



ANNUAL REPORT 2023-24



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# ABOUT ATREE

Ashoka Trust for Research in Ecology and the Environment (ATREE) is a globally recognised non-profit organisation focused on environmental conservation and sustainable socially just development. ATREE engages in the generation and dissemination of rigorous interdisciplinary knowledge that informs and is informed by the needs of grassroots communities, policymakers and the wider public. It prioritises capacity-building for producing the next generation of scholars.

ATREE works across landscapes on issues pertaining to biodiversity conservation and restoration, water security, sustainable resource use, livelihoods and human well-being and climate change adaptation and mitigation.

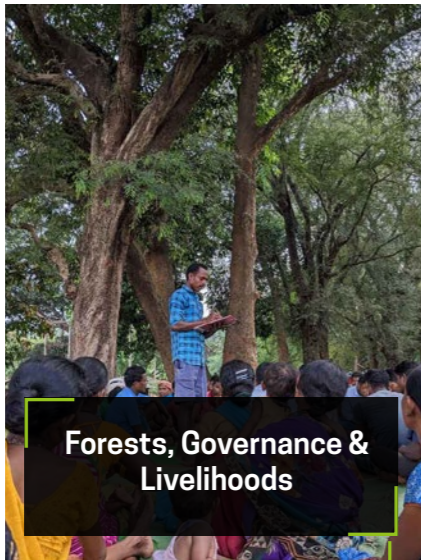
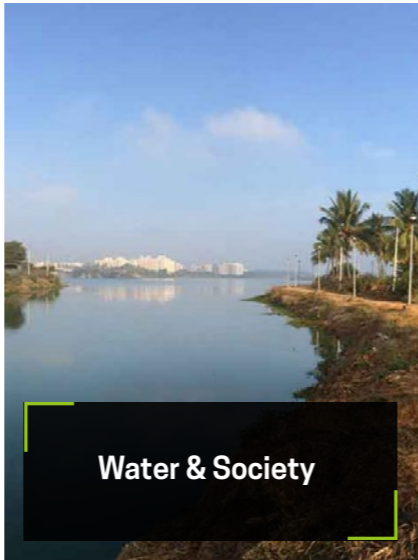
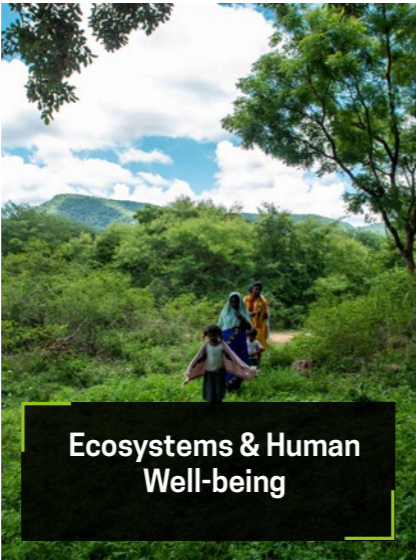
Over the past 25 years, ATREE has established itself as a premier institution working on critical challenges and opportunities in environmental conservation and sustainable development. It has been recognised as a Scientific and Industrial Research Organisation by the Ministry of Science and Technology, Government of India and it is ranked among the top 20 environmental think tanks worldwide (UPenn global ranking).

OUR MISSION

ATREE’s mission is to generate rigorous interdisciplinary knowledge for achieving environmental conservation and sustainable development in a socially just manner, to enable the use of this knowledge by policymakers and society and to train the next generation of scholars and leaders. To deliver on our mission, we work across issues like biodiversity and conservation, climate change mitigation and development, land and water resources, forests and governance and ecosystem services and human well-being.

OUR PROGRAMMES

ATREE’s Programmes are housed within the Centre for Biodiversity and Conservation and the Centre for Environment and Development. Adopting research, implementation, policy outreach and capacity building pathways, ATREE’s programmes cover a spectrum of environmental challenges from water security and forest rights to species conservation, habitat restoration and human-animal interactions.



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## OUR FELLOWS

ATREE's scientists span a diverse spectrum of disciplines, including anthropology, political ecology, taxonomy, environmental economics, ecology, developmental economics, public policy and finance, agroecology and conservation genetics.

This diversity of disciplines and experiences equips us to understand and address the complex interactions between ecosystems, species and human communities.

By leveraging our collective knowledge and skills, we seek to implement impactful conservation initiatives that benefit both biodiversity and human well-being.



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**Balaram**  
*Chairperson, ATREE*

The past year, ATREE continued to focus on its role in nurturing a new generation of conservationists, reinforcing its commitment to India's environment and ecology and fostering collaborations.

Reflecting the calibre of expertise ATREE embodies, our esteemed colleague, Dr Ekalabya Sharma, was awarded the Padma Shri in Science and Engineering by the Government of India. This prestigious recognition celebrates his outstanding contributions to the field, especially in the Himalayan region.

Our ongoing explorations in the Siang Valley of Arunachal Pradesh and the Western Ghats contributed to over 35 new species. These discoveries across taxa enrich our understanding of these biodiversity hotspots.

Our Community Conservation Centres (CCC) continued in very many ways to exemplify our strategy of promoting grassroots work backed by science to develop successful and diverse conservation initiatives.

We extend our heartfelt gratitude to Dr K.N. Ganeshiah for his unwavering support since our inception. As a co-founder, trustee and mentor, his contributions have been instrumental in shaping our organisation. We eagerly anticipate his continued engagement with us as a Distinguished Honorary Fellow. Additionally, ATREE is deeply appreciative of Nithin Kamath's significant contributions during his year as a member of the Board of Trustees. His efforts have greatly benefited our organisation.

Our achievements are possible due to the unwavering support from our donors and friends, along with the dedication of our faculty, staff and students. We look forward to continuing our journey of generating cutting-edge research, creating meaningful partnerships and addressing key conservation issues with renewed vigour and innovation.

Thank you for your continued trust and support.



**Anita Arjundas**  
*Executive Director, ATREE*

It gives me great pleasure to share ATREE's progress and achievements over the past year.

An important milestone during the year was the progress made in empowering forest-dependent communities through the Forest Rights Act 2006. The efforts of ATREE's forest rights team, involving Adivasi youth in Bastar district, Chhattisgarh, led to a cumulative of 56 villages receiving formal title deeds in recognition of their Community Forest Resource rights over 54000 hectares in the last two years.

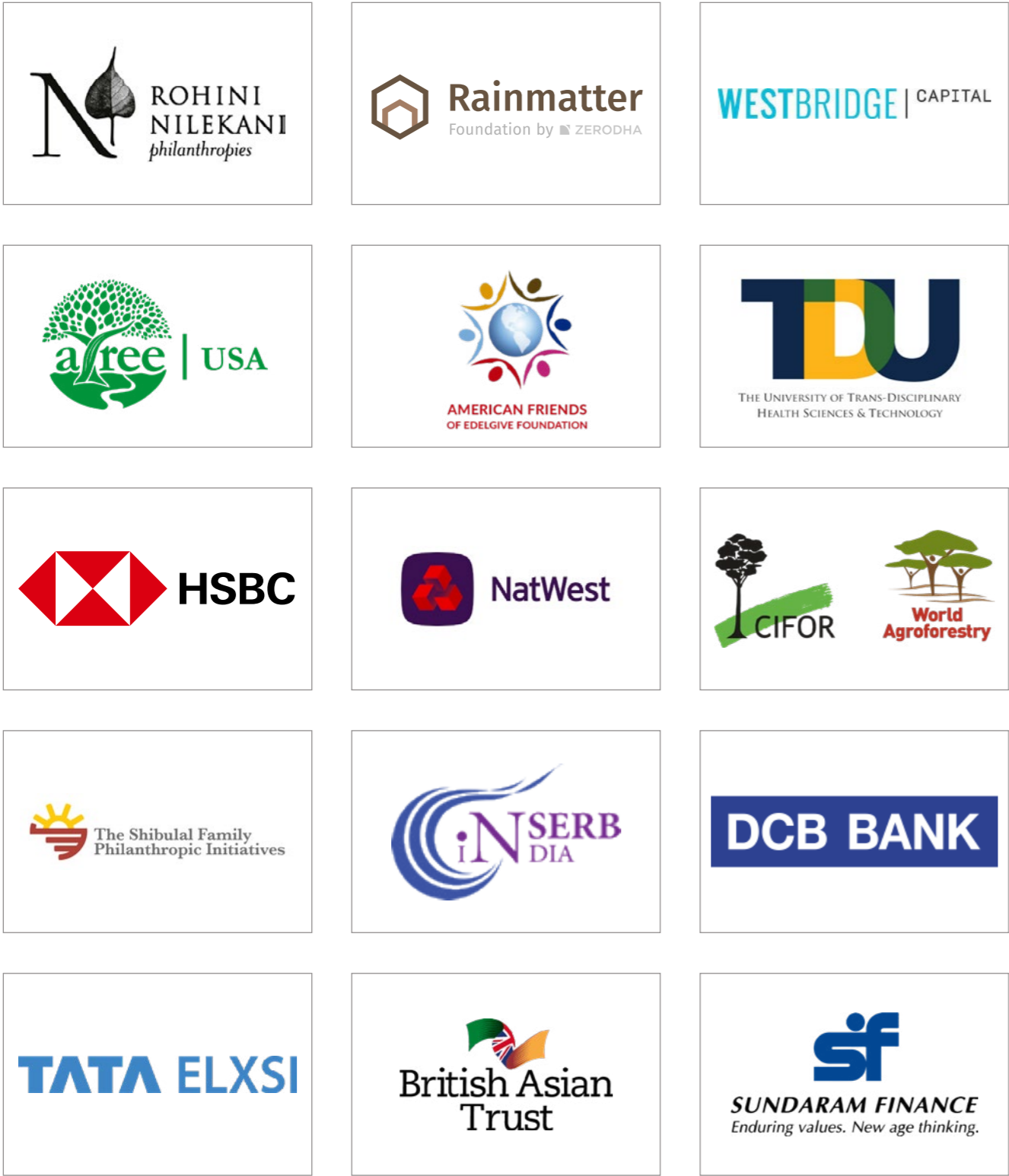
On a global scale, ATREE continued to advocate for policy interventions based on scientific evidence and promote discussions on commons, land use and access rights. At COP 28, our sessions focused on bringing the Himalayas and the Open Natural Ecosystems to the forefront of climate discussions, highlighting the potential for scaling nature-based solutions to create climate-resilient landscapes.

Throughout the year, we saw the alarming effects of climate change nationwide, including persistent heatwaves and water scarcity, besides natural disasters in the Eastern and Western Himalayas. These events serve as reminders that the challenges are not just looming ahead, but currently impacting us. We announced a 10-year collaborative plan for our work in the Indian Himalayas – The Himalaya Initiative to focus attention on these critical yet fragile ecosystems at the forefront of climate change impacts.

During the year, we secured long-term support from the Rainmatter Foundation and WestBridge Capital, underscoring the confidence our partners place in our work and fuelling our resolve to meet future challenges and strengthen the science-policy-practice interface. We are grateful to them and many other donors listed in this report, who have supported us with endowments, unrestricted funds and project grants.

We understand the journey is long and complex and the challenges, pressing and urgent. The unwavering commitment of our staff, the backing of our partners and collaborators and the confidence of our supporters give us the courage to navigate these challenges and make meaningful contributions towards environmental conservation and socially just development in India.

OUR KEY DONORS



RECOGNITIONS AND ACHIEVEMENTS





# Rohini Nilekani Philanthropies Centre for Environment and Development

The Centre addresses critical issues at the interface of environment and development, particularly related to forests, water and sanitation and climate change.



## BUILDING CAPACITIES OF CIVIL SOCIETY ORGANISATIONS ENGAGING IN ENABLING CFR AND CFR MANAGEMENT IN CHHATTISGARH, MADHYA PRADESH AND TELANGANA

### *Programme: Forests, Governance & Livelihoods*

Several grassroots organisations are actively working to enable communities to claim their Community Forest Rights (CFR) under the Forest Rights Act. However, these organisations often face challenges due to limited understanding of the law's intricacies, procedural requirements, government records, maps or insufficient training in mapping techniques. In cases where villagers have received CFR titles, there is a strong interest in learning how to prepare CFR management plans and initiate management actions.

To address these needs, we conducted a series of workshops across Chhattisgarh, Madhya Pradesh and Telangana, and contributed to workshops in Tamil Nadu and Maharashtra. These workshops aimed to enhance CFR claim-making capabilities and introduce a simple, people-friendly and problem-driven template for CFR management planning that we developed earlier. We will continue to provide technical support to these organisations as they facilitate claim-making and management in their respective areas.

## ENABLING ADIVASI COMMUNITIES TO CLAIM FOREST RIGHTS AND TO MANAGE THEIR CFR: ACTION RESEARCH IN BASTAR (CHHATTISGARH) AND BAIGA CHAK (MADHYA PRADESH)

### *Programme: Forests, Governance & Livelihoods*

Our action research in Bastar District, Chhattisgarh, led by Anubhav Shori and his team of dedicated Adivasi youth, resulted in another 28 villages receiving Community Forest Rights (CFR) over their forests. We then piloted the management of CFR in seven villages, starting with the election of CFR Management Committees (CFRMC). This included the opening of Gram Sabha bank accounts, training CFRMC members in transparent functioning and record-keeping, engaging with villagers to identify major forest-related and livelihood-related issues and assisting CFRMC in drafting their management plans using a simple template pioneered by ATREE.

Communities have already begun management activities such as patrolling their boundaries to prevent illicit felling, establishing internal rules for bamboo harvesting and submitting requests to the Forest Department for support in lantana removal. Additionally, a couple of villages have commenced eco-tourism activities for livelihood enhancement.

Baiga Chak in Madhya Pradesh has a large number of Forest Villages (FV). Despite the fact that these villages were set up by the Forest Department, the recognition of pre-existing cultivation rights (as a precursor to recognising forest access and management rights) has been significantly lacking. We were invited by the District Administration to pilot a new methodology for resolving this issue using wall-to-wall GPS mapping and comprehensive claim filing. As a result, a majority of landholders in two pilot villages, Pondi and Sheetalpani, have received comprehensive rights and the villages have moved towards the next step: claiming Community Forest Rights (CFR).

Our focus now is on building capacities among the local Adivasi youth to advance these processes in multiple villages and develop scalable procedures that can be implemented in other districts.



## AMPLIFYING PASTORAL KNOWLEDGE, VOICE AND AGENCY FOR RANGELAND CONSERVATION IN THE HIGH HIMALAYA

### *The Himalaya Initiative | Programme: Forests, Governance & Livelihoods*

The frontier ecosystem – Ladakh – in India is experiencing rapid rangeland degradation due to complex socio-political and environmental factors, affecting both wildlife and the pastoralists who inhabit these lands. Systemic disenfranchisement of communities coupled with the conversion of their lands for unrestrained infrastructural development is leading to interconnected crises of climate, livelihood and equity.

Our initiative seeks to co-design a smart governance solution with pastoralists, emphasising local knowledge, voice and

agency in rangeland management. We focus on employing decolonial and feminist approaches to conservation through a three-pronged, bottom-up strategy: community-led research, collaborative livelihood innovation and knowledge exchange.

The groundwork for the project commenced in June 2023, establishing partnerships between ATREE, the Achi Association, IRD and UMass Amherst. A curriculum for a youth fellowship was discussed and designed and fundraising proposals were developed and submitted to various agencies.



## CO-MANAGEMENT FOR BIODIVERSITY CONSERVATION AND HUMAN WELL-BEING IN THE BILIGIRI RANGASWAMY TEMPLE (BRT) TIGER RESERVE

### *Programme: Forests, Governance & Livelihoods*

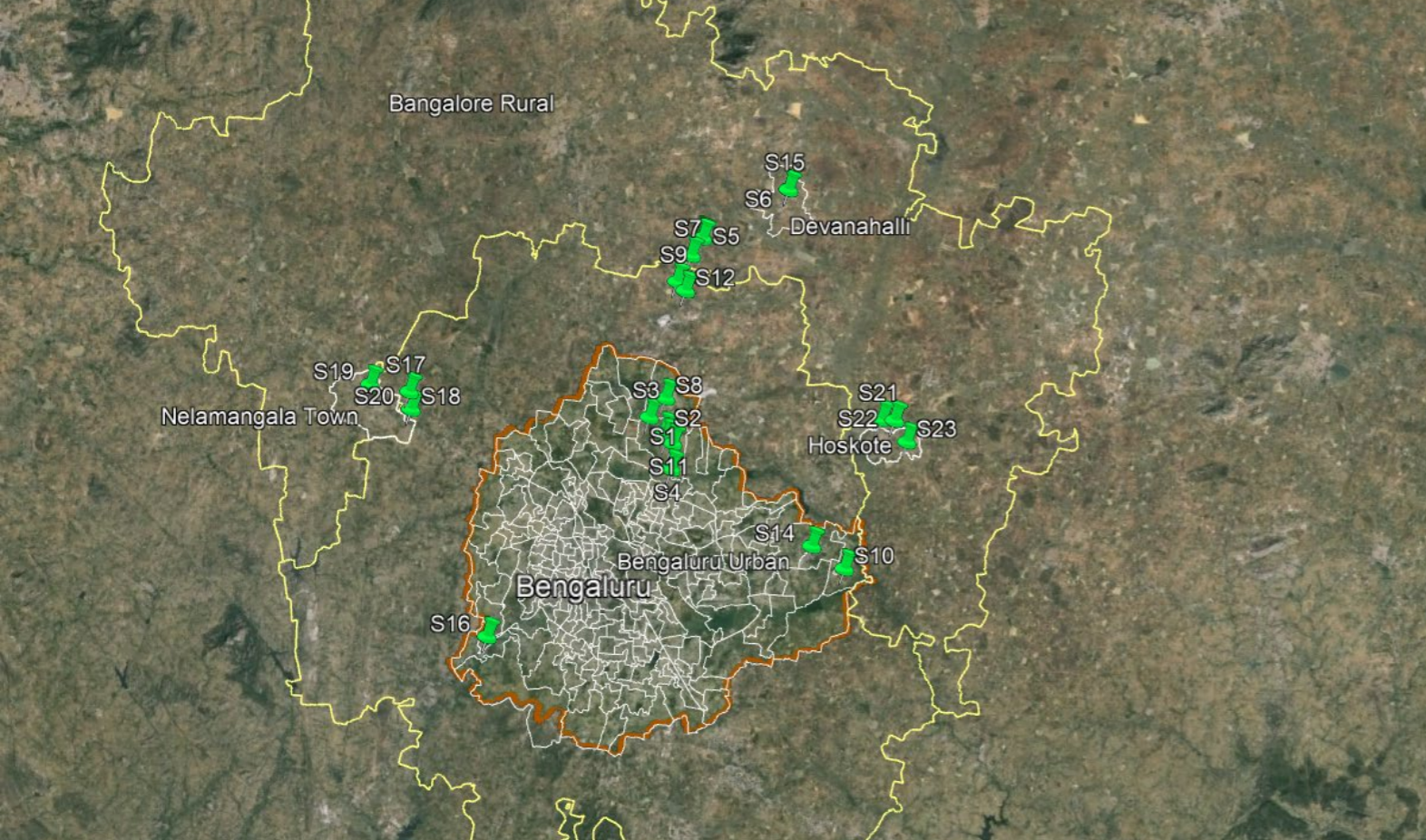
ATREE's research and developmental activities at BRT with the indigenous Soliga tribes aimed to address the sustainability of the landscape and its associated socio-ecological systems. With ATREE's support, 90% of households have been granted individual forest rights and 95% of households have received community forest rights in the landscapes including MM Hills. Various organisations such as community institutions and the forest department contributed to this achievement.

As a critical next step, the ATREE team embarked on enabling the development of a co-management plan for biodiversity conservation and human well-being in the landscape. The primary objective of this management plan is to facilitate sustainable management of Non-Timber Forest Products (NTFPs) by the community. This approach not only safeguards the forest and its resources but also ensures that the community can access these resources to sustain their livelihoods. To begin work on developing the co-management plan, the ATREE

team conducted several workshops on the Forest Rights Act (FRA), wherein around 300 people participated cumulatively, including Adivasi leaders, community-based organisations, local authorities and the Forest Department. The events facilitated insightful discussions on challenges faced, decision-making processes and the intricate interplay between forest rights, biodiversity conservation and community livelihoods. These meetings and workshops were aimed at fostering inclusive governance, preserving traditional ecological knowledge and creating a sustainable coexistence between indigenous communities and their natural habitat.

ATREE will facilitate a community-led co-management plan in the next phase and work towards operationalising and socialising the plan among the community members to ensure its uptake and use. Additionally, ATREE will explore avenues to strengthen local enterprises and provide incentives to communities for conservation efforts.





## ENGAGEMENT WITH NATIONAL AND INTERNATIONAL ORGANISATIONS TO SET AN AGENDA FOR RESEARCH IN WATER SECTOR

### Programme: Water & Society

The Water and Society programme actively participated in various national and international forums such as the World Water Quality Alliance, One Health Initiative, Bangalore Sustainability Forum, Kerala Water Conclave and the Coalition for Disaster Resilient Infrastructure (CDRI). These engagements aim to provide crucial insights into urgent issues within the water sector. For instance, during the WWQA meeting, the lack of standardised frameworks for tracking water

pollution, utilising monitoring data from various institutions, was highlighted as a pressing concern. Additionally, there was a significant focus on integrating lakes into the global sustainability agenda. Within the framework of One Health, environmental health emerged as a key focus area. A concept note was developed to address environmental degradation within rapidly developing catchments.

For more visit [www.atree.org/CED](http://www.atree.org/CED)

## DEVELOPING A BLUEPRINT FOR LAKE RESTORATION

### Programmes: Water and Society | Resilient Urbanscapes

ATREE is actively working to develop a comprehensive framework for the restoration of lakes located in the rapidly urbanising catchments. Within this effort, several workshops and meetings are being conducted with stakeholders to seek their inputs on the restoration approach. Currently, the idea of restoration is limited to aesthetics and water quality improvement, which, on the one hand are clear to practitioners but are not being effectively communicated to stakeholders and actors. This discrepancy leads to a distorted perception of restoration goals, wherein stakeholders expect lakes to achieve drinking/swimmable water quality after restoration. Bridging this gap between expectations and the reality of restoration is crucial, even if operating within financial constraints.

This includes innovations in nature-based solutions, circular blue economy solutions and biodiversity-focused solutions. We will demonstrate the integration of these solutions

in operational lake basin management in four lakes (Demo Basins) and, through this, deliver a tested blueprint for lake protection and restoration. The blueprint will incorporate a catalogue of innovations and guidance on the required environment to turn promising technical innovations from niche measures to mainstream approaches in lake catchment management planning. This includes demonstrating more effective and inclusive collaborations in water governance and showcasing innovations in policy implementation and green financing. The lake restoration project will contribute towards three objectives: (1) protecting and restoring lake ecosystems and their biodiversity, (2) reducing pollution and (3) building a sustainable, carbon-neutral and circular blue economy. The project will develop a digital decision support system and demonstrate innovative approaches to enhancing public participation in lake restoration.



The background of the image is a vibrant green landscape. It features rolling hills with patches of darker green vegetation and scattered trees. In the middle ground, there is a small, rustic hut with a thatched roof, partially obscured by a cornfield. To the right of the hut, there is a small, open-sided structure, possibly a drying rack or a small shelter. The overall scene is peaceful and rural.

# S M SEHGAL FOUNDATION CENTRE FOR BIODIVERSITY AND CONSERVATION

The Centre's primary work is to build a repository of knowledge concerning India's biodiversity, ecosystem functions and ecosystem services through concerted exploration and assessment of every ecosystem type within the country. We hope to detangle the complex web of social, political, economic and environmental changes, as well as the reasons and impact of these changes on biodiversity and local communities.



## PROTECTION AND SUSTAINABLE MANAGEMENT OF AQUATIC RESOURCES IN MANIPUR

**Programme: Biodiversity Monitoring and Conservation Planning**

The Chakpi River in Chandel district, Manipur, provides several ecosystem services to the local communities. It also serves as a cultural and emotional bridge connecting diverse communities in the Manipur Valley.

Freshwater systems, such as the Chapki, support various orders of animals, plants, fungi and algae, contributing to almost 10% of all the species and 35% of all the vertebrates described to date. The anthropogenic pressures and threats have resulted in the decline of freshwater biodiversity at an alarming rate. One of the major gaps in freshwater biodiversity conservation is a lack of data on species distribution, its use and the conservation challenges, especially in tropical regions. These resources, however, are under threat due to several anthropogenic activities such as exploitation, pollution, urbanisation and climate change. All these threats will have serious consequences on the

freshwater resources and, thus, the livelihoods of the communities dependent on the riverine ecosystems. The project was formulated to assess the ecosystem services provided by the Chakpi River and develop an action plan for the conservation of the river and the sustainable use of its freshwater fish and invertebrate resources with the help of the local communities and through extensive stakeholder consultation. The major outcomes of the project: (1) Documentation of ecosystem services of the Chakpi River in the pilot study village, (2) Documentation of socio-economic differences among the communities, (3) Development of a river monitoring toolkit to monitor aquatic ecosystems, and (4) Comprehensive action plan for building a community conservation centre, establishing a conservation zone along the Chakpi River and providing alternative livelihoods for the villages.

## ASSESSING THE BREEDING STATUS AND MAPPING IMPORTANT ROOSTING SITES OF THE LESSER-KNOWN PIED HARRIERS (*CIRCUS MELANOLEUCOS*) IN INDIA

**Programme: Biodiversity Monitoring and Conservation Planning**

The Indian subcontinent is a non-breeding stronghold for six of the 16 harrier species occurring worldwide. The Pied harrier is the only harrier with breeding records in northeast India. It is a much-understudied species; its wintering distribution and ecological requirements are not entirely understood. A single breeding record of the Pied harrier was noted during a study in 1988 in the terai grasslands of Assam. But there haven't been any other breeding records ever since, though the species is suspected to breed along the marshlands in the Brahmaputra Valley in Assam, a fact that requires confirmation through a re-survey. The population status of Pied harriers in the wintering regions and the various threats they face are not known.

Our study aims to assess the breeding status of the species and identify its important roosting sites in the Indian subcontinent. This will enable us to establish the population status of the species. Further, we will conduct a habitat characterisation of these roosting sites to form a baseline that will help delineate other potential roosting sites of Pied harriers in India. The first pilot phase of this project was completed in November 2023, where we successfully mapped two Pied harrier roosting sites in Manas National Park. Besides the habitat characterisation, we will continue to monitor these sites to confirm if the species breeds in Assam.



## ASSESSING AND INTEGRATING POLLINATOR SUPPORT AT MULTIPLE SCALES IN URBANSCAPES

**Programmes:** *Ecosystems and Human well-being | Resilient Urbanscapes*

Green spaces in the city are important refuges for biodiversity, with recent studies highlighting their potential to support pollinators. The contribution of bees to sustainable development goals through food security and biodiversity is widely acknowledged. However, their role in the sustenance of urban spaces is beginning to gain importance. The level of resilience and vulnerability to urbanisation can vary with species of bees. Understanding the response of various bee species to urbanisation is critical, particularly in the context of urban agriculture, which is being promoted globally as one of the pathways to attaining multiple Sustainable Development Goals.

The study was designed to understand the response of social and solitary bees to urbanisation at varying scales of the city, including

public spaces and household gardens. Initial results indicate higher species richness in larger greenspaces located at the city's periphery. However, the trend seems to change with seasonality. We have set up large-scale pollinator resorts at Venkateshpura Lake and Jakkur Lake shores – these structures provide nesting spaces for solitary bees. This is an ongoing experiment to integrate pollinators in community spaces. We are also establishing a pollinator garden at Venkateshpura Lake. We have distributed 50 bee hotels to residential gardens spread across Bengaluru city. We are monitoring these bee hotels through a smartphone app and by reaching out to hosts via emails and calls. Analysing and synthesising the information will allow us to develop a conservation plan for supporting pollinators, particularly bees, in the city.



## INSECTS FOR HUMAN WELL-BEING

**Programme:** *Biodiversity Monitoring and Conservation Planning*

Biosystematics is not just about classifying species; it is also key to unravelling the complexity of evolution and intriguing relationships between organisms. Over the past year, ATREE scientists have undertaken numerous taxonomic revisions of various insect genera and conducted many comprehensive inventories. Among their notable achievements are significant discoveries in the realms of ants, dung beetles, parasitic insects and bees. Their efforts have identified three new genera, 37 new species and several genera and species previously unrecorded in India. These discoveries highlight India's remarkable biodiversity and offer invaluable insights into the intricate dynamics of these insect groups.

Among the notable findings are two new species of bees from the Anthophoridae family. Additionally,

four new species of ants have been identified, with one belonging to the genus *Paraparatrechina* and the other two to the army ant genus *Aenictus*. During the period 2023–24, a total of 23 species of parasitic wasps were discovered, showcasing the diversity within this group. Notable discoveries include *Taeniogonalos deepaki*, a new species belonging to the family Trigonidae from Belgaum; *Chalcis biligiriensis*, a Chalcidid wasp from BR Hills; the identification of a new genus, *Rugosimirax*, along with a new species; and the unveiling of six new species belonging to the subfamily Miracinae. Furthermore, two new genera, *Crenuladesha* and *Protadesha*, were identified along with one new species belonging to the subfamily Adeshini of the family Braconidae.





To design suitable legal mechanisms for biodiversity conservation beyond protected areas, our research mapped forest tenure systems. The findings revealed complex governance structures intertwined with traditional production systems and cultural practices. With land values shifting and markets

expanding, communal land-use practices have increasingly given way to privatisation.

ATREE's ongoing pilot explores how private land ownership might be aligned with community-based conservation strategies.

*For more visit [www.atree.org/CBC](http://www.atree.org/CBC)*

## COMMUNITY-BASED CONSERVATION ON PRIVATE FOREST LANDS: THE SIANG VALLEY PILOT

*The Himalaya Initiative | Programme: Biodiversity Monitoring and Conservation Planning*

Tucked within the Eastern Himalaya, Siang Valley is one of five major river valleys in Arunachal Pradesh, India.

Despite its vast forest cover – 84.4% as recorded in the 2021 India State of Forest Report – the region remains vulnerable, with only 7% of its forests under formal protection. These forests play a critical role in carbon sequestration, climate regulation, and water management, benefitting millions downstream. Given the fragility of these ecosystems and the fact that most forests in Siang Valley fall outside the protected areas (PA) network, it is crucial to safeguard this biodiversity.

ATREE has devised a comprehensive framework for forest and biodiversity conservation in Siang Valley. This framework employs a two-pronged approach:

1. **Engagement with local communities:** Collaborating with indigenous groups to identify priority sites, co-create strategies, and plan interventions for conserving forests and biodiversity outside the PA network.
2. **Strengthening government capacity:** Enhancing the protection, management, and infrastructure within the forest department to reverse existing threats and bolster conservation outcomes in the PAs of Siang Valley.



A wide-angle landscape photograph showing rolling green hills under a vast, cloudy sky. In the foreground, a small, calm pond reflects the sky. The hills are covered in lush green grass with scattered dark rocks. In the distance, a small village with red-roofed houses is visible. The overall scene is bright and natural.

# CENTRE FOR POLICY DESIGN

The Centre aims to design, inform and influence policies in the field of sustainability and conservation in India. We work with various levels of government and civil society using a three-pronged approach:

- Knowledge generation to bridge the gap between science, policy and practice
- Systematic and strategic communication
- Partnerships with the government, civil society and private sector



Comparisons of carbon stocks in Nannaj, across recently restored and unrestored patches, indicate that grassland habitats can sequester up to 30 tons of carbon per hectare. This figure is approximately 300% higher than that observed in unrestored semi-arid grasslands of plateau areas. Remarkably, just three years of grassland restoration has the potential to increase SOC by 53%.

sediment-rich grassland soils, also highlighting the risks associated with soil disturbance, which can result in significant carbon loss. Our analysis suggests that the Banni grasslands alone serve as a reservoir for a total of 27 metric tons of carbon in the form of SOC. Therefore, it is imperative to protect the Banni grasslands' soil from disturbances to achieve carbon sequestration objectives.

Furthermore, SOC stock estimates in Banni reveal exceptionally high carbon values of 142 tonnes per hectare, significantly surpassing the carbon stock in soils affected by the invasion of *Prosopis juliflora*. Banni's substantial carbon stock emphasizes the importance of preserving

Establishing carbon baselines for these unique grasslands elucidates the role of grassland restoration in achieving climate mitigation goals. It also provides essential policy recommendations for the management of dry grassland ecosystems.

The year 2023–24 was exciting as we strategised, expanded and applied our theory of change through various initiatives. Committed to strengthening ATREE's Science-Policy-Practice (SPP) interface, CPD aims to showcase best practices to the broader conservation policy community. The centre's core focus, to synthesise and build knowledge on Open Natural Ecosystems in India from a policy perspective, was carried out through:

## MOUs SIGNED WITH GOVERNMENT DEPARTMENTS

The CPD enabled the signing of two Memoranda of Understanding with government agencies focused on developing a long-term plan for ecological restoration for Open Natural Ecosystems – grasslands in Maharashtra. This was made possible through strategic partnerships with government stakeholders and on-ground partners, as well as targeted and curated messaging.

The first MoU was signed with the Divisional Commissioner Office, Pune, Government of Maharashtra and the second MoU was signed with the Forest Department, Government of Maharashtra. These are important milestones to enable socio-ecologically responsible restoration of ecosystems in India's semi-arid landscapes in collaboration with the government.

## KNOWLEDGE GENERATION FOR POLICY OUTREACH

Semi-arid grasslands support the lives and livelihoods of many people in India and are also important for biodiversity conservation. They can serve as a key ally in tackling climate change. One of their important attributes, often overlooked, is their ability to contribute to effective and long-term climate action. These ecosystems have the potential to store large amounts of carbon in their soils. Restoring them can go a long way in realising this potential. However, the data and knowledge

on this aspect are inadequate and we enabled two pilot studies to fill this gap.

We conducted two important pilot studies to develop soil organic carbon (SOC) profiles for the semi-arid grasslands of India, the Nannaj Wildlife Sanctuary, Maharashtra and the Banni Grasslands of Kutch, Gujarat. Both ecosystems exhibit the varied topographic and climatic conditions characteristic of India's semi-arid grasslands.



## PILOT PROJECTS TO DEMONSTRATE BEST PRACTICES FOR POLICY

Maharashtra and Karnataka are two peninsular states where Open Natural Ecosystems cover approximately 38,500 and 14,500 sq. km, respectively. We initiated a restoration project in the savanna grasslands (a type of ONE) covering two sites in Maharashtra in the year 2023–24, in partnership with The Grasslands Trust. The two sites included Kendur village (the pilot site) and Supe village, both in Pune district.

The aim is to facilitate the restoration of 50 hectares of savanna grasslands in three years. In 2023 in Kendur, we conducted an in-situ plantation of five species of native grasses in five hectares of privately owned commons at a density of 3500 saplings per hectare. We also enabled the creation of a native species nursery for savanna grasslands with the help of experts. Additionally, through focus-group discussions and aspiration surveys, we initiated consultations with the Gram Panchayat and members of the communities of these sites so that our interventions remain flexible and well-informed.

In Supe, we prepared a restoration intervention plan for 12 hectares inside the Reserve Forest and initiated the creation of a 17,500 sq. ft native grass nursery, in collaboration with the Forest Department, to grow three lakh saplings in 2024.

In both sites, we have been conducting regular ecological monitoring of vegetation and soil to record the impact of restoration activities. While our focus has been on western Maharashtra, we have also enabled restoration activities in Bagepalli district in Karnataka through knowledge sharing.

The larger objective of conducting restoration work in all ONE states is to make a coordinated effort with other teams to demonstrate alternatives to tree plantations and land trenching – two major publicly funded activities conducted in such habitats.



## ADVOCACY

In November 2023, ATREE submitted comments and suggestions to the Ministry of Environment, Forest and Climate Change (MoEFCC) on the Draft Methodology for Tree Plantation-based Green Credits, part of the Green Credit Programme. Our response highlighted that while the initiative is promising and has the potential to channelise the efforts and resources needed for India's conservation and livelihood goals, the proposed draft requires several improvements to scientifically and socially align with its objectives.

Our key recommendations were that the methodology should contain a defined vision of outcomes, be sensitive to India's enormous biophysical variations and pay closer attention to rights and equity concerns. Through this effort, we urged the MoEFCC for wider and more in-depth consultations to ensure that its implementation has a scientific basis and it responds to the needs of a broad range of stakeholders. ATREE's response was published in the *Frontline* magazine.

*For more visit [www.atree.org/CPD](http://www.atree.org/CPD)*

# THE HIMALAYA INITIATIVE

A strategic long-term initiative focused on  
mountain-specific challenges

The Himalaya Initiative (THI) envisions a future where resilient mountain and downstream societies sustainably enjoy the natural endowment of the Indian Himalayan Region while protecting and preserving its rich biodiversity.





## OUR GOAL

Our goal is to bring a paradigm shift in conserving and restoring nature, augmenting ecosystem services to meet the United Nations Sustainable Development Goals related to the environment

and well-being of people, and in transforming institutions for sustaining natural assets and meeting climate change threats in the Himalaya.

## FOCUS AREAS

- Assessment, Monitoring and Conservation of Biodiversity
- Restoring Degraded Landscapes
- Sustainable Use, Livelihoods and Economies

The development of knowledge commons for plant and animal species, including bioresources will form an integral part of these focus areas, as also evidence and advocacy for mountain-specific policies.

## CONTEXT

Over the past 25 years, ATREE has focused on research and place-based conservation efforts in Sikkim and Darjeeling Hills of West Bengal. In the last 3 years concerted efforts have been made to monitor biodiversity and establish community managed conservation areas in Arunachal Pradesh.

In 2023, a ten-year THI strategy was put together for the IHR to develop a society that enjoys improved well-being in a healthy environment. This strategy defines ATREE’s focus in the Himalayan region in the face of increasing biodiversity loss, environment degradation and climate change impacting the region.

THI has a three-pronged approach to achieving its aspirations:

- a. Adopting a partnership model by working with a mission and values-aligned consortium of partners that include a range of institutions following interdisciplinary approaches to sustainability.
- b. Having on board multi-stakeholder groups, consisting of representatives from implementing organisations, local communities, civil society groups and government agencies, to design and implement programmes aimed to achieve measurable outputs.
- c. Focusing on institutions and processes to meet targets with measurable impacts.



## ACTIVITIES

- To shape the initiative, ATREE brought on board Padma Shri Dr Eklabya Sharma as Strategic Advisor and Distinguished Fellow.
- Under his guidance and leadership, ATREE has developed a ten-year THI strategy. The THI strategy development process included a problem tree analysis and crafting a theory of change to define outcomes and long-term impacts.
- ATREE also identified pathways and key partnerships to guide its work in the region. Capacity-building efforts have been initiated to enhance the team's skills in project design, implementation, partnership approaches and stakeholder analysis.
- Additionally, a partner consultation workshop was organised in Gangtok to share and receive feedback on the THI strategy. The feedback from partners strengthened the thematic verticals, identified key areas where ATREE and partners could work together to develop synergy, and also identified mountain-specific policies that need attention during the next five years.



*Dr Eklabya Sharma receiving the Prestigious Padma Shri Award*



## OUTCOMES

ATREE has successfully established and operationalised partnerships through formal Memorandums of Understanding with key institutions, including the Forest Department of the Government of Sikkim, Mouling National Park and Dering Wildlife Sanctuary in Arunachal Pradesh, and the International Centre for Integrated Mountain Development (ICIMOD) for the Hindu Kush Himalaya region. Additionally, ATREE formed collaborative partnerships with the Forests and Wildlife Departments of the Government of West Bengal to address native invasive species and restoration efforts within protected areas (PAs). These partnerships have strengthened THI's capacity to implement conservation and restoration initiatives across the region.

During the year, ATREE secured long-term funding support for its restoration related goals under THI in the Khangchendzonga landscape. We also successfully secured continued funding for our work in Arunachal Pradesh on community conserved areas in the Siang Valley. The National Mission on Himalayan Studies (NMHS) supported ATREE with a small grant for a One Health disease surveillance project focused on Scrub Typhus in small mammals.

*For more visit [www.atree.org/THI](http://www.atree.org/THI)*

# OUR COMMUNITY CONSERVATION CENTRES (CCCs)

ATREE's action-oriented research on community-based conservation is anchored in its Community Conservation Centres (CCCs) located in different parts of India. We believe that the present frontiers of conservation lie at the interface of communities and the sustainable management of ecosystem services. Conservation efforts in human-dominated landscapes require active grassroots participation from communities.





## AGASTHYAMALAI

The Agasthyamalai Community Conservation Centre (ACCC) engages with the biologically unique and culturally diverse Agasthyamalai landscape in southern Tamil Nadu. It strives to understand how ecosystems respond to natural and human changes and explore governing mechanisms and management strategies that address biodiversity and conservation issues. The ACCC's approach combines existing knowledge, engagement with state authorities and applied research. The ACCC coordinates all programmes conducted in the Agasthyamalai region.

## MULLAI FESTIVAL

The earliest documentation of grasslands and scrub jungle in southern Tamil Nadu is found in Sangam literature dating to 300 CE, which refers to them as Mullai thinai. The dry grasslands harbour several endemic and endangered taxa. Local pastoral communities have developed unique cattle breeds adapted to these conditions. However, the existing biodiversity and pastoral livelihoods are under threat due to the loss of these grasslands.

According to the Wasteland Atlas of India 2010, Tamil Nadu lost significant hectares of open scrub and pasture land between 2003 and 2006. The UN declared 2026 as the International Year of Rangelands and Pastoralism. ATREE, with various organisations, organised the Mullai Festival.

The theme was Pastoral Lands (Dry Grasslands) with subcategories: Biodiversity, Threats, Culture and Livelihood. A photo contest was organised followed by an exhibition that showcased over 150 photographs of endemic species, native livestock, reptiles, mammals, birds, butterflies and dragonflies.

An art contest was held highlighting the creativity



and engagement of participants in conservation issues. Another event, Karuppatti Coffee with Keethari (pastoral community head), enabled the pastoral communities to share their traditional knowledge with the public. A technical workshop on 'Equitable Solutions for Sustainable Pastures' with students, research scholars, grassland experts and pastoral community members discussed the relationship between grazing and biodiversity and the challenges the pastoral communities face.

The festival also hosted The BELLPINS-ATREE Conservation Leadership Award, an annual award

to honour local conservationists. This year, a local breeder received the award for conserving the native cattle breed, Thenpandi. The festival saw the release of a Harrier field guide that will aid the local communities in identifying and recording migratory harriers in grasslands. The festival, through various events like nature walks, night walks, moth observations and contests, encouraged the participants to explore the Mullai landscape and learn about biodiversity and conservation, thus providing a rich educational experience.

## TAMIRAPARANI FISH SURVEY

The Tamiraparani River, an important southernmost east-flowing river in Peninsular India, originates in the Agasthyamalai hills and flows entirely through Tamil Nadu. It supports biodiversity and livelihoods but faces water depletion and pollution. The river is known for its rich fish diversity but the last comprehensive survey was done over 25 years ago. Since then, the river has been exposed to the impact of exotic plant and fish species, climate change and disruptive human activities. The team engaged with the fishing communities to understand the status of the river and its inhabitants and learnt there was a

decline in traditional fishing due to reduced catch diversity. The two-day Tamiraparani Fish Count, along the lines of the very popular water bird count, was initiated on March 23, 2024. It was the first synchronised fish count in the Tamiraparani River. It involved 6 pre-determined locations along the river, with volunteers and local fishermen sampling different habitats. The survey recorded 36 species of fish, with a total of about 1120 individual fishes. Highlights included endemic species like the Tamiraparani Barb and sightings of the rare Smooth-coated Otter. The majority of the fishes documented were native species, but invasive

species like Tilapia and African catfish were also recorded. The success of the fish count and the engagement of local communities highlight the importance of community-driven initiatives in conservation. ATREE's Agasthyamalai Community

Conservation Centre conducts various such community science programmes, contributing to biodiversity documentation and conservation in the Tamiraparani landscape.

## HARRIER - A MIGRATORY BIRD SURVEY AT TWO DISTRICTS

Counting migratory birds that alter their place to feed or roost is a big challenge. One way to overcome this is to count them synchronously at multiple places. Harriers are migratory birds of prey whose population is reducing rapidly. To estimate their numbers in Tirunelveli and Tuticorin, Tamil Nadu, identified as crucial southernmost habitats for these species, ATREE's Harrier Watch Team has been doing synchronized harrier roost counts with the help of the local communities.

The first survey was conducted from December 5 to 7, 2023. Seventeen harrier roosting sites (grasslands) were selected from the two districts for the survey. The Conservator of Forest & Field Director of Kalakad Mundanthurai Tiger Reserve, District Forest Officer, Tirunelveli, 20 members from the Harrier Watch team, local bird watchers and college students were involved in this survey. After a brief orientation, the entire group was divided into four clusters to cover all

the roosting places within the two districts. Three species of harriers (Pallid, Montagu's and Eurasian Marsh) were recorded during the survey. A total of 102 individuals were counted, with Montagu's harrier (*Circus pygargus*) being the most common.

The second survey was conducted from February 8 to 10, 2024. This was a follow-up to the count done in December 2023 at the same roosting sites. A total of 90 individuals were counted, showing a marginal decline from December. Vljayanarayanam Tank was the main roost in December, but it had submerged under water by February. Moolakaadu, a private grassland where 9 individuals were counted in December, was converted to an agricultural farm, resulting in the complete loss of a roosting site. Many such roosts in unprotected grasslands are constantly transformed, thus calling for immediate action for the protection of the roosting harriers and other wildlife.

*For more visit [www.atree.org/agasthyamalai](http://www.atree.org/agasthyamalai)*



# BILIGIRI RANGASWAMY TEMPLE TIGER RESERVE

The CCC at Biligiri Rangaswamy Temple (BRT) Tiger Reserve has engaged with the Soliga community for over 30 years to enrich livelihoods and protect community rights. The centre is involved with long-term monitoring of species, landscape and forest produce.

It also works towards the adoption of agroforestry and other interventions for biodiversity conservation to maintain ecosystem health.

## ECOLOGY AND MIGRATION OF *APIS DORSATA* (ROCK BEES): A STUDY IN AND AROUND BRT TIGER RESERVE, SOUTHERN INDIA

The Rock bees (*Apis dorsata*), an important wild bee pollinator species in South Asia, construct open nests on trees, rock cliffs and buildings and migrate seasonally from the plains to mid- to high-elevation forests to take advantage of floral supplies at varying altitude gradients.

The BRT Tiger Reserve, a protected area in the Western Ghats, has experienced a slight decline in colony numbers in the past decades. The Soligas, who live within the protected area, harvest honey traditionally, producing 15 tonnes every year. Hence it occupies a significant part of their livelihood.

We are monitoring bee colonies in the natural, agricultural and urban habitats to identify various drivers of Rock bee populations and establish baseline data on the population dynamics of the Rock bees in a forest-agriculture-urban landscape gradient. A map delineating potential nesting sites is being tracked monthly to know the seasonal trends of the bee population. We



have created a checklist of nectar and pollen-yielding plants in and around the nesting habitats of different landscapes. The Rock bees display an evolved seasonal migratory cycle. It follows a distinct yearly migratory pattern shaped by honey harvesting, climatic factors and the

depletion of food resources during monsoon. We have identified that around 27.2% of the plant species in the forests, 9.9% of plant species in the agricultural landscape and 12.26% of trees in the urban landscapes were preferred as potential foraging resources by the Rock bees.

## PROMOTING BIODIVERSITY-FRIENDLY SMALL-HOLDER COFFEE

We initiated a coffee-based business for the Sri Biligiri Rangaswamy Kapi Belegarara Sangha (Soliga coffee farmers) through collaborations benefitting 221 Soliga families. ATREE's efforts encourage organic farming techniques to reduce the impact on biodiversity of the landscape.

In all, 221 families benefitted from an increase in their income by 11.11% from last year. A part of the effort is to also encourage the Soligas to cultivate coffee organically through collaborations

with Rainforest Alliance to reduce the impact on biodiversity and reduce dependency on the forest, especially the soil and fauna of the landscape (particularly the pollinators).

625 Soliga farmers are cultivating coffee in 19 Podus or hamlets within the BRT Tiger Reserve under the project activities.



## CO-MANAGEMENT AND SUSTAINABLE USE OF NON-TIMBER FOREST PRODUCTS

We have worked towards integrating local communities in the management and enhancing community benefits from the forests. The Forest Rights Act (FRA) 2006 was used to empower forest-dependent communities with the right to access forests for their well-being.

Our work has facilitated the provisioning of forest rights to 77 Gram Sabhas (90% households), which included 83 villages and 5433 families with 21,732 members and 2070 households

exercising individual rights (90%). These two accomplishments are important milestones under the protected area regime.

To develop an inclusive co-management plan, we conducted seven community meetings, which saw participation from 341 community members. The focus was to encourage the community to develop co-management plans for conservation and livelihood enhancements under FRA.

## THE SOLIGA CHILDREN: ASPIRATIONS, EDUCATION AND CONSERVATION AWARENESS

This project promotes the education of Soliga children through research, grants and workshops. The focus is on understanding the aspirations and challenges the children face and devising interventions against high dropout rates among college students from the community. The goal

is to reduce dependence on forest resources and promote sustainable development. To counter dropout rates, we organised workshops and seminars, creating awareness about the available educational opportunities, scholarship programmes and financial aid.

*For more visit [www.atree.org/br-hills/](http://www.atree.org/br-hills/)*



## DARJEELING

Darjeeling and Kalimpong, in the Eastern Himalaya, are part of the Himalaya Biodiversity Hotspot. This biodiversity-rich landscape comprises Global 200 ecoregions, Endemic Bird Areas and Important Bird Areas. Indigenous and immigrant ethnic groups make the region culturally diverse and dynamic. Most of these communities depend on the forests and pastures for food, fibre, fodder, fuel wood, medicinal plants, pollinators and climate and water regulation. Through our work, we hope to develop models for sustainability in issues that are closest to the people – agriculture, water, tourism, livelihoods and forests. We are mindful of working with young people as they are the future of the landscape and next-generation environment leaders.

### PROMOTING BIRD CONSERVATION THROUGH COMMUNITY ENGAGEMENT IN DARJEELING, EASTERN HIMALAYA, INDIA

Darjeeling Himalaya is known to harbour about 50% of bird species found in India, even though the region only contributes to <0.0001% of the total area of India. This makes Darjeeling a hotspot of avian diversity, worthy of conservation attention. With a large part of the landscape being outside protected areas, local communities have an important role in the conservation of birds in Darjeeling.

Though bird tourism has flourished in a few local sites, it remains a largely unexplored sector in Darjeeling, but one that generates birding interest among the local communities. Promoting bird tourism in key sites, hence, can be crucial to conserving birds in the ever-changing human-dominated landscapes of Darjeeling Himalaya. With this outlook, we implemented targeted birding guide training across six localities in Darjeeling Himalaya, in collaboration with local organisations, including the Forest Department, catering to local communities in the region.



products involving zero investment as they are readily available, thus enabling local livelihoods and developing value-added products from the Himalayan region.

### OUTCOMES

A literature survey from the region identified 117 plant species as invasives and a field-level assessment revealed 47 invasive plants in the agri-ecosystems with an altitudinal range of 900–2400 m. From these, we have drawn a priority list of five invasive species: 1) *Lantana camara*, 2) *Eupatorium sp.*, 3) *Chromolaena odorata*, 4) *Ageratum conyzoides* and 5) *Mikania micrantha*. We developed a systematic protocol to monitor the abundance of key invasive species and plotted the study area through the line transect method, covering 71 villages from Darjeeling and Kalimpong districts.

**Training and other activities:** The project's main accomplishment included training 58 women to produce different value-added products in Darjeeling and Kalimpong districts.

**Briquettes training:** As part of the product development phase of the project, we trained selected participants in producing briquettes. Of the 11 participants in Darjeeling district, the majority were women from five Self-Help Groups (SHGs). In Kalimpong district, 47 women from 24 SHGs received training.

**Natural dye extraction training:** 11 participants, mostly women from five SHGs from Darjeeling district, were trained in natural dye extraction.

**Training in herbal soap making:** This training workshop included 11 participants, mostly women from 5 SHGs from Darjeeling district.

**Establishment of an enterprise group:** We helped establish the Women Entrepreneurs Organisation (WEO), a single enterprise group with 11 members from the Darjeeling region. Its primary activities include developing, manufacturing and marketing various value-added products derived from species of invasive plants.

Each two-day training programme encompassed a comprehensive curriculum, blending theoretical sessions with practical field experience. Important topics such as the significance of birds and their habitats in the distinctively managed forests of Darjeeling Himalaya and guiding skills were covered.

### OUTCOMES

- Six birding guide training sessions were carried out across Darjeeling Himalaya.
- 128 local community members actively engaged in these trainings.
- 79 participants completed the intensive two-day training programme.
- Citizen science was promoted through these trainings.

## VALUE-ADDED PRODUCTS FROM INVASIVE PLANT SPECIES FOR IMPROVING LIVELIHOODS OF MARGINALISED COMMUNITIES IN INDIAN HIMALAYA

Invasive plant species are one of the most important yet subtle threats to biological diversity and bio-resources in the Eastern and Western Himalayas. They were found spreading along a wide altitudinal range in the districts of Darjeeling and Kalimpong Himalaya. Both form the northernmost districts of West Bengal, with unique environmental eco-perception.

Different invasive alien plant species were found to be colonising the habitats at different climatic conditions, growing rapidly and dominating the resident species of the region. They are either human-introduced or natural invasions through other sources. Our efforts focus on reducing the impact of these invasives on the native environment and converting them into value-added



# MALAI MAHADESHWARA HILLS

The Malai Mahadeshwara Hills (MM Hills) Community Conservation Centre regularly conducts awareness programmes on environmental protection and forest conservation. The CCC engages with the local communities on the importance of forest restoration, sustainable use of non-timber forest products and the ecological threats from invasive species, such as *Lantana camara*.

The CCC works with the local Soliga and Bedagampana (lingayat) communities to bring about positive changes to the ecosystem while enhancing their livelihoods.

## A TIME-TESTED INVASIVE MANAGEMENT TOOL

*Lantana camara* is among IUCN's 10 worst invasive weeds in the world. It is widespread in about 1.54 lakh sq. km of the Indian forests. Our study focuses on the effects of *L. camara* invasion and management on plant diversity and livelihoods in the Malai Mahadeshwara Wildlife Sanctuary in Chamarajanagara district, Karnataka.

ATREE's work for the past two decades (2004–2024) in MM Hills and the establishment of Lantana Craft Centre (LCC) as a community-based initiative have been a success and 2023–2024 saw the generation of an income of Rs 2.5 crores. The project, focusing on real-world solutions to the *Lantana* problem, has helped to improve the social and economic status of the Soliga families. The Soliga households are systematically trained in *Lantana* craft and regular harvesting of the plant in the forest for the craft has led to a decline in its population in the neighbouring landscapes and an increase in native plant species regeneration.



The LCC also serves as a living lab for community artisans, researchers, interns, designers, entrepreneurs and forest managers in many ways. It offers a platform to share knowledge, take up experimentation, replication and scaling within and across the states and facilitates designers to work closely with artisans.

## PROMOTING AN INTEGRATED MILLET-BASED ORGANIC FARMING

ATREE has been engaging with marginalised small farmers who have received land rights under the Forest Rights Act 2006 to promote sustainable millet-based organic farming in forest fringe areas. The project seeks to promote organic farming and branding to fetch premium prices for the produce. The focus is on improving the livelihoods of the Soliga community in 20 villages (500 farmers) at MM Hills. The project is aligned with India's commitment (International Year of Millets-2023) to create domestic and global demand and provide nutritional food to the people. A village-level farmer's meet was held in different clusters to increase their awareness of the

Our post-harvest impact studies and the revelation that the artisans have had to travel 6 km in 2022 to collect *Lantana* sticks in the forest as against 2 km in 2004 point towards *Lantana*'s decline. Our study also showed that another invasive, *Senna spectabilis*, competes with *Lantana* in occupying open places in the forest.

importance of integrated organic millet cropping and build their capacity for value addition, branding and marketing. The thrust was on adopting sustainable agriculture by linking with the new markets.

There is a need to establish a farm producers' cooperative that supports business/marketing and the welfare of the Adivasi community. Therefore, we also encouraged the Soliga community to adopt new enterprises, like Soliga's Organic Millets Producers Company (SOMPC), to enhance their marketing skills and income from selling millets and forest and other agricultural products.



## THE STUDY ON THE IMPLICATIONS OF CO-INVASION AND INTERACTION BETWEEN SENNA SPECTABILIS AND LANTANA CAMARA

Invasive species can cause changes to ecosystems, which can be extensive and long-lasting. Despite most landscapes being invaded by multiple invasive plant species, >90 % of the impact studies only characterise the impacts of single species. Therefore, our knowledge of an invasive plant's impacts does not reflect the co-invaded nature of most landscapes, potentially ignoring complex interactions between invasive species.

Our objective is to characterise the interactions between *Senna spectabilis* and *Lantana camara* and their potential implications on floral diversity in the deciduous forests of MM Hills. We explored the patterns of distribution and impact relationships and found that both the invaders can reduce native plant richness by 70 % individually or in combination and the total cover of any combination of the two invaders had a negative quadratic effect on the native plant richness.

Co-invasion had far wider implications on the native richness. As a result of their overlapping niches, additional changes to the invaded forests were observed. The variation in the community structure and species composition of trees, shrubs, climbers

and herbs in MM Hills had been influenced mainly by the invasion of *Senna* and *Lantana*. The *Lantana* spread is making the forests of the MM Hills shrubbier and creating a cascading effect at the trophic level. As *Senna* invades and expands its range in the MM Hills, the native plant community will be further impacted when *Senna* invades an existing heavy *Lantana* invasion.

The dominating and competitive nature of *Senna* limits the native trees' population recruitment in a larger way than the *Lantana*. In overlapping niches, the impact level is higher than that of independent invasion. Therefore, rather than focusing on individual species, the reduction of multiple invasive species cover should be a priority for management and conservation goals.

Our study highlights the importance of incorporating impact and interactions between invasive species into ecological impact studies. Going forward, we seek to focus on multiple species and identify synergies, especially as they relate to invader cover, which will inform ecological interactions and management prioritisation.

For more visit [www.atree.org/mm-hills](http://www.atree.org/mm-hills)





## SEMBANAD

The Vembanad CCC, also called the Community Environmental Resource Centre (CERC), is an ATREE field academy engaged in wetland conservation, sustainable livelihood and climate action. CERC was established in 2007 to follow the Ramsar Convention's wise use of wetlands. Since then, CERC has been working in the Vembanad region in Kerala to enhance the capacity and institutional networks of local communities and stakeholders for the sustainable management of wetlands so that they are restored, protected and maintained for generations to come.

### BAMBOO BARRIERS: COMBATING WATER HYACINTH IN SEMBANAD LAKE

The Vembanad Ramsar site is like a lifeline for a million people living in four districts in central Kerala. Similar to many other water bodies around the world, the Vembanad Estuary faces challenges from invasive water hyacinth (*Pontederia crassipes*) infestations. These challenges are exacerbated by the closure of the Thaneermukkom barrage, which alters salinity levels that foster the proliferation of water hyacinth on the southern side of the estuary.

Fishing and clam collection are the principal sources of livelihood for traditional stakeholders. However, the excessive mat-like growth of water hyacinths has been causing significant blockages in the canals, obstructing free passage and hindering people's ability to carry out their routine activities. Fisherfolk endure significant disruptions to their livelihoods, encountering hurdles in their daily pursuits as the dense mats impede access to fishing grounds and hinder gear deployment, consequently affecting catches and incomes for these coastal communities. Conventional methods of eradicating the weeds have proven to be costly and largely ineffective as the weeds tend to regrow rapidly, making it a recurring issue.



Establishing bamboo barriers has proven to be a cost-effective and efficient method to stop the spread of weeds. Apart from stopping further spread, weed barriers ensure the canal mouths remain clear and the primary access routes are navigable for the clam collectors.

ATREE CERC, along with the Lake Protection Forum and financial support from the State Wetland Authority of Kerala (SWAK), established bamboo barriers extending up to 1.8 km in 11 canals regularly used by the fisherfolk to access the lake from their villages.

## EMPOWERING COMMUNITIES TO ENSURE WATER SECURITY: THE RAINWATER HARVESTING INITIATIVE IN KUTTANAD

In the picturesque region of Kuttanad, where waterways weave through lush green landscapes, the community grapples with a fundamental challenge: access to clean drinking water. For years, the residents of Kuttanad have faced the harsh reality of water scarcity, exacerbated by saline groundwater and inadequate infrastructure.

Recognising this, ATREE CERC launched the project SUJALAM – Rainwater Harvesting for Improved Water Security in the Kuttanad Region of Kerala. More than just an infrastructure initiative, SUJALAM empowers people to resolve the drinking water crisis and ensure water security through several initiatives.

Through 11 Jala Samrakshana Samitis (JSS) – registered bodies of local user groups formed in each panchayat – the project fosters a sense of ownership and responsibility for water resources and their conservation among the people. Community members, through the JSS, played a pivotal role in every stage of the project, from planning and implementation to maintenance and sustainability. This year, JSS successfully installed 280 ferrocement tanks with 10,000 litre capacity, benefitting more than 800 households. This is the second phase of the project and so far, 560 rainwater harvesting tanks have been installed across 9 panchayats.

The project's impact extended far beyond providing access to clean water. ATREE CERC, along with the JSS, spearheaded various information, education and communication (IEC) activities and comprehensive training programmes aimed at fostering behavioural changes among the public. These initiatives instilled a deeper understanding of water conservation practices and promoted sustainable usage habits. Moreover, by actively promoting community engagement and environmental stewardship, the project laid the groundwork for a more resilient and sustainable future in Kuttanad.





# ACADEMY FOR CONSERVATION SCIENCE AND SUSTAINABILITY STUDIES

The Academy for Conservation Science and Sustainability Studies at ATREE offers a PhD programme, an MSc course and Certificate courses that enable researchers to develop interdisciplinary skills and gain experience in sustainable development and biodiversity conservation. ATREE is a recognised Research Centre of the Manipal Academy of Higher Education, Manipal (MAHE) for the PhD programme. It is associated with The University of Trans-Disciplinary Health Sciences and Technology (TDU) for the Master's programme.

## PHD PROGRAMME

The ATREE doctoral programme in Conservation Science and Sustainability Studies is designed to train students/research scholars to develop and use integrated approaches in sustainable development and biodiversity conservation. The programme promotes interdisciplinary research and frameworks to integrate tools and approaches from ecology, economics, sociology and climate science.

ATREE is a recognised centre of the Manipal Academy for Higher Education (MAHE) – the institution that awards the PhD degrees.

In accordance with the requirements of ATREE and MAHE, students seeking admission should have:

- A background in natural or social sciences
- Exhibit academic excellence

ATREE accepts new PhD students every year and provides a stipend and other support as per its policies.

Students admitted to the programme will work under the personal mentorship of an ATREE faculty member and will also be guided by a doctoral committee of 3 to 5 members. The committee consists of ATREE faculty members and external scientists and will include a representation of expertise from different disciplines.

As of March 31, 2024, 46 students have completed their PhD and 37 are currently enrolled in the doctoral programme.

## COURSEWORK

Doctoral training begins with rigorous coursework that is expected to take a year to complete. This includes a set of mandatory courses and a choice of electives. We have designed foundation courses in the natural and social sciences to introduce students to the main concepts in both these disciplines since students will have a background in one of these.

- Foundations in Natural Sciences –Ecology
- Foundations in Natural Sciences – Environmental Science
- Foundations in Social Sciences –Economics
- Foundations in Social Sciences – Sociology

Mandatory coursework concludes with the tools for conducting research in the natural and social sciences and the ethics and practice of disseminating science, through a series of research methods courses.

- Practising Interdisciplinary Research on the Environment
- Research Design and Methods – Social Sciences
- Research Design and Methods – Natural Sciences
- Quantitative Methods
- Scientific Writing
- Research and Publication Ethics



## MSC PROGRAMME

The MSc Environmental Studies course in Conservation Practice, jointly offered by ATREE and TDU (The University of Trans-Disciplinary Health Sciences and Technology), equips natural and social science students with interdisciplinary knowledge, perspectives and skills to understand and address conservation challenges. This course is curated to create young environmental leaders whose interdisciplinary skills will add value to corporate social responsibility and sustainability offices, development and conservation NGOs and government-line departments dealing with environment and development portfolios. In academic institutions, these leaders will lend a practical edge.

Besides foundational knowledge in social and natural sciences, our graduates will accumulate domain knowledge and skills across a spectrum of conservation and sustainability themes and sectors: forests, farms and biodiversity; ecosystem services and human well-being; environmental ethics and social justice; policy, governance and impact assessment; ecological restoration and landscaping; climate change and field and machine learning technologies. A wide range of competencies in these fields make our graduates competitive and sought-after candidates for roles in conservation and sustainability initiatives across the country.

With 22 students having successfully passed out of the two-year MSc in Environmental Studies (Conservation Practice), the course now has 42 students.



## STUDENT ANNUAL SEMINAR

The Academy organised the sixth annual Student Annual Seminar (SAS) from January 29 to 31, 2024, where 25 registered students presented work they completed in the previous calendar year and the work they intend to complete in the upcoming year.

The SAS is designed to provide students with a platform to present to faculty (especially outside their DACs) the progress they are making against their research objectives. Student presentations involved conceptual and/or methodological discussions and field, lab or archive data analysis.

## INTERSECTIONALITY TALK SERIES

ATREE Academy started a new monthly conversation series, 'The Intersectionality Series'. The intent is to initiate open and honest conversations on diversity, equity, inclusivity and accessibility.

Three talks including one webinar were held during the year as part of the Intersectionality Series, with speakers from varied disciplines and institutions.

*For more visit [www.atree.org/academy](http://www.atree.org/academy)*

## ENVIRONMENTAL EDUCATION (EE) PROGRAMME AT K-12 LEVEL

ATREE's EE portfolio envisages an India where children connect with their local environments and take informed actions to steward natural resources (Jal, Jungle, Jameen). Towards this, it fosters programmes aligned with the K-12 system for teachers and students with respect to environmental education.

One of our focus areas for 2023–2024 has been initiating a national-level, curated resource repository of contemporary environment education materials at the K-12 level. Our criteria for selecting these resources is that they are contextual, relevant, in vernacular languages and promote both understanding and action

(a key philosophy driving the National Education Policy 2020) for the conservation of natural resources in India. We now have a growing database of 400+ resources. These include field guidebooks, fiction, picture books, NCERT chapters, AV resources and more.

Another key focus area is thematic teachers' workshops to build the capacities of middle school educators to implement place-based education. The year 2023–24 saw two water-related environment education workshops and one on Land, Soil and Food in Bangalore, Karnataka.

## INTERNSHIP PROGRAMME

ATREE internships are aimed at diverse applicants – including undergraduates, postgraduates, mid-level professionals in environment and development, government employees, policymakers and educators. The Academy for Conservation and Sustainability Studies helps match intern interests with

requirements on current ATREE projects and initiatives. Applicants should be willing to commit to a minimum duration of 8 weeks to be considered for an ATREE internship.

**During the year, ATREE hosted 21 interns for different projects.**





# PUBLICATIONS



**61**  
Journal Articles



**7**  
Books



**85**  
Popular Articles



**233**  
Press Articles



**105**  
Events



**27**  
Talks

# TN KHOSHOO MEMORIAL AWARD AND LECTURE

For more visit [www.tnk.atree.org](http://www.tnk.atree.org)

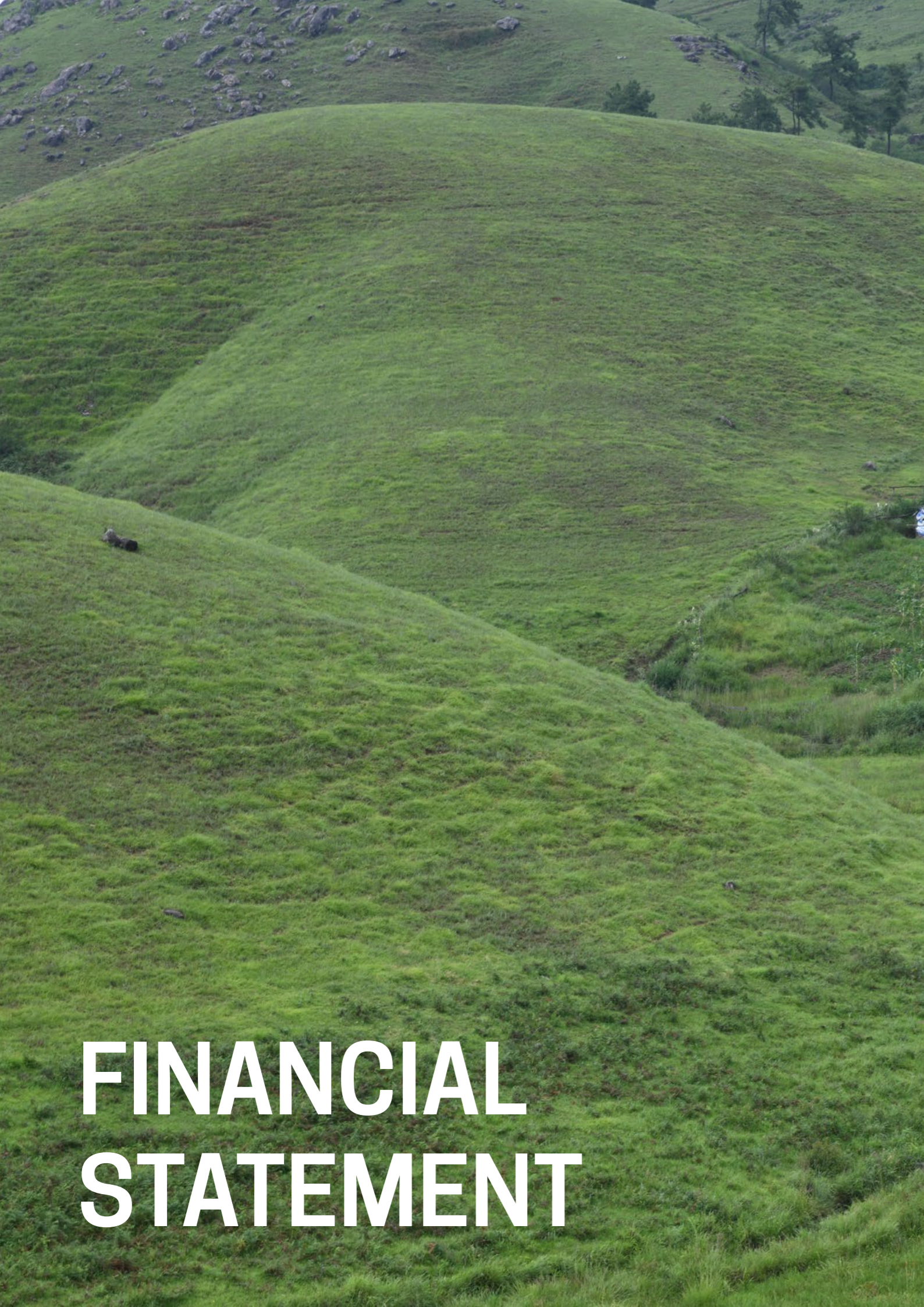
The 20th TN Khoshoo Memorial Award and Lecture was celebrated under the theme '**Economics of Biodiversity**'. Delivering the memorial lecture on the occasion, Indian British economist **Prof. Sir Partha Dasgupta** highlighted the complex relationship between social and natural systems and the poverty-environment nexus.

This year's **awardee, Deepak Malghan**, was chosen for his contributions to the field of ecological economics. He works on the proportional relationship between the economy and the ecosystem and has designed innovative methods to study urban spatial inequalities.

Keeping with the theme, the book, **Forgotten Trails: Foraging Wild Edibles** was launched at the event. The book examines the changing relationship between Adivasi communities and nature and the complex interplay of food, livelihoods and their changing environment.

The event culminated with a **performance by Tajdar Junaid, Satyaki Mandal and Rabi Mondal**. The trio delivered a captivating set of soulful Baul compositions, which resonated deeply with the audience and concluded the evening on an enchanting note.





# FINANCIAL STATEMENT

ASHOKA TRUST FOR RESEARCH IN ECOLOGY AND THE ENVIRONMENT (ATREE)  
Royal Enclave, Srirampura, Jakkur Post  
Bangalore - 560 064, India

CONSOLIDATED BALANCE SHEET AS AT 31 MARCH 2024

(Amount in INR)

LIABILITIES	Schedules	Amount	ASSETS	Schedules	Amount
Utilised Reserve		25,50,29,624	Fixed Assets		
			Project Assets		16,38,51,765
			Land and Building	5	8,76,90,011
			Other Assets		34,87,848
Corpus Fund	1	103,52,60,402	Corpus Investments	6	103,52,60,402
General Fund	2	2,85,66,435	Other Investments	7	7,84,06,322
Current Liabilities			Current Assets		
Project Fund	3	14,89,69,953	Deposits	8	56,65,398
Others	4	37,85,123	Loan and Advances	9	1,45,10,957
			Cash in Hand	10	47,722
			Cash at Bank	11	8,26,91,112
Grand Total		1,47,16,11,538	Grand Total		1,47,16,11,538

Place : Bangalore  
Date: 21.09.2024

Executive Director

Trustee

As per our Report of Even Date  
For G. ANANTHA & CO.,  
Chartered Accountants  
Firm Reg. No. 005160 S

Rani N.R.  
Partner  
M. No. 214318  
UDIN: 24214318BKBVFN9852



# ASHOKA TRUST FOR RESEARCH IN ECOLOGY AND THE ENVIRONMENT (ATREE)

Royal Enclave, Srirampura, Jakkur Post  
Bangalore -560 064, India

## CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 MARCH 2024

EXPENDITURE	Schedule	Amount	INCOME	Schedule	Amount
<b>Centre for Environment and Development</b>			Grants		25,48,54,825
Forests, Governance & Livelihoods	12	3,05,76,016	Interest on Endowment Interest		4,55,04,248
Water & Society	12	2,58,53,555	Other Income		2,44,918
			Donation		23,83,228
<b>Centre for Biodiversity and Conservation</b>			Interest on Savings bank		1,13,08,147
Ecosystem and Human Wellbeing	12	8,25,96,936			
Biodiversity Monitoring & Conservation Planning	12	8,00,21,687			
<b>Centre for Policy Design</b>	12	54,20,093			
<b>Academy for Conservation Science and Sustainability Studies</b>	12	70,84,712			
Salaries-Programme Support	12	1,13,52,726			
<b>Administration and Support Expenses</b>					
Salaries/Consultancy-Institutional Support	12	5,02,56,842			
Administrative Expenses	12	1,07,43,459			
Depreciation		23,70,532			
Surplus for the year transferred to General fund		80,18,808			
<b>Total</b>		<b>31,42,95,367</b>	<b>Total</b>		<b>31,42,95,367</b>

Place: Bangalore  
Date: 21.09.2024

*[Signature]*  
Executive Director

*[Signature]*  
Trustee

As per our Report of Even Date  
For G. ANANTHA & CO.,  
Chartered Accountants  
Firm Reg. No. 005160 S

*[Signature]*  
Rani N.R.  
Partner  
M. No. 214318  
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# ASHOKA TRUST FOR RESEARCH IN ECOLOGY AND THE ENVIRONMENT (ATREE)

Royal Enclave, Srirampura, Jakkur Post  
Bangalore -560 064, India

## CONSOLIDATED RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31 MARCH 2024

RECEIPTS	Schedule	Amount	PAYMENTS	Schedule	Amount
<b>Opening Balances</b>			Fixed Assets		1,56,87,655
Cash		55,325			
Bank		11,82,39,745	<b>Centre for Environment and Development</b>		
			Forests, Governance & Livelihoods	13	3,04,08,905
			Water & Society	13	2,56,55,523
Fixed Deposits		6,37,96,470			
<b>Receipts during the year</b>			<b>Ecosystem and Human Wellbeing</b>	13	8,51,40,159
Grants		21,57,27,818	Biodiversity Monitoring & Conservation Planning	13	7,79,99,987
Donation		26,27,749	<b>Centre for Policy Design</b>	13	54,20,093
Corpus/Endowments		2,86,96,805			
Interest on Endowments		6,40,56,848	<b>Academy for Conservation Science and Sustainability Studies</b>	13	70,84,712
Other Interest		1,00,74,144	Salaries-Programme Support	13	1,13,52,726
Other receipts		2,55,002	<b>Administration and Support expenses</b>		
			Salaries/Consultancy-Institutional Support	13	5,02,56,842
			Staff welfare	13	
			Administrative Expenses	13	1,29,76,628
			Net movement in Current Assets/Liabilities		(1,32,34,168)
			<b>Opening Balances</b>		
			Corpus/Endowment		
			<b>Closing Balance</b>		
			Corpus/Endowment		
			<b>Net Movement in Corpus/Endowment</b>		3,36,35,686
			<b>Closing Balances</b>		
			Cash		47,722
			Bank		8,26,91,112
			Other than Corpus/Endowment		7,84,06,322
<b>Total</b>		<b>50,35,29,904</b>	<b>Total</b>		<b>50,35,29,904</b>

Place: Bangalore  
Date: 21.09.2024

*[Signature]*  
Executive Director

*[Signature]*  
Trustee

As per our Report of Even Date  
for G. ANANTHA & CO.,  
Chartered Accountants  
Firm Reg No. 005160 S  
*[Signature]*  
Rani N.R.  
Partner  
M.No. 214318  
UDIN: 24214318BKFVN9852



# THANK YOU

On behalf of ATREE, I want to extend my heartfelt gratitude to each member of our dedicated team, our esteemed Centres, the Academy and all staff for their exceptional contributions throughout the fiscal year 2023–2024. Building upon the transformative achievements of the previous year, we continue to pioneer in conservation and sustainability. Our renewed strategic outlook and interdisciplinary approach have amplified our impact across diverse landscapes and research centres.

We are delighted that the inaugural batch of the MSc in Conservation Practice graduated earlier this year. Reflecting the programme’s strength and our dedication to nurturing environmental leaders, the alumni have secured esteemed positions in the field. The programme’s success strengthens our resolve to integrate interdisciplinary education with on-ground application.

Our progress and achievements would not have been possible without the generous support of our principal donors and partner organisations. Their steadfast commitment has empowered us to conduct innovative research and drive impactful initiatives in our programmatic areas. We are deeply grateful to our Board of Trustees for their strategic guidance, steering ATREE towards continued growth and excellence.

As we look ahead, we remain committed to advancing cutting-edge action research, forging meaningful partnerships and addressing critical conservation challenges with renewed vigour and innovation. Together, we are building a world-class institution dedicated to environmental conservation and sustainability.

**Vamsidhar Pothula**

*Chief Operating Officer & Registrar*



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