

# Annual Report

## 2019–2020



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India houses astounding biodiversity, awe-inspiring conservation landscapes, and magnificent species. But this rich natural heritage is threatened. Northeast India, in particular, is a region with two Biodiversity Hotspots, multiple Important Bird Areas and landscapes of conservation significance. Northeast India is also a region of rich people–nature traditions, and in some areas, heavy dependence of people on forests for their lives and livelihoods.

**Conservation Initiatives works with multiple stakeholders towards science-based conservation of threatened wildlife and their habitat, and sustenance of positive people–nature relationships into the future.**

## Our Vision

Our **vision** is to nurture a planet where endangered flora and fauna rebound and thrive, and people lead self-sufficient, eco-friendly lives that are at one with nature.

In keeping with our vision, our **overall goal** is to achieve large-scale conservation of endangered species, biodiversity and ecosystems through a model where multiple conservation roles of stakeholders in India's complex landscapes coalesce in a scientific manner.

Our approach involves three basic tenets. Using **scientific evidence** to prioritise **best practices, locations, and actions** for each conservation landscape; Devising **solutions tailored to the local** ecological and conservation **context**, and social and cultural environment; An **inclusive participatory approach** wherein stakeholders are integrally involved in the implementation of conservation strategies.

We believe that India can emerge as a nation of **scientific excellence in the field of conservation**, while the socio-cultural context provides opportunities for novel and path-breaking conservation models, which can be replicated across the globe.

# Our Approach

We use a **science-based conservation** approach, wherein our scientific enquiry provides us with: (a) an in-depth understanding into the socio-ecological context of the landscapes we work in; (b) firms our boots-on-the-ground approach to conservation; and (c) directs us to the most important locations, critical actions, and imminent threats, for **maximum and sustained conservation benefits**.

**Landscape-scale conservation** encompassing Protected Areas, as well as intervening non-habitat areas, including agricultural fields, plantations, and other land-uses. A landscape-scale approach to conservation automatically and implicitly includes: securing key source populations; maintaining connectivity and ecological linkages across populations and habitats; and understanding and shaping human–wildlife interactions. This enhances persistence of endangered species.

Connectivity mitigates negative impacts of climate change on wildlife. It ensures that we benefit from ecosystem services, valued globally at USD 125 trillion / year, nurtures positive human–nature relationships, and secures support for conservation efforts. All our projects and efforts embrace this approach.

**Collaboration** is key to all successful conservation efforts. We implement projects and engage with State Forest Departments. We have monitored biodiversity in collaboration with State Forest Departments of Assam, Meghalaya and Nagaland; with the Assam Forest Department, we have collaboratively produced one peer-reviewed scientific article.

We work closely with local communities in all our field sites. In Nagaland, we implemented our community-based conservation project with the Bhutan Glory Eco-Club. We also work in collaboration Village Councils or Syiemships and Eco-tourism Societies.

We are part of a multi-organisation partnership Coalition for Corridors, focussed on connectivity conservation. Taken together, our goal is to increase the scope of conservation such that all stakeholders have a stake and take initiative to firm their role in landscape-scale conservation.

## PROJECTS: Conserving the Asian Elephant



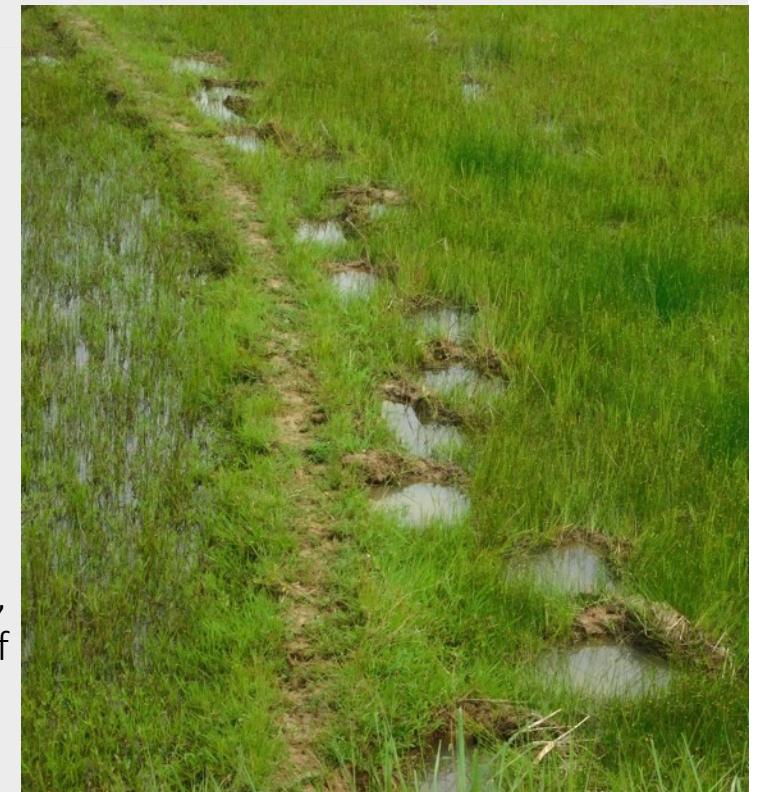
The Asian elephant *Elephas maximus*, our **National Heritage Animal**, is a species that captures our collective imagination. The elephant is a wide-ranging and endangered species, requiring conservation efforts to be focussed at the scale of large heterogeneous landscapes.

Elephant habitat is severely fragmented across much of its range. As a consequence, human–elephant interactions and resultant conflicts are on the rise. Further, there is need to prioritise and secure elephant corridors. However, current knowledge on elephant habitat, impacts of fragmentation, and threat status across Northeast India is presently incomplete or unreliable. Taken together, what is urgently required are landscape-scale conservation plans that prioritize existing habitats and movement corridors, as well as actions that can minimise negative human–elephant interactions.



**8,500 km<sup>2</sup>** surveyed in elephant conservation landscapes  
**1,400** residents of elephant conservation landscapes interviewed  
**5** districts of Assam, **2** districts of Meghalaya

**413** reports of elephant presence  
Elephant reports in **3,275 km<sup>2</sup>** of elephant conservation landscapes  
**1,400** stakeholder interactions  
**381** reports of human–wildlife conflict (crop loss, property damage, human injury or loss of life)





## PROJECTS: Elephant-Friendly Tea Estates

Kaziranga is a floodplain ecosystem at the banks of the Brahmaputra River. Annually, the monsoon rains flood the River, inundating the park; this provides for the richness of Kaziranga. But is also means that animals have to move southwards. Our work has shown that tea estates in the Kaziranga–Karbi Anglong landscape play a key role in allowing movement of elephants and other wildlife.

We work closely with tea estates and hold awareness programs to forge a network of elephant-friendly tea estates, such that elephant movement is facilitated, while negative human–elephant interactions are limited.



## PROJECTS: Community-Based Conservation

In the hill states of Northeast India, such as Meghalaya and Nagaland, a large majority, up to 90%, of forests are community-owned and managed. We work closely with communities, supporting them in their efforts to conserve wildlife, forests and natural resources.



This year, we engaged local community youth in forest conservation activities, training the next generation of community conservation leaders. We initiated a project to undertake community-based bio-monitoring in collaboration with local community youth, and with them, monitored their forests for wild felids and the western hoolock gibbon. We liaised with local community and conservation leaders of villages near Fakim Wildlife Sanctuary, including the Nagaland State Forest Department, the Bhutan Glory Eco-Club—a grassroots conservation organisation—, the Fakim Ecotourism Board and the Village Councils of Fakim and Vongtsuvong villages. We worked with local village leaders to identify interested youth who could take this effort forward.



We trained 12 youth and forest guards and deployed camera-traps across 29 locations, and bio-acoustic recorders at 10 locations, spread over 30 km<sup>2</sup> of a Protected Area–Community Forest complex.



*A male Blyth's Tragopan, marbled cat, Asiatic wild dog or dhole, and Asiatic golden cat, clockwise from the top left*

## PROJECTS: Securing the future of the endangered western hoolock gibbon

India is home to a wild ape, the hoolock gibbon. The western hoolock gibbon is a forest-dependant species facing threats of forest loss, degradation and fragmentation, and hunting.



Gibbons presence can be established through their loud and distinct 'duet' morning calls. We bio-acoustically monitor gibbon populations with passive recorders, identifying gibbon duets visually via spectrograms. We undertook such a monitoring exercise in Nongkhylllem Wildlife Sanctuary, and community managed forests of Hima Malai Sohmat. Conservation Initiatives personnel were also involved in drafting and finalising Community Reserve Management Plans, with the Meghalaya State Forest Department.



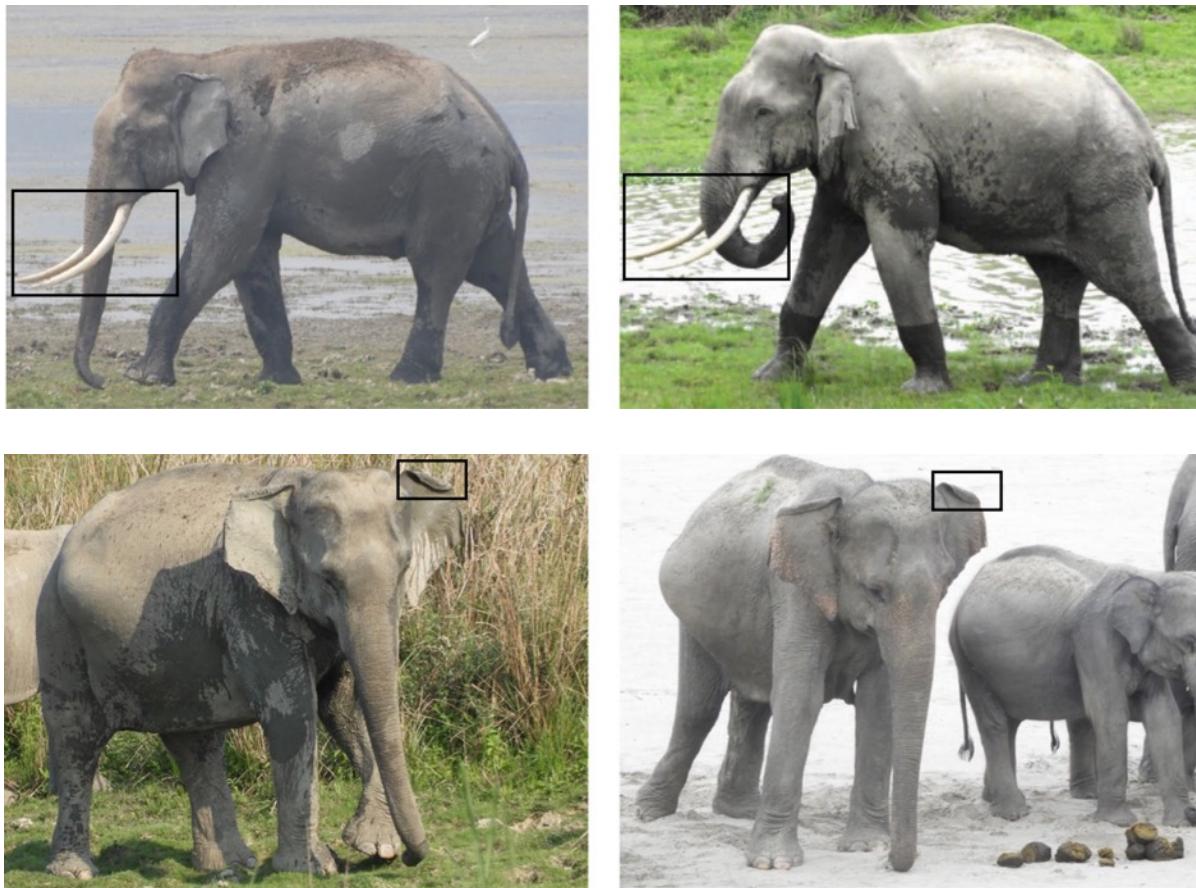
We placed bio-acoustic recorders in 32 strategic locations in Nongkhylllem and 47 locations in Malai Sohmat, recording gibbon calls in 34 locations in total.

We held awareness programs and film screenings across 5 villages important for gibbon conservation, targeting a total of 800 people, including students and future conservation leaders.



## SCIENTIFIC OUTPUT

Varun R. Goswami, Mahendra K. Yadava, Divya Vasudev, Parvathi K. Prasad, Pragyan Sharma & Devcharan Jathanna. 2019. Towards a reliable assessment of Asian elephant population parameters: the application of photographic spatial capture–recapture sampling in a priority floodplain ecosystem. *Scientific Reports* 9: 8578.

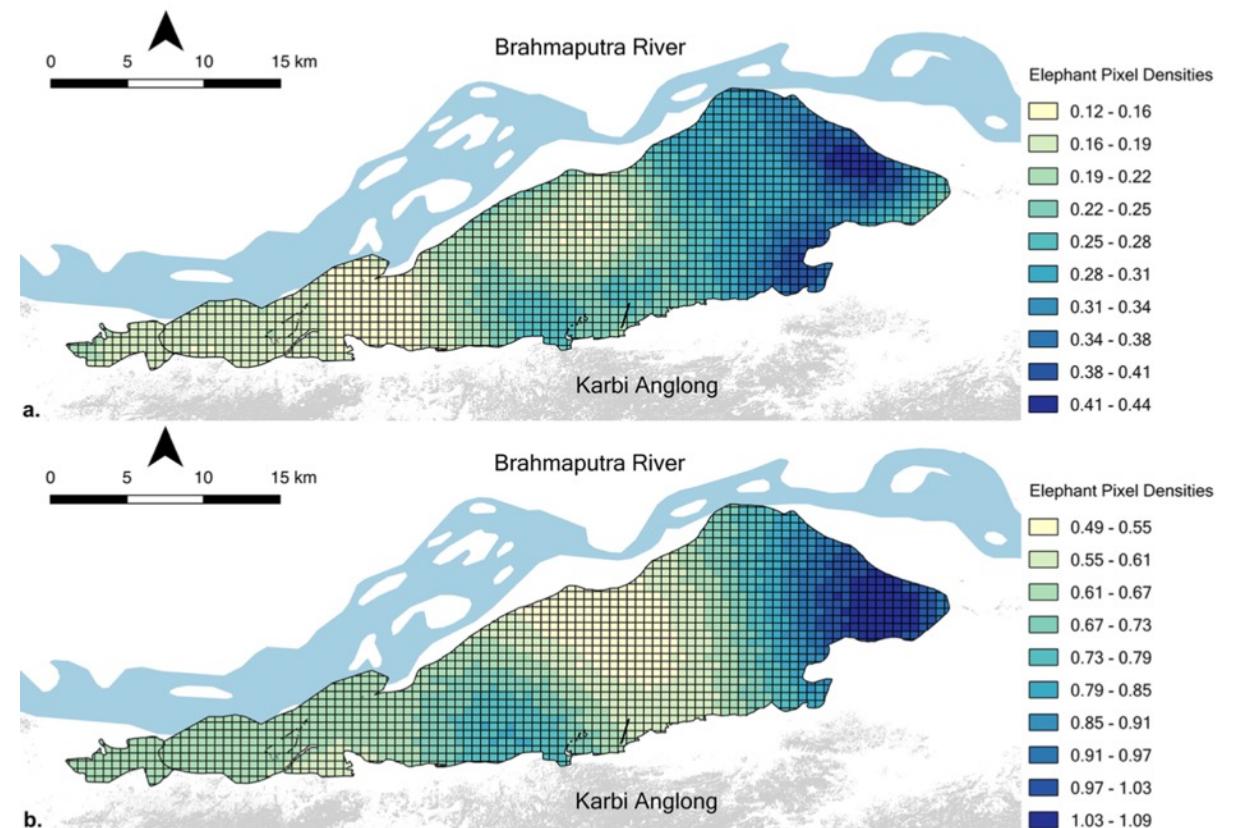


Elephants can be individually identified, just like humans, via a suite of morphological characters, such as their ears, tails, and in the case of tusked males, their tusk orientation and shape. In an intensive and systematic effort, we traversed approximately 3300 km of Kaziranga National Park, over 64 days, replicating each of 10 routes 10 times. We photo-recorded over 700 sightings of elephants.

In total, we identified 210 adult females, 23 sub-adult females, 88 adult males and 28 sub-adult males.

Adult males comprised 18% of our detected population, adult females 40%, sub-adults and juveniles 28%, and young 14%. Of the adult males, we observed a tusked : tuskless (or makhna) elephant ratio of 1.2:1, that is, for every 12 tusked adult male elephants, we saw 10 tuskless male elephants (makhnas).

In one of its first applications to Asian elephants, we used the Spatial Capture Recapture model, a state-of-the-art approach to monitor wildlife populations, to estimate a density of 1.39 elephants / km<sup>2</sup>, or 1746 adult and sub-adult elephants in Kaziranga and its neighbourhood. We also present elephant movement of 14.5 km and 8.9 km, for herds and adult males respectively, including movement outwards from Kaziranga to the hills of Karbi Anglong.



Reproduced from Goswami et al. 2019, *Sci Rep*, DOI: 10.1038/s41598-019-44795-y

Bhavendu Joshi, Biang La Nam Syiem, Rokohebi Kuotsu, Arjun Menon, Jayanta Gogoi, Varun Rshav Goswami & Divya Vasudev. 2019. Records of the marbled cat *Pardofelis marmorata* and the Asiatic golden cat *Catopuma temminckii* (Mammalia: Carnivora: Felidae) from the community forests surrounding the Dzükou Valley in Nagaland, India. *Journal of Threatened Taxa* 11: 14363–14367.



Community-managed forests play a key role in our overall conservation efforts, especially in the hill states of Northeast India, such as Nagaland. Yet, we know little about the presence of different endangered species in these forests. We are especially data limited with respect to elusive species like the Asiatic golden cat, a felid species found across south and southeast Asia, facing continued decline. A similar paucity of information affects the marbled cat, a forest-species with beautiful ‘marbled’ pelage pattern that lends this small cat its name.



Providing amongst the first photo-records of the Asiatic golden cat (above) and marbled cat (below) in community-managed forests of Nagaland, our surveys clearly establish the conservation role of these ecosystems.

The forests in question are those in and around the Dzükou Valley of Nagaland, a high-elevation grassland ecosystem surrounded by semi-evergreen and evergreen forests, and contiguous with the Puliebadze Wildlife Sanctuary, Khonoma Nature Conservation and Tragopan Sanctuary, and other community-managed forests.

These reports were the result of a camera-trapping effort involving 15–20 cameras per village forest, totalling an effort of 78 camera-trap days. Our findings also highlight the importance of such bio-monitoring efforts, undertaken collaboratively with the local community, to document the rich wildlife present in community-managed forests.

Divya Vasudev & Varun Rshav Goswami. 2019. A Bayesian hierarchical approach to quantifying stakeholder attitudes toward conservation in the presence of reporting error. *Conservation Biology* 34: 515–526.

Stakeholder support is critical for conservation success. We typically assess the extent of stakeholder support through questionnaire surveys, but for various reasons, people may not accurately report their true attitude towards wildlife or conservation.

True state \ Detected / Recorded state	Positive towards wildlife	Non-positive towards wildlife
	Positive towards wildlife	<p>Accurate reporting</p> <p><i>Expectation of remuneration / compensation</i>  <i>Maintaining consonance with expected community concerns vis-à-vis loss / safety risk from the species</i>  <i>Maintaining consonance with expected community concerns of potential restrictions from conservation actions</i>  <i>Alignment of response with the overall goal of the surveyor</i></p>
Non-positive towards wildlife	<p>False positive error</p> <p><i>Maintaining consonance with an expected majority response when people have cultural ties with the species or nature</i>  <i>Social expectation of positive response due to traditional or cultural norms</i>  <i>Alignment of response with the overall goal of the surveyor</i></p>	<p>Accurate reporting</p>

Reproduced from Vasudev & Goswami et al. 2019, *Conserv Biol*, DOI: 10.1111/cobi.13392

In a first, we developed an approach to account for such (conscious or sub-conscious) misreporting to arrive at *true* attitudes towards wildlife and conservation.

We also separate *notional* or abstract attitudes towards wildlife, from those that are more tangible, relating to a localized scale of the stakeholder’s lands, livelihood, or locale.

We applied our method to a questionnaire survey of >2200 residents of 17 tea estates of the Kaziranga–Karbi Anglong landscape to show that while the majority (85%) of them were notionally positive towards elephants, various factors provided limitations to local-scale support, such that across estates, between 34% and 80% were positive towards elephants.

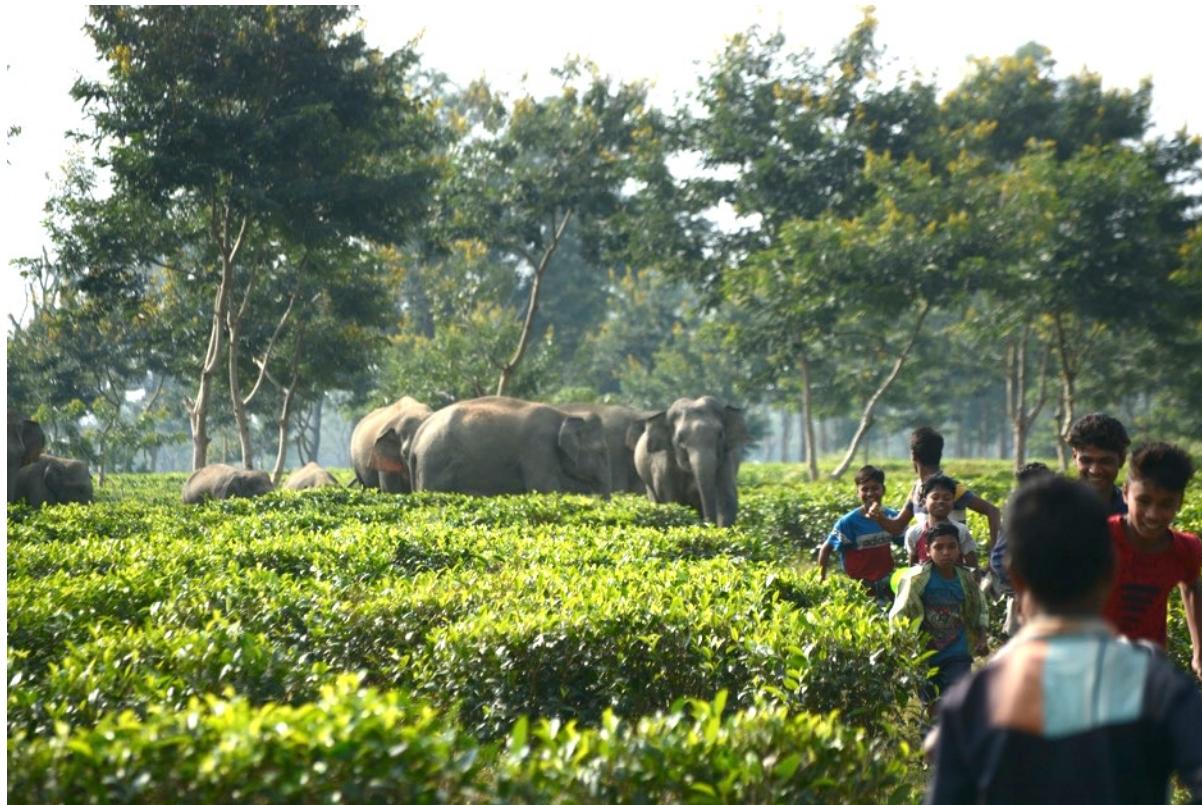


Our approach is applicable to studies across the globe which use questionnaire surveys to assess stakeholder attitudes to assess support for conservation, endangered species.

Divya Vasudev, Varun R. Goswami, Prity Hait, Pragyan Sharma, Bhavendu Joshi, Yogita Karpate & Parvathi K. Prasad. 2020. Conservation opportunities and challenges emerge from assessing nuanced stakeholder attitudes towards the Asian elephant in tea estates of Assam, Northeast India. *Global Ecology and Conservation* 22: e00936.

Using the same survey of > 2200 residents of tea estates, we went further in-depth into their attitudes towards elephants, identifying opportunities and challenges for elephant conservation.

Positive attitudes stemmed primarily from cultural ties and beliefs about the animal's intrinsic right to life.



Safety concerns limited support for elephant use of tea estates—as movement corridors or refuge. But people still pointed out that elephants do not harm unprovoked, highlighting cultural tolerance towards the species.

People recognised the endangered status of elephants, and that forest loss had impacted this wide-ranging species. They were conflicted about elephant presence in tea estates in addition to being in forests, clearly emphasizing a growing problem of human–wildlife conflict.



These findings have provided the foundation for science-based conservation efforts in tea estates: (a) provision of strategically placed solar-powered lights which allow elephant movement through tea estates, while ensuring the safety of residents; and (b) awareness programs regarding 'dos' and 'don'ts' of living with elephants.

We continue to engage with stakeholders to ensure an elephant-friendly network of tea estates in the landscape. We propose expanding this network to other conservation landscapes in the coming years.

## ACADEMICS



Biang La Nam Syiem, a conservationist from Khasi Hills, Meghalaya, enrolled in Deakin University's in-country PhD program in August 2019 in partnership with Conservation Initiatives, India.

Biang aims to pursue his PhD research on forest bird community ecology in mixed forest-agricultural landscapes of Northeast India. Different species of forest birds respond differently to forest loss and the conversion of forests into different agricultural land-uses; some are more threatened than others. Thus, the bird community varies with changing land-uses. With insights into this, Biang hopes to generate scientific information that can be directly fed into forest conservation strategies. This will be especially relevant for community forests of Northeast India. In 2019-2020, Biang carried out reconnaissance surveys to finalise his study design.



Asian barred owlet, great barbet, little spiderhunter, green pigeon and green billed malkoha, clockwise from the top left, are some bird species found in forests of Meghalaya

## TALKS AND PRESENTATIONS

At the 29<sup>th</sup> International Congress for Conservation Biology, the conference of the Society for Conservation Biology, held at Kuala Lumpur, Malaysia, between the 21<sup>st</sup> and 25<sup>th</sup> of July, 2019, the following talks were given.

*Assessing stakeholder attitudes: accounting for scale, diverse beliefs and sources of error.* Divya Vasudev.

*Assessing population and movement parameters for the wide-ranging Asian elephant using photographic spatial capture-recapture.* Varun R. Goswami.

*Recognizing community perceptions for effective conservation decision making: an example from community-owned forests of Nagaland, Northeast India.* Bhavendu Nalin Joshi.

*Asian elephant social network in a floodplain ecosystem in Northeast India.* Parvathi K. Prasad.

Varun R. Goswami gave a talk at the Centre for Wildlife Studies on *Nurturing human-nature relationships in biodiverse Northeast India* on the 31<sup>st</sup> of January, 2020.



## Trustees

**Dr. Varun R. Goswami**  
Managing Trustee

**Dr. Divya Vasudev**

## Advisors

Dr. Ajith Kumar  
Dr. Jagdish Krishnaswamy  
Mr. Srinivas V.

## Partners

Centre for Wildlife Studies  
Wildlife Conservation Trust  
Deakin University

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Conservation Initiatives expresses gratitude to our donors, supporters, collaborators, villages and tea estates we work with, our advisors, and well-wishers. With your support, we hope to secure the future of wildlife in India.



*Photo credits: Varun R. Goswami, Divya Vasudev, Bhavendu Joshi, Pragyan Sharma, Biang La Nam Syiem, Parvathi K. Prasad, Banshimsubhen Wanniang, Tsuseki Yimchunger, Anju Bawri, Uthaiah N. T.*



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