

Foundation for Ecological Research, Advocacy and Learning



Annual Report
2025 - 2026

Foundation for Ecological Research, Advocacy and Learning
(FERAL)

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Backwaters along the Bay of Bengal meet the sea across shifting sandbars. Their calm, brackish waters nurture fish, prawns, and crabs—and the local livelihoods that depend on them.

Mandate

FERAL is a public charitable trust founded in 1997 with a mandate to develop sustainable and community-centred solutions to address the pressing challenges that affect our natural ecosystems and the services they provide. We rely on interdisciplinary and quantitative methods to understand these systems and provide practical, participatory and gender-responsive strategies toward their restoration and management. Our programmes invest in rigorous field studies to track and measure ecological processes over sustained periods. We adopt an evidence-based approach to identify problems, provide frameworks for their resolution and monitor the effectiveness of our interventions. We develop scientific and educational material, technical know-how, provide training, employment and skilling of stakeholders. We believe that addressing the seemingly intractable challenges we face in finding solutions to ecological and environmental problems today is only possible through meaningful collaborations with multiple stakeholders.

Vision

Resilient ecosystems and thriving communities that enjoy a sustainable and equitable future supported by rigorous research, informed advocacy, and inclusive practices.

Mission

To conduct rigorous ecological research, promote evidence-based conservation practices, and strengthen community capacity for sustainable ecological management. We are committed to bridging science and society by generating knowledge that informs equitable environmental policies, empowers local communities with sustainable solutions, and fosters collaborations that advance long-term ecological resilience.



Driven by severe habitat loss and fragmentation, the gaur (*Bos gaurus*) is increasingly straying into adjoining villages, plantations and farmlands, escalating human-wildlife conflict.

A Year of New Beginnings, Continuing Journeys, and New Directions

The past year marked a pivotal period of growth, reflection, and expansion for FERAL. As long-term field initiatives advanced, new collaborations opened up critical opportunities to address some of conservation's most complex, multi-layered challenges. Across our core programmes of Wildlife Biology and Conservation, Natural Resource Management, Marine Science, and Learning, we continued to build robust evidence, ask rigorous questions, and drive data-backed solutions for ecosystem management. The year's operational footprint saw two projects reach successful completion, three new initiatives take shape, and two long-term research efforts continue their trajectory, supported by institutional developments that significantly strengthened our capacity to mentor, collaborate, and lead.

Following the launch of the FERAL–TDU doctoral program last year, four FERAL faculty members were officially recognised as registered doctoral guides by the University of Trans-Disciplinary Health Sciences and Technology (TDU), Bengaluru, and we formally welcomed our inaugural cohort of four PhD candidates. Their research spans a remarkable geographic and ecological breadth, from marine mammals in Lakshadweep to understanding climate-driven shifts in human-elephant conflict to the ecology of gharials and Indian skippers and pangolin ecology in Central India. Supported by foundational coursework and cross-institutional expertise, this program represents far more than an academic offering—it is our strategic commitment to bringing rigorous scientific research, active mentorship, and practical conservation action under one roof. Expanding our footprint in conservation education, our Learning program also partnered with the Tamil Nadu Forest Department to train field staff in GIS, equipping frontline personnel with a fundamental tool for data-driven, on-ground management.

Our capacity to address emerging environmental crises was further strengthened this year with the addition of key scientists. Dr. Devcharan Jathanna, a National Geographic Explorer, joined the team to expand our understanding of how medium and large mammals persist within human-dominated landscapes in Kodagu, Karnataka. Concurrently, Dr. Balachandra Hegde and long-standing FERAL researcher Dr. Sushma launched an initiative at the complex intersection of public health and biodiversity loss. Working within the Aghanashini Lion-tailed Macaque Wildlife Sanctuary—a vital sanctuary for endangered primates and endemic *Myristica* Swamps—the team is working to reduce retaliatory primate killings and habitat burning by addressing local misconceptions surrounding the Kyasanur Forest Disease. Niren Jain, a Sanctuary ABN AMRO Wildlife Service Awardee and the Carl Zeiss Roll of Honour, recipient (both in 2004) joined our team to further the conservation efforts in the Central Western Ghats region.



During the winter migratory season (typically November through March), large flocks of Greater Flamingos (*Phoenicopterus roseus*) settle in the shallow waters of the Kaliveli.

After years of active field operations, the Frontier Elephant Programme—a multi-institutional initiative spearheaded by FERAL since 2018—entered an intentional pause from intense field activities. This step back provided vital space and time to consolidate our learnings, share our knowledge, and strengthen network ties with the Karnataka Forest Department, and chart new directions for elephant conservation in expanding peri-urban landscapes.

The Marine Science programme continued to expand its scope, bringing together research and conservation of islands and reefs alongside our longstanding focus on coastal and marine ecosystems. This year, the programme also strengthened its focus on marine mammal conservation through a project examining two highly threatened coastal cetaceans—the Indian Ocean Humpback Dolphin and the Finless Porpoise—within an Important Marine Mammal Area (IMMA) off India's west coast. Studying marine ecosystems presents very different challenges from working in terrestrial environments. To meet some of these challenges, our team has been applying bioacoustics to estimate, monitor and understand the ecology of threatened marine mammals. In a collaborative effort, our researchers are documenting blue whale songs to understand their ecology through their vocalisations. At the same time, our researchers have been engaging with the wider community of ecologists to advance bioacoustics as a conservation tool and to build these skills in young researchers entering the field.

Our future-focused research is built upon FERAL's commitment to sustained ecological monitoring. In the Nilgiris, our foundational hydrology and meteorology monitoring continued uninterrupted. By tracking water dynamics across gradients of invasive wattle, our team is quantifying the long-term hydrological costs of plant invasions on mountain ecosystems. This project embodies our core philosophy: that the most critical conservation answers cannot be rushed, but must be uncovered through patient observation over time. Together, from doctoral classrooms and bioacoustic surveys to long-term watershed monitoring, the past year reflects a dynamic balance of learning, experimentation, and an enduring commitment to evidence-based conservation.



Indian Flapshell Turtle (*Lissemys punctata*) is well adapted to drought conditions. It burrows and moves between water bodies to survive and the loss of small ponds and changing peri-urban habitats threaten its survival.

Highlights

Research

- ▶ “Hennu Sampige”, (*Flacourtia montana*) is a thorny tree endemic to the Western Ghats known for its medicinal properties and edible fruits. Our researchers found that the fruits of this species is also an important food for arboreal mammals in the forests of Sirsi-Honnava, Karnataka.
- ▶ In the Urban Green Spaces of Dehradun, our study showed that squirrel, birds, insects and rodents form the prey base for cats, confirming, for the first time in India, the predatory pressure of free-ranging domestic cats on urban fauna.
- ▶ Tree plantations lead to significant declines in herbaceous biomass in open natural ecosystems which have negative implications for biodiversity and grazing-dependent livelihoods. Also, it is not a cost-effective climate mitigation strategy. Our study further finds that contrasting perceptions shape the restoration of semi-arid open natural ecosystems in India.
- ▶ The long-term monitoring of rainfall suggests a change in rainfall pattern this year. The Nilgiris have received bulk of the rainfall in the months of July and August. However, in 2025, bulk of the rains were received in the month of May.
- ▶ Rainfall is becoming increasingly unpredictable, making continuous monitoring essential to understanding shifts in precipitation patterns and their impact on agriculture and the economy. This is particularly crucial given the influence of El Niño events, where tracking rainfall and hydrological changes is vital.
- ▶ Long-term bioacoustics monitoring project off Lakshadweep was launched. The initiative is led by Dr Divya Panicker in collaboration with The Habitats Trust, Baranna Dives, Fishers, Dive centres, Ashoka University, Woods Hole Oceanographic Institution, Wavelet, the University of Trans-Disciplinary Health Sciences and Technology. The project will track cetacean distribution via underwater soundscapes—including blue whale song monitoring.
- ▶ Our researchers documented ~232 mortalities of two species of marine mammals (Indian Ocean humpback dolphin (*Sousa plumbea*) and the Indo-Pacific finless porpoise (*Neophocaena phocaenoides*) in Sindhudurg and Goa (2013–2024), with 203 in Goa alone.



The Western Ghats, one of Earth's richest natural havens, is increasingly severed by expanding infrastructure—including hydrological modifications, roads, railways, and transmission lines.

Training & Capacity Building

- ▶ Our inaugural cohort of 4 PhD students started their doctoral journey.
- ▶ Trained 40 frontline staff of the Forest Department in basic GIS and map making.
- ▶ Co-led a fully funded marine field ecology course in Lakshadweep (with National Centre for Biological Sciences and the Department of Science and Technology, Government of India): 15 PhD students were selected from more than 100 applicants across 7 states; Master's-level marine science students from the islands also attended selected sessions; the course covered island ecology, reef/seagrass systems, bioacoustics, and R programming.
- ▶ Trained 20 graduate students and conservation practitioners in advanced bioacoustics techniques at an Advanced Bioacoustics workshop that our researcher co-conducted at IISER Tirupati.
- ▶ Workshop co-conducted at the Student Conference on Conservation Science introduced 28 students to bioacoustics as a tool for conservation.

Networks & Partnerships

- ▶ Our researchers serve on Forest Department committees to delineate Elephant corridors in Tamil Nadu, where they contributed critical data along with field and mapping expertise.
- ▶ FERAL is a partner in the coalition for wildlife corridors, a collaborative network of people and organizations working to advance connectivity conservation in India.
- ▶ We have been part of the India Open LandCover Network (IOLN), which provides open-access data, class references, and spatial mapping tools for tracking land cover and natural ecosystems across the country. With several decades of working knowledge, our researchers have taken the lead for the Western Ghats and are contributing to the efforts for the coastal ecosystems.
- ▶ Our marine scientists are active members of the steering and working groups of the Marine Mammal Consortium of India (MMCOI). They helped convene 77 experts from 40 institutions at this year's national summit in Navi Mumbai to advance nationwide marine mammal protection.
- ▶ The Marine Sciences team co-organised a landmark multi-stakeholder strategy meeting at INSA, Delhi, bringing together nearly 90 key partners to establish a national roadmap for standardised acoustic data, open access, and policy integration.
- ▶ Our researchers are commission members of the IUCN WCPA Connectivity Conservation Specialist Group (2026-2029), IUCN WCPA South Asia (2026-2029), IUCN SSC Asia 2026-2029, IUCN SSC Small Carnivore Specialist Group 2026-2029, IUCN SSC Asian Elephant Specialist Group 2026-2029, and the IUCN SSC Primate Specialist Group: South Asia Section 2026-2029.



The chital (*Axis axis*) plays a foundational role in sustaining forested ecosystems as the primary prey base for apex predators like tigers, leopards, and dholes.

Key Steps towards the Bigger Picture

Wildlife Biology & Conservation

- ▶ Expanding core work in the Central Western Ghats region, while sharing our learnings from the southern Western Ghats with Government authorities to foster wildlife conservation.
- ▶ Maintaining networking and collaborative research—continuing these as key operational drivers over the coming years.

Natural Resource Management

- ▶ Long-term eco-hydrology monitoring across the Western Ghats, with future focus additionally including areas where restoration has been initiated, and monitoring the effects of climate change and the El Nino.
- ▶ Breaking the silos across our verticals, initiated dialogue with on-ground partners to focus on system interconnectedness—from land to freshwater to coastal and marine environments.

Marine Science Programme

- ▶ Expanding scope through the integration of Islands and Reefs—to cover coastal, island, and offshore ecosystems.
- ▶ Targeting data-poor yet ecologically critical habitats.

Learning

- ▶ Building our recently launched Ph.D. programme, and continuing our long-standing specialised training workshops.
- ▶ Initiated steps toward degree and certificate-granting learning initiatives, scheduled for inauguration over the next few years.



Spatial decision support tools enhance conservation strategies, ensuring more effective protection of vital refuges for endangered species such as the tiger (*Panthera tigris*).

Wildlife Biology and Conservation

Our conservation programme is rooted in a simple premise: lasting conservation action must be grounded in sound science and shaped by an understanding of local communities who share the space with wildlife. Over the years, we have worked at the intersection of ecological research and community engagement, bringing together field-based studies, long-term monitoring, and landscape-level perspectives to understand how wildlife responds to rapidly changing environments. By examining biological and physical drivers of change, and learning as much from interventions that have fallen short as from those that have succeeded, we seek to develop practical strategies that can strengthen biodiversity conservation across protected areas, working landscapes, and human-dominated spaces.

This year, two projects were completed, offering insights into conservation in human-modified landscapes. India's first study of free-ranging cats in Dehradun found their ecological impact extends beyond urban birds to insects, reptiles, and small mammals. Hunting was recorded across almost all age groups, with cats fed home-cooked diets hunting substantially more than those provided with meat or commercial cat food. These findings underscore the complexity of managing wildlife interactions where domestic animals, people, and native biodiversity increasingly overlap.

The second study examined large-scale afforestation initiatives in India's semi-arid savannas. The research found that replacing naturally open ecosystems with dense tree plantations substantially reduces herbaceous biomass, altering these landscapes. Such changes have implications for biodiversity and pastoral communities whose livelihoods depend on natural grazing grounds. The findings reinforce the need to recognise open natural ecosystems as valuable habitats in their own right, rather than degraded landscapes awaiting tree cover.

Alongside these studies, our work continued across some of India's most biodiverse landscapes. Phenological surveys and camera-trap monitoring helped us understand how resource extraction and other forms of human pressure interact with the rhythms of natural ecosystems.

Our capacity to pursue wildlife research was further strengthened this year with the addition of three senior wildlife conservationists. One brings extensive experience in mammal ecology and conservation and will lead research focused on the persistence of mammals within the agro-ecological mosaic of Kodagu. The other, who played a key role in establishing the Aghanashini Lion-tailed Macaque Conservation Reserve is expanding our efforts to conserve Lion-tailed macaques across the Aghanashini landscape. This work also encompasses the protection of *Myristica* swamps—highly specialised, wetland ecosystems that are endemic and unique to the Western Ghats. The third brings extensive on-ground conservation experience, especially in the Western Ghats in Karnataka.

At the core of our efforts is a commitment to generating evidence that informs policy, strengthens conservation practice, and safeguards biodiversity in protected areas and shared spaces.



Jungle Striped squirrel (*Funambulus tristriatus*) feeding on ripe fruits of *Ficus montana*.

Impact of Harvest of Wild Fruits on Plant Frugivore Interactions in a Mixed-Use Landscape in the Central Western Ghats

Project Period: January 2025–December 2026

Budget: INR 4,00,000

Supporting agency: Self Funded

Principal Investigator: H. S. Sushma

Introduction

Relationships between plants and fruit-eating animals, whether animals disperse seeds or consume them, are crucial for maintaining forest structure, connecting plant populations, and helping disturbed habitats recover. Most tropical woody plants depend on vertebrates to disperse their seeds, while their fruits provide essential nourishment for frugivores. Unfortunately, human-driven biodiversity loss is increasingly disrupting these vital ecological partnerships.

Seed dispersal is vital for plant persistence, especially in landscapes shared by humans and nature. Yet, it is continually undermined by fragmentation, degradation, and over-harvesting of forest resources. Local communities often collect wild fruits and other non-timber forest products for subsistence and livelihoods. Many of these fruits are also consumed by frugivores, and intensive harvesting reduces food availability for wild animals and weakens mutualistic interactions critical for the forest regeneration.

In the central Western Ghats, local communities extract fuelwood, leaf litter, and foliage from forests surrounding their settlements, creating resource pressure on the surrounding landscapes. Consequently, fruiting trees in these disturbed fringe areas may attract few or different animal species compared to those in the forest interiors. Understanding how such disturbances affect plant-frugivore relationships is crucial for balancing land management with sustainable harvesting.

This study examines the relationship between fleshy-fruited plants and their frugivores across a disturbance gradient within the Sirsi and Honnavara Forest Divisions and the Sharavathy Valley Lion-Tailed Macaque Wildlife Sanctuary in Karnataka. The study area is a mixed-use landscape with evergreen and semi-evergreen forests, moist deciduous tracts, agricultural mosaics, and several villages, and supports the largest population of the endangered, frugivorous Lion-tailed Macaque (*Macaca silenus*).

To evaluate these ecological dynamics, the study applies the seed dispersal effectiveness framework, tracking quantitative metrics (such as visit frequency and fruit removal rates) and qualitative behaviours (such as fruit handling). The research focuses on widely harvested species including *Garcinia gummi-gutta*, *Myristica dactyloides*, *M. malabarica*, and *Artocarpus lakoocha*, comparing them with closely related species like *Garcinia morella*, *G. talbotii*, *Knema attenuata*, and *Artocarpus hirsutus* to control for phylogenetic relatedness.



The field site in the Central Western Ghats in Karnataka is a mosaic of intensive human-use areas and forests.

Objectives

1. Identify frugivores and their interactions with select fleshy-fruited species.

1.1. Is there a variation in frugivore community structure between harvested tree species and non-harvested species?

1.2. Do plant traits (tree size, fruit and seed size and fruit crop size) and animal traits (fruit handling behaviour and body size) influence interactions between these plant species and their frugivores?

2. Determine the impacts of habitat degradation and harvesting of fruits on plant-frugivore interactions.

2.1. Is there variation in frugivore visitation rates to trees along varying distances from villages?

2.2. Does harvesting pressure on fruiting trees (damage to fruiting trees measured as number of branches lopped) influence frugivore richness and visitation patterns?

2.3. Are fruit and seed removal rates and deposition away from the crown influenced by disturbance?

Status

This year, the study concentrated on field data collection. Five belt transects, measuring 250 m × 40 m, were laid across the landscape between September 2025 and January 2026. Vegetation sampling was carried out and all trees ≥ 30 cm GBH were identified and their GBH measured.

We sampled 5 ha; 3215 trees belonging to 32 families were recorded. *Knema attenuata* (Myristicaceae) was the most abundant species followed by *Garcinia morella* (Clusiaceae). Some species were rare represented by only one or two individuals – *Alphonsea* sp. (Annonaceae), *Rapanea* sp. (Primulaceae), *Prunus ceylanica* (Rosaceae), *Glochidion velutinum* (Phyllanthaceae).

Phenological monitoring began in February 2026. Once a month, fruiting and flowering of all trees in the plots were assessed. This ongoing project activity will continue till the end of the project. Flowering and fruiting of some focal species began in March. Opportunistic observations were carried out for *Flacourtia montana*. Locally, called Hennu Sampige, this Western Ghats endemic bears edible fruits. Observations were carried out near three trees and camera traps were deployed near one fruiting tree. Among the diurnal arboreal frugivores, all three primate species (Lion-tailed macaque, Bonnet macaque (*Macaca radiata*), and the Hanuman langur (*Semnopithecus hypoleucos*) and the Indian giant squirrel (*Ratufa indica*) fed on the fruits. The primates mostly fed on pulp, spitting out the seeds, whereas the giant squirrels fed on whole fruits. Frugivory by the Jungle Striped Squirrel (*Funambulus tristriatus*) was also recorded using the camera trap. Nocturnal frugivores did not visit the fruiting tree.



In urban areas, free-ranging cats are major predators of birds and other small animals.

Assessing Impacts of Free-Ranging Cats on Bird Community in Urban Green Spaces of Dehradun, Uttarakhand

Project Period: April 2024 to December 2025

Budget: GBP 6,000 (INR 6,13,200)

Supporting agency: The Rufford Foundation, United Kingdom

Principal Investigator: Monica Kaushik

Introduction

Previous studies have highlighted that the bird community composition in the urban green spaces (hereafter UGS) of the rapidly urbanising Himalayan foothill city of Dehradun, Uttarakhand was explained by a combination of landscape and local scale factors, including land use types in the surrounding matrix. These studies underscored the value of larger and vegetationally complex green spaces in conserving resident and migratory avifauna and highlighted the value of both local and landscape-level variables for urban bird communities.

To supplement this knowledge on urban bird communities, the current study proposed to quantify the effect of urban predators, specifically, domestic and feral cats on the bird community in the UGS of Dehradun. Over the past five years, our interactions with the local community have revealed increasing incidents of cat predation on birds and nests in home gardens. Loss of avian scavengers, rise in solid waste, and human-subsidised food are potential reasons for the increased population of free-ranging invasive predators in India. This is the first attempt to quantify the impacts of free-ranging cats on birds and document their diet in an urban setting in India. We believe that many cat owners are unaware of the potential ill effects of their pets on urban biodiversity. Findings of this study will be utilised to sensitise urban residents about the silent crisis unravelling in their backyards.

Objectives

1. To quantify the free-ranging cat density within and around UGS.
2. To quantify the hunting pressure by free-ranging domestic cats on urban birds.
3. To conduct outreach activities within UGS for the green space users and pet parents.

Status

In this last phase of the project, analysis of scat was completed to determine the diet of cats in the UGS of Dehradun. Of the 65 usable samples that were collected over a period of seven months (June to December 2024), 59 were used for the diet analysis. First, each sample was subjected to an initial rough analysis, using a dissecting microscope, to segregate feathers, beaks, bones, and any other insect parts that were



The Common Kingfisher (*Alcedo atthis*) relies on clear waters to spot its prey—making this vibrant bird a natural indicator of a thriving aquatic ecosystem.

present in the sample. This was noted along with their abundance. Next, slides were prepared of the hair present in each of the scat samples. About 60 slides, with 2–4 strands of hair per slide, were prepared for each sample. The number of slides varied slightly, based on the abundance of hair in the sample. The slide was then examined under a microscope and photographed. As references for identifying hair samples of prey in this region were not readily available, the team undertook to prepare permanent reference slides which were then used to aid in the identification of hair in the scat.

Based on a survey of pet owners undertaken earlier in the project, birds were found to be the most hunted taxa observed by the pet parents, followed by rodents, reptiles, insects, amphibians, and squirrels. Contrary to this, our scat analysis showed that squirrel hair had the highest frequency of occurrence in scats followed by birds, insects and rodents.

The results from this study align with those conducted in other countries confirming that free-ranging predators, especially cats, affect not only the bird assemblages, but also other wildlife in urban areas. To our knowledge, no study has confirmed the predatory pressure of free-ranging domestic cats on urban avifauna in India. The present study thus provides the much needed baseline information on the diet of one of the most common urban predator found across Indian cities. Our findings are useful for urban planners, managers and citizens interested in minimising the negative consequences of urbanisation on urban wildlife.



Seven beaks found in a sample of a nine month old kitten.



Herbaceous biomass was sampled using quadrats.

Assessing the Motivations for, Extent, and Carbon Sequestration Potential of Massive Afforestation Projects in Semi-Arid Savannas in India

Project Period: May 2024–April 2025

Budget: GBP 6,000 (INR 6,29,700)

Supporting agency: The Rufford Foundation, United Kingdom

Principal Investigator: Anisha Jayadevan

Collaborators and their Institutions: Dr. Jayashree Ratnam, National Centre for Biological Sciences, Bengaluru

Introduction

Tree planting is widely promoted as a universal solution for global warming and ecosystem restoration, leading to tropical open natural ecosystems (ONEs) being disproportionately targeted for afforestation. In India, ambitious climate mitigation goals combined with colonial legacies that classify ONEs as "wastelands" have led to approximately 4.3 million hectares of these lands being targeted as carbon sinks through tree planting.

Global studies indicate that practitioners define restoration in varying ways and frequently plant trees for utilitarian motives, however, few have examined how "wasteland" narratives and misconceptions of ONEs as degraded lands drive practitioners to afforest Indian savannas. Furthermore, it remains uncertain whether tree planting consistently increases both above- and below-ground carbon compared to old-growth savannas. Existing global research suggests that natural increases in savanna tree cover yield only minimal carbon sequestration gains. However, these findings exclude deliberate tree planting and omit data from Indian savannas, which feature distinct management practices and land-use histories.

To address these gaps, this study evaluates the motivations behind tree planting as a restoration strategy in the savannas of Maharashtra, India, map its spatial distribution, estimate its carbon sequestration potential, and calculate the economic expenditure per unit of carbon gained.

Objectives

1. Understand the motivations for, and implementation of, restoration of open natural ecosystems in India.
2. Understand the carbon sequestration potential of tree plantations in semi-arid open natural ecosystems in Maharashtra, India.
3. Data collection to assess patterns of tree cover in afforested semi-arid open natural ecosystems in Maharashtra, India.



Tree girths were measured to assess the carbon sequestration potential of tree plantations in semi-arid ONEs in Maharashtra.



Status

The current year saw the completion of analysis on this project and preparation and dissemination of findings through scientific publications: Interviews were conducted earlier in the project to understand the motivations for restoration of ONEs. These were transcribed and a hybrid grounded theory approach was used to code the interviews. The coded interviews were then analysed for different perceptions related to ONEs and tree plantations, motivations for restoration, and restoration implementation. One of the key results from this analysis showed that restoration across India's semi-arid ONEs lies at the intersection of conflicting perceptions, where differing views on land degradation, utility, and carbon potential drive conservation strategies. All laboratory analyses to assess the carbon sequestration potential of tree plantations in ONEs were completed. The findings from these analyses are being written up as a scientific publication. Training data was collected to map spatio-temporal trends in tree cover across afforested, semi-arid ONEs in Pune District using satellite embeddings on Google Earth Engine. A key insight from this study was that replacing ONEs with tree plantations causes a marked decline in herbaceous biomass—a shift that threatens both ecosystem biodiversity and traditional grazing livelihoods. The importance of ONEs in India is a much discussed topic today. However, some gaps remain around the identification of open ecosystems, and on restoration strategies. The results from this study highlight some of these gaps and can aid further focused discussions on future directions.



Tree plantation in grasslands.



The Brown Palm Civet (*Paradoxurus jerdoni*) is an endemic to the evergreen and moist deciduous forests of the Western Ghats.

Patterns and Mechanisms Driving Persistence of Medium and Large Mammals in Human-Dominated Landscapes

Project Period: March 2026–June 2026

Supporting agency: Anusandhan National Research Foundation (ANRF), formerly known as DST-SERB, Government of India

Budget: INR 47,22,320 (Total project budget; INR 14,52,211 received by FERAL)

Principal Investigator: Devcharan Jathanna

Introduction

This project attempts to understand distributions of small carnivores in coffee plantation areas, both in terms of the patterns and the underlying mechanisms, and build a sense of pride, awareness and appreciation for the biodiversity in their own backyards among local community members by involving local volunteers in field research activities. The study landscape covers approximately 963 km² in the main Kodagu Valley, between the Madikeri Ridge and the main Western Ghats Ridge along Kodagu's western border with Dakshina Kannada District, Karnataka and Kasargod District, Kerala. Within the study area, the tropical wet evergreen bio-climate remains relatively constant, thus removing the confounding drying effect as we move eastward elsewhere along the Western Ghats. To obtain unambiguous and independently verifiable detections of small carnivore species within coffee plantation areas, we are using camera trapping, with the explicit prior permission of the individual estate owners (from very large to very small holdings) as well as a research permit from the Karnataka Forest Department, endorsed by the Deputy Conservators of Forests (DCF), Virajpet and Madikeri Territorial Division.

Objectives

1. Carry out camera trap surveys across a coffee plantation landscape to obtain unambiguous detections of small carnivores and other medium and large terrestrial and scansorial mammal species.
2. Using the camera trap detections within an occupancy modelling framework, characterise spatial distribution patterns of species in relation to distance from the forest-coffee edge.
3. Assess the role of remnant forest patches (sacred groves and de facto forests) in facilitating the persistence of mammals in the larger landscapes.
4. Understand mechanisms underlying observed distribution patterns of mammals in human-modified landscapes.



The small Indian civet (*Viverricula indica*) is a widely distributed small carnivore found in south and south-east Asia. It is nocturnal, mostly terrestrial and insectivorous.

Status

This project was transferred to FERAL when the PI joined FERAL, and work was re-initiated only in late March 2026 due to delays in obtaining approval for the shift, transfer of funds and meeting with the Karnataka Forest Department officials in Bengaluru and Kodagu. The project team was then on-boarded and field work was commenced. During the current reporting period, camera traps were deployed at 36 locations across the study landscape (cumulative total of 116 locations including those surveyed previously, in 2025). Camera traps were spaced a minimum of 0.5 km apart, and each location is active for 30 days, before being moved to a new location. The camera traps will continue to remain in the field until early June 2026, when they will be removed before the start of the heavy monsoon rains. During the monsoon period, the staff will process the data, after which the PI will independently validate the species identification. A summary of the species photo-captured, capture rates and locations will be obtained at the end of this exercise for the current field season.

During the previous year (2025; before the project was shifted to FERAL), camera trapping was carried out at 80 locations across the study landscape, yielding photo-captures of seven small carnivore species (three from family Viverridae, two from Herpestidae, two from Felidae), as well as 11 other mammal species.



The field team setting up a camera trap.



The endangered Lion tailed macaque (*Macaca silenus*) is a shy endemic to the Western Ghats. Habitat loss and fragmentation are the main threats it faces, which have lead to conflict with humans across its distribution.

Resilience Strategies for the Lion-Tailed Macaque and *Myristica* Swamps, India

Project Period: March 2026–August 2026

Budget: USD 20,000 (INR 18,00,000)

Supporting agency: Critical Ecosystem Partnership Fund–Rapid Rescue for Conservation Crises (R2C2) Facility

Principal Investigator: Balachandra Hegde

Co-Investigator: H. S. Sushma

Introduction

The Aghanashini landscape in Karnataka's Western Ghats is a critical stronghold for the endangered Lion-Tailed Macaque (LTM; *Macaca silenus*), a flagship species with fewer than 4,000 individuals remaining in the wild. However, this fragile ecosystem is now facing an unprecedented social-ecological emergency driven by an outbreak of Kyasanur Forest Disease (KFD), a deadly, tick-borne viral haemorrhagic fever, often called "monkey fever" (Manga-na-kayale in Kannada) as it is often preceded by monkey die-offs.

Following mass mortality among bonnet macaques and langurs in late 2025, January 2026 marked the first time KFD was reported within a human settlement located inside the protected area. This sudden emergence has sparked widespread panic. Amplified by local misinformation falsely framing all monkeys as disease vectors, public anxiety has fuelled hostility toward wildlife. This tension is further exacerbated by pre-existing community alienation stemming from the 2019 upgrade of the conservation reserve to a wildlife sanctuary and the 2023 Ecologically Sensitive Zone (ESZ) declarations.

In a desperate bid to control tick vectors, villagers have increasingly resorted to setting fire to forest edges and *Strobilanthes*-rich understory patches. These anthropogenic fires directly degrade core rainforest habitat, posing an immediate threat to the LTM.

With active human and primate fatalities, vaccine shortages, and the dry season approaching, fear-driven actions are rapidly eroding decades of conservation progress. This project addresses the critical intersection of public health and biodiversity conservation. An urgent, integrated intervention is required to counter misinformation, mitigate fire threats, restore community trust, and safeguard both local communities and the Lion-Tailed Macaque from catastrophic decline.

Objectives

The overall goal is to reduce incidents of retaliatory killing of primates and burning of their habitats within Aghanashini Lion-tailed Macaque Wildlife Sanctuary by addressing misconceptions about the causes of Kyasanur Forest Disease.



Across the Aghanashini River, we created awareness about the Kyasanur Forest Disease, Lion Tailed Macaques and their importance and riverine ecosystem conservation.



Biodiversity along the Appemidi River was documented.

To achieve this, the project will integrate conservation and public health outreach through the following activities:

1. Awareness & Education using simple educational material in the local language, short videos, posters, and street plays, disseminated at schools, village meetings, local festivals and through local communication channels.
2. Community Engagement & Capacity Building by training local youth and farmers on the importance of LTMs and sharing relevant information through a WhatsApp group; involving Village Forest Committees and Eco-Development Committees in the awareness programs and in monitoring KFD in the study area; and participatory workshops to communicate the linkage between forest health, disease prevention and wildlife protection.
3. Science-Based Health & Safety Interventions in collaboration with the Health Department to strengthen tick surveillance, promote safe practices for forest workers and forest-dependent communities, and by documenting monkey mortalities scientifically, and identifying hot spots of LTM habitat degradation to develop restoration of critical areas for their conservation.
4. Foster Wildlife & Ecosystem Stewardship by restoring the pride among locals about the LTMs, position the LTM as a flagship species for “healthy forests and healthy people”, and encourage the community to monitor macaque groups in their area to ensure the conservation of these endangered animals.

Status

This project is a time-bound on-field intervention with very specific activities planned to achieve the objectives. In the first few weeks of the project initiation, the team helped organise and undertook a five-day awareness programme across the Aghanashini River from 26th of March to 31st of March, 2026, to create awareness about Kyasanur Forest Disease and precautions that need to be taken to prevent it, create awareness about LTMs and their importance and to create awareness about riverine ecosystem conservation. The biodiversity and the varieties of the mango cultivar Appemidi across the Appemidi River were also documented.

A foot march was taken out by 35 participants who spoke to the locals in each village about the KFD, LTMs and the importance of the riverine ecosystem. GPS locations of all biodiversity rich spots identified across the river valley were recorded. A 45-kilometre stretch of the riverine system was covered during this march and approximately 15,000 people from eight Panchayats and two Taluks were reached through this program.



Shade-grown coffee estates serve as vital wildlife havens, where balancing human safety with conservation is essential. Leveraging technology for early warning helps prevent encounters.

Innovating for Impact: Safeguarding Coffee, Communities, and Elephants with Technology

Project Period: September 2025–March 2026

Budget: INR 6,00,000

Supporting Agency: Aakash Beverages Private Limited, Mumbai, India

Principal Investigator: Srinivas Vaidyanathan

Introduction

Nearly half of Asia's elephant population now survives in human-dominated landscapes due to severe forest loss. India reflects this trend, with only about 3% of its total land area—within protected zones—available for long-term elephant survival. Because small, degraded forest patches cannot support viable populations, elephants are forced into suboptimal habitats and agricultural lands in search of food, driving human-elephant conflict to unprecedented levels.

This conflict carries devastating consequences: crop destruction, human casualties, property damage, retaliatory elephant deaths, and immense pressure on forest staff. On average, these interactions claim over 500 human lives and more than 100 elephant lives annually, alongside widespread agricultural and property damage. According to the Ministry of Environment, Forest and Climate Change (MoEFCC) data, from 2010 to 2020, electrocution—mostly from illegal fencing—accounted for 64% of unnatural elephant deaths, followed by train collisions (16%), poaching (14.5%), and poisoning (5.5%). These stark statistics underscore the urgent need to integrate conflict mitigation into India's National Elephant Conservation Policy.

Human-elephant conflict is best explained by a "push-pull" dynamic: invasive plants degrade forest forage, pushing elephants out, while year-round irrigated crops near forest borders pull them toward high-energy food sources. Guided by optimal foraging theory, elephants target these nutrient-dense crops as an efficient survival strategy. Because elephants are highly intelligent and adapt quickly to standard deterrents, there is no one-size-fits-all solution.

Effectively mitigating this complex issue requires localised strategies informed by long-term behavioural monitoring and modern technology. This project addresses the challenge by developing automated detection systems that identify elephant presence near human settlements and trigger real-time alerts—empowering communities to protect both lives and property.

The project focuses on the coffee-growing region of Karnataka, an emerging conflict hotspot that accounts for 2% of the world's coffee production. Studies show that elephants are adapting to this altered landscape, with some herds establishing permanent residency within coffee estates. These plantations provide vital canopy cover that serves as daytime refuge, thus contributing to the "pull factor" along with



As megaherbivores, Asian elephants (*Elephas maximus*) need expansive, continuous forests to meet their immense forage needs.

high-nutrition crops—such as fruit trees, paddy, arecanut, banana, and pepper. Notably, selective feeding on ripe coffee berries is a newly observed behaviour that threatens to further intensify human-elephant conflict.

Objectives

The goal of this project is to develop technologies which provide alerts to people to safeguard themselves and their crops when elephants stray out of their natural habitat.

1. Develop technologies to detect elephants when they are outside forested habitat which will allow monitoring large areas in a cost efficient manner.
2. Develop movement models to predict elephant movement.
3. Develop small scale, low cost, decentralised elephant alert systems.
4. Study the behavioural response of elephants to alert systems and other mitigation measures to update the technology stack.

Status

In the first year, we were able to raise financial support to achieve Objective 2. We have started working on developing an agent-based model that will simulate elephant movement from a given location based on the surrounding habitat, known elephant behaviour, and the time of day. The model is being developed to incorporate these key factors to better understand and predict how elephants may move through the landscape under different conditions.

The outputs from this model will help us identify potential villages that an elephant could visit within a few hours and over a period of up to three days. By providing information on the likely movement and potential destinations of elephants, the model can help improve our understanding of elephant movement and the potential for elephants to enter human-dominated areas.

This information can then be utilised to set up an early warning system that can provide timely information about potential elephant movement towards villages. Such a system can help farmers better protect their crops and lives by allowing them to take appropriate precautions in advance. At the same time, the information can help the Forest Department in managing elephants when they enter human habitation, by providing an indication of the villages that may potentially be visited by elephants and allowing for better preparedness and response.



The Western Ghats serve as a primary watershed, giving rise to numerous major rivers.

Mapping Activity for Forest and Wildlife Conservation in the Western Ghats

Project Period: November 2025–January 2026

Budget: INR 1,00,000

Supporting Agency: Manipal Dot Net Pvt. Ltd., Manipal, India

Principal Investigator: Niren Jain

Introduction

The Western Ghats, recognised as one of the world's biodiversity hotspots, are characterised by rich forest ecosystems, high endemism, and critical wildlife habitats. The Netravati River Basin forms an integral part of this bioregion, supporting both ecological processes and human livelihoods. However, the region is increasingly subjected to fragmentation due to expanding infrastructure such as roads, railways, transmission lines, and hydrological modifications. In this context, the project was conceptualised to address a key gap: the lack of an integrated, spatially explicit dataset that captures both ecological assets and anthropogenic pressures in a single analytical framework.

Objectives

1. Develop a GIS-based integrated map of the Netravati River Basin that would enable visualisation and analysis of conservation priorities alongside landscape-level threats to support research and serve as a practical decision-support tool for policymakers, conservation practitioners, and advocacy groups working in this part of the Western Ghats.

Status

We compiled publicly available geospatial datasets, which were integrated into a multi-layered spatial framework. The mapping encompassed Protected Areas (Kudremukh National Park, Pushpagiri and Someshwara Wildlife Sanctuaries), reserve forests (Bisle and adjoining ranges), and hydrological networks (Netravati and Kumaradhara Rivers with their tributaries). Wildlife corridors, particularly in the Kudremukh–Charmadi–Bisle–Pushpagiri zone, were identified. Human habitations across Sullia, Subramanya, and Beltangady were mapped to contextualise anthropogenic footprints alongside linear infrastructures that threaten to disrupt ecological continuity.

Spatial overlay analysis examined interactions between these elements to highlight fragmentation, barriers, and potential conflict zones. The primary output—a GIS for the Netravati River Basin—synthesised ecological assets and threats into a coherent visual tool. Along with the compiled baseline dataset, these ultimately translates complex spatial data into actionable insights to inform policy, support conservation planning, and promote sustainable landscape management in this region.



A bull in musth is identified by temporal gland secretions. Studying how males adapt their behavior during these high-testosterone phases helps inform better forest management and conflict mitigation strategies.

Frontier Elephant Programme

The Frontier Elephant Programme (FEP), started in 2013, is a collaborative initiative aimed at reducing conflicts and promoting peaceful coexistence between elephants and human communities in areas where their habitats overlap. FERAL, in collaboration with National Institute of Advanced Studies, Indian Institute of Science, and the Asian Nature Conservation Foundation, undertakes studies to address complex ecological and social aspects of human-elephant interactions, leveraging a multi-disciplinary approach for long-term conservation impact. Through these initiatives, FEP aims to develop sustainable solutions that benefit both elephants and the local people who share their landscapes.

This past year, we completed the current phase of our project on male Asian elephant and their conservation in human-dominated landscapes of southern India, supported by the Katie Adamson Conservation Fund. We had the opportunity to meet with representatives from this long-standing partner, showcasing our current initiatives and discussing future plans for the FEP. Alongside consolidating our learnings and preparing manuscripts for publication, we maintained our engagement with the Karnataka Forest Department to improve the conservation status of elephants.



Donor visit: representatives of the Katie Adamson Conservation Fund along with the FEP team visiting a farmer who had installed the hanging fence to protect his field from elephants.



As a critical catchment for the Cauvery and Bhavani rivers, the Nilgiris face reduced dry-season streamflow due to invasive species, threatening downstream drinking water and power generation.

Natural Resource Management

The Natural Resource Management (NRM) programme works at the intersection of ecosystems, climate, and communities, seeking to understand how landscapes are changing and what it takes to sustain them in the long term. From forests and wetlands to fragile coastal ecosystems, these landscapes provide the soil, water, and ecosystem services that underpin both ecological processes and local livelihoods. As climate change and changing land use place increasing pressure on these systems, understanding shifts in ecosystem function and community vulnerability is central to our work.

We combine rigorous scientific research with participatory approaches, working alongside other research institutions, technical experts, and local stakeholders to generate knowledge that can inform action. Our work includes the use of affordable environmental sensors and accessible monitoring technologies that enable communities and decision-makers to track environmental change and respond more effectively. By bringing together multidisciplinary research, local knowledge, and practical decision-support tools, we seek to make complex environmental challenges, and the inherent trade-offs between conservation and development, more visible and actionable.

The programme ultimately aims to translate evidence into strategies that strengthen the resilience of both ecosystems and the communities that depend on them. This includes supporting sustainable land management, community-led restoration, climate adaptation, and preparedness for natural disasters.

Our long-term work in the Nilgiris reflects this integrated approach. In India's first Biosphere Reserve and an important catchment for rivers such as the Cauvery and Bhavani, we have maintained a continuous hydrological research effort for more than a decade. As land-use change and the spread of invasive wattle threaten the region's ecological functions, our ongoing research is examining how wattle invasion affects hydrological dynamics. The evidence generated through this work is helping build a strong scientific basis for native ecosystem restoration and long-term watershed management.

Through the NRM programme, we continue to connect research with action, environmental change with local realities, and scientific understanding with better decisions for building more resilient landscapes.



The invasion of natural grasslands by exotic woody plants has changed vegetation structure and composition and poses a threat to hydrological processes and services.

Assessing the Hydrological Impacts of Invasive Wattle across a Gradient of Invasion in the Nilgiris

Project Period: November 2023–December 2026

Supporting Agency: Self Funded

Principal Investigator: Srinivas Vaidyanathan

Co-Principal Investigator: Jagdish Krishnaswamy, Indian Institute for Human Settlements, Bengaluru

Introduction

Our long-term eco-hydrology monitoring study in the Nilgiris was initiated in 2012. This project, a part of this initiative, focuses on the influence of invasive woody species on hydrological processes.

The Nilgiris is an important catchment for several perennial rivers including the Cauvery and Bhavani, on which, large human populations are dependent downstream. Exotic tree species such as wattles, *Acacia mearnsii* and *Acacia dealbata*, and woody shrubs like broom grasses, *Cytisus scoparius* and gorse, *Ulex europaeus*, have invaded natural grasslands posing threats to hydrological processes and ecosystem services.

This study aims to provide benchmark data on ecosystem function and physical condition indicators at reference grassland sites, which would help in assessing the impact of wattle invasion and for monitoring the success of grassland restoration activities in the future.

Earlier in this project, our data showed a reduction in stream-flows as a result of excessive water losses due to transpiration by woody invasives during drier periods. Also, we observed increased run-off in invaded catchments, resulting from their inability to retain much of the rainwater. Reduced stream-flow impacts availability of fresh water for not only wildlife and natural ecosystem functioning, but also drinking water for people and water for power-generation in the drier periods.

Objectives

1. Monitor stream discharges across catchments with varying densities of wattle.
2. Monitor stream discharges from grassland and shola catchments.
3. Assess the impacts of wattle invasion on stream flow by comparing flows with those from natural catchments of grassland and shola forests.
4. Understand the impact of wattle on soil physical (soil moisture, water holding capacity, infiltration rate) and chemical properties (nutrient status) across seasons.
5. Generate long-term, reference hydrology and soil data with grasslands and shola forests as benchmark sites.



We monitored stream levels using acoustic-based water level recorders in different catchments. Regular monitoring helps in assessing seasonal changes and the impact of different vegetation cover on stream-flows.

6. Generate soil-loss models that could help in developing Invasive Removal and Restoration Planning to minimise soil loss.

Status

This year, we continued collecting rainfall and stream level data. We monitored 26 rain gauges and eight water level recorders installed in catchments that represent different vegetation types and densities of wattle and other invasives. Rainfall data was recorded at one-minute intervals, while water level data was recorded at five-minute intervals during both the dry period (April–May) and the rainy season (June–November). The dry-season water-level data was analysed to understand diurnal variation in water levels across different catchments and to quantify evapotranspiration rates in invaded areas, whereas the rainy season stream-levels were used to evaluate rainfall-runoff relationships across different vegetation types. To calculate stream discharges accurately and develop stage-discharge rating curves, we measured stream velocity across instrumented catchments through 10 readings taken at different water levels to capture seasonal variations. Stream profiles were also recorded at the installed locations.

Additionally, we determined soil infiltration rates across different land-cover types by measuring unsaturated hydraulic conductivity. To monitor dry-season soil moisture, we installed sensors in one wattle-dominated site and one grassland site, logging soil water tension at depths of 20 cm and 1 m every 15 minutes.

Our study till date yielded several key outputs. Comparing vegetation types, the grassland catchment showed the lowest reduction in stream levels during this dry spell when contrasted with shola and high-density wattle catchments. Analysis of diurnal water-level variations during the dry spell showed that high-density wattle catchments exhibited markedly higher diurnal fluctuations in stream stage than the grassland catchment, driven primarily by enhanced daytime water losses associated with transpiration by woody invasive species. Furthermore, during the pre-monsoon and monsoon periods, greater flows were observed in the high density wattle catchment, indicating increased runoff in heavily invaded areas.

Regarding landscape precipitation and soil dynamics, total rainfall across the region in 2025 ranged from 1,236 mm to 8,100 mm, with a mean of 3,530 mm, and the highest single-day rainfall of 408.8 mm was recorded on June 15, 2025, at Emerald Beat in the Udhagai South Range. Departing from the long-term trend where the bulk of rainfall typically occurs during July and August, peak monthly rainfall in 2025 occurred in May, averaging a monthly total of 1,032 mm across the landscape. Finally, soil hydraulic conductivity was low across both wattle and grassland catchments, suggesting that surface runoff predominates over infiltration in these areas, while hourly soil moisture comparisons in April showed greater fluctuations under wattle cover, reinforcing the significant role of evapotranspiration in water loss within wattle-dominated catchments.



Protecting our oceans and coasts safeguards marine life, fights climate change, and sustains millions of livelihoods.

Marine Science Programme

Marine spaces encompass a dynamic range of environments—from estuaries, coastlines, and nearshore waters to offshore depths—housing diverse ecosystems from blue carbon systems like mangroves, saltwater marshes to seamounts, deep-water canyons, and abyssal plains. Given this vast canvas, collaborative partnerships are essential to achieving meaningful impact. This year, we continued working alongside fishing communities, students, and practitioners, employing cutting-edge technologies to facilitate access to and understanding of understudied ocean spaces.

With the integration of Islands and Reefs, the scope of this programme expanded from coastal systems to island ecosystems and offshore waters, addressing some of the most data-poor and ecologically critical marine habitats in Indian waters. Our focus, this year, was centred on marine mammals—a flagship group across marine ecosystems—and on expanding the use of bioacoustics. Because sound travels far in water, it remains one of the most effective tools to study oceanic depths where light barely penetrates and animals rely on sound as their primary sensory modality to communicate, navigate, and mate.

A key ongoing effort under this programme involves establishing a collaborative, long-term bioacoustic monitoring project off the Lakshadweep coast to map cetacean distribution, underwater soundscapes, and oceanographic processes. Notably, the project is documenting blue whale songs to understand their presence and seasonality through vocalisations.

Simultaneously, our team evaluated the status of two highly threatened coastal cetaceans—the Indian Ocean Humpback Dolphin and the Finless Porpoise—within an Important Marine Mammal Area (IMMA) off India's west coast. Using combined acoustic and visual surveys, we estimated their population density and spatial use while mapping fine-scale human activity. Together, these datasets strengthen the evidence base for conservation and management along India's west coast.

In alignment with our commitment to 'Learning', we supported and trained numerous students and practitioners through technical workshops, internships, and doctoral programmes.

Our team co-organised and served as faculty for two major courses this year. The first, a marine field ecology course in Lakshadweep run by the National Centre for Biological Sciences and co-led by Dr. Divya Panicker, provided students with a strong foundation in marine ecology, practical field skills, and rigorous scientific methodologies. The second, an intensive six-day advanced bioacoustics workshop hosted in collaboration with the Cornell K. Lisa Yang Center for Conservation Bioacoustics and IISER Tirupati, trained participants in advanced analytics for bioacoustic datasets. Additionally, an introductory workshop on 'Bioacoustics in Conservation' was conducted for students at the Student Conference on Conservation Science.



Since light barely penetrates oceanic depths, sound is essential for marine life to navigate, communicate, and mate—making acoustic monitoring a vital tool for marine ecological studies.

Beyond field research and education, our Marine Science programme is actively driving collaborative ecosystems at a national scale. Serving on the steering committee of the Marine Mammal Consortium of India (MMCOI), our researchers recently helped facilitate a major national platform uniting researchers, policymakers, and diverse institutions. Together, we are bridging the gap between scientific discovery and institutional action to develop coordinated, nationwide strategies for marine mammal protection.

Building on this momentum, FERAL joined the core organising team shaping a national vision for India's first dedicated Bioacoustics Centre. Convening leading researchers, practitioners, and funders alongside IISER Tirupati, we helped guide strategic consensus toward a hybrid model designed for real-world conservation impact. The resulting roadmap establishes four vital priorities for the country: standardising long-term baseline datasets, expanding national technical capacity, developing accessible bioacoustic hardware and software, and embedding acoustic monitoring directly into national biodiversity policy.



Humpback dolphins (*Sousa sp.*) are India's most common nearshore cetaceans, living in coastal waters heavily impacted by human activity.

Assessing the Status of Coastal Cetaceans in an Important Marine Mammal Area (IMMA) off the West Coast of India

Project Period: May 2025–May 2026

Budget: GBP 12000 (INR 13,57,440)

Supporting Agency: The Rufford Foundation, United Kingdom

Principal Investigator: Isha Bopardikar

Collaborators and their Institutions: Mahi Mankeshwar and Shaunak Modi (Coastal Conservation Foundation, Goa); Cornell K Lisa Yang Centre for Conservation Bioacoustics

Introduction

The coastal waters off the Arabian Sea, surround some of the most densely populated regions, providing vital resources and livelihoods to local communities. These waters also form a critical habitat for coastal megafauna, including the Indian Ocean humpback dolphin (*Sousa plumbea*) and the Indo-Pacific finless porpoise (*Neophocaena phocaenoides*) and are listed as an IUCN Important Marine Mammal Area. Between 2013 and 2024, the coastal stretches of Sindhudurg and Goa alone recorded approximately 232 mortalities across both species, with 203 of these reported from Goa. As these figures reflect only documented strandings, the true extent of mortality is likely much higher, given the strong possibility of under-reporting in the region.

Although the precise causes of these strandings remain unclear, the shallow, nearshore habitat preferred by both species places them at chronic risk from a range of human activities. These include indirect pressures such as chemical and noise pollution, resource depletion from unregulated coastal fisheries, and habitat degradation, as well as direct threats like fisheries interactions and incidental bycatch and mortalities.

Given these concerns, generating robust population estimates and systematically assessing anthropogenic pressures are essential first steps toward understanding the concerns faced by these species. In this study, we build upon a monitoring framework developed and tested in Sindhudurg, that uses integrated acoustic and visual survey methods to generate density estimates and space-use data for both species. Our study also maps anthropogenic activities at a fine spatial scale to assess their overlap with dolphin and porpoise habitat. Together, these datasets will strengthen the evidence base needed to inform effective conservation and management strategies for both species along India's west coast.

Objectives

1. Population size estimates for Indian Ocean humpback dolphins and Indo-Pacific finless porpoises.
2. Spatio-temporal distribution patterns for both species.



Cetacean presence was assessed along 122 km of the northern Goa coastline using 17 zig-zag line transects, recording both visual and acoustic sightings.

3. Mapping anthropogenic activity in areas of high densities of both species.
4. Assessing population estimates for both species in relation to mortality events along the coast.

Status

We have completed one survey that included the entire northern Goa coastline. We covered a distance of 122 km during this first survey. The survey included 17 zig-zag line transects and lasted ~9 hrs of continuous effort (both acoustic and visual) from 7:30 am to 4:20 pm.

The survey did not result in any visual detections of finless porpoises or humpback dolphins. However, we had several acoustic detections of finless porpoises. Our next step is to quantify these detections. With further surveys and more data we aim towards generating robust density estimates.

During upcoming surveys, we will involve the state forest department and train their staff in survey protocols. The Goa State Forest Department is keen to host marine mammal monitoring and stranding protocol workshops for their staff. We aim to arrange for these in the post monsoon season so that both field methods and classroom sessions can be conducted.



Top: Our inaugural batch of Ph.D. students alongside faculty members during a field session.
Bottom: Guest lecturers and our faculty delivered the coursework for our first Ph.D. cohort.

Learning

Nurturing Ecological Scholars: The Launch of the FERAL Doctoral Initiative

Building the Foundation for a Doctoral Programme

This past year marked a transformative milestone for FERAL's educational vision with the official launch of our Doctoral Programme. Our overarching priority for this inaugural year was clear: establish a comprehensive, high-caliber foundation that will support and elevate ecological research for years to come.

Designed specifically as a part-time Ph.D. track, the programme creates a dedicated academic avenue for salaried professionals and scholars backed by national fellowships—such as CSIR, UGC-NET, and GATE—or independent research funding. To anchor the programme's academic standing, four core FERAL faculty members—Dr. Nishant Srinivasiah, Dr. Divya Panicker, Dr. Nachiket Kelkar, and Dr. H.S. Sushma—were formally recognised as Assistant Professor-level faculty at the University of Trans-Disciplinary Health Sciences and Technology (TDU), Bengaluru.

Welcoming Our Inaugural Cohort

The response to our initial call was both encouraging and competitive. Of the nine applications, seven candidates sat for the entrance examination held at our Bengaluru workspace in July. Following intensive interviews with prospective faculty guides and a selection committee tasked with reviewing research viability, fellowships, and field logistics, four scholars successfully cleared the process and were provisionally admitted.

In August 2025, FERAL officially welcomed its first doctoral cohort, whose research projects span critical ecological themes:

- Aditya Joshi (Guided by Dr. Nachiket Kelkar) will be studying the autecology of the Indian Pangolin (*Manis crassicaudata*).
- Rajat Nayak (Guided by Dr. Nishant Srinivasaiah) will be working on integrating climate risk into wildlife research to understand climate-driven shifts in human-elephant conflict.
- Rukmini Shekar (Guided by Dr. Divya Panicker) will be studying spinner dolphins (*Stenella longirostris*) as vectors of nutrient transfer in selected islands of Lakshadweep.
- Tarun Nair (Guided by Dr. Nachiket Kelkar) will be researching the threats affecting the nesting ecology of the critically endangered Gharial (*Gavialis gangeticus*).



The doctoral coursework provided our students with both fundamental theoretical knowledge and hands-on field sampling experience.

Academic Rigour and Collaborative Learning

To fulfil 8 to 10 credits of their required doctoral coursework, FERAL hosted an intensive, one-month teaching and field session at our Bengaluru workspace, with more than 75% of the schedule dedicated to in-person contact hours. Grounded in helping scholars formulate and address complex ecological inquiries through the scientific method, the curriculum offered a mandatory module in Research Methodology & Statistics, alongside three specialized electives: Population Ecology, Landscape Ecology, and Behavioural Ecology.

Instruction was led by FERAL's own faculty and researchers, complemented by guest lectures from domain experts across partner institutions. Reflecting our commitment to broad institutional engagement and open knowledge-sharing, these courses were also extended to external researchers—drawing a Ph.D. student from the Coexistence Studies Group as a full participant, as well as two Ph.D. students from the Indian Institute for Human Settlements (IIHS), Bengaluru, who attended select lecture series.

Looking Ahead

Our doctoral scholars are entering the next phase of their academic journey. Over the coming months, they will complete their coursework requirements through two additional mandatory courses—one hosted by TDU and another through the SWAYAM platform. Upon completing these modules and passing their subject-specific examinations, their formal Doctoral Advisory Committees will be established. With these final procedural steps, the cohort will be fully recognised as TDU Ph.D. candidates, ready to advance into their field-based doctoral research.



A GIS workshop for field staff of the Tamil Nadu Forest Department was held at Dindigul.



Dr. Divya Panicker delivered a public talk in Bengaluru on her work on marine mammals.

Capacity Building Workshops & Applied Training

Date and Venue: 4 August 2025–5 August 2025 Dindigul, Tamil Nadu

No. of Participants: 37

Supporting Agency: Office of the Conservator of Forests, Dindigul Circle, Tamil Nadu Forest Department,

We conducted a two-day training programme titled **"Introduction to GPS and GIS"** organised by the Office of the Conservator of Forests, Dindigul Circle, for the field staff of the Dindigul Forest Circle, Tamil Nadu Forest Department.

The workshop was attended by 40 Forest Department personnel across the ranks of Range Officers, Foresters, Forest Guards, and Forest Watchers.

Dr. R. Kanchana, IFS, Conservator of Forests, Dindigul Circle, inaugurated the workshop. The training covered the fundamentals of spatial data, beginning with map reading and the principles of using GPS for field data collection and navigation, accompanied by practical hands-on exercises. Participants were then introduced to Geographic Information Systems (GIS), where they completed a comprehensive hands-on session—importing field-collected data into a GIS, visualising spatial data, georeferencing, digitising, and map layout creation.

Dr. Kanchana, concluded the sessions with a vote of appreciation for the resource team, commending their delivery of the workshop and expressed strong interest in following up this session with an advanced GIS training module for senior field officers.

Public talk: What Listening to Whales, Dolphins, and Porpoises Can Tell Us

Speakers: Dr. Divya Panicker and Dr. Isha Bopardikar

No. of Participants: 20

Date and Venue: 22 September 2025 at FERAL's workspace in Bengaluru

Whales, dolphins, and porpoises rely on clicks, whistles, and songs to navigate, forage, and communicate. By listening to these underwater acoustics, scientists can determine species distribution, estimate population sizes, and assess how these animals interact with their marine environment.

During the talk, the speakers highlighted how coastal and island ecosystems shape marine life, discussed the critical threats blue whales, spinner dolphins, humpback dolphins, and finless porpoises face, and explained why sound serves as such a vital research tool. Attendees were introduced to Passive Acoustic Monitoring—a methodology that offers a unique window into marine ecosystems to support science-based conservation strategies.

The presentation was followed by an interactive Q&A session, where an engaged audience discussed marine ecology and ocean conservation efforts with the speakers.

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The Field

Animal communication is **first and foremost about signal transmission** and aims to understand how communication occurs.

It is a field that has contributed to and been inspired by other fields, from information technology to neuroscience, in **finding ever better methods to eavesdrop on the actual 'message'** that forms the basis of communication. Kaplan 2014, WIREs Cogn Sci 2014, 5:661–677. doi: 10.1002/wcs.1321



We share our knowledge with both the public and the scientific community.

Publications

Journal Articles

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Conference Papers/Posters

Jayadevan, A. et al. (2026). Limited ecosystem carbon gains from tree plantations across semi-arid open natural ecosystems. Poster presented at the International Association for Landscape Ecologists and at the NASA Biosphere Meeting.



Ravana's moustache (*Spinifex littoreus*) is a resilient coastal grass that stabilizes sand dunes, prevents erosion, and supports coastal fauna, though littering threatens its ecosystems.

Balance Sheet

Foundation for Ecological Research Advocacy and Learning
No.52, 1st Cross Street, Sabthagiri Township, Thiruchitrambalam
Vanur Taluk, Villupuram, Tamil Nadu - 605101

Balance Sheet as at 31st March 2026

		(Amount in ₹)	
Particulars	Note	As at 31.03.2026	As at 31.03.2025
<u>SOURCES</u>			
Corpus	3	13,66,308	21,81,728
Project Asset Reserve account	4	-	43,788
Projects Account (Cr)	5	64,59,697	34,86,640
Current Liabilities	6	3,72,926	3,73,197
		81,98,931	60,85,353
<u>APPLICATION</u>			
Fixed Assets (Less) Depreciation	7	9,21,561	11,02,952
<u>CURRENT ASSETS, LOANS AND ADVANCES</u>			
Cash and bank balances	8	71,59,819	48,23,670
Loans and advances	9	1,17,551	1,58,731
		72,77,370	49,82,401
		81,98,931	60,85,353

The accompanying notes are integral part of the financial statements

Brief about the Entity	1
Summary of significant accounting policies	2

As per our report of even date attached

For Yoganandh & Ram LLP

Chartered Accountants

FRN # 005157S / S200052

Sridhar
Narasimhan

Digitally signed by
Sridhar Narasimhan
Date: 2026.09.28
14:01:21 +05'30'

N. Sridhar, FCA

Partner

Membership No : 026833

Place : Chennai

For Foundation for Ecological Research
Advocacy and Learning

SRINIVAS
VAIDYANATHAN

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SRINIVAS VAIDYANATHAN
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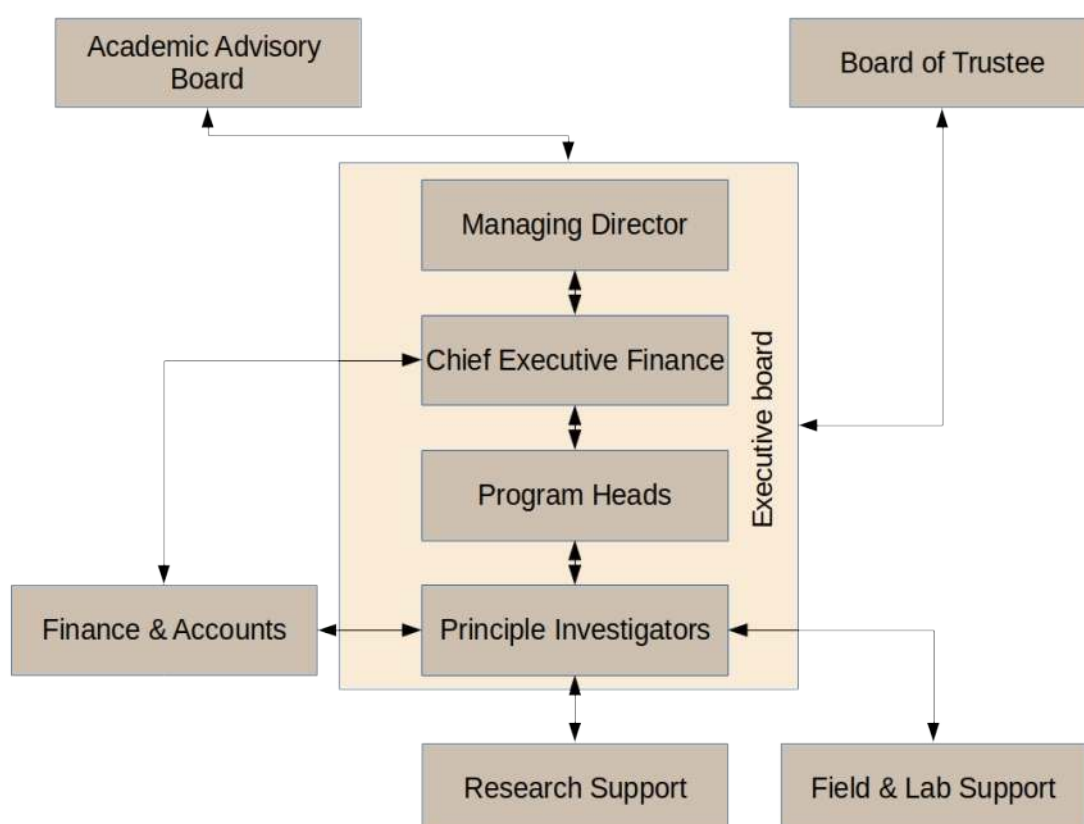
Srinivas Vaidyanathan

Trustee

Administrative Information

FERAL is a non-profit trust founded under the Indian Trusts Act (1882), in July 1997. We are certified as a Scientific and Industrial Research Organisation (SIRO) by the Department of Scientific and Industrial Research (DSIR), Ministry of Science and Technology, New Delhi. Donations made to FERAL attract deduction under section 80G of the Income Tax Act, 1961 and we are registered and authorised to receive foreign funds under the foreign contribution regulation act (FCRA) 2010.

We have a simple organisational structure which provides a supportive framework for our researchers while ensuring them functional autonomy. As per the DSIR and Trust Act rules, we are advised by an academic advisory board for all scientific matters and governed by a board of trustees for overall administration and organisational policy.



Academic Advisory board

Deviprasad K V, Ph.D., Jagdish Krishnaswamy, Ph.D., Mahesh Sankaran, Ph.D, Neil Pelkey, Ph.D., R. S. Bhalla, Ph.D., and Senthil Babu, Ph.D.

Board of trustees

Mahesh Sankaran, Ph.D., Srinivas Vaidyanathan and Anand V M

Partners

FERAL's work is made possible through grants from the Government of India and international agencies. Often these grants are made to multi-institutional consortia of two or more partner organisations. The agencies who have supported our work and those who have collaborated in project implementation are listed below.

Supporting Partners

Aakash Beverages Private Limited, Mumbai (India), Anusandhan National Research Foundation (ANRF), Government of India (India), Critical Ecosystem Partnership Fund-Rapid Rescue for Conservation Crises (R2C2) Facility (USA), Manipal Dot Net Pvt. Ltd., Manipal (India), Office of the Conservator of Forests, Dindigul Circle, Tamil Nadu Forest Department (India), The Rufford Foundation, (UK), The Wild Heart Trust (UK)

Individual Donors

Ms. Anupama Pai, Dr. R. S. Bhalla, Mr. Srinivas Vaidyanathan, Mr. Karthik Selvam, Mr. Ramalingam Kumbakonam Chandrasekar, Mr. Karthikeyan Chandrasekaran, and an anonymous donor through Benevity UK Online Giving, Global Remittance.

Collaborating Institutions

Asian Nature Conservation Foundation (India), Coastal Conservation Foundation (India); Cornell K Lisa Yang Centre for Conservation Bioacoustics (USA), Indian Institute for Human Settlements (India), Indian Institute of Science (India), National Centre for Biological Sciences (India), National Institute for Advanced Studies (India), University of Trans-Disciplinary Health Sciences and Technology (India).

The FERAL Team

Feral's team is a mix of researchers and professionals from various disciplines who are supported by a small but competent and highly trained team. Below is a short introduction to the people who make FERAL tic (arranged alphabetically).

Research team

Aditi Ramchiary



Aditi Ramchiary is a researcher from Assam with a keen interest in human-wildlife interactions and urban ecology. She holds a post-graduate degree in Environment and Development from Ambedkar University Delhi.

Anisha Jayadevan



Anisha Jayadevan is a PhD candidate at the University of Maryland, USA. She is largely interested in how people, policies, and narratives shape land-use and land-cover change.

Balachandra Hegde



Balachandra Hegde is a landscape ecologist and a practicing farmer, with a PhD from Kuvempu University. His interests include land use change, ecosystem services and conservation in the Western Ghats, especially in the Uttara Kannada District.

Devcharan Jathanna



Devcharan Jathanna is a carnivore biologist and population ecologist. A National Geographic Explorer and a member of the IUCN SSC Small Carnivore Specialist Group, his research focusses on understanding the population dynamics and distributions of mammalian carnivores, large herbivores as well as bird species in high elevation sky islands of the Western Ghats, and implications for their long-term persistence .

Divya Panicker



Divya Panicker is an oceanographer and marine mammal researcher working at the intersection of science, conservation, and community engagement. She is interested in long-term scientific studies that track changes in marine ecosystems, including how large-scale oceanographic processes influence whales and dolphins.

Isha Bopardikar



Isha is a marine mammal researcher interested in using acoustic tools to answer questions on the ecology and behaviour of cetaceans. She aims to develop a framework using acoustic tools to make population estimations of marine mammals easier, especially in areas with limited resources. Besides field-based research, Isha is interested in capacity building within the bioacoustics research community.

Kiran Yadav



Kiran has nearly two decades of experience in fieldwork, data processing and a decade of team oversight and work allocation towards implementing wildlife population estimation methods. He is also familiar with GIS and mapping, and has worked on an initiative to develop methods to individually identify Gyps vultures in India.

Kumaran K



Kumaran has a Masters degree in Ecology and Environmental Science. His interests include understanding the impact of changes in land use and land cover, especially due to exotic invasive species, on natural habitats and ecosystem services.

Monica Kaushik



Monica is an ecologist and conservation biologist studying birds, their habitats, and how they fare in a world dominated by humans. She is also interested in understanding the effects of invasive plant species on native communities and mutualistic interactions.

Nachiket Kelkar



Nachiket is an ecologist with a Ph.D. in socio-environmental history of resource conflicts in riverine fisheries, and a M.Sc. in Wildlife Biology and Conservation. He is interested in developing interdisciplinary and long-term understanding of the ecological and socio-political processes that affect biodiversity conservation and human livelihood security in riverine and wetland ecosystems.

Niren Jain



Niren is an architect and environmental planner with over 25 years of experience in forest and wildlife conservation in the southern Western Ghats. His work bridges conservation science and sustainable development, with a focus on habitat connectivity, environmental planning, and forest governance.

Nishant Srinivasaiah



Nishant is instrumental in starting a multi-institution, multi-disciplinary collaboration to manage Asian elephants in India. Over the last decade he has been monitoring elephants, understanding their behaviour and interactions with humans to find solutions to conserve elephants.

Rajat Ramakant Nayak



Rajat has completed his Masters in Wildlife Biology and Conservation. He is interested in understanding the influence of anthropogenic activities and climate change on ecosystem processes and services and wildlife. He currently works on forest fragmentation and its influence on wildlife movement and ecosystem services.

Santhosh M N



Santhosh has over two decades of experience in boots-on-the ground, implementing population estimation methods such as line transects, camera trapping and occupancy. He is also experienced in meticulous data processing and validation prior to statistical analyses.

Srinivas Vaidyanathan



Srinivas is an ecologist with an interest in understanding changes in landscape-level processes and structure and how they affect large mammal populations. Srinivas uses spatial approaches for finding innovative and practical solutions to conservation problems.

Sunita Ram



Sunita has worked extensively on the ecology and distribution of primates in the southern Western Ghats. Her interests lie in contributing to long term strategies for the conservation of wildlife and their habitats.

Sushma H S



Sushma, an ecologist with a multi-disciplinary background, holds a PhD degree from University of Mysore. Her research interest spans the fields of ecology and conservation and includes primate community ecology, frugivory and seed dispersal, landscape-level surveys of endangered species, and systematic conservation planning.

Research support

Kamalraj S



Kamal has been working with FERAL as a field assistant for more than a decade. He is adept at handling a range of equipments and data loggers. He is a reliable driver in tough forest terrain and is good with managing field staff and taking over running of field stations at a pinch.

Saravanan S



Saravanan holds a masters in human resources development and is very experienced in undertaking social surveys and in coordinating field activities. He is also a resource person for GIS and GPS workshops conducted at FERAL.

Interns

Chirayu Shinde



Chirayu interned on the project on afforestation in semi-arid savannas and assisted fieldwork in Pune district, Maharashtra.

Lokesh Chauhan



Lokesh Chauhan interned on the project on afforestation in semi-arid savannas and assisted during laboratory analysis in National Centre for Biological Sciences.

Prithviraj Sarnobat



Prithviraj provided assistance during fieldwork in Pune District, Maharashtra on the project on afforestation in semi-arid savannas.

Administrative support

Anupama Pai



Anupama has been associated with FERAL since inception and has wide interests ranging from gender and development, natural resource management and developing study abroad programs. She is the Chief Executive Finance and supports project management.

Shanthi R



Shanthi is our finance manager handling the day-to-day accounting responsibilities of the organisation. She has a postgraduate degree in commerce and is versatile in the use of a range of accounting softwares.

Doctoral Students

Aditya Joshi



Guide: Dr. Nachiket Kelkar

Autecology of the Indian Pangolin (*Manis crassicaudata*)

Rajat Ramakant Nayak



Guide: Dr. Nishant Srinivasaiah

Integrating Climate Risk into Wildlife Research: Understanding Climate-Driven Shifts in Human-Elephant Conflict

Rukmini Sekhar



Guide: Dr. Divya Panicker

Spinner dolphins as vectors of nutrient transfer in selected islands of Lakshadweep

Tarun Nair



Guide: Dr. Nachiket Kelkar

Threats affecting nesting ecology of the critically endangered Gharial

Notes



Foundation for Ecological Research, Advocacy and Learning

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Email: feral@feralindia.org