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A natural history note from Similipal Tiger Reserve, Odisha, India: Predation of Indian chevrotain *Moschiola indica* by Spot-bellied Eagle Owl *Bubo nipalensis*

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Abstract

An Indian chevrotain, *Moschiola indica*, was observed being preyed upon by a spot-bellied eagle owl, *Bubo nipalensis*, in Similipal Tiger Reserve, Odisha. A camera trap captured an image of the spot-bellied eagle owl in flight, clutching an Indian chevrotain in its talons during the night, thereby providing empirical evidence of predation. Notably, an earlier study has reported an incident of the spot-bellied eagle owl preying on a young Indian chevrotain in the Annamalai Hills, Western Ghats. Our observation of nocturnal predation supplements previous records and indicates that the Indian chevrotain could be a regular prey item of the spot-bellied eagle owl across their shared distributional range. This record enhances our understanding of the dietary niche of the spot-bellied eagle owl and offers insight into the potential predation pressures exerted on the Indian chevrotain by nocturnal avian predators within its habitat.

Keywords: Avian predator, camera trapping, dietary niche, prey–predator interaction, tropical forest ecology

Introduction

The Indian chevrotain (*Moschiola indica*), also commonly known as the mouse deer, is a small, primitive ruminant and even-toed ungulate. This species is native to the Indian subcontinent, with a distribution across the Western Ghats, the Eastern Ghats up to Odisha, and the forests of central India (Prater, 1971), as well as parts of southern Nepal (Mitchell & Punzo, 1976). However, recent reports suggest that there is no current evidence of the species in Nepal (Duckworth & Timmins, 2015). This species inhabits tropical deciduous, moist evergreen, and semi-evergreen forests covering the plateaus, plains, and hills of peninsular India (Prater, 1971; Raman, 2004). Due to its broad distribution, relative habitat stability, and continued common status, the species is classified as Least Concern (Duckworth & Timmins, 2015), yet it remains one of the most hunted species (Madhusudan & Karanth, 2002). In India, the chevrotain is listed in Schedule I of the Wildlife (Protection) Act, 1972, which ensures the highest level of legal protection. Much of the ecological information about chevrotains is anecdotal (Raman, 2015). They are generally solitary, except for mother-offspring pairs (Figure 1) or during courtship. Their diet primarily consists of fallen fruits (Prasad & Sukumar, 2010), along with young leaves, buds, and shoots (Sridhara *et al.*, 2013). The Indian chevrotain is part of the diet of a number of large carnivores, such as leopard (*Panthera pardus*) (Karanth & Sunquist, 2000), tiger (*Panthera tigris*), and dhole (*Cuon alpinus*) (Raman, 2004), and smaller mammals, such as the Nilgiri marten (*Martes gwatkinsii*) (Mudappa, 1999; John & Madhukumar, 2002). Reptiles, including pythons (*Python molurus*), crocodiles (*Crocodylus palustris*) (Raman, 2004) and various birds of prey, such as eagles (Raman, 2015) and large owls (Nandini, 2005), also prey on chevrotains. In this paper, we report a natural history observation of predation on an Indian chevrotain by a spot-bellied eagle owl (*Bubo nipalensis*) in the Similipal Tiger Reserve (STR), located in Mayurbhanj district, Odisha. STR is home to a significant population of Indian chevrotain (Mohapatra *et al.*, 2019) with a reported population density of 1.88 ± 1.19/km² (Palei *et al.*, 2016).

To monitor tiger, and and copredator movement in STR, we deployed motion-sensor Cuddeback C-1 camera traps, strategically along a forest road. On 14 December 2021, the camera-trap was triggered at 02.58 hrs. by the action of a large owl swooping on an Indian chevrotain in the Tropical Moist Deciduous Forest of Jenabil Range in the STR (21°40'28.4"N, 86°23'17.5"E) (see Figure 2). The image shows the dorsal side of a large owl in low flight, clutching the Indian chevrotain in its talons, with a noticeable fresh wound evident on the ventral side of the chevrotain's body.



Figure 1. An adult female Indian chevrotain with its offspring in Similipal Tiger Reserve, Odisha

The Similipal TR hosts five commonly observed large owl species: mottled wood-owl (*Strix ocellata*), rock eagle-owl (*Bubo bengalensis*), brown fish-owl (*Ketupa zeylonensis*), brown wood-owl (*Strix leptogrammica*), and the spot-bellied eagle-owl (*Bubo nipalensis*). Mottled wood-owl and rock eagle-owl are generally associated with dry deciduous forests and rocky outcrops, primarily found near forest edges and in the drier northern ridges. At the observation site, the bird could be either brown fish-owl, brown wood-owl, or spot-bellied eagle-owl. The brown fish-owl usually has a pale brown upper part with dark streaks on the upper back and largely unmarked lower back, rump, and tail coverts (König & Weick, 2008). The brown wood-owl generally has a uniformly plain brown back without spots or barring (Mikkola, 2017), which does not match the plumage observed in our camera trap photo. From the wing pattern, we deduce that the species could be a spot-bellied eagle-owl, as it has diagnostic pale silver-grey upper part colour, prominent white scapular patches, and distinct continuous dark barring across the rump and tail coverts, which separate it from the other sympatric owl species in Similipal TR.

The spot-bellied eagle owl preys on snakes, lizards, large birds, and mammals (Ali & Ripley, 1981; Mikkola, 2017). Owls are opportunistic hunters with specialised flight structures that enable silent movement, which is essential for hunting using visual and auditory cues close to the ground surface (Mikkola, 2017). The Indian chevrotain, weighing around 3 kilograms (Raman, 2015), is one of the largest mammalian prey species that exceeds the body weight of the spot-bellied eagle owl (1.3 to 1.5 kilograms, Mikkola, 2017), highlighting its ability to capture prey that exceeds its own body mass. The other large mammalian prey species recorded for the spot-bellied eagle owl include golden jackal (*Canis aureus*), Indian hare (*Lepus nigricollis*), and fawns of northern red muntjac (*Muntiacus vaginalis*) (Ali & Ripley, 1981; König & Weick, 2008). Both, Indian chevrotain and spot-bellied eagle-owl, are nocturnal in their activity (Raman, 2004; König & Weick, 2008), but an earlier observation documented the spot-bellied eagle owl's predation on Indian chevrotain during daylight hours in a rain forest patch, adjoining Valparai in the Anamalai hills (Nandini, 2005). Our observation indicates that the spot-bellied eagle owl can prey on the Indian chevrotain during the day as well as at night.

In Odisha, the Indian chevrotain inhabits protected areas like Similipal TR, Satkosia TR, Kotagarh Wildlife Sanctuary, Badrama Wildlife Sanctuary, Ushakothi Wildlife Sanctuary, and other forested habitats of Angul, Athagarh, Berhampur, Bolangir, Boudh, Cuttack, Dhenkanal, Jeypore, Kalahandi, Koraput, Malkangiri, Phulbani, *etc.* (Mohapatra *et al.*, 2019). The Indian



Figure 2. Indian chevrotain predated upon by a spot-bellied eagle owl in Similipal Tiger Reserve, Odisha

chevrotain prefers habitats that offer refuges and a complex understory to decrease predation risk (Sridhara *et al.*, 2013). However, in Similipal TR, several photographs of the Indian chevrotain have been taken along the open forest roads (Palei *et al.*, 2015), where the species is vulnerable to predation by birds of prey, such as the spot-bellied eagle owl. This indicates wider habitat preferences and behaviour plasticity in the Indian chevrotain. Combined with the natural history observation presented, it provides another compelling reason for detailed studies to better understand the ecology of the Indian chevrotain across its range.

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CONFLICT OF INTEREST

Manoj V. Nair, Bivash Pandav & Samrat Mondol are academic editors at the Journal of Wildlife Science. However, none of them participated in the peer review process of this article except as authors. The authors declare no other conflict of interest.

DATA AVAILABILITY

Data is available from the corresponding author on request.

AUTHOR CONTRIBUTIONS

All enlisted authors have collaborated in developing and designing the paper. Harshvardhan Singh Rathore: Data generation, data curation, conceptualization, validation, investigation, writing original draft, writing-review and editing. Jagyandatt Pati, Samrat Gowda, Sai Kiran DN, M. Yogajayananda, Prakash Chand Gogineni, Manoj V. Nair : Data curation, resources, writing - review and editing. Bivash Pandav: Conceptualization, resources, writing-review and editing, supervision, funding acquisition. Samrat Mondol: Conceptualization, resources, writing - original draft, writing -review and editing, supervision, project administration, funding acquisition.

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