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Camera – Trapping Records of Indian Pangolin (*Manis crassicaudata*) from Similipal Tiger Reserve, Odisha, India

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Abstract

The Indian pangolin, although considered to be widely distributed due to its elusive nature and low detection probability its status and distribution records are very limited. Rampant hunting for local consumption and illegal wildlife trade for medicinal and ornamental purposes has pushed the species towards serious decline. Herein we report the first photographic records of the Indian Pangolin in Similipal Tiger Reserve, Odisha. During our camera trapping study from January 2017 to January 2018 the species was recorded on three occasions from different locations of the Tiger Reserve.

Keywords: Indian Pangolin; Camera Trapping; Similipal Tiger Reserve

Introduction

Indian pangolin or thick-tailed Pangolins, Manis crassicaudata (the word crassicaudata derived from Latin words crassus (thick or heavy) and cauda (tail), are medium sized mammals weighing between 9 and 18 kg. They primarily feed on termites and ants, and their specialized feeding habit known as myrmecophagy, has led to specific morphological adaptations such as long sticky tongue and long sharp claws. The keratinized scales of pangolins act as an armour, protecting them when they curl up into a ball (referred to as pengguling a Malay word meaning rolling up in response to threats. Ironically these scales which evolved to protect pangolins against predators now drive them to extinctions as thousand of pangolins are killed for their scales every year by humans. Indian pangolins face extreme risk of extinction due to poaching, habitat loss and fragmentation. Their habitat extends from northern Burma and the southern Yunnan Province in China to the eastern parts of Punjab and Sindh in Pakistan, as well as most of India, Nepal and Bangladesh. Despite the wide range of Pangolin, little is known about their distribution and status, except for a few presence records obtained from the semi arid regions of western India, moist deciduous forests of North Bengal, tropical moist forests of the Western Ghats and lower Shivalik hills of Himachal Pradesh. Indian pangolins are quite adaptive to modified habitats having abundant prey and less exploitations pressure [1]. The Indian Pangolin is nocturnal and rests in burrows during the day time. Two types of burrows have been reported for the Indian pangolins i.e. feeding burrows and living burrows [1]. It uses its long protrusible and glutinous tongue to predate on ants and termites; consuming the eggs, young and adults of ants and termites, also ingests grit, sand and small stones that aid mastication [2]. Thus the species plays an important ecological role by consuming termites which are a serious insect pest for agricultural crops and buildings (Roberts 1997). Indian Pangolins are typically solitary in nature, except during the matting and rearing of the young ones; it is believed that scent markings by male using urine, scat or anal glands are the means to maintain territory and social relations [1]. Pangolins occurs in very low densities, few available studies estimating densities for various

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species of pangolin suggests density of 0.0001 individual per km² for the Indian pangolin, 0.001 individual per km² for the Chinese pangolin and 0.8 individual per km² for the white-bellied pangolin *Phataginus tricuspis* in Africa [3,4].

The Indian pangolin is protected under Appendix I of the Convention on International Trade in Endangered Species (CITES) and schedule I species in the wildlife (protection) Act 1972, It is also listed as 'Endangered 'in the IUCN Red list of Threatened Species due to its rapid decline in their numbers [1]. Despite being protected under many regimes of the law, the population of this species is declining rapidly; mainly because of hunting for local use as meat, for traditional medicines and rampant illegal international trade of the species are used as a whole or in powdered from in the preparation of traditional medicines in southeaster Asia, mainly china and Vietnam [5-8]. In India, hunting and illegal trade of 119 pangolin seizures were recorded from year 2009 to 2018 and an estimated 7,500 individuals were killed (Kumar., et al. 2020). Additionally, the Indian pangolins in their habitat were killed due to the belief that they dig up graves and pull out the buried dead bodies. In addition farmers kill the animal allegedly for damaging their crops and agricultural lands by digging the burrows [4].

Study area and Field surveys

The Similipal is densely forested hill in the heart of Mayurbhanja district lying close to the eastern most of the eastern ghat in the Mahanadian Biogeographically region and within the Chotanagpur plateau. Similipal is the richest watershed in Odisha giving rise to the many perennial rivers. Four types of forest habitat such as semi ever green; tropical moist deciduous, dry deciduous hill forests and high level sal forest are found in the Similipal Tiger Reserve. Similipal Tiger Reserve spreads over 2,750 sq km 1, 078 species of plants including 94 species of orchids occur in the tiger reserve. It hosts 55 species mammals, 304 species of birds, 60 species of reptiles, 21 species of frogs, 60 species of fishes and 164 species of butterflies. The core area has a size of 1.194 sq km² [9-13].

The field surveys were conducted for a period of twelve months from January2017 to January 2018. The site selection criteria included the detection of recent claw marks, tail drag marks, foot prints, faecal samples (dung) quills, bite marks, feeding sign (broken ant nests and termite mounds) scratch marks and burrows of our target animals.

Distribution

According to Mohapatra., *et al.* [5] the Indian Pangolin is found in southern Asia from northern and southeastern Pakistan throughout the Indian subcontinent south of the Himaiaya, to northeastern India and Srilanka. In India it is distributed across states like Andhrapradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamilnadu, Uttarakhand, Uttar Pradesh and West Bengal.

Habitat and diet

The Indian Pangolin is Mainly fossorial and is known to excavate burrows in the soil, as well as inhabit crevices of boulders [7]. There are two types of burrows: the resting burrow where it rests during the day, and the feeding burrow, which it digs to uncover prey [14]. The most preferred dietary choices of the Indian Pangolin are the red ants and the termites which are found within its habitat.

Behaviour

The Indian pangolin sleeps in burrows during the day time and forages at night [14]. A study conducted on Indian pangolin in captivity at the Nandankanan Zoo, India revealed that they show peak activity between 2000h and 2100h. It is also arboreal and can climb trees using its forelimbs, hindlimbs and the prehensile tail which acts as an extra limb.

Description

As the species name *crassicaudata* suggests, the Indian pangolin is characterized with a prehensile thick (crassus) tail (cauda) with adults weighing up to 16 kg and having length approximately 148 cm [7]. Sharp keratinous scales cover the dorsal and lateral surfaces of its body, both dorsal and ventral surface of the tail, and over the limb. It has 11-13 rows of over lapping scales round the mid body with a terminanal scale on its ventral side of tail [5]. It

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has curved claws in its forelimbs which are used to dig into termite mounds and ant nests, following which the ants and termites are licked up by its long, sticky saliva-coated tounge. When threatened it either flees or curls up into a tight ball, depending entirely on its scale [15] for protection.

Discussion

Despite being one of the most traded species throughout the globe, very little is known about the distribution and current status of the pangolin in most of the range including Odisha. This can be attributed to its elusive nature and low density, as evident from the study that the species captured only three images. As part of the All-India Tiger Estimation we deployed double-sided camera traps from January 2017 to January 2018. All the Cameras were positioned at a height of 30-45 cm above the ground to capture both large and small mammals. On 09-January-2018 one image captured from southern part of the tiger reserve and on 26-January-2017 two image captured from northern part of the tiger reserve. Indian pangolin images were captured from camera points on the main forest tracks as well as interior animal trails (foot paths) these areas are covered with moist deciduous and semi ever green forest and crossed by the perennial rivers east deo and west deo. Although the effort was intensive the cameras were mainly installed on trails, foot path and areas for capturing the big cats. As big cats have larger home ranges and they prefer regular trails and paths for walking to avoid injuries but the same cannot assumed for the smaller vertebrates like the Indian pangolin so a little bias in less detection of pangolin during the study cannot be ruled out. Since the species inhabits wide varieties of habitats and outside protected areas [1] the comprehensive study in Similipal as well as adjoining areas on the ecological aspects and population dynamics of the species would give more insight on the Indian pangolin. The measures like creating awareness among the local people and frontline staff, including local communities to protect the Indian pangolin from traditional hunting would help in conserving the species.

Conclusion

Due to immense poaching and increasingly demand for its meat and scale as well as its use in traditional medicine in the international illegal wildlife trading markets the population of Indian pangolin is declining from their natural habitat. According to TRAFFIC Indian nearly 6,000 Pangolins were poached India between 2009 and 2017. Further research to better understand the ecological factors that influence the population dynamics and distributional of the Indian pangolin to effectively implement conservation strategies for the vulnerable animals.

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Figure 1: Captured of Indian pangolin in Dudhiani range.



Figure 2: Captured of Indian pangolin in Bisoi Range.

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Figure 3: Captured of Indian Pangolin in Pithabata Range.

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