importance of biodiversity of the Western Ghats via social networks and social marketing.

Actual Progress Toward Long-term Impacts at Completion:

The Western Ghats Portal (WGP) has established a robust informatics platform to aggregate and disseminate biodiversity information in the public domain. Through its spatial module, species pages module and citizen science module it has provided a base for accumulating and synthesizing information of the biodiversity in Western Ghats. The portal has set up a global standard compliant framework to gather and serve spatial data and has populated it with basic environmental layers. This will serve as a foundation for understanding biodiversity and aid conservation efforts. The species pages module has sourced information from scientific literature, species assessment surveys and from institutions to serve as a basis of species information in Western Ghats. It has set up a process and mechanism by which species information can be aggregated in the long term by participation of researchers and from observations accumulated on the citizen science module. The species module conforms to evolving international standards setting in a process to exchange species information with international databases. The integration of citizen science module with spatial and species modules will help build distribution data of species in the long run. The platform has been functioning well and has matured in the last 2 years. WGP has established itself firmly in the biodiversity informatics domain in India.

WGP has built collaborations with a wide spectrum of stakeholders including research institutions, civil society organisations, amateur naturalist groups, Government organisations, businesses and individuals. The portal has facilitated the flow of information from different sources enabling stakeholders to freely access and use this information for better conservation in Western Ghats. WGP has campaigned widely in the Western Ghats region for open access to biodiversity information and citizen participation. With a robust citizen science module and a scientifically curated species pages module, integrated onto a single platform, WGP has facilitated collaboration between civil society and scientific community. WGP now enables addressing intractable scientific questions by providing an opportunity for researchers to leverage the power of citizen science.

The WGP Groups infrastructure can be used by schools, colleges and local communities to build inventories publish and contribute local biodiversity information to global databases. The portal can also be used as a system to monitor biodiversity in their immediate environment. The Groups

infrastructure can also facilitate social networking of individuals around a certain biodiversity theme or a geographic area.

With its concerted effort in engaging the spectrum of stakeholders in Western Ghats, WGP has contributed to the increased awareness of biodiversity in Western Ghats and the importance of conservation. WGP has the commitment of around 15 organisations who have committed to function as a consortium to take forward the portal in the long term.

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal):

1. Scientific collection, curation, organization, and dissemination of biodiversity and ecosystem data of the Western Ghats via the Western Ghats Portal.
2. Building a virtual community of stakeholders on the biodiversity and conservation of the Western Ghats.

Actual Progress Toward Short-term Impacts at Completion:

Over the duration of the project, the WGP has accumulated 123 map layers, 9189 species pages, 104 checklists and 4240 observations. These map layers cover the basic environmental layers that impact biodiversity; like soil, water, climate, demography, protected areas, etc. The species pages cover lists of angiosperms of the Western Ghats, IUCN status reports of species of the Western Ghats, etc. We have also collected species lists of known species from global databases and created stubs to be populated over the next few years.

WGP has campaigned extensively among the wide spectrum of stakeholders including research institutions, civil society organisations, amateur naturalist groups, Government organisations, businesses and individuals. The portal has over 2719 users with about 10% being active contributors to the portal. The citizen science observation interface accumulates over 1000 records every 20 days and this is bound to grow over time.

The corpus of information which is available on the portal as of date has been contributed by a variety of stakeholders such as CEPF grantees, portal partners and a community of researchers committed to open data. WGP has built a community around it comprising active amateur naturalists, researchers and a vibrant group of organisations. The organisations have committed themselves to work as a consortium to enrich the content of the portal in terms of data and participation.

Please provide the following information where relevant:

Hectares Protected: Not Applicable
Species Conserved: Not Applicable
Corridors Created: Not Applicable

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

WGP has demonstrated the possibilities of participation and generating open data in biodiversity domain in India. With various meetings and in various fora the portal has been presented with its campaign for open data and participation. WGP has now firmly established the idea of open data in the biodiversity informatics landscape in India. The WGP project has been an opinion leader in open data in biodiversity information in India and all other portal initiatives need to subscribe to open data.

The portal has established a robust citizen science module. There were initial concerns that the citizen participation would be inert, with people sharing only photographs and multi-media and there would be no rigorous scientific content, and correct identifications to generate authentic biodiversity data. Experts would not participate and most of the observations would be unidentified and unverified images. However, WGP has shown that while citizen participation has taken time to pick up, there is a great potential in India to enlist participation in documenting reliable and validated biodiversity information from distributed locales. Over 95% of the observations have been identified to at least the family level. Now seeing the scientific value of the portal for biodiversity, experts have taken notice and are increasingly helping in the identification and verification of biodiversity information.

Consistent campaigning and increasing awareness on benefits of data sharing has now established a positive attitude to sharing data. The CEPF grantees have been requested to share the data generated by the project on the portal. The data from the grantees have been curated and deployed on the portal in a consistent format. This has added value to their data and has made contributors appreciate the value of sharing data.

Researchers' attitude towards sharing data in public domain is still evolving. Global initiatives on open data are reflected with initiatives in India, where many researchers are seeing the value of using and exploiting open data for their own research. This also encourages researchers to put their own data in the public domain.

Government policies on open data are being framed, but will take time to be implemented and liberate huge amounts of data held in their repositories. The National Data Sharing and Accessibility Policy has been notified. This requires all data generated by Government funded research projects to be put into the public domain. These policies will take time in establishing itself as an open data culture and the portal is well poised to have a mature platform to accept, publish and archive the data in the biodiversity domain. Further the Right to Information Act has put the onus on the Government to provide Government data in the public domain. Government departments that have biodiversity data are now open to putting these out in the public domain. The portal is well positioned to provide a platform for such initiatives as well.

Over the project period the platform has been satisfying user needs and attracting more and more users to the portal. With increasing users, functionality, user needs and requirements have also been increasing. It is a challenge to keep in pace with evolving needs. The portal team has been striving and doing their best in putting out new functions and evolving and maturing existing functions. Technology development should be an on-going process and needs to grow in tandem with the growth of users on the portal.

Were there any unexpected impacts (positive or negative)?

None.

Project Components

Project Components: *Please report on results by project component. Reporting should reference specific products/deliverables from the approved project design and other relevant information.*

Component 1 Planned:

Platform Development will be led by Strand Life Sciences. Develop a web-based platform for the Western Ghats Portal for aggregating and serving conservation and biodiversity information on the Western Ghats, incorporating Web 2.0 technologies, using open source components and ensuring compatibility with the India Biodiversity Portal.

Component 1 Actual at Completion:

Technology has been an important component of the project that provides an enabling platform to build a mature and vibrant biodiversity information system for the Western Ghats. We have a mature web-based platform with the following modules:

WebGIS Module: A fully featured webGIS module is built on the open source GeoServer and is populated with 123 map layers. All layers are categorized into thematic and geographic categories. The thematic categories include Biogeographic, Abiotic, Demography, Species, Administrative Units, Land Use Land Cover, Conservation and Threats. All layers are under creative commons licenses with over 60% of all layers freely sharable and downloadable by the end user. The map module is integrated with the species pages module and the citizen science module. Map layers can be overlayed and the attributes can be queried at any location. There is a generic search and a species search function on the map module that will retrieve all features that satisfy the search criteria.

The usage of the map module is currently limited to GIS professionals. Providing more flexible use of spatial objects detached from the layers would be valuable to increasing utilization of the rich datasets available in the map module.

Species Pages Module: The species pages module has been built conforming with international standards of the Taxonomic Database Working Group (TDWG). Multiple standards, like the Plinian Core, the Darwin Core, and the Species Profile Model were examined and the Species Profile Model was adopted by the portal, since it is used by the Encyclopedia of Life and satisfied the use case of providing one page for every species. For exchange of data from the portal the Darwin Core Archive Standard is used, since this is growing to be the most flexible and common exchange standard among biodiversity informatics sites across the world. Over 9000 curated species pages have been uploaded to the portal. Contributions to species pages is through curators and content is verified and loaded only by the portal team. Participation on the species pages is by way of comments that can be added each section of a species page.

There could be a rationale for greater and open participation on species pages, but we would need carefully worked out mechanisms to ensure scientific accuracy and quality of content. The portal team is exploring and experimenting with mechanisms for increasing participation on species pages.

Observation Module: The observation module is a mechanism in the portal to encourage citizen science, involve large scale participation and crowd source biodiversity data from different locales in the Western Ghats. It allows citizens to observe biodiversity and upload the observation with a media, a location, a species call, and notes. Others can interact on an observation with species suggestions and comments. These observations also feed the species pages and enrich distribution information of species. The module has now matured and is fully functional on the portal. It has been seeing increasing activity in the last few months and we are convinced this will be a vibrant crowd source and citizen science portal for biodiversity.

Module integration and services: All the modules are integrated with each other to provide a cohesive platform for biodiversity informatics. Simple intuitive visualizations and analytics have been added to a dashboard that provide a view of the data and state of the portal; and provide transparency to portal operations. All data is structured under a taxonomic reference and a spatial reference. Interfaces to exchange data with other national and international initiatives like Encyclopedia of Life and Indian Bioresource Information Network (IBIN) have been established. All content on the portal use restful URLs so that search engines can index the information conveniently. This enables Internet users to easily search for information from the portal.

Component 2 Planned:

An active community of stakeholders contributing data to the Western Ghats Portal built through an outreach campaign to civil society, research institutions and the general public (Strand and IFP)

Component 2 Actual at Completion:

WGP has campaigned extensively among stakeholders to build an active community of contributors and users around the portal. The team has covered the Western Ghats region targeting key players in biodiversity conservation to popularise the portal and to promote participation on the portal. The team has had interactions with 299 organisations covering Government, research, civil society, education, informal social groups, media and corporate organisations. It has established direct contact with 694 individuals/experts seeking their collaboration for the portal. After the launch of the citizen science module, the team has organised bio-blitzes in forestry training colleges, among wildlife graduate students, school programs in Nilgiris and Vembanad, campaigned with the teaching community as part of their refresher courses; worked among tribal and village communities in Karnataka. The team also engaged with business enterprises such as Kannan Devan Hills Plantation Company Ltd., Munnar and Jungle Lodges and Resorts Ltd., Karnataka. These campaigns have helped build a vibrant community around the portal and the citizen science module is gaining increased participation.

In its effort to productively engage with research community at national and international level, the WGP team organised a number of workshops and participated in various events where it could directly address the research community. In February 2011, it organised a stakeholders consultation meeting to gain an understanding of expectations of stakeholders to an open access biodiversity informatics initiative. In Nov 2011, it brought together all big and small players in the biodiversity informatics scenario in India to discuss about the status of the emerging discipline in India and explore how initiatives could cooperate and collaborate. It also brought remote participants from Australia and America to present biodiversity initiatives in their region. In Jan 2013, the portal team with co-funding from IUSSTF organised a workshop on biodiversity informatics where a host of leading American and Indian researchers and practitioners presented their initiatives and discussed the trends in biodiversity informatics at the global level. The final workshop of the WGP was organised in Aug 2013 where a consortium was formed and the implications of biodiversity informatics for ecological sciences and conservation was discussed. This workshop served as a platform to engage with Indian Government agencies concerned with biodiversity and conservation such as Department of Biotechnology, National Biodiversity Authority, Botanical Survey of India, Zoological Survey of India, State Forest Departments of Kerala and Karnataka, Wildlife Institute of India among others.

The team represented and campaigned for the portal at various fora. The portal team presented the portal at the India Biodiversity Congress 2010 and 2012; Young Ecologists Talk & Interact (YETI) in 2011 and 2012; Student Conference on Conservation Sciences in 2011 and 2012 and organised a workshop in Society for Conservation Biology Asia 2012. The portal team organized and participated in a panel discussion on Biodiversity Informatics at the 11th Conference of Parties (CoP) to the Convention on Biological Diversity in October 2012. The team also participated in the formulation of the National Biodiversity Information Outlook for India driven by Indian node of GBIF. It interacted with CIRAD and Tela Botanica, France to exchange ideas and find synergy between their biodiversity informatics initiative Pl@ntnet and WGP. The portal team also attended the science congress organized by the Atlas of Living Australia in June 2013. WGP has formalised an MoU with Encyclopedia of Life to share and exchange content on Indian species at the global level.

WGP's partner, FERAL has organised a number of introductory GIS workshops and the relevant course materials are published in the public domain on the moodle platform in FERAL's server. The portal also produced and distributed campaign materials such as brochures and posters focusing on open data and citizen science.

Because of its incessant campaigning, the portal has earned its reputation as a leading effort in the arena of open access biodiversity information at the national level. Apart from the five formal partners, it has enrolled 11 other organisations who have strongly expressed their commitment to take this initiative forward and has agreed to work together as a consortium. It has 2719 registered users, of whom 10% are active contributors to the portal. The team also has campaigned in online social networking platforms such as facebook where people tend to share pictures and are organised in groups. This has resulted in increased activity on the citizen science module of the portal. It now receives around 120 observations every week and is expected to increase on the long run. These churn of activities represent an evolving vibrant community around the portal and we believe this will grow rapidly in the coming months.

Component 3 Planned:

All project deliverables achieved on time due to effective project management and coordination with components led by IFP.

Component 3 Actual at Completion:

The smooth implementation of the project is ensured by a core group which meets remotely every Tuesday for weekly status calls and face-to-face almost every quarter for reviewing progress. A planning meeting is held at the beginning of every year which chalks out the broader plan of action for respective years. The core group consists of members from IFP and Strand. Of late, members from partner organisations have also begun to participate in the weekly meetings and the brainstorming sessions. The team has organised periodic reviews both individually with each partner and also collectively with few partners on the sidelines of the workshops organised by WGP. Most importantly, close coordination and intense informal exchange between Strand and IFP team has facilitated the effective management of the portal effort.

Creative Commons licenses form the fundamental data sharing framework of WGP. The consistent campaigning of the team to encourage the use of most liberal of the CC licenses has resulted in 60% of the map layers downloadable and all species pages content to be exchanged with other global initiatives. The team continues to promote the CC-BY license, the most liberal license of CC to be adopted by the contributors.

A proposal for long term governance structure and financial sustenance was drafted in late 2012 and discussed among different partners at different stages. To work towards a common understanding on the principles that drive WGP, a consortium meeting was organised on 5 August 2013 at IFP, Pondicherry. This meeting brought together 16 organisations who have at different stages contributed to the efforts of establishing an open access biodiversity information system driven by civil society. The meeting agreed that a consortium structure would be a meaningful structure to collaborate, being organized into four working groups on (1) species pages, (2) research and policy, (3) capacity building and outreach and (4) informatics working group. Each of the member is at least part of one working group. The gathering also agreed that each working group will try to raise funds for the portal either individually or collectively and in around 3 years' time, when working relationships are concretised, it may be appropriate to think of a more formal, registered structure to govern the portal. Hence, WGP team has successfully managed to build the basics of a consortium, which needs to be incubated and nurtured for success in the long term.

Were any components unrealized? If so, how has this affected the overall impact of the project?

All were realised beyond committed deliverables.

Please describe and submit (electronically if possible) any tools, products, or methodologies that resulted from this project or contributed to the results.

WGP's code base is open and is available at www.github.com/strandls/biodiv which can be used by anyone interested to adopt and implement their own biodiversity information system.

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

The project design emphasised the participatory nature of the portal effort. Such an open access biodiversity information system has to be built with large scale participation and crowd sourced information. No single agency will be able to achieve the huge challenge. So the team decided on a participatory approach in which all relevant stakeholders are engaged in the development, implementation and contribution to the biodiversity information system.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

The team's participatory outlook and approach has helped the team to seek active involvement from stakeholders throughout the project period. Extensive campaign and a concerted effort to engage all stakeholders such as Government, research institutions, experts, amateur naturalists, students and activists is reflected in the activity and the data on the portal.

The core team which oversaw the implementation of the project was a combination of experts from technology and biodiversity domains of taxonomy, botany, zoology and conservation science. Over the project period a strong working relationship has been established between the interdisciplinary core group. The evolution and maturity of the core group has led to the implementation of a robust and enriching biodiversity informatics platform Technology development is not only a continuous process, but it also has to develop in tandem with user expectations. Ensuring this by interacting with users and implementing feature requests, the portal has stayed in tune with its user base.

Concerted effort around the citizen science module has resulted in gaining traction among user community of the portal. Particularly targeted online campaigns in social networking platforms like Facebook have resulted in attracting participation on the portal. This we hope will lead to inclusive and large scale participation on the portal.

Other lessons learned relevant to conservation community:

The research community has reservations on sharing data in public domain for various reasons such as priority for publications, credits, competition among researchers, etc. WGP has realised that persistence and perseverance with the open access philosophy will build trust among the community and fructify on the longer run. The team has witnessed changes in the attitude of researchers to the idea of data sharing, from outright rejection to a more positive approach to data sharing. Attitudinal changes take time and persistence on the principle of open data is beginning to bear fruit. The research community also needs to be assured of appropriate credits for their publications. Although, the portal has clear credits and attribution to every content, innovative adoption of data papers on the portal could be advantageous in encouraging open data.

The portal team has initially taken Internet access across the Western Ghats region for granted. On our campaigns, the portal team found Internet access and usage very limited in the small towns of the Western Ghats. While large scale internet spread and access is bound to improve

over time, campaigning among existing online communities in social networks have yielded quick and positive results.

Additional Funding

Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of the CEPF investment in this project.

Donor	Type of Funding*	Amount	Notes
Strand Life Sciences Pvt. Ltd.	Type A: Human Resources and contribution to Equipment	USD 69,629	Strand has made significant contributions to the human resources directly working on the project.
Indo-US Science and Technology Forum	Type B: Funding for organizing an Indo-US workshop in Biodiversity Informatics	USD 20,000	Organized an Indo-US Workshop on Biodiversity Informatics based on the progress on WGP.
Ashoka Trust for Research in Ecology and the Environment	Type C: Part funding and support for the workshop on Biodiversity Informatics	USD 15,000	Part financing for Indo-US Workshop on Biodiversity Informatics based on the progress on WGP.

*Additional funding should be reported using the following categories:

A   *Project co-financing (Other donors or your organization contribute to the direct costs of this project)*

B   *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project.)*

C   *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

WGP has set up a technology infrastructure with a fundamental framework to hold different types of information on biodiversity. This framework and infrastructure are highly scalable, which makes it easy to expand, adapt and replicate to any other hotspot or region of the world. The portal functions well, addressing the needs of both research and citizen science communities and also provides an exchange platform for both to interact. This will help in the generalizability, scalability and long term sustenance of the portal.

WGP has a basic consortium in place with commitments from 16 organisations who have volunteered to organise themselves as working groups around technology, species, research and outreach. Such institutional commitment coupled with the increasing activity on the portal is a very positive sign for the portal effort.

The technology platform of WGP is open source and is available at github, which can help others to replicate such a platform.

Summarize any unplanned sustainability or replicability achieved.

National Biodiversity Centre of Bhutan, which is the nodal agency for setting up a biodiversity information system for Bhutan has sought collaboration with WGP/IBP to set up their information system. Training and commissioning of the infrastructure is in process and by the end of the year, Bhutan Biodiversity Portal (BBP), which is based on the code base of WGP, will be launched. BBP also has adopted our consortium model for the management of their portal.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

None

Additional Comments/Recommendations

None

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

Please include your full contact details below:

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If your grant has an end date other than JUNE 30, please complete the tables on the following pages

CEPF Global Targets				
(Enter Grant Term)				
Provide a numerical amount and brief description of the results achieved by your grant. Please respond to only those questions that are relevant to your project.				
Project Results	**Is this question relevant?**	**If yes, provide your numerical response for results achieved during the annual period.**	**Provide your numerical response for project from inception of CEPF support to date.**	**Describe the principal results achieved from July 1, 2012 to May 30, 2013. (Attach annexes if necessary)**
1. Did your project strengthen management of a protected area guided by a sustainable management plan? Please indicate number of hectares improved.				Please also include name of the protected area(s). If more than one, please include the number of hectares strengthened for each one.
2. How many hectares of new and/or expanded protected areas did your project help establish through a legal declaration or community agreement?				Please also include name of the protected area. If more than one, please include the number of hectares strengthened for each one.
3. Did your project strengthen biodiversity conservation and/or natural resources management inside a key biodiversity area identified in the CEPF ecosystem profile? If so, please indicate how many hectares.				
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.				
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1below.				

If you answered yes to question 5, please complete the following table

Table 1. Socioeconomic Benefits to Target Communities

Please complete this table if your project provided concrete socioeconomic benefits to local communities. List the name of each community in column one. In the subsequent columns under Community Characteristics and Nature of Socioeconomic Benefit, place an X in all relevant boxes. In the bottom row, provide the totals of the Xs for each column.

Name of Community	Community Characteristics								Nature of Socioeconomic Benefit													
									Increased Income due to:													
	Small landowners	Subsistence economy	Indigenous/ ethnic peoples	Pastoralists/nomadic peoples	Recent migrants	Urban communities	Communities falling below the poverty rate	Other	Adoption of sustainable natural resources management practices	Ecotourism revenues	Park management activities	Payment for environmental services	Increased food security due to the adoption of sustainable fishing, hunting, or agricultural practices	More secure access to water resources	Improved tenure in land or other natural resource due to titling, reduction of colonization, etc.	Reduced risk of natural disasters (fires, landslides, flooding, etc)	More secure sources of energy	Increased access to public services, such as education, health, or credit	Improved use of traditional knowledge for environmental management	More participatory decision-making due to strengthened civil society and governance.	Other
Total																						

If you marked "Other", please provide detail on the nature of the Community Characteristic and Socioeconomic Benefit: