



Over a hundred years ago, British colonists with their passion for mapping the source of rivers, set off to explore the Siang River in the north-eastern frontier. Along the way, the expeditioners very meticulously catalogued every plant, frog, lizard, fish bird and mammal, resulting in several volumes of high-quality natural history and travelogues.

Since then, the major changes in land use, land cover and development, as well as a massive earthquake, have transformed the region.

In a bid to record some of these changes, a team of researchers from ATREE, along with filmmakers from FELIS, set out to explore the region's ecologically important families of plants, mammals, reptiles, fishes, insects and molluscs.

The expeditions undertaken by ATREE were aimed at:

- a) Exploring current biodiversity and comparing it with the British expedition reports.
- b) Documenting the change in hydrology, land use and climate that has occurred in the last 100 years
- c) Documenting the indigenous knowledge of the Adi communities.

Expedition in Siang Valley, Arunachal Pradesh

PLANTS

R Ganesan, Nabasmita Malakar, Keerthana R



The team collected a total of **525 samples across 340 species** of plants.

92 leaf samples were preserved for molecular studies. **77 flowers and fruits** from various plant species were preserved.

Sub-tropical moist deciduous forests to evergreen forests were sampled for flowering plants distributed across **150 m to 1500 m altitude**. During the survey, plant species of families such as **Elaeocarpaceae, Euphorbiaceae, Lauraceae, and Urticaceae** were often observed as species-rich and abundant groups. The general perception of Siang River Valley is of towering mountainous landscapes with competing trees trying to reach the sky. However, a few of the steep slopes are clothed with wild banana, bamboo, palm, and pandanus groves. It is rare to see a rocky outcrop or any area without vegetation cover. The forest slopes had trees with clear boles. When the team scanned **through the tree canopies with binoculars to locate leaves or other parts for identification**, the exercise opened up a different world reined by the diverse epiphytic plants.

The rare plants encountered during the exploration include the **Family**

Carlemanniaceae. The team stumbled upon a plant on the forest floor and interestingly it can be seen only by the flowers – the ***Sapria himalayana***. The second plant that was collected is an ‘**extinct plant species**’ as per the **IUCN Red List, Hopea shingkeng**, a 10 m tall tree in the middle of vegetation that covered the banks of the Siang River.

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INSECTS

Priyadarsanan Dharma Rajan, Ranjith AP, Seena Narayanan



During the 1911 expedition, 9 species of Scarabaeinae and 24 species of parasitic insects were recorded, whereas the ATREE expedition **recorded 81 species of dung beetles and 700** specimens of parasitic Hymenoptera, which roughly include **200 species**. The team also found a **large braconine parasitoid species, Maculibracon simlaensis**, which belongs to the group **Campyloneurus/Serraulax**, not a common group found in India.

In Siang, **edible bugs are collected by indigenous groups, especially Nyishi and Adi tribes**, from Brahmaputra riverbeds. From fries to chutney, each person's recipe can vary. **Coridius nepalensis and Coridius assamensis**, used as insect food in the northeastern states, were collected during the expedition. **Himalayan**

giant honey bee (*Apis laboriosa* Smith) was collected from a lower elevation. Until now, this species was known to occur only in higher elevations.

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MOLLUSCS

Aravind Madhyastha, Nipu Kumar Das, Anushree Jadhav



This expedition led to the first collection of molluscs from the East Siang region after 110 years. The 1911 and 1912 expeditions not only covered the hilly regions but also the plains such as Sadia, Kobo, Passighat, and Dibrugarh.

During ATREE's expedition, the team covered the hilly regions. The collection was made from **Kaleg, Ymesing, Ramsing, Renging and Yinku** on the western bank of the **Siang River and Sissen, Kumsing and Jorsing** on the eastern bank. During the second phase, the team plans to cover the remaining localities both in the hills as well as the plains.

In the 1911 expedition, 122 species of land snails and 11 species of freshwater molluscs were recorded. Among, these, the family Cyclophoridae was the most dominant with 73 species. Except for Plaudoums, all other freshwater molluscs were collected from the wetlands in the plains around **Dibrugarh, Sadia, Koban and Pasighat**.

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HERPETOFAUNA

Surya Narayanan



Most of the species reported from the 1911-1912 Siang expeditions were recovered during our expedition. In addition, a few species of snakes and amphibians were reported newly from the valley. **A total of 42 species of reptiles and amphibians were recorded.** During the first phase of the study, three species each from the groups **geckos, lizards, and skinks** were collected along with **18 species of snakes and 15 species of amphibians**.

Visual encounter survey (VES) and **Acoustic encounter survey (AES)** were used for the herpetofauna sampling across the study area. AES is employed for the detection of the amphibian presence and the calls are recorded wherever possible. Surveys are carried out during the **day and night since the herpetofauna** are broadly diurnal and nocturnal and some of them are crepuscular. In addition, we also attempted targeted micro-habitat searches for species that are specific to a particular microhabitat. This included digging humus-rich soil for the burrowing groups, and checking the rock crevices, etc., We also recorded the opportunistic road-killed specimens throughout the study period.

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PEOPLE

Rajkamal Goswami



The Siang Valley Exploration project focused on understanding changes in biodiversity and the environment over the last 100-odd

years using the British expedition of 1911 as a baseline. Central to the process of explaining and **understanding any changes in biodiversity or the biophysical environment**, is to understand the way human interactions and relationship with nature and the environmental changes lead to further changes and modification of the natural and the physical environments.

We focused on understanding the interactions and relationships of the **local Adi communities with their forests and biodiversity through oral histories** and open-ended interviews with key informants such as the eldest members of a given village.

We focused on understanding changes across six broad categories:

1. Socio-economic changes at the village level
2. Socio-economic changes at the household level
3. Changes in the hunting and gathering regime
4. Changes in the food and other crop production regimes
5. Observed changes in climatic variables, mainly temperature, rainfall and seasonal fluxes
6. Observed changes in the forests and environment around them

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