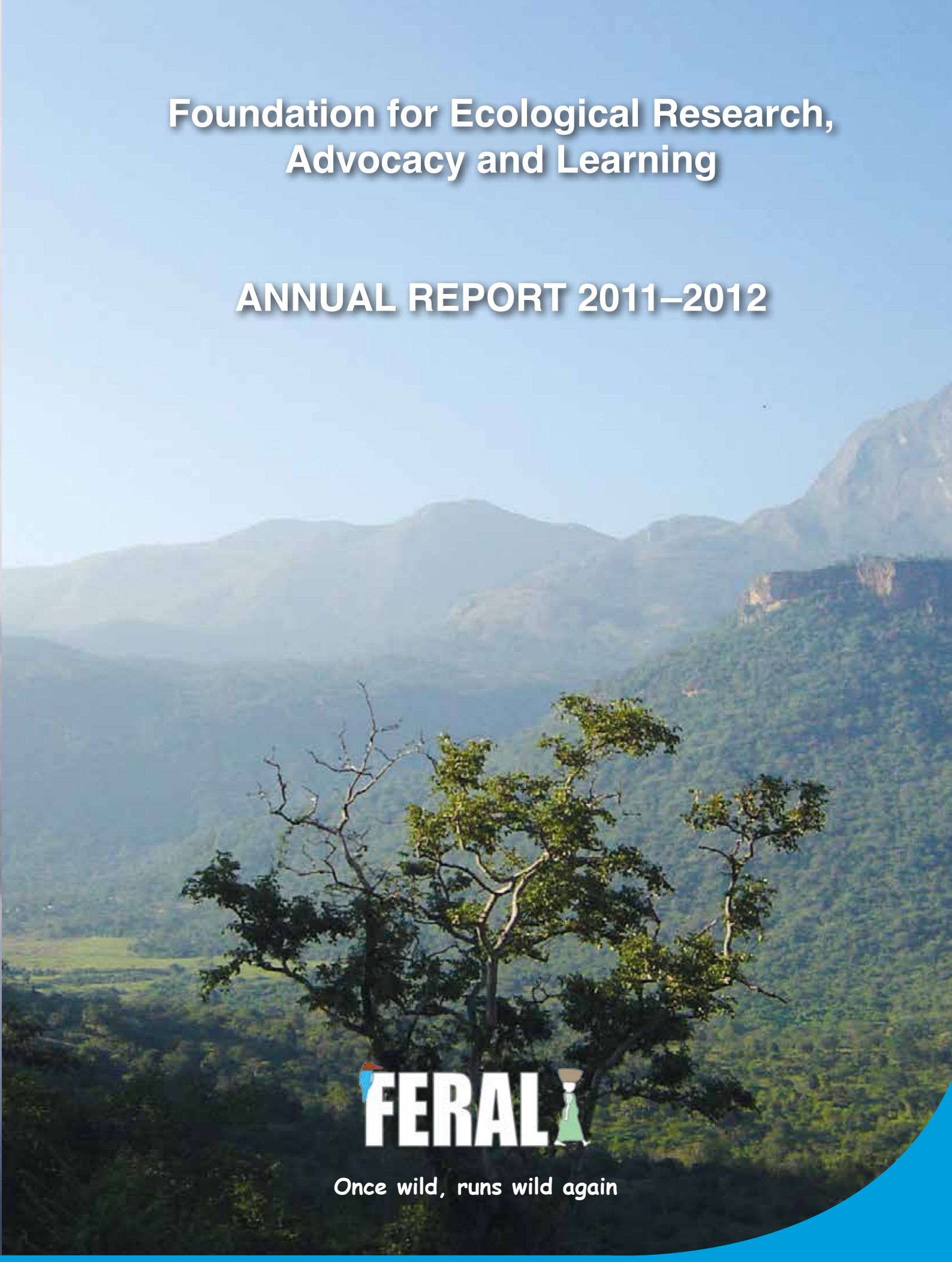
Foundation for Ecological Research, Advocacy and Learning

ANNUAL REPORT 2011–2012



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MISSION STATEMENT

Action research for ecological restoration,
conservation and natural resources management.

FERAL

Foundation for Ecological Research, Advocacy and Learning (FERAL)

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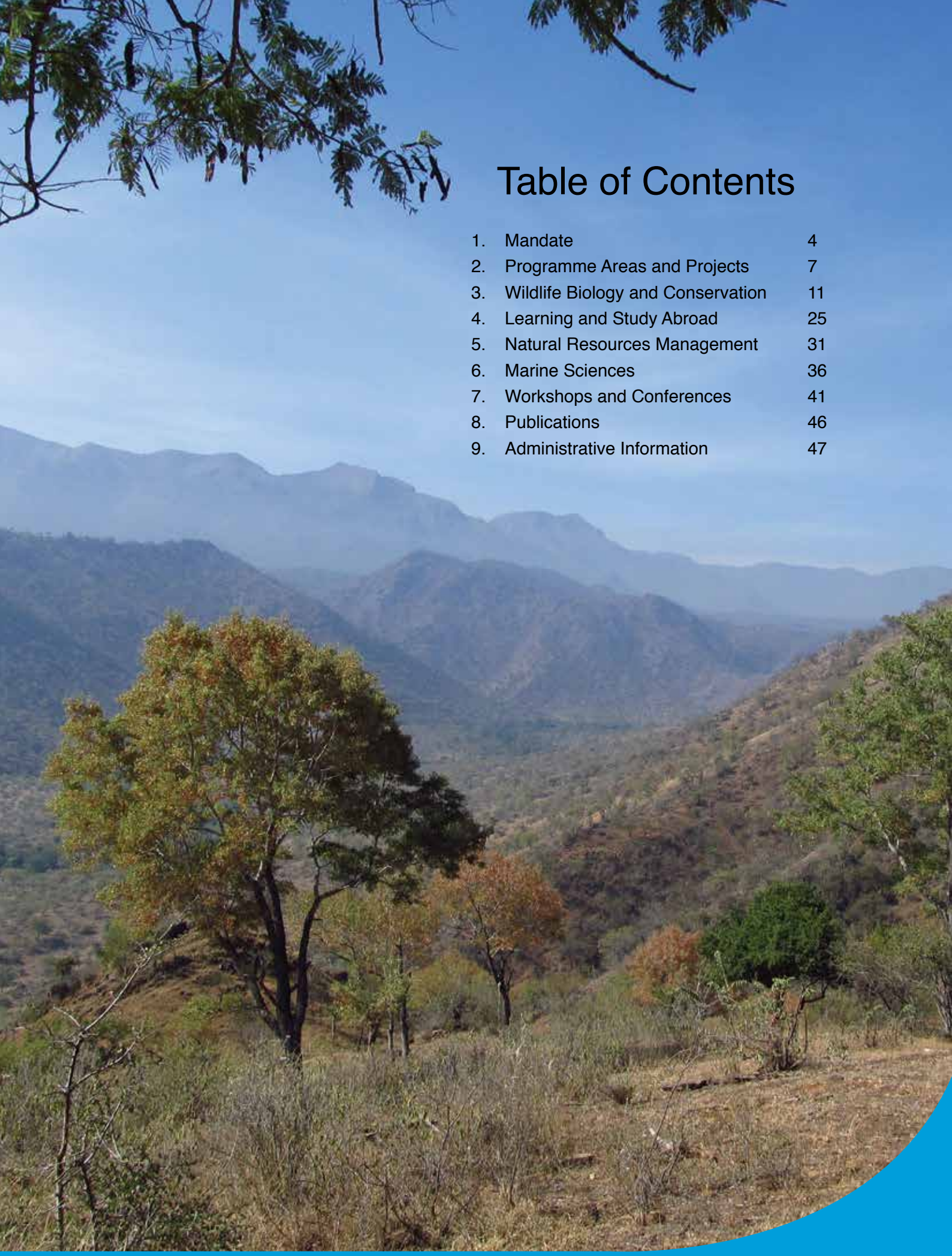
Cover Photos:
Front: View of the Mundanthurai plateau © Srinivas Vaidyanathan
Back: View of Agastiamalai (Agasthia Koodam) © Gopinath Sricandane



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MANDATE

Our mandate is to provide a base and support for researchers to follow their interests and priorities. Furthermore, to impart training in ecological research, techniques and tools. And finally, to use ecological data to solve issues in natural resource management, conservation and advocacy.

FERAL – once wild, run wild again.

Foundation or goal of our organisation is to find ways to help natural processes return to a more natural or less degraded state.

Ecology, as we define it, is the study of the interactions of organisms within and across species in a shifting landscape of communities subject to the physical environments they inhabit. Our primary focus of work studies the interface and relationship between ecology and society.

Research is the key ingredient to our understanding of ecological systems. We believe that ecological science is not well enough established to make broad prescriptions that apply universally. Thus each ecological dilemma needs rigorous analysis that can then provide guidelines for local action.

Advocacy for appropriate natural resource management is the fourth lynchpin of our organisation. For us this is a mix of negotiation, facilitation and mediation where possible, but as a last resort litigation is also a potential option.

Learning is the final head on our chimera. To keep abreast of developments in this young science, we continuously strive to learn more and pass on these learnings. Newer techniques for analysis, new tools and new developments in the field of ecology, action research and advocacy keep us constantly on our toes.

FERAL is a non profit Trust formed on the 22nd of July 1997. We are a team working on various topics of ecological research, natural resource management, environment education and training. Our activities are co-ordinated from the campus close to Pondicherry and our office in Bangalore. We also have field stations located at Ariyankavu (Kerala), Saptur (Tamil Nadu) and Sirsi (Karnataka).

THE YEAR THAT WAS

It has been a busy year at FERAL with over twenty projects and studies running concurrently.

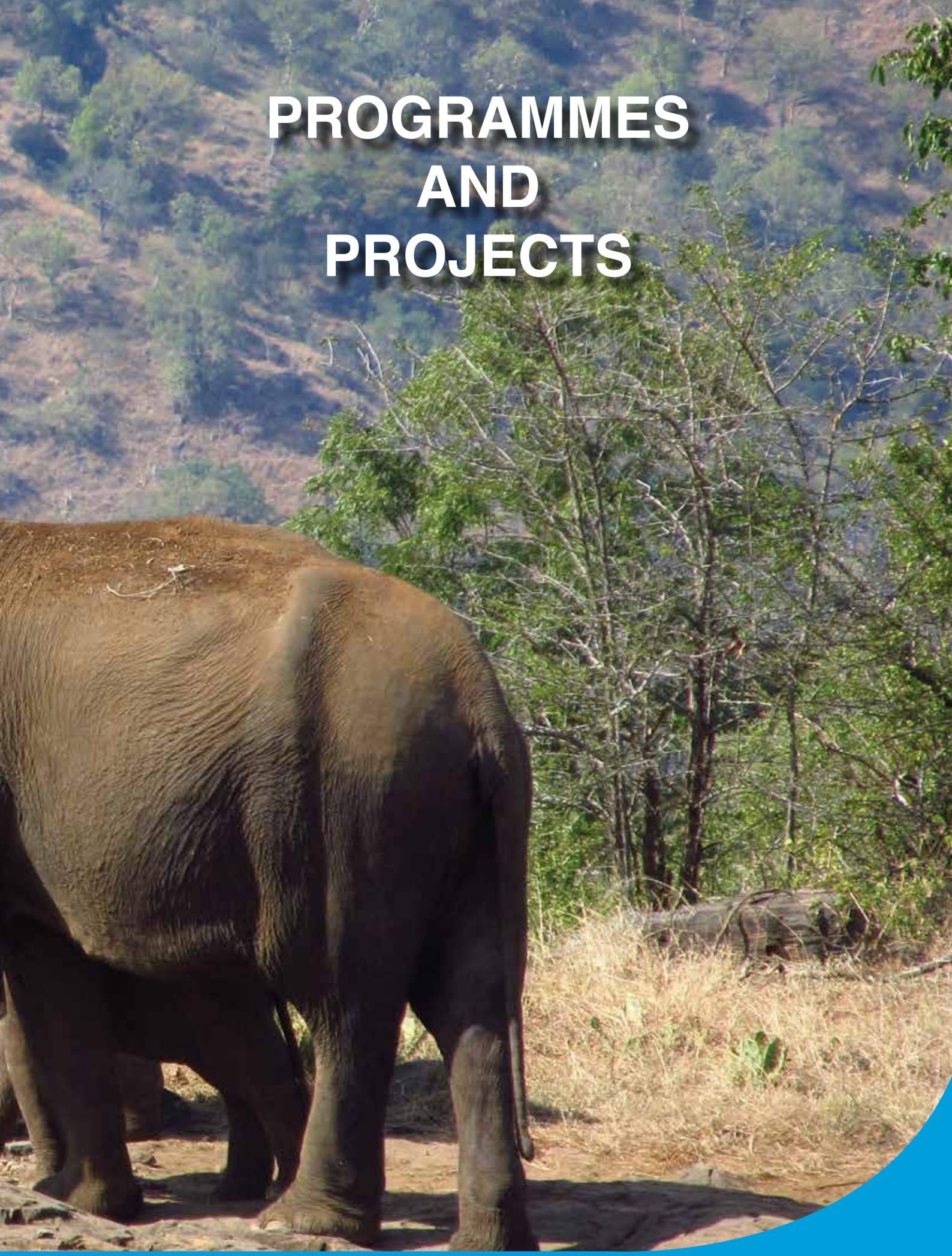
Wildlife biology and conservation was our largest programme this year with a number of new projects, largely focussing on connectivity between habitats and animal movement dynamics in the Southern Western Ghats. Networking and collaborations with other institutions was another high point of the year. We continued to build upon our Water, Sanitation and Hygiene (WASH) initiative with two new projects and we successfully wrapped up a large initiative in the Cuddalore district of Tamil Nadu.

FERAL ran a number of outreach programmes and workshops this year. These included sessions to discuss options in co-management with fishing communities, and awareness raising among school children and in settlements on WASH. Several meetings with communities on conservation issues and workshops on reverse auctions for Payments for Ecosystem Services (PES) for farmers were conducted. GIS and remote sensing workshops for researchers and conservation practicioners were held in partnership with other institutions working in the Western Ghats. This has opened up various potential collaborations on longer term research and capacity building.

Our work in the Nicobar islands continues with the “coconut project.” We initiated a project in the Great Himalayan National Park looking at fire-vegetation-grazing dynamics. A fall semester on Sustainable Development in India was conducted for the first time on the study abroad program with five students and was very successful. Our study abroad course in marine science initiative continues to build upon previous work with five students successfully completing yet another semester on the program. We also initiated the marine sciences programme to address all coastal and marine conservation issues.

Read on for more details....

PROGRAMMES AND PROJECTS




Programmes & Project Locations
Learning
Marine Sciences
Natural Resources Management
Wildlife Biology and Conservation

We have four programme areas which correspond to our long term priorities. Each of these is headed by a senior research scholar and comprise of one or more projects. These are:

1. Wildlife biology and conservation
2. Learning and study abroad
3. Natural resources management and
4. Marine sciences

We remain involved in field based research, much of which involves community participation and is both socially and environmentally relevant. Emphasis on quantitative techniques and application of spatial technologies is an integral part of all our research projects.

The following table summarises the projects that were implemented during the period 1st April 2011 to 31st March 2012. Subsequent sections present a summary of each project.

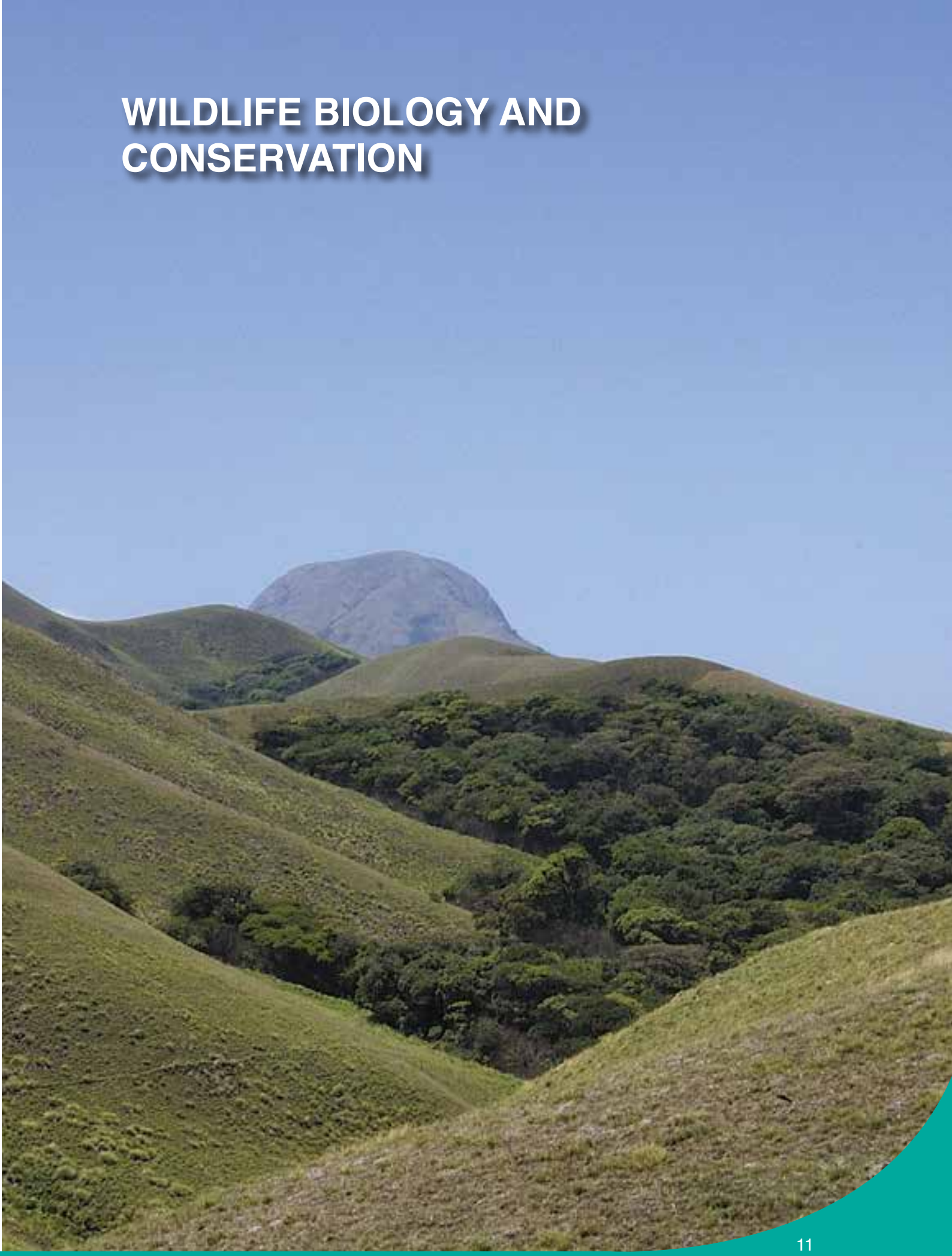
WILDLIFE BIOLOGY AND CONSERVATION				
Sl. No.	Projects	Supporting Institution	PI/Head	Budget
1	Spatial decision support for conservation planning in the Western Ghats	CEPF-ATREE Western Ghats Small Grants Programme	R.S.Bhalla	$ 19,925
2	Bridging the Shencottah Gap: How Paymentsfor Ecosystem Services Can RestoreBiodiversity Outside Protected Areas in India	Critical Ecosystems Partnership Fund	Srinivas Vaidyanathan	$ 499,443
3	Distribution of Primates of the Genus Semnopithecus	DST, Women Scientists Scheme Primate Conservation Inc., USA	Sunita Ram	₹ 9,98,000 + ₹ 1,55,951
4	Gastrointestinal parasites in langurs	Primate Conservation Inc., USA	Sunita Ram	₹ 1,13,216
5	Functional connectivity for large mammals in the Southern Western Ghats, India, linking movements & distribution	Wildlife Conservation Society	Aditya Gangadharan & Srinivas Vaidyanathan	$ 16,000
6	Functional connectivity for large mammals in the Southern Western Ghats, India, linking movements & distribution	U.S.Fish & Wild life Services	Aditya Gangadharan & Srinivas Vaidyanathan	$ 49,810
7	Conservation of Kazhuveli Wetland	Forest Dept. of Tamilnadu	R.S.Bhalla	₹ 63,000
8	Consumer control and vegetation response: the fire-vegetation-grazing dynamics in the Western Himalayan landscape	Ruffords Small grants for Nature Conservation	Rajat Ramakant Nayak	£ 6,000
9	Gap analysis of the Periyar- Agastyamalai landscape for arboreal mammal conservation	CEPF-ATREE Western Ghats Small Grants Programme	H.S.Sushma	$ 19,046.50
10	Exploring Sustainable Landuse Practices in Rubber Plantations in a Critical wildlife Corridor	Critical Ecosystems Partnership Fund	Robin Abraham & Srinivas Vaiydanathan	$ 39,833

LEARNING AND STUDY ABROAD				
Sl. No.	Projects	Supporting Institution	PI/Head	Budget
11	FERAL–KSAC Spring 2012 - Marine Science in India Programme	KSAC-Juniata College – USA	Neil Pelkey & Tara Nicole Lawrence	$ 32,500
12	Fall program : FERAL-KSAC Sustainable Development in India program	KSAC-Juniata College – USA	Neil Pelkey & Tara Nicole Lawrence	$ 32,500
13	Building Capacities for Conservation Planning using open source tools	CEPF – ATREE Western Ghats Small Grants Programme	R.S.Bhalla	$ 18,888.75

NATURAL RESOURCES MANAGEMENT				
Sl. No.	Projects	Supporting Institution	PI/Head	Budget
14	Establishing small scale coconut extraction units in the Nicobar Islands	St.Andrews Prize for the Environment	Rauf Ali	
15	Community based water and sanitation facilities	UN-HABITAT, Nairobi	Abraham V.A.	$ 168,000
16	WASH in schools in Krishnagiri	UNICEF	Benjamin Larroquette	₹ 5,01,000
17	Hydrologic and carbon services in the Western Ghats	MOES India - NERC UK. Changing Water Cycles Awards India	R.S.Bhalla	₹ 45,20,744

MARINE SCIENCES				
Sl. No.	Projects	Supporting Institution	PI/Head	Budget
18	Long Term Funding Mechanisms for the Gulf of Mannar Biosphere Reserve Trust	UNDP - New Delhi	R.S. Bhalla, Neil W. Pelkey, Benjamin Laroquette, Dipani Sutaria	₹ 11,96,081
19	Ecological status of Artisanal fisheries resources along the Coromandel coast	Ruffords Small grants for Nature Conservation	Tara Nicole Lawrence	£ 5,921
20	Co-Management Fisheries along Coromandel coast	Department of Science & technology, New Delhi	Tara Nicole Lawrence	₹ 22,66,110

WILDLIFE BIOLOGY AND CONSERVATION



The focus of this programme is to undertake scientific research on wildlife and use the outputs to steer conservation interventions. In the year gone by, FERAL implemented six new projects under this programme. Our long term commitment to address conservation issues in the Periyar-Agastyamalai landscape continued this year with the initiation of three new projects. Our efforts to conserve the Kalivelli wetland continued with one short term study. We also initiated a three year study in the Great Himalayan National Park. The year has also seen a substantial increase in projects as well as researchers working on various ecological and conservation issues.

In the Periyar-Agastyamalai landscape we continued our studies on threatened arboreal mammals. These include; a comparative study of the ecology and distribution of the two colobine monkeys and a study to determine the ecological factors that helps maintain their common boundary.

Our project on Payment for Ecosystem Services approach to conservation in the Shencottah gap was continued. Along with developing mechanisms to make direct payments to individuals to enhance biodiversity on private lands, we also initiated a community based payments to monitor biodiversity within the landscape.

The new projects within this landscape include a project that is assessing and developing the required framework to certify rubber plantations. This collaborative project with Rainforest Alliance aims to provide certification as an incentive to large rubber holdings for sustainably managing their land while preserving/enhancing biodiversity and connectivity for large mammals.

The second research project within the same landscape is building models to identify fine scale movement pathways for large mammals using non-invasive sampling techniques. Results from this project will add to our earlier finding by identifying critical movement pathways that need to be restored within the Shencottah gap to facilitate animal movement.

Another new study within this landscape addresses gaps in conservation for arboreal mammals, especially when substantial populations exist outside Protected Area network. This project will use field surveys and develop a replicable framework to identify conservation gaps that need to be addressed and will produce site specific recommendations for managers to act upon.

Our efforts to conserve and facilitate better management of the Kallivelli Wetland along the east coast continued with a short study that compiled information on the wetland and made recommendations to the state forest department on actions that need to be included in their management plan.

This year we also initiated a three year study in the Great Himalayan National Park and its surroundings to understand the effects of recurring forest fires and grazing system on the grasslands found in this landscape. This project will throw insight to vegetation changes that have occurred after the formation of the National Park, and also document changes in the traditional grazing systems.

Lastly, one of the most interesting, non-field project that was initiated aims at building capacities of other NGOs, students and research institutes in using open source tools for conservation planning. This project will not only empower regional institutes in the Western Ghats to make use of these techniques, but it also builds a strong network that will bring forth issues and data for a larger collective effort to address emerging conservation challenges.

These contributions towards pure ecological research, conservation efforts, larger policy implications and collaborative research are highlighted in the subsequent pages.

Spatial decision support for conservation planning in the Western Ghats

Project period: 2010-2011
Budget: 9,23,325/-
Supporting partner: CEPF-ATREE Western Ghats Small Grants
Principal Investigator: R.S. Bhalla

This was a collaborative project which collated and organised spatially explicit data for the Western Ghats. Contributions to the project were made by the Ashoka Trust for Research in Ecology and the Environment, the French Institute of Pondicherry, the National Centre for Biological Sciences and FERAL.

We have made available a large dataset to the conservation community in a standardised formats and re-projected into a standard projection system. The data provides a substantial baseline to any conservation group interested in working in the Western Ghats. We believe this dataset will provide the critical mass required for open source data portals such as the CEPF supported Western Ghats portal (http://thewesternghats.in) to build a community of users around them. This is the first effort at such a scale and with explicit objectives of sharing data in geo-spatial formats in India.

Two specific research papers have been initiated which use this data to identify critical gaps in data for identification of ecologically sensitive areas based on scientifically established and replicable methods.

Finally, the project has demonstrated the use of open source software for the analysis and representation of geo-spatial data. In doing so it has built and consolidated a network of agencies and individuals committed to conservation and ecological research in the Western Ghats region.

Among the achievements of the project were:
1. Collated spatially explicit, geometrically corrected data for the project area.

2. Developed scientifically sound and replicable methodology to identify and evaluate ESAs that combines ecosystem services and biodiversity within a single conceptual frame-work. This is being worked into a scientific publication.

3. Made available maps of ecological sensitivity based on available datasets and covering the entire Western Ghats based on the compiled datasets. A presentation of this was made at the Geospatial World Forum at Hyderabad and the abstract was published. A more complete manuscript is currently under preparation.

4. Identified gaps in baseline data required for identification of ESAs and to guide conservation efforts in the Western Ghats.

5. Shared digital datasets comprising of this information through the India Biodiversity Portal (http://indiabiodiversity.org/) and interested institutions. Data has been provided to the WGEEP team and to the contributing partners. It has been agreed that all the data will be shared on the CEPF-funded Western Ghats portal (http://thewesternghats.in) pending minor modifications and resolving potential copyright conflicts.

Bridging the Shencottah Gap: How Payments for Ecosystem Services Can Restore Biodiversity Outside Protected Areas in India

Project period: Oct 2009 to Aug 2013
Budget: $ 499,443
Supporting partner:
Critical Ecosystems Partnership Fund[1]
Principal Investigator:
Srinivas Vaidyanathan
Collaborators: Somanathan E, (Indian Statistical Institute), Peter Bardsley, (University of Melbourne), Gary Stoneham (Department of Treasury and Finance, Govt. of Victoria, Australia)

The Shencottah gap has been recognised as one of the critical wildlife corridors that needs to be immediately restored to ensure long term sustenance of wildlife populations in the Periyar-Agastyamalai complex. It has also been acknowledged that critical wildlife corridors are likely to pass through productive human landscapes, thus necessitating involvement of local communities and individuals in restoring and maintaining connectivity. While both these facts have been debated and discussed in the past, there has hardly been any effort to empirically identify critical links in the Shencottah gap and to develop viable mechanisms to involve local communities in restoring these linkages.

The goal of the present project is to demonstrate that biodiversity can be restored and enhanced using a Payment for Ecosystem (PES) approach in areas like the Shencottah gap which contain several private holdings, and to establish protocols in using this novel approach for wildlife conservation.

Primary components of the project are to

a) identify key wildlife corridors conservation where in PES will be implemented

b) develop individual and community based payment mechanisms

c) establish baseline data to establish a monitoring system which will be linked to payments and measure the success of PES.

In the previous year we identified two potential linkages within the Shencottah Gap, these occur in the western and eastern parts of the landscape, around the settlements of MSL and Kottavasal.

Each of the critical links have their own advantages and disadvantages in terms

Two male gaur headbutting in front of a camera trap.

1The Critical Ecosystem Partnership Fund is a joint initiative of l'Agence Française de Dévelopement, Conservation International, the Global Environment Facility, the Government of Japan, the MacArthur Foundation and the World Bank. A fundamental goal is to ensure civil society is engaged in biodiversity conservation.

of biological value, human presence, and conservation challenges. This year we continued our intensive biodiversity assessments within these two linkages. We also initiated camera trap surveys to monitor habitat use by large mammals within the corridor.

For the first time we have recorded presence of tigers within the corridor through our camera trap surveys. So far we have completed instrumenting the MSL corridors and preliminary data indicates a narrow gap of 4km that needs to be secured to restore connectivity for tigers and elephants. Restoring this narrow gap will link the northern populations in Periyar with southern populations in KMTR. Our efforts to involve individual land-holders in the Shencottah gap to enhance or maintain biodiversity on private land did not generate the required sample sizes to hold an auction. Our efforts was hampered due to a campaign by influential individuals who perceived our presence as a threat to their illegal activities. We diverted our efforts into developing a community based monitoring programm to incentivise the entire community to monitor biodiversity. We have established contact with the Malaprandarm tribe in Mambalatara settlement and initiated discussion on the design of the incentive structure. mechanism for wildlife conservation.

Since we had to wait for situation in Ariankavu to improve, we also started looking for alternative sites in Tamil Nadu to test our individual payment mechanism and preliminary surveys in villages adjoining the Srivalliputtur Wildlife Sanctuary has been completed. Results indicate a possible intervention within our exiting framework to protect the endangered grizzled giant squirrel on private landholding. This year we held several auction training workshops in Ariankavu and also costing workshop for farmers in the one of the settlement. A workshop along with the Ariankavu Gram Panchayat and Kerala Forest Department was held in November to explain and discuss agreements with individual landowners. This event was presided by the Divisional Forest Officer of Thenmala Forest Division and the President of the Arinakavu Gram Panchayat.

Tiger in MSL corridor photographed by camera trap

Interacting with farmers in Srivalliputur landscape.

Study of the distribution of Primates of the Genus Semnopithecus and understanding factors that influence parapatry between the Common langur (*Semnopithecus priam*) and Nilgiri langur (*Semnopithecus johnii*) in the Southern Western Ghats

Project period: Mar 2010 to Feb 2013
Budget: ₹ 11,53,943
Supporting partner: Department of Science and Technology – Women Scientist Scheme (WOS-A) SR/WOS-A/LS-164/2008
Primate Conservation Inc., USA.
Principal Investigator: Sunita Ram

The two threatened langur species in the southern Western Ghats have been reported to hybridize in regions where their ranges adjoin. The mechanism by which such distributional pattern is maintained is of considerable importance in understanding the evolution and speciation of the genus. A comparative study of their distribution and ecology is imperative for elucidating these mechanisms.

This study proposes to compare the distribution patterns of these two colobine species in the southern Western Ghats and determine the role of ecological factors in maintaining their distributional boundaries at a specific site where their ranges adjoin forming a parapatric pattern of distribution.

Specifically answers to the following questions will be explored:
a) How are the two langur species distributed with respect to each other and to what extent are they distributed parapatrically within the southern Western Ghats region?

b) What role do environmental gradients (gradients in altitude and vegetation) play in maintaining the pattern of distribution of each species?

c) At a given site where the range of the two species overlaps, what role do ecological factors including inter-specific competition and intestinalparasite loads play in maintaining the pattern of distribution of each species?

A possible hybrid between Nilgiri langur and Hanuman Langur found at Mundanthurai in a mixed species (uni-male) group comprising of Nilgiri langur females and a Hanuman langur male.

Hanuman langur group at Lower camp in the Kalakkad-Mundanthurai Tiger Reserve.

All field work has been completed. Analysis is ongoing.

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This study proposes to compare the distribution patterns of these two colobine species in the southern Western Ghats and determine the role of ecological factors in maintaining their distributional boundaries at a specific site where their ranges adjoin forming a parapatric pattern of distribution.

A comparative study of vegetation in areas of different langur occupancy was undertaken and preliminary analysis has been completed. Laboratory work on gastro-intestinal parasites is ongoing and we have completed analysing for the Nilgiri langur. The work for the Hanuman langur is likely to be completed shortly. As there are no manuals for parasite species identification of primates, we will be sending out the photographs taken to experts for confirmation of identification.

Some Interesting findings and results
a) The distributional pattern of the langurs is clearly parapatric, however, the Nilgiri langur has a higher probability of occurrence than the Hanuman langur.

b) The two species had contrasting habitat preference in this landscape – the Nilgiri langur preferred low aridity areas with closed canopy at high elevations while the Hanuman langur preferred more arid areas at elevations lower than those occupied by the Nilgiri langur.

c) While both species show avoidance for each other, the Hanuman langur shows a stronger avoidance of the Nilgiri langur. This gives some support to the hypothesis (Hohmann and Sunderraj, 1990) that the absence of the Nilgir langur in the forests north of the Brahmagiri hills has allowed the Hanuman langur to take over their niche, a possible case of competition release.

d) Within Mundanthurai, we found a clear difference in species richness and the species found between the areas of different langur occupancy.

Nilgiri langur female and juvenile resting in the Kalakkad-Mundanthurai Tiger Reserve.

Gastrointestinal parasites in langurs: the influence of human settlements within a Protected Area in the Western Ghats, India

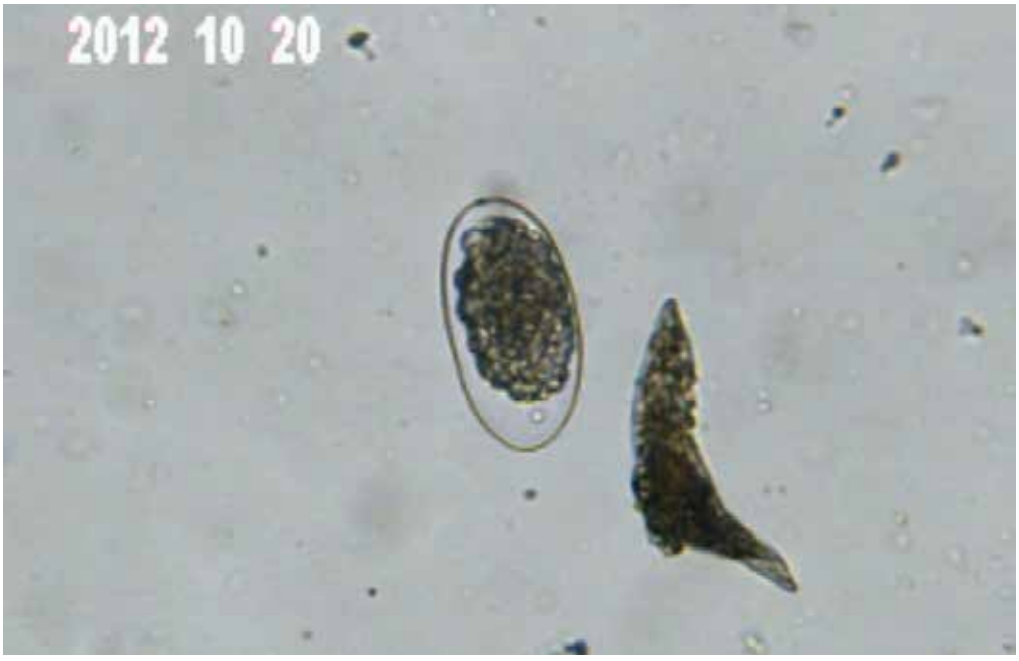
Project period: June 2010 to Feb 2013
Budget: ₹ 1,13,216
Supporting partner:
Primate Conservation Inc., USA
Principal Investigator: Sunita Ram

The Nilgiri langur (*Semnopithecus johnii*) and the common langur (*Semnopithecus priam thersites*) are threatened colobine monkeys found in the southern Western Ghats. Data regarding patterns of parasitic infections in langur populations in the wild are a critical indicator of the population health and will mark a beginning towards assessment and management of disease risks. This is especially important for populations that are in proximity to human settlements as this can either have a direct effect through contagion from humans and indirectly due to increased stress. This project aims to fill in the paucity of information on gastrointestinal parasites of langurs in the wild and help in our understanding of the influence of human settlements within Protected Areas on the parasitic loads of these primates.

The objectives of the project is to a) Identify and quantify the prevalence of gastrointestinal helminth and protozoan parasites in the two langur species

b) Determine the gastro-intestinal parasite richness and prevalence of these primates in areas where they come in close contact with humans/ human use areas and contrast this with infection in forest interiors where their contact with man is minimal.

Field work has been completed. Faecal samples collected; Laboratory analysis is ongoing. Samples from Nilgiri langur have been completed and those from Hanuman langur are being processed. We are in the process of confirming the identification of the parasites and once the laboratory work is completed we will be taking the help of experts to help in confirming the parasites using the photographs that have been taken.



Nematode egg found in Hanuman langur faeces

Functional connectivity for large mammals in the Southern Western Ghats, India, linking movements & distribution

Project period: Mar 2011 to Aug 2013
Budget: $16,000 + $ 49,810
Supporting partners: Wildlife Conservation Society ($16,000) and U.S.Fish & Wild life Services ($49,810)
Principal Investigator:
Aditya Gangadharan
Co-Principal Investigator:
Srinivas Vaidyanathan

Large mammal populations in the Periyar and Agasthyamalai reserves of the Western Ghats, India were once contiguous, but are now isolated by a mosaic of human-impacted habitat and linear barriers (the Shencottah Gap). Restoration of movement is essential to buffer their populations from demographic stochasticity and loss of genetic diversity. Between 2008 and 2010, we identified two multi-species linkages that can serve to connect these two populations. However, the precise locations, optimal habitat compositions, and conflict management strategies for small-scale movement corridors through this human-dominated landscape are unknown. This study aims to quantify large mammal habitat preferences at a fine scale, and hence a) identify optimal corridor locations; b) identify the factors that influence animal use of a site. Study results will help in restoration of corridors and in mitigating human wildlife conflict in this landscape.
To achieve this goal, we are using a combination of intensive camera trapping, and community-based monitoring of human-wildlife conflict. Close to 400 locations been sampled using camera traps within an area of approximately 300 km^2 since May 2011. Data is collected throughout the year, enabling us to quantify seasonal variation in corridor function. Our initial data are encouraging in terms of the potential for revival of connectivity across the Shencottah Gap:

a) A total of 21 mammalian species have been photographed, implying that the corridors may be useful for a range of species.

b) Only around 4 km (most of which is through forest land) separates the elephant and tiger populations north and south of the Shencottah Gap. Thus, corridor restoration is a realistic goal, given adequate management actions.

c) At least five individual tigers use the Shencottah Gap, a little-known and unexpected finding. Data collection is ongoing, and we hope to derive concrete results within a year.

Camera trap photograph of a Leopard

An elephant herd photographed by camera trap

Conservation of Kazhuveli Wetland

Project period: June 2011
Budget: ₹ 63,000
Supporting partner: Forest Department of Tamil Nadu
Principal Investigator: R.S. Bhalla

A compilation of work done by various individuals and scientists working on a series of projects in the Kalivelli region. These include scientists and field staff who have worked in FERAL over the past decade and a half. The report includes a detailed literature review on the wetlands. Agencies that have supported this work include various wings of the Dept. of Science and Technology - New Delhi, the India Canada Environment Facility and the United Nations Development Programme - New Delhi.

The Upukalli creek which links the fresh water lake with the Ediyanthittu estuary.
Photo: R.S.Bhalla

Consumer control and vegetation response: the fire-vegetation-grazing dynamics in the Western Himalayan landscape

Project period:
July 2011 - December 2012
Budget: ₹ 4,27,080
Supporting partner: The Rufford Small Grants Foundation RSGF
Principal Investigator:
Rajat Ramakant Nayak

The Western Himalayas is a part of the Himalayan biodiversity hotspot. Livestock grazing and fire have been two integral parts which together have reshaped these landscapes over the last few hundred years. However, the growing concern about the effects of over-grazing and increasing fire-frequency as a cause of serious disturbance and a threat to biodiversity has resulted in complete restriction on grazing and costly efforts to control fire in many places over the last few decades. These restrictions, which are based on general perception and neglect fire-vegetation-grazing dynamics, have affected the pastoralists and may pose a threat to existing biodiversity.

Our study uses a combination of remote sensing, GIS-tools along with vegetation and other field surveys to understand the role of fire and grazing in structuring these landscapes for long term conservation initiatives.

The study is being carried out in Great Himalayan National Park Conservation Area (GHNPCA).

Our objectives are:

a) To document the traditional grazing and fire management practices and spatial extent of grazing and fire in the landscape.

The high altitude grassland, locally known as 'TACH' are the traditional summer grazing grounds for the livestock.

b) To determine the effects of over grazing and increased fire frequency on ground vegetation composition.

c) To determine the acceptable levels of human activities by way of grazing and or fire from the point of view of biodiversity conservation.

d) To develop strategies involving local people for long term monitoring and ensuring the persistence of existing biodiversity.

The study is divided into two phases. The first involves questionnaire based surveys to identify traditional grazing and fire management practices, and grazing and fire gradients across the landscape. The second phase involves sampling for ground vegetation for species composition, abundance and demography, in areas with different fire frequencies and grazing-intensities using vegetation transects.

We carried out informative questionnaire surveys between July 2011 and September 2011. We documented traditional and current grazing and burning practices by the local people in the study area. We mapped the local grazing grounds and collected information on the intensity of use of these grazing grounds by various villages.
The information on changes brought in the life style of local people by the declaration of Protected Area and the restrictions imposed on grazing and burning practices as well as people's observations on changes in vegetation brought by these restrictions were collected. With the help of the information obtained during this phase of the survey we developed grazing intensity and fire frequency maps for the landscape.

We aimed at collecting information on ground vegetation for two seasons; pre monsoon and post-monsoon. The data on pre-monsoon vegetation composition was collected from March 2012 to July 2012. We collected data across the grazing gradients covering the areas both inside the protected area, where legal restrictions are imposed, and outside the protected area, where there are no legal restrictions. We will be carrying out the post-monsoon sampling for ground vegetation in October 2012.

Gap analysis of the Periyar- Agastyamalai landscape for arboreal mammal conservation

Project period: Aug 2011 to Jan 2013
Budget: $ 19,047
Supporting partner: CEPF – ATREE Western Ghats Small Grants Programme
Principal Investigator: H.S. Sushma

The Periyar - Srivilliputtur and Agasthyamalai hills hold some of the remaining vast stretches of forests in the southern Western Ghats. These forests harbour several endemic species and are a home to globally threatened arboreal mammals such as the lion-tailed macaque (*Macaca silenus*), Nilgiri langur (*Semnopithecus johnii*), and the grizzled giant squirrel (*Ratufa macroura*).

In addition to these species, other arboreal mammal species that occur in this region are the Hanuman langur (*Semnopithecus priam*), bonnet macaque (*Macaca radiata*) and the Indian giant squirrel (*Ratufa indica*). Of these arboreal mammals, the lion-tailed macaque and Nilgiri langur are endemic to the Western Ghats. Though a large part of this landscape is under existing Protected Area (PA) network, there are considerable stretches of forests which lie outside PAs and these nevertheless serve as potential habitat for arboreal mammals. The goal of this project is to carry out a gap analysis to identify forests outside the PA network in Periyar - Agasthyamalai landscape, that are important for conservation of these diurnal arboreal mammals and to assess the existing Protected Areas for adequate representation of these species. The study aims to:

a) Determine the current distribution of arboreal mammals in the Periyar-Agasthyamalai landscape

b) Determine what factors – physical variables (like elevation, rainfall, latitude etc)., habitat or threats, play an important role in delineating their current distribution

c) Using information from a) and b) in a gap analysis, identify important forests outside the PA network that support populations of these threatened arboreal mammals and assessing potential distributions of these threatened species within PAs, and

d) Data collection was initiated in September 2011. Draw site specific recommendations for a conservation and management plan for these arboreal mammals.

This involved collation of existing data from previous surveys in the landscape, field surveys and questionnaire based surveys at sites where information was not available. Questionnaire based surveys were mainly carried out in settlements adjoining forest areas. Secondary data collected from previous surveys included occurrence points of target species. No information was available from many of the sites in the landscape and therefore surveys had to be undertaken at these sites. Field surveys were carried out in Ranni, Punalur and Trivandrum Forest Divisions. Surveys were carried out in the following Protected Areas: Grizzled giant squirrel Wildlife Sanctuary, Shendurney Wildlife Sanctuary, Neyyar, Peppara and Kanyakumari wildlife sanctuaries. Questionnaire surveys were carried out in Grizzled giant squirrel Wildlife Sanctuary and Trivandrum Forest Division. Data collection for the study has been completed and analysis has been initiated. Workshop to chart out site specific conservation plan for arboreal mammals will be conducted and the final report will be available soon.

Exploring Sustainable Landuse Practices in Rubber Plantations in a Critical wildlife Corridor

Project period: Jan 2012 to June 2013
Budget: $ 39,833
Supporting partner:
Conservation International
Principal Investigator: Robin Abraham & Srinivas Vaidyanathan

A slope cleared for replanting of rubber. Photo: Robin Abraham

Past conservation efforts in India have been centered on Protected Areas (PA) and have ignored the need to manage PA networks at a landscape level. Additionally, very little has been done to maintain or restore connectivity of ecosystems outside PAs. It is well acknowledged that landscape-level corridors are as important as PA's for the long-term conservation and many such corridors pass through production landscapes.

Managing such corridors will require support and involvement of local land managers and owners. However mechanisms for co-management are lacking and do not allow communities in productive landscapes to pro-actively participate in conservation initiatives, and often they are averse to such initiatives.

Active participation also involves opportunity costs that they incur through better land management practices and co-management is best achieved when it is profitable, economically and holistically, for people to involve themselves in conservation activities.

The situation described above is well exemplified in the Shencottah Gap, which connects the Ashambu hills with the Cardamom Hills in the Western Ghats. Our previous work has identified potential linkages for wildlife connectivity, passing through a mixture of land ownership types, individual landowners and those owned by companies. We have also identified rubber plantations to be a crucial landuse feature influencing river and watershed management. A certification process, linked to Corporate Social Responsibility and a market based approach that encourages landowners to manage their land and water bodies in a more ecologically friendly manner appeals as a workable solution for private plantation managements. Proposed standards are directly linked to fair- and sustainable-trade markets and based on best management practices that are grounded on ecological and social indicators, while safeguarding agricultural production.

The key components of this study include: Developing key ecological indicators for a certification process of rubber plantations in Southern India.

Identifying market linkages for certified rubber.

During this year, contact was initiated with rubber plantations/managers, and communication was sent out and appointments sought. Templates were prepared for awareness posters, intended to raise awareness amongst the plantation staff and workers on sustainable management of ecosystems and water, responsible storage and handling of chemicals, production area and waste management, and welfare of workers and staff.

Diagnostic audits need to be prepared which will give directions to plantation managements on what interventions are necessary to address any existing paucities that would prevent qualification for certification. A preliminary audit is also a necessary exercise in developing criteria pertaining to certifying the rubber crop.

LEARNING AND STUDY ABROAD

Learning is an integral component of programmes at FERAL. We are constantly working towards improving our own skills and techniques as well building capacities of other organisations, students and professionals. The Education and Training programme of FERAL covers a range of topics, from participatory methods to spatial statistics and vegetation sampling to fish gut analysis. This programme comprises of a mix of workshops, seminars and formal class room teaching, although the bulk of the courses conducted by us tend to have a significant “hands-on” component. Faculty from other institutions often participate in these programmes as occasionally, FERAL staff go as guest faculty to other institutions.

FERAL–KSAC Spring 2012 - Marine Science in India Programme

Project period: Jan 2006 - ongoing
Budget: $ 32,500 (for this financial year)
Supporting partner: Keystone Study Abroad Consortium – Juniata College
Principal Investigator: Neil Pelkey & Tara N. Lawrence

The Marine Science Program took on a few changes this Spring 2012 based on last year's student feedback. Time in the Islands, MCBT and Pondicherry was extended giving the students time to develop and engage in research projects at FERAL (Pondicherry) and on the Islands. The reduced travel definitely strengthened the academics on the program thereby producing one of the best project reports seen on the program in some time. Additionally, as most of the teaching was taken up by FERAL faculty, the curriculum was a lot more focused adding substantially to the overall structure of the course.

The Andaman Islands as always offered a fantastic environment for students to work in and presented the first opportunity for them to do mini research projects on their own. The intertidal walks, the mangrove forests, the beaches, and the fish landing centres afforded an array of possibilities for students to work with and the extended time with a few days dedicated exclusively to data collection certainly enabled students to research the following topics:

a) Right or left?: Handedness in male fiddler crabs

b) Complexity of mangrove root systems as a determinant of mangrove macrofauna diversity and abundance

c) Mangrove regeneration in the Andaman Islands

d) The relationship between mudskipper size and behavioural patterns

e) Pattern extent and crab size related to mating strategy of sand bubbler crabs on South Andaman Island.

A new addition to the ANET itinerary was the hike to Rutland, the home of

The group drinking coconut water at New Wandoor beach after a field day at Kanai dera.

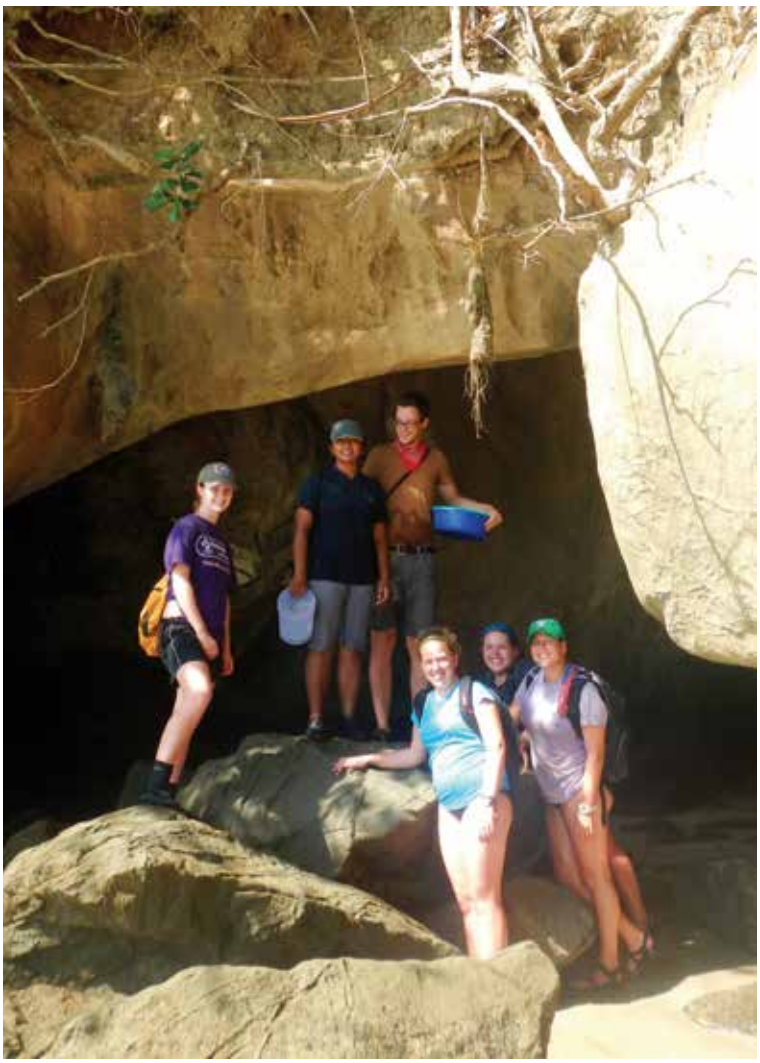
Naveen, the cook at ANET. Rather than a rain forest ecology hike, it seemed more appropriate to include this visit under the CCG course as the setting was unlike any that students have seen before on the program. A community known as the Ranchis, presently squatting on an Island with no electricity or running water and homes made of mud and hay and other indigenous materials: this was a part of the world that very few people visited and was definitely a unique experience for the students. On the whole, the program in the Andamans was very successful and leaving as always was a difficult task.

Sexing spectacled caymans, feeding and cleaning the aldabra tortoises and learning how to handle herps was all part of the schedule alongside lectures on reptile morphology and physiology at MCBT. The Marine GIS and Methods course was conducted at FERAL campus and was spread out such that students always had the opportunity to come back to their methods class after a few days of research and data collection.

Four students paired off to complete their final research papers on gravid crabs and a comparative study on livelihoods in the fisheries sector respectively while one student surveyed the damage wreaked by cyclone Thane on the vegetation in Auroville and FERAL campus.

Post spring break was a week at Madras Christian College with practical sessions conducted at the field station, Pulicat lake which was a unique cultural experience for the group. Classes on plankton, benthos and oceanography were held along with the MCC first year Msc Marine Biology students thereby encouraging interaction between student groups which from a CCG lens, gave our five plenty of food for thought.

The Art as Sustainable Development course was run at Pyramids, the Art centre of Auroville this year with the group expressing their creativity through painting and sculpture under the guidance of their mentors, Michelle, Veronique and Victor. With rave reviews on the theory classes on techniques, studio visits and interactions with people from very diverse backgrounds, the Art course as always was the one of the highlights of the program. On the whole, students enjoyed the program immensely and have provided positive feedback which will be considered for future programs.



Students and program coordinator on the Intertidal walk from Kanai dera to New Wandoor beach.

Fall program : FERAL-KSAC Sustainable Development in India program

Project period: Aug 2011 - ongoing
Budget: Depending on participants
Supporting partner: KSAC–Junita College
Principal Investigator: Neil Pelkey & Tara N. Lawrence

A collaboration with the Keystone Study Away Consortium (KSAC) in August 2011 saw the beginning of the fall semester as part of the study abroad student program that FERAL coordinates every year. This is a cultural and social semester focussing on Sustainable Development in India with the following courses:

a) Sustainable Resource Management
b) Culture, Class and Gender
c) Heart of India
d) Art as Sustainable Development
e) Optional: Islands and Reefs

The overall organization of the program allows students to see for themselves some of the places and organizations that shape contemporary India's views not only in science but also on social issues. They are also provided a historical perspective and hear about current debates which will help them understand these from the larger Asian or global perspective.

Five students from Juniata College which is a part of the consortium signed up for this semester, with academic backgrounds mostly in Environmental Science/Studies and Wildlife conservation. The travel locations listed on the program were many thereby giving students the opportunity to interact with people from diverse backgrounds and who were involved in a range of activities with a few striving to make these experiences and coursework relevant to local communities. Students interacted, observed, reflected and learned the concepts, challenges and opportunities in each subject area.

The sustainable resource management course was developed from a Sustainable Agriculture module that was run as a short summer course in previous years. While it included topics on fisheries and coastal erosion, it still retained a strong agriculture

The Taj Mahal. The Golden Triangle Heart of India tour.

focus for which students visited Pebble Garden, Auroville Botanical Garden, Buddha Garden, Solitude, Sadhana Forest and the Pondicherry agriculture department. These visits gave students an opportunity to learn and understand the different techniques being applied in the field subsequently helping them develop two short term research projects on FERAL campus, looking at the effects of charcoal on plant growth and comparing palm oil productivity. The group worked on these projects in two teams of two and three members respectively.

The Culture Class and Gender course was intertwined with the Heart of India course and these courses were covered at all locations i.e., Pondicherry, Auroville, Kodaikanal, Kerala (Thekkady, Aleppy and Cochin), Delhi, Agra and Jaipur and the Andaman Islands. The CCG module was similar to the optional course on the Spring Program. Heart of India however, was a brand new addition to the list of courses run by FERAL and was mostly travel followed by observation and reflection oriented. The cultural experience at the centre in Cochin was one of the highlights of the program.

Art as Sustainable development with Angad Vohra at Mantra Pottery as always was a success and the Andaman Islands for the optional Islands and Reefs course was considered the best part of the program. Students completed their SCUBA certification at Barefoot Scuba with ease and also enjoyed a day of snorkelling at Tamarind Camp. Topics such as coral reef ecology, intertidal ecology, marine physiology and mangroves were covered at Barefoot and at ANET. The last leg of travel was the tour to the Golden Triangle thereby completing the Heart of India course and was considered to be the second best part of the program.

As students travelled, learned, observed and reflected, they not only gained academic knowledge but also took home a unique personal learning experience. Being the first year that this program was run, there is room for improvement in terms of the overall structure and therefore the administration. Student feedback was detailed and constructive and will definitely be considered for future programs.

The group with a Theyyam dancer at the cultural centre in Cochin, Kerala.

Building Capacities for Conservation Planning using open source tools

Project period: April 2011-July2012
Budget: $18,889
Supporting partner: CEPF – ATREE Western Ghats Small Grants Programme
Principal Investigator: R.S. Bhalla

The project objectives were to build the capacities of conservation groups in the use of GIS and remote sensing in conservation planning. Particular focus was on those those agencies active in the CEPF programme in the Western Ghats. Application of spatial data for conservation planning requires both its availability as well as capacities to utilise it. The investments being made by CEPF in the Western Ghats portal will partly address the first part of this problem. The project intended to address the lack of capacities in conservation groups by conducting a minimum of four five day workshops on open source GIS, remote sensing and spatial statistics. Twenty persons were expected to be trained in each of the workshops.

Over eighty researchers active in the field of conservation and ecology in the Western Ghats have been trained during this year in the use of spatially explicit tools. The workshops themselves were hosted by five different institutions. The reviews of the participants indicated that the training addressed an important gap in the capacities of these researchers to use spatially explicit data from a variety of sources in conservation related research. The project has also helped bring together an initial set of syllabi for teaching spatial analysis to ecologists based on discussions with experts in the field. This may have long term impacts on the quality of research outputs from institutions involved in these fields.

The participants of the workshop held with ANCF and IISC/CES at Bangalore in early 2012.

NATURAL RESOURCES MANAGEMENT

This broad programme links up with various projects being run under other programmes of FERAL. This includes work with fishing communities along the Coromandel coast, and our various conservation related projects in the Southern Western Ghats. Five projects were implemented as part of the programme this year which covered a diverse range of topics from water sanitation and hygiene in Tamil Nadu to virgin coconut oil extraction by tribal communities in the Nicobar islands. The common thread of these projects was the central role of communities in managing their resources. On a more technical note, we initiated a collaborative project on impacts of extreme rainfall events on hydraulic and carbon services of ecosystems.

Establishing small scale coconut extraction units in the Nicobar Islands VCO- From Tsunami to Development

Supporting partner: St.Andrews Prize for the Environment
Principal Investigator: Rauf Ali

The earlier initiative to develop a hydraulic press that doubles the virgin coconut oil extraction which was used to help the people of the Nicobar Islands, an Island in the Bay of Bengal that was heavily affected by the 2004 Tsunami was awarded the St. Andrew Runners-up Prize for the environment for the year 2011. Linking the virgin coconut oil produce to the market has significantly increased the income of the islanders. This work has been continued and the activities that were undertaken during the current year were:
A series of meetings were held in Port Blair, to solve various logistical problems that had arisen. The biggest was actually transporting the oil out of Car Nicobar, and due to the intervention of the Principal Secretary (Shipping) of the Andaman & Nicobar Administration, this problem seems to have been solved.

Arrangements have been made with the Andaman & Nicobar Island Integrated Development Corp. (ANIIDCO) to retail the oil within mainland India. The Andaman & Nicobar Forest Plantation Development Corp. (ANFPDCL) will undertake the responsibility of bulk purchase and distribution. Both these initiatives wait clearance from the concerned Ministries in Delhi.

Production has been at a halt while sales outlets are being organised. A consultant will shortly be spending time in the Nicobar Islands to organise and restart this.

A website: http://coconutsforchange.in has been set up for this project.

Nicobarese women displaying virgin coconut oil extracted from the indigenously developed coconut press

Community-based water and sanitation facilities and capacity building of local residents for adaptation to the calamity in coastal areas in Cuddalore district, Tamil Nadu, India

Project period: March 2009 to November 2011
Budget: $ 1,68,000/-
Supporting partner: UN-HABITAT
Coordinator: Abraham V.A., Gaspard Appavou and Benjamin Larroquette
Project Area: Coastal areas of Cuddalore Dt. Tamil Nadu

The Water for Asian Cities Programme is supporting the implementation of the water and sanitation related Millennium Development Goals and targets (MDGs) in Asian cities. It specifically promotes pro-poor governance, gender mainstreaming, water demand management, increased attention to environmental sanitation; and income generation for the poor linked to water supply and sanitation. The programme seeks to achieve this by mobilising political will, raising awareness through advocacy, information and education; training and capacity building; by promoting new investments in the urban water and sanitation sector; and by systematic monitoring of progress towards MDGs.The overall goal of the project is to promote adaptation of communities living in natural calamity prone coastal areas of Cuddalore District in TamilNadu and its key objective of the project is to increase access of a minimum of 13,500 people, including children, women, men and people with disabilities to 'community owned and managed water and sanitation facilities' in urban and periurban areas of Cuddalore District. By the end of this project - which was completed in November 2011- the following sanitation infrastructures had been implemented: Construction of 69 hand pumps with raised platforms for communities, schools and individuals, 5 Community water supply systems, 42 latrines for schools, women-headed households and disabled persons, 6 drainage systems in five communities and 7 rainwater harvesting systems. Awareness activities 10 street plays on hygiene practices, 8 awareness campaigns in schools, 3 Global Hand Washing Day Events and 2 Global Toilet Day Events.Trainings1 Village WASH Committee training, 2 Village WASH Animators training, 1 Training on Eco-San Toilets, 1 Training on Eco-San toilet construction for Local Masons, 5 Health and Hygiene awareness campaigns for communities, 1 Training on Hand Pump repairs and Maintenance, 2 Training on GIS and GPS, 1 Training workshop on Ecological Sanitation, 1 Environmental Health Training for Engineers and 1 Training on Waterand Sanitation for Local NGOs.

A hand pump being marked as a non-potable water source based on the water quality monitoring surveys.

WASH in schools in Krishnagiri

Project period: Sep 2010 to Dec 2011
Budget: ₹ 5,01,000
Supporting partner: UNICEF
Principal Investigator: Benjamin Larroquette

This 3-month project was completed on December 12, 2011. The first objective of this project was to improve the sanitation star rating in five selected schools so that these could serve as so called 'model schools'.

The second objective was to build capacity of teachers, block coordinators and block trainers on UNICEF's 'Water, Sanitation and Hygiene concepts and guidelines'. The third objective was to build capacity of district officials on global WASH aspects.

This project involved constructing necessary sanitation facilitates such as latrines, wash basins and rainwater harvesting systems as well as providing training for students, teachers and district officials on WASH. Construction involved rain water harvesting systems (1), renovation of existing toilets (4) and wash basins (3), water provision to toilets and school kitchens (5), soak pits (4) and incinerators (1). Awareness training involved WASH trainings (2) and awareness campaigns (10).

School children's procession through the village to make people aware of the importance of proper sanitation.

Fully repaired washbasin with new taps.

Hydrologic and carbon services in the Western Ghats: Response of forests and agro-ecosystems to extreme rainfall events

Project period: Jan 2012 to Dec 2015
Budget: ₹ 45,20,744
Supporting partner: Ministry of Earth Sciences, India
Co-Principal Investigator: Srinivas Vaidyanathan & R.S. Bhalla

This is a collaborative between ATREE, NCBS and FERAL as the Indian partners and Universityof Dundee and Lancaster University UK as the international partners. The project is headed by Dr.Jagdish Krishnaswamy (ATREE) for the Indian institutions and Dr.Michael Bonell (University of Dundee and Lancaster University UK) for the international institutional partners.

Project team member collecting stream profile in the Aganashini basin.

Despite decades of research, a comprehensive understanding of the linkages between carbon and water relationships in forested ecosystems has remained elusive. Most of the available data come from small experimental catchments in the temperate zone, and are as such not representative of the diversity of soil, vegetation and historical conditions in tropical landscapes, such as the Western Ghats in India (Malmer etal. 2010). Given that these tropical regions support a large fraction of the human population and are subject to intense anthropogenic pressures, there is an urgent need to understand and predict the hydrological and carbon consequences of land-use and climate change in these dynamic landscapes.

This is an inter-disciplinary project with four objectives of which the first three will be led by the Indian partners.

a) To couple the synoptic and mesoscale meteorology with the spatial and temporal dimensions of Extreme Rainfall Events (ERE) in the Western Ghats (Karnataka and Kerala States) and in turn, the hydrologic responses linked with the spatial patterns of land-cover and land-use.

b) To determine the hydrologic and carbon dynamics consequences of existing land-cover and land-use including large scale forestation in the Western Ghats and adjacent Deccan plateau

c) To assess the hydrologic and carbon vulnerability of ecosystems, natural, semi-naturaland agro-ecosystems, to ERE at various spatialscales.

d) To prioritise sites in the Western Ghats and adjacent Deccan plateau for restoration under the Green India Mission (India is one of the global leaders in forestation of degraded land) and contribute towards water resources management and climate change mitigation policy.

MARINE SCIENCES

This program is a fairly new addition to the long term priorities at FERAL, forming an umbrella over the fisheries and henceforth all marine/ coastal related work. What began as a six month fisheries research endeavour has led to a two year baseline on 'artisanal' fisheries along the coasts of Pondicherry, Cuddalore and Villupuram. The program seeks to address serious gaps in earlier efforts simultaneously identifying future research directions far beyond the scope of those currently funded. The ultimate aim of this program is to use the outputs to influence local management strategies as well as inform district and perhaps state level policy decisions regarding management of fisheries resources.

Long Term Funding Mechanisms for the Gulf of Mannar Biosphere Reserve Trust

Project period: Oct 2010 to Dec 2011
Budget: ₹ 11,96,081
Supporting partner: United Nations Development Programme
Principal Investigator: R.S. Bhalla, Neil W. Pelkey, Benjamin Laroquette, Dipani Sutaria

The gulf of mannar biosphere reserve is considered a globally significant ecologically sensitive marine ecosystem. A decade after the notification of the biosphere reserve, the Governments of India (GoI), and Tamil Nadu (GoTN), the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF) formulated a partnership for the effective management of the GoMBR. This partnership resulted in the Gulf of Mannar Biosphere Reserve Project with GEF funding of $7.65 million and co-funding of $19.09 million from the GoTN, GoI, UNDP and others. An independent, Statutory Trust was formed to ensure effective inter-sectoral cooperation in the conservation and sustainable utilisation of the GoMBR's biodiversity resources. A comprehensive Mid Term Evaluation of this project, carried out in April 2008 noted that a Trust fund that was to be put aside for running of the Trust and all its activities was not created and as a result, the funds available for the trust to sustain itself were likely to be spent by 2012. A need for an alternative funding mechanism was thought required. FERAL was selected by UNDP to develop a working mechanisms for long term funding to sustain the Trust and associated conservation activities within the Biosphere Reserve.

This study was initiated to identify viable long term funding options for the Gulf of Mannar Biosphere Reserve Trust (GoMBRT or Trust hereafter). Funding of the Trust on a sustained basis is a pre-requisite to meeting the five major components of the Gulf of Mannar Biosphere Reserve Project. The study resulted in a formal report and culminated in a workshop of major stakeholders wherein the final report was presented.

Major recommendations of the study included:
a) Simplification of the organisational structure of the trust.

b) Clearer definition of roles of the organisation and its various partner institutions in the biosphere.

c) A fund raising strategy coupled with specific requirements for the trust to enable it to receive funding from both Indian and foreign donors.

d) Revival of the fourth component of the project to generate scientific base lines on the biosphere and

e) Better integration and coordination with the district authorities.

The mixed fleet of fishing craft at Rameshwaram island.

Ecological status of Artisanal fisheries resources along the Coromandel coast

Project period: Sep 2010 to May 2012
Budget: £ 5,921
Supporting partner: Ruffords Small Grants for Nature Conservation
Principal Investigator: Tara N. Lawrence

In many parts of India—particularly in small or traditional fish landing areas, fisheries data are either unreliable or non-existent. Data on boats, gear and mesh sizes, crew sizes, time spent fishing, etc., are available at very coarse scales and additionally, poor taxonomic identification of fish species, limited abundance and size class information further compounds the issues that confront fisheries managers. The problems in this sector are many. Overfishing, IUU (illegal, unreported and unregulated) fishing, over capacity coupled with management plans with questionable scientific bases are some of the major concerns. The lack of accurate and reliable scientific data significantly contributes to the dearth of information in this sector. Without knowing the most basic information as to what the resource base is, how can fisheries be managed appropriately? Establishing a baseline which addresses this lack of data with the ability to advise the various facets of fisheries management will be the first of its kind for the Coromandel Coast of India. This baseline can help determine whether changes in the current fisheries support system and existing policies are working and will also enhance the capacity to have adaptive reforms to better suit the needs of conservation and artisanal fisher folk. This project expands upon the work earlier done as part of the FAO artisanal fisheries project which later continued as an internal effort of FERAL. A baseline over the span of two years has been °successfully compiled with craft, gear, crew and fish catch details. Subsequent proposals with more specific conservation objectives will be developed from this baseline. Scientific communications are presently underway.

"Kaccha valai": gear specifically targetting snails species from the Family Babyloniidae. Dry eel fish is used as bait in each ring and this is set at the bottom. After about an hour or so, one or two rings are hauled up so the fishermen can see how many snails have crawled in.

A dissected fish specimen from Family Sciaenidae displaying the swim bladder thereby enabling identification to the species level.

Co-Management Fisheries along Coromandel coast

Project period:
January 2012 – December 2014
Budget: ₹ 22,66,110
Supporting partner: SEED Division, Dept. of Science and Technology, New Delhi.
Principal Investigator:
Tara. N. Lawrence & R.S Bhalla

Marine fishing in India, particularly on the East Coast, is facing a crisis of resource depletion caused by a mix of over-exploitation and destructive practices and gear. For management of tropical multi-species fisheries a better understanding of the processes that affect species assemblages is required in addition to the social and economic issues that also play a major role in governing the exploitation of fisheries in these area. Failure to recognise the institutional arrangements under which most artisanal fisheries operate often leads to non-compliance of externally imposed regulations.

This project seeks to contribute to sustainable management of marine fisheries by strengthening initiatives in fisheries co-management. It seeks to answer specific questions about resource utilisation among artisanal fishers and helps build upon earlier work in organising meetings between representatives of artisanal fishers and the fisheries department. This research has direct relevance to the artisanal fishing communities located on the Coromandel coast. The project area comprises of 15 fishing settlements and three jetties along the largely sandy coast between Marakannam in Villupuram Dt. It extends to the deltaic areas of the Cauvery river in the region of Killai, at the South of the Cuddalore Dt. and encompasses the union territory of Pondicherry.

Stakeholder meeting with fishing community members at Kanagachettikulam, Pondicherry.

The specific objectives are:
1. Creation of a scientific baseline on :

a) Fishing capacities covering seasonal patterns in use of fishing groups and gear utilisation.

b) Credit and subsidy mechanisms in the formal and in-formal sector.

c) Marketing linkages and processes for both domestic and export markets.

2. To organise consultative meetings on comanagement between artisanal fishers, mechanised fishers and representatives of fisheries department and civil society.

3. To feed into general fisheries management programs and policy recommendations pertaining to India as well the states of Tamil Nadu and Pondicherry through publications in popular press and relevant scientific journals. DST also requested the addition of artificial reefs as part of the project to see how these structures affect the local fish catch. This phase of the project will take place towards the end of the first year on the project.

A trawl fisherman marking a waypoint on the fishfinder unit. The fisherman do this every time they stop to fish.

WORKSHOPS AND CONFERENCES

FERAL hosted and collaborated in a number of events this year. Many of these were project specific and oriented towards their objectives such as awareness raising for our conservation initiatives, WASH or training students and end users in the monitoring of water quality and use of facilities provided by the projects. We ran a number of workshops related to GIS and remote sensing applications as part of the CEPF-ATREE supported small grants project. We also participated in events organised by other agencies, such as the YETI meet at Guwahati, to which we contributed fiancially, and the SCCS, where we ran a workshop on introductory GIS. A summary of some of these events follows:

Introduction to GIS with Quantum GIS at the Student Conference on Conservation Science

Dates: 16 September, 2011
Resource persons: Srinivas Vaidyanathan & R.S. Bhalla
Venue: Indian Institute of Science, Bangalore

This was a short introductory session attended by 20 participants which covered a few simple data handling and thematic mapping modules of Quantum GIS. The workshop was well received but the paucity of time was a challenge. Future instalments of the introductory GIS workshop will probably be of a longer duration.

Long Term Funding Mechanisms for the project "Conservation and Sustainable use of Gulf of Mannar Biosphere Reserve's Coastal Resources"

Dates: 11 October, 2011
Resource persons: Stakeholders and institutional members of the Gulf of Mannar Biosphere Reserve
Supporting Partner: UNDP, New Delhi and Forest Department, Tamil Nadu
Venues: Chennai

A final stakeholders consultation was held at Chennai on the 11th of October, 2011. The workshop provided an opportunity to share the results of the study on long term funding mechanisms for the Gulf of Mannar Biosphere Reserve Project and the Trust formed to implement it. Among the 30 participants were representatives of civil society groups, research institutions, government departments and the UNDP, apart from officials from the Trust itself. Senior functionaries from the state and central government also attended the consultation which was chaired by the Principal Secretary, Environment, Govt. of TamilNadu. As part of preparation for the workshop, the executive summary of the report was circulated to all invitees and key functionaries of the Trust were provided with copies of the draft LTFM report. Discussions held during the workshop focused on the structural and functional changes required for the Trust to ensure its survival as a robust institution facilitating a long term and sustainable use of resources in this bio-diversity hot spot. As pointed out during the introductory session, the purpose of the study and the consultation was not to evaluate the performance of the Trust, but to take informed and strategic decisions on its long term funding based on its strengths and weaknesses. It was also noted that long term funding cannot be seen in isolation of the functions and therefore the structure of the organisation itself.

Members on the dais from left to right: Dr..J.R.Bhatt (MoEF, New Delhi), Mr. Srinivasan Iyer (UNDP, Head ofEnergy and Environment Unit), Mr. C.V. Sankar (PrincipalSecretary, Dept. of Environment and Forests,Government of Tamilnadu), Dr. Balakrishna Pisupati (Chairperson National Biodiversity Authority), Dr. Rakesh Vishist (PCCF/CWLW - Tamil Nadu Forest Dept.)

Future Vision for Fisheries Management for Pondicherry and Karaikal Regions

Dates: 20-21 October, 2011
Resource persons: Senthil Babu
Supporting Partner: Food and Agriculture Organization of the United Nations
Venues: Pondicherry

The primary objective for the two-day workshop held on October 20-21, 2011 was to develop a vision statement on fisheries management for the Pondicherry and Karaikal region as part of our earlier involvement with the FIMSUL programme in their Stakeholders and Livelihood Analysis of Fisheries in the states of Tamil Nadu and Pondicherry. The workshop was attended by about sixty participants representing the various stakeholders in fisheries from both Pondicherry and Karaikal regions, including twenty women. The participants through various exercises discussed and drafted the various problems, including problems due to resource depletion, the current state and the future of fisheries resources and the the various opportunities and obstacles in evolving strategies for a more sustainable fishing in the region.

The workshop in progress. Stakeholders from both Pondicherry and Karaikal attended.

Piloting economic models for biodiversity conservation

Dates: November 9th, 2011
Resource persons: Srinivas Vaidyanathan, Kerala Forest Department officials, Gram Panchayat Members
Supporting Partner: CEPF
Venues: Ariankavu, Kerala

A one day workshop "Piloting economic models for biodiversity conservation" was conducted on 9th November, 2011 at Ariankavu, Kerala. The workshop invited all stakeholders in the landscape and included VSS executives, Panchayath members, individual farmers and officials of the Forest Department. The objective of the workshop was to present the economic model that was developed to bring communities together for maintaining and restoring natural habitats and increasing biodiversity in the landscape. Mr. Srinivas Vaidyanathan, Managing Trustee of FERAL welcomed workshop participants and delivered the key note address. The meeting was presided by Mr. Johnson Thomas, Divisional Forest Officer, Thenmala and Ms. B. Ayammal, President, Ariyankavu Grama Panchayat.

During the workshop the DFO and Panchayat Presidents released project related awareness material to the stakeholders and also spoke about the need for a better environment for our well being. On behalf of FERAL they also donated books to three VSS libraries, these popular books highlight the need for forest and wildlife conservation in India.
This was followed by a detailed presentation which highlighted the individual and community based conservation models, incentive structure, activities and selection criteria. After the presentations the floor was opened for discussion and witnessed active participation from the stakeholders. The lines of discussion was split across two groups those who actively supported need for conservation efforts and another faction which was vary of such efforts.

Another major point of discussion was based on legislation by the Government of Kerala namely the Ecologically Fragile Land Act of 2003'. The stakeholders sought a response from the DFO on the act if provisions within the act empower the empowers the government to declare lands that has high conservation value as ecologically fragile and from then be vested with the government for management. The DFO took all queries and stated such provisions were not available with the act. The presence of a mining lobby in the area who exploit this fear among the people to oppose our conservation efforts was also evident during the meeting.

Topics like organic farming, environmental education in schools, solid waste management and disposal were also discussed In the wrap up session, key points arising from the discussion were clarified and further village level meetings for further discussions were agreed upon. The 75 invitees who attended the workshop were thanked for their participation and the workshop concluded with a lunch.

Community workshop introducing direct payment mechanism to stakeholders.

Building Capacities for Conservation Planning (4 workshops)

Dates: 12-16 December, 2011, 2-6 January, 2012, 9-13 January, 2012, 23-25 March, 2012
Resource persons: R.S. Bhalla, Saravanan S. and Kumaran K.
Supported by: CEPF-ATREE Western Ghats Small Grants
Host institutes and venues: Centre for Environment and Development – Trivandrum
Dept. of Ecology and Env. Sciences – Pondicherry University (2 workshops)
Asian Nature Conservation Foundation/Centre for Ecological Sciences, I.I.Sc. – Bangalore
Course site: http://www.feralindia.org/moodle/course/view.php?id=2

The workshops comprised of training in free and open source software for GIS, remote sensing and spatial analysis. The content of the workshops was based on the participants andt heir interests and ranged from limited training on GIS and GPS to use of spatially enabled databases, raster analysis and introductory spatial statistics using R. Host institutions played a major part in organising and coordinating the workshops. When possible additional resource persons from the French Institute, Strand Lifescience and FERAL also participated.

R.Prabhakar from Strand Lifesciences presenting the the Western Ghats portal to participants.

Publications

A number of reports and few journal articles were published during this year. Most of these can be downloaded from our website and hard copies can be obtained from our offices on request.

PEER REVIEWED ARTICLES

1. Ahrestani, Farshid S., Ignas M.A. Heitkönig, Frank van Langevelde, Srinivas Vaidyanathan, M.D. Madhusudan, and Herbert H.T. Prins. (2011). Moisture and nutrients determine the distribution and richness of India's large herbivore species assemblage. Basic and Applied Ecology 12(7): 634-642 doi: 10.1016/j.baae.2011.08.008.

2. K. Ullas Karanth, Arjun M. Gopalaswamy, N. Samba Kumar, Srinivas Vaidyanathan, James D. Nichols, and Darryl I. MacKenzie. (2011) Monitoring carnivore populations at the landscape scale: occupancy modelling of tigers from sign surveys. Journal of Applied Ecology. 48(4): 1048 - 1056 doi:10.1111/j.1365- 2664.2011.02002.x.

REPORTS AND OTHER PUBLICATIONS

1. Ali, R. 2012 Imported threat. The Hindu. January 29, 2012.
URL:http://www.thehindu.com/todays-paper/tp-features/tp-sundaymagazine/article2841371.ece.

2. Appavou, Gaspard, Abraham Varampath, and R.S. Bhalla. 2012. Setting up Community Based Water and Sanitation Facilities - a Protocol Manual Based on Field Experiences. 1st ed. Pondicherry, India: Foundation for Ecological Research, Advocacy and Learning.
URL: http://www.feralindia.org/drupal/download/file/fid/359

3. Bhalla, R.S., Larroquette, B., Sutaria, D. and Pelkey, N.W. Long Term Funding Mechanisms for the Gulf of Mannar Biosphere Reserve. Pondicherry, India: FERAL, UNDP.
URL: http: //www.feralindia.org/drupal/download/file/fid/410

4. Bhalla, R.S. 2011. Conservation of the Kalivelli Wetland Complex. Final Project Report. Pondicherry: Foundation for Ecological Research, Advocacy and Learning.
URL: http://www.feralindia.org/drupal/download/file/fid/330

5. Aditya, Gangadharan, Vaidyanathan Srinivas, and Ram Sunita. 2011. Identifying critical areas for a landscape - level wildlife corridor in the southern Western Ghats. Final Technical Report. Pondicherry, India: Foundation for Ecological Research, Advocacy and Learning.
URL: http://www.feralindia.org/drupal/download/file/fid/238.

6. Ali, R. 2011. Calm after the storm. Motherland, 5: 18-25
URL:http://www.motherlandmagazine.com/ecology-issue/welcome-to-dharavi-inc

7. Ali, R. 2011. My Great Uncle Salim. OPEN magazine, May 7, 2011
URL:http://www.openthemagazine.com/article/arts-letters/my-grand-uncle-s-lim

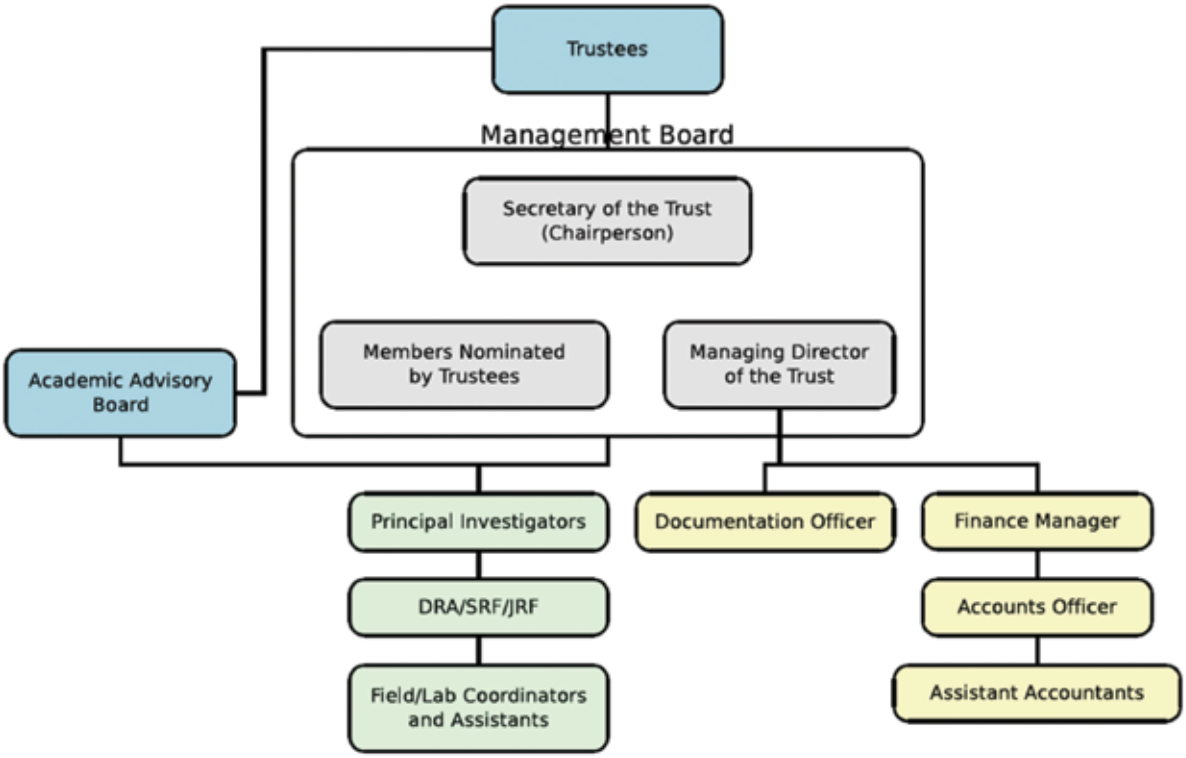
8. Bhalla, R. S., Krishnaswamy, J. and Vaidyanathan, S. 2011. Vulnerabilities of Critical Ecosystems and Services in the Western Ghats to Overland Flows and Sedimentation During Extreme Rainfall Events. In Geospatial World Forum: Seminars: Disaster Management, 66. Hyderabad, A.P. India: GIS Development.

Administrative Information

ORGANISATIONAL STRUCTURE

FERAL is registered as a trust under the Indian Trust Act in 1997 (reg. no. 1327/97), as a non profit organisation. It is certified as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India (No.11/493/08-TU-V). FERAL also has a Foreign Contributions Regulation Act clearance (Registration number: 285130074, Nature: Educational Social) which allows it to receive foreign funds. The simple organisational structure we follow ensures a high level of autonomy within projects with principal investigators or Principal Investigators in charge.

THE FERAL ORGANOGRAM



Feralidae

The people behind FERAL are a diverse group with specific interests in the wide field of ecology. This team is responsible for formulating and co-ordinating the organisations activities and comprises of a number of persons introduced alphabetically below[2]:

SCIENTIFIC STAFF

Dr.Rauf Ali (D.R.A./P.I.): Founding and Managing Trustee of FERAL. Rauf is involved in various research efforts in the Andaman and Nicobar islands with a focus on assessments and impacts of exotic species. A primatologist by training, Rauf is active in policy advocacy for conservation efforts and is part of the researcher network across the country and worldwide.

Gaspard Appavou (J.R.F./F.C.): Gaspard has been coordinating the field surveys and data collection for the FAO-UNTRS project. He holds a master's degree in human resources management and a bachelors degree in law. His ability to moderate during meetings and discussions and manage multiple field teams during surveys has been a boon to the organisation.

Ajith Ashokan (JRF): Ajith has a Master's degree in plant biotechnology. His interests lie in vegetation studies and specifically plant taxonomy.

Senthil Babu (P.I.): Babu has an M.Phil. in History of Science. He is interested in issues affecting the coastal communities in general and the fishing community in particular. He has worked along the east coast on various issues for the last six years.

R.S. Bhalla (S.R.F./P.I.): Founding Trustee, Ravi's area of interest is natural resources management with specific interest in water resources management. He is presently wrapping up his PhD in landscape ecology. He conducts occasional training programs on participatory GIS and remote sensing.

Rutuja Dhamale (JRF): Rutuja has a Master's degree in Environmental Sciences from Pune University. Other than her interest in studying carbon stocks, she has a keen interest in studying butterflies.

Aditya Gangadharan (J.R.F./P.I.): Aditya is currently interested in evaluating connectivity for large mammals and is involved in our initiatives in the southern Western Ghats wildlife corridor program. He is particularly intrested in measuring functional connectivity in human modified landscapes. He is currently pursuing his Ph.D. at University of Alberta, Edmonton.

Kumaran K.: Kumaran has been working as part of our field teams in Pondicherry and in the Western Ghats. Although he has a Bachelors in Business Adminstration his interests lie in ecology related field work.

Shanth Kumar (J.R.F.): After obtaining his Master's degree in wildlife biology from Bharadhidasan University, Trichy, he worked extensively on various issues related to conservation of the fauna in Southern Western Ghats, especially focusing on human wildlife conflict. Currently he is involved in assessing economic losses due to crop raiding in the southern Western Ghats.

2. Doctoral Research Associate (D.R.A.), Senior Research Fellow (S.R.F), Junior Research Fellow (J.R.F), Project Investigator (P.I.), Field Coordinator (F.C).

Robin Abraham Kurien (J.R.F./P.I.): Robin has a masters in Wildlife Biology and Conservation from National Centre for Biological sciences, Bangaluru. He is interested in conservation of the biodiversity rich areas in the southern Western Ghats and is especially interested in amphibian and fish diversity and their conservation.

Tara Lawrence (J.R.F./P.I.): is a junior research fellow with a masters degree in Marine Biology. Her broad interests lie in the area of fisheries ecology and more recently ecophysiology (anything fish centric!). Her interest in the fisheries sector stems from the incredible dynamics the industry displays in the face of a rapidly changing resource base. She also coordinates the student program, teaching topics largely related to fish, fisheries and marine ecophysiology.

Rajat Ramakant Nayak (J.R.F./P.I.): Rajat completed his Masters in Wildlife Biology and Conservation from National Centre for Biological Sciences, Centre for Biological Sciences, WCS-India Programme, Bengaluru. His research focuses on the long-term changes in ecosystem components and processes due to anthropogenic factors in Indian forests. He has a special interest in grassland ecosystems, both low and high altitude, semi-arid and wet. He is currently working on understanding the role played by anthropogenic fire and grazing in different habitat types, ranging from tropical seasonal forests to savannah woodlands to sub-tropical sub-alpine and alpine woodlands and grasslands.

Ignatius Peliyas (J.R.F.): Ignatius is interested in understanding human dimensions of conservation. He is currently working in the Agastyamalai complex assessing the role human settlements and community based organisations play in conserving wild habitats. Other than talking to people he is also interested in watching wild animals and accompanies us during our field surveys.

Dr. Neil Pelkey (D.R.A./P.I.): A Founding Member of FERAL and currently Senior Advisor, Neil is an Assistant Professor at the Juniata College, Pennsylvania, USA. He is an expert on GIS andremote sensing and environmental studies. He is an advisor on many of the projects and research proposals of FERAL. Neil is also responsible for developing the ongoing collaboration with the Juniata College for facilitating their undergraduate study aboard program in India.

Sunita Ram (S.R.F./P.I.): Sunita is a PhD scholar currently working on the behaviour and distribution of Langurs. Her interests lie in the identification of habitats of these shy primates so that conservation efforts may be improved.

Kumaran S. (JRF): Kumaran is part of our Marine Sciences team. He has a Master's in Ecology and Environmental Scienes from Pondicherry University. His interest lies in working on marine biodiversity and conservation related issues along the Coromandel Coast.

Saravanan S. (F.C.): Saravanan is a self taught GIS expert and coordinates the field activities on various projects, particularly the NRDMS supported work on landscape assessments. He is presently completing his post graduate degree in environmental economics.

Selvaganesh: Ganesh is a post-graduate working as part of our WASH Programme implementation team.

Shruti Singh (JRF): Shruti has a Master's degree in Environmental Sciences from Mysore University and studied the distribution and densities of butterflies in urban areas of Mysore for her thesis. Her interests include wildlife conservation, Natural Resource Management, education, herpetology, ornithology and study of butterflies.

Dr. H. S Sushma (D.R.A.): Has a post graduate degree in psychology and studied resource partitioning and inter-specific interactions of arboreal mammals in the rainforest's of Annamalai's for her doctoral dissertation. Her broad research interests are community ecology, restoration ecology, conservation of tropical evergreen forest patches in human altered landscapes and primate behaviour. Her primary academic interests lie in behavioural ecology of primates and the role primates play in forest ecosystem functioning.

Dr. Dipani Sutaria (D.R.A./ P.I.): Dipani is a senior research fellow with a doctorate degree in environmental sciences from James Cook University, Australia. She has worked as academic support on the Study Abroad Marine Science course for FERAL. She is involved in ecological research, specifically in the marine environment.

Karthik T (J.R.F.): Karthik possess a Master's degree in wildlife biology and has previously worked on different ecological projects in diverse habitats form the wet evergreen forests of the Western Ghats to arid zones of Gujarat. He is primarily interested in amphibians and reptiles.

Srinivas Vaidyanathan (S.R.F./P.I.): Srinivas, is a trustee of FERAL. He is a wildlife biologist with particular interest in understanding changes in landscape level processes and structure and how the same affect large mammal populations and distributions, in particularly wide ranging mammals. Srini's expertise lies in monitoring animal populations using a variety of advanced sampling techniques and the use of GIS and remote sensing to develop decision support systems for conservation initiatives.

Abraham Varampath (S.R.F./P.I.): Aby has expertise in the areas of water and sanitation. He has worked in several regions including with the UNICEF in the Nicobar Islands after the tsunami and Save the Children in Haiti.

ADMINISTRATIVE STAFF

FERAL has a small administrative support system which comprises of an accounts manager and an office manager. Our administrative staff contribute to other projects by way of facilitating training programmes, workshops and reporting and include:

Rajendran. K: Raji is the Office Manager at FERAL and is engaged in keeping the campus at Morattandi operational and organises workshops and events for various projects. The former involves facilitating the entire range of projects operating out of the campus and Pondicherry office.

Benjamin Larroquette: Benjamin held the post of Managing Director of FERAL till January 2012 and was in charge of overseeing the finance and administration. He plays a significant role in advising projects and programmes such as the Water, Environment and Sanitation effort, as well as the study abroad program. Benjamin is also very involved with the communication with the Government and UN agencies.

Shanthi. R: Shanthi is the Accounts Manager at FERAL handling the day to day accounting responsibilities of the organisation. She is a post-graduate and is versatile in the use of a range of financial software.

Our support staff include Sumathi and Chitra who help with office maintanence and kitchen work on campus; and Citru for campus security. At our field stations, a number of field assistants have been part of various projects helping with both field data collection and in maintanance of field stations.

Balance Statement

FOUNDATION FOR ECOLOGICAL RESEARCH ADVOCACY AND LEARNING

No 27, 2nd Cross Appavou Nagar, Vazhakulam, Pondicherry - 605012

BALANCE SHEET AS AT 31.03.2012

(Amount in ₹)

Particulars		Sch.Ref	31.03.2012	31.03.2011
SOURCES				
Corpus		1	(385,315)	742,275
Project Asset Reserve		2	4,456,433	2,599,439
Projects Account (Cr)		3	7,461,115	4,570,402
SBI - Bolero Vehicle Loan			389,585	542,836
			11,921,818	**8,454,952**
APPLICATION				
Fixed Assets less Depreciation		4	4,313,573	3,277,381
CURRENT ASSETS, LOANS AND ADVANCES				
Cash and bank balances		5	7,620,578	5,138,923
Loans and advances		6	62,886	77,845
	(i)		7,683,464	5,216,768
Less: Current liabilities		7	75,219	39,197
	(ii)		75,219	39,197
Net Current Assets (i) - (ii)			7,608,245	5,177,571
			11,921,818	**8,454,952**
Notes on Accounts		9		

As per our report of even date attached

For FOUNDATION FOR ECOLOGICAL RESEARCH ADVOCACY AND LEARNING

Dr.RAUF SAAD ALI
Managing Trustee

SRINIVAS V
Trustee

FOR ASA & ASSOCIATES
Chartered Accountants

K.VENKATRAMAN
Partner
M.No:200/21914
Firm Reg No: 009571N

Place : Chennai
Date : 17.08.2012

Notes

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Tamil Nadu
Phone: (+91) 413 2671566
& 2671567

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