

Eastern Himalayas

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Studying amphibians in Khangchendzonga Biosphere Reserve, Sikkim

“Look *aai* (elder sister), there’s a *peeray paa* out there,” shouts Passang, over the roar of the gushing torrents. All of thirteen years of age, he is one of the finest Lepcha trackers in our group. I find myself standing on a huge boulder feeling the cool water rush under my feet, a thin drizzle sweeping across my face, amidst the roar of the flowing river and the singing frogs, searching for the source of that ecstatic call. I rush towards him, forgetting my precarious position on that moss-covered rock. We photograph the frog, take notes and measurements quickly.

Passang is impatient to put it into his bag. The *peeray paa* (local name for *Amolops formosus*) is believed to have medicinal properties and almost miraculous healing power in case of deep cuts. As I finish, he grabs the frog and we inspect it for finer details. It gives off a pleasant scent on being handled, a bit like ripe guavas. The frog is carrying eggs, so Passang decides to let it go even though it was a precious find.



Amolops formosus



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Looking for frogs in Dzongu, North Sikkim

All this unfolds inside the Khangchendzonga Biosphere Reserve (KBR), one of the highest protected areas in the world (1000m-8598m). My study is one of the few that have been undertaken on amphibians at these altitudes and focuses on distribution, diversity and ecology across various habitat types and altitudes. I am also looking at traditional use of frogs for food and medicine. Seventeen species of amphibians have been recorded so far, including in the fringe villages.

The Lepchas live on the southern and eastern slopes of Mt. Khangchendzonga, in one of the most inaccessible valleys within the buffer zone. They have always lived and depended on the forests around them and have immense knowledge of plants, animals and ecological processes. Hunting is an integral part of their tradition. With the enforcement of Wildlife Protection Act (1972) hunting is strictly prohibited. Consequently, hunting for livelihood, medicinal use and sport has shifted to smaller animals like frogs, whose killing usually goes unnoticed.

- Barkha Subba
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A wetland under threat



A view of Loktak lake with its unique 'phumdis'

Loktak Lake is the largest natural freshwater lake in Northeast India and plays an important role in the ecological and economic security of Manipur. It is also the first Ramsar Site of northeast India and a key Important Bird Area, providing refuge to thousands of birds, including more than 21 species of waterfowl. However, their numbers have declined due to hunting and general disturbances.

Oinam Sunanda Devi, a research scholar at Guwahati University, undertook a year-long study of status of water birds and conservation issues in Loktak Lake. The study documented 69 bird species, including 17 species of waterfowl. Of these, 51 species were sighted in undisturbed habitat, 37 species were strictly restricted to disturbed habitat, and 44 species were confined to moderately disturbed habitat. It was also observed that most waterfowl were confined to undisturbed and moderately disturbed habitats where there was little or no disturbance from fishing. Globally threatened species such as Black-necked Stork *Ephippiorhynchus asiaticus*, Oriental Darter *Anhinga melanogaster* and Ferruginous Pochard *Aythya nyroca* were found only in the undisturbed habitat.

The study points out that apart from hunting and other disturbances, construction of the Ithai barrage for a multipurpose hydroelectric and irrigation project was the main threat to the Lake. Overfishing was another key threat, leading to decrease in fish diversity and causing scarcity of food for migrating waterfowl. This is highlighted as a possible cause for their decline in numbers each year.

It also noted a conflict between local fisherfolk and the government due to the *phumdi* (floating vegetation mats) cleaning drive undertaken by the Loktak Development Authority in association with the state forest department.

Sunanda received a grant from the ATREE Small Grants Programme for Research in NE India.
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A sustainable development agenda for the Himalayas

ATREE Eastern Himalayas Regional Office was part of the organizing committee for the Indian Mountain Initiative – Sustainable Mountain Development Summit II held in Gangtok 25-26 May 2012. ATREE facilitated discussions and inputs into the Summit recommendations on the thematic area of Water, and the sub themes: water hazards in the mountains; water ecosystem services; water preservation, traditional systems and innovations; and, water rights, policy and governance.

The Summit was organized by Ecotourism and Conservation Society of Sikkim (ECOSS), with support from the Central Himalayan Environment Association (CHEA) and several local and regional organisations. The Gangtok summit was preceded by pre summit consultations at Kalimpong, Shillong and Kohima. The IMI is a forum of the 11 mountain states of the Indian Himalayas, including the hill districts of Assam and West Bengal.



At the inauguration of the Sustainable Mountain Development Summit II in Gangtok, May 2012

A sweet harvest in Phedikhola

Beekeeping is one of the key livelihood interventions that ATREE is promoting in villages in the buffer zone of Singalila National Park in Darjeeling. In Phedikhola, a forest-fringe revenue village, 55 households have benefited from this livelihood option.



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A traditional bee hive

In May and June, 170kg of honey was harvested, of which 80kg was sold in Darjeeling at Rs.280 per kg, bringing in an income of Rs 22,400 for honey producers. The price was fixed by the community following a consultation. The rest was sold locally at Rs.250-300 per kg. ATREE continues to provide training on beekeeping, extraction and construction of beehive frames, and partially supports the cost of new bee boxes.



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A modern bee hive

To address issues of food stress, farmers are being encouraged to plant various flowering and nectaring trees and plants, so that there are sufficient food resources for bees throughout the year. This will also help in restoring and maintaining diversity and green cover. The project is also encouraging farmers to cultivate traditional crops like buckwheat, barley and mustard, which were abandoned for cash crops.

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Vermicomposting training in Kaziranga



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Farmers at a vermicompost demonstration unit

In April about 100 villagers from Tamulipathar and Sukani Barigaon villages under the Eastern Range of Kaziranga National Park gathered for a 2-day training programme on the techniques of vermicomposting. This was organised by ATREE under the UNESCO World Heritage Biodiversity Project, in collaboration with the Assam Forest Department and with technical guidance from the Rain Forest Research Institute (RFRI), Jorhat, Assam.

Concrete vermicompost tanks were constructed as demonstration units prior to the training. Farmers learnt to prepare vermicompost, and were trained in maintenance of the tanks and construction of low-cost vermicompost units using bamboo and plastic sheets. They were also apprised of the market value of vermicompost and encouraged to take it up as an enterprise. 200kg of vermicompost was distributed as sample for trial in their paddy fields. It is hoped that this initiative will reduce dependence on chemical fertilizers as well as increase household incomes.

- Arunava Gupta, Project Associate, ATREE, Guwahati
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Workshops organised

ATREE-NCBS seminar and workshop

ATREE and the National Centre for Biological Sciences (NCBS) organised a two-day seminar and workshop in Gangtok on 2-3 May 2012. The seminar by students and researchers was to share preliminary findings and progress on the Department of Biotechnology-supported project with the Sikkim Forest Department and other stakeholders. It was followed by two one-day workshops focused on communication skills and study design.

Methods for geographical ecology

A two day workshop on 'Methods for Geographical Ecology' was held at the Indian Institute of Bank Management, Guwahati, Assam, India for students and researchers of northeast India who were engaged on individual research projects as well as action projects of organisations. The workshop focused on using the GIS software IDRISI.

The chief instructor was Dr. John J. Kineman, Senior Research Scientist, Ecosystem Science Division Cooperative Institute for Research in the Environmental Sciences, University of Colorado, Boulder. 18 participants from Assam, Arunachal Pradesh, Manipur and Sikkim participated in the workshop.

Visits

A delegation of Deputy Chiefs of Mission visit of the Nordic countries visited the Eastern Himalayas Regional Office at Gangtok on 11 June 2012. The delegation comprised Mr. Aslak Brun, Chargé d' Affaires, Norway, Mr. Åke Peterson, Chargé d' Affaires, Sweden, Mr. Pekka Voutilainen, Minister Counsellor/DCM and Mr. Hakur Olafsson, Deputy Chief of Mission, Iceland. Dr. Sarala Khaling, Regional Director, made a presentation on the ATREE Eastern Himalayas programme which was followed by general discussions on conservation and development issues in northeast India.

Grants received

Integrated approaches for adaptive resilience-based management of forests for supporting agro-systems in the Sikkim-Darjeeling Himalayas (Sir Dorabji Tata and Allied Trusts)

Linking Disaster Risk Reduction (DRR), Climate Change Adaptation (CCA) and Sustainable Landscape Development Goals in the Eastern Himalaya (START - global change SysTem for Analysis, Research and Training)

Barkha Subba has been awarded a Herpetological Conservation Research Fund grant by the Madras Crocodile Bank Trust.

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 Himalayas and Assam, and works with a range of local partners in the other states of north east India.

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