



nature  
conservation  
foundation

# ANNUAL REPORT

2025-26







# CONTENTS

|                                                  |     |
|--------------------------------------------------|-----|
| Vision and Mission                               | 3   |
| Connecting Science, Communities and Conservation | 5   |
| Eastern Himalaya                                 | 8   |
| Western Ghats                                    | 18  |
| High Altitude                                    | 30  |
| Oceans and Coasts                                | 40  |
| CEROS                                            | 48  |
| Endangered Birds                                 | 60  |
| Education & Public Engagement                    | 68  |
| Conservation Social Sciences                     | 80  |
| School for Science & Conservation                | 90  |
| Publications & Talks                             | 102 |
| The Story Continues                              | 116 |
| Select Articles and Media                        | 120 |





## VISION

A world in which nature and society flourish together

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## MISSION

To explore, understand, and conserve the natural world through research and responsible engagement with society









## CONNECTING SCIENCE, COMMUNITIES, AND CONSERVATION

I am happy to share our 2025-26 Annual Report which showcases another year of work at the Nature Conservation Foundation (NCF) across India's diverse ecosystems and reflects the remarkable diversity of NCF's work.

Our vision of a world in which nature and society flourish together continues to guide everything we do. We combine rigorous science with meaningful partnerships to understand ecological change, strengthen conservation, and support communities whose lives are closely intertwined with nature. Our work reminds us that conservation is not just about protecting species or ecosystems—it is equally about sustaining people-nature relationships. Over the past year, our programmes have continued to explore, understand, and strive to conserve India's extraordinary biodiversity through rigorous research and responsible engagement with society.

In the **Eastern Himalaya**, we strengthened hornbill conservation, expanded ecological restoration through diverse partnerships, supported locally-led conservation linked with livelihoods, and advanced research on tropical forests, plant-animal interactions, and climate change. In the **Western Ghats**, decades of ecological monitoring continued to inform restoration, biodiversity conservation, and human-wildlife coexistence, while new landscape-scale collaborations strengthened elephant conservation across Karnataka.

Our **High Altitude** Programme deepened research on snow leopard landscapes and worked with mountain communities to promote coexistence in the face of climate and livelihood changes. Along India's **Oceans & Coasts**, our teams advanced research on marine and coastal ecosystems to better understand the dynamic interactions between these ecosystems, climate change, and resident communities, while collaborating with coastal and island communities to address the growing challenges posed by climate change and development.

Through **CEROS**, we expanded research on endangered species and threatened ecosystems, from the Critically Endangered White-bellied Heron to the Satara gecko, while supporting ecological restoration in the northern Western Ghats. The **Endangered Birds** Programme continued long-term studies of threatened birds, strengthened citizen science initiatives, and preserved valuable natural history archives for future generations.



Beyond field research, we remained committed to building stronger connections between science and society. Our **Education & Public Engagement** Programme reached diverse audiences through communications, learning resources, and citizen science, inspiring greater appreciation of India's natural heritage. These initiatives inspire curiosity and deepen public engagement providing varied learning opportunities.

The **Conservation Social Sciences** Programme helps us understand the human dimensions of environmental change, ensuring that conservation is informed by diverse knowledge systems, lived experiences, and questions of equity and justice. The **School for Science and Conservation** continued to nurture the next generation of scientists and conservation leaders through interdisciplinary training, mentorship, and field-based learning.

Across these programmes, the common thread is of conservation through collaboration. Whether restoring vibrant ecosystems, monitoring endangered species, documenting ecological change, or supporting community-led conservation, our work depends on the trust, knowledge, and commitment of the many individuals and institutions with whom we collaborate.

As multiple crises continue to reshape our world, there is a need for credible science, inclusive conservation, and long-term commitment. At NCF, I think we remain optimistic because of our work on the ground. The achievements highlighted in this report reflect the dedication of our researchers, students, field teams, community partners, government agencies, and supporters, whose collective efforts bring hope for a better future.

We are deeply grateful to our field teams, collaborators, supporters, funding partners, government agencies, community leaders, and well-wishers whose contributions make this work possible. Their continued trust enables us to pursue innovative science and strengthen conservation practice and outcomes.

We hope this report offers a meaningful glimpse into the people, partnerships, and places that define NCF's work, and inspires continued collaboration in safeguarding India's remarkable natural heritage.



**Aparajita Datta**

Director, NCF & Senior Scientist, Eastern Himalaya Programme









## ABOUT THE PROGRAMME

The Eastern Himalaya Programme conducts ecological research and supports community-centric conservation in Arunachal Pradesh, north Bengal, and other parts of northeast India. Our research themes include hornbill and hoolock gibbon ecology, plant–animal interactions, tropical forest dynamics, tree phenology, ecological restoration, mammal population recovery, and climate change impacts on biodiversity. Conservation efforts focus on strengthening hornbill conservation through partnerships with communities, government, and partner organizations, alongside capacity building in ecological research, restoration, and nature education. We also support locally led conservation by promoting sustainable livelihoods through ecotourism initiatives that generate revenue and advance conservation goals.





## PROJECT IN FOCUS

# Climate, Forests and Hornbills: Insights from Long-Term Monitoring in Pakke Tiger Reserve

Since 1998, NCF researchers have been running one of South Asia's most comprehensive long-term ecological monitoring programmes in Pakke Tiger Reserve, Arunachal Pradesh. The programme integrates three datasets: 14 years of tree phenology monitoring (716 trees, 54 species), continuous weather recording since 2011, and 26 years of hornbill breeding data across three sympatric species: Great, Wreathed, and Oriental Pied Hornbills.

Tree phenology monitoring has established the seasonal framework of the forest. Leaf flush and flowering peak in the warm dry season (March to May), driven primarily by daylength and solar irradiance rather than rainfall. Most

species flower annually. Fruiting patterns differ by dispersal mode: bird-dispersed species peak in April, mammal-dispersed in October, and mechanically-dispersed in the dry season. These phenological windows, tightly constrained by narrow optimal climate ranges, form the resource base on which hornbill breeding depends.

Examining long-term trends in flowering and fruiting intensity from 2011 to 2024 reveals that reproductive phenology is sensitive to large-scale climate variability. Flowering intensity peaked during the two strongest El Niño events of the study period and was lowest during La Niña years. Fruiting responds to solar irradiance with a three-month lag.



Several species including *Baccaurea ramiflora* and *Magnolia hodgsonii* show declining fruiting trends over time, a matter of direct concern for large frugivores that depend on this.

Annual monitoring of hornbill nesting in these forests provides the biological response to these patterns. Across 26 years, nest occupancy and breeding success have remained stable despite approximately 1.2°C of regional warming, indicating that populations are currently buffered against gradual climate change. At the same time, pre-breeding temperature (January to February) explains 36 to 70% of interannual variance in nest entry timing, with warmer years triggering earlier breeding across all three species. Temperature sensitivity varies by body size: Wreathed Hornbill advances nest timing most strongly (15.9 days per degree Celsius) and Oriental Pied Hornbill least (4.8 days per degree Celsius), reflecting differences in breeding duration and thermal exposure during the monsoon.

Phenological plasticity appears to buffer reproductive outcomes under current variability. However, across tropical Asia temperatures are projected to increase by 1.0 to 2.1°C by mid-century under moderate emissions scenarios, with larger increases under high emissions and a substantial rise in extreme heat days. In Northeast India specifically, warming of 1.2 to 2°C projected by mid-century may push pre-monsoon temperatures beyond the 2.7°C interannual range within which current plasticity operates, potentially exceeding the buffering capacity of larger species whose extended breeding cycles expose cavity-bound females to peak monsoon heat.

Together, these long-term monitoring efforts form a rare integrated picture of how climate shapes tropical forest phenology from trees to frugivores, with direct implications for conservation under accelerating climate change.





#### PARTNER HIGHLIGHT

## Depository Trust & Clearing Corporation (DTCC)

DTCC Chennai has been supporting the Nature Education Programme (NEP) since 2020. The NEP, which formally started in 2017, has 11 registered schools from the adjoining areas of the Seijosa and Tippi Range of the Pakke Tiger Reserve in Arunachal Pradesh.

DTCC's support has ensured that we are able to conduct year-long activities for students of these eleven schools. The highlight of the programme is the nature camps conducted in the Pakke Tiger Reserve for which specific modules have been designed by Dr. Pranav Trivedi. Over the years, these nature camps have been conducted by Dr. Pranav Trivedi, Sangeetha Trivedi, and Saniya Chaplod along with our field collaborators Tajik Tachang, Khem Thapa, Prem Tok, Taring Tachang and in partnership with Pakke Tiger Reserve management. We have





also conducted three workshops for nature educators from the Northeast which has led to the development of a nature education manual titled 'Where the Forest Teaches'. The manual is a collection of nature education activities rooted in the forests, wildlife, and lived landscapes of Northeast India. The workshops and the development of the manual were also co-funded by the Whitley Fund for Nature.

In North Bengal, the support from DTCC has enabled the expansion of the nature education programme to Buxa Tiger Reserve, Latpanchar, Samsing and Chummong, strengthening our regional outreach and impact. Here, we have conducted three workshops for community members, teachers and Forest Department staff and programmes for school students.

The continued support and trust from DTCC over the last six years has played a pivotal role in strengthening our nature education work in both Arunachal Pradesh and North Bengal.

Since 2017, the NEP has reached out to over 3,000 students across both sites, along with 100 teachers and more than 100 nature educators from across Northeast India.





FIELD TALE

# Cursed or Protected? The Spirit Gibbons of Lower Dibang Valley

Eha Tacho

As I sit back, I remember an incident before I began my journey of research on hoolock gibbons. It was a cold December evening at my aunt and grandma's in Roing, Lower Dibang Valley, where I was staying at the time while studying in college. I went to the nearby forest to gather firewood for my grandma. It was already quite dark and as I was returning with a load of firewood, suddenly something came onto the bamboo next to me and started making sounds that I had never heard before. I turned around and saw a large white monkey-like figure staring down at me from the bamboo. I was so startled that I dashed out of the forest, leaving the

firewood behind that I had worked so hard to collect. On the walk back home, I was convinced that I had just seen a spirit and was terrified of what might happen to me.

We Idu Mishmis believe that spirits can harm us if we can see them. I recounted the encounter to my grandma who said, "You must have seen an amepa (hoolock gibbon). It is a taboo animal and we must avoid them, but they won't harm you as you did no harm to them". I breathed a sigh of relief and asked her more about them, but she didn't know much as there are no gibbons in the higher mountains of the Dibang Valley where she and I are from.

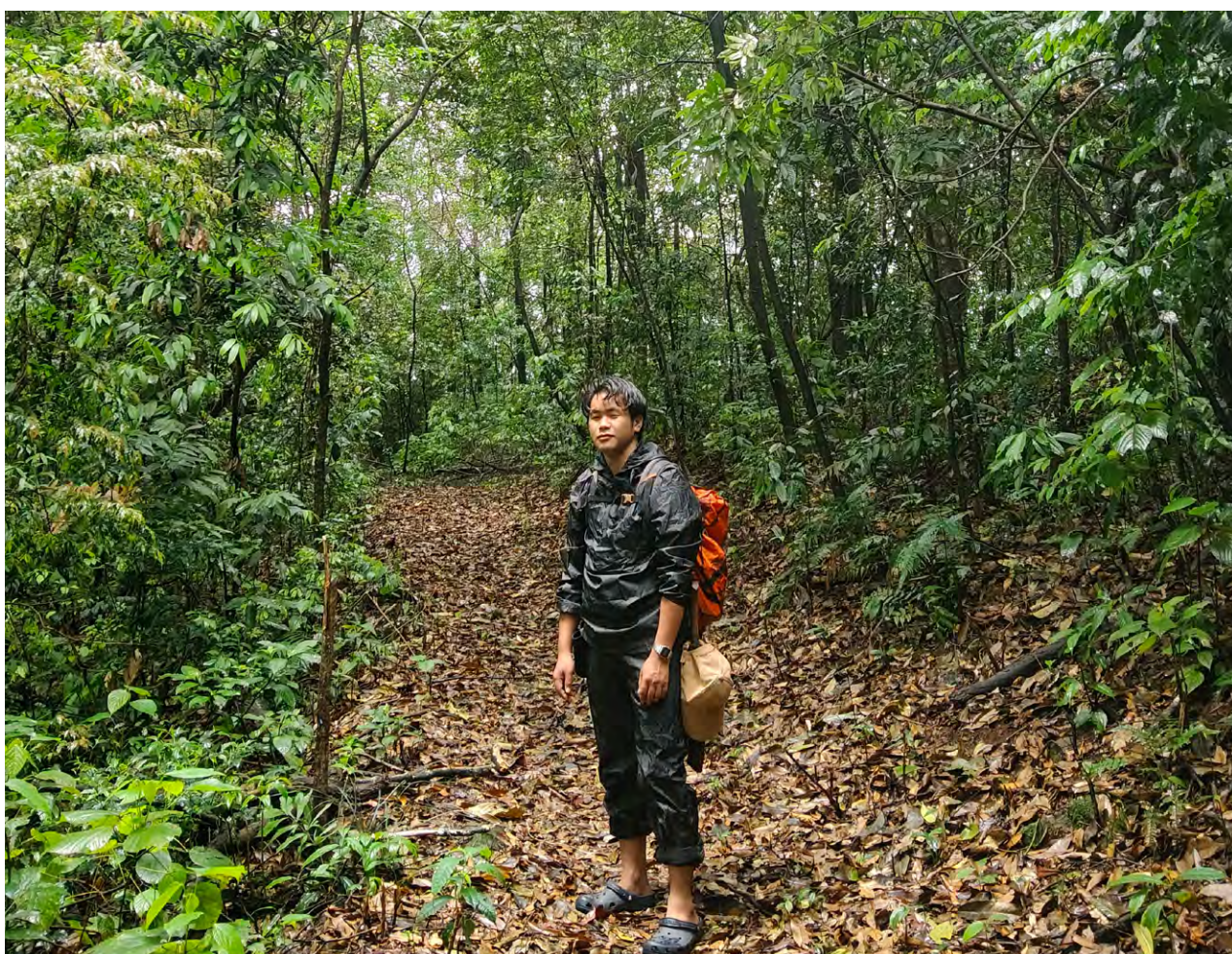


After that incident, I never went to that part of the forest again, afraid I might encounter them again. Even though I feared them at first, I was still curious to know why they were considered taboo in our culture. Also, why did they not flee when they saw me as wild animals generally do?

A few years later, as if the gibbons wrote my future that fateful evening, I joined Elopa-Etugu Community Eco-cultural Preserve (EECEP) Community Conserved Area (CCA) as a community researcher focusing on gibbons. As part of my first research, I interviewed community elders to understand Idu knowledge and relations with gibbons. I went from not knowing anything about gibbons to being able to

see our landscape, forest, and animals through the lens of the Idu worldview, all intertwined and interconnected by stories which make it part of our lived reality.

The elders said that the gibbons are just like us as they are our ancestral relatives in the Idu creation story. They were separated from us after they consumed intoxicating rice beer, which made them live in the trees, which is why we consider them taboo. We are not supposed to harm them in any way. They belonged to the forest spirits who live in big trees like the strangler fig, and allowed the gibbons to live there with them. The spirits also provided them with powerful protection, which is why we avoid them. The spirits give them





a certain home range within which to roam, and the connecting network of the canopy routes, their “daily path” has also been provided by the spirits. The gibbons shouldn’t leave their spirit-mandated home range or they risk falling from the trees. To me, these words opened a new avenue to understand gibbons and the forest through such knowledge encoded in beliefs and stories. It was fascinating how known gibbon behaviour was explained by our elders through a multispecies cultural lens.

I asked the elders, “why are gibbons declining?”. I received many reasons. Some said that they die from electrocution from open electric cable lines, predation by feral dogs when they come down, and the rampant destruction of the forest and the conversion of traditional agricultural fields into cash crops, such as tea and oil palm. One response was particularly intriguing. An elder said that on rare occasions when the gibbons call at midnight (they almost always call only in the mornings), the following day, you would find one less gibbon in the family, often an adult. This means that the spirit owner must have taken a gibbon away for ritual sacrifice, just like the Idu do with our livestock. I kept thinking about the spirits kidnapping gibbons, until I spoke to another elder who told me that he had seen clouded leopards preying on gibbons at night

when they are blinded by darkness. The gibbons cry loudly in fear. I love it when different perspectives, knowledge sources and experiences encounter each other; it answers even those questions I didn’t think to ask.

While the Idu are forbidden from killing gibbons, sometimes they are accidentally shot, mistaken for a macaque. People shared countless stories of those who had killed or harmed a gibbon were later met with the loss of a loved one. This curse of death may even pass on to several generations. These stories are shared widely in the community so that everyone understands clearly why they are a taboo species. I found it compelling how spirits enforce these taboos via the laws of multispecies existence, punishing those who break them.

My friends and other Idus my age often argue that such stories are useless in the modern world. I tell them that these are not just stories, they are a storehouse of knowledge that has been passed down through many generations. These stories make us who we are. These stories ensure that gibbons live amongst us, as another elder said, “if you don’t have gibbons, you won’t hear the morning alarm, nor will the stories be narrated again.”







## PROGRAMME TEAM

Aparajita Datta, Bibidishananda Basu, Budhiram Tai, Chaithra Gowda, Faizee Ali Khan, Jakop Brah, Kaja Keyang, Kamala Magar, Karishma Pradhan, Katolic Tomo, Khem Thapa, Late Narayan Magar, Nikje Tayem, Noopur Borawake, Peter Wage, Prem Tok, Rikam Gyadi, Ritobroto Chanda, Sana Huque, Shako Waru, Sikander Dewan, Sital Dako, Sirumai Khusiali Kri, Tajek Wage, Tajik Tachang, Taring Tachang, Turuk Brah, Vijay Tachang

Dibang team: Chiging Pilia, Kalen Dalong, Udan Rattan, Julee Jerang, Mopin Yaying, Kirina Melo, Eja Pulu, Iho Mitapo, Eha Tacho, Lahi Pulu, Azo Linggi, John Meme, Ram Linggi, Chamali Milli, Achili Mihi, Timai Miwu, Joho Tayu, Nina Meto, Regon Miri, Sipa Melo, Oyo Mihi, Chondo Mihi, Ngapi Mengo, Moniya Umbrey, Reema Shah, Sahil Nijhawan, Ishika Ramakrishna, Wuhimi Pulu

**Nature Mates Nature Club team:** Shilpita Mandal, Sitaram Mahato, Kezajacho Dukpa

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Ajay Dhankarghare, Amber Verkade-Jansen and Evert Verkade, Anam Tok, Apoorv

Grover, Arindam Ray, Arvind P. Datar, Avijit Sarkhel, Bado Sora, Balakrishnan Chandra Shekar, Bhavya B, Bikramjit Maitra, Eashwar Raghuraman, Gaurav S. Athreya, Geetanjali Dhar, Harshil Parmar, Hummingbird Digital Private Limited, Irfan Andreas Quader, Jayananda A Kotri, Joy Ghosh, M. Gopakumar, Maya Ramaswamy, Medha Darshani, Nihad Mohammed Basheer, Nisha Viswanathan, Peeyush Sekhsaria, Prabhuraj Siddappa, Ram Gopalakrishnan, Ramesh Adkoli, Revant Mehta, Rohan Randery, Rohit Varma, Sandeep Mehta, Sanmarg Foundation, Shama Buch, Shefali Bhatnagar, Shiva Ram Raj Guntreddi, Subbu Subramanya, Subhajit Chaudhuri, Sudip Datta, Supratim Deb, Tim O'Brien & Margaret Kinnaird, Uday Kumar, Udain Singh Tomar, Ulhas Anand, Utsava, Vana Safaris Pvt Ltd., Varsha Sathish Kumar, Vir Anirudh Pratap Deshmukh

**Zoos:** Boissiere Mervent Conservation (France), Fundacja Rozw Warsz Ogrodo Zool (Poland), Parc Zoologique D Amiens Metropole (France), Toronto Zoo (Canada), Virginia Zoo (USA).

## COLLABORATORS

Nature Mates Nature Club, Kolkata, Dr. Pranav Trivedi, Saniya Chaplod, Green Hub, Canopy Collective, Conservation Initiatives, Uday Kumar, Vivekananda Kendra Vidyalyaya Alumni Association Pakke Kessang District Unit (VKVAAPKD), Idu Mishmi Cultural and Literary Society (IMCLS)

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## ABOUT THE PROGRAMMES

NCF's Western Ghats Programmes focus on long-term research on ecosystem dynamics and climate, ecological restoration of forests and grasslands, human-wildlife coexistence, and nature education. Research examines tropical forest dynamics and tree phenology in relation to climate change. We also study wildlife populations including birds and amphibians, threatened species like hornbills, trees, and primates, and how better land use and production landscapes (such as coffee and tea plantations) can support conservation. In the Malenadu landscapes of Karnataka and in the Nilgiris and Anamalai Hills of the Tamil Nadu Western Ghats, we carry out ecological restoration of degraded forests and grasslands. Our Asian elephant programme continues to focus on the Valparai and Hassan regions. More recently, NCF, joined hands with four organisations and the Karnataka Forest Department to adopt a landscape approach to elephant conservation through scientific understanding and building positive relationships in the Kodagu-Hassan-Chikkamagaluru landscape.





## PROJECT IN FOCUS

# Tracking the Lives of Trees through Time

As part of our long-term research and restoration in the Anamalais, we are tracking the seasonal rhythms or phenophases of rainforest trees; i.e., the seasonal timing of new leaves, flowers, and fruit. Phenology, the science of reproductive rhythm, describes and probes these patterns and how they change across time, species, and ecosystems. The project, which began in 2017 and now continues with fortnightly visits, has monitored over 1,500 individually tagged trees of 167 species, along six rainforest trails on the Valparai Plateau. During each visit, observers record for each tree the extent of young leaves in flush, flower buds and open flowers, and unripe and ripe fruits. Tracking these scores over time reveals when and how often these events happen, how long they last, how

abundant the flowers and fruits are, and when they peak during the year. Phenological observations are not just about the trees. Forests are webs of mutualistic connections: insects pollinate and rely on flowers for nectar, birds and mammals consume fruit and disperse seeds to new locations. Understanding when these resources appear, and how reliably, is fundamental to understanding how the whole ecosystem functions. Most importantly, the seasonal rhythms of trees evolved in association with climate. Thus understanding how shifts in climate affect changes in seasonal phenological patterns and thereby affect synchrony with mutualistic organisms is crucial. Over the last year, we have been exploring two questions: how do phenological patterns of leafing, flowering, and fruiting respond to climate





variables like rainfall, temperature, light intensity, and daylength? And what drives phenological patterns of different tree species? Is it shared physical traits, such as seed size or tree growth form, or shared ancestry? Our findings reveal that leaf flushing and flowering follow distinct seasonal patterns, linked to drier periods and increasing light availability. Fruiting is spread more evenly across the year, particularly over the long wet season, and responds less strongly to climate. Across species, evolutionary relatedness rather than shared physical

traits seemed to matter more. The timing of ripe fruiting events appears to be strongly evolutionarily conserved across species, independent of current climate. This has important implications. Leaf and flower timing may flexibly track climate change, but the timing of fruiting may be less pliable, leaving certain tree lineages increasingly out of sync with climate and the animals that depend on them. We intend to continue this research and anticipate more insights, including at the level of each species, in the years ahead.





## PARTNER HIGHLIGHT

# The Narmada Estate

One of the joys of working in the Malenadu coffee landscape of the Western Ghats is that one frequently crosses paths with remarkable people from various walks of life who are passionate about nature and conservation. An even greater joy is when such encounters throw up exciting new ideas and evolve into long-term collaborations for nature conservation. Two years ago, we began such a collaboration with the Narmada Coffee Estate in the central Western Ghats.

The Narmada Estate, operated by Satyanarayana Plantations, is an organic shade coffee estate located near Chikmagalur in Karnataka. A chance meeting with its General Manager Sohan Shetty quickly revealed many common topics of interest and elements of a shared vision. We agreed that the region lacked adequate restoration nurseries







and decided to set one up at the Narmada Estate, to be operated by the estate with technical and partial funding support from NCF. Established in 2024 and operated by a highly skilled team of estate staff, the Narmada Estate Nursery already houses around 15,000 seedlings of 50 native rainforest tree species, and has a capacity of close to 100,000 seedlings. The nursery has started supplying restoration projects and coffee farmers interested in planting native shade trees, and as word spreads, demand is starting to grow. Running a restoration nursery is not easy, not least when there are full-fledged coffee operations to run alongside. Partners like Narmada Estate strengthen our hope and inspire us to do better.



# The Tank at Velonie

Ganesh Raghunathan



On the morning of 12 February 2026, just after 8:00 am, I received a call from the Forest Range Officer. An elephant had fallen into a water tank at Velonie Estate.

That was all I needed to hear.

The tank lies at the base of a steep hill within the Anamalai Tiger Reserve landscape—a region regularly used by wildlife such as gaur, sloth bear, leopard, sambar, and elephants. While human activity has expanded into these areas,

they remain active wildlife corridors. Incidents like this are ever-present.

By the time we reached the site, a crowd had gathered. People were trying to get a closer look, adding to the tension. Our first priority was to clear the area and reduce disturbance.

Then we saw them.

Two elephants stood beside the tank, visibly distressed. They dusted themselves





repeatedly, shifted their weight, and remained fixed at the edge.

They refused to leave.

The tank was built on a raised platform, making it impossible to see inside from ground level. We deployed a drone to assess the situation. The footage revealed a juvenile male calf standing in shoulder-deep water.

This was a critical detail. The water had likely cushioned the fall, reducing the risk of serious injury. However, the calf had been in the tank for several hours. We began draining the water, as prolonged exposure had already caused whitening around the tip of his trunk and feet.

We reconstructed the timeline through local accounts. Around 3:30 am, a herd of elephants had been seen near the estate colony. By 4:00 am, residents reported continuous trumpeting. It was likely during this period that the calf fell in.

An estate plumber, who had come to release water early in the morning, encountered the elephants unexpectedly. Startled, he fled down a steep slope of loose stones and erosion ridges, fell, and sustained a fracture. His report alerted the Forest Department.

Meanwhile, the two elephants—likely the mother and a young female—remained by the tank. At regular intervals, they reached down with their trunks to touch the calf. The behaviour was deliberate and consistent—

an attempt to comfort or reassure. Any rescue effort had to be carefully planned.

The only feasible approach to the tank was from the left side. A JCB was required, but access was difficult. Tea bushes had to be cleared, and the machine had to navigate a steep, rocky incline. Stones were manually moved to create a workable path.

Range Officer Suresh Kumar accompanied the JCB operator, guiding him through the approach. Range Officer Giritharan and I monitored the situation via drone, relaying real-time instructions.

As the JCB neared the tank, the elephants' behaviour intensified. They made repeated mock charges, kicking up dust and attempting to drive the machine away. The operator was visibly shaken. Maintaining composure at this stage was critical. Suresh Kumar remained calm and steady, ensuring the operator continued the approach safely.

We decided to break a section of the tank wall to create an exit route. Each strike against the structure triggered a response. At times, the adults charged forward; at others, the calf reached up toward the JCB bucket. Progress had to be paused repeatedly to avoid injury. The drone became essential. From above, we guided the ground team—when to proceed, when to halt, and how to position the machine safely.



The process was slow and physically demanding. Eventually, the tank wall began to give way. Broken debris was pushed into the tank, forming a gradual slope that could serve as an exit path.

In the final phase, the situation shifted. The two adult elephants moved to the opposite side of the tank. They remained alert, but stopped charging. For the first time, there was a pause in the tension.

As the final opening was cleared, the mother moved immediately. She positioned herself between the JCB and the calf and guided it toward the exit. The calf climbed steadily up the improvised ramp and out of the tank.

Within moments, the three elephants regrouped and began walking back toward the forest. There was no panic—only a quiet, controlled retreat into familiar habitat.

We remained at the site for some time after they disappeared. The damaged tank stood as a stark reminder of the risks posed by poorly designed infrastructure in wildlife landscapes. Following the incident, the estate management decided to decommission the tank and construct a safer alternative. This location had seen previous incidents, and this intervention was necessary.

This incident highlights the fragile interface between human infrastructure and wildlife movement. In shared landscapes, even routine structures can become hazards. Preventive, wildlife sensitive design and early response systems are essential to reducing such risks.

The rescue at Velonie was successful—but it underscores a broader need for proactive measures to ensure safer spaces for coexistence.





# Nocturnal Pollinators on Coffee Farms



The flowers of robusta coffee depend on insects for cross pollination, with conspicuous white coloration and strong fragrance suggesting that nocturnal insects such as moths are candidate pollinators. Yet, very little is known about the nocturnal insects inhabiting coffee farms and how much they contribute to pollinating coffee. This motivated our recent study on nocturnal insects and their role as pollinators on coffee farms in the Western Ghats.

We first asked how the nocturnal insect communities of coffee farms differ from rainforests. We set up light screens in both habitats, counted and identified insects landing on the screens, and found that nocturnal insects were less abundant on coffee farms than the rainforest, especially moths and beetles. We then conducted an experiment enclosing a few coffee flower

clusters within pollinator-excluding mesh nets in the day and others at night, and subsequently examining flowers under a microscope for diurnal and nocturnal pollination. The experiment confirmed that coffee is primarily pollinated by diurnal insects such as bees, while nocturnal insects appear to contribute very little to coffee pollination. Questions that follow are to what extent the low levels of nocturnal pollination are because nocturnal pollinator populations are reduced on coffee farms, and how coffee can be managed differently to make it more nocturnal insect friendly.

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## PROGRAMME TEAM

### **Anamalais and ERA-India:** T. R.

Shankar Raman, Divya Mudappa, K. Srinivasan, Gopana Nanda Kumar, K. B. Sonia, Aashra Hannah Iype, Sneha R. Sakthivel, G. Sujay, M. Ahirbudhnyan, K. Vasila, A. P. Madhavan, Aruna Skaria Gamuz, P. Pavithra, Arjun Singh Kindra, Mandeep Singh, Vaishnavi Suresh, Marishia Rodrigues, G. Moorthi, T. Sundarraaj, R. Rajesh, Arun, Siva Dass, Stella, Muthulakshmi, Sumathi Prakash, Dharmaraj, Kannan, and Navin Radhakrishnan.

### **Central Western Ghats:** Anand M.

Osuri, Vijay Kumar S., Abhirami C., Vijay Karthick, Vedika Dutta, Swathi R., Vidwath S. M., Abhishaek G., Aparna Pradeep, Aparna Krishnan, Kshama Bhat, Gowtham K., Manu M., Kiran, Dushyantha, Soujanya P., Priya M., Mintu, Manisha.

### **Wildlife Coexistence (Anamalais and Hassan):** M. Ananda Kumar,

Ganesh Raghunathan, Aditya Ghoshal, Deepak Bhat Dundi, Nisar Ahamad, Satish Kumar, Pradeep Kumar, Prakash, Nandini, Chitra Arumugham, Jai Shankar, Gopinath, Rajkumar, Velumurugan

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## COLLABORATORS

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## ABOUT THE PROGRAMME

We work across the high mountain landscapes of Himachal Pradesh, Ladakh, Jammu & Kashmir and Uttarakhand, where people and wildlife have shared space for generations. We study these fragile snow leopard landscapes at a time when climate change, shifting livelihoods, and growing pressures on land are reshaping life in the Himalaya. By combining long-term research with community-led conservation and outreach, we work to reduce conflict, strengthen coexistence, and support local stewardship. Along the way, we aim to build conservation approaches that are rooted in science, trust, and the lived realities of mountain communities.





## PROJECT IN FOCUS

# Strengthening Community-Led Conservation in the Western Himalaya

The high-altitude landscapes of the Western Himalaya are among the most important habitats for snow leopard and several other mountain wildlife species. These landscapes are also home to agro-pastoral communities whose livelihoods depend heavily on livestock rearing. In such regions, livestock depredation by predators such as snow leopards and wolves can result in significant economic loss and emotional stress for local families. Over the years, our conservation approach has focused on enabling

coexistence through community-led and locally-grounded solutions.

A major milestone this year was the completion of predator-proofing of corrals across the entire Langza-Hikkim-Komic belt in Spiti Valley, Himachal Pradesh. Since 2021, in partnership with local communities, we have worked to strengthen livestock corrals to reduce livestock depredation. The Langza-Hikkim-Komic region historically supported one of the highest densities of



small-bodied livestock in the valley and remained highly vulnerable to predator attacks. By 2025, the initiative resulted in the construction of 62 individual corrals and 2 community corrals, collectively safeguarding more than 614 livestock. With every corral in the belt now reinforced, the region stands as an example of how long-term community participation and local ownership can significantly reduce human-wildlife conflict.

This year also marked the beginning of our conservation engagement in Jammu and Kashmir, expanding our work into yet another critical snow leopard landscape in the Western Himalaya. Following a detailed assessment of human-wildlife interactions across four administrative blocks in Kishtwar district, we initiated a community-led conservation programme

focused on reducing conflict through a local conservation champions network and locally adapted interventions.

As part of the pilot phase, sensor-based light deterrent systems were installed across five villages in the Paddar region—Dangaile, Hango, Haloti, Lossaini, and Gorna; four villages in Dacchan Block—Kibber, Prangas, Surnoo, and Gamb Suid; and one village in Marwah block—Anjer. Alongside this, a community corral site was identified in Haloti village, where construction is currently being planned to reduce the risk of livestock depredation.

We also initiated outreach across villages in the Dacchan and Marwah blocks, laying the foundation for long-term participatory conservation efforts that support coexistence between local communities and wildlife.







## PARTNER HIGHLIGHT

# International Institute of Environment and Development

Over the past two years, Nature Conservation Foundation has partnered with International Institute for Environment and Development (IIED) to explore how rights-based approaches can strengthen responses to human-wildlife conflict.

Supported through the Darwin Innovation Fund (2024–26), the collaboration focused on understanding how conflicts with wildlife affect not only livelihoods and well-being, but also the rights of local communities.

Led by Dr. Ruth Pinto at IIED, the partnership helped develop and test a participatory tool that maps socio-economic impacts faced by communities to human rights concerns, while facilitating dialogue between communities, government agencies, and other stakeholders to identify locally-relevant conflict mitigation actions.

The tool was tested across two long-term field sites in India: Korzok in Ladakh with the Changpa pastoralist community, and Lahaul in Himachal Pradesh with apple and lettuce farming communities, alongside a third site in Indonesia. The pilot generated important insights into community participation in decision-making, government-community relations, and locally prioritised interventions such as sensor-based light and sound deterrent systems and compensation policy amendments. These learnings are now informing the beta version of the tool manual. A broader international guidance framework for equitable and rights-based conservation practice was also developed.



# Keeping Livestock Safe



In the high-altitude landscapes of the Western Himalaya, conservation solutions are most effective when technology is adapted to local realities. Across snow leopard habitats in Himachal Pradesh and Ladakh, we have been working closely with communities to co-design interventions that reduce livestock losses while supporting coexistence with large carnivores.

One of the key initiatives has been the reinforcement of livestock corrals. In snow leopard landscapes, poorly secured corrals often allow predators

to enter at night, leading to surplus killing and significant financial losses for herding families. Rather than applying a single design across regions, corral reinforcements were tailored to local architecture, terrain, and community preferences. In Darcha, Lahaul, interventions involved installing metal grills on open windows and replacing damaged wooden doors. In Spiti, where many corrals remain open from the top for ventilation, lightweight meshed roofing structures were added. In parts of Spiti and Kinnaur, corrals built along slopes were modified to maintain sunlight



access for livestock while improving predator security.

In Ladakh, we worked with the Changpa communities to co-design and co-implement corral reinforcement, tailored to their challenges and needs. Given the different seasons and migration of herders, we helped in constructing two types of corrals: rectangular summer corrals and tent-shaped winter corrals. The tent-shaped design serves a dual purpose—it not only protects livestock from predators but also allows sunlight and sufficient wind circulation, which promotes the growth of Pashmina wool, a valuable local resource. Moreover, the co-designed tent-shaped corrals helped reduce snow accumulation during

winters, thereby preventing livestock loss due to hypothermia.

Alongside physical infrastructure, in Jammu & Kashmir, we also piloted ANIDERS, a technology-assisted, solar-powered light deterrent inspired by traditional nighttime guarding practices. The sensor-based system automatically activates at dusk as ambient light levels decline and emits flashing lights from all four sides at varying patterns and intervals, thereby mimicking human presence and activity. By creating the perception of continuous vigilance, it helps deter wildlife from entering agricultural fields surrounding the pilot villages and reduces the risk of crop damage.







## FIELD TALE

# Beyond the Field

Kesang Chunit

This is a story of my journey beyond the field, a journey that did not begin in classrooms or institutions, but in the mountains, pastures, observing animals, and everyday life in the snow leopard landscape.

I am from Kibber village in Spiti and grew up as an agro-pastoralist. Much of my childhood was spent herding livestock, often not just for my family but for the entire village. Because of this, I could not continue formal education for long. But even then, I was curious and wanted to learn how things worked, why wildlife behaved the way it did, and what researchers were doing in our landscapes. That curiosity eventually became the foundation of my journey.

My association with NCF began with assisting with camera trapping for snow

leopards and ungulate surveys in Spiti. At the time, I was simply excited to spend time outdoors and learn something new. Later, I worked with Dr. Chandrima Home on free-ranging dogs, where I learned more about wildlife monitoring and data collection. Alongside this, I slowly taught myself how to use computers, a skill that felt just as unfamiliar to me as scientific equipment once had.

Over time, one opportunity led to another. I learnt bird and plant identification, and contributed to projects involving dog collaring and other wildlife research projects. These experiences took me beyond Spiti into snow leopard landscapes across Ladakh, Jammu & Kashmir, and Nepal. Every landscape taught me something unique. Ladakh felt very similar to home, while in



Jammu & Kashmir, I learnt the importance of always carrying my Aadhaar card because defence personnel regularly checked our identification. Nepal showed me something different: that even without speaking the same language, people living in mountain landscapes often share similar values, lifestyles, and ways of relating to nature.

Somewhere during these journeys, I developed a quiet fondness for wildlife, including animals I was once afraid of. Photography became a way to connect with these experiences, and it remains one of my favourite hobbies.

As the years passed, my role gradually shifted from supporting research to leading conservation initiatives in Spiti. That transition came with its own lessons. Research projects usually follow fixed timelines and methods, but conservation work depends on people, their priorities, trust, and willingness to collaborate. In the beginning, I stayed in the background and relied heavily on my peers. Slowly, with encouragement, I learnt how to work with communities, government departments, and different stakeholders. Today, I lead multiple conservation initiatives in Spiti through collaboration across landscapes.

A big learning happened last year, and it did not happen in the field. I applied for the Green Hub Western Himalaya Conservation Grant for a project focused on managing free-ranging dog populations in Spiti. Until then, fundraising was something I had only heard colleagues discuss in meetings. Suddenly, I found myself drafting proposals, preparing budgets, pitching ideas,

communicating with donors, and learning how reporting systems worked. It felt like entering a completely different world.

The hardest part for me was public speaking. Ironically, I had no trouble speaking with villagers, herders, or government officials, but the thought of presenting my work in front of a jury made me extremely nervous. Before the presentation, I kept calling my peers and telling them I wanted to back out. I felt this was not something I could do. But they never stopped encouraging me.

Then, just before my turn to present, one thought came into my head, “Ab jo hoga hone do.” Whatever happens, happens.

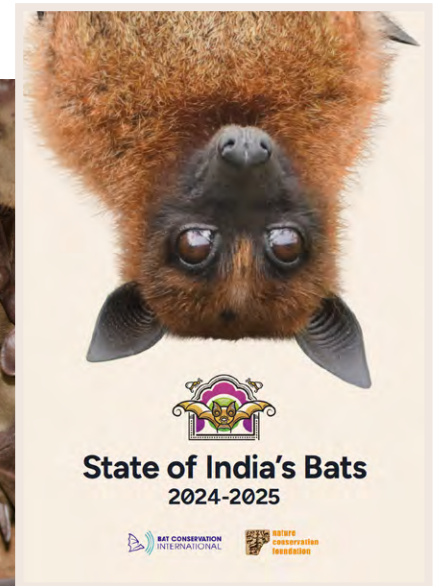
After that, I suddenly felt calm. I spoke about my work, answered questions, and even enjoyed the experience. When I learnt that I had received the grant, it felt like a completely new chapter had opened for me.

Looking back, I realise this journey wasn't just about learning research or conservation. It was about learning to step beyond boundaries I had created for myself. The same curiosity that once pushed me to learn camera trapping and wildlife surveys helped me navigate proposals, donor communication, and budgeting.

For me, this field tale is about growth, about staying open to learning, adapting to unfamiliar roles, and discovering ways to contribute to conservation while remaining deeply connected to the landscapes and people that shaped my journey.



# State of India's Bats: The Definitive Roadmap for Bat Research & Conservation in India



Spread across 3.28 million square kilometres, India is home to diverse habitats and 135 species of bats. Sadly, the country has fewer than 50 dedicated bat researchers. In an age of increasing threats coupled with the lack of trained personnel, there is a growing need to prioritise topics for the research and conservation of Indian bats.

The State of India's Bats (2024-2025) report emerged from an unwavering partnership between Nature Conservation Foundation (NCF) and Bat Conservation International (BCI) and addresses this pressing need. This 208-page report compiled by 34 researchers from 27 institutions is, by far, the most comprehensive guide on the current status, threats, and future priorities

in the field of research and conservation of bats in our country. Some of the key recommendations of the report are to form a network of government bodies and NGOs for bat conservation, and for working with the Archaeological Survey of India to conserve bats in historical monuments across the country.

In early 2026, the report was formally launched at WWF-India, New Delhi by Mr Saumitra Dasgupta, Mr Ravi Singh, Mr S.S. Rasaily, and Mr Abhilash Khandekar, ushering in a new era for Indian bat conservation. A digital copy of the report is available for free download at: [www.batcon.org/soibats](http://www.batcon.org/soibats)



## PROGRAMME TEAM

Kulbhushansingh Suryawanshi, Vindhya Jyoti, Deepshikha Sharma, Munib Khanyari, Karma Sonam, Srijan Dangwal, Sonam Palmo, Shweta Shivakumar, Ajay Bijoor, Deepti Bajaj, Tanzin Thinley, Kalzang Gurmet, Rinchen Tobge, Tanzin Chhewang, Tanzin Thuktan, Tandup Chhering, Kesang Chunit, Bodh Namgial, Rajat Rao, Akshata M, Ateen Das, Charu Sharma, Rohit Chakravarty, Priya Hazra, Muhammad Maaz, Sreejith Jayakumar, Rashmi Singh Rana, Herman Ramesh, Manjot Kaur, Divyajyoti Ganguly, Monika C, Shahid Hameed, Padma Gyatso, Nawang Yangchan, Ranjana Pal, Mukta Mande

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## COLLABORATORS

World Wide Fund for Nature-India (in Uttarakhand)

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Wildlife Department, Jammu and Kashmir  
Wildlife Department, Ladakh  
Uttarakhand Forest Department







## ABOUT THE PROGRAMME

India's coasts and islands represent a diverse set of geographies and ecological contexts, home to more than 60% of India's population that relies on the rich resources the seas provide. Our coasts and oceans are also geographies of increasing uncertainties from climate change, developmental transformation and overexploitation. Our team works to understand, document, manage and celebrate this dynamic mosaic of ecosystems with fundamental research on species, ecosystems and societies, and with a series of collaborative engagements with island and coastal communities.





## PROJECT IN FOCUS

# Knowledge Sharing in the Lakshadweep

Our efforts to engage with the islanders of Lakshadweep have mainly been through a short-film series called the “Ways of Life” and comic books called “Melem Keezhem” that highlight cultural, historical and ecological knowledge. During the 2025-2026 season, we planned a travelling festival called Khayal that had its grand conclusion in Kavaratti. The festival was conducted on the beach-side Panchayat stage, with more than 900 of Kavaratti’s 13,000-strong population in attendance for both the exhibition and stage event.

Khayal was designed as a space for knowledge sharing. Nature Conservation Foundation has been working in Lakshadweep for the last 30 years, and Khayal was our way of giving back to the

community from who we have learnt so much. Khayal aims to be the start of a meaningful conversation around island nature between islanders and researchers. The event on the 24<sup>th</sup> March 2026 was the culmination of several months of the festival travelling across the archipelago. Our team has visited 8 of the 10 inhabited islands in the Lakshadweep Archipelago. Altogether, we estimate that more than 4,230 people participated in these events across all islands, which represents more than 6% of Lakshadweep’s total population.

In addition, in every island, we had independent screenings with schools and women’s groups, with participation from 939 children and women altogether. We also interacted with all major administrative





departments during our travelling festival, including departments of environment and forest, rural development, panchayat, block development, science and technology, and fisheries.

The main focus of the events was screening documentaries from NCF's Ways of Life series: Choorā — which highlights the islanders' sustainable tuna fishing traditions and their intimate understanding of the sea, Onnaam Fira — which focuses on how life on the islands transforms during the holy month of Ramadan, highlighting the harmony between faith, nature, and community, and Billam — which documents Lakshadweep's intertwined relationship with the lagoon in an age of uncertainty and change. Together, these films offer an honest and heartfelt glimpse into Lakshadweep's heritage, resilience and connection to the ocean.

The event also included an exhibition that directly communicates the research that NCF has been doing in Lakshadweep. The principal themes explored in the exhibition include:

- Atoll formation in Lakshadweep
- The origin and maintenance of freshwater on atoll systems
- Climate change and island habitability
- Seagrass and turtle interactions
- Island biodiversity

We also distributed 500 copies of our comic book “Melem Keezhem” to different stakeholders of the community.

“Melem Keezhem” is already emerging as a vital educational resource to explain the complex ecology of our islands, where there is no place-based education. By illustrating the delicate balance between the land, “above”, and the groundwater and reef, “below”, these stories provide critical lessons on island sustainability. Putting these materials directly into the hands of students and teachers will allow them to continue learning about their environment long after the festival concludes.

The festival was conducted with the help and support of the Lakshadweep Department of Environment, Forests and Climate Change. In addition, the exhibition in Kavaratti merged with Azim Premji University's Coasts and Oceans of Life festival, which significantly enhanced our efforts.





## TECHNOLOGY MEETS ECOLOGY

# Decoding Dugong Behaviour through a Universe of Sounds

Studying marine mammals often means trying to understand a world beneath the ocean surface that remains unseen. For dugongs, one of India's most threatened marine mammals, this has been a challenge for conservation. In the Andaman Islands, where their population is small, scattered, and rarely encountered visually, understanding their distribution and habitat use remains a hurdle when developing effective conservation interventions.

However, one thing we do know about dugongs is that they produce sounds,

most likely to communicate. Bioacoustics is helping us use their vocalisations to better understand their behaviour and presence. Through the deployment of underwater acoustic recorders, or 'hydrophones', in seagrass meadows across the Andaman Islands, we employ Passive Acoustic Monitoring (PAM) to collect recordings of the underwater system using dugong sounds as indicators of their presence.

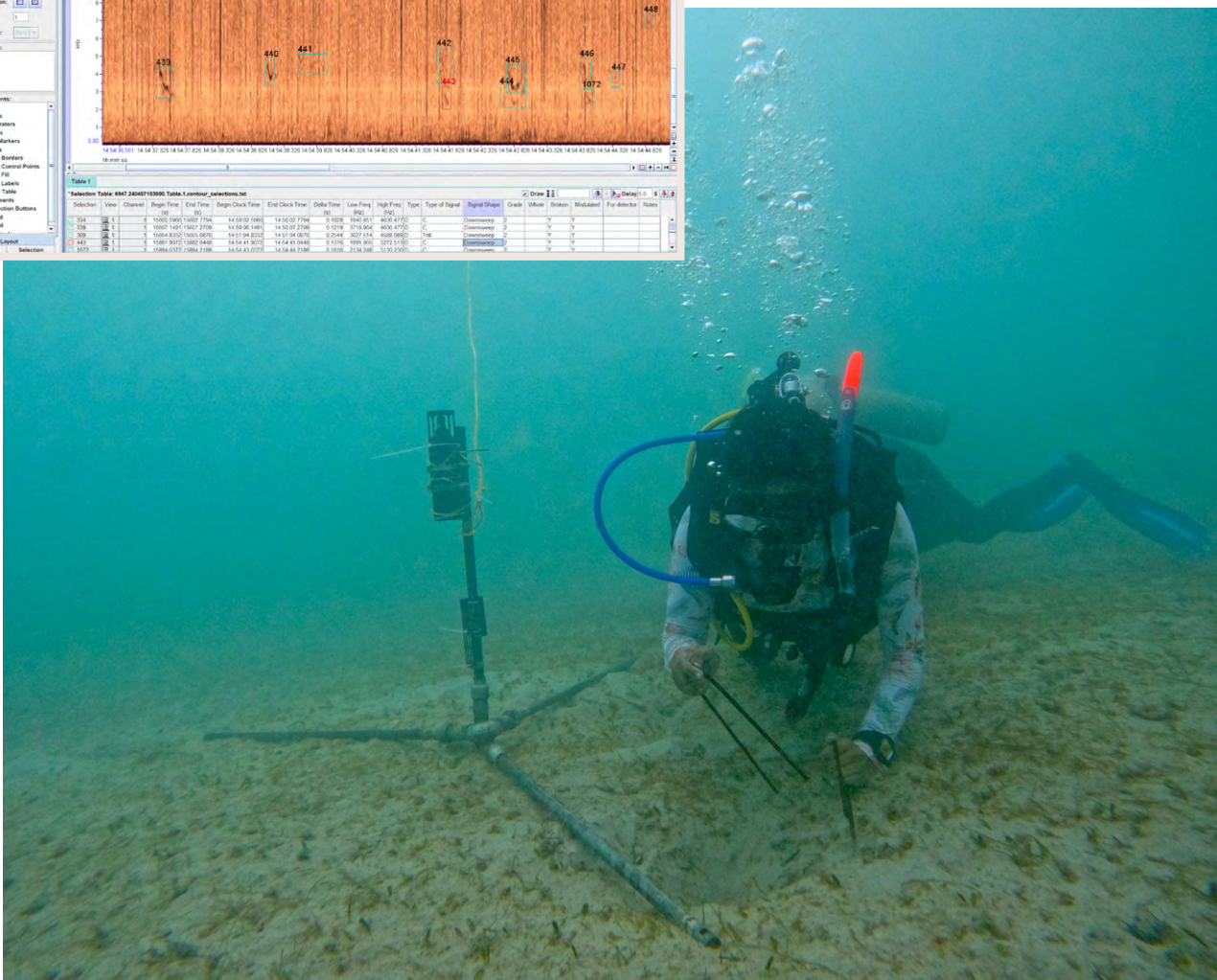
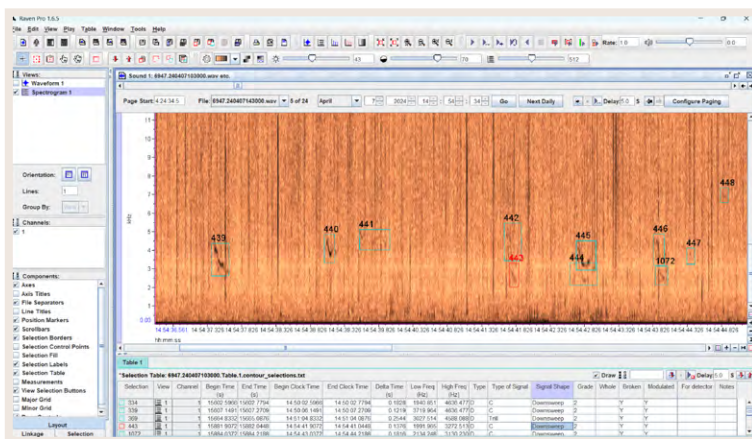
Passive acoustic monitoring has provided an opportunity to study dugongs with minimal disturbance, which is extremely



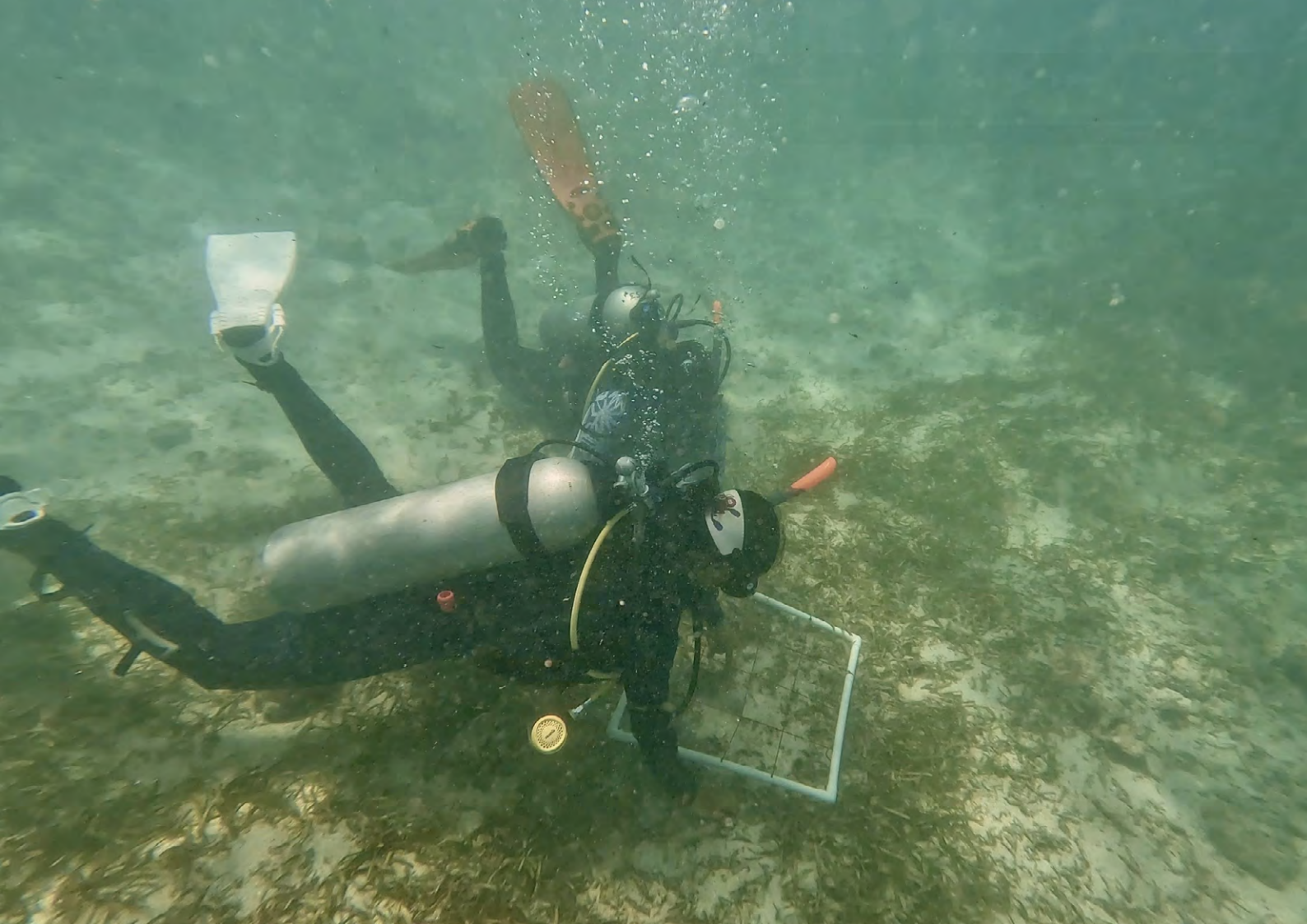
difficult through traditional visual surveys alone, allowing us to collect 7,000+ confirmed dugong calls since 2023.

Acoustic data can not only help detect when and where dugongs are present, but also aid in answering questions like ‘how do their activity patterns change with environmental conditions?’, and ‘how might human disturbance influence their habitat use?’. By combining acoustic detections with various environmental factors, we can build a comprehensive understanding of dugong habitat use.

Furthermore, the large volumes of data generated by these recordings have created opportunities for further innovation where we have been working on developing machine learning models to analyse recordings to automatically detect dugong vocalisations more efficiently. These approaches expand our capacity for longer-term monitoring of the vulnerable population of these animals in the islands, while also providing practical frameworks to encourage wider applications of PAM in dugong research and conservation.







#### PARTNER HIGHLIGHT

## Ministry of Environment, Forest and Climate Change

Ministry of Environment, Forest and Climate Change (MoEFCC) announced the Indian Long-Term Ecological Observatories (LTEO) programme in December 2015 at the climate change summit at Paris. The goal of this programme was to understand the impacts of climate change on several ecosystems across India. Through this programme, the MoEFCC has been funding a long-term seagrass monitoring programme in the Andaman and Nicobar archipelago. We have been monitoring three inter-tidal multi-species seagrass meadows in the South Andaman district since 2021.



# How Reef Fishing Shapes Fish Communities in the Lakshadweep



Tropical reef fisheries are often small-scale and informally regulated; however, with market expansion, pressures on reef resources increase. Fishery management is challenging in data-poor fisheries where the history of the fishery is not well understood, and in the absence of spatially-explicit records of extraction, ecological impacts are difficult to quantify. The people of the Lakshadweep archipelago have historically fished reef fish for subsistence. Commercial fishing began in the 1960s, targeting pelagic skipjack tuna. However, since 2013-14, Lakshadweep has seen the growth of a commercial reef fishery,

driven by demand from mainland and export markets. We used a combination of interview surveys with local fishers and in-water surveys of the reef in order to understand how reef fishing has shaped reef fish communities in the Lakshadweep.

We found that while no explicit rules determine access to fishing grounds, subsistence reef fishing has historically been limited to reefs closest to home, which has led to a depletion of target fish species and an overall restructuring of fish communities at these sites. For the recently emerged commercial fishery,

fishers prefer distant, uninhabited atolls that possess high biomass of commercially valued fish such as groupers, snappers, emperors and jacks. The use of distant reefs for commercial fishing can thus be termed as a 'spatial fix' where problems of resource scarcity are solved by restructuring 'space', or in this case, moving from old, depleted fishing grounds (inhabited islands) to new fishing grounds (uninhabited islands). Our findings highlight the nuances that underlie how different fishers navigate shared resources and the need for careful characterisation of fisheries and their ecological impact.

Nair, R., Jaishankar, S., Dey, M., Pinto, W., Bhai, B. R., Alcoverro, T., & Arthur, R. (2026). Fishing patterns shaped by history, place, and access leave lasting ecological signatures on coral reef fish assemblages. *Biological Conservation*, 314, 111675.

## PROGRAMME TEAM

Aadya Tammaiah, Al Badush Gafoor, Amisha Nakhwa, Arifa Begum, Elrika D'Souza, Evan Nazareth, Harshul Thareja, Irfan Mubarak, Kavya Ramesh, Mayukh Dey, Mayuresh Gangal, Nicole Pinto, Poolmani Kongari, Radhika Nair, Rajeswari Bhai B T, Rohan Arthur, Safair Ali Jereesh, Shweta Kullu, Siddhi Jaishankar, Wenzel Pinto, Suri Venkatachalam, Teresa Alcoverro

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## COLLABORATORS

Anand Ramakrishnan, Jessica Luis, Malvika Tewari, Navyaa Shah, Preethika Asokan, Rucha Bhawe, Shripad Goenka, Wildlife Conservation Society - India, World Wide Fund For Nature - India







#### ABOUT THE PROGRAMME

CEROS advances conservation science for endangered species and threatened ecosystems through research that bridges ecology, evolution, and restoration. We work on lesser-known species such as the Critically Endangered White-bellied Heron and Satara gecko across diverse landscapes, including wet evergreen forests, Himalayan riverine ecosystems, and lateritic plateaus. By combining field studies, molecular tools, and ecological modelling, we examine how species and communities respond to historical and contemporary environmental change. Our research directly informs conservation planning while supporting the restoration of degraded forests in partnership with local communities in the northern Western Ghats.



## PROJECT IN FOCUS

# Uncovering the Future of the Critically Endangered Satara Gecko

Millions of years ago, volcanic eruptions shaped the Deccan Traps, giving rise to the lateritic plateaus of the northern Western Ghats. These remarkable landscapes experience intense monsoon rains exceeding 5,000 mm each year, followed by months of scorching heat. Although they appear barren for much of the year, these plateaus harbour a wealth of unique biodiversity, a lot of which is endemic to the region. Yet they remain among India's least-studied and most threatened ecosystems.

One of the plateau's most remarkable inhabitants is the Critically Endangered

Satara gecko, a ground-dwelling lizard scientifically described only in 2008. Despite its conservation importance, very little was known about its ecology, population status, and distribution. Over the past year, PhD student Vaishnavi Apte has led the first comprehensive ecological study of this elusive species on the 45 km<sup>2</sup> Chalkewadi Plateau, where scientists first described the gecko. Working through torrential monsoon rains and harsh summer conditions, she conducted extensive plot-based and time-constrained surveys to estimate population size, identify habitat requirements, and map the species' distribution.





The findings paint a sobering picture. The Satara gecko occurs at an estimated density of only about 60 individuals per km<sup>2</sup> and is restricted to the northern part of the plateau. Its occurrence is strongly influenced by elevation and season, suggesting that even small changes in temperature and rainfall could significantly affect its survival. These results indicate that only a few thousand individuals may remain in Chalkewadi.

Vaishnavi surveyed more than 25 lateritic plateaus north and south of the Chalkewadi plateau. The gecko was found on only three plateaus, confirming

its extremely restricted and fragmented distribution.

These discoveries provide the first robust scientific foundation for conserving one of India's most threatened reptiles. Building on this work, our next phase will use landscape genomics to understand connectivity between isolated populations and assess the species' ability to adapt to a changing climate. By combining field ecology with genomic tools, we aim to generate the evidence needed to guide conservation planning for this unique species and the extraordinary ecosystems it calls home.





## PARTNER HIGHLIGHT

# Enabling Innovation in Hornbill Conservation

We are grateful for the generous support of Mr. Uday Kumar, who donated four artificial hornbill nest boxes and four nest box camera systems to strengthen our long-term hornbill research programme. The nest boxes have been installed at field sites in Maharashtra, where the cameras allow us to monitor breeding activity with minimal disturbance. This technology provides a rare opportunity to observe nesting hornbills, breeding success, and chick development in unprecedented detail while generating long-term data that would be difficult to collect through conventional field observations.

NCF's long-term research indicates that hornbills may be particularly vulnerable to climate change. By combining artificial nest boxes with automated monitoring, we aim to understand how changing weather patterns influence breeding success and reproductive timing across different landscapes.

We are using computer vision to automate annotation of the data collected using CCTV cameras. This initiative is being carried out in collaboration with Birla Institute of Technology and Science, Pilani – Hyderabad Campus and Sartaj Ghuman.





## FIELD TALE

# Gecko Trails and Gumboot Tales

Muskan Shrivastava

I boarded a bus to Satara with a little chaos and that fluttering, unknown feeling. I was going there to volunteer for the Satara gecko project. The excitement was real, but so was the fear. What was I even getting into? Looking back now, I smile. Because I did get into something thrilling, challenging, terrifying, and yes, deeply fulfilling. I can replay all of it frame by frame.

From Satara, we (I, Vaishnavi, and another volunteer, Dev) headed to

Chalkewadi, a high-elevation plateau landscape—the only place in the world where the Satara gecko is found. On the way, one could see how the monsoon had cast its full spell. The landscape was dressed in fifty shades of green, with little waterfalls flowing through the gaps, searching their way down the mountains—those slippery, curvy, wet roads weaving through the white, chilly fog; and those big windmills. It was an amazing feeling.

After a beautiful ride through the mist and greens, we finally reached our field base and decided to visit the field site to search around for the Satara geckos.

Soon, we were already flipping rocks and scanning for the gecko. And yes, we found one. As soon as I saw it, I was amazed by how beautiful it looked in real life, the golden eyes, the delicate body, and the intricate patterns along its body blending perfectly with the rocky habitat. It had such a striking presence. As Dev gently placed the gecko on my palm, I could instantly feel its tiny nails and that soft, squishy body. The creepy feeling was all over me. But yes, it was thrilling and crazy to do. Uncomfortable, yes. But unforgettable.

Mornings there had a rhythm of their own. Waking up to that biting chill, with the sound of the crazy July rain hitting the roof, and that war of staying under the blanket vs. getting ready for sampling. But by 9 am, we'd head out—raincoats, gumboots, all layered up. We'd walk through misty trails, slip down wet slopes, and hike across open grasslands to reach our sampling grids. The memory of the first day of sampling is carved in my mind. That giant windmill standing still in the fog, the sound of its blades slicing through the wind. I can still hear it.

We walked long distances, passed through some breathtaking landscapes, and lived moments I'll never forget. A few that stand out are hearing the

Malabar Whistling Thrush song for the very first time; finding saw-scaled vipers and shieldtails; spotting a fox against that lush green backdrop; running after butterflies just to get the perfect shot; and, of course, the birds. On the way back, we'd keep mentally telling ourselves, "The vehicle is just around the corner." A lie I desperately wanted to believe. Sometimes, the fog was so thick that the landscape felt empty, and it ignited that terrific feeling of us being the last people on Earth. I'd recall random Bear Grylls survival tips in my head just in case. Now, when I look back, I laugh. It's funny in hindsight. But back then? It was wild.

And then—the RAIN.  
Ohhh, the rain.

I used to hate rain. Honestly, I still do when I'm in the city. But Chalkewadi changed something. I remember flipping rocks in full-blown downpours, trying to balance against the wind, and water still finding its way through every 'waterproof' layer. We'd come back drenched with wonder. Gumboots would squelch with every step, filled with chocolaty water. And every time, while removing them, I'd just pray, "Please, no leech. Please, let me stay a leech virgin (hehe!)"

And then there was Turning Point Café—our sacred network zone. I miss sitting there in the chilly breeze, watching the mist drift across the hills and the windmills playing hide-and-seek, while



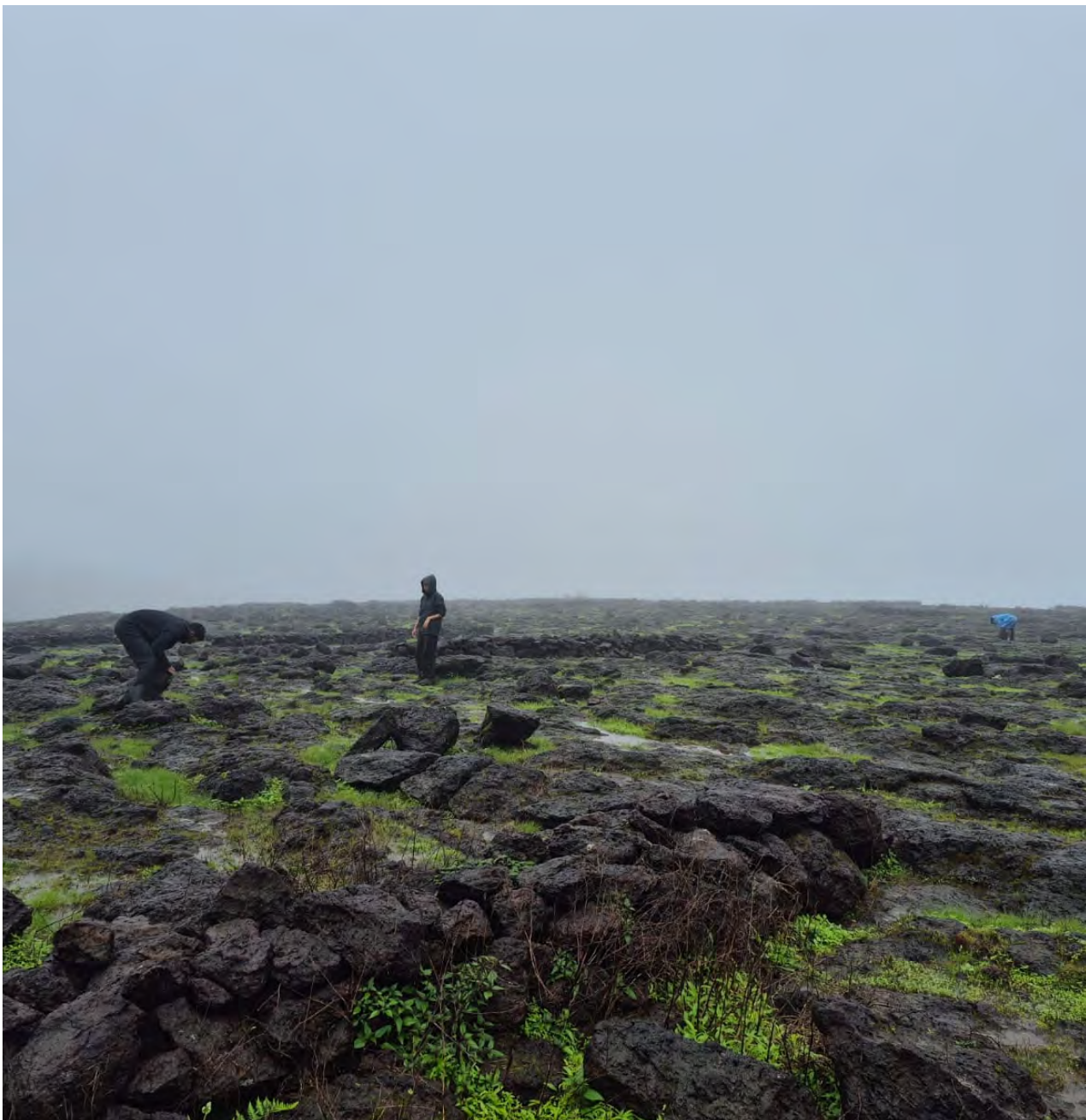
tourists rushed in for shelter and we just sat there happily soaking it all in with the network.

In the city, rain meant delays, inconvenience, and muddy shoes. But Chalkewadi gave me a new lens. Now, I can stand in the rain without complaining (well, mostly). Funny how discomfort works. We fight it. Avoid it. But then we start to miss it. The frogs I thought were too loud at night? I miss their “turr turr.”

The mist that blocked my view? I want to see it drift again. The water in my boots? Okay, maybe not that.

You grow attached to the very things that once made you uncomfortable.

I went there thinking I'd just volunteer for a gecko project. I came back with a changed relationship with fear, rain, and comfort. And somewhere between the rocks, rain, and endless field days, the place quietly became a part of me.





## TECHNOLOGY MEETS ECOLOGY

# PlantWise: Finding the Right Native Species for the Right Location

One major challenge in ecological restoration is selecting the right native species for the right location. To address this, we launched PlantWise, a decision-support tool that helps restoration practitioners identify tree species best suited to local environmental conditions. Using species distribution models built from over 14,000 records of 368 evergreen tree species, PlantWise predicts which species

are bioclimatically suitable for every 1 km × 1 km grid across the Western Ghats. The tool enables forest managers, NGOs, and nursery owners to make science-based planting decisions. PlantWise was developed in collaboration with Akanksha Rathore and was led by young researchers Viswesh Suri and Sharvani Deshpande.



# Conserving Biodiversity in Cashew Plantations



Across the low-elevation northern Western Ghats, much of the forest lies outside protected areas and is privately owned. Increasingly, these forests are being converted into intensive cashew

monocultures, raising important questions about how biodiversity can be conserved within working landscapes. In a study led by Nandita Madhu and published in the journal *Forest Ecology*



and Management, our team investigated how different forms of cashew cultivation influence bird communities. Through extensive surveys of birds and vegetation across the landscape, we found that traditional cashew agroforests retaining native trees supported far greater bird diversity than monoculture plantations. These agroforests continued to provide habitat for many forest-dependent species, while monocultures were increasingly dominated by widespread open-habitat birds. More than half of the 70 bird species for which species-level analysis was conducted showed positive associations with native trees, canopy cover, and nearby forest.

The study demonstrates that conserving remnant forest patches and retaining native trees within agricultural landscapes can substantially enhance

biodiversity without eliminating agricultural production. These findings provide a strong scientific foundation for promoting biodiversity-friendly farming practices and guiding restoration initiatives in the northern Western Ghats. They also reinforce a broader message: conservation in India must extend beyond protected areas and work with landowners to create landscapes where both people and wildlife can thrive. This work was part of Nandita's Master degree at the Wildlife Institute of India.

Madhu, N., Sadekar, V., Biswas, N., Jayapal, R., Rege, A., and Naniwadekar, R., 2025. Native trees within plantations and surrounding forest cover are essential for bird conservation in cashew-dominated landscapes in a biodiversity hotspot. *Forest Ecology and Management* 593: 122878. <https://doi.org/10.1016/j.foreco.2025.122878>









## PROGRAMME TEAM

Aditya Satish, Bindu Kempegowda,  
Devanand N, Dhanush S. S., Himanshu  
Lad, Jithin Vijayan, Nandita Madhu,  
Nitin Kawthankar, Pooja Pawar, Rintu  
Mandal, Rohit Naniwadekar, Sharvani  
Deshpande, Vaishnavi Apte, Vasant  
Dhuri, Vishal Sadekar

## FUNDERS

Conservation Leadership Program  
Rainmatter Foundation  
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Mr. Manish Gupta  
Dr. Rajesh Nair  
Mr. Uday Kumar

## COLLABORATORS

Abhishek Gopal, Akanksha Rathore,  
Anand Osuri, Aparna Watve, Dhananjay  
Shedbale, Divya Mudappa & T. R.  
Shankar Raman, Honnavalli N. Kumara,  
Jahnvi Joshi, Jay, Kanteli and Neil  
Mehra, Kali Tiger Reserve, Navendu  
Page, Praveen Desai, Sahyadri Sankalp  
Society, Swastik Engineering, Tamil  
Nadu Veterinary and Animal Sciences  
University, Chennai (TANUVAS),  
Tech4Good, The Sri Muthukumaran  
Educational Trust, Uday Kumar, Varad  
Giri, Western Ghats Nursery

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Gowthami  
Jyotsna Nag  
Andrew Reintar







## ABOUT THE PROGRAMME

The Endangered Birds Programme conducts long-term research on selected threatened bird species and works toward the conservation of their habitats. The programme is also actively engaged in nature education and citizen science initiatives. In addition, we digitally archive valuable records, registers and publications from museums, natural history collections, and field notes maintained by naturalists.





## PROJECT IN FOCUS

# In search of the Himalayan Quail

The Himalayan Quail is classified as Critically Endangered by the IUCN—the last reliable record was in 1876. It is believed that only a small population survives within a highly restricted range in the Western Himalayas of Uttarakhand, in northwestern India. The species is known from just nine specimens collected during the 19<sup>th</sup> century in the vicinity of Mussoorie and Nainital, making it one of the rarest and most elusive birds in the world.

However, no formal large-scale and intensive surveys have been carried out in this region using proper methods in recent times. Our initial surveys and ground-truthing of the habitat suggest that potentially suitable habitats are extensive and that much of this region is inaccessible. Hence, there is a possibility that this elusive species may still be lurking around the hill slopes. We initiated

interactive, interview-based surveys in about 60 villages and interacted with more than 325 individuals. During the survey, we displayed images of various wild pheasant species and tried to determine whether people recognized any of them. We are currently analyzing the information and hope to gain insights into where we should focus our survey efforts using camera traps and automatic recording units. We have also reached out to local birdwatching communities and produced posters showcasing different galliform species of this region. This is intended primarily to raise awareness, encourage the reporting of sightings, and increase local participation in the rediscovery effort.

We have created a simple website, [himalayanquail.wordpress.com](http://himalayanquail.wordpress.com), where the posters can be downloaded.





## PARTNER HIGHLIGHT

# Re:wild

With support from Re:wild, we launched our project, “In Search of the Himalayan Quail (*Ophrysia superciliosa*).” The Himalayan Quail is classified as Critically Endangered and has not been reliably recorded since 1876, when it was last sighted near Mussoorie. It is widely regarded as one of the world’s most enigmatic “lost” species. This grant has enabled us to carry out extensive interactive surveys with various local communities in Uttarakhand. To date, we have completed approximately 325 interviews across 60 villages in the Kumaon and Garhwal regions. By supporting this initiative, Re:wild is not only helping to shed light on the fate of a legendary bird but also contributing to a deeper understanding and conservation of the unique and often overlooked biodiversity of the Himalayan region.





## FIELD TALE

# Of Barottas and Black-bellied Birds

Y. Teja

Kabisthalam situated on the banks of the Kollidam River, which is a distributary of the river Kaveri, became one of my favourite places in Tamil Nadu. In 2025, I visited this place for our fieldwork to find nests of the Black-bellied Tern and other ground nesting birds on the sandy river bed. This year, as before, I was very curious to be in the field to find nests.

On the first day, we went to the Kollidam river in the evening, and we started our work from the same place as last year.

First, we found a Small Pratincole nest. I really love to observe how they fool us; they are very intelligent. If we move towards the nest, they start distracting us as if they are injured. How fascinating it is to see their broken wing display! We walked on the riverbed, crossed a few shallow streams, and ended up finding around 15 nests in the same evening. On the second day of our fieldwork, we found a Little Ringed Plover nest with three chicks. Luckily, I carried my camera and chose a place to hide and film the plovers.





I waited almost 30 minutes observing the behaviour of the plovers. They were very clever, even though I was hiding, they noticed and chose to distract me. I couldn't spend much time over there since the main target was to find the Black-bellied Tern, an opportunity I had been waiting for over a year. While I was searching for nests, I saw two Black-bellied Terns hovering over the water, and I thought to myself, maybe we will find the nest tomorrow. With a lot of enthusiasm, we started in the morning braving the scorching sun and walking in ankle-deep sand. Our hard work paid off; we finally found a nest with three chicks! I got all my equipment to film the most-sought after bird on my bucket list. We noted the latitude and longitude of that location so that we could return to film them from a distance.

We returned to the spot after finishing our sampling. I fixed my tripod behind a tree bark, and sat down and waited a

while. Finally, I heard the calls around me. They didn't come down until they were assured that there was no disturbance. We already kept our trap cameras ready to get better footage of the hatchling. It was almost 10 AM, and the sun was scorching. I wasn't able to get a good video due to the haze. But in those two hours, I was very lucky to witness some beautiful moments. My favourite part was the way they incubate over the chicks by wetting their belly and keeping the chicks under them for a long time. I even saw how they feed their chicks.

Apart from fieldwork there are other memorable moments during our sampling period. One of them was having barotta (South Indian Parotta) with *chalna* served in banana leaf. I am already looking forward to the next season for both Black-bellied Terns and barottas!



# Nature Alphabets in Tamil



Walk into any bookstore and you'll find alphabet charts filled with giraffes, penguins, and macaws. But what about more-than-human beings that are around us? This chart brings together the plants and animals of Tamil Nadu, from dugongs to *Indrella* snails, fungi, odonates, wasps, and wildflowers all through the Tamil alphabet. As the name suggests this chart has flora and fauna seen in Tamil Nadu with their Tamil names. This chart was produced mainly to introduce the biodiversity of Tamil Nadu through the Tamil alphabets for the kids, teachers and nature educators. The flora and fauna presented here are carefully chosen so that:

- they cover organisms from all the landscapes of Tamil Nadu. For instance dugong, sea shell, and sardine are from marine ecosystems,

*Indrella* snail, *Strobilanthus* are from the forests and wasp, spiders, skink are from plains and urban settings,

- organisms are not the so called iconic or charismatic but lesser known organisms such as stingray, butterflies and odonates,
- and not just from one or two groups of organisms but cover most of the taxa such as fungi, plants, invertebrates, reptiles, birds and mammals.

This resource is created in collaboration with Nature Classrooms and illustrated and designed by Karunya Baskar.

P Jeganathan, Aditi Rao and Vena Kapoor (2025). Iyarkai Tamil Arichuvadi (Nature Alphabets in Tamil). Illustrated by Karunya Baskar. Educational Poster. Published jointly by NCF & Nature Classrooms.



## Think you saw a Himalayan Quail?

### 5 POINTS TO REMEMBER

1. Be careful **not to disturb** the bird.
2. Try to **take photos** (even via a mobile phone through a binoculars or spottingscope). Please also try to **record calls**.
3. Take **detailed notes** (see below for key details).
4. Contact key persons (see below) to **verify your record**.
5. Do **not share the details** in social media.

### ESSENTIAL INFORMATION TO NOTE

**Date:**

**Number of birds:**

**Location:** (include name of the nearest town and GPS co-ordinates)

**Observer(s):** full names, addresses, email and mobile numbers.

**Distance:** your distance from the bird(s) in meters.

**Description:** Please describe the bird(s) as fully as possible, referring to the field characters used to distinguish the Himalayan Quail from Common Quail or other ground dwelling birds of that region. If there are any other ground dwelling birds around please report which species.

**Describe any calls.**

Please also report any probable Himalayan Quail you have seen in the past, but not yet reported.

To facilitate the rapid reaction of experts to help verify record and undertake conservation action, please immediately contact:

**Whatsapp Contact:** +91 94123 48345

**Email:** hiqul1876@gmail.com

This document is available in Hindi. For further reference images, details on steps to take in searching for Himalayan Quails please visit: [himalayanquail.wordpress.com](http://himalayanquail.wordpress.com)



Bird illustrations used with permission from 'Birds of the Indian Subcontinent' by Richard Grimmet, Carol Inskip and Tim Inskip (OUP and Bloomsbury, 2011) Museum Specimen images copyright NHMUK, Tring. Content: P. Jeganathan and Raman Kumar

Himalayan Quail search has been supported by rewild [www.rewild.org](http://www.rewild.org)



## finding the HIMALAYAN QUAIL



Female ♀

Male ♂





## PROGRAMME TEAM

P. Kumar  
Y. Teja  
N. Vamshi Krishna  
Balwant Singh Farswan  
Rajendra Koranga  
Jagdish Singh Negi  
Prajwal Tamang  
Purohit Sahani  
Nisha Bhakat  
Jenis Patel  
T. Siva  
P. Jeganathan

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Arvind Datar

## COLLABORATORS

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Department, Nature Science  
Initiative (NSI), India's Nature,  
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Magazine

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K. Asha

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Narasimha Ayyagari, Srikumaran  
M A, Maitreyee Lawande, Shefali  
Bhatnagar, Amod Inamdar





#### ABOUT THE PROGRAMME

We wish to see a world in which public appreciation for, engagement with, and support for nature is widespread. We catalyse change by deepening public engagement with nature mainly using birds and trees as entry points. We create opportunities for engagement with nature at different levels, for audiences ranging from the public to researchers and policymakers. We enable this engagement through the various themes under the programme:

- Communications to bring nature to large numbers of people
- Outreach and Learning through resources and opportunities to engage students and enthusiasts
- Citizen Science for serious enthusiasts and researchers, and finally
- Research that generates output useful for both scientists and policymakers

Across all these efforts, our goal is to nurture a community of people who see nature as central to their work and life.





## PROJECT IN FOCUS

# Bringing Together Young Birders

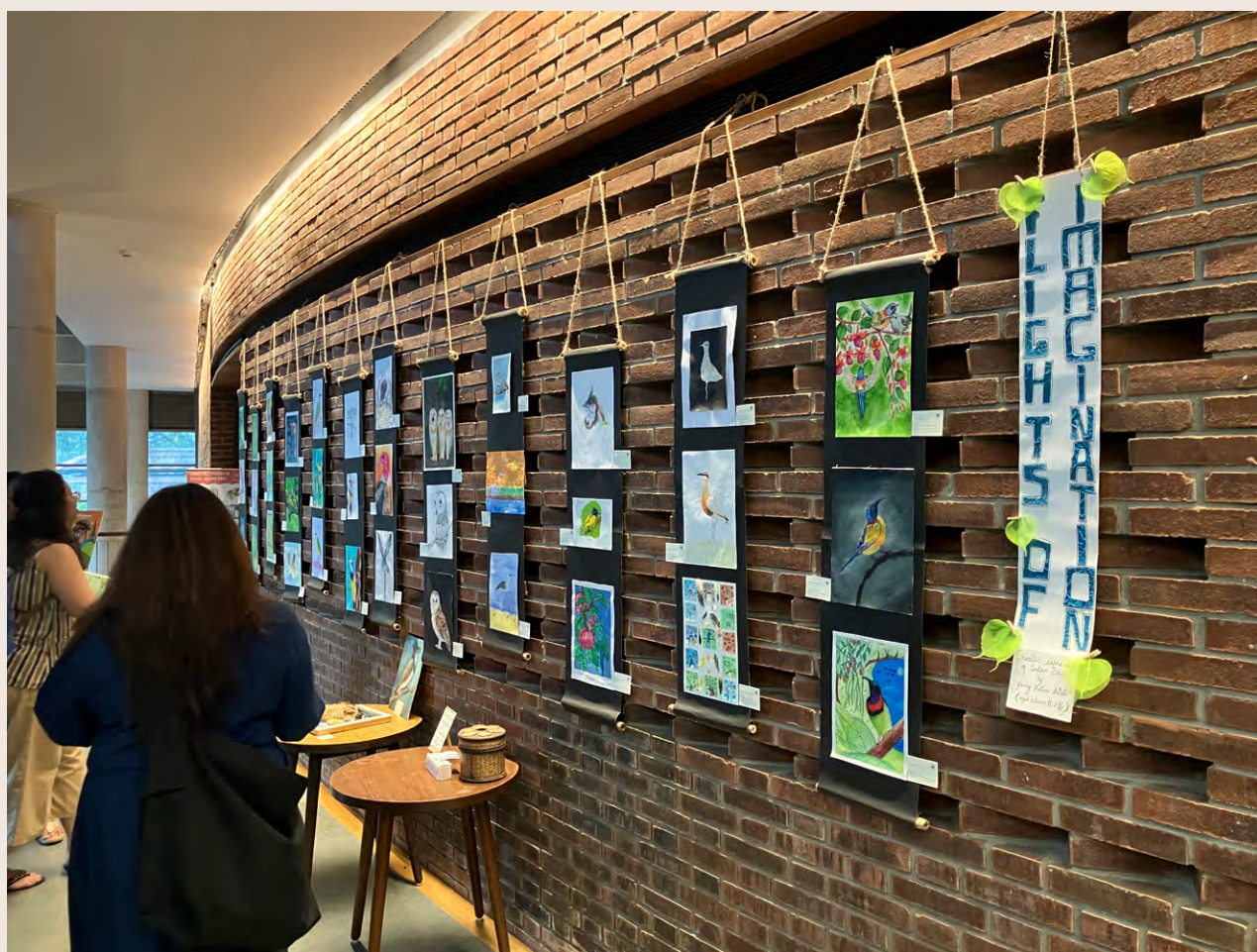
The Young Birder's Month (YBM), was a nationwide celebration to inspire young people across India to connect with birds and the natural world around them. Planned and executed in partnership with WWF India, the YBM took place in November 2025, timed to coincide with the arrival of winter migrant birds, the birth anniversary of renowned ornithologist Dr. Salim Ali, and Children's Day.

YBM brought together a diverse network of conservation organisations, birding clubs, schools, nature educators, parents, and young participants. Events poured in from different parts of the country – bird walks from Kanyakumari to Arunachal Pradesh, a bird walk led by young birders themselves near Hyderabad, a bird origami session in Salem and many more. Together, these activities reached children as young as four years old through to



college students. While the initial target for YBM was 100 events, the response exceeded all expectations, with 70+ partner organizations coming forward to conduct 200+ events in 85+ locations across the country, reaching more than 3,000 young participants. The events ranged from online webinars to in-person nature journaling events, nature walks, quiz competitions, games and day-long festivals held in Chennai and Bangalore. In addition to playing a coordinating role, our Early Bird team conducted several events throughout the month, including bird-themed games at Mumbai Zoo, nature walks and nature journaling sessions, a national bird art competition,

an interschool bird quiz, and a weekend bird-themed festival called Feather Fest in Bangalore. For many participants, YBM served as a first structured opportunity to engage with birds and nature beyond textbooks or screens. These events also emphasized the importance of connecting with biodiversity in one's own backyard, helping young nature enthusiasts develop a deep sense of belonging to nature around them. The month-long celebration also served to unite nature educators from across the country, providing a platform to amplify innovative approaches, and showcase their work.





[illegible][illegible]

**ଶୁଦ୍ଧ ଜଳିକକୁଟା ପାଇଁ ଚିନ୍ତିତ ବେନ**

ଡଃ. ସୀତଲ ଦାସଙ୍କ ନେତୃତ୍ବରେ ଏକ ଶିଳ୍ପ କାର୍ଯ୍ୟକ୍ରମ ଆରମ୍ଭ ହୋଇଛି । ଏହା ମଧ୍ୟରେ ଉଚ୍ଚ ମାଧ୍ୟମିକ ବିଜ୍ଞାନ ଓ ଟେକ୍ନୋଲୋଜିର ଅନୁଷ୍ଠାନଗୁଡ଼ିକରେ ଶିଳ୍ପ କାର୍ଯ୍ୟକ୍ରମ ଆରମ୍ଭ ହୋଇଛି । ଏହା ମଧ୍ୟରେ ଉଚ୍ଚ ମାଧ୍ୟମିକ ବିଜ୍ଞାନ ଓ ଟେକ୍ନୋଲୋଜିର ଅନୁଷ୍ଠାନଗୁଡ଼ିକରେ ଶିଳ୍ପ କାର୍ଯ୍ୟକ୍ରମ ଆରମ୍ଭ ହୋଇଛି ।



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ପିଲା ଓ ବାସୀମାନଙ୍କ ଚାନ୍ଦିନୀର ବାସୁକ୍ତି। ନିର୍ବାକ୍ତା, ପ୍ରଜାପତି

ଆନାଦିତ ପ୍ରାଚୀନଯାନୀଙ୍କର ଖୁମ୍ବୀ, ପାମାଳାଙ୍କର କାମରାଜ, ଗାନ୍ଧାରୀଙ୍କର ପାମରାଜ ଗ୍ରନ୍ଥ ଏବଂ ଅନେକଟି ଗୁରୁତ୍ବପୂର୍ଣ୍ଣ ତରଙ୍ଗ ଗପର ଏକ ନୂତନ ଅଧ୍ୟାୟ ଯୋଡ଼ିଛି ।

ତତ୍ପରେ କହେ, “ନିରୁପାନ୍ତର ଦୁଃଖ ପାଇଁ ଯଦି ଆମେ ଧ୍ୟାନ ନେଇ ପ୍ରସାଦିତ ହୋଇଥାଏ ଆମର ଦେହପରିଚ୍ଛାଦିତ । ଆମର ଦିନେକ ସମୟ ନିଜର ଦେହକୁ ଗଣନେଇପାରୁନାହିଁ । ଏହାଦେଖିମାନେ ପୁଣି ପରିତ୍ରାସହୀନ ହୋଇଥାନ୍ତି । ଶାନ୍ତ୍ୟାତ୍ମକତା ଦୁଃଖର କ୍ଷମାକର ଚକ୍ରକୁଲାଇଁ ଉଠିଥାନ୍ତି ।

ଓଡ଼ିଶାରେ ଅନୁରାଗ ପାଆନ୍ତି ଗାଁ ଗାଁ ଏ ୧୦୦୦ ବର୍ଷର ପ୍ରଗତିର ଓ ନିଜ ପ୍ରଗତିର ଶେଷପାଆନ୍ତି । ଏମାନଙ୍କର ପୁଣି ଏକ ଗପେକର, ଏମାନେ କରାଯାଇ ପାରନ୍ତେ । ଆମର ଆଜି ବି ଦେଶର ପରଷେବ ଗ୍ରନ୍ଥର କରାଯାଇ ନାହିଁ ।

ଓଡ଼ିଶା ଶାନ୍ତର ପରଷେବ ଶେଷର ଦିନ । ତରଙ୍ଗର ଦିନି ଅଧ୍ୟୁଧ୍ୟାନ କରାଯାଉ ନାହିଁ । ଏମାନଙ୍କର କରାଯାଉ ନାହିଁ । ଏମାନଙ୍କର ଅନ୍ତରାଳ ଆଜିର ଦିନ ଅନ୍ତରାଳ ଗୁରୁତ୍ବ ନାହିଁ । ତରଙ୍ଗର କରାଯାଉ ନାହିଁ । ତରଙ୍ଗର ନିଜର ଦେହପରିଚ୍ଛାଦିତ । ଆମର ଆଜି ବି ଦେଶର ପରଷେବ ଗ୍ରନ୍ଥର କରାଯାଇ ନାହିଁ ।

BHUBANESWAR Edition

## PARTNER HIGHLIGHT

# Sambad

In April 2021, as part of our initiatives to popularize nature narratives in Indian languages, the Nature Communications team built a collaboration with Sambad, one of the largest circulated Odia newspapers in Odisha. Since then, we have enabled publication of over 60 articles written in Odia, by experts and enthusiasts across the state, of which 15+ articles were published this year. We started with a series of articles under the theme Birds of Odisha and later published on the theme of fascinating species of Odisha. In 2024, alongside our regular series, we began contributing to their Environment Column, connecting media professionals with people who work relentlessly in the fields of nature education, wildlife research and conservation in the state. In the past year, we highlighted 8 people and their work through this column in Sambad. Our strong partnership with Sambad ensures that nature-based articles break out of the bubble of interested enthusiasts, reach a wide audience as well as sustain interest from media professionals to publish more nature-based stories.





## FIELD TALE

# A Night at a Village Library in Mizoram

Ankita G.

Our knowledge about India's birds today is created through tens of thousands of recreational birdwatchers spread around the country. But there are some regions that have eluded birdwatchers despite holding many mysteries and potentially special bird life. The state of Mizoram has many such regions, and therefore the Bird Monitoring team at EPE decided to visit Mizoram, encourage regional birdwatching, and find birds!

This took Samakshi and Pauzatuala (Pau) to Mizoram, where Aditi and I joined them as volunteers for 20 days in April. Our work needed us to travel where birdwatchers do not go and where tourism facilities may not already exist. Such travel into the unknown without knowing where and how we will spend the night is based on trust and the hope of kindness from the community.



We had to change accommodation every few nights; shifting among a wide variety of places including tourist lodges, homestays, forest department resthouses, and even village council houses and libraries! Most villages in Mizoram have well functioning village councils that manage local libraries, wage distributions, Church related activities and also maintain accommodation facilities for travellers.

Our travels were further complicated by our vehicle, a second hand Bolero, that repeatedly decided not to cooperate. Sometimes it was a screw in the axle, sometimes the handbrake, sometimes worn out belts, sometimes mysterious mechanical failures. One incident in particular illustrates the uncertainty of our travel and the remarkable kindness that we came to experience from the community.

Our car once broke down when we were driving through sprawling open patches of shifting cultivation (jhum). Of all the places to get stuck with a broken down car, ours was definitely a good choice; the jhum looked beautiful—lit by the evening sun with swifts and swallows chittering and flying around. While Pau and No-a (the driver in our team) checked the car, we couldn't help watching birds and admiring the landscape. Samakshi was off looking at birds, Aditi divided her attention between the car and the birds, and I was switching between noting down data (for the project) and staring at the sunset. Several people drove past us

and almost everyone stopped by to know what happened. They sighed, expressed sympathy and drove off when their curiosity was satisfied. We learned that the problem was a broken screw which needed to be replaced and it would be dangerous for the car to drive even a short distance.

The next village, Hmuntha (H silent), was only about 7 kms away, but it would have been very difficult to walk there late in the evening on mountain roads. So we started to make plans for the night. There was an unused shed a few meters away that we presumed was made by the jhum field owners. We figured we could stay there since we had our sleeping bags, our precious stock of instant noodles, the field stove, water and, most importantly, coffee and Amul Gold milk.

But then, a pick-up truck stopped next to us. Like many others, we expected the driver to ask a few questions and drive away. But as the driver stopped, the woman sitting next to him started talking to Pau. A long conversation followed in Mizo between her and Pau. Aditi, Samakshi and I couldn't understand Mizo, so we stood giving her smiles when she occasionally looked towards us. She got out of the truck looking perfect in her purple outfit, turned to us and said, "Come". And we went.

Neither of us had any hesitation in following the woman, she looked like she could get things done, and her being a woman instilled immediate trust from



us in her. Pau explained that she would take us to the next village and she could make arrangements for us to stay in the village library. We could take limited bags since there was limited space at the back of the pick-up truck. She made a few calls, which we learnt later were to arrange dinner for us and to clean the library of the village so we could spend the night. We went to the back of the car to try to decide which luggage to take with us; we couldn't leave our electronics and equipment of course, and we were debating if we should take one suitcase and share whatever towels and toothpaste are in there. The woman, having made her calls, comes around to us and says, "Take take" indicating we could take all our bags.

Before we could climb into the trailer, she asked us all for a photo and I honestly can't remember the last time I was this happy to take a photo with someone. To

our utter delight, she introduced herself as the treasurer at the Village Council of Hmuntha! She said something in Mizo and then added in English that she was "very happy". We too, were very happy. We got onto the back of her pick-up truck which was full of cement bags and cartons with cooking oil, and very shamelessly asked her to join us. She just laughed at us and got into the front seat.

A man was already sitting in the trailer on a cardboard piece. Ever so generously, he tore off three pieces for Samakshi, Aditi and I, while the boys settled on the cement sacks. After handing it to us wordlessly, he went back to his cigarettes. With music playing from our phone and the wind in our hair, off we went to Hmuntha on a pick-up truck riding into the sunset.







## TECHNOLOGY MEETS ECOLOGY

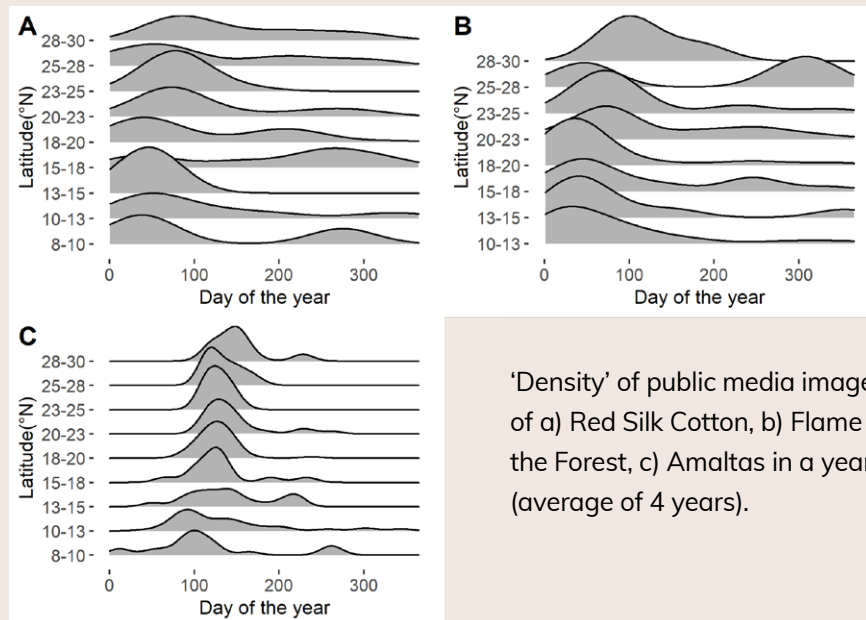
# Data, Digital Products and Democratizing Knowledge

Over the last year we have seen a rapid integration of technology into biodiversity data analysis, access, and communication. Over the past 2–3 years, there has been a noticeable increase in interest and participation from technology professionals, which has strengthened our analytical capacity. For example, we brought in an external consultant (a computational data scientist) who helped optimize our analytical workflow for the State of India's Birds, reducing processing time from three months to 36 hours—fundamentally changing how quickly we can update and respond.

Platforms like MYNA have transformed how outputs are shared, enabling much wider access to data products and effectively democratizing knowledge than was previously restricted to technical teams. This has made reports and analyses more interactive, transparent, and usable for a broader audience. Digital products developed by partners and customised by us for our audiences, like the Merlin app, are another example of sky-rocketing uptake by the public. We are exploring ways to maximise these benefits, while recognising challenges.



# Can Citizen Science Teach us about when Trees Flower?



'Density' of public media images of a) Red Silk Cotton, b) Flame of the Forest, c) Amaltas in a year (average of 4 years).

Is it possible to understand latitudinal patterns of widespread tropical trees in India using public media repositories and citizen science data? This is a question that summer interns Bhavya Kriti and Sidharth Mahesh set out to answer by combing through publicly available images and data uploaded to a citizen science project tracking tree seasonality—SeasonWatch. They chose three tree species with striking, seasonal flowers that are likely to get noticed by enthusiasts, observed, and photographed—the red silk cotton tree, the flame of the forest tree, and the Indian laburnum. Using time and location stamps of images of flowering trees, they were able to generate spatial patterns of flowering across India, finding a south-to-north gradient in flowering phenology for the three

species. This pattern was corroborated with observations on the same species in the SeasonWatch data—with southern latitudes showing much larger variation in flowering times than that observed in the image-only dataset. They concluded that public media repositories can supplement information coming into goal-driven citizen science projects like SeasonWatch, providing valuable insights into the spatial responses of widespread tree species to the environment.

Kriti, B., Mahesh, S., & Ramaswami, G. (2025). Latitudinal patterns of flowering phenology of three widespread tropical species from public media and data repositories: Bhavya Kriti et al. *Journal of Biosciences*, 50(4), 83.







## PROGRAMME TEAM

Abhisheka Krishnagopal, Alen Alex, Amruta Padgaonkar, Ananya Ramesh, Ankita G, Aravind AM, Ashwin Viswanathan, Carol Pereira, Deepthi Gowda, Devica Ranade, Emidacanee Dkhar, Garima Bhatia, Geetha Ramaswami, Jignasa Patel, Mittal Gala, Muhammed Nizar, Pauzatuala Suante, Praveen J, Prerana Chandak, Priti Bangal, Rahul Kumar, Ronith Urs, Samakshi Tiwari, Saniya Chaplod, Sanjeev Menon, Sarang Mhamane, Shasank Ongole, Shruti Mehta, Shubham Giri, Suhel Quader, Suhirtha Muhil, Sayee Girdhari, Swati Sidhu, Tanmaye G, Varsha Sridhar.

## FUNDERS

Advanced Institute for Wildlife Conservation, Vaibhav Alok Ranjangaonkar, Bengaluru Sustainability Forum, Cotton Casuals (India) Pvt Ltd, Charities Aid Foundation, America; Duleep Matthai Nature Conservation Foundation, Ministry for Environment, Forests and Climate Change, Moonfrog Labs Pvt. Ltd., Rainmatter Foundation, Rohini Nilekani Philanthropies, Serenity Trust and Library, Southern Lubrication Pvt Ltd, The Habitats Trust, The Community Foundation for Northern Virginia, Wipro Foundation, Wipro Earthian Programme.

## COLLABORATORS

Advanced Institute of Wildlife Conservation (AIWC), Amar Ujala, Andaman and Nicobar Environment Team, Arannya Environment Research Organisation (AERO), Ashoka Trust

for Research in Ecology and the Environment (ATREE), Assam Bird Monitoring Network (ABMN), Azim Premji Foundation, Bengaluru International Center, Bengaluru Sustainability Forum, Bhaangarbhuin, Bihar Forest Department, Bimb, Bird Conservation Society Gujarat, Birds of the World, Birdwatchers' Society, Bombay Natural History Society, Centre for Ecological Sciences IISc, Cornell Lab of Ornithology, Dainik Prabhat, Dainik Tribune, Doordarshan Sahyadri, Eikas Foundation, Foundation for Ecological Security, Goa Bird Conservation Network (GBCN), Green Hub, Hindustan Times, IIIT - Delhi, Indian Music Experience Museum, Karnataka Panchayat Raj Commissionerate, Kerala Bird Monitoring Network, Keystone Foundation, Khabar UP, Kutuhali Science Magazine, Mathrubhumi SEED, Nagaland Forest Department, Nagaland Tribune, Nandankanan Zoo, National Biodiversity Authority (NBA), National Gallery of Modern Art, Nature Science Initiative, Navneet, National Centre for Biological Sciences (NCBS), National Programme on Technology Enhanced Learning, Nashik Nature Conservation Society, Nature's Ark, Nature in Focus, NavGujarat Samay, Niyomiya Barta, NDTV India, Param Foundation, Pasumai Vikatan, Palluyir Trust, Punjabi Tribune, RoundGlass Sustain, Rupa Rahul Bajaj Centre for Environment and Arts, Sálím Ali Centre for Ornithology and Natural History, Sakshi, Sambad, Saryan Foundation, Srishti School of Design, Tamil Birders Network, The Hindu Tamil, The Morung



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Aditi Elassery, Abhishek Jain, Amith Kumar, Arathi Hanumanthappa, Arpit Bansal, Arundhathi Chandrashekhar, Ashish Jha, Ashwathy Nair, Balaji Doraiswamy, Bindu B.S., Deepa Bisht, Deepa N, Farheen Anjum, Farida Tampal, Ghazala Shahabuddin, Gurpreet Kaur, Ishita Roy, Jagdeesh S.B., Jayan Thomas, Khushi M Appannavar, Kedar Champhekar, Krutika Pathak, Manjari Jain, Mitali Raval, Mohit Bhatia, Mousumi Ghosh, Mudita Pasari, Nakul Heble, Neha Sinha, Nirmal Govindraj, Nirav Bhatt, Pankaj Jalote, Poorva Satija, Praveen Xavier, Priyanka Francis, Priyanka Prakash, Radha Gopalan, Rajah Jayapal, Rajneesh Suvarna, Ramesh Kumar, Risha Vaidya, Rituraj Singh, Roshni Ravi, Rucha Limaye, Saumitra Deshmukh, Sarojini, Sneha Sabnis, Snehith Attiguppe Madhukar, Sriram Reddy, Sushil Jangra, Uma Mahadevan Dasgupta, Veena HT, Vineet Panchhi, Visesh K., V.V. Robin, Yuvan Aves, and all eBird India Editors and Bird Count India Regional Coordinators.





#### ABOUT THE PROGRAMME

As the interconnected crises of climate change and biodiversity loss continue to impact lives, livelihoods and landscapes, there is an urgent need to understand not only ecological change but also how it is experienced, interpreted and negotiated by communities in their everyday lives. Building on methods from sociology, political science and cultural and cognitive anthropology, the Conservation Social Sciences Programme explores social processes and relations, knowledge systems and on-ground realities that shape how communities respond to on-going, entangled socio-ecological transformations in their landscape. Through collaborative and interdisciplinary research with communities, policy makers and practitioners, we aim to highlight local perspectives and generate insights that can inform and support more equitable and place-based adaptation pathways for resilient futures.





## PROJECT IN FOCUS

# Understanding Climate Vulnerabilities among Agro-pastoral Communities in Himachal Pradesh

This project aims to understand how environmental change, livelihood transformation, and changing socio-ecological relationships shape vulnerability and resilience among agro-pastoral communities in Lug Valley, Himachal Pradesh. Building on existing approaches to climate vulnerability and resilience assessment, the research combines indicator-based social-ecological systems frameworks with relational and place-

based perspectives that foreground care, reciprocity, local knowledge, and everyday practices of adaptation. Rather than viewing adaptation solely through technical responses, the projects examine how relationships among people, land, water, forests, animals, and institutions shape experiences of vulnerabilities and the capacity to cope with change. At the same time, the research remains attentive to the uneven and sometimes contested



nature of these relationships, recognizing that resilience, cooperation, and care are experienced differently across social groups and contexts. Similar to our work in Ladakh, the work emphasizes sustained, grounded, collaborative engagement with communities and local actors, while seeking to contribute to more context-sensitive approaches to climate adaptation and resilience planning in mountain landscapes.

In addition, the project will also examine how different forms of care towards land, livestock, water resources, and community

members shape responses and resilience to extreme climatic events, the frequency of which have drastically increased in the last decade in the region. By examining how climate variability is perceived, interpreted, and discussed locally, and how these narratives interact with scientific and policy-driven climate response efforts, the project seeks to contribute to a more nuanced understanding of climate resilience in Himalayan regions by foregrounding local knowledge, lived experiences, and relational approaches to adaptation.





# The Spaces In-between

Sidak Kaur



Fieldwork often tends to reward active movement. In a landscape like Changthang, where the high-plateaus and wide, open basins seem ever-expanding, it can begin to feel as though understanding the landscape and its people are somehow dependent on the amount of ground you cover. But every once in a while, some of the deepest insights emerge not from seeking more,

but from slowing down enough for a place to reveal itself.

Several weeks of fieldwork across Changthang had already given our days a certain momentum. As we moved from village to village, we had become accustomed to tracing and often chasing, migration routes and timings, conducting interviews everywhere from households

to pastures to reybos, and always learning to arrive before the Changpa would pack up and move to their next location. Days became measured by the long distances covered and soon we seemed to be in a bid against time. But, as it often does, the landscape had its own lessons to offer.

On a crisp, blue morning, we headed out to Puga and Anku in the Tso Kar Basin, inspired by the weather and by reports that a few remaining herders might still be around. But very quickly, we came up empty as most had already packed up and left early. Our carefully made plans quickly dissolved into uncertainty, something we had come to accept as a condition of working with nomadic pastoralists, always a little suspended between the anticipation of an encounter and the ever-present possibility that nothing might happen at all.

It was in this in-between space that we found ourselves coming across a lone shop in Anku, where we decided to stop for tea. At first glance, it looked like any other tiny tea shop scattered across the vast plateaus. It stood by itself, small but proud against the wide, expansive basin, accompanied by a solitary Himalayan sheep dog that drifted lazily in and out of sight. Inside, we met an elderly herder who had turned to running the shop after the demands of pastoral life had come down too hard on his ageing knees. As he later told us, the same knees that once carried him across mountains, could no longer keep up with livestock. And the

children, who might have inherited the work, had been encouraged to choose other paths. In the quiet matter-of-fact way that characterised much of our conversation, he spoke about reducing a herd that had once numbered nearly five hundred animals.

Our very presence seemed to puzzle him at first, and the conversation unfolded cautiously, through the familiar exchanges and acknowledgements of the weather that accompany many unexpected meetings in Changthang. Gradually, curiosity gave way to warmth, and even enthusiasm! Once he knew more about our work, he sat down and began speaking with us at length, pouring us endless cups of tea. Stories, memories and aspirations surfaced and soon, time, as it often does over tea, began to slow down a little.

Somewhere along our conversation, more people began to arrive, as someone stopped to buy supplies, share news and some just peeped in out of curiosity. The elder herder seemed to radiate a quiet sense of pleasure in each arrival and introduction. Before we knew it, the Nambardar and Ama Tsogspa (womens group) were joining us and more cups of tea were being brought out. In the background, young people drifted in and out, travellers stopped a while and passed by, animals too were an animated part of the scene. As luck would have it, two local councillors happened to pass through and agreed to speak with us too, and what began as a single interview,



branched out into a tree of many perspectives.

Later, it occurred to me that from a distance what had seemed like an isolated structure was in fact, deeply woven into the everyday, relational life of the basin. People came for provisions, yes, but they stayed for the company, to share news, to gather over tea and for the many small and big conversations that weave together lives spread across large distances. The shop occupied a curious space because it was neither a destination nor simply a pitstop, rather something in-between. A liminal space, where movement briefly slowed down and where people, stories and concerns accumulated, connecting many different voices for a while.

Over the course of that afternoon, many entangled worlds within Changthang emerged. The old herder spoke about

ageing bodies and of children pursuing other lives, the women spoke of the continuity of village systems, and the councillors spoke about modern nomads and futures. None of these renditions of Changthang displaced the other, rather they coexisted, overlapped, and occasionally sat in tension, revealing a region where futures were being imagined and negotiated in multiple ways. Looking back now, what had initially felt like an unproductive pause gradually became a way of inhabiting a place, something that no amount of movement could have revealed. In a landscape so characteristically defined by mobility, at times a deeper understanding is revealed by pausing in the in-between spaces—where people linger for tea, where conversations are interrupted and resumed, and where arrivals and departures are woven into the ordinary fabric of everyday life.





## PARTNER HIGHLIGHT

# Circular Bioeconomy Alliance

The Circular Bioeconomy Alliance (CBA) is a global network of organisations working to accelerate the transition towards a nature-first economy. Rooted in the principles of a circular bioeconomy, the Alliance seeks to demonstrate how the restoration and sustainable use of natural capital can support biodiversity, climate resilience, human wellbeing, and inclusive economic development. Through a growing network of Living Labs across diverse landscapes, CBA brings together science, business, finance, and local communities to develop and test regenerative approaches that can serve as scalable blueprints for the future.

Over the past year, the Conservation Social Sciences Programme has led the social segment of the work supported by CBA in Changthang, Ladakh. Through interdisciplinary and community-based research, we have worked alongside pastoral communities to better understand the social dimensions of climate vulnerability, resilience, and adaptation. By examining local experiences of environmental change and relational forms of resilience, we hope to continue to generate insights and support context-specific pathways that sustain both landscapes and livelihoods.



# Scaling Community-based Conservation Initiatives



This paper is set against the backdrop of a collective push to establish and scale conservation initiatives with little attention to ensuring that they persist over time. Abandonment refers to the discontinuation of a conservation initiative after it has begun. This paper is set against the backdrop of a collective push to establish and scale conservation initiatives with little attention to ensuring that they persist over time.

Governments, philanthropists, nonprofit organizations, and communities are understandably racing to scale conservation initiatives to combat biodiversity and climate crises. But the sole focus on scaling new initiatives to meet ambitious targets may in fact undermine long-term biodiversity recovery. Real-world progress will be inflated if abandonment is not considered, possibly leading to misguided policies and perverse

resource allocation, with new initiatives being overinvested in at the expense of durable and effective ones. Most importantly, we cannot know how to establish effective, just, and enduring conservation initiatives if we do not understand the causes and consequences of their abandonment. The launch of a conservation initiative is merely an early milestone on the road to a more sustainable future. Only by embracing the ‘long road’ of conservation—designing for, monitoring and investing in persistence—can we secure lasting ecological and social benefits for generations to come.

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## PROGRAMME TEAM

Arundhati Jagadish

Sidak Kaur

Supreetha Devarakonda

Avanthika Kartha (Intern)

## FUNDERS

Ajay Dhankarghare

Circular Bioeconomy Alliance

Harshil Parmar

Niharika Bahl

Rainmatter Foundation

Rohini Nilekani Philanthropies  
Foundation

Shefali Bhatnagar

## COLLABORATORS

Abha Joglekar, Imperial College  
London

Alvaro Roel Bellot, DEFRA

Daniel John Read, Panthera

Mathew Clark, The University of  
Sydney

Morena Mills, Imperial College London

Michael B. Masica, Duke University

Olivia Crowe, Imperial College London

Pastoral communities of Changthang,  
Ladakh

Thomas Pienkowski, Kent University

Walker DePuy, University of North  
Carolina, USA

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### ABOUT THE PROGRAMME

The School for Science and Conservation remains focused on strengthening conservation leadership capacity in the country through our PhD programme and Courses in Conservation Leadership. Our doctoral and Master's programmes deliver high-quality interdisciplinary training in conservation science through an integrated approach that combines rigorous coursework, individual mentorship, and field-based research, thereby preparing graduates for leadership roles in biodiversity conservation. In addition, the annual Courses in Conservation Leadership provide training in essential conservation skills to practitioners working across diverse landscapes and contexts throughout the country.





## PROJECT IN FOCUS

# Courses in Conservation Leadership

NCF launched the Courses in Conservation Leadership (CCL) Programme in FY 2019–20 to build the capacity of conservation practitioners in core skills such as wildlife research, stakeholder engagement, and monitoring and evaluation. Over the past six years, the annual CCLs have trained 685 practitioners from across India. The programme began with six courses in essential conservation skills and has since expanded to 14 courses, including region-specific courses delivered in local languages. The courses draw upon nearly three

decades of NCF conservation experience and are strengthened by external experts, enabling additions such as Conservation Entrepreneurship, Environmental Law, and Conservation Communication through written and visual media.

We offered ten courses in Conservation Leadership in the year 2025-2026. The courses include Conservation Law (in English, Malayalam, Hindi), Social and Historical Dimensions of Conservation, Project Management, Working with





Local Communities, Conservation Entrepreneurship, Social Science Methods for Collaborative Decision Making, Integrated Population Models (and other models), Communicating Conservation Science (in Tamil), Monitoring and Evaluation of Conservation Programmes, Working with Local Communities (in Hindi).

We received a total of 336 applications and finally, 145 practitioners attended these courses. Participants joined us from 21 states and 1 Union Territory, with 53 attendees coming from non-metro cities. The courses were taught by 11 resource persons from NCF and 13 external resource persons. Some of our external collaborators include Dr. Arshiya Bose, founder of Black Baaza

Coffee, Dr. Abishek Harihar and Dr. Daniel Read, Panthera, and Dr. Sripad Tuljapurkar, Stanford University.

We do not charge any course fee, except for a modest fee of 1,000 INR for course material, for attending these courses and providing financial support to applicants who are otherwise unable to meet the expenses. This year, we disbursed 32 travel support grants, 25 accommodation support grants, and one course material fee waiver.

Going forward, we aim to introduce more regional-language courses across different Indian states, tailored to the needs and knowledge gaps of local conservation practitioners.





## PARTNER HIGHLIGHT

# Rainmatter Foundation

Rainmatter Foundation has supported the PhD programme and the Courses in Conservation Leadership at the SSC. Their continued support enabled the admission of a new cohort of PhD students, who also receive a one-time grant of Rs 4 lakhs each upon their registration. These funds support expenses related to their research work, attending conferences to present their research work, and for making their research findings more accessible. These students are intending to research diverse taxa (reptiles, vegetation communities, sharks and carnivores) across diverse ecosystems on the mainland and in the oceanic islands using ecological, social and molecular datasets. The support has also contributed towards training of 685 practitioners from across India over the past six years through our annual Courses in Conservation Leadership, which are offered free of cost and we also provide support for attendance to those in need. In recent years, we have focused on making these courses more accessible by including region-specific courses delivered in local languages.



# Wonders of Pakke—Experiencing the Forest through Our Senses

Pooja Pawar



The rocky riverbed and grassy banks with trees towering in the background make the picture perfect landscape of the Pakke Tiger Reserve in Arunachal Pradesh. This is where I kicked off my field surveys in the land of dawn-lit mountains. Truly, what better start to the field season could one ask for!

I was delighted to join the nature education camp conducted for school kids aged 10-12. Like them, it was my

first introduction to the enchanting forests of Pakke. Geared with binoculars we set out on a day-long journey to explore the wonders of this magical landscape, led by Saniya Chaplod along with field staff and forest department personnel.

As we assembled at the entrance of the tiger reserve, a flock of about forty Scarlet Minivets flew over us vanishing in the dense canopy. A pair of Chestnut-bellied Nuthatches was busy gleaning the



bare branches of a tree. A few hundred metres along the trail, the loud barks of a startled barking deer had all our ears. This led us to a very interesting activity, which we called the ‘music of nature’. All of us sat down in an open glade, closed our eyes, and focussed on every sound that we heard for the next five minutes. In the quiet stillness, we could hear and discern the many sounds of the forest—the hum of insects, the chirps and tweets of birds, the great “whoosh” of hornbills flying past us, and also the faint, trailing “quaa” of the Malayan giant squirrel from somewhere deep within the forest. The kids then made a sound map of the jungle, which ranged from seven to twenty-one different calls! This immersive activity taught us that the jungles can be experienced not only as a feast for the eyes but also by being all ears!

As we walked deeper into the woods with open eyes and ears we came across a tall fig tree laden with fruit. Fig trees offer a great feast for many frugivores. Here, we learned about how pigeons, barbets, and hornbills play key roles in dispersing seeds in the forests. Such magnificent fig trees are important resources for other wildlife too, especially in Pakke. They support many hornbills which predominantly feed on figs. Strangler figs, as the name suggests, grow over other trees, eventually strangling them. However, in return they provide roosting sites for bats, tokay geckoes, support for orchids and tree ferns, and feed an immense number of animals including elephants

and binturongs which forage on the fruit. We were asked to decide whether the strangler fig is a foe or a friend of the forest; we were convinced of the latter.

Bhelu (*Tetrameles nudiflora*) is another important tree of Pakke. Tall, with fat buttresses and a straight trunk, the glistening, greyish bark is a characteristic of Bhelu. The trees with cavities are preferred by hornbills for nesting. Such nest-trees have been monitored and protected by members of the local Nyishi community under the Hornbill Nest Adoption Programme. Tajik Tachang shared with us his heart-touching experiences of observing hornbills successfully raising chicks every year in the reserve forest. The children couldn’t hide their emotions for the dedicated hornbill parents and were grateful to “foster” parents such as Tajik.

As we were engrossed in admiring the towering Bhelu tree, we spotted tens of butterflies hovering over flowers of *Garuga floribunda* locally called kechkechipoma. The sweet scent of the tiny pink-and-white flowers with their promise of nectar had attracted a congregation of butterflies including the orange oakleaf butterflies, besides other colourful insects and giant wood spiders. We learnt about pollination services provided by insects with a beautiful “live demo” in the wild.

Now that our ears, eyes, and noses were stimulated by nature around us, the sense of taste was up next in the



queue. Saniya plucked a couple of tiny yellow flowers of *Acmedla oleracea* which were in full bloom along the trail. She cut them into small pieces for us to eat and describe the taste. This flower is locally called 'jhing-jhing' because of the tingling sensation it creates on your tongue. Animals too, learn to choose or avoid certain foods based on taste. Such well-thought activities along this nature trail not only brought us closer to nature but also made us a part of it.

During our walk, colleagues at NCF acquainted us with the ongoing conservation efforts such as forest restoration. We saw their hard work in this restoration programme literally bearing fruit—a young three-year-old *Dysoxylum gotadhora* tree they planted was fruiting. Thousands of such native trees are being planted and monitored by my colleagues at NCF.

The activities culminated in a treasure hunt activity, beautifully summarizing the learnings from our walk. It aimed to

simultaneously activate all the senses. With alert senses, we had to gather different things from the wild such as colourful stones, things with smooth and rough textures, flowers and so on. What a fun way to explore the natural world! This was topped off by a delicious hot meal by the flowing stream, which was equally rewarding, as we continued sharing and learning about the wonders of Pakke.

To foster pride and build an emotional connection with natural heritage among children, the nature education expert Dr. Pranav Trivedi conceptualised these nature education camps in 2017. So far over 1,100 students from around the Pakke Tiger Reserve have participated in these camps and other year-round activities with repeated engagement. The excellent team work by the NCF staff, forest department, schools, enthusiastic students and members of local communities filled me with hope that the wonders of Pakke will be around for long.







BEHIND THE SCENES

# Monitoring Amphibian Calls with Bioacoustics

“If a tree falls in the forest and no one is around to hear it, did it fall?”

For ecologists, this age-old philosophical question has a practical counterpart: if an animal calls and no one is there to listen, how do we know it has called? For many amphibians, vocalizations are central to their lives, serving as signals for mate attraction, territorial defence, and species recognition. Yet these calls occur at night, during brief seasonal windows, or in habitats that are difficult to monitor continuously.

With nearly 40% of the species threatened with extinction, amphibians face increasing pressures from habitat modification and climate change. Bioacoustics offers a powerful approach for understanding how amphibians respond to changes across space and time. As recording technology becomes increasingly affordable

and analytical tools more powerful, bioacoustics is transforming how we monitor biodiversity, enabling continuous and non-invasive observations at unprecedented spatial and temporal scales. In the human-modified landscapes of the Western Ghats, I use passive acoustics monitoring (PAM) to investigate how amphibian calling activity varies through time and across relatively undisturbed rainforests and coffee agroforests. By continuously recording soundscapes from these two habitats, bioacoustics enables us to track when species begin calling, identify peaks in breeding activity, and examine how abiotic factors such as rainfall and temperature influence amphibian calling activity. Understanding when and where amphibians breed is crucial for their conservation. Changes in calling activity can provide early indications of shifts in breeding seasons, population declines, and



responses to habitat and climate change. Additionally, PAM enables long-term amphibian monitoring by helping identify sensitive species and assess how coffee agroforestry management influences amphibian communities.

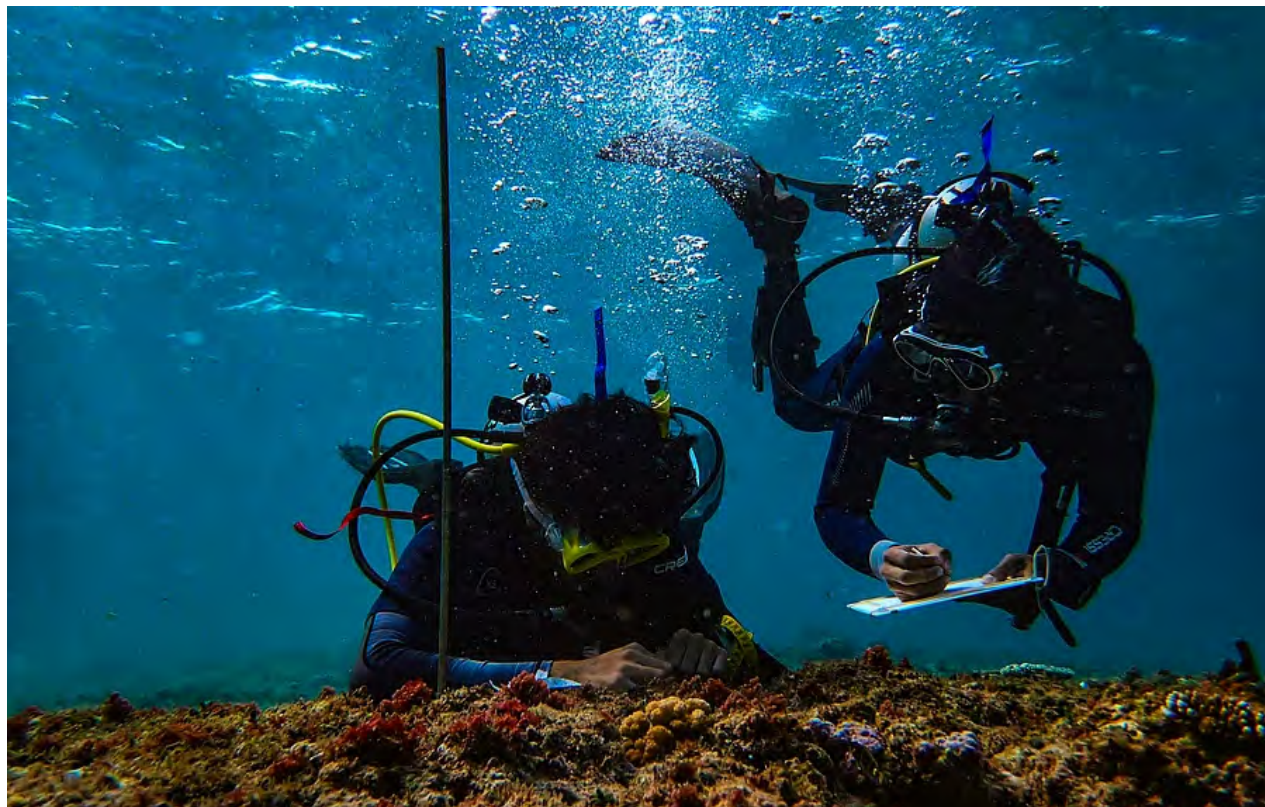
Over the last two years, we have generated hundreds of hours of recordings and are currently processing and analysing these large acoustic datasets using BirdNET. BirdNET uses machine learning to automatically detect and identify species-

specific vocalizations from large volumes of audio recordings. The combination of autonomous recorders and machine learning is now allowing us to move beyond traditional field observations and examine amphibian calling patterns continuously over extended periods. Perhaps the answer to the question I began with is simple: the forest never stopped speaking—we have only recently learned how to listen.





# Lakshadweep's Reefs and How they Respond to Climate Change



Since 1998, researchers from the Nature Conservation Foundation have been tracking reef conditions at three atolls across the Lakshadweep Archipelago—Agatti, Kadmat and Kavaratti—to understand how reefs respond to climate change. This programme has monitored reefs as they declined and recovered from three major El Niño Southern Oscillation (ENSO) events—in 1998, 2010 and 2016.

Over 24 years, coral cover declined from 37% to 20%, reflecting a roughly 50% reduction from the 1998 baseline. This decline was explained by reduced recovery rates after each bleaching event, despite coral mortality decreasing

with successive events. Recovery rates dramatically increased after 6 years, suggesting a critical period of bleaching-free years needed for reefs to recover. We observed contrasting responses of coral genera which clustered in six groups representing distinct assemblage-wide patterns in distribution (depth and wave exposure) and bleaching responses. Genera with different life histories clustered together, highlighting the importance of local environments in determining the survival and recovery of corals across taxa.

Species are expected to respond to disturbances according to their biological





characteristics (life history traits) and our expectation was that corals in Lakshadweep reefs will closely track their biology as has been suggested by other studies, resulting in a clear set of winners and losers on the reef. What we found was much more nuanced. Over the 24 years of change, we identified not just two groups of winners or losers but six distinct kinds of responses (or clusters), based on how corals were affected by heatwaves, their recovery time, the depth at which they were found, and whether they grew on exposed or sheltered reefs. Importantly, these clusters are a useful predictive framework which we can use to map other reefs across the archipelago (and possibly beyond), to determine their susceptibility to climate change. This work offers an unprecedented tool to assist classifying corals based on their ability to resist and recover from future bleaching events which can lead to meaningful spatial planning in the face of climate change—something that was unavailable for this region until now. These results challenge the simplifying

narrative that all coral reefs respond in a similar fashion to climate change, and are universally doomed. Even within a small archipelago like Lakshadweep, there is a large variability in responses—sometimes in reefs only a few kilometres apart. While marine heatwaves are increasing, local environmental filters still determine how badly reefs are hit—and how well they bounce back. While our results challenge the dichotomy of winners or losers, what we find is that many of the clusters in this study show a declining trend. This has major implications for marine spatial planning in India and beyond, especially in atoll nations on the frontlines of the climate crisis.

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## ACADEMIC DEAN

Mousumi Ghosh

## ACADEMIC COORDINATOR

Tamoghna Santra

## PHD SCHOLARS

Aakash Bhushan

Abhirami C

Bibidishananda Basu

Divyajyoti Ganguly

Evan Nazareth

Jenis Patel

Kirina Melo

Mayukh Dey

Noopur Borawake

Pooja Pawar

Rintu Mandal

Rohan Menzies

Suhridam Roy

Vaishnavi Apte

Vijay Karthick

## FUNDERS

Cholamandalam Investment and Finance  
Company

Rainmatter Foundation

Rohini Nilekani Philanthropies

## COLLABORATORS

Abishek Harihar, Anand M. Osuri,  
Aparajita Datta, Arshiya Bose, Arundhati  
Jagadish, Canopy Collective, Chandrima  
Home, Daniel J. Read, Deepshikha  
Sharma, Dr. Shanmuga Sundaram  
A., Dr. Sreekumar C., Erika D'Souza,  
Harman Jaggi, Jayashree Ratnam, K.  
Asha, K. Valliappan, Karishma Pradhan,  
Karthik Natarajan, Kulbhushansingh  
Suryawanshi, M. D. Madhusudan,  
Narayani Subramanian, P. Jeganathan,  
Partha Sarathi Mishra, Prof. Shripad  
Tuljapurkar, Rohan Arthur, Rohit  
Naniwadekar, Sahil Nijhawan, Sana  
Huque, Stella James, Suri Venkatachalam,  
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## THE STORY CONTINUES



**Eastern Himalaya Programme:** We plan to continue our long-term field monitoring for hornbill nesting, tree phenology, and climate, and publish our long-term data. New plans include the development of a new design for artificial nest boxes, the creation and installation of nest boxes in our field sites in North Bengal and Arunachal, and a new study to assess cavity availability for hornbills and other birds and understand the use of and preference for nesting holes. We also plan to undertake an interview-based survey across Arunachal to understand past and current hornbill distribution/occurrence, hornbill–human relationships, cultural associations, and local forest governance. A nature education activity manual, co-created by a network of nature educators, will also be produced based on workshops, while we will strengthen our efforts to disseminate ecological restoration initiatives across multiple sites through training and knowledge sharing among partners by helping to initiate several new native species nurseries in the region.

**Western Ghats Programme:** The Asian elephant programme continues the existing SMS and outreach interventions to promote human–elephant coexistence in both the Valparai and Hassan landscapes. However, the programme plans to experiment with the “Coexist”

mobile application, a unique Android app, to send push notifications about elephant locations to end users in Hassan. In addition, solar-powered digital information boards will be introduced in critical conflict-prone areas of Valparai, and solar-powered elephant-alert traffic lights will be tested at crossing points where elephants and people meet in Hassan to avoid direct encounters. On the academic front, we plan to publish our long-term data in peer-reviewed publications.

The restoration programme in the Anamalais will continue with its annual targets of restoration planting and long-term monitoring of forest dynamics. We hope to strengthen our partnership with the Tamil Nadu Forest Department on hornbill research, conservation, and restoration.

In the central Western Ghats, we will continue to explore and develop opportunities for research and restoration with private landowners, coffee farmers, and the Karnataka Forest Department. While continuing our long-term forest ecology and biodiversity monitoring, we will look to develop new lines of research in agroecology and grassland monitoring and restoration.

**High Altitude Programme:** In the next year, we will continue building towards a Western Himalaya-wide, multi-landscape research and conservation programme rooted in long-term ecological monitoring and community-led stewardship. With the expansion of our work in Jammu and Kashmir this year, we are now positioned to strengthen conservation efforts across interconnected snow leopard landscapes in Himachal Pradesh, Ladakh, and Jammu and Kashmir through a phased and collaborative approach.

Our focus will be on deepening partnerships with local communities, strengthening conflict mitigation systems, and expanding conservation interventions that support coexistence between people and wildlife. Alongside scaling conservation models, we also aim to strengthen landscape-level ecological research to better understand changing habitats, wildlife populations, and emerging conservation challenges linked to climate and socio-economic change.

By integrating science, community participation, and long-term institution building, we hope to create a resilient conservation model for the high-altitude ecosystems of the Western Himalaya.

**Oceans and Coasts Programme:** With barely any time to recover from the previous mass bleaching event in 2024, conditions that precipitate another marine heatwave along our coasts are underway. Along with the usual sites we monitor in Lakshadweep, we are attempting to conduct a pan-India assessment of El Niño's impact on coral and fish



communities. We plan to work with independent divers, research organisations, and dive schools to collect information on coral and fish health.

Along the Andaman Islands, we will conduct an archipelago-wide survey of seagrass meadows and assess the threats to these ecosystems. In addition, this year we will begin assessing the environmental impacts of farming invasive fish species through aquaculture.

We have also planned various capacity-building and knowledge-sharing workshops and conferences. In the Lakshadweep Islands, we are organising the second Lakshadweep Knowledge Summit that will bring together researchers, government representatives, and students working in Lakshadweep. We also plan to extend the Divers' Ecology Network to two more islands in the archipelago. In the Andaman Islands, in collaboration with other research organisations, we will train local guides to conduct intertidal walks for tourists, increasing their knowledge about these vital habitats and supplementing their income.

**CEROS:** Over the coming year, we will conduct a large-scale study of woody plant communities across the Western Ghats, from Bhimashankar in Maharashtra to the Agasthyamalai Hills in Kerala and Tamil Nadu, to understand how environmental gradients shape species distributions and forest composition. These insights will also strengthen the PlantWise platform by improving recommendations for ecological restoration. We will also continue our research on endangered lizards of the northern Western Ghats, using genomic tools to understand genetic diversity and connectivity between isolated populations. Alongside research, we will continue the restoration of degraded private lands and sacred groves in partnership with local communities. Finally, we aim to develop an AI-assisted woody plant identification tool for the northern Western Ghats to make species identification faster, more accessible, and more reliable for restoration practitioners, researchers, and forest managers.

**Endangered Birds Programme:** We plan to continue our work on habitat mapping of OENs in southern Andhra Pradesh. We have initiated a study of scrubland bird communities in Kadapa, and in the coming year we plan to extend our surveys to the grasslands of the region. We will continue our interview surveys in Uttarakhand to gather recent information about possible sightings. We are currently analysing Black-bellied Tern data and hope to gain further insights into its habitat requirements and publish these results. We will also continue to produce and publish educational materials related to natural history in Tamil. In addition, we will be involved in digitising and archiving natural history notes created by naturalists and birdwatchers.

**Education and Public Engagement Programme:** Over the past year and a half, our team has worked collectively to shape a strategy for the next five years. In the coming

year, we plan to continue strengthening our long-term work across Communications, Outreach, Learning, Citizen Science, and Research, which together form the core of the programme. Alongside this, each theme will experiment with new ideas and pilot models that can be refined and scaled in the future. We have also identified four shared strategic priorities across teams: strengthening training opportunities, convening conferences and gatherings, building new partnerships, and expanding our on-ground reach through local representatives. Since much of our work is public-facing, we are also investing in how we communicate and present ourselves to our many stakeholders by developing a clearer programme identity and a more cohesive communications strategy. Through all this, we hope to work towards building stronger connections, broaden and deepen engagement, and widen the impact of our work.

**Conservation Social Sciences Programme:** Over the coming year, the Conservation Social Sciences Programme will expand its work across Ladakh and Himachal, the landscapes in which we currently work, to examine not only how communities respond to ecological and climatic change but also how they imagine the futures of the landscapes they inhabit. Through visioning exercises, participatory and visual arts-based approaches, we will explore what constitutes a desirable future, what relational aspects communities wish to retain or change, what shapes future aspirations, and what people might fear losing. By engaging with hopes, anxieties, and uncertainties embedded within these future imaginaries, we seek to understand how communities are making sense of change, where they perceive agency and constraint regarding their futures, and how anticipated futures might shape decision-making in the present. Insights into how these communities envision potential and possible futures can contribute to a more holistic, plural understanding of adaptation and collective well-being.

**School of Science and Conservation:** In the coming year, we look forward to several exciting publications and thesis submissions from our senior scholars. These students have undertaken doctoral research across a diverse range of ecology-driven and conservation-relevant themes. Their work addresses critical challenges such as climate change and ecological restoration and spans plant communities, amphibians, birds, and mammals. Our new cohort of PhD scholars are currently developing research proposals addressing diverse taxonomic groups as well as pressing conservation challenges. We look forward to seeing how these projects evolve and contribute to advancing conservation science and practice.

We remain committed to our mission of delivering high-quality conservation training through our annual Courses in Conservation Leadership. As part of this effort, we are exploring new collaborations with local organisations to strengthen the relevance, accessibility, and effectiveness of these courses for practitioners working at the grassroots level.



## SELECT MEDIA ARTICLES

|                                                                                                                                                  |
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**Sahil Nijhawan**

**Priya Tamma**, APU (External member)

**Saloni Bhatia**, ATREE (External member)







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**[www.ncf-india.org](http://www.ncf-india.org)**

**Call us: +91 9880920110**

(Smita Prabhakar)

**Write in:** [contactus@ncf-india.org](mailto:contactus@ncf-india.org)

**Mysuru:**

'Amrita' 1311,  
12<sup>th</sup> A Main,  
Vijayanagar 1st Stage,  
Mysuru 570017

**Bengaluru:**

361 'Hari Hara',  
5<sup>th</sup> Main Road,  
Canara Bank Layout,  
Bengaluru 560097