

Eastern Himalaya

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Perception of Viability in Agriculture

“Service in government sector or private sector but not farming”

“Agriculture cannot fulfill family needs; it is a return less effort”

“Agriculture is not viable option for livelihoods”

“Farming means limitation; there is no scope of individual growth in terms of savings and expenditures”

The excerpts above are from Lalung, a fringe village of Senchel Wildlife Sanctuary (Darjeeling) which was once an agriculture intensive village known for its production of peas and cabbage. Today the scenario in this village is completely different where only twelve to fifteen of the fifty-five households are engaged in farming.

In a recent study conducted by ATREE communities in Lalung village perceive abandoning of agriculture to be a positive change in their lives. They map these changes as “progress” and attribute this to formal education received by the young generation thus giving them the opportunity to be recruited to other services. Here rural to urban migration is driven by the availability of quality education outside the village. Better connectivity of the village to nearby towns have been established under rural connectivity schemes making it possible for employment generation within the villages and access to life beyond the village. In other words, government schemes have mobilized livelihood opportunities within the villages; connectivity to the outside has enabled movement of people, youth in particular to other livelihood opportunities. Thus, one witnesses the transition of people from agriculture to skilled labor, government or private services, business and others.

With the on-going movement of people outside the villages, agriculture fields have become fallow which is often attributed to the lack of labor for agriculture. Agriculture, which was an integral source of livelihood is now looked upon nostalgically as a thing of the past. Agriculture is considered “risky”, “labour-intensive”, “without economic returns”. The dissuasion from agriculture is not restricted to the younger generation but is made visible through conversations with the “parents” who no longer view agriculture as a viable option for the upcoming generation.



Abandoned field in Lalung

-By Tshering Bhutia

Communities identify decrease in productivity due to changing climatic conditions, loss of agriculture labour due to migration, intense crop depredation by wildlife and changing aspirations of the people as drivers of farm land abandonment. Paradoxically, in educating the younger generation, they are de-educating them on the traditional agricultural practices, thus culturally de-crediting agriculture as a viable livelihood option available to them. Once intensively utilized and managed fields are now being subjected to geomorphic changes which in the coming years may lead not only to loss of economic viability in agriculture but the loss of relevance in agriculture itself.

The distinct voices in the excerpt above provides us with a lens to understand how agriculture now constitutes the life-world of the people and is simultaneously getting re-constituted in the face of changing times. These views thus pose a pertinent point for us to think through, the viability in/of agricultural practice(s) in the region. This is also a reflection of what is an on-going process in other parts of our mountain region.

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Future scenarios of Forest Ecosystem and Human Well-being: Case of Rammam Forest Village

Forests provide diverse ecosystem products and services which are vital to human well-being. Over exploitation of these resources cause damage to the ecosystem and inhibits the ability of the ecosystem to function properly to maintain the flow of ecosystem services. Sustainable management of forest needs clear understanding of :

- 1) Complex inter-linkages of the forest ecosystem and human well-being;
- 2) Drivers of change of the ecosystem; and
- 3) Analysis of ecosystem change under different types of future scenarios.



Buddhist and Hindu worship place in Singalila forest
-By Dr. Sourya Das

We have used the above-mentioned approach for assessment of forest ecosystems and human wellbeing for the research project "Integrated Approaches for Adaptive Resilience based Management of Forest for Supporting Agro systems in Sikkim-Darjeeling Himalayas". We used matrix method for developing different types of future scenarios and tested the scenario analysis on Rammam Forest Village.

Rammam Forest Village is located in the fringe area of Singalila National Park, Darjeeling. Farmers are dependent on cash crop farming and wage labour for income and subsistence. For sustaining their farming and their daily lives they are dependent on the forests for fodder, fuelwood, medicinal plants, wild edible plants, and have customs and rituals that require forests or forest products (ecosystem services). Tenure rights have not been settled for these communities. Crop depredation by wildlife from the surrounding forests makes their farms vulnerable to wide scale loss leading them to opt for cultivation of fodder crops and ultimately abandonment of farming. There is a decreasing trend in the flow of ecosystem services from the forest. Communities attribute these to:



Fuelwood collection around Singalila area
-By Tenzing Sherpa

- 1) Protected area declaration in 1992 resulting in no or restricted access to forest resources.;
- 2) Massive forest fire in 1992 which gave rise to weed colonization due to lack of pre and post-fire management.

The availability of and access to forest ecosystem services and products hinge on securing the rights of communities to the forests that they are dependent on. This will ensure their rights to better forest management as well as collection which under the current policy regime are not possible. Therefore, for Rammam it is imperative that the Forest Rights Act (FRA) is implemented and their right to forests is settled. This also requires the Panchayati Raj Institutions (PRI) to be put in place to implement the FRA effectively. The last Panchayat elections were held in 2000. Four future scenarios were envisioned for Rammam of which the scenario - "FRA implemented through elected PRIs" is the most desirable. The combination of forest rights (forest management, land tenure and resource collection rights) and improved participation in village level planning is expected to improve the condition of the forest and thereby the flow of ecosystem services. This will enhance the capability of the communities to convert ecosystem services into their wellbeing. Additionally, this will greatly increase market linkages and increase access to various schemes and facilities of government departments. On the other hand, if future scenarios do not fulfill both conditions the problems arising may potentially increase the "push factor" leading to outmigration.

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Conserving Pangolins in the Tea landscapes of Darjeeling Himalaya

Protected Areas (PAs) are central to conservation of wildlife in India. Totally around 700 PAs constitute less than 5% of India's

geographical area, while the Eastern Himalaya (India) with 67 PAs forms a tiny proportion of the Indian landmass. Vast expanses of monoculture plantations of tea, coffee, cardamom, private forests, agriculture land, agro forests, identified and unidentified water bodies and remnant forests form prominent land use areas outside PAs. There is now increasing evidence that such human dominated and modified 'Areas outside Protected Areas' (AOPAs) support significant habitats and wildlife populations. However, these areas still do not come under the purview of any targeted conservation policy, leaving the species and the habitats in AOPAs inadequately managed. In one such effort to examine biodiversity status in AOPAs of Darjeeling Himalaya, ATREE identified Tea Plantations and Private agro forests as critical habitats for two Asian Pangolins - Indian Pangolin *Manis crassicaudata* (Endangered) and the Chinese Pangolin *Manis pentadactyla* (Critically Endangered). Pangolins are the most traded mammals in illegal wildlife trade globally. This led the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), COP 17 to upgrade all Pangolin species to Appendix I to halt illegal trade. In India, the Chinese and the Indian Pangolins are protected as



Chinese Pangolin in the Agroforests of Darjeeling Himalaya
-Camera trap photo

Schedule I species under the Wildlife Protection Act (1972).

ATREE's work on Pangolins since 2014 confirmed the presence of the species in the Tea Plantations and Private agro forests. Initially, signs like burrows were the only evidence of the presence of the two species. Pangolin guardians were identified from among local communities to monitor the species and raise awareness about conserving them. In 2016, camera trap surveys were initiated to better understand the species and their behavior. Valuable information about the ecology and natural history of the Pangolin, especially the Critically Endangered Chinese Pangolin was generated. It is now confirmed that both species of Pangolins occur in the area. The work has also revealed the rich mammal diversity that such a small area holds. With this ongoing study we hope to develop survey protocols for pangolins to better understand their ecology and behavior and assess their population density. We hope to further strengthen the capacity of the Pangolin keepers and enhance community involvement in conserving these species.

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Training for Nature Guides in Manas

Manas Tiger Reserve, a World Heritage Site, supports more than 476 species of birds and is identified as an Important Bird Area (IBA). The presence of rich bird diversity is a key attraction for many tourists who visit the area thus providing an opportunity for local youth and nature guides to maximize benefits from tourism.



Field visit by the participants

-By Brojo Basumatary

ATREE organized a 2-day bird identification training workshop for nature enthusiasts and potential nature guides so that they could build themselves as nature entrepreneurs through guiding bird enthusiast tourists. Apart from tourism activities we expect them to be involved in documentation of bird diversity in the Manas Landscape. Mr. Bishwapriya Rahut, an experienced ornithologist from SPAWN, Jalpaiguri was the resource person. A follow up training was organized on bird identification along with, a day long birding event where Mr. Rustom Basumatary assisted the trainees to enhance their identification skills. Trainees identified more than 45 species of birds during the event. As an early output of these training events 2 trainees have started working as tourist guide in association with Manas Jeep Safari Association and Manas Maozigendri Ecotourism Society respectively.

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Dissemination and Closure Workshop

A dissemination and closure workshop on The Tata Trusts supported project "Integrated Approaches to Adaptive Resilience – based Management of Forests for Supporting Agro systems in the Darjeeling Himalayas" was held in Darjeeling on 25th -26th March 2017, 63 participants representing academics from Assam, Tripura and West Bengal, local NGOs, government, local communities and ATREE staff attended the workshop. The first day included district level participants while the second day included participants from villages where the project was implemented. The purpose was to share findings of the five-year research project in eight villages near Singalila National Park and Senchel Wildlife Sanctuary.



Participants at the closure workshop

-By Rohit George

The key issues highlighted as feedback included:

1. Further research on water quality and communicating results to communities
2. Recommendations on mitigating human wildlife conflict
3. Further disaggregating information on tolerance to crop depredating species
4. Further study on the diversity of cultural and religious values of forests besides the conventional ones
5. Explaining links between human capabilities and ecosystem services more explicitly particularly in food and nutritional security and
6. Further clarifying the remote sensing and GIS analysis on the status of land use change in the landscape.

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Nature Guide Training in Buxa Tiger Reserve

Buxa Tiger Reserve (BTR) with an area of 758 sq. km lies in Alipurduar district of West Bengal. More than 500 species of birds and 550 species of butterflies have been recorded in BTR. The presence of rich bird and butterfly diversity is a key attraction for tourists. However, there is lack of capacity among local youth who work as nature guides in identifying birds and butterflies. A workshop to build the capacity of nature guides in identifying and documenting birds and butterflies was organized on



Field visit by the participants

-By Rohit George

29th and 30th March 2017 in partnership with Society for Protection of Wildlife and Nature (SPAWN) Jalpaiguri in Panijhora, Rajabhatkhawa. 15 participants actively participated in the event which comprised of classroom sessions lead by Bishwapriya Rahut of SPAWN on birds and Rohit George of ATREE on butterflies. During the workshop 64 species of birds and 47 species of butterflies were recorded by the participants. A refresher course will be organized later this year for the participants after assessing their progress.

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ATREE EH in the news

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earthmag.org/stories/2017/3/8/biodiversity-conservation-human-wellbeing-darjeeling-tea-estates

ATREE's mission is to generate rigorous, interdisciplinary knowledge to address challenges in achieving environmental conservation and sustainable development in a socially just manner, to train the next generation of scholars and leaders, and to enable the use of this knowledge by society and policy makers.

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