Volume 10, Issue 3 July, 2024 -December, 2024

EASTERN HIMALAYA

Half-Yearly newsletter of the ATREE Eastern Himalaya / Northeast Regional Office

PASTORALISM AND ITS CHALLENGES

Pastoralism has long been the mainstay for the Dokpas, Lachungpas, and Lachenpa communities in the high-altitude regions of North Sikkim. These semi-nomadic pastoralists, who reside in the rugged and remote valleys of Lachen and Lachung, rely primarily on yak herding as their main source of income and cultural identity. These valleys, situated at altitudes ranging from 2,700 to 5,000 m, are characterized by an alpine climate, harsh winters, and a challenging topography.

The Lachen Valley, located at an elevation of about 2,750 meters, experiences extremely cold winters, with temperatures often dipping below freezing and heavy snowfalls blanketing the area. The Dokpas, a yak-herding community, reside in the higher altitudes of Thangu and the surrounding regions (3500 to 5000 meters), where they manage yak herds and Tibetan sheep. Yak herding in these high-altitude areas is vital for providing milk, meat, wool, and butter, which form the basis of both sustenance and trade for the herding families. Traditionally, the herders followed a semi-nomadic lifestyle, migrating seasonally between pastures to maintain the health and well-being of their herds. The Lachung Valley, situated at around 2,700 meters above sea level, is another region in North Sikkim where semi-nomadic pastoralism is practised. Apart from yak herding, tourism has become an essential source of livelihood for local communities. The growing influx of tourists has brought both opportunities and challenges. While tourism provides economic benefits, it has also introduced incentives that are perceived to be far superior to traditional pastoral lifestyle. The Lachungpas, rely on both yak herding and hired labor from nearby districts such as Darjeeling and Kalimpong in West Bengal to manage their herds. However, in recent decades, yak herding has faced significant challenges. One of the primary issues is the growing negative human-wildlife interaction. The presence of large predators such as Snow Leopards (*Panthera uncia*), Feral Dogs (*Canis lupus familiaris*), Leopards (*Panthera pardus*), Tigers (*Panthera tigris*), and Himalayan

Dokpa returning to his yak station after grazing his yaks at Letchen, Lachen North Sikkim. P.C-Pema Yangden Lepcha

Black Bear (*Ursus thibetanus*) has escalated in recent years. The herders report substantial livestock losses each year, particularly among young calves, which are the most vulnerable to predation. On average, about 327 yaks are predated annually in these valleys, contributing to the economic distress of the herding families. During summer months the situation gets worse, as grazing pastures become more crowded with both herders and predators.

The increasing population of feral dogs has emerged as an additional threat to livestock. Historically, domestic dogs were used as guardians for the herds, but the rise in feral dog populations has created a new challenge for herders.

A mother yak standing over its death calves died due to FMD, at Lachen valley Picture credit-Yak herder

Feral dogs often attack and kill livestock, contributing to further economic loss and frustration within the herding community. Another pressing challenge is the lack of market access for yak products. Despite the significant investment required to manage yak herds, the financial returns from yak herding are limited due to a lack of proper infrastructure to commercialize yak-based goods such as wool, milk, and meat. This economic struggle has made yak herding less profitable, especially when considering the substantial costs involved in maintaining the herds, including labor and medical care. The challenges of veterinary support and limited access to medications have further compounded this issue, with herders struggling to treat diseases affecting their livestock. Furthermore, impacts of climate change are being felt in the rangelands. This has the potential to lead to rangeland degradation and altering seasonal migration patterns. The increasingly unpredictable weather and reduced availability of suitable grazing land have made it difficult for herders to sustain their livestock. The adoption of a 50-50 ownership system called 'Adya', where yak herders share yak profits with outside labor, reflects the growing challenges of finding trusted and skilled labor. The declining number of experienced herders has exacerbated the difficulty in managing livestock effectively. Although, pastoralism remains an integral part of the culture of Lachen, Lachung, and Dokpa communities, it faces numerous challenges. From human-wildlife conflict and market limitations to the impacts of climate change, the future of yak herding in this region is uncertain. Addressing these challenges will require a collaborative approach, including better wildlife management strategies, improved access to veterinary care, and more market opportunities for yak products. The resilience of these traditional pastoral communities will depend on both local solutions and support from external stakeholders to ensure that yak herding remains a viable and sustainable livelihood option and this culture is preserved.

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Community engagement for developing invasive plant species based products for rural entrepreneurship

To manage the spread of the invasive weeds like *Eupatorium adenophorum, Ageratum conyzoides, Lantana camara, Chromoleana odorata* and *Mikania micrantha* in Darjeeling and Kalimpong Districts we organised hands-on training events for the Women Entrepreneurs Organization a registered body from Lalung & Ranju valley, Darjeeling. Invasive based product development and local enterprise setup were part of the project activities.

Eadenophorum adenophorum soap. P.C-Yougesh Tamang

The training included techniques to make invasive plants based products like: a) Herbal handmade soap from *Eupatorium adenophorum* and *Ageratum conyzoides* as an alternative to chemical based soaps; and b) Natural dye extraction with weeds like *Eupatorium adenophorum*, *Ageratum conyzoides*, *Ageratum conyzoides*, *Lantana camara*.

The main target of the training was to train local rural women in exploring valuable products from invasive plant species and to develop rural and urban market linkages for these products. We hope this initiative will benefit rural communities to diversify their livelihoods and also lead to management of invasive species in the landscape.

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Rapid biodiversity assessment in the corridor areas of Darjeeling-Kalimpong district, West Bengal, India

As part of the project assessing and enhancing biodiversity in the Darjeeling Himalaya, Khanchendzonga Landscape, Eastern Himalaya, three biodiversity conservation corridors have been identified:
i) between Singalila National Park and Senchel Wildlife Sanctuary; ii) between Senchal Wildlife Sanctuary and Mahananda Wildlife Sanctuary and iii) between Mahananda Wildlife Sanctuary and Neora National Park. A rapid biodiversity assessment protocol appropriate for the sites was developed to assess the biodiversity in these corridors using indicator taxas such as birds, butterflies and, herpetofauna. Additionally, information on trees and mammals in the corridor are being collected using transect method and camera traps respectively. During these rapid assessments, a total of 210 kms were walked in 21 days. 4-5 observers comprising of researchers and experts in the identification of each taxa participated in the assessments. Butterflies were the highest scoring taxa in terms of richness and individuals observed (195 sps./1427 individuals), followed by birds (189/1375) and herpetofauna (reptiles 6/13, amphibians 6/41 and snakes 5/6). “Khasmahal” i.e., privately owned lands yielded the highest number of butterfly species while cinchona plantation block yielded the most number of bird species signifying the importance of these non-protected landscapes as biodiversity corridors.

Walking on the trails in the corridor during rapid biodiversity assessment: P.C-Avantika Thapa

Herping during the rapid biodiversity assessment. P.C-Avantika Thapa

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Training workshop on "Wildlife Surveillance in the Context of Vector-borne Disease Scrub Typhus - an Emerging Threat in the Himalayas"

Combing of trapped small mammal for ectoparasite collection. P.C-Saurabh Gurung

We organised a training on "Wildlife Surveillance in the Context of Vector-borne Disease Scrub Typhus - an Emerging Threat in the Himalayas" in Darjeeling from the 9th-12th September, 2024. This program which was part of a broader study called was led by experts from ICMR Dibrugarh, SMCRF Nepal, and ATREE Bangalore and attended by professionals from the health, veterinary, forest, and academic sectors of Sikkim and West Bengal. Small mammal trapping and ectoparasite collection methodologies were comprehensively covered during the program, with an emphasis on One Health approaches to tackle zoonoses. The workshop was considered a crucial step towards fostering inter-sectoral relationships to combat zoonoses in the region.

Participants of the workshop. P.C-Bren Kumar Kharka

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Capacity Building for Promoting Bird Tourism in the Darjeeling Himalaya

With support from the Oriental Bird Club, UK, we organized two capacity-building workshops to promote bird tourism in Darjeeling. The first workshop was held on 16th–17th November 2024 at Dabai Pani Bhotia Busty Primary School, engaging 15 local community members. The second took place on 23rd–24th November 2024 in Sonada, training 18 forest guards in collaboration with Hill Research Range II, Silviculture (Hill) Division, Darjeeling. Both workshops aimed to enhance participants' knowledge of biodiversity, bird identification, and conservation, equipping them to support bird tourism and act as ambassadors for bird conservation. The training combined theoretical and practical sessions, covering topics such as bird and butterfly identification, the biogeography of Darjeeling, endemic birds of the Eastern Himalaya, and diversity of important bird groups.

Participants along with resource persons of the Birding Guide Training in Dawai Pani, Darjeeling, P.C- Aditya Pradhan

Field sessions complemented classroom learning, providing hands-on experience in bird and butterfly identification and observation. Participants recorded 39 bird species and 6 butterfly species in Dawai Pani, while those in Sonada identified 32 bird species using the Merlin Bird ID app and eBird. Observations were uploaded to citizen science platforms like eBird and iNaturalist, fostering a culture of data-driven birding. These workshops are expected to contribute to sustainable bird tourism in Darjeeling, creating livelihood opportunities, enhancing local engagement in conservation, and promoting environmental stewardship in the region.

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Snow Leopard Human-Coexistence in Sikkim

Lachen and Lachung, high-altitude regions in North Sikkim, are home to the Dokpas and Bhutias, yak herders who migrate to extreme terrain and weather. These landscapes are also the habitat of the elusive Snow Leopard, an apex predator vital to the region's ecosystem. For generations, herders and Snow Leopards have shared these mountains, with occasional conflict when yaks fall prey to predators like Snow Leopards, feral dogs, tigers, bears, and wolves. Locally, yak herding communities, have viewed the Snow Leopard negatively. Frustration is growing among herders who face increasing livestock losses due to predation. According to the herders. the compensation they get are often delayed or inadequate, leading to resentment towards conservation policies that seem to prioritize wildlife over their livelihood. Some herders see Snow Leopards as a threat and have developed negative sentiments towards them. Conservation efforts in Lachen and Lachung should work towards reducing negative human-wildlife interactions. Initiatives such as community-based livestock insurance, predator-proof night shelters, and eco-tourism provide alternate solutions were recommended during our discussions with them. At the same time, awareness programs can reinforce the co-existence with the Snow Leopard. Sustaining coexistence depends on supporting herders while ensuring the survival of the species and maintaining the ecological and cultural balance of Sikkim's rangelands.

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A typical landscape of rangeland, yak station and snow leopard habitat in the background at Ocha, lachen , P.C- Pema Yangden Lepcha

The Mountains to Mangrove Initiative: A Participatory Evidence-Based Approach to Landscape Restoration (RE-HIM)


Restoration activity in Yang Makum, Kalimpong. P.C-Aditya Pradhan

The project aims to restore 200 hectares of degraded land and conserve 17,000 hectares across Sikkim, Kalimpong, and Darjeeling in West Bengal, India. It focuses on conserving key indicator species, including hornbills, woodpeckers, and native trees, while engaging over 3,000 local communities in sustainable resource management and conservation practices.

13.13 hectares of degraded, privately-owned land in Yang Makum Gram Panchayat, Kalimpong were identified for restoration through consultations with local communities, Gram Panchayat representatives, and landowners. Eight pre-restoration plots and two permanent control plots were established to collect baseline vegetation data using quadrat sampling. Restoration plans were co-designed through focus group discussions, prioritising 28 of 46 native tree species identified by the community. Boundaries were demarcated with landowner agreements, and nurseries for 13 native species were secured. Reference forest data were also collected from 10 plots in nearby reserve forests in Sevoke and Bagora using the same sampling methods to guide restoration practices, ensuring a participatory and evidence-based approach. Despite the late start in August, restoration activities commenced in three privately owned degraded agroforestry and degraded forest lands. A total of 8,470 saplings from 13 native tree species were planted on these sites. This effort highlights the importance of community participation and scientific guidance in addressing land degradation and promoting biodiversity conservation. The RE-HIM project continues to build capacity for sustainable practices while contributing to ecological restoration and the preservation of key species in the Eastern Himalaya.

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Inception Meeting at Jhapujote. P.C: Sanjeeb Pradhan

Inception meeting with beneficiaries and stakeholders of Naxalbari and Panighatta Range

ATREE, with support from ICIMOD, is implementing the project “Piloting holistic human-elephant coexistence solutions in the Kangchenjunga Landscape - India” at Naxalbari and Panighatta Range, along the Mechi River on the Indo-Nepal border in India, focusing on building institutional capacity for comprehensive human-elephant Coexistence. All the activities were co-designed and co-identified by communities who are most affected by negative human-elephant interactions.

ATREE organized inception meetings with beneficiaries and stakeholders, including community representatives, Self-Help Groups, Rapid Response Teams, Panchayat members, and SSB personnel in Jhapujote/Baramaniram, Kilaram Jote/Surajbar, and Tukria Busty on September 19th, 25th, and 26th, 2024. Approximately 150 participants were briefed on the project's description, goals, activities, strategies, and timeline. The meetings encouraged active participation, with attendees sharing recommendations on the project's sustainability. Five Tower Construction and Monitoring Committees were formed, consisting of community members, project staff, and landowners. These committees will supervise day-to-day monitoring of construction, ensuring adherence to blueprints, tracking materials and equipment, and managing the watch towers after project completion.

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Empowering Women Entrepreneurs through Invasive Plant-Based Products

As part of the DBT project "Value-Added Products from Invasive Plant Species for Improving Livelihoods of Marginalized Communities in the Indian Himalaya," ATREE Darjeeling organized two workshop events in December 2024.

a. Handmade Soap-Making & Packaging from invasive plants workshop

Continuing our efforts to create value-added products from invasive plants, we conducted a hands-on training session for the registered women entrepreneur group in Sittong III, Kurseong, Darjeeling. This workshop aimed to strengthen market linkages for value-added products derived from invasive plants. The one-day training served as a revision session for participants, focusing on handmade soap-making using invasive species such as *Eupatorium adenophorum* and *Ageratum conyzoides*, along with crafting and packaging techniques. , enhancing economic opportunities for marginalized communities.

Participants during soap packaging workshop: P.C: Yougesh Tamang

During the session, the participants successfully produced and packaged 150 soaps made from these invasive plants. The registered women entrepreneurs from Sittong III are actively participating in various rural exhibitions organized by the government, as well as in village fairs and cultural festivals, further promoting their products and generating sustainable income.

b. Women Entrepreneurs Organization Formation

A one-day inception meeting and enterprise group formation workshop was conducted for 16 women from seven Self-Help Groups (SHGs) at Panbu village, Kalimpong. The primary objectives of this workshop were to establish a registered women's enterprise group and provide training on fundamental business strategies and entrepreneurship.

As a result, the Women Entrepreneurs Organization (WEO) Panbu Kalimpong, was formed and officially registered under the village Gram Panchayat.

Moving forward, this newly established WEO will receive training in product development using invasive plants, as provided by the project team. This initiative not only fosters entrepreneurship in the village but also provides an alternative source of rural-urban livelihood

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Butterfly Diversity in Urban Areas of Sikkim

Despite rapid urbanization, the urban landscapes of Sikkim continue to support a diverse butterfly community. As a part of a long-term monitoring program, we have been documenting butterfly diversity in Gangtok and Namchi, two major urban centers of the state. In Gangtok, we documented 80 species, with the Indian Cabbage White (*Pieris canidia*) being the most abundant, while Namchi recorded 40 species, dominated by the Redbase Jezebel (*Delias pasithoe*). These species collectively represent 5% of the butterflies documented in Sikkim (Haribal, 1992). Species richness and abundance were highest in forest patches, where we recorded 56 species, followed by open lands with 18 species. The dominance of polyphagous and oligophagous species in forest patches suggests that habitat heterogeneity and host plant diversity play a crucial role in butterfly distribution. Butterflies are highly sensitive to environmental gradients, human-induced disturbances, and climatic changes. Understanding their responses to urbanization is crucial for conservation planning. This study emphasizes the need for targeted conservation strategies that focus on maintaining urban green spaces, protecting small forest fragments, and promoting native plant species to sustain butterfly diversity in Sikkim's rapidly developing cities.

Gangtok Forrest Patch: P.C: Sailendra Dewan

Landscape Conversion: P.C: Sailendra Dewan

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Big Butterly Month 2024

As part of Big Butterfly Month 2024, ATREE Eastern Himalaya organized workshops at four academic institution in Sikkim including Nar Bahadur Bhandari Government College, Sikkim Alpine University, Sikkim Government College, and Sikkim University engaging over 200. The program combined lectures on butterfly diversity and ecological importance with hands-on training using the iNaturalist app. A total of 235 butterfly species were recorded during the event. Overall, 2025 observations by 141 observers, representing 32.6% of Sikkim's were recorded during the event.

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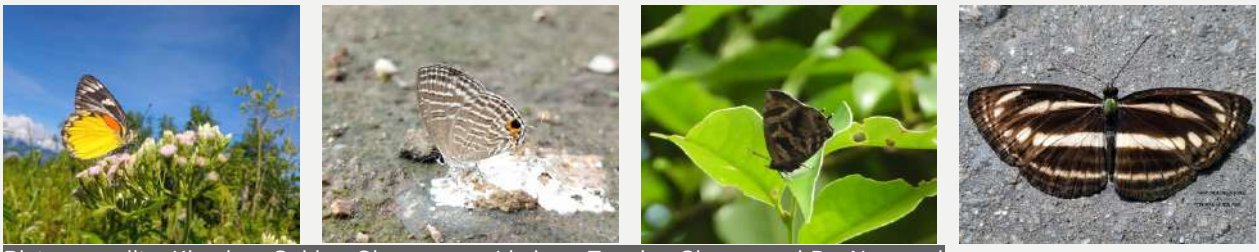
Hands-on training on using Inaturalist app and identifying butterflies. P.C-Pema Yangden

Sailendra presenting during the event at SAU Namchi P.C-Pema Yangden



Picture credits: Khushan Subba, Chungwama Limboo, Tenzing Sherpa and Dr. Namgyal

Promoting sustainable horticulture through capacity building and natural farming practices under WADI project

As part of a horticulture project supported by NABARD involving 250 ethnic/tribal members, ATREE conducted 3 days long training at Dhaki Gaon, Lower Rollak and Upper Lanku in Sittong, separately for second phase 161 project beneficiaries to encourage farmers to adopt natural farming, a chemical-free orchard management practice that integrates local innovations and diverse cropping systems. A total of 1998 person hour trained. During training jeeva amrit drum and vermi composting bed were also distributed. This approach follows local agro-ecological principles, leveraging traditional knowledge and location-specific technologies adapted to the local environment to promote sustainable farming practices. Training includes soil moisture conservation, water resource development for irrigation, intercropping practices, composting, liquid manures, jeeva amritum, insect pest and disease management and participatory rural appraisal for identifying future challenges.

Training will help reduce input costs, decrease dependency on external inputs, and improve soil health and resilience to climate risks. As part of training, we have identified peafowl and monkeys are one of the potential threats affecting the project in the future through PRA. Therefore, to prevent the loss through HWC in the future ATREE will conduct a consultation meeting with Village Planning Committee, Project Implementation & monitoring committee and Sittong Agro-Horti Farmers Association in December 2024. The major objectives of the consultation meeting will be to develop a strategy planning to prevent depredation by working closely with line departments especially with the Forest Department.

Soil water conservation. P.C- Tshering Dorjee

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Focus Group Discussion on feasibility of White-bellied Heron (WBH)-based ecotourism with Communities living in Ghandhigram and Vijaynagar of Arunachal Pradesh, India.


FGD in Ghandhigram, P.C- Yumlam Benjamin Bida

A focused group discussion was conducted with the Lisu and Nepali-speaking communities of Ghandhigram and Vijaynagar, Changlang district, Arunachal Pradesh to assess the feasibility of White-bellied Heron (WBH)-based ecotourism on 10th and 11th January 2025, in Mazgao and Ghandhigram. The discussion engaged 38 participants including village leaders, gaonburahs, and panchayat members.

Given the region's rich biodiversity, scenic natural trails, and rich culture, participants acknowledged ecotourism as a sustainable alternative to their current reliance on cardamom cultivation, the area's only cash crop.

While both communities recognized the presence of the WBH in their rivers and streams, they were largely unaware of its Critically Endangered status. However, they expressed interest in developing WBH-based tourism but highlighted several concerns. Challenges such as habitat degradation due to a lack of collective involvement, poor road connectivity, reliance on external tour operators and inadequate training for local guides and homestay hosts were raised.

The discussion emphasized the need for capacity building and infrastructure development to ensure the success of community-led conservation tourism while fostering local stewardship for the White-bellied Heron and its habitat.

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Immersion Visit for students from ATREE Academy

In October 2024, ATREE Eastern Himalaya Regional Office hosted five M.Sc. students from ATREE Academy, Bangalore for their third-semester immersion visits. Each student participated in a different field activity and worked to obtain practical experience in ongoing research and conservation activities across five different sites in the region.

The five students worked to:

- Understand the socio-ecological parameters enhancing Scrub Typhus risk in the local communities.
- Explore the topic of landscape restoration through participatory evidence-based approaches.
- Learn climate-resistant sustainable agricultural practices.
- Conduct rapid assessments of butterfly and bird diversities.
- Understand human-wildlife conflict (HWC) and strategize measures for coexistence.


Household Surveys, P.C-Saurabh Gurung


Household Surveys, P.C-Sanjeeb_Pradhan


Students at the debriefing session. P.C-Bren Khadka

These activities enabled the students to gain field exposure and hone their skills in facilitating focus group discussions as well as conducting household surveys and key informant interviews using ODK. They were exposed to methodologies in orchard management, documenting bird and butterfly diversity, and monitoring elephants with local Rapid Response Teams. The students were also trained in the use of Sherman traps for trapping small mammals and in the establishment of permanent monitoring plots for restoration.

In addition to the research activities, the students also gained knowledge of the local culture and cuisine, enhancing their understanding of the socio-ecological landscape in the region.

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Awareness, Sensitization and outreach through short Skits

Skit for awareness, Sensitization and outreach through short Skit . P.C- Sanjeeb Pradhan

Under the project "Piloting Holistic Human-Elephant Coexistence Solutions in the Khanchendzunga Landscape - India", an awareness drive was conducted on human-elephant conflict, from 29th November 2024 to 3rd December 2024. The program was carried out through interesting street plays. The program took place at Bara Maniram & Kilaram Jote, Tukria Basti, Jhapu Jote and Surajbar village under Naxalbari and Panighatta Ranges. There were over 300 individuals across multiple villages who attended the program. Although the program was organized by ATREE, the enthusiastic local RRT members have participated and contributed their best to complete this drive successfully. 11 Rapid Response Team members actively participated in the awareness drive program, and performed well.

Through a series of interactive performances and demonstrations, the program educated participants on safe practices, preventive measures, and the role of collective vigilance in mitigating conflicts. The main aim of the event was to equip communities with skills to adapt to living alongside elephants. There were several dramas based on various encounters with wild elephants.

The sessions focused on the dangers of provocation and attacks toward elephants, and other inappropriate activities, like taking selfies with the elephants or teasing them by making different sounds, etc. Other critical issues addressed were open defecation, being unvigilant during morning walks, crop monitoring, which increased the likelihood of human-elephant encounters. The campaign also addressed the risk of mobile phone addas (gatherings) near forest areas, which increases the risk of unexpected elephant attacks due to lesser alertness. By engaging local concerns and real-life examples, this awareness drive promoted better coexistence practice among the villagers.

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The Mountains to Mangrove Initiative: A Participatory Evidence-Based Approach to Landscape Restoration (RE-HIM)

Under the Mountains to Mangrove Initiative, the RE-HIM Project aims to restore degraded land across Sikkim, Kalimpong, and Darjeeling. In the previous quarter, 13.13 hectares of degraded, privately owned land in Yang Makum Gram Panchayat, Kalimpong, were identified for restoration, and 8,470 saplings from 13 native tree species were planted through a participatory approach.

During this reporting period, ATREE focused on monitoring of restored sites to ensure sapling survival. Local communities participated in post-restoration activities, including manual clearing of weeds to reduce competition for nutrients, water, and sunlight. A total sapling assessment across sites recorded an average survival rate of 86.9%. Potential restoration sites covering 65 hectares were identified and surveyed, with meetings held with landowners, community members, and Gram Panchayat representatives. Additionally, 310 hectares of bamboo-invaded land in Senchal Wildlife Sanctuary were surveyed, and an action plan was submitted to the Chief Wildlife Warden. These efforts reinforce the project's commitment to participatory, evidence-based restoration and biodiversity conservation in the Eastern Himalaya.

Mapping potential restoration sites with the help of local community members in Yang-Makum, Kalimpong. P.C- Aditya Pradhan

Maling bamboo invaded forests in Senchal Wildlife Sanctuary . P.C-Tenzing Sherpa

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Regional Workshop on Field Research and Methodologies for Pangolin Research and Conservation in the Himalayan Region

As part of the Pangolin Conservation Project, a two-day regional workshop on Field Research and Methodologies for Pangolin Research and Conservation in the Himalayan Region was conducted on 8th- 9th November 2024 at Tukre, Sangmaru Tea Estate, Darjeeling. The workshop, involving 17 participants from India and Nepal, aimed to enhance research methodologies, foster cross-border collaboration, and address key conservation challenges for pangolins, one of the most trafficked mammals globally.

Group Photo with Participants @ Bren Kumar Kharka

Experts from various research institutions, including SMCRF Nepal, NTNC Nepal, Green Hood Nepal, Guwahati University Assam, NERIST Itanagar, Durgapur Government College, and NIAS Bangalore, India, showcased their work and shared insights on pangolin ecology, habitat assessment, conservation strategies, and threats such as illegal trade, habitat destruction, and climate change. Discussions highlighted the need for standardized research protocols, community engagement, and capacity-building initiatives. Additionally, researchers shared their experiences in community-based conservation, behavioral studies, and monitoring techniques. Overall, the workshop provided an opportunity for participants from different regions to connect and learn from research and conservation professionals.

The event concluded with a commitment to developing a regional research protocol and strengthening transboundary collaboration to improve pangolin conservation efforts. By integrating scientific research and community engagement, participants aim to ensure the long-term protection of pangolins in the Himalayan region.

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Construction of safe spaces with in-kind contributions from communities

ATREE, with support from ICIMOD, is implementing the project Piloting holistic human-elephant coexistence solutions in the Kangchenjunga Landscape-India, focusing on building institutional capacity for comprehensive human-elephant conflict mitigation strategies. In the initial phase, the project focused on creating safe spaces, enhancing the capacity of Rapid Response Teams, and engaging stakeholders through consultations for sustained support.

Watchtowers are often used by community members, RRTs, SSB, Forest officials to monitor elephants' movement and protect crops or livestock from potential wildlife threats. This year we planned and constructed a total of 6 watchtowers at Tarabari and Tukria clusters under Naxalbari and Panighatta Range.

The Blueprint with design and estimate was developed by the Engineer, who also monitored the construction process and certified the infrastructure. An infrastructure construction Standard Operating Protocol was also developed so that the construction process was transparent and used the best quality materials. Six watch tower construction and monitoring committees were established to ensure that the required criteria for stability and sustainability of the watch tower site met overall criteria and further ensure that the tower remains operational for the long term through regular maintenance and repairs. Local communities played a critical role in the construction process by providing in-kind contributions such as labour, raw materials, and logistical support. This participation not only reduced construction costs but also fostered a sense of ownership and responsibility toward the maintenance of the towers. A sum of INR 3,08,400 has been contributed in kind for the construction of 6 watch towers.


Watchtower, P.C-Amit

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Bird and butterfly assessment in the cinchona plantation area, Mungpoo, Darjeeling district, West Bengal, India

Large swathes of primary forests have been converted to plantations of commercial plants such as cinchona, which have been know to support rich faunal biodiversity. An assessment of the bird and butterfly diversity was conducted in the Mungpoo cinchona block (10023.72 acres) with an altitudinal range of 365.76 m to 1880 m. Historically, this block had Cinchona, Ipecac, Taxus baccata and Swertia chirata plantations. The block is now an experimental ground under the Horticulture Department and is planted with lemongrass, citronela, rubber, avique, dragon fruit, coffee and mandarin. This area makes up a significant section of a biodiversity corridor that connects Senchal Wildlife Sanctuary with the Mahananda Wildlife Sanctuary. As a part of the field immersion program for the master's student in ATREE; birds and butterflies were observed using the open-width transect walk method by a field supervisor and a student. 18 trails were walked. An average of 6 km was walked every day observing birds and butterflies. A total of 72 km was walked in 12 days, 60 hours of observation were made, and 75 species of birds were observed. A total of 519 bird individuals were observed and 74 species of butterflies were observed. A total of 951 butterfly individuals were observed.

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Ensuring Sustainable Irrigation for Tribal Farmers in Sittong, Darjeeling

ATREE, in collaboration with NABARD under the Tribal Development Fund (TDF), has successfully established a combined orchard of Mandarin Orange and Avocado across 80 hectares in Sittong, Darjeeling. This initiative has directly benefited 202 tribal families, promoting sustainable livelihoods and ecological resilience. However, ensuring a reliable water supply during the dry months from November to April remains a critical challenge.

Water Harvesting Initiative. P.C-Tshering Dorjee Bhutia

Community Irrigation Tanks . P.C-Tshering Dorjee Bhutia

To address this, the project has initiated the construction of Community Irrigation Tanks (CITs) across all three project clusters. Each CIT, with a capacity of 576 cubic feet, will enhance water storage and accessibility for irrigation. The construction is expected to be completed by January 2025. These tanks will play a vital role in mitigating the effects of water scarcity, ensuring that farmers can maintain their orchard even during dry spells.

In addition to community-level irrigation infrastructure, farmers have been actively encouraged to adopt decentralized water conservation measures. As a result, all 202 project beneficiaries have successfully installed water harvesting structures within their respective orchards. These units collect and store rainwater, unused fresh water, and waste water supplementing the CITs in providing a sustainable water source throughout the year.

The integration of Community Irrigation Tanks and individual water harvesting structures is expected to significantly enhance water availability, leading to improved orchard health and yield. By implementing these climate-resilient water management strategies, ATREE and NABARD are empowering tribal farmers with the resources needed for long-term agricultural sustainability. This initiative exemplifies a holistic approach to conservation-based livelihood development, ensuring that communities can thrive while maintaining environmental balance.

As the project progresses, continuous monitoring and community participation will be key to optimizing water use efficiency. This collaborative effort marks a significant step toward sustainable agriculture in Darjeeling's hill regions, reinforcing the commitment to both ecological conservation and rural development.

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Advancing Rural Sustainability: Mustard Oil Extraction Unit Launched Under NABARD-WADI Project

As part of the NABARD-supported WADI project, ATREE has established the Sittong Agro-Horti Farmers Association (SAHFA), an inclusive organization formed through village-level consultations among 252 beneficiaries. Comprising 19 members with a focus on gender balance, SAHFA embodies the principles of local ownership, participatory decision-making, and sustainable development.

A key milestone in the project is the establishment of a mustard oil extraction and value-addition unit in Rollak Village, accomplished with 100% community contribution. The project provided a state-of-the-art oil expelling machine, which was installed and inaugurated in September 2024 in the presence of NABARD officials. In its first phase, farmers collectively harvested 5,656 kilograms of mustard, marking the beginning of a significant step towards value-added product development and enhanced income generation for the community.

Oil extraction machine inauguration . P.C-Tshering Dorjee Bhutia

Oil extraction . P.C-Tshering Dorjee Bhutia

To ensure the long-term sustainability of these efforts, ATREE plans to transition SAHFA into a registered Farmers Producer Organisation (FPO). NABARD has already committed additional funding for this transformation. The FPO will be equipped to manage diverse operations, with future expansions aimed at producing fruit juices, honey, vegetables, and livestock products. These initiatives will diversify local livelihoods, reduce environmental footprints, and promote climate-resilient agricultural practices.

The WADI project emphasizes environmentally friendly approaches by integrating ecological principles into all activities. This includes promoting natural farming techniques, reducing chemical inputs, and enhancing soil health. Capacity-building initiatives further empower the community with technical knowledge, fostering innovation and resilience.

Through collaborative efforts with NABARD and local stakeholders, ATREE is creating a self-sustaining model of rural development. This initiative not only strengthens tribal livelihoods but also contributes to environmental conservation, underscoring the potential of community-driven projects to deliver sustainable and scalable outcomes.

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1. Conservation of Snow Leopards and associated habitats while augmenting community livelihoods North Sikkim funded by the Eicher Group Foundation
2. Generating Knowledge and information for managing rangelands for multiple benefits- India supported by ICIMOD
3. Piloting holistic human-elephant coexistence solutions in the Kanchenjunga Landscape - India supported by ICIMOD
4. Resilient Himalayas: A participatory evidence-based approach to landscape restoration funded by Conservation International through its Mountains to Mangroves initiative
5. Resilient Himalayas: A participatory evidence-based approach to landscape restoration funded by Conservation International through its Mastercard-Priceless Planet Coalition initiative

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New staff

Amit Routh

Amit Routh aged 32, resident of Kilaram Jote, Naxalbari, District Darjeeling has joined the project Piloting holistic human-elephant coexistence solutions in the Kangchenjunga Landscape-India as Field Technician. He has been involved with the Rapid Response Team – RRT of Tarabari Amit has completed his Higher secondary education.

Chewang Choden Bhutia

Chewang Choden Bhutia from Lachung, North Sikkim has joined as Project Assistant Assistant for project "Conservation of Snow Leopards and associated habitats while augmenting community livelihoods North Sikkim" supported by Eicher Group Foundation from November 2024. She hold BA degree in Education.

Jiten Das

Jiten Das aged 35, resident of Kilaram Jote, Naxalbari, District Darjeeling has joined the project Piloting holistic human-elephant coexistence solutions in the Kangchenjunga Landscape-India as Field Technician. He has been an active member of Rapid Response Team-RRT of Tarabari cluster

Leesh Ray

Leesh Ray has joined as a Project Associate for the ICIMOD-funded project, "Piloting Holistic Human-Elephant Co-existence Solutions in the Kangchenjunga Landscape-India." She will be based in our Naxalbari Project Office. She is from Alipurduar and has an MSc. in Environmental Science from Banaras Hindu University. Her interests include trekking, camping, and mountaineering.

Nisu Kumari

Nisu Kumari has joined as Project Accountant for the Re-him project. She holds a Master's in Commerce and brings six years of experience in the field. Prior to joining ATREE, she worked at the Regional Ayurveda Research Institute in Gangtok.

Pramod Rai

Pramod Rai has joined as a Project Associate for the ICIMOD-funded project, "Generating knowledge and information for managing rangeland for multiple benefits-India." He holds a Master's in Botany from NBU and has published 11 articles in international peer-reviewed journals.

Ramesh Subba

Ramesh Subba is 24 hailing from Yang Makum village under Kalimpong District. He has joined ATREE as a Field Technician under "A Participatory Evidence Based approach to Landscape Restoration (RE-HIM) project based in Panbu. He has completed his Higher secondary education.

Riwas Tamang

Rewas Tamang is a dedicated field technician working with ATREE on the WADI project. Hailing from Shelpu village, he is a 25-year-old who has completed his Class 12 education.

Sanjay Limbu

Sanjay Limbu is a field technician working with ATREE in the WADI project. Hailing from Rolak Village, he is a 32-year-old who completed his Class 10 education at Saraswati High School, Mungpoo

Sonamit Lepcha

Sonamit Lepcha has joined as a Research Assistant for the NMHS-funded project, "Ectoparasite Infestation in Small Mammals and Other Risk Factors in the Context of Scrub Typhus: An emerging zoonotic threat in the Himalayan." A Dzongu native, she holds a Bachelor's in Zoology.

Srijana Sharma

Srijana Sharma, from Rinchenpong, West Sikkim has joined as a Project Associate for the Rainmatter Foundation-funded project, "Site Specific Portal Development for Sikkim and Darjeeling Himalayas." She holds a Master of Arts in Geography from the Delhi School of Economics, University of Delhi, and is a co-founder of I and U food supply chain store.

Tara Chettri

Tara Chettri, from Darjeeling, has a M.A. in Anthropology, specializing in Social-Cultural Anthropology. Having one year of experience as a Research Assistant in a mental health project at Darjeeling Ladenla Road Prerna, a Darjeeling-based NGO. Currently, working as a Project Assistant on the DBT project at ATREE.

ATREE's mission is to promote socially just environmental conservation and sustainable development by generating rigorous interdisciplinary knowledge that engages actively with academia, policy makers, practitioners, activists, students and wider public audiences. ATREE's Northeast / Eastern Himalayas Programme has a direct presence in the Darjeeling and Sikkim Himalaya with a range of local partners in the other states of North East India.

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