Annual Report 2009-2010



Once wild, run wild again

Foundation for Ecological Research, Advocacy and Learning



Mission Statement

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

Foundation for Ecological Research, Advocacy and Learning (FERAL)

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Cover Photo: The Parambikulam Wildlife Sanctuary is the catchment area of three reservoirs - Parambikulam, Thunacadavu and the Peruvaripallam $\[mathbb{C}$ Sunita Ram

Contents

Mandate	1
The Year That Was	2
Programme Areas and Projects	3
Conservation and Wildlife Biology	6
Education and Training	12
Gender and Development	15
Restoration and Action Research	19
Workshops and Conferences	23
Publications	26
Peer Reviewed Articles	26
Reports and other publications	26
Administrative Information	27
Organisational Structure	27
Feralidae	28
Balance Statement	31

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.

- **Cology,** 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 field offices close to Pondicherry and Ariankavu, Kerala, and our Bangalore office. An administrative office in Pondicherry town provides support to all our projects.

The Year That Was

The last year saw FERAL consolidating a number of different programmes and extending into a few new areas. We also received certification as a research organisation from the Dept. of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India this year.

After a decade of supporting a small number of women self help groups in the Tiruchitrambalam Panchayat, we reviewed our strategy for this programme. We will be withdrawing from direct facilitation of the SHGs in the next few years and instead concentrate on technological innovations for income generation and capacity building of groups who are formed and facilitated by organisations specialising in micro-credit. Two projects, both supported by the Department of Science and Technology, were implemented this year. This included one in the Nicobar islands where women were provided a mechanical coconut oil extraction device designed through the project. A second project targeted over 120 women entrepreneurs in a range of income generation activities in food processing.

The conservation and wild life biology programme was the most active of all our programmes with a total of six projects. Two projects were on the leaf eating primates (Hanuman Langur and the Nilgiri Langur) in the southern Western Ghats - studying the influence of human settlements on the gastrointestinal parasites of these langurs and a comparative study of their distribution. The other four covered a broad policy initiative on re-building wildlife corridors and comprised of specific components of this initiative. These included the collection of data on habitat use by large mammals, a study on application of payment for ecosystem services as a mechanism for conserving biodiversity outside protected area boundaries and two studies on identifying critical corridors for large mammals.

Our community based initiatives this year included work on disaster proofing water and sanitation infrastructure in flood prone areas of Cuddalore district and work with artisanal fishing communities. The latter focussing largely on issues of co-management and catch composition and fishing efforts. Efforts are on to extend both these programmes both in spatial extent as well as scope.

Read on for more details....

PROGRAMME AREAS AND PROJECTS

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. Conservation and wildlife biology.
- 2. Education and training.
- 3. Gender and development and
- 4. Restoration and Action research.

We remain involved in field based research, much of which has a strong element of community participation and is both socially and environmentally relevant. Our reliance on quantitative techniques and application of spatial technologies pervades all our projects.



A glimpse of some of our activities.

SI. No.	Programme Area/Project	Supporting Institution	PI/Head	Budget			
Conservation and Wildlife Biology							
1	Gastrointestinal Parasites in Langurs: The Influence of Human Settlements Within a Protected Area in The Western Ghats, India	Primate Conservation Inc. USA.	Sunita Ram	\$ 3,401/-			
2	Study of the distribution of Primates of the Genus Semnopithecus and understanding factors that influence parapetry between the common langur and nilgiri langur in the southern Western Ghats -India	Women's Scientist Scheme WOS-A, DST.	Sunita Ram	₹ 648,000/-			
3	Bridging the Shencottah Gap: How Payments for Ecosystem Services Can Restore Biodiversity Outside Protected Areas in India	Critical Ecosystems Partnership Fund	Rauf Ali & Srinivas Vaidyanathan	\$ 4,99,443/-			
4	Baseline Surveys for Designing and Implementing Payments for Eco System Services in The Western Ghats – India	Göteborg University, Sweden	Srinivas Vaidyanathan	kr. 1,42,243/-			
5	ldentifying Critical Areas for a Landscape Level Wildlife Corridor in The Southern Western Ghats, India.	Rufford Small Grants for Nature Conservation	Aditya Gangadharan	£ 5,990/-			
Education and Training							
6	Marine Science in India	AIIS-BCA-Juniata	Neil Pelkey & Anupama Pai	\$ 18,427/-			
7	Summer Courses	Juniata College, Huntingdon, Pennsylvania	Neil Pelkey & Anupama Pai	\$ 7,350/-			

The following table summarises the projects that were implemented during the period 1st April 2009 to 31st March 2010. Subsequent sections present a summary of each project.

SI. No.	Programme Area/Project	Supporting Institution	PI/Head	Budget			
Gender and Development							
8	Technology Application and Capacity Building in Natural Resource Based Income Generation	Science and Society Division, DST.	Anupama Pai	₹ 8,09,050/-			
9	Skill Based Micro-enterprise Development for Women from Scheduled Caste	Science and Society Division, DST.	Anupama Pai	₹ 10,00,000/-			
10	Establishing small scale coconut extraction units in the Nicobar Islands	Science and Society Division, DST.	Rauf Ali	₹ 9,98,480/-			
Restoration and Action Research							
11	Landscape Assessment of the Kalivelli Basin	Natural Resources Data Management Systems, DST.	R.S.Bhalla	₹ 19,95,900/-			
12	Monitoring and maintenance of restoration sites	UNDP, Delhi	R.S.Bhalla	\$ 60,063/-			
13	Community-based Water and Sanitation Facilities and Capacity Building of Local Residents for Adaptation to the Calamity in Coastal Areas	UN-HABITAT, Nairobi	Abraham V.A.	\$ 1,68,000/-			
14	Artisanal Fisheries Resource Surveys along a part of the Coromandel Coast	FERAL	Tara Lawrence	₹ 100,000/-			

Conservation and Wildlife Biology

This programme is devoted to conservation issues and encompasses research and documentation of wildlife, their habitats and understanding issues related their long term sustenance. The Agastyamalai-Periyar landscape in the southern Western Ghats has been the focus of our research and conservation activities. This year, the programs in the realm of payment for ecosystem services and wildlife corridors have been continued with a new grant from the Critical Ecosystem Partnership Fund. A new project on the comparative ecology and distribution of the langurs was initiated and one project on the gastrointestinal parasites of langurs was continued from the previous year.



The Srivilliputtur landscape.

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

Project period 1 year Budget \$ 3,401/-Supporting partner Primate Conservation Inc., USA. Coordinator Sunita Ram

The Nilgiri langur (*Semnopithecus johnii*) and the common langur (*Semnopithecus priam thersites*) are colobines found in the southern tip of the Western Ghats. Changes in land use patterns and the loss of habitat due to the ever increasing demand for land to meet anthropogenic requirements are major causes for these, and other primates being critically threatened today.



Gastrointestinal parasites of langurs are studied using non-invasive methods using langur faecal samples. Here a dung beetle rolls off fresh faeces of a Hanuman langur in the Kalakad-Mundanthurai Tiger Reserve.

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 proxim-

ity 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. Permission for field work from the Tamil Nadu Forest Department was granted in May 2009 and field work in the Kalakad-Mundanthurai Tiger Reserve was initiated from September 2009. Several groups of hanuman langur and Nilgiri langur have been identified at differing proximity to settlements within this PA and faecal samples from individuals from these groups are being collected in 10% formalin for microscopic analysis. Laboratory work has been initiated and preliminary results from this study will be available soon.

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 3 years starting March 2010 **Budget** ₹ 6,48,000/-

Supporting partner Department of Science and Technology – Women Scientist Scheme (WOS-A) SR/WOS-A/LS-164/2008

Coordinator Sunita Ram

The genus Semnopithecus in south India is represented by the Nilgiri langur (*S. johnii*) and the common Hanuman langur (*S. priam thersites*). The Nilgiri langur is an endemic to the Western Ghats and is a threatened species while the status of the common langur, an endemic to the Indian-subcontinent, is not known due to deficient data. The lack of knowledge of their distribution, ecology and status makes it difficult for informed conservation initiatives. These closely related langur species have been reported to hybridise in regions where their ranges adjoin i.e. regions where they are parapatric. The mechanism by which such parapatry 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.



A Nilgiri langur female with a possible hybrid infant of Nilgiri and Hanuman Langur in Mundanthurai. There are reports of interbreeding between the two in the Mundanthurai plateau and in the Anamalai hills.

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 –

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

of each species?

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

Distributional surveys in the Kalakkad-Mundanthurai Tiger Reserve, Tirunelveli division and Srivilliputtur Grizzled Giant Squirrel Wildlife Sanctuary and sampling (faecal samples collected from Nilgiri langur and common langur groups) for the study on intestinal parasites in the Kalakkad-Mundanthurai Tiger Reserve have been initiated. Work on this project is ongoing.



Nilgiri langur in the Mundanthurai plateau feeding on petiole of young leaves of teak.

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

Project period: 2009-2012

Budget: \$ 4,99,443/-

Supporting partner: Critical Ecosystems Partnership Fund¹

Project lead contact: Dr.Rauf Ali

- Project director: 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 in the southern Western Ghats is a mosaic of remnant patches of forests, plantations of rubber, teak, tea, arecanut and paddy fields. The gap lies between the Agastyamalai hills in the south and the Periyar-Srivilliputtur hills. These hills contain unique evergreen ecosystems, many endemic species and some of the last remaining stretches of undisturbed forests. They were historically part of a single, wildlife-rich forested landscape, but human pressure has reduced both animal numbers and connectivity between them. Large mammal movement between these two complexes is increasingly rare owing to the rapid pace of development in the intervening 1000 km2 mosaic of remnant forests, plantations and settlements. Restoring connectivity in this fragmented landscape is imperative for long-term population viability of many endangered species of mammals.

The goal of this project is to restore this connectivity and conserve biodiversity. A large part of the critical link within the corridor is under private holdings, for which a Payment for Ecosystem Services (PES) approach is being proposed to establish protocols in using this novel mechanism towards conservation. Primary components of the project are to (a.) identify key wildlife corridors for conservation wherein PES will be implemented and (b.) establish baseline data to establish a monitoring system which will be linked to payments and measure the success of PES.



Last few remaining grassland and moist forests of the Achankovil Division. Like most other forest division, the original vegetation has been replaced with commercial timber plantations (photo credits: Siddharth Rao)

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.

Baseline Surveys for Designing and Implementing Payments for Eco System Services in The Western Ghats – India

Project period: 2008-2009

Budget: kr. 1,42,243/-

Supporting partner: Environmental Economics Unit, Department of Economics, Göteborg University, Sweden

Coordinator: Srinivas Vaidyanathan

Collaborators: Somanathan E, (Indian Statistical Institute), Peter Bardsley, (University of Melbourne), Gary Stoneham (Department of Sustainability and Environment, Govt of Victoria)

This study was carried out in the southern Western Ghats with a primary focus of improving habitat connectivity between the Agastyamalai Periyar - Srivilliputhur hill ranges and to complement our study to identify critical areas for wildlife corridors. The project targeted two conservation priorities.

The first was to gather baseline data to develop incentive based mechanisms. These would be used to encourage land use changes by land holders in the area leading to both a healthier and more productive forests. This in turn would would facilitate large mammal movement and result in an expansion of area under forest cover.

The second was to collect baseline data to develop incentive based mechanisms to work with local individuals and communities to mitigate anthropogenic ecosystem threats (fire, fuel wood collection, and poaching).

Information was collected on the status and distribution of 14 species of large mammals and a profile on commercial plantations, individual landholder and 14 community groups was created. The major accomplishments of the bridging fund was:

- Thirty nine human settlements have been mapped and profiled.
- Detailed information on land-use; cropping pattern and productivity; forest dependency; and attitudes towards conservation has been collected over the last one year.



Vast tracts of privately owned land has been converted to rubber plantations. Such conversion along with human settlements and other linear barriers has lead to decreased animal movement in the Shencottah corridor.

Identifying critical areas for a landscape level wildlife corridor in the southern Western Ghats, India

Project period: April 2008-2009
Budget: £ 5,990/Supporting partner: Rufford Small Grants Foundation
Coordinator: Aditya Gangadharan and Srinivas Vaidyanathan

The Agastyamalai and Periyar-Srivilliputhur hills constitute the southernmost ranges of the Western Ghats. They contain unique ecosystems and species, and are acknowledged as high priority areas for conservation. Large mammal movement between these ranges is increasingly rare owing to the rapid pace of habitat degradation and alteration in the intervening mosaic of multiple-use forests, estates and small settlements.



Other than large mammals, the Shencottah corridor supports a wide range of small mammals. A small Indian civet photographed on the Ambanaad estate.

The current study is part of a long-term research and conservation programme aimed at assessing and preserving connectivity between large mammal populations in this region, which was initiated in 2008.

The objectives of the study are:

1.Quantify animal occupancy and habitat use patterns over the landscape, and factors that affect these;

2. Quantify movement patterns for elephants;

3.Identify areas suitable for establishing corridors at both the local and landscape level

Sign-based occupancy surveys for herbivores and carnivores was carried out and about 225 sq km has been sampled. The large mammalian diversity in the area is remarkable; thus far we have encountered 16 species during our surveys, including six endangered species. The most frequently encountered species are sambar, barking deer and elephant. While the first two species are found through out the study area, including rubber and tea gardens, elephants have a restricted distribution. One critical link within the area sampled needs immediate attention to restore large mammal connectivity.

Education and Training

Learning is a core objective of 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.



The spectacular diving at the Andaman islands is one of the highlights of the marine science programme.

Study abroad programme

Courses under this programme are designed to provide students academic and experiential learning opportunities while exploring the fields of natural and social sciences with an emphasis on issues of sustainable development. It provides them with the opportunity to interact with people from diverse backgrounds, those involved in research and those who try to take this research to the local communities.

Marine Sciences

Project period 2006- ongoingBudget Depending on participantsSupporting partner AIIS-BCA-JuniataCoordinator Neil Pelkey and Anupama Pai

The marine science course was not run this year. We did however run the Reefs and Islands course as a a January term (J-Term) course. The syllabus included reefs, islands, mangroves and fisheries. We had two students from Messiah College, Grantham, PA USA. This was done while simultaneously facilitating a BCA faculty seminar to introduce both Marine Science (Dr. Catherine M Schaeff²) and Social Work (Dr. Julia K Moen³, Dr. Sharon K Davis⁴, Dr. Marian Mattison⁵) faculty to the India Programs. Robert William, BCA Regional Director and Anupama Pai of FERAL led that workshop.

The first week in Pondicherry had both the students on the beaches early in the mornings where part field- part theory on artisanal fisheries was completed. They got to see a quantitative and qualitative diversity in catches for the day, fishing craft and gear, and every other facet of fisheries in a couple of villages from Pondicherry and Tamil Nadu.

The students experienced their first glimpse of mangroves on a row boat through the Pichavaram Bird Sanctuary. While the topic was mangroves, the bird diversity for which Pichavaram is known was brilliant.

The next two topics—coral reefs and island ecosystems—were covered in the Andaman Islands. One of the students and the visiting faculty member needed to complete their dive certifications while the second student completed a couple advanced open water certifications at Barefoot Scuba, Havelock. That was followed up with 5 research dives and several expeditions to the regenerating coral beds off of beach #5.

A trek through the Andamans forest and slushing it in the mangroves at ANET, Wandoor kept them busy and learning hands on through most part of the day. We also tested a modified Forest Inventory and Analysis (FIA) approach in a set of regenerating mangroves near Wandoor. We recommend continuing this in the future.

Field trips and dives were followed with class room lectures on the essential features of the subject. Discussions on observations on field related to the numerous environmental issues in the respective subject were insightful and thought stimulating. While the first J-Term was a success, student feedback suggested that we alternate field days with lecture days to provide more time to rest and process the field information. In fact several lectures had to be cancelled due to late arrivals and tired students. The feedback also suggested that trying to coordinate the faculty seminar with the J-Term course did not provide synergies, but rather coordination difficulties. We are integrating that feedback into future courses and seminars

The College Education Programs completed two summer courses and two internships. The summer courses included Peace Studies in India, Culture Class and Gender. The internships included water and sanitation in coastal villages and the Wastelands Fodder Fertigation Project.

²Chair, Biology Undergraduate Studies Committee, Department of Biology, American University, Washington, DC.

³Associate Professor, Field Director, Social Work Program, Bethel University, MN

⁴Associate Professor, Chair, Department of Sociology and Anthropology, Professor of Sociology, University of La Verne, CA

 $^{^5\}mbox{Associate}$ Professor, Chair, Department of Social Work, Providence College, RI

The participants are listed below.

Interns

- Juliet Garlow: Wastelands Fodder Fertigation Project
- Marcin Jaroszewicz: Wastelands Fodder Fertigation Project
- Troy Carl: Worked on the UNH water and sanitation project
- Jennifer Loving: Worked on children's development efforts with Rajagiri College, Kalamassery.
- Takako Yamamoto: Worked with National Institution of Oceanography, Goa, on chemical oceanography.

Faculty on Peace Studies:

- Dr. Celia Cook-Huffman Juniata College
- Father Prasant, Rajagiri College of Social Work

Students on Peace Studies

- Marcin Jaroszewicz
- Juliet Garlow
- Troy Carl
- Sara-Beth Stoltzfus
- Jennifer Loving
- Hannah Everhart

Culture Class and Gender

Daniel Kraft

Gender and Development

FERAL continued its activities with the women groups it supports within the Tiruchitrambalam Panchayat. Building up on the experiences of the income generation activities taken up in the previous year, the next step of working towards setting up micro-enterprises was initiated. The Nicobar islands project focused on getting in place the machinery for coconut oil extraction.



One among the many programmes on income generation activities conducted at our campus.

Technology Application and Capacity Building in Natural Resource Based Income Generation

Project period 2006-2009
Budget ₹ 8,09,050/Supporting partner Science and Society Division, Dept. of Science and Technology, New Delhi
Coordinator Anupama Pai

The project goal was to demonstrate and train on technologies and tools that enhance natural resource based income generation projects for women Self Help Groups (SHGs). This was done through a series of field trials, training and exposure visits with focused on two key activities approved by the project review committee. These were kitchen gardens and ornamental fish rearing. The project was initiated with a series of meetings with the women SHGs to introduce the project and the activities that were envisaged. Individuals were selected based on willingness and space available. A total of 57 individuals set up kitchen gardens through the project period. A demonstration site was also set up within the field campus which also served as a trial area. Various bed preparation methods have been used ranging from conventional row gardens to circle gardens.

The ornamental fish rearing part of the project required substantial researching and identification of resource persons. Cement tanks of 1 meter diameter were first set up at the field campus and interested individuals visited regularly to learn about tank maintenance and fish rearing. Following this, three tanks each were set up for six individuals to raise the fish.



Ornamental fish rearing was one of the activities identified by the project which has been taken up by the women SHGs.

There have been a total of twelve training programs with 268 participants have been conducted through the project period. These concentrated on skill building and exposure for members of the SHGs working with FERAL and also other SHG members contacted through local NGOs. Basic training materials have been prepared for use by the women for maintaining their gardens and fish tanks.

The kitchen gardens performed well with all members harvesting sufficient amounts which

subsidised their household expenditure substantially. 25% of the members also earned a small income through sale of vegetables to neighbours. Seed saving methods were also taught and 50% of the women have continued to maintain their kitchen gardens beyond the project period. Ten women also set up small vermicomposting bins in their backyards.

The fish rearing activity got of to a slow start as women needed quite a bit of exposure and information before they were willing to take it up. The space required for keeping fish tanks was also a constraint. At the initial stage six women took up rearing of ornamental fish. These women were continued to be supported through the project period. Further sessions with these women focused on diversifying from mollies to guppies and preparing local fish food. A larger groups was trained in aquarium building. These activities were taken up through information collected from IRTC, Pallakad.

Skill Based Micro-enterprise Development for Women from Scheduled Caste

Project period 2008-20011
Budget ₹ 10,00,000/Supporting partner Science and Society Division, Dept. of Science and Technology, New Delhi
Coordinator Anupama Pai

This project aims to provide women from the weaker sections of society with a set of skills and further support them in setting up micro-enterprises. Two main areas of skills have been identified – food processing and aquarium systems.

The project was initiated with an intensive survey schedule and group discussions to assess the need for training and skills sets that would be required by the women who would participate in the project activities. These surveys also provided input in to the mode of training that would be required and the helped identify trainees. As part of these surveys, baseline information has been gathered on socio-economic conditions so that changes in these can be assessed to the extent possible at the close of project. Respondents to the surveys were primarily members of Self Help Groups. Identification of these women was done with the help of local NGOs.

Training and capacity building looks at two aspects : (1) Skill development and (2) Entrepreneurial management. The first will focus on training on the activity of choice which includes production techniques, quality management, product design and market surveys. A total of six workshops of total eight days have been planned with 25 participants each. Two such workshops were conducted for 3 days each focussing on the food processing activities. As part of the food processing workshops pickles of mango and lime were produced and marketed locally by the trainees. One workshop of 2 days has been conducted on aquarium construction. A total of 57 women attended these training programs.

Training programs will be continue for a larger groups of women and training manuals prepared in the next couple of months. We will

also be networking with existing groups involved in micro-enterprises and setting up a unit each for food processing and aquarium systems.



Food processing is a popular micro-enterprise among the women SHG members and elicits a high level of participation in training programmes.

Establishing small scale coconut extraction units in the Nicobar Islands

Project period April 2008-June 2010 **Budget** ₹ 9,98,480/-

Supporting partner Science and Society Division, Dept. of Science and Technology, New Delhi **Coordinator** Rauf Ali

The current production of coconuts in the Nicobar Islands is more than 2 crore annually. Apart from the amount consumed for house-hold use, the bulk is exported in the form of copra. Cultivators in Car Nicobar get around ₹ 4/coconut. However, for household use, the Nicobari people prepare virgin coconut oil. This is sold in Chennai for over ₹200 per litre. Since each coconut contains about 100 ml of VCO, this translates into about ₹ 20 per coconut as income.

The principal aims of the project have been to:

- 1. Develop a quick, cheap and efficient way of producing VCO
- 2. To train local residents of Car Nicobar to use this machine.
- To develop market linkages for the sale of this oil, so as to ensure that the growers get the best price for the oil.

A press costing about ₹ 25,000 has been developed by FERAL. Six presses have been transported to Car Nicobar, of which two were found unsuitable. The press squeezes the grated coconut, producing coconut milk. This is kept aside for 24 hours, and separates into water, virgin coconut oil, and sludge. The oil is then scooped out. No heating is involved.

Four presses are with the Dosti Group, which has been carrying out demonstrations in their use in all the villages in Car Nicobar over the last three months.

Market surveys have been done and potential buyers have been identified both in India and in Europe.



The final version of the Deegan Press.

A bulk buyer has been found in Hyderabad who will repackage this and market it. Other buyers are in the process of being identified, and market forces will ensure that high prices are obtained for this product.

A production of 10,000 litres/month is anticipated by the year end. Growers bring in grated coconut, and this is converted into virgin coconut oil. The grower receives ₹ 130/litre for the oil, and this translates into about ₹ 12/coconut. This compares favourably with the ₹ 4/coconut the growers are currently getting.

Restoration and Action Research

Restoration and action research includes projects and research which has a clear community based approach. This programme area remained active this year with four project covering a geographical area of four coastal districts in Tamil Nadu and Pondicherry. Our work included water resources management, coastal fisheries, environmental sanitation and habitat restoration. Among the stakeholders in these projects are artisanal fishing communities, communities living in low lying flood prone areas of Cuddalore and coastal communities who are conserving natural habitats around their settlements.



Children participating in setting up a rain-water harvesting system at their school

Landscape Assessments of the Kalivelli Basin

Project period November 2007- November 2010 Budget ₹ 19,95,900/-

Supporting partner Dept. of Science and Technology, Natural Resources Data Management Systems.

Coordinator R.S. Bhalla and K.V. Devi Prasad (Pondicherry University)

This study site is an ecologically important and nationally and internationally recognised wetland called Kalivelli which lies in the Villupuram Dt. of Tamil Nadu in South India. Kalivelli is a rainfed lake receiving water from a largely agricultural catchment of about 800 square kilometres. We used the Kalivelli watershed to build a case for the review of the watershed development policy in India and to demonstrate a set of landscape tools (ATtILA) for decision support in watershed management. We dealt with the problem in two parts.

First a detailed literature review of tools, particularly those useful for decision support for watershed management was undertaken. These were compared with the present version of the common guidelines for watershed management. We also ran a series of (spatial) statistical tests on the criteria used to prioritise watersheds areas for restoration by these guidelines and found that the present set of criteria are inappropriate in various ways. In particular, they tend to be based on rural development priorities of the planners and not on hydrological characteristics. This leads to a haphazard prioritisation of micro-watersheds which is unsuitable from a hydrological viewpoint. This work has recently been accepted as a paper in the Journal for Water Resources Management.

Second, we set up a working model of ATtILA based on secondary data and are presently re-running the model based on primary data on land cover/ land use and analysis of water quality from runoff from specific landuse types. This involved the creation of landuse/landcover maps from recent satellite imagery (IRS-P6) and intensive field work to collect training sites. We also procured stereoscopic imageries of this area which are currently being analysed to obtain digital elevation models. Our preliminary analysis (based on secondary data) showed that the areas that are prioritised by the common guidelines for watershed management are statistically different from the results of ATtILA which identifies areas which are likely to contribute the most in terms of environmental stressors (sediment and nutrient loads) to the watershed.



Butterflies are considered good "indicators" of habitat health. This survey will yield data on habitat preferences and relate them to landscape metrics.

Monitoring and maintenance of restoration sites

Project period 2009, January to December Budget \$ 60,063/-Supporting partner United Nations Development Programme, New Delhi Coordinators R.S. Bhalla

The project started in January 2009 and was concluded in December 2009. It had three basic components the first of which involved the monitoring and maintenance of restoration sites. This was a one year extension to support the eco-restoration committees and had three major outcomes:

- Constant protection and maintenance of sites so that saplings were established and attained a height of up 3 metres.
- Repeated interaction with the concerned community representatives and broad consensus in the villages that the sites need to be protected from grazing and removal of plants.
- Replanting of dead saplings and of areas that were damaged by cattle after initial planting efforts. This allowed the project to overcome earlier setbacks and consolidate the gains.

All sites were formally handed over to the respective Panchayat Presidents who were also heads of the eco-restoration committees.



Extending the dune stabilisation work at South Pogainallur.

The second outcome was a 25 minute documentary film entitled "Washed Away – threats

and challenges to coastal habitats" was produced. Washed Away presents a livelihood perspective of loss and degradation of coastal habitats. It was shot along the Coromandel coast, Palk Bay and the Gulf of Mannar - covering many fragile and highly disturbed ecosystems along the Tamil Nadu coast.

Finally the project brought out an illustrated and easy to read document which collated the lessons learnt during the PTEI project and presented them to a non-scientific audience. The document entitled "Status of Coastal Habitats - learnings from the post tsunami environment initiative of UNDP" will be distributed together with the documentary film and targets policy makers and civil society.

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-November 2011
Budget \$ 1,68,000/Supporting partner UN-HABITAT
Coordinator Abraham V.A.
Project Area: Coastal areas of Cuddalore Dt. Tamil Nadu



Planning the location of drinking water sources with the settlement based committees.

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 promots 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 Tamil Nadu 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 peri-urban areas of Cuddalore District.

Artisanal Fisheries Resource Surveys along a part of the Coromandel Coast

Project period 2009- May 2010
Budget ₹ 100,000
Supporting partner Supported from internal funds
Coordinator Tara N. Lawrence
Project Area: Coastal areas of Villupuram and Cuddalore Dt. Tamil Nadu and Pondicherry

One of the achievements of the FAO project on Co-management of Artisanal Fisheries along the Coromandel coast (2007-2008) was an exhaustive database of species composition and size observed in the artisanal fish catches over a period of six months. The villages surveyed were along the districts of Villupuram and Cuddalore and the Union Territory of Pondicherry. The brief findings from this project showed a considerable diversity of 83 families, 144 genera and 244 species. Every spectrum of species available is being harvested including bycatch species, highlighting the need for more scientific research on resource exploitation along this coast.

FERAL funded an extension of this project to achieve a full year of sampling in order to cover all seasons of sampling for fisheries survey. The present database has 1809 boat observations and 61,784 entries on species. Identification was done up to the lowest taxon and measurements of size was done where possible. An additional component to this project is weighing the fish in order to develop growth curves. Most commonly seen species and most commonly encountered size classes are purchased and weighed under this ongoing activity. Field work for this project was completed within six months and data analysis is currently underway. Results and data from this project will be published in peer reviewed fisheries journals.



Surgeonfish and jacks. A bumper ring seine catch unfortunately dumped due to lack of transport to the main market. Neither did the village have any storage facilities and the problem arose due to a state wide petrol distributors strike!

WORKSHOPS AND CONFERENCES

A number of workshops conducted this year fell under the specific deliverables of the DST project on natural resource based income generation. In addition we conducted internal capacity building workshops for staff which included sessions on GIS, statistical analysis, spatial statistics and databases. Other workshops conducted are presented below.

Payments for Ecosystem Services: An approach to Restore and Conserve Biodiversity outside Protected Areas

Dates February 5th 2010

Supported by: Critical Ecosystem Partnership Fund, Rufford's Small Grant and Göteborg University, Sweden.

Host Institutes Forest Department of Kerala, Conservation International, Indian Statistical Institute and FERAL



The CCF Kerala gives the inaugural address.

A workshop to introduce the concept of Payment for Ecosystem Services was held on February 5th 2010 at the Forest Department head quarters, Thiruvananthapuram. The workshop was presided by Shri K.P. Ouseph (CCF Kerala, Ecologically fragile land). In the opening talk he presented the "Status and challenges to wildlife conservation in Southern Western Ghats, India". Dr. E. Somantathan (Indian Statistical Institute, New Delhi) introduced the concepts of Payment for Ecosystem Services and the importance of good designs. Case studies of PES for wildlife conservation from Australia and Sweden were presented and its relevance to the Indian scenario was highlighted. Mr. Tian Feng's (Conservation International, China) talk titled "Implementing Conservation Agreements" highlighted the Conservation Stewardship Program (CSP) model developed by Conservation International and presented a case study of its implementation in China for restoring a panda corridor. Mr. Srinivas Vaidyanathan (FERAL) spoke about the "Opportunities to enhance and restore connectivity in the Shencottah gap", the relevance of a PES approach and how it can be linked on going government schemes like CAMPA; and the corridor and buffer zone management under the NTCA.

Dr. Neil Pelkey (FERAL) provided a synthesis of all the four presentations and chaired the discussions. The key points discussed were long term sustained funding, issues and mechanisms; conservation actions and their economic consequences on the local community; mitigating human wildlife conflict; and private land management. There was overall agreement that people are interested in conservation so long as they economically benefit by active participation and the IEDP in KMTR an Periyar are an example. It was also recognised that failure of IEDP in other sites needs to be analysed and newer approaches including those based on a PES approach also need to be included in our long term conservation policy and planning process.

Training Workshop for Executive Engineers from TWAD Board on Environmental Health During Emergencies

Dates Oct 12th to Oct 14th 2009

Concerned Project 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

Host Institute RED-R, Tamil Nadu Water and Drainage Board and FERAL



The Red-R team with the participants.

RedR India conducted a training programme on "Environmental Health in Emergencies" during 12th_14th October 2009 for engineers from Tamil Nadu Water Supply and Drainage Board (TWAD) at Hotel Ginger in Puducherry. This course was organised by FERAL under the UN Habitat project. A total of 23 engineers including 2 executive engineers attended the course. RedR India's trainer team led by Sriraman comprised of Praveen Pawar and Rahul Pathak.

Stakeholder Workshop with Panchayat Leaders

Dates January 9th 2010

Concerned Project 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

Host Institute FERAL

A consultation with the Village Wash committee was held in Chidambaram at Akasya Hotel on the 9th of January 2010. The primary objectives of the consultation was to:

create awareness on importance of water

and environmental sanitation

- discuss interventions planned as part of the UNH project and
- discuss challenges from the community's point of view.

This committee consist of Panchayat presidents, women self help group members, school teachers, Youth Club members and Animators appointed by FERAL. The Panchayat presidents are the focal persons for this project and the occasion was used to share the project objectives and findings of the surveys of water quality and sanitation conditions in the project villages. Interventions proposed at each of the villages were also discussed and participants contributed to both the discussions and presentations.



WASH committee members discussing the project.

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

- Andrew. H. Baird, R. S. Bhalla, Alexander. M. Kerr, Neil. W. Pelkey and Srinivas, V. (2009) Do mangroves provide an effective barrier to storm surges?, Proceedings of the National Academy of Sciences. 106:40, 111. http://www.pnas.org/content/106/40/E111.full? sid=7da07903-2992-4d23-abec-57f4b874228c
- Alexander. M. Kerr, Andrew. H. Baird, R. S. Bhalla and Srinivas, V. (2009) 'Reply to 'Using remote sensing to assess the protective role of coastal woody vegetation against tsunami waves", International Journal of Remote Sensing, 30:14, 3817-3820. DOI: 10.1080/01431160903046711. http://dx.doi.org/10.1080/01431160903046711

Reports and other publications

- R.S. Bhalla. Maintenance and Monitoring of Restoration Sites: Final Project Report. Submitted to the United Nations Development Programme, New Delhi. December 2009. http://www. feralindia.org/files/undp/MMfinal.pdf
- 2. R.S.Bhalla. NRDMS/11/1171/06, mid term progress report, Aug, 2009. http://www. feralindia.org/files/undp/MMfinal.pdf
- FERAL/Moving Images, Washed Away : Threats and challenges to coastal habitats. 25 minute documentary film created for the UNDP as part of the project "Maintenance and Monitoring of Restoration Sites". December 2009. http://www.feralindia.org/files/ undp/WashedAway-001.avi
- FERAL. Economic Incentives to Foster Conservation. A handout prepared for the Workshop on Payment of Ecosystems Services: An approach to Restore and Conserve Biodiversity outside Protected Areas, Thiruvananthapuram, Kerala. February 2010.

Organisational Structure

FERAL is registered as a trust under the Indian Trust Act in 1997 (reg. no. 1327/97), as a non profit organisation with a certification from the Department of Scientific and Industrial Research, Ministry of Science and Technology, Govt. of India, as a research organisation (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 coordinators 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 below⁶:

- **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. He is currently heading the UN HABITAT project. He is also pursuing his PhD on "Reducing social and environmental vulnerabilities to natural hazards through process optimisation of social networks /coalitions in Water, Sanitation and Hygiene (WASH) interventions".
- Aditya Gangadharan (J.R.F./P.I.): Aditya is currently interested in evaluating connectivity for large mammals and is involved in our wildlife corridor program. His particularly intrested in measuring functional connectivity in human modified landscapes. He is currently pursuing his PhD at University of Alberta, Edmonton.
- Anupama Pai (S.R.F./P.I.): Anu is the Managing Director of FERAL and also co-ordinates the educational activities. She plays the role of administrator combined and logistics organiser. Appreciation and understanding of the environment among school students, developing the overall Study Abroad Program and teaching the gender and development component on this program are the focus of her work. She also oversees the Gender Initiative in the organisation.
- **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.
- **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.
- **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 humans 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.
- **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. His primarily interested in amphibians and reptiles.
- 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 and remote sensing and environmental studies. He is an advisor on many of the projects and

⁶Doctoral 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).

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.

- Dr.Rauf Ali (D.R.A./P.I.): Founding 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.
- **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.
- **Rohini Mann (J.R.F.):** Rohini did her Master's thesis assessing the response of herbivores after the relocation of people from Rajaji National Park. Lion-tailed macaques took her to Kalakad Mundanthurai Tiger Reserve where she assessed their population and distribution. Her current interests are to study the responses of animals to changes in their habitat and to evaluate the sustainable balance in the use of land and resource amongst humans and wild animals.
- **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.
- **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.
- Srinivas Vaidyanathan (S.R.F./P.I.): Srinivas, the managing 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.
- **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.
- **Tara Lawrence (J.R.F./P.I.):** Tara Lawrence is a junior research fellow with a masters degree in Marine Biology and has worked on the artisanal fisheries project. She is also the teaching assistant on the Study abroad Marine Science course. She is presently involved in establishing fisheries baselines for the Coromandel Coast and is also working on setting up a Fisheries research programme for this coast covering aspects of fisheries ecology, genetics and resource management.

FERAL has a small administrative support system which comprises of a two accountants and a office manager. The team is set to expand with the selection of a finance manager who will be joining at the start of the next financial year. Most of 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 organisation of workshops and events for various projects.

The former involves facilitating the entire range of projects operating out of the campus and Pondicherry office. He is closely involved with the Gender initiative, particularly the organisation and conducting of training programmes for women.

Shanthi. R: Shanthi is the Accounts Manager at FERAL handling the day to day accounting responsibilities of the organisation. She is a graduate and is versatile in the use of a range of financial software. Shanthi also participates in various training programmes for women, particularly those involving food processing. In addition she handles the SHG accounts of these groups.

Balance Statement

FOUNDATION FOR ECOLOGICAL RESEARCH ADVOCACY AND LEARNING No 27, 2nd Cross Appavou Nagar, Vazhakulam, Pondicherry - 605 012.

BALANCE SHEET AS AT 31.03.2010

(Amount in ₹)

Particulars	Sch. Ref.	31.03.2010	31.03.2009
SOURCES			
Corpus	1	665,294	1,012,551
Project Asset Reserve Projects Account (Cr)	23	2,058,624 5,017,763	1,198,325 2,461,844
		7,741,681	4,672,720
APPLICATION			
Fixed Assets less Depreciation	4	2,568,590	1,953,960
CURRENT ASSETS, LOANS AND ADVANCES			
Cash and bank balances	5	5,276,231	3,154,741
Loans and advances (i)		5,316,219	3,364,110
Less: Current liabilities	7	143,129	645,351
(1)		143,129	645,351
Net Current Assets (i) - (ii)		5,173,090	2,718,759
		7,741,681	4,672,720
Notes on Accounts	9		

For FOUNDATION FOR ECOLOGICAL RESEARCH ADVOCACY AND LEARNING

SRINIVAS V Managing Trustee

BENJAMIN LARROQUETTE Managing Director

Place : Chennai Date : 13.09.2010 K.VENKATRAMAN Partner

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M.No:200/21914 Firm Reg No: 002164S

As per our report of even date attached FOR MURALI ASSOCIATES

Chartered Accountants

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Registered Office

No.27, 2nd Cross, Appavou Nagar, Vazhakulam, Pondicherry 605 012 Phone: (+91) 413 2225441

Field Office & Campus

170/3, Morattandi Village, Auroville P.O. 605 101 Tamil Nadu Phone: (+91) 413 2671566 & 2671567

Bangalore Office

170/B, 14th Main 1st Block East, Jayanagar, Bangalore 560 011 Phone: (+91) 80 22442462