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## NOTE

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## ODISHA'S FIRST RECORD OF A FREE-TAILED BAT (MAMMALIA: CHIROPTERA: MOLOSSIDAE): WHAT COULD IT BE?

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Bats are one of the most abundant and widely distributed mammalian groups after rodents, represented by more than 1,300 species worldwide (Bat Conservation International 2013). Free-tailed bats (Molossidae) are the fourth largest family of bats, containing approximately 110 species worldwide (Ammerman et al. 2012). In general, free-tailed bats are characterised by a robust body, relatively long and narrow wings, and a free tail projecting beyond the end of the uropatagium (Srinivasulu et al. 2010). In India, a total of 125 species of bats were reported (Ruedi et al. 2012; Srinivasulu & Srinivasulu 2012; Senacha & Dookia 2013; Saikia et al. 2017; Thong et al. 2018), which represents about a quarter of the country's mammalian diversity. Still, information on the diversity and distribution of different bat species from different parts of India is sporadic. In India, the bat family Molossidae is represented by four species, namely the Wrinkle-lipped Free-tailed Bat *Chaerephon plicatus* (Buchanan, 1800), Wroughton's Free-tailed Bat *Otomops wroughtoni* (Thomas, 1913), the European Free-tailed Bat *Tadarida teniotis* (Rafinesque, 1814), and the Egyptian Free-tailed bat *T. aegyptiaca* (É. Geoffroy, 1818) (Bates

& Harrison 1997; Srinivasulu & Srinivasulu 2012). These bats are quite widely distributed throughout the country, except for *Otomops wroughtoni* which is known only from five localities in Karnataka and Meghalaya (Bates & Harrison 1997; Thabab & Bates 2002; Srinivasulu & Srinivasulu 2012; Ruedi et al. 2014) and *Tadarida teniotis* from a single locality in West Bengal (Hill 1963) (Table 1). Among these bats, *Chaerephon plicatus* and *Otomops wroughtoni* can be clearly distinguished from the other two species in having a membrane between the ears over the forehead (Bates & Harrison 1997; Srinivasulu et al. 2010). Among all the four species of free-tailed bats occurring in India, *Otomops wroughtoni* is a very rare species and is legally protected under Schedule I of the Indian Wildlife (Protection) Act, 1972.

Odisha is one of the eastern coastal states of India and its bat fauna is represented by 25 species in seven families (Debata et al. 2016). To our present knowledge, there is no report on the occurrence of any free-tailed bats from Odisha. In this communication based on examination of a pup, we report the occurrence of a free-tailed bat in the state.

During a regular survey of bat roosting sites in Similipal Biosphere Reserve (SBR) in northern Odisha from September 2014 to August 2017, a pup of an unidentified bat (Image 1a,b) was spotted laying over a rock adjoining Sitakund Waterfall in the northeastern side of SBR (Fig. 1; 21.924°N & 86.570°E; 303m). Bat guano was present at the location where the pup was found and the screaming sound of bats from an



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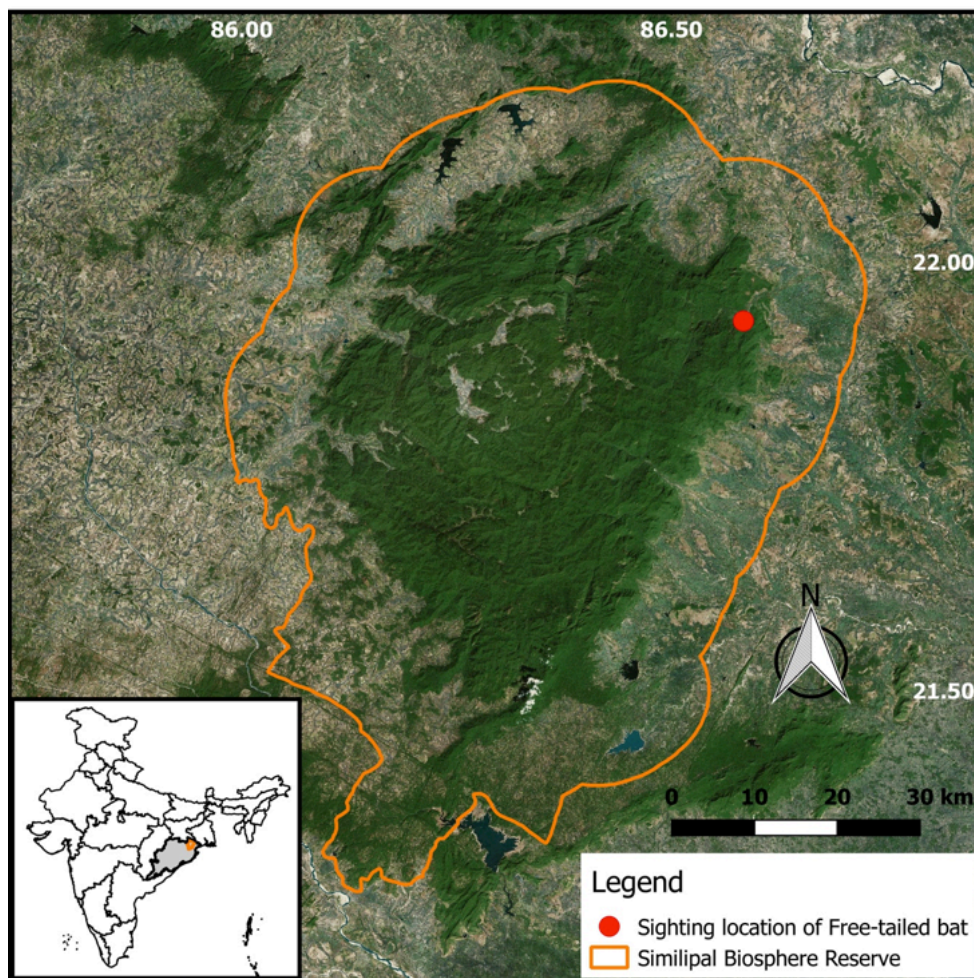


Figure 1. Sighting location of the pup of a free-tailed bat in Similipal Biosphere Reserve in Odisha, eastern India.

inaccessible cliff above was audible (Image 1c). The recorded location is situated along a riparian zone of moist deciduous forest adjoining a perennial hill stream of Sitakund Waterfall. The sighting location also falls within the boundary of Similipal Wildlife Sanctuary and Tiger Reserve. As we did not have permission to collect any specimens from protected areas, we took close-up images using a Fujifilm Finepix HS 10 digital camera and noted the morphological characters of the pup for identification.

The pup was characterised by a free tail, wrinkled lips, and strong and stout hind feet (Image 1a,b) and thus belongs to the Molossidae family as per the descriptions provided by Bates & Harrison (1997) and Srinivasulu et al. (2010). The species-level identity of the pup could not be confirmed as we could not collect the pup or capture any adult from the inaccessible roost for further examination (Image 1c). As the base of the ears of the pup was connected by a membrane over the

forehead (Image 1a,b), however, we narrowed down the unidentified pup to either *Chaerephon plicatus* or *Otomops wroughtoni*.

*Chaerephon plicatus* is widely distributed in India and was recorded from different localities in Andhra Pradesh to Goa, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal (Bates & Harrison 1997; Srinivasulu & Srinivasulu 2012); therefore, there is a possibility of its occurrence in the forests of SBR. On the other hand, *Otomops wroughtoni* is a rare species and is restricted to a few localities in Karnataka and Meghalaya (Bates & Harrison 1997; Thabah & Bates 2002; Srinivasulu & Srinivasulu 2012; Ruedi et al. 2014). As the known distribution range for this species is quite disjunct so far, a continuous population covering the forested regions of eastern India may be possible.

Although the present study could not confirm the species-level identification of the examined pup, we





Image 1. a & b - The recorded pup of the unidentified free-tailed bat | c - Roost (red arrow) and site where the pup was found (white arrow) in Similipal Biosphere Reserve, Odisha, India.

Table 1. Diversity and distribution of free-tailed bats (Family: Molossidae) in India.

	Species	Common name	Distribution in India
1	<i>Chaerephon plicatus</i>	Wrinkle-lipped Free-tailed Bat	Andhra Pradesh, Goa, Karnataka, Madhya Pradesh, Maharashtra, Meghalaya, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.
2	<i>Otomops wroughtoni</i>	Wroughton's Free-tailed Bat	Karnataka and Meghalaya.
3	<i>Tadarida teniotis</i>	European Free-tailed Bat	West Bengal.
4	<i>T. aegyptiaca</i>	Egyptian Free-tailed Bat	Andhra Pradesh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, and West Bengal.

can at least confirm the occurrence of molossid bats in Odisha. As the locality is within the Similipal Wildlife Sanctuary and Tiger Reserve area, we did not get permission to deploy mist nets at night. We, therefore, propose acoustic monitoring in future inventories, which can help reveal the identity of the species. This can also aid in revising the distribution record of the proposed species in India.

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