

**POPULATION DENSITY, ABUNDANCE AND THREATS TO SRI LANKA  
SLENDER LORIS (*LORIS CF. TARDIGRADUS TARDIGRADUS*) IN A FOREST  
FRAGMENT AT BELIHULOYA, SRI LANKA**

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## INTRODUCTION

Sri Lanka is a tropical island located in the Indian Ocean. The island boasts of great ecosystem and species diversity (Jansen & Zoysa, 1992; Wijesinghe, 2000; Wijesinghe *et al.*, 1993), that include five species of primates with 12 subspecies of which three are endemic to Sri Lanka (Molur *et al.*, 2003). Slender lorises are small nocturnal prosimian primates endemic to Sri Lanka and India (Roonwal and Mohnot, 1977). Two species of Slender lorises named *Loris tardigradus* and *Loris lydekkerianus* exist in Sri Lanka. They are currently classified in to four subspecies as *L. t. tardigradus*, *L. t. nycticeboides*, *L. l. grandis* and *L. l. nordicus* (Hill, 1953; Groves, 2001; Nekaris and Jayewardene, 2003). Severe habitat loss has led to being listed as Endangered primates for Sri Lankan slender lorises (Hilton-Taylor, 2002). The Western Red Slender Loris (*Loris tardigradus tardigradus*) is an endemic and endangered primate in Sri Lanka (Groves, 2001; Nekaris and Jayewardene, 2003; Nekaris *et al.*, 2005; IUCN & MENR, 2007). According to the current literature this loris sub species is only found in southern wet zone and intermediate part of the country (Gamage *et al.*, in prep.). A study was aimed at determining the population density, abundance and threats of *Loris cf. tardigradus tardigradus* in a small fragmented forest patch in Belihul oya in the Sabaragamuwa Province of the Island.

## METHODOLOGY

The study was carried out in a small fragmented forest patch located in Belihuloya, in the Rathnapura district, near the Rathnapura- Badulla district boundary within the Imbulpe Divisional secretariat division (06° 42'N & 080° 47'E). The study area falls within the mid country Intermediate zone and still has fragmented patches of mid country evergreen forest. This forest patch is fragmented by Muttettuwegama, Kinchigune and Mungasthenna villages. The extent of this forest patch is approximately 0.14000 km<sup>2</sup>. This survey was conducted between 1900-2200 hours and walked at a slow pace of about 1km per hour, looking for eye shines. For that dimmed, wide-beam and heavily red -filtered head torches was used. Using the line transect method, observations were made over a period of six months (June - December) in 2011 along the three line transects. Transect 1 and 2 lied inside the forest fragment and transect 3 lied along the seasonal water stream at northern edge of the forest. Ten times have the each transect been repeated. Five visits were made for each month. Based on these observations the population density and abundance of *Loris cf. tardigradus tardigradus* in the Belihuloya forest fragment was ascertained. Distance software version 6.0 was used for data analysis.

## RESULTS AND DISCUSSION

Three line transects were used for data collection and five sightings were made over a period of six months (June - December) in 2011. The calculated density of *Loris cf. tardigradus tardigradus* in this fragmented forest patch is 0.592 animals/km<sup>2</sup> (0.217 – 1.614); however sample size is really small to reach a robust conclusion regarding the population density. The

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Vertical substrate used by *Loris cf. tardigradus tardigradus* is 6.8 m ± 4.7. Abundance of animal in this study site is 1.07 animals/km<sup>2</sup> (Table 1).

Of this, line transect-1 was contributed for three sightings and other two transects were contributed for one sightings from each transect.

Following disturbances to forest habitat were observed during the study period. There are several natural trails which is used by villagers. So, villagers enter the forest for many purposes, such as, illegal logging and create man-made forest fires. Due to illegal logging, continuity of arboreal substrate will be interrupted and it will affect the arboreal locomotion of slender lorises. Man-made forest fires are highly destructive and will damage to animals natural habitat.

Compared to other studies, population density of Belihuloya forest fragment was lower (0.592 animals/km<sup>2</sup>) than Kottawa Arboretum (41 animals/km<sup>2</sup>) and Massmulla Conservation Forest (13 animals/ km<sup>2</sup>) [Gamage *et al.* 2009 and Nekaris and Jayewardene 2004]. This may be due to disturbed habitat or small sample size.

The potential predators that were observed at the study site were Forest eagle owl (*Bubo nipalensis*), Brown Fish Owl (*Ketupa zeylonensis*). The present study site is highly vulnerable to many anthropogenic activities such as encroachment and domestic animals (E.g. Dogs and cats).

**CONCLUSIONS/RECOMMENDATIONS**

This Forest Fragment in Belihuloya should be considered as an important site for in-situ conservation of this endangered species. Due to the human encroachment and uncontrolled human activities in the forest, quality of the habitat of Slender loris will eventually reduce. So, conservation of the Slender loris and other wild animals isolated in this forest fragment, as such urgent measures have to be taken to mitigate anthropogenic activities in this isolated forest patch.

**TABLES, FIGURES ETC**

**Table 1: Population density and other results**

Density	ΔAIC	AIC	ESW	CI	CV
0.592	0.00	23.97	9	0.217 – 1.614	0.396

ESW=Effective strip width

CI = Density of individual analytic lower and upper confidence limits

CV= Coefficient of variance

AIC=Akaike information criterion

ΔAIC =Difference between the focal model’s AIC and that of the best fitting model

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