DISTRIBUTION SURVEY OF BENGAL SLOW LORIS *Nycticebus bengalensis* IN TRIPURA, NORTHEASTERN INDIA

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ABSTRACT

A survey of Bengal slow loris, *Nycticebus bengalensis*, was carried out in June to July 2007 at Thrisna and Sepahijala Wildlife Sanctuaries in Tripura, Northeastern India. This survey is intended to estimate distribution and population status of the Data Deficient Bengal slow loris based on IUCN Red List 2007. Using recce sampling method, the encounter rate is 0.22 individuals/km^2, which falls within the range seen in Assam (0.03-0.33 individuals/km^2). Most animals were detected at around 8-15 m in height at the interior of moist deciduous forest.

Keywords: Bengal slow loris, *Nycticebus bengalensis*, distribution and population surveys, Tripura-Northeastern India.

INTRODUCTION

Bengal slow loris *Nycticebus bengalensis* has the largest geographic range among the slow lorises and has been recorded from the forests of northeastern India, Myanmar, Cambodia, southern China, Laos, northern Thailand, and Vietnam (Nekaris *et al*., 2006). Groves (2001) recognized the Bengal slow loris as a distinct species, separate from *Nycticebus coucang*, which is distributed in Indonesia, Malaysia, and Thailand (Nekaris *et al*., 2006). Bengal slow loris is listed under Schedule I of the Wildlife (Protection) Act of India, 1972 and classified as Data Deficient species in the IUCN Red List (2007) due to limited information on its distribution and population status.

Preliminary observations show that slow lorises in India are found in subtropical and tropical evergreen and semi-evergreen habitats at altitudes up to 2400 m asl (Choudhury, 2001; Gupta, 2001). Habitat destruction due to *jhum* cultivation, tree felling, road kills and hunting have been reported as major threats to the species (Choudhury, 1992; Srivastava, 1999; Gupta, 2001; Radhakrishna *et al*., 2006). Several studies have highlighted the need for better information on distribution, abundance, ecology, and conservation status of the species (e.g. Gupta, 2001; Radhakrishna *et al*., 2006).

This paper presents results of a preliminary survey for Bengal slow loris *Nycticebus bengalensis* in the state of Tripura, northeastern India. The specific objectives of the study were to establish the distribution status of the species in the protected areas of Tripura and to assess conservation threats affecting its long-term survival.

METHODS

The study was carried out in Trishna Wildlife Sanctuary and Sepahijala Wildlife Sanctuary, Tripura from June 10, 2007 to July 8, 2007. As time available for the survey was limited, the method employed was that of an encounter rate survey using recce sampling (Walsh and White, 1999; Radhakrishna *et al*., 2006).

Local people and Forest Department employees were interviewed to gather information on recent and past sightings of slow lorises, rescued individuals, their preferred habitat and diet. Based on the information gathered from these interviews and the available records of vegetation cover; particular trails, beat paths and roads were selected for the survey.

The survey was conducted between 1900h and 0100h. The surveying team comprised four individuals among who three were involved in searching the area thoroughly. The speed of walking was maintained around 1 km/h.

From previously conducted surveys it is known that slow lorises emit a bright orange eye shine in response to flashed light (Radhakrishna *et al*., 2006). Headlamps were hence used regularly during the survey to detect loris eye shine. All heights from ground level to the upper canopy were searched thoroughly during each walk.

Upon spotting potential eye shine powerful hand-held lights were used to identify the animal. If the individual was identified to be a slow loris, information was collected on parameters such as time of sighting, activity of the animal, height at which sighted, tree species on which sighted, and vegetation structure of the habitat.

Whenever possible, photographs were also taken of the sighted individual. A Garmin GPS unit was used to record geographic locations and the survey distances. During the survey, all signs of disturbance such as tree felling, bamboo collection, poaching and those indicating human presence and activity were recorded.

RESULTS

A total of 41 km was covered in Trishna Wildlife Sanctuary and 16.5 km in Sepahijala Wildlife Sanctuary. Nine slow lorises were sighted in Trishna Wildlife Sanctuary (Table 1, Figure 1). Although slow loris was not sighted in Sepahijala Wildlife Sanctuary, their presence was confirmed from interviews with local people and employees of the Sepahijala Zoological Park.

Most sightings occurred in the interior areas of the forest where the vegetation was dense; tree species were largely moist deciduous (*Grewia microcos*, *Schima wallichii*, *Careya arborea*, *Artocarpus chaplasha*, *Syzygium* sp., *Dillenia pentagyna*, *Vitex penduncularis*, *Ficus* sp., *Terminalia bellirica, Gmelina arborea*, *Delonix regia*, *Terminalia chebula*, etc.), around 8–15 m in height, and overgrown with climbers and vines.

The average height at which individuals were sighted was 8.33 m (n = 9; range = 5-15; SD = 2.94). The mean number of slow lorises

Tabel 1. Slow loris sightings in Trishna Wildlife Sanctuary, Tripura, Northeastern India.

Individuals*	Time of sighting (hours)	Tree species / height on tree	Geographical location	~ distance from nearest village (km)
1	2215	Terminalia bellirica / 15m	N 23^{0}15'42.8" E 091^{0}22'06.4"	5.5
2	2302	Unidentified / 5m	N 23^{0}15'27.8" E 091^{0}21'58.3"	5
3	2350	Unidentified / 5m	N 23^{0}15'10.1" E 091^{0}21'54.6"	4.5
4	2235	*Ficus* sp. / 8m	N 23^{0}18'31.0" E 091^{0}22'16.8"	1.5
5	2150	*Bursera serrata* / 8m	N 23^{0}15'04.8" E 091^{0}26'10.1"	2.5
6	2307	*Ficus* sp. / 10m	N 23^{0}15'04.5" E 091^{0}21'54.6"	4
7	0045	*Artocarpus chaplasha* / 8m	N 23^{0}14'25.0" E 091^{0}22'04.3"	3
8	2230	*Ficus* sp. / 10m	N 23^{0}16'32.1" E 091^{0}22'39.3"	3
9	2250	*Lagerstromea flosregine* / 6m	N 23^{0}16'40.7" E 091^{0}22'35.8"	3

* as identified in Figure 1.

Figure 1. Slow loris sightings in Trishna Wildlife Sanctuary, Tripura, Northeastern India.

(0.22/km) can be considered as an index of relative abundance of the species in Trishna Wildlife Sanctuary. Seven out of the nine loris sightings in this sanctuary occurred clustered in a small area of 1.71 km^2 (the area shaded white in Figure 2).

DISCUSSION

The encounter rates of Bengal slow loris from different areas of Assam ranged from 0.03 – 0.33 individuals/km (Radhakrishna *et al*., 2006). Density counts for the closely related *Nycticebus coucang* from two studies in Malaysia vary more widely. Wiens and Zitzmann (2003) recorded a density of *c*. 80 individuals/km^2 in Segari Melintang Forest Reserve in West Malaysia, while Barrett (1981) estimated a density of *c*. 20 individuals/km^2 for the Malay Peninsula (Barrett, 1981 *in* Wiens and Zitzmann, 2003).

The present study showed an encounter rate of 0.22 individuals/km. Although this number falls within the range seen in an earlier survey in Assam, it is significant that a majority of the sightings (seven out of nine) occurred in a small area of 1.71 km^2. We strongly recommend a long-term study of the behavioural ecology of this slow loris population and surveys in other parts of Tripura to investigate whether the high density in the small area within Trishna WLS is a localized phenomenon, and if so, the factors contributing to this density.

A more rigorous examination of disturbance factors and slow loris densities in other parts of Tripura may also reveal the role of environmental disturbances in affecting slow loris densities. It has been reported that encounter rates for *Nycticebus bengalensis* are 5-15 times lower than for *Nycticebus coucang* (Nekaris and Nijman, 2007). A more detailed population and behavioural study of the slow loris in Tripura will reveal whether low densities for the Bengal slow loris is typical of the species or an effect of environmental stresses.

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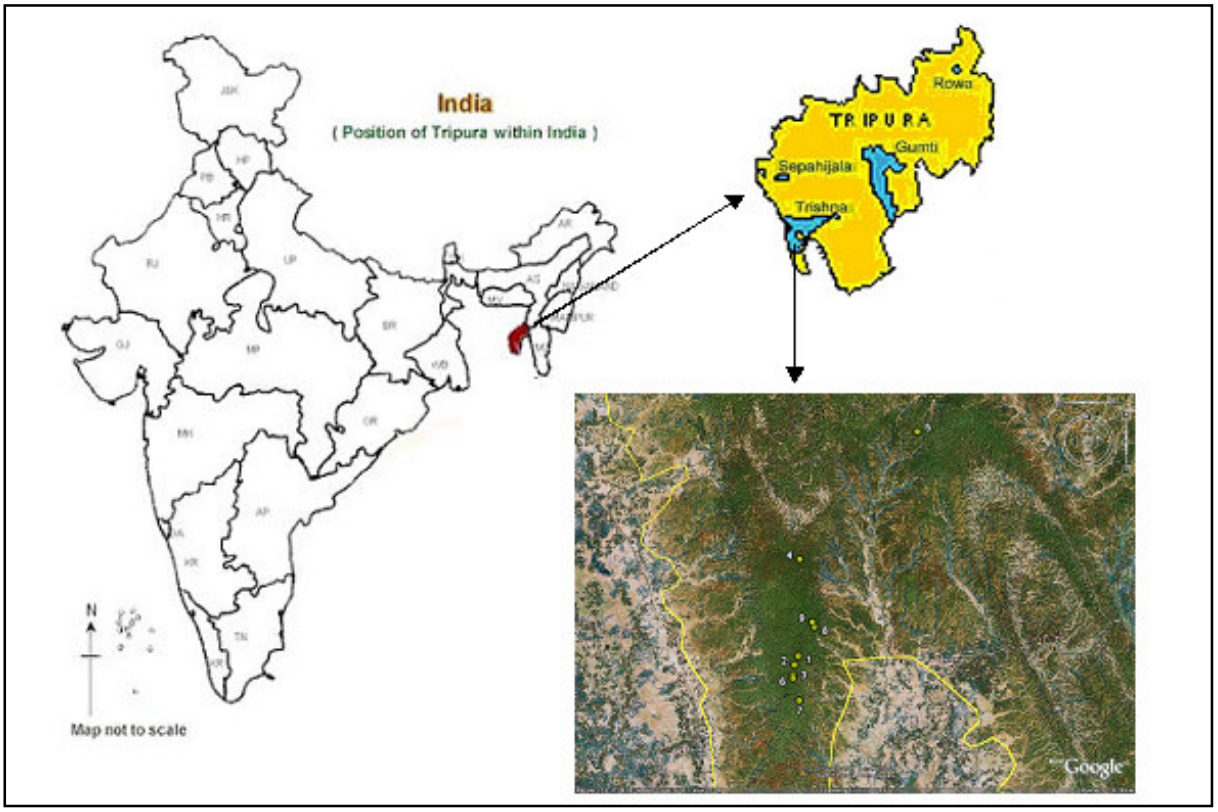

Figure 2. Bengal slow loris sighting locations in Trishna Wildlife Sanctuary, Tripura, Northeastern India.

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