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## SMALL WILD CATS SPECIAL ISSUE

### SHORT COMMUNICATION

#### FIRST PHOTOGRAPHIC RECORD OF THE RUSTY-SPOTTED CAT *PRIONAILURUS RUBIGINOSUS* (I. GEOFFROY SAINT-HILAIRE, 1831) (MAMMALIA: CARNIVORA: FELIDAE) IN HORTON PLAINS NATIONAL PARK, SRI LANKA

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## FIRST PHOTOGRAPHIC RECORD OF THE RUSTY-SPOTTED CAT *PRIONAILURUS RUBIGINOSUS* (I. GEOFFROY SAINT-HILAIRE, 1831) (MAMMALIA: CARNIVORA: FELIDAE) IN HORTON PLAINS NATIONAL PARK, SRI LANKA

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**Abstract:** The Rusty-spotted Cat *Prionailurus rubiginosus* is thought to be present in most forested areas of Sri Lanka. Though it was suggested that the species may occur in montane regions, there was no photographic evidence to date. Here we present the first photographic record of the Rusty-spotted Cat in Horton Plains National Park. Individuals including cubs were photo-captured on 15 separate occasions during a 5,538 camera trap days study. These photo-captures were made both during the day and night, and indicate the presence of a breeding population in this protected area.

**Keywords:** Camera trap, carnivore, Felidae, montane forest, protected area.

The Rusty-spotted Cat *Prionailurus rubiginosus* (I. Geoffroy Saint-Hilaire, 1831) is native to India, Nepal, and Sri Lanka (Nekaris 2003; Mukherjee et al. 2016). It is currently listed by the IUCN as Near Threatened (Mukherjee et al. 2016) and is considered nationally Endangered in Sri Lanka (Ministry of Environment 2012). Its main threats are habitat loss and fragmentation (Mukherjee et al. 2016).

In Sri Lanka, the Rusty-spotted Cat is thought to be

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present in most forested areas (Philips 1980 cited in Nekaris 2003). Direct evidence of its presence below 1700m in arid scrub forests, dry forests, and monsoon forests was presented by Nekaris (2003) and Kittle & Watson (2004). Indirect or anecdotal evidence suggests its presence in wet forests near montane regions (Nekaris 2003). Photographic evidence, however, is scarce, particularly in the montane region. Here we report the first photographic record of the Rusty-spotted Cat above 2,000m in Horton Plains National Park (HPNP), located in Sri Lanka's montane zone, from a series of photographs made over a 15-month period.

### STUDY AREA

HPNP is a protected area covering 31.6km<sup>2</sup> of grassland and montane forest; it was designated as a national park in 1988 (IUCN 1990) and is part of the Central Highlands of Sri Lanka World Heritage Site (World Heritage Convention 2018). It is located within the wet and cool highlands (Fernando 1968) between 6.783–6.833 °N and 80.767–80.850 °E at an altitude of 2,100–2,300 m (Fig. 1). It receives an annual rainfall of 2,000–5,000 mm (Werner 1988). The vegetation consists of tropical montane forest interspersed with a mosaic of large grasslands and forest patches; extensive grasslands

and terraces indicate areas of former farmland (Padmalal & Kikuchi 1993). HPNP is surrounded by natural forests, pine and eucalyptus plantations, and tea plantations with an associated village.

### MATERIAL AND METHODS

During the initial phase of a camera trapping project focusing on Sri Lankan Leopard *Panthera pardus kotiya* in HPNP, we established 18 survey points in the core of the national park, next to and surrounding the grassland (Fig. 1). Survey points were located within each cell of a 1km<sup>2</sup> systematic grid. At each survey point, paired Reconyx™ HC500 camera traps were set up facing each other 45cm above the target level. The cameras were deployed from 3 December 2015 to 3 March 2017, for a total of 5,538 camera trap days. Each camera was in operation for 24 hours daily in Rapidfire™ mode, with no delay between image sets, taking three images per trigger.

The retrieved images were sorted into incidents; we define an incident as an image or a series of images of a species or individual separated by intervals of less than one hour. The timings of the incidents were analysed using the overlap package (Ridout & Linkie 2009) in R v. 3.5.1 (R Core Team 2018). The Rusty-spotted Cat was

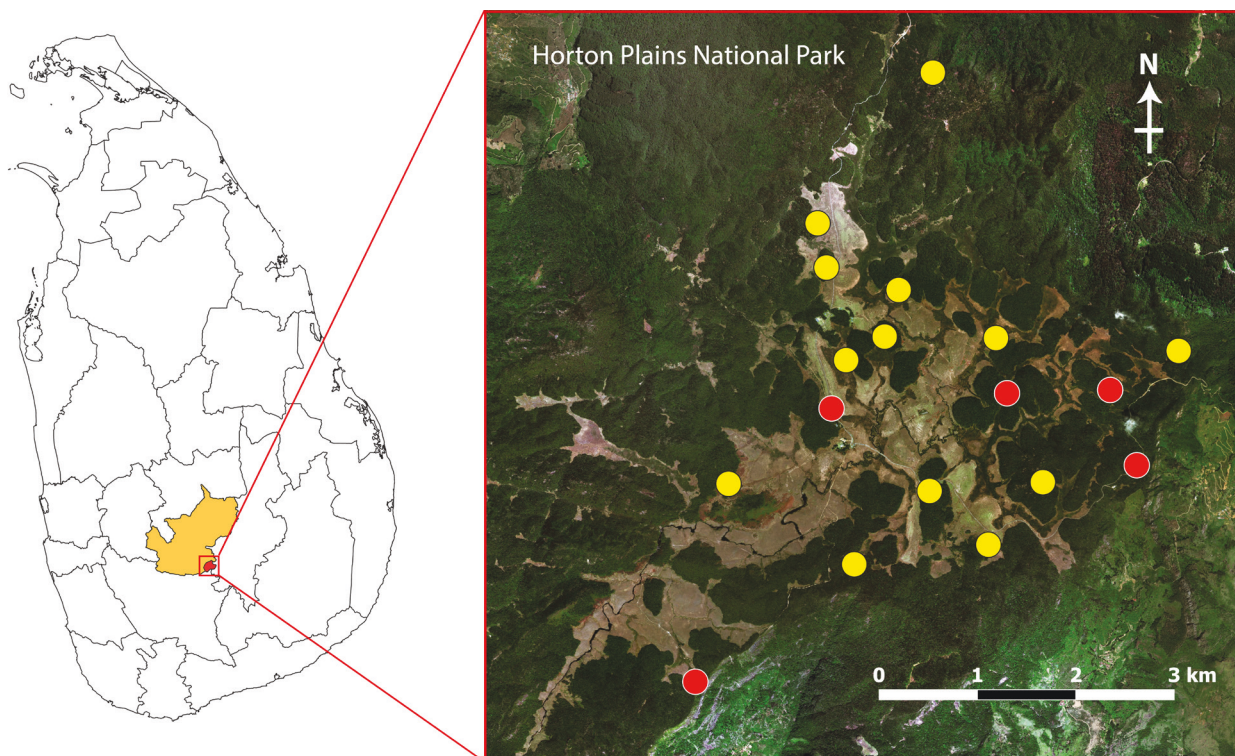


Figure 1. The study site in Horton Plains National Park (HPNP; marked in red on the map of Sri Lanka), located within Nuwara Eliya District (orange). The circles on the satellite image of HPNP represent camera trap locations; Rusty-spotted Cat was recorded in locations marked in red. Administrative map of Sri Lanka obtained from GADM v. 2.8 (2015).

identified by its reddish-grey fur in daytime images, reddish-brown spots that ran longitudinally along its body and head, and by the dark stripes on the inner sides of its front legs (Sunquist & Sunquist 2009). Because of the poor contrast between the cat's spots and coat in our infrared images, we were not able to distinguish among individuals.

## RESULTS

Over the survey period, the Rusty-spotted Cat was captured in 15 incidents at five locations, of which two incidents (13.3%) occurred during the day (Table 1; Image 1). These locations were separated by distances of 0.8–5.1 km. In the first incident on 26 March 2016, two adult individuals were recorded in the same image. The last incident was recorded on 16 October 2016. One notable incident shows an adult female with a kitten during the day on 16 June 2016. On 22 July 2016, an adult individual was photographed with a rodent in its jaws. Overall, most photo-captures occurred between sunset and sunrise (Fig. 2).

## DISCUSSION

Our findings make an important extension to the documented range of the species, as previously it was only documented below 2,100m (Nekaris 2003; Kittle &

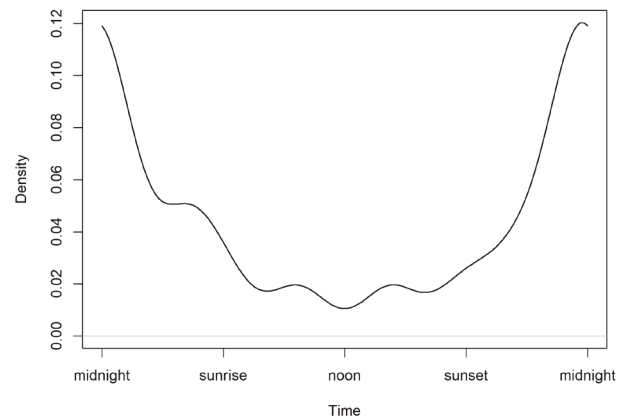


Figure 2. Patterns in photo-capture timings (n=15) of the Rusty-spotted Cat in Horton Plains National Park, Sri Lanka

Watson 2004). Further, the record of an adult female Rusty-spotted Cat with a kitten indicates the presence of a breeding population in Horton Plains National Park. This also indicates that the Rusty-spotted Cat possibly maintains a reproductive population in montane forest regions.

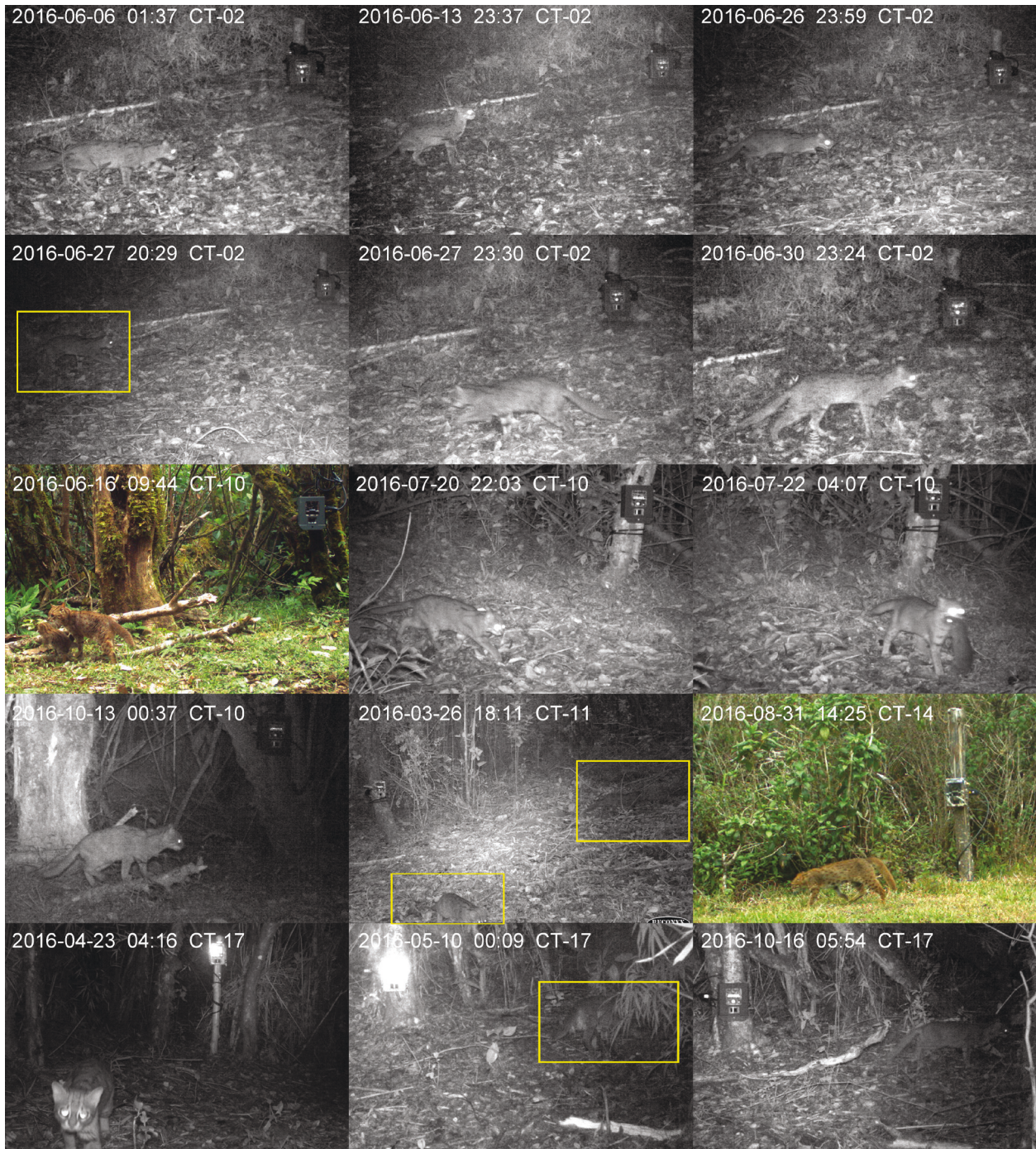
Given the nationally Endangered status of the species, these findings highlight the conservation value of HPNP and may have implications for managing tourism in the national park. HPNP is one of the most highly visited national parks in Sri Lanka (Sri Lanka Tourist Board 2017) with strict legal protection and enforcement; therefore, the wildlife populations therein are likely adequately protected. Outside HPNP, however, the montane forest is one of the most threatened habitats in Sri Lanka (Kittle et al. 2017). More research needs to be carried out in high-altitude habitats throughout Sri Lanka to determine the importance of montane forest habitats and to assess the impact of forest fragmentation and land use change for the cat's survival.

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Table 1. Records of Rusty-spotted Cat in Horton Plains National Park, Sri Lanka, in 2016.

Camera trap station (CT) and elevation	Date and time of records	Remarks
CT02 (2,135m)	6.vi.2016, 01.37h	
	13.vi.2016, 23.37h	
	26.vi.2016, 23.59h	
	27.vi.2016, 20.29h	
	27.vi.2016, 23.30h	
CT10 (2,162m)	30.vi.2016, 23.24h	
	16.vi.2016, 09.44h	Daytime capture; one adult individual observed with cub.
	20.vii.2016, 22.03h	
	22.vii.2016, 04.07h	One adult individual observed with a rodent in its jaws.
CT11 (2,084m)	13.x.2016, 00.37h	
	26.iii.2016, 18.11h	Two adult individuals captured in the same image.
CT14 (2,154m)	31.viii.2016, 14.25h	Daytime capture.
CT17 (2,151m)	23.iv.2016, 04.16h	
	10.v.2016, 00.09h	
	16.x.2016, 05.54h	



**Image 1.** Photographic evidence of the Rusty-spotted Cat *Prionailurus rubiginosus* in montane forest of Horton Plains National Park, montane forest of Sri Lanka. Yellow boxes indicate the location of the cat in the image if it is not easily observable. Notable features of these images include the presence of a cub, predation behaviour, and up to two individuals in the same image.

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