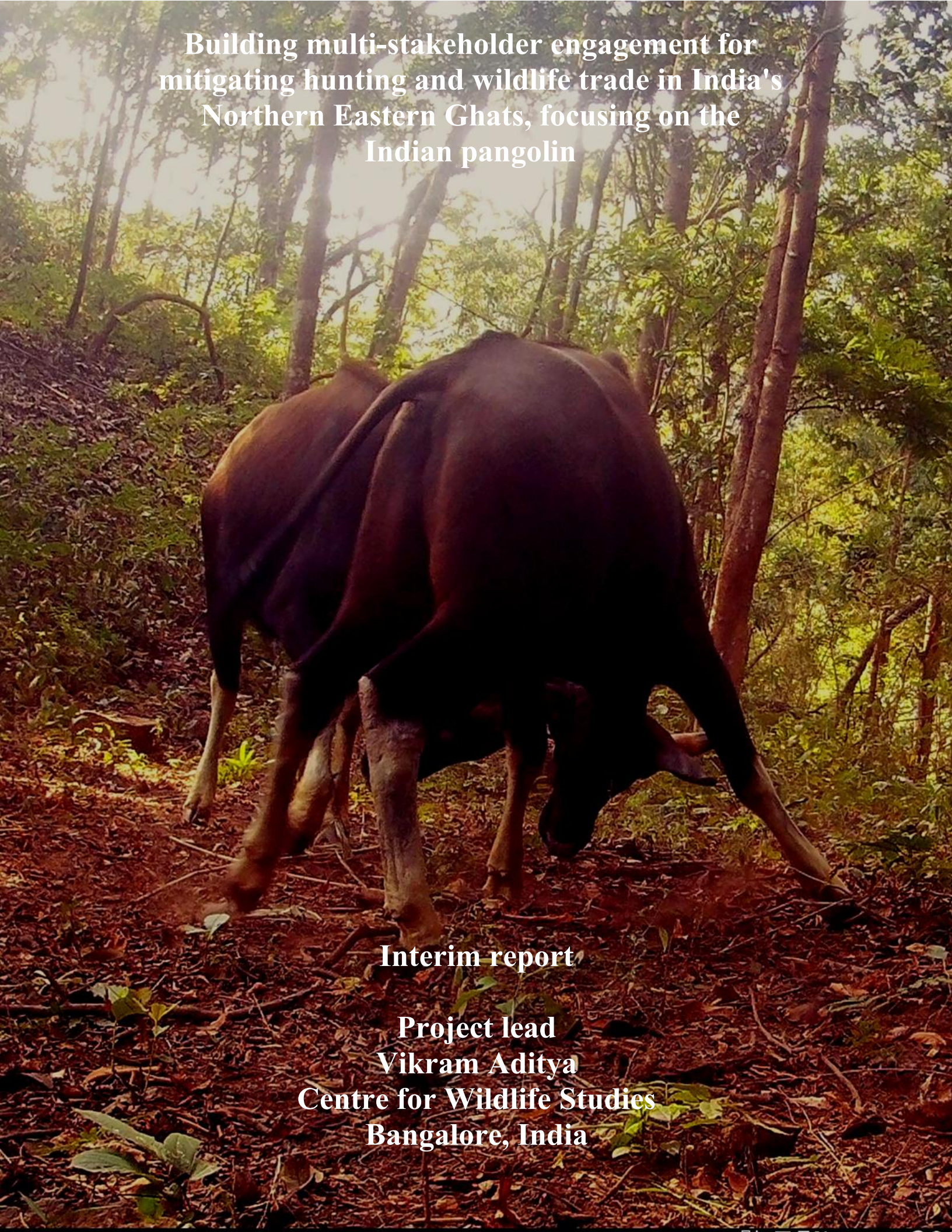

Building multi-stakeholder engagement for mitigating hunting and wildlife trade in India's Northern Eastern Ghats, focusing on the Indian pangolin

Interim report

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Introduction:

Hunting of wildlife for consumptive use and their illegal trade are major threats to biodiversity in India, and are disproportionately affecting already threatened species like pangolins and big cats, and also placing forest-dwelling communities at risk. Despite all forms of hunting and trade in wildlife being illegal in India under the Wild Life (Protection) Act of 1972 and its latest amendment in 2022 and similar laws existing in other South Asian countries, hunting and wildlife trade is rising in India, driven by demand for wild meat, traditional medicine and the lucrative market for some species in the illicit wildlife market. Hunting was historically an important element of cultural identity and practices, particularly amongst forest-dwelling, tribal communities, and is still very much practiced as a traditional 'sport' across large parts of India. However, given the growing pressure on the shrinking forests, hunting has become unsustainable and is currently one of the most pervasive and gravest threats to biodiversity. In India's biodiversity-rich tropical forests, such as the Eastern and Western Ghats, hunting contributes to rapid declines in wildlife populations, pushing many endangered species towards extinction and has been recognised as a major factor in the historical decline of India's wildlife (Madhusudan and Karanth 2002). The impacts of hunting on wildlife are most evident in the Eastern Ghats, which have a low percentage of protected areas and a high human impact. The Eastern Ghats have among the lowest protected area coverage globally at 3.53% and are experiencing very rapid land cover change driven by infrastructure development and agricultural expansion (Cardillo et al. 2006). The Eastern Ghats region is experiencing the fastest declines in mammal populations worldwide and is experiencing what is known as an 'empty forest syndrome' (Cardillo et al. 2006, Cardillo et al. 2008; Aditya et al. 2015). Although wildlife is often hunted for both food and traditional medicine, a significant driver of wild meat consumption in the Eastern Ghats is the myths and false beliefs that persist among communities about the medicinal properties of some wildlife species, many of which are threatened with extinction. This ongoing project is helping to understand the scale of hunting and illegal wildlife trade in the Northern Eastern Ghats by

producing quantitative data on the population status of Indian pangolin and other wildlife targeted for hunting and IWT in this landscape. Our project will serve as a roadmap to future conservation actions in the NEG landscape.

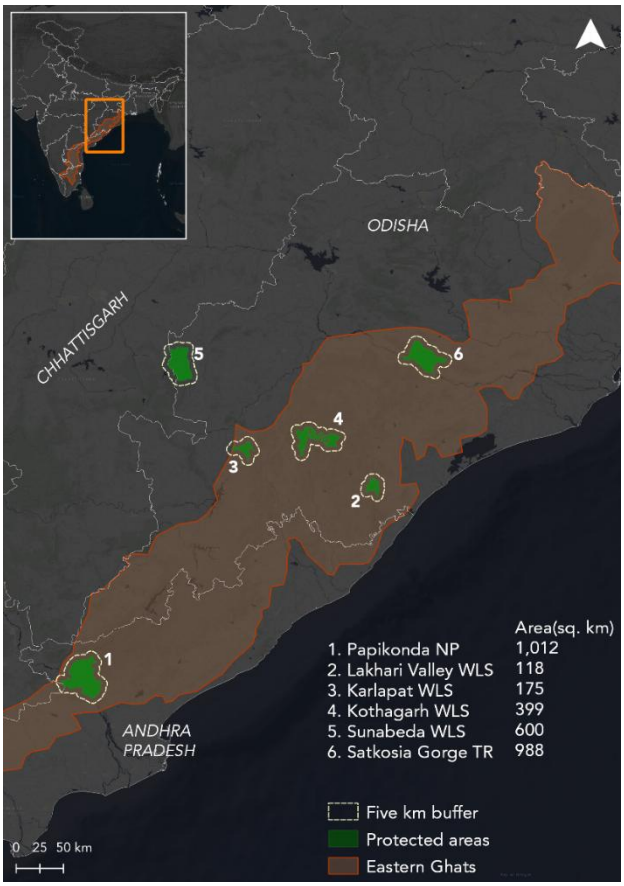

Figure 1: Map showing the study area in Andhra Pradesh and Odisha states including the six protected areas included

Aim of the project:

Through this project, we attempted to understand of the traditional hunting practices by local forest-dwelling communities in the Northern Eastern Ghats landscape of Andhra Pradesh and Odisha, their drivers, linkages with wildlife trade, and their impacts on wildlife through detailed semi-structured interviews with tribal communities, combined with large scale ecological surveys of wildlife presence and abundance in forests around villages experiencing varying levels of hunting pressure, as estimated through interview findings. In particular, we attempted to evaluate the impacts of hunting on threatened species that are widely targeted. We used a combination of socio-ecological surveys with local communities in the Northern Eastern Ghats of Andhra Pradesh and Odisha and field ecological surveys in the same region, covering approximately 20,000 km^2, to assess populations of affected species, quantify hunting offtake, identify targeted species, and map spatial patterns of hunting (Figure 1). This

allowed us to obtain precise information on affected species, the extent of threats, and hotspots of hunting and wildlife trade across the landscape.

Objectives:

1. To assess the impacts of hunting by local communities and wildlife trade in the NEG on wildlife through socio-ecological surveys, focusing on the Indian pangolin.
2. To engage with local communities towards mitigating IWT and hunting in the NEG
3. To build the capacities of the forest department on the identification of wildlife products in trade, hunting practices, legal implications and effective mitigation

Study area:

The project area is the Northern Eastern Ghats (NEG) of India, a forested mountain landscape stretching across more than 20,000 km^2 from north to south in the Andhra Pradesh and Odisha states of southeastern India. This section of the EG is dominated by moist deciduous forests, with stretches of semi-evergreen vegetation across higher elevations and scrub and mixed forests in the foothills (17°28'6.02" N, 81°18'41.73" E and 18° 3'30.28" N, 82°22'20.55"E). The Eastern Ghats are one of the world's oldest geological formations, dating back 3.5 billion years, predominantly covered with moist deciduous forests. The landscape is distinguished by complex forest mosaics, high elevational variability, and rough terrain. *Terminalia*, *Anogeissus*, *Pterocarpus*, *Shorea*, and *Madhuca* species predominate in the tropical dry deciduous to moist deciduous forests found in the NEG, according to the floristic studies, which vary significantly along disturbance and elevation gradients (Reddy et al., 2011; Naidu and Kumar, 2015; Ramachandran et al., 2018; Ganguly and Chatterjee, 2020).

The landscape supports diverse habitats and rich biodiversity, with recent surveys reporting several rare, endemic, and threatened species, including mammals such as the Indian pangolin (*Manis crassicaudata*), striped-neck mongoose (*Urva vitticolla*), leopard cat (*Prionailurus bengalensis*), smooth-coated otter (*Lutrogale perspicillata*) (Aditya 2015; Aditya and Ganesh 2022), birds like yellow-throated bulbul (*Pycnonotus xantholaemus*) (Sreekar and Srinivasulu 2010), the critically endangered Blewitt's Owl or Forest Owl (*Athene blewitti*) (Ishtiaq and Rahmani 2000), and reptiles such as the Golden gecko (*Gekko badenii*) and the Jeypore Ground Gecko (*Cyrtodactylus jeyporensis*) (Agarwal and Karanth 2015). However, the Eastern Ghats have very low coverage of protected areas. Although natural vegetation covers 84% of the Eastern Ghats overall, its total protected area coverage stands at only 9,767.64 km^2, representing 6.3% of the landscape, which is significantly below the Western Ghats protected area coverage of 9.06% and 15.18% in the Himalayas. In addition to hunting, this region is also highly affected by mining activities, shifting cultivation and forest degradation. The NEG is a relatively unexplored forest landscape that has received scant attention in conservation efforts. Papikonda National Park is located in the northern section of the Eastern Ghats. The sole NP in the Northern Eastern Ghats landscape, Papikonda NP was declared an Important Bird and Biodiversity Area (IBBA) by BirdLife International in 2017 as a result of our work. In Odisha, the project area comprises 12 districts in the southern mountain section of Odisha *viz.* Rayagada, Gajapati, Ganjam, Kalahandi, Kandhamal, Koraput, Nuapada,

Nabrangpur, Balangir, Berhampur, Boudh and Malkangiri. Southern Odisha is an important part of the Eastern Ghats, and the study area comprises five protected areas: Karlapat Wildlife Sanctuary in Kalahandi, Sunabeda Wildlife Sanctuary in Nuapada, Kotagarh Wildlife Sanctuary in Kandhamal, Lakheri Valley WLS in Gajapati, and the Satkosia Gorge Tiger Reserve (Figure 2).

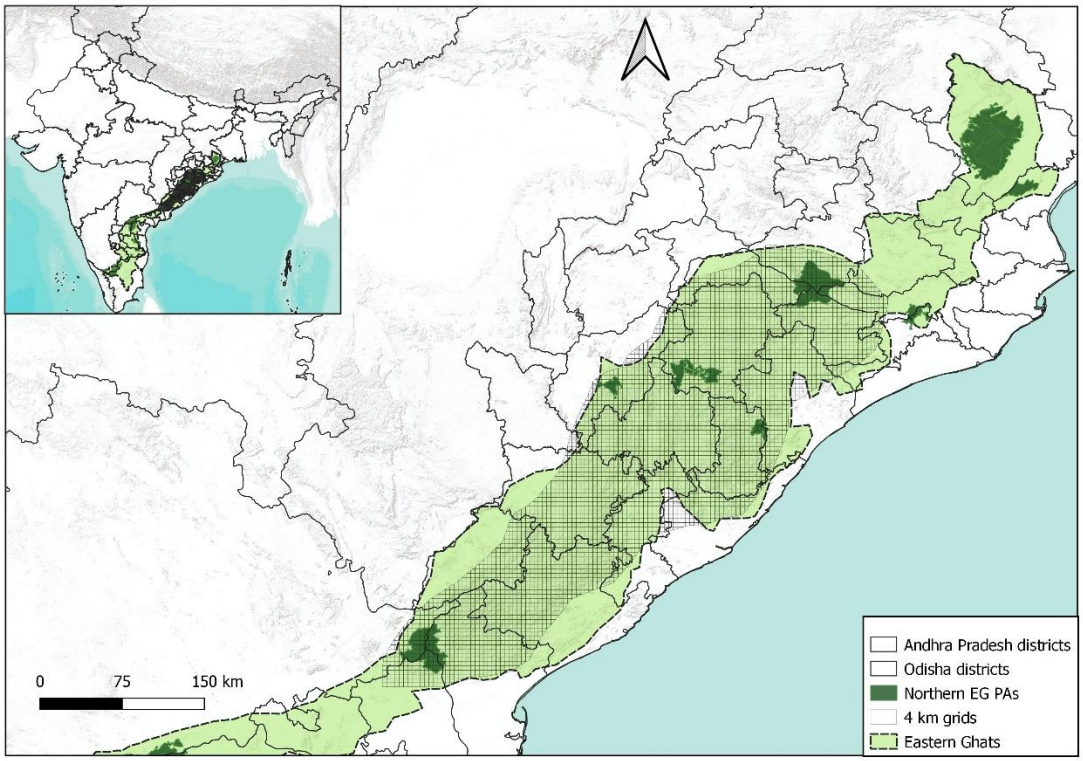

Figure 1: The study area overlaid with 4x4 km (16 km^2) survey grids for community interviews and ecological surveys. Dark green areas indicate protected areas, with the southernmost being Papikonda NP in Andhra Pradesh, going northwards into Lakheri Valley WLS, Kotagarh WLS, Karlapat WLS, Sunabeda WLS and Satkosia Gorge Tiger Reserve being the northernmost.

Work completed so far:

We have identified all villages located within and around the Papikonda National Park, as well as those situated within a ten-kilometre buffer zone around the National Park. Subsequently, villages in and around protected areas in Odisha were also identified. We have also identified and established contacts with other key stakeholders for our project, with support from the Rajahmundry Wildlife Circle, including Forest Department staff from the Chintur division and the Rampachodavarm and Maredumilli ranges of the Rajahmundry division, as well as NGOs and other community groups working in the region. After starting fieldwork in Andhra, we also received a three-year permit in Odisha and therefore decided to expand the study to Odisha, which is immediately adjacent to Papikonda NP and shares similar landscape and sociocultural conditions with the communities. We received a three-year permit from July 2025 to June 2028 to conduct the study in 7 districts covering 11 forest divisions and five protected areas in Odisha's Eastern Ghats (Satkosia Gorge Tiger Reserve, Lakheri Valley Wildlife Sanctuary, Karlapat Wildlife Sanctuary, Kotagarh Wildlife Sanctuary and Sunabeda Wildlife Sanctuary). The entire study

area covering the Eastern Ghats region of Andhra Pradesh and Odisha was systematically gridded into 4 x 4 km sq. using GIS. The reconnaissance survey began by identifying grids with more than 50% of forest cover containing at least one village for conducting interviews with the local community. We conducted interviews with local forest-dwelling tribal communities using a semi-structured, guided questionnaire protocol to elicit responses from different groups on their views regarding landscape change and hunting. So far, 55 villages in and around Papikonda NP in 40 grids have been covered. In the same grids, we conducted camera-trap surveys to assess animal abundance across areas with varying hunting intensity. We also conducted line-transect surveys in each of the selected grids in forest areas around villages to assess the frequency of animal signs (pugmarks/hoofprints, scrapes, rakes) and hunting signs (snares, traps, pitfalls, etc.), and to understand the impact of hunting activity on animal sign abundance. Surveys were done on one 3 km transect in every grid divided into 30 segments of 100 meters each representing spatial replicates for occupancy/detection, traversing through a mix of forest types, in each of the respective grids (Table 4). A total of 63 grids have been surveyed in the Rayagada and Gajapati districts in Odisha so far, including 12 grids covering Lakheri Valley. These included interviews, camera-trap surveys, and transect surveys, details of which are provided further in this report. In these 63 grids, a total of 300 interviews with forest-dwelling tribal communities using a semi-structured, guided questionnaire in 98 villages have been completed. Through the last year, we have worked in close coordination with the Odisha Forest Department.

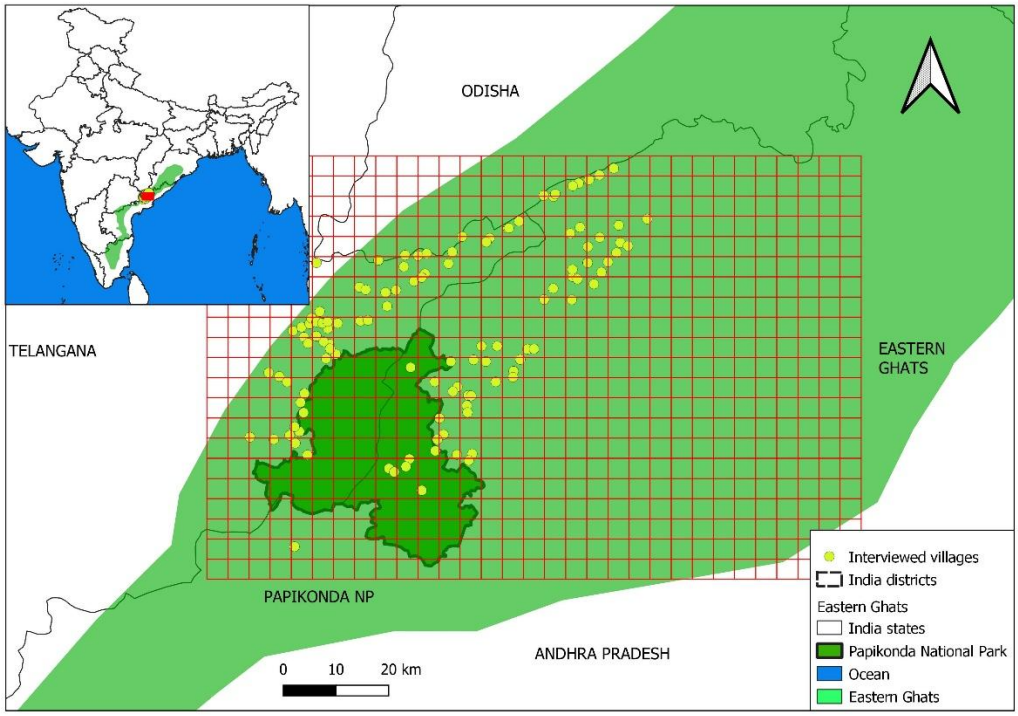

Figure 2: Locations of villages in grids around Papikonda National Park in Andhra Pradesh, where interviews have been completed so far. Ecological surveys using camera traps have been done in the same grids.

Preliminary results:

The species detection data from our field surveys show varying numbers of species detected in each range, primarily herbivores (9 species), followed by carnivores (5 species), and a few omnivores (2 species), around villages with varying levels of hunting intensity (Table 1 and 2). A total of 16 species of mammals were detected in Andhra Pradesh, and 19 species in Odisha (Table 1-4). The most frequently encountered species were barking deer *Muntiacus muntjak*, wild boar *Sus scrofa*, Rhesus macaque *Macaca mulatta*. From the preliminary fieldwork done thus far, we have found interesting patterns in animal habitat distribution in the study area. Small carnivores, particularly species such as the leopard cat *Prionailurus benghalensis* and the Asian palm civet *Paradoxurus hermaphroditus*, were found only in moist deciduous forests, whereas other animals were found across all habitat types throughout the NEG. The Division and Range wise distribution of animals is given below. Our study detected the stripe-neck mongoose *Herpestes vitticollis* and Leopard cat *Prionailurus benghlensis* for the first time in this part of Odisha. Other rare smaller cats such as Rusty spotted cat *Prionailurus rubiginosus* and Jungle cat *Felis chaus* were also detected in Lakhari Valley Wildlife Sanctuary, Odisha. The field data is now being analysed while the project is completed, and the data and findings will be shared soon.

Andhra Pradesh:

Table 1: A summary of mammal species detected across all ranges combined in the Northern Eastern Ghats of Andhra Pradesh, based on our field survey findings

Division	Range name	Habitat type	Species richness	Species
Chinturu	Lakkavaram	Dry deciduous forest	13	Leopard (VU), Macaque (LC), Small Indian civet (LC), Barking deer (LC), Gaur (VU), Hanuman langur (VU), Porcupine (LC), Wild boar (LC), Spotted deer (LC), Four-horned antelope (VU), Sloth bear, Sambar (VU), Mouse deer (LC)
Chinturu	V.R.Puram	Dry deciduous forest	2	Barking deer (LC), Mouse deer (LC)
Rampachoda varam	Maredumilli	Dry deciduous forest + Moist deciduous forest	15	Macaque (LC), Leopard cat, Small Indian civet (LC), Barking deer, Gaur (VU), Hanuman langur (VU), Porcupine (LC), Wild boar (LC), Palm civet (LC), Four-horned antelope (VU), Black-naped hare (LC), Sambar (VU), Ruddy mongoose (LC), Mouse deer (LC), Leopard (VU)
Rampachoda varam	Rampachoda varam	Dry deciduous forest	5	Barking deer (LC), Wild boar (LC), Macaque (LC), Mouse deer (LC), Gaur (VU)
Rampachoda varam	Indukuru	Moist deciduous forest	6	Porcupine (LC), Barking der, Wild boar (LC), Macaque (LC), Sambar (VU), Mouse deer (LC)

Table 2: Guild wise division of species found during ecological surveys in Andhra Pradesh

Category	No of species detected	Species	Red List category
Herbivore	8	Barking deer (LC), Gaur (VU), Spotted deer (LC), Four-horned antelope (VU) (FHA), Sambar (VU), Mouse deer (LC), Black-naped hare (LC)	Sambar (VU), Gaur (VU), Four-horned antelope (VU)
Carnivore	6	Leopard (VU), Leopard cat, Small Indian civet (LC), Palm civet (LC), Ruddy mongoose (LC), Crested serpent eagle	Leopard (VU), Sloth bear (VU)
Omnivore	4	Macaque (LC), Hanuman langur (VU), Porcupine (LC), Wild boar (LC)	None
Other	1	Red jungle fowl (LC)	None

Table 3: Camera trap survey grids with details of species encountered in each range in the NEG of Odisha

Division	Location	Total mammal richness	Mammals captured
Rayagada	Darukona	10	Elephant, Barking deer, Mouse deer, Porcupine, Small Indian civet, Palm civet, Grey langur, Rhesus macaque, Ruddy mongoose, Indian grey mongoose
Rayagada	Ghospadi	6	Barking deer, Porcupine, Small Indian civet, Grey langur, Rhesus macaque, Ruddy mongoose.
Rayagada	Rangamati	0	NA
Rayagada	Khambesi	10	Barking deer, Mouse deer, Porcupine, Leopard, Grey langur, Rhesus macaque, Ruddy mongoose, Small Indian civet, Indian grey mongoose, Striped-neck mongoose
Rayagada	Ambodala	2	Rhesus macaque, Grey langur
Rayagada	Baliapadar	5	Rhesus macaque, Ruddy mongoose, Barking deer, Palm civet, Porcupine
Rayagada	Dhengakul	2	Golden jackal, Indian grey mongoose
Rayagada	Bandhugud a	7	Barking deer, Macaque, Porcupine, Ruddy mongoose, Mouse deer, Grey langur, Wild boar
Rayagada	Patalamba	5	Elephant, Barking deer, Wild boar, Porcupine, Rhesus macaque
Rayagada	Lekhapadar	5	Rhesus macaque, Porcupine, Barking deer, Mouse deer, Wild boar

Rayagada	Guma	7	Rhesus Macaque, Porcupine, Barking deer, Mouse deer, Ruddy mongoose, Palm civet, Hare
Rayagada	Pankeri	8	Wild boar, Mouse deer, Palm civet, Barking Deer, Rhesus macaque, Leopard cat, Indian grey mongoose, Ruddy mongoose
Rayagada	Musudi	4	Rhesus Macaque, Mouse deer, Indian grey mongoose, Small Indian civet.
Rayagada	Bariapada	7	Rhesus macaque, Porcupine, Ruddy mongoose, Mouse deer, Palm civet, Wild boar, Barking deer
Rayagada	Daruguda	5	Barking deer, Ruddy mongoose, Rhesus macaque, Porcupine, Jackal
Gajapati (Lakhery Valley WLS)	Chandragiri	5	Rhesus macaque, Wild boar, Palm civet, Mouse deer, Porcupine
Gajapati (Lakhery Valley WLS)	Jubagaon	5	Barking deer, Mouse deer, Rhesus macaque, Grey langur, Palm civet
Gajapati (Lakhery Valley WLS)	Baligonda	9	Leopard, Sambar, Golden Jackal, Chital, Wild boar, Rhesus macaque, Barking deer, Grey langur, Porcupine
Gajapati (Lakhery Valley WLS)	Kamarakhali	4	Leopard, Porcupine, Wild boar, Rhesus macaque
Gajapati (Lakhery Valley WLS)	Dhepaguda	10	Leopard, Wild boar, Small Indian civet, Palm civet, Barking deer, Mouse deer, Porcupine, Hare, Rhesus macaque, Grey langur
Gajapati (Lakhery Valley WLS)	Lakheri	9	Barking deer, Palm civet, Small Indian civet, Porcupine, Ruddy mongoose, Grey langur, Rhesus macaque, Hare, Jungle cat
Gajapati (Lakhery Valley WLS)	Sugada	4	Barking deer, Wild boar, Rhesus macaque, Palm civet
Gajapati (Lakhery Valley WLS)	Kumutipankhal	8	Wild boar, Mouse deer, Barking deer, Small Indian civet, Ruddy mongoose, Porcupine, Rhesus macaque, Rusty spotted cat
Gajapati (Lakhery Valley WLS)	Kuruba	5	Rhesus macaque, Grey langur, Palm civet, Barking deer, Porcupine
Gajapati (Lakhery Valley WLS)	Katamati	4	Leopard, Grey langur, Porcupine, Ruddy mongoose
Gajapati (Lakhery Valley WLS)	Dalikota	7	Palm civet, Small Indian civet, Grey mongoose, Barking deer, Wild boar, Grey langur, Ruddy mongoose
Gajapati (Lakhery Valley WLS)	Pitakari	6	Mouse deer, Hare, Wild boar, Rhesus macaque, Barking deer, Palm civet

Table 4: Species detected in ecological surveys categorized by their IUCN Red List status.

Sl. no.	Scientific name	Common name
1	*Elephas maximus*	Asiatic elephant (EN)*
2	*Muntiacus muntjak*	Barking deer/ Indian muntjac (LC)*
3	*Moschiola indica*	Mouse deer/ Indian spotted chevrotain (LC)*
4	*Sus scrofa*	Wild boar (LC)*
5	*Canis aureus*	Golden jackal (LC)*
6	*Macaca mulatta*	Rhesus macaque (LC)*
7	*Semnopithecus entellus*	Grey langur (LC)*
8	*Hystrix indica*	Indian crested porcupine (LC)*
9	*Urva smithii*	Ruddy mongoose (LC)*
10	*Herpestes edwardsii*	Grey mongoose (LC)*
11	*Urva vitticolla*	Striped-neck mongoose (LC)*
12	*Prionailurus bengalensis*	Leopard cat (LC)*
13	*Prionailurus rubiginosus*	Rusty spotted cat (NT)*
14	*Panthera pardus*	Leopard (VU)*
15	*Paradoxurus hermaphroditus*	Palm civet (LC)*
16	*Viverricula indica*	Small Indian civet (LC)*
17	*Rusa unicolor*	Sambar (VU)*
18	*Axis axis*	Spotted deer/ Chital (LC)*
19	*Lepus nigricollis*	Black naped hare (LC)*

(EN)*- Endangered, (LC)*- Least concern, (VU)*- Vulnerable.

Selected camera trap photos of mammals detected during field work:


27°C/81°F 24/06/2025 12:22:15


24°C/75°F 27/06/2025 03:35:11


2025/08/07 07:07:13
23 °C 73 °F


/08/19 07:47:16
23 °C 73 °F


24°C/75°F 07/09/2025 19:09:01


25°C/77°F 21/08/2025 17:37:16


24°C/75°F 14/08/2025 16:26:23


23°C/73°F 11/09/2025 20:59:40

Photo legend (from top to bottom):

1. Asian elephant 2. Mouse deer (Indian chevrotain)
3. Barking deer (Indian muntjak) 4. Leopard 5. Grey langur 6. Sloth bear
7. Barking deer 8. Gaur 9. Leopard cat 10. Wild boar 11. Leopard
12. Grey langur 13. Sloth bear 14. Palm civet 15. Rhesus macaque
15. Chital (spotted deer) 16. Leopard cat

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