CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	-
Project Title:	Investigating congruence between biodiversity and ecosystem services across production landscapes in the Mysore-Nilgiri landscape corridor in the Western Ghats
Date of Report:	31st December 2010
Report Author and Contact Information	M.O. Anand, Lab-22, National Centre for Biological Sciences, GKVK Campus, Bangalore 560065. email: moanand@gmail.com

CEPF Region: Mysore-Nilgiri Landscape Corridor

Strategic Direction: 1 - Enable action by diverse communities and partnerships to ensure conservation of key biodiversity areas and enhance connectivity in the corridors

Grant Amount: $15,455.00

Project Dates: 1st October 2009 - 31st December 2010

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

1. Nature Conservation Foundation, Mysore: NCF provided logistical support for this project by contributing various field and office equipment, free of cost, as well as partially covering field vehicle maintenance charges.
2. National Centre for Biological Sciences, Bangalore: NCBS provided office space, computers and some field equipment and use of some laboratory facilities free of cost.
3. CAFNET, Kodagu: CAFNET supported this CEPF-ATREE Small Grant project through local expertise and logistical support during fieldwork. Mechanisms for data sharing and combined dissemination of results are being discussed.

Conservation Impacts

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

This project focused on generating baseline information on biodiversity and ecosystem services in the Virajpet taluk of Kodagu district: a biodiversity-rich human-dominated landscape that straddles the Mysore-Nilgiri and Malnad-Kodagu landscape corridors. Emphasis was given to generating baseline data on ecosystem services such as carbon storage because several forests in this region fall on public and private lands outside the formal protected area network, in landscapes that are primarily geared towards maximizing economic profits. Research aspects of this study centred on two broad themes: (1) characterizing the occurrence and abundance of biodiversity groups (trees, birds and butterflies) in remnant forest patches across the production landscape, thereby assessing the functional connectivity that this landscapes provides to these communities, and (2) assessing the level of congruence across remnant forest sites between biodiversity conservation value and carbon storage ecosystem services provided by these forests. Information dissemination and outreach – primarily to highlight the biodiversity and ecosystem service values of remnant forests in human-dominated landscapes – was achieved through presentations given to local stakeholders, as well as the preparation and distribution of posters. These activities were aimed towards gathering essential data and garnering support for community participation in conservation within CEPF landscape corridors (Strategic direction 1).

Please summarize the overall results/impact of your project against the expected results detailed in the approved proposal.

a. Landscape-scale patterns of biodiversity and forest carbon storage: Baseline data on bird communities, butterfly communities, tree communities, above- and below-ground carbon stocks from sacred forest sites (see map in Appendix A) across the Virajpet taluk have been collected and analysed. The results indicate that although some well-protected sacred forest sites might harbour rich biodiversity (including several endemic species) and store high amounts of carbon, increasing isolation and increasing disturbance by way of biomass extraction in general lead to reduced abundances of species important to conservation, reduced tree density, and correspondingly lower above- and below-ground carbon stocks. Altered tree community composition and population structures seem to indicate longer-term trajectories of declines in most carbon storage ecosystem services. Following a consistent and recurring pattern, overall bird species richness did not show much variation across the landscape, but there were marked shifts in the community. Importantly, species with globally restricted distributions such as endemics declined steadily with increasing distance from large contiguous forests. These results suggest that for a number of species of conservation importance such as the peninsular Indian endemics Malabar Trogon and White-bellied Treepie, the tree-covered landscape of sacred forest fragments and shade coffee plantations may contribute very little to landscape connectivity.

   Soil carbon storage showed fairly strong patterns of variation across the landscape, declining quite sharply in the more isolated sacred groves.

   Tree stand density appears to be an important positive correlate of most of the bird and carbon storage ecosystem service responses studied. Tree density, in turn, seemed to decline at higher levels of site isolation. The reasons for this pattern were not assessed during this study, but are likely related both to ecological processes as well as anthropogenic pressures such as biomass extraction.

   Overall, there appears to be some congruence in the response of some biodiversity and ecosystem services across the Kodagu landscape (see table below). Still, even within the limited set of responses studied, varying levels of congruence were documented depending on which variables were being compared. While this congruence raises the potential for the joint management of a production landscape for both biodiversity conservation and ecosystem service benefits, a lot remains to be understood on the ecosystem properties and processes that bring about such congruences.

	Tree density	Bird species richness	Bird conservation value	Vegetation carbon	Vegetation carbon sensitivity to tree removal	Soil carbon
Tree density	1.0	**-0.66 ****	**0.7 ****	0.01	**-0.53 ***	**0.78 ****
Bird species richness	-	1.0	-0.19	0.05	0.35	**-0.67 ****
Bird conservation value	-	-	1.0	0.09	**-0.59 ***	**0.73 ****
Vegetation carbon	-	-	-	1.0	0.06	-0.07

Vegetation carbon sensitivity to tree removal	-	-	-	-	1.0	**-0.62 ****
Soil carbon	-	-	-	-	-	1.0

Table 1: A matrix of Pearson's correlations between the biodiversity and ecosystem service responses measured. * indicates $p<0.05$ and ** indicates $p<0.01$. Bird conservation value refers to a metric that returns a higher value for sites that have greatest values for sites that harbor large numbers of range-restricted species. Sensitivity to tree removal is a metric that captures the loss of carbon resulting from the simulated random removal of individual trees. Higher values of this metric are given to sites where a bulk of the carbon is stored in just a few large trees.

b. Data dissemination and conservation outreach: Results of the project have been conveyed in reports to the Karnataka Forest Department (one report posted to the office of the Principal Conservator or Forests (Territorial) in May 2010) – Appendix B, one in preparation) as well as a meeting with the Divisional Forest Officer, Virajpet Forest Division in September 2010. A scientific manuscript on the impacts of habitat fragmentation and disturbance on carbon storage ecosystem will be completed in the coming months, following the analysis of additional data that are currently being collected (in preparation). A poster highlighting the economic importance of forests, written in English as well as the local languages - Kannada and Kodava languages has been prepared (Appendix C) and have been distributed through a number of channels including (1) around 100 posters distributed at 'CAFNET Mela' on 14th and 15th April 2011, (2) around 100 posters distributed directly to temple committees, educational institutions and put up at various other public places across Kodagu district, and (3) around 100 posters distributed to plantation owners and managers across the Western Ghats in collaboration with the CEPF-funded project 'Fostering Sustainable Agriculture Practices for Conservation of Tropical Biodiversity in Plantation Landscapes of Western Ghats'.
c. Collaboration with other conservation programmes: Insights from this study into the conservation importance of private and public forest lands outside the formal protected area network have been presented at meetings organized by the Nature Conservation Foundation and Rainforest Alliance in Kodagu and Chikmagalur, both of which were attended by stakeholders from the study landscape. Soil carbon data from this project will be shared with ATREE and with databases such as the Western Ghats portal.

Please provide the following information where relevant:

Hectares Protected: NA

Species Conserved: NA

Corridors Created: NA

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

The short-term goals of this project, which were to characterize biodiversity (bird and butterfly) and ecosystem service (above- and below-ground carbon storage) within sacred forests across the Virajpet Taluk of Kodagu were mostly achieved. Systematic field data have now been

collected for these variables within 18 sites across the landscape. A major challenge to interpreting some aspects of the results is to do with differing site histories (in terms of disturbance and resource extraction) which have not always been well-documented.

Some preliminary steps (through meetings and discussions with local stakeholders, informal meetings with local forest department staff, conservationists and through ecosystem service awareness campaigns across numerous villages) have been taken towards the longer-term goals, which relate to implementing ecosystem service-based approaches to conservation of forests outside the protected area network. While local conservationists and forest officials agree with the potential value of this approach in the Kodagu landscape, the general belief is that a lot of groundwork would first be needed, in terms of clarifying administrative boundaries, land tenure and improving goodwill with local landowners, before this approach can be pursued.

Were there any unexpected impacts (positive or negative)?
None

Lessons Learned

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 major goal of this project was to generate scientific data towards understanding a conservation problem (assessing correlations between biodiversity and ecosystem service responses). Direct engagement with conservation was limited, and there are no real lessons for conservation that can be taken from this project. From a research design point of view, although the project has satisfactorily accomplished its short-term goals of documenting patterns in select biodiversity groups and ecosystem services in sacred forests across the study landscape, some attention to understanding underlying ecological processes (e.g. species functional traits, seed dispersal) driving these patterns could have been incorporated in to the project design.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)
Because of a paucity of up-to-date information on the existence, location, habitat status and areas of sacred forests across the study site, a large effort was required to conduct rapid preliminary surveys to locate and survey sacred forests across the landscape. While this exercise generated valuable information on the contemporary status of the sacred forest network in the study site, it was also time-consuming, setting back the proposed work by over a month and a half. Outputs of this survey will be made available on the Western Ghats Biodiversity Portal.

Other lessons learned relevant to conservation community:

None to report

ADDITIONAL FUNDING

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of Funding*	Amount	Notes
UKIEIRI, through NCF	A	Rs 1,80,000	Field station furniture, field equipment, office space.
NCBS	A	Rs 80000	Field equipment, laboratory equipment, office space, computers.

Additional funding should be reported using the following categories:

A *Project co-financing (Other donors contribute to the direct costs of this CEPF 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 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.

This project was largely research oriented with some preliminary steps towards conservation. The research demonstrated that, at least for the biodiversity groups and ecosystem services studied, there is some congruence in responses to disturbance and patch isolation, and therefore some potential for joint management for biodiversity and ecosystem services. Further, preliminary efforts to spread awareness and sensitize stakeholders about the value of forest conservation were made, through the preparation of outreach posters and participation in workshops attended by stakeholders. A number of steps still separate these activities from actual implementation of ecosystem service-based conservation interventions. Bridging this gap will be the focus of longer term work.

Summarize any unplanned sustainability or replicability achieved.

Safeguard Policy Assessment

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

Did not trigger

Performance Tracking Report Addendum

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, 2007 to June 30, 2008. (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.	NO			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?	NO			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.	NO			
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.	NO			
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1below.	NO			

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:

Additional Comments/Recommendations

List of appendices:
Appendix A – Map of study area and list of study sites
Appendix B – Copy of report submitted to Karnataka Forest Department
Appendix C – Copy of outreach poster
Appendix D – List of meetings and workshops attended
Appendix E – Bird species-site matrix

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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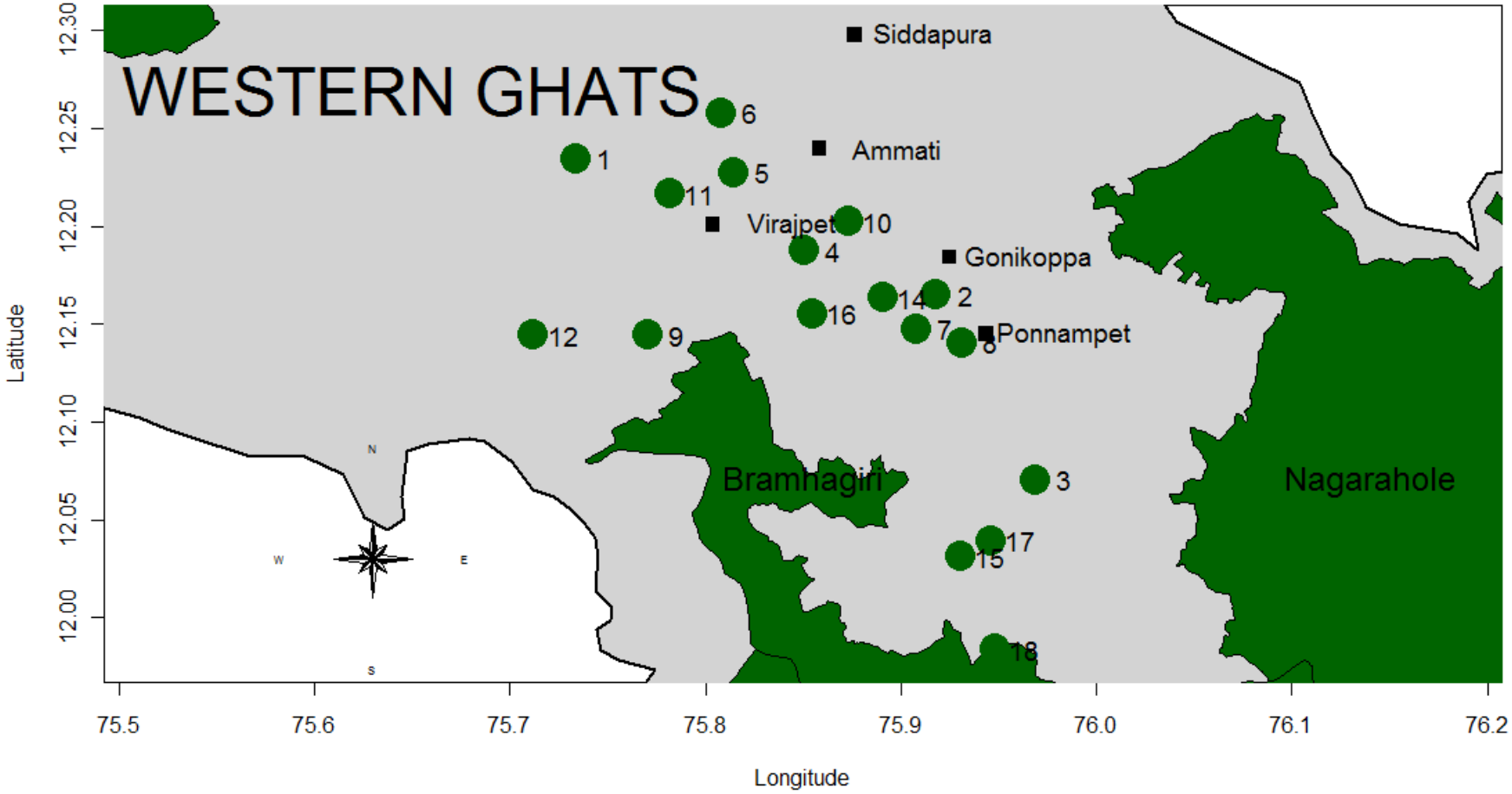
Investigating congruence between biodiversity and ecosystem services across production landscapes in the Mysore-Nilgiri landscape corridor in the Western Ghats

Study area map



Study site locations

Sl. No.	Latitude	Longitude	Village name	Category
1	12.234510	75.733840	Arapattu	Sacred forest fragment
2	12.164950	75.918020	Aruvathokkalu	Sacred forest fragment
3	12.070460	75.968750	Bellur	Sacred forest fragment
4	12.187450	75.850780	Bittangala	Sacred forest fragment
5	12.227390	75.814150	Chembebeloor	Sacred forest fragment
6	12.257850	75.807850	Devangiri	Sacred forest fragment
7	12.147650	75.907830	Echur	Sacred forest fragment
8	12.140450	75.930960	Halligattu	Sacred forest fragment
9	12.144467	75.770700	Heggala	Reserved forest
10	12.202383	75.872900	Hoskote	Sacred forest fragment
11	12.216533	75.781600	Kadanur	Sacred forest fragment
12	12.144190	75.712100	Kedamullur	Reserved forest
13	12.351310	75.770450	Kirgur	Sacred forest fragment
14	12.163450	75.890750	Kunda	Sacred forest fragment
15	12.031267	75.930669	Poradu	Sacred forest fragment
16	12.155380	75.854760	Rudraguppe	Sacred forest fragment
17	12.039420	75.945810	T-Shettigeri	Sacred forest fragment
18	11.983880	75.948330	Biruga	Reserved forest

Assessing congruence between biodiversity and ecosystem service responses in *Devarkadus* of Kodagu

A report submitted to the Karnataka Forest Department detailing work progress during 2009-2010

Prepared by Dr. M.O. Anand

(submitted as a section of a report on the project LINKING BIODIVERSITY TO ECOSYSTEM SERVICES IN A GLOBAL BIODIVERSITY HOTSPOT prepared by M.D. Madhusudan)

Introduction

The focus of conservation planning has recently begun to expand – particularly in landscapes used by humans – to prioritize not only overall biodiversity conservation but also the conservation of ecosystem services that these landscapes provide (Fischer et al. 2006; Jordan et al. 2007). While the ability of natural ecosystems to provide a variety of services is well documented (Daily 1997; Millennium Ecosystem Assessment 2003), relatively little is known about how the use and modification of natural landscapes alters their ability to provision ecosystem services, and even less on the congruence between ecosystem service and biodiversity responses in these modified landscapes. These latter two areas of research have till date largely relied on broad scale models based on secondary data, ecosystem service estimates from global values presented in Costanza et al. (1997), and satellite imagery (Chan et al. 2006; Wang et al. 2006). Primary field studies are still required to test these models of change and congruence at landscape scales.

Objectives

The main objectives of the project are to investigate how environmental and anthropogenic drivers interact to influence the spatial configuration of biodiversity (Objective 1), and how this, in turn, translates to the provisioning of key ecosystem services to humans in surrounding landscapes (Objective 2).

Study Sites

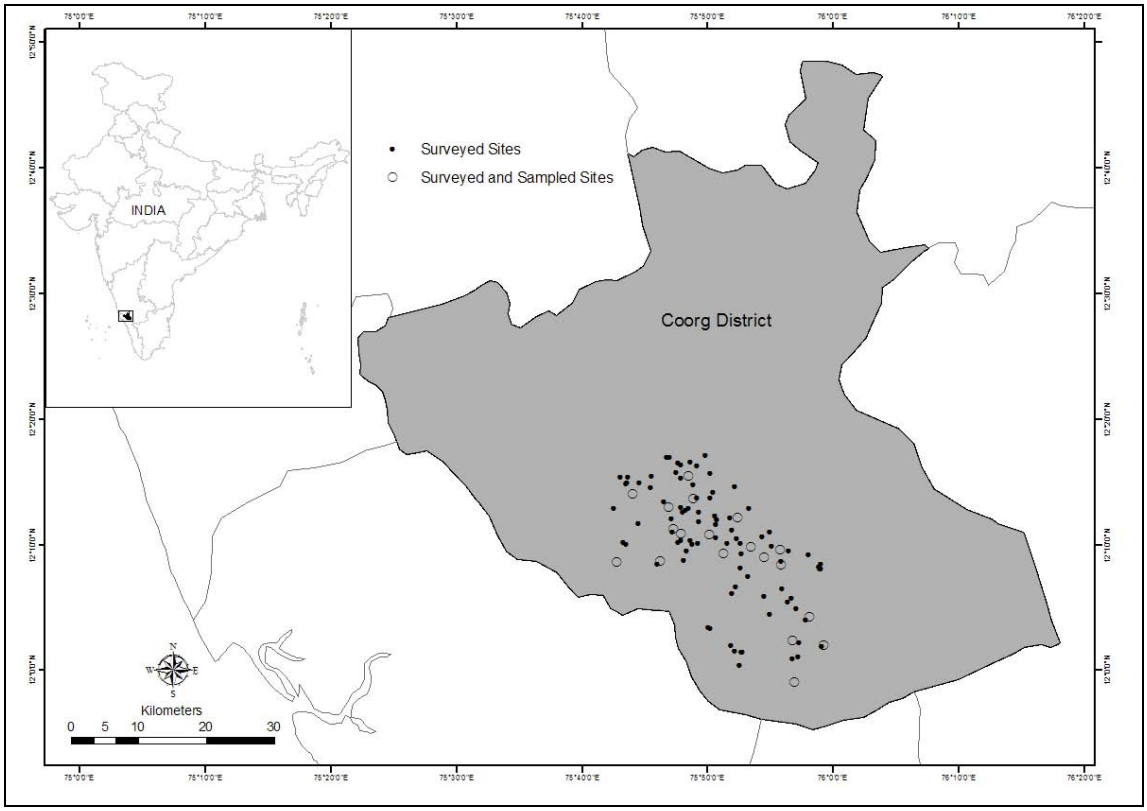
During 2009-10, we focussed on remnant forest fragments (*Devarkadus*) and adjoining shade coffee plantations occurring in the Virajpet Taluk of Kodagu district (11°56’ –12°52’ N and 75°22’ – 76°11’ E) in Karnataka (Figure 1). The entire study area is administered by the Virajpet Forest Division encompassing the Virajpet, Ponampet and Srimangala forest ranges. *Devarkadus* in the district occupy roughly 2500 ha, with close to 850 ha occurring within Virajpet Taluk (Kalam 2001). The rest of the landscape is mostly under shade coffee plantations and paddy fields. *Devarkadus* range in area from very small (fraction of a hectare) to very large (several hundreds of hectares) (Bhagwat et al. 2005); a majority of these are less than 10 ha in

area. Details of the intensively sampled *Devarkadus* (highlighted in Figure 1) are presented in Table 1.

Table 1: List of sampled *Devarkadus*

Sl. No.	**Village**	**Devarkadu**	**Official area (acres)**
1	Arapattu	Mahadevarakadu	47.23
2	Aruvathokkalu	Kadle Aiyyappa	NA
3	Arji	Bhagawati	20.85
4	Bellur	Aiyyappa	3.56
5	Betoli	Bhadrakali	23.83
6	Biruga	Muthappa	36.5
7	Bittangala	Bhagawati	9.42
8	Chembebeloor	Malapare Aiyyappa	9.17
9	Devanageri	Aiyyappa	20.25
10	Echuru	Aiyyappa	10.60
11	Halligattu	Aiyyappa	19.55
12	Heggala	Aiyyappa	103.04
13	Hosakote	Mudanna	18.81
14	Kadanur	Aiyyappa	28.72
15	Kedamullur	Karyarubane	668.80
16	Kirgur	Kuttichaita	
17	Kunda	Eshwar	5.76
18	Poradu	Ponya Bhagawati	5
19	Rudraguppe	Aiyyappa	27.76
20	T. Shettigeri	Bhagawati	35.4

Figure 1: *Map of Kodagu district showing 92 sacred groves that were surveyed and 19 out of 20 sites which have been intensively sampled.*



Specific Activities During Year 1 (June 2009 to June 2010)

1. Habitat quality assessments of *Devarkadus*

Background

Hundreds of rainforest fragments, conserved by cultural values as sacred groves or *Devarkadus*, support remarkable biodiversity in the Virajpet Taluk of Kodagu, Karnataka. While a few of these *Devarkadus* are well-studied, the present status of a majority of them – which apart from fragmentation face several anthropogenic pressures – is poorly documented. We first needed to address this lack of information in order to then select sites for our study in an objective and unbiased manner. This activity was therefore an important first step taken by the project.

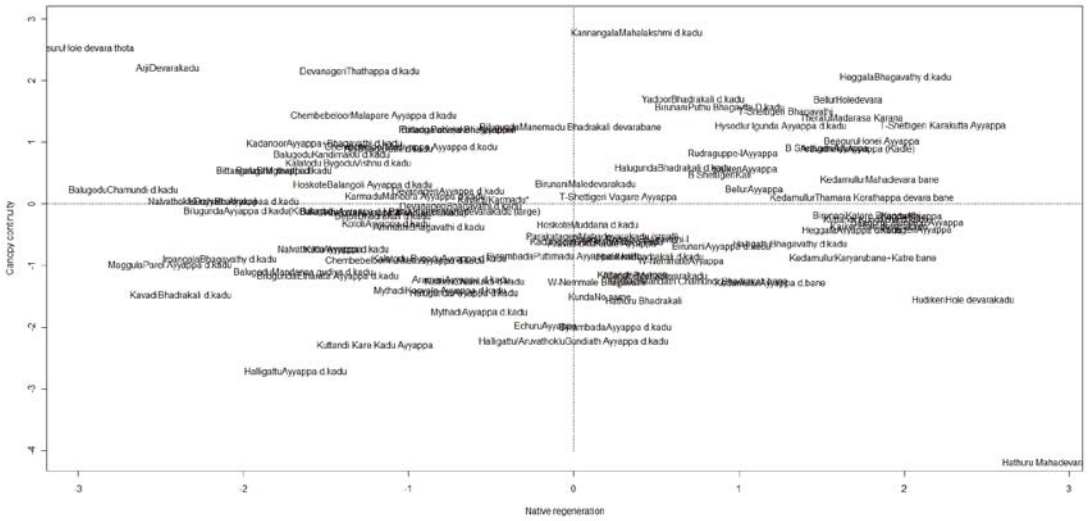
Methods

Between September 2009 and January 2010, 66 villages in the Virajpet Taluk were visited and in each of these all existing *Devarkadus* were located.

Devarkadus were located using a combination of existing lists from official village records as well as interviews with local residents. Once located, sites were visited and rapid surveys conducted to characterize the physical structure of the *Devarkadu* and levels of degradation. This was done by visiting up to 10 points, selected at random, within the site and answering a set of 16 questions (e.g. *"1. How would you describe the canopy cover within the Devarkadu?*

(a) Complete canopy overlap with almost no sky visible; (b) Dense canopy cover with mostly overlapping canopy; some sky visible; (c) Moderate canopy cover with little overlap; lots of sky visible; (d) No canopy overlap; lots of sky visible") at each point. In all, 88 *Devarkadus* were surveyed in this manner. A number of these surveyed sites were also mapped using a GPS. Using the data collected, the *Devarkadus* were characterized as (i) undisturbed sites with intact canopy and understorey, (ii) moderately disturbed sites with intact canopy but disturbed understorey, (iii) moderately disturbed sites with disturbed canopy but intact understorey, and (iv) heavily disturbed sites where both canopy and understorey are degraded.

Figure 2: Characterization of physical structure of Devarkadus *using a Principal Components Analysis (PCA). X axis is correlated to ground cover by native regeneration and Y axis is correlated to increased canopy continuity and density of large trees. Note that these are preliminary results that have not been verified, and analysis is still ongoing.*



Preliminary Results

There appears to have been a significant reduction in the size and extent of the *Devarkadu* network in Virajpet Taluk. Of the 576 *Devarkadus* listed in the official record, a large number are either entirely converted to other landuse, or reduced to a stand of three-four trees. Further, present day areas of *Devarkadus* are typically less than the reported official areas, which were recorded 40-50 years ago.

Of the existing *Devarkadus*, a majority are disturbed in some way or the other, in terms of reduced tree density, poor regeneration and proliferation of invasive species. Preliminary results of the rapid survey characterizing the physical structure of these *Devarkadus* are presented in Figure 2.

2. Assessing spatial linkages between biodiversity and ecosystem services

Background

Assessments of the degree of congruence in the response of biodiversity groups along environmental and/or anthropogenic gradients are important in conservation biology. These assessments not only provide basis for conservation prioritization and planning (Prendergast and Eversham 1997) but also help identify indicator or surrogate taxa, which subsequently allow for more economical and rapid assessments (Bilton et al. 2006; Gardner et al. 2008). In this study, we will extend this principle to assess congruence between biodiversity and ecosystem service responses.

Methods

Devarkadu sites were selected in a manner that they spanned two gradients: (1) landscape composition – ranging from sites occurring in landscapes of high forest cover to those with low forest cover and of (2) habitat quality ranging from sites with minimum disturbance to the overstorey and understorey to sites with highly disturbed overstoreys and understoreys. Vegetation plots (25m X 25m) were conducted to assess carbon stored in above-ground biomass, soil cores collected to assess below-ground carbon stocks, and point counts conducted to sample birds and estimate bird diversity and conservation value for each site.

Fieldwork for this component is still in progress and no analysis has so far been undertaken. Results of this study will be submitted to the Forest Department as soon as analysis is completed.

Future Direction

The upcoming field season (2010-11) will be used to continue many of the tasks which have been initiated during 2009-10. We will continue with habitat status assessments of *Devarkadus* as well as with biodiversity assessments in these sites. Additionally, we will work to develop a wood library and a wood trait database for

the tree species encountered in the landscape. Such primary information is essential in order to obtain accurate and reliable estimates of carbon stocks above ground.

Another major goal for the upcoming year will be to develop a more mechanistic understanding of how the structure and composition of biological communities relate to their ability to provide ecosystem services. Specifically, we will focus on quantifying the impacts of anthropogenic stresses such as habitat fragmentation, fuelwood and timber extraction on the ability of forests to store carbon, both at present as well as in the long term. This will be achieved through a combination of fieldwork (vegetation plots for adult and regenerating trees) and modelling of forest dynamics.

References

Bhagwat et al., 2005. Ecology and Society 10, 8.

Bilton et al., 2006. Freshwater Biology 51, 578-590.

Chan et al., 2006. Conservation planning for ecosystem services. PLoS Biology 4, 2138-2152.

Costanza et al., 1997. Nature 387, 253-260.

Daily, G.C., 1997. Nature's services: Societal dependence on natural ecosystems. Island Press, Washington.

Fischer et al., 2006. Frontiers in Ecology and the Environment 4, 80-86.

Gardner et al., 2008. Ecology Letters 11, 139-150.

Jordan et al, 2007. Science 316, 1570-1571.

Kalam, 2001. Sacred groves in Kodagu District of Karnataka (south India): a socio-historical study. French Institute of Pondicherry, Pondicherry.

Millennium Ecosystem Assessment, 2003. Ecosystems and Human Well-being. Island Press, Washington.

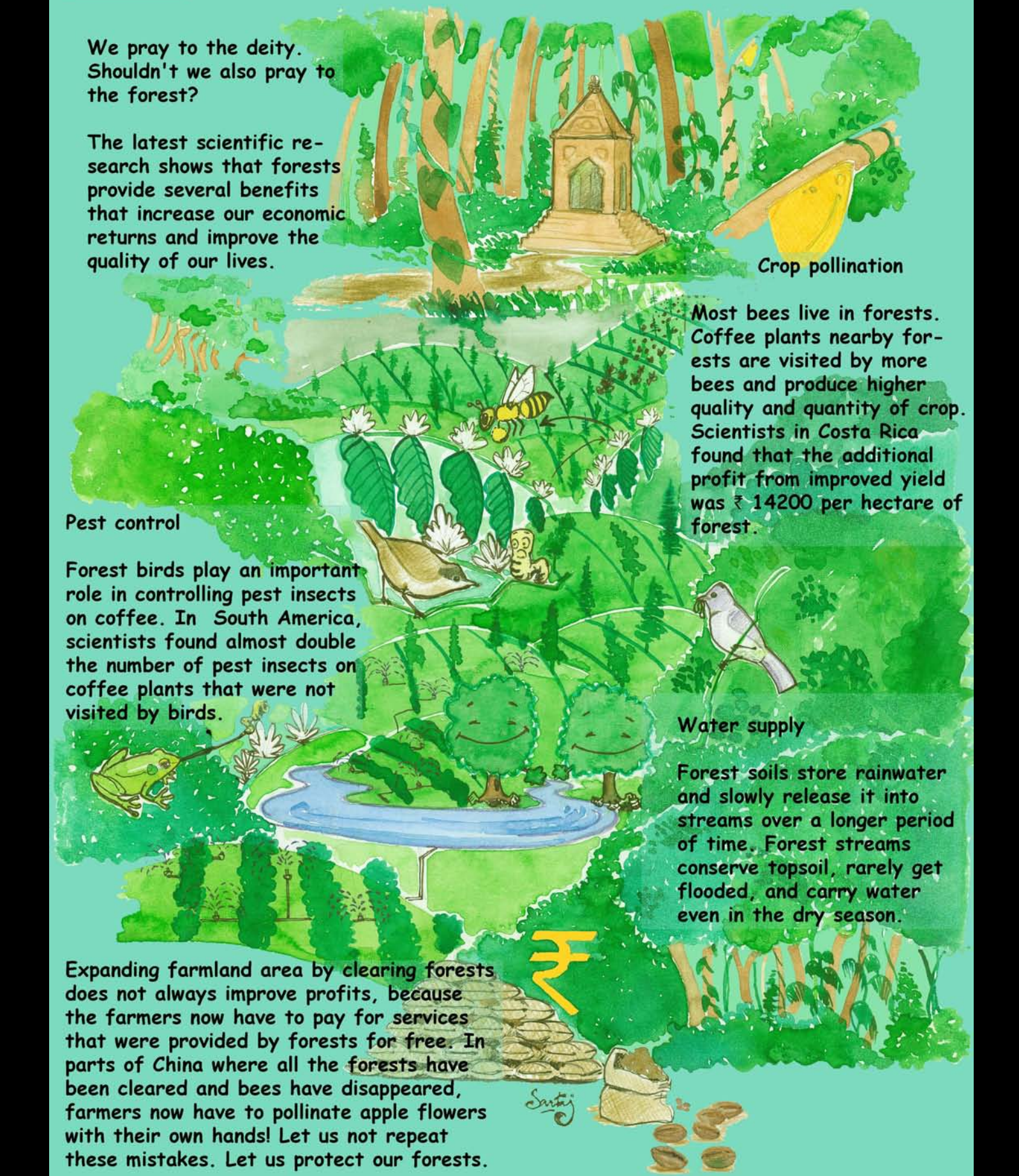
Prendergast & Eversham, 1997. Ecography 20, 210-216.

Wang et al., 2006. Environmental Monitoring and Assessment 112, 69-91.

Forest's Valuable Services

We pray to the deity. Shouldn't we also pray to the forest?

The latest scientific research shows that forests provide several benefits that increase our economic returns and improve the quality of our lives.



Crop pollination

Most bees live in forests. Coffee plants nearby forests are visited by more bees and produce higher quality and quantity of crop. Scientists in Costa Rica found that the additional profit from improved yield was ₹ 14200 per hectare of forest.

Pest control

Forest birds play an important role in controlling pest insects on coffee. In South America, scientists found almost double the number of pest insects on coffee plants that were not visited by birds.

Water supply

Forest soils store rainwater and slowly release it into streams over a longer period of time. Forest streams conserve topsoil, rarely get flooded, and carry water even in the dry season.

Expanding farmland area by clearing forests does not always improve profits, because the farmers now have to pay for services that were provided by forests for free. In parts of China where all the forests have been cleared and bees have disappeared, farmers now have to pollinate apple flowers with their own hands! Let us not repeat these mistakes. Let us protect our forests.

Content: M.O. Anand (moanand@ncbs.res.in);Design: Sartaj Ghuman & Uttara Mendiratta; Scientific inputs: Dr. C.G. Kushalappa & Dr. S Raghavendra

Investigating congruence between biodiversity and ecosystem services across production landscapes in the Mysore-Nilgiri landscape corridor in the Western Ghats

Meetings attended

1. Attended a meeting organized by Rainforest Alliance and Nature Conservation Foundation on the topic of "*Coffee and conservation: fostering sustainable plantations and opportunities for certification*" in Chikmagalur on 19th July 2010 and participated through correspondence in "*Training in Sustainable Agriculture Standard and Local Indicator Workshop*" in Madikeri on 29th and 30th October 2010. These meetings were well-attended by the coffee-growing communities in these regions. Made a presentation on "*How coffee and conservation can help each other: some lessons from research*" during the Chikmagalur meet. In this talk I focussed on the economic incentives (through ecosystem services) for retaining natural forests in coffee-growing lanscapes.
2. Informal meetings with Divisional Forest Officer, Virajpet (date not recorded) to hand over report and discuss the nature and progress of the project.
3. Informal meetings with several members of the Kodagu community during an a poster distribution campaign of an outreach poster developed as part of this CEPF project (1st and 7th February 2011).




Photographs from the outreach poster distribution campaign through which posters showcasing ecosystem services were put up in prominent public places (schools, meeting halls, temples, shops) in over 25 villages in Kodagu district.