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SHORT COMMUNICATION

THE DISCOVERY OF A MELANISTIC LEOPARD *PANTHERA PARDUS DELACOURI* (LINNAEUS, 1758) (MAMMALIA: CARNIVORA: FELIDAE) AT BUKIT KUDUNG IN JELI, KELANTAN, PENINSULAR MALAYSIA: CONSERVATION AND ECOTOURISM

Kamarul Hambali, Nor Fakhira Muhamad Fazli, Aainaa Amir, Norashikin Fauzi, Nor Hizami Hassin, Muhamad Azahar Abas, Muhammad Firdaus Abdul Karim & Ai Yin Sow

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The discovery of a melanistic Leopard *Panthera pardus delacouri* (Linnaeus, 1758) (Mammalia: Carnivora: Felidae) at Bukit Kudung in Jeli, Kelantan, Peninsular Malaysia: conservation and ecotourism

Kamarul Hambali [1], Nor Fakhira Muhamad Fazli [2], Aainaa Amir [3], Norashikin Fauzi [4], Nor Hizami Hassin [5], Muhamad Azahar Abas [6], Muhammad Firdaus Abdul Karim [7] & Ai Yin Sow [8]

[1–7] Faculty of Earth Science, Universiti Malaysia Kelantan, Jeli Campus, 17600 Jeli, Kelantan, Malaysia.
[8] Faculty of Agro-Based Industry, Universiti Malaysia Kelantan, Jeli Campus, 17600 Jeli, Kelantan, Malaysia.
[1] kamarul@umk.edu.my (corresponding author), [2] fakhira947@gmail.com, [3] syazwani@umk.edu.my, [4] ashikin@umk.edu.my, [5] hizami.h@umk.edu.my, [6] azahar.a@umk.edu.my, [7] firdaus.ak@umk.edu.my, [8] gsomaster87@gmail.com

Abstract: Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. During a study near an ecotourism site, we recorded a melanistic Leopard *Panthera pardus delacouri* on top of Bukit Kudung in Jeli District. This finding is considered important because the Indochinese Leopard *P.p. delacouri* is classified as Critically Endangered in the Red List of Threatened Species by the International Union for Conservation of Nature (IUCN). We hope that this record will foster conservation efforts in the area.

Keywords: Camera trapping, felid conservation, Indochinese Leopard, melanism.

The melanistic Leopard has been recorded throughout Peninsular Malaysia (Azlan 2006; Hedges et al. 2015). During camera trapping studies conducted between 1996 and 2009 in southern Thailand and Peninsular Malaysia, melanistic Leopards were recorded only south of the Isthmus of Kra, indicating a near fixation of melanism in Leopards in this region (Kawanishi et al. 2010). Nine Leopards recorded in a wildlife corridor in central Peninsular Malaysia were also melanistic (Hedges et al. 2015). Latter authors assumed that Peninsular Malaysia is the only region in the world where the entire Leopard population consists of melanistic morphs. Medway (1983), however, also reported spotted Leopards in the region. Kawanishi et al. (2010) referred to the presence of spotted Leopards in Endau Rompin National Park in the southern part of Peninsular Malaysia. Tan et al. (2015) recorded two spotted Leopards in Ulu Muda Forest Reserve in the northern state of Kedah. Melanistic Leopards are most common in tropical and subtropical moist broadleaf forests (da Silva et al. 2017).

From India, while reporting about melanistic and other range of over 12 colour variations in *Panthera tigris*, Singh (1999) also mentioned about the black panthers, whom nature has possibly given the way to favourable selection. Melanistic leopards were captured in camera trap from the eastern state of Odisha in India

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during June 2014 (Anonymous 2015a) and 2018 (Palei et al. 2018). Mahabal et al. (2019) have tabulated 45 instances of black or melanistic Leopard from India starting with Buckland (1889) to Anonymous (2015b) and Sayyed & Mahabal (2015).

Melanism in the Leopard *Panthera pardus delacouri* is caused by a non-synonymous mutation in the coding region of a gene that regulates the production of melanin, while keeping black rosettes visible (Schneider et al. 2012). According to da Silva et al. (2017), they demonstrate that this distribution is non-random across the subspecies' range, with the observed spatial patterns significantly supporting an association with moist forests and a decrease in frequency in open/dry habitats. It has been suggested that melanism is an evolutionary response to dipterocarp forest with a close canopy and low light levels (Kawanishi et al. 2010). While these results support classical adaptive hypotheses, implying that melanism in Leopards is influenced by natural selection related to habitat type and moisture, several questions remain unanswered, such as the exact selective mechanism in different areas.

In this article, we report a melanistic Leopard near an ecotourism attraction in Jeli District, Kelantan, Peninsular Malaysia. It was recorded by camera traps employed in autumn 2019. This finding is expected to promote conservation efforts for the Leopard in Malaysia and to enhance ecotourism in the area. An education centre in the area may provide exposure and awareness for tourists about the subspecies and the importance of conserving them in their natural habitat.

Study Area

Our research focused on collecting terrestrial vertebrate data in Bukit Kudung, Jeli District, Kelantan, Peninsular Malaysia from October 2019 to December 2019 (Figure 1). The study area is a hill dipterocarp forest with streams and rivers at an elevation of 90–500 m. During the camera trapping survey, there was no evidence of snares and human footprints that indicated the presence of illegal hunting.

Material and Methods

In this study, five camera traps units [Bushnell Natureview HD Model 119436 and Browning Spec Ops Advantage Trail Camera] were installed and left in selected areas where wildlife were expected to be present. The distance between any two camera traps was about 257m. The camera traps were set to one second interval between three consecutive images and were fitted with 8GB SD secure digital card storage and 12 double AA batteries to ensure that they were able to cope with this study period. The strap of camera was properly tied with appropriate angle, and checked before setting the feature. Possible stealing away of cameras or their damage by wildlife were the risks in this study. The GPS location of each point had been taken by using the Military Navigation application.

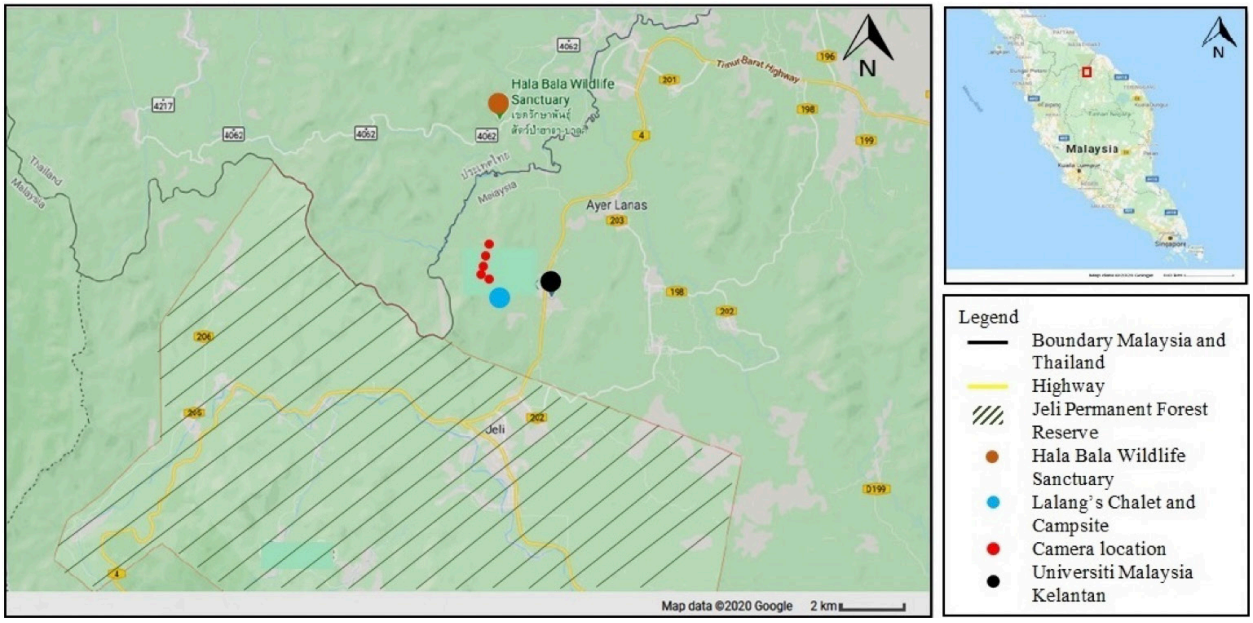

Figure 1. Overview of the study area and its location in Peninsular Malaysia (Google Map 2020).

Results

From this study, 57 days of data from the entire camera traps were collected and 1,254 images obtained. A melanistic Leopard was recorded by two camera traps. One image was taken on 27 October 2019 at 07.04h (Image 1). Three consecutive images show a melanistic Leopard on 11 November 2019 at 04.42h (Image 2). The coordinates of the findings are kept confidential to ensure the safety of the Leopard.

Discussion

The Indochinese Leopard has been recorded in primary and secondary forests, tropical dry and moist deciduous forests, evergreen and semi-evergreen forests, and also plantations (Rostro-García et al. 2019). As such, melanism has been proposed as an evolutionary reaction to acclimatize to specific environments where pigment genes can allow melanistic types to better adapt to green dipterocarp forest with a closed canopy and low light levels, whereas spotted Leopards are ideally adapted for disguising in open field environments (da Silva et al. 2017).

A geographical gradation is seen with spotted, melanistic and black leopard in the distributional range of the extant subspecies of *Panthera pardus* in their global distribution range. In India, it is possible that nature has already given way to favourable selection of black panthers (Singh 1999: page 52–53), and that the normal-spotted and black leopards have biologically settled for togetherness, and genetically settled with comparable body features except for the colour. Photographs of black and melanistic leopards are time and again have been posted in social media during 2020. As pointed out by Singh (1999) preponderance of black or melanistic large cats is an indication that the gene pool for normal spotted or striped forms is changing fast.

The Indochinese Leopard is listed as Critically Endangered (Rostro-García et al. 2019). The population trend of the Leopard is decreasing in Peninsular Malaysia because of high threats to its survival and habitat (Chew 2019). Dead Leopards have been seized from poachers and wildlife traders (Lai 2013; Traffic 2013, 2014). In addition, habitat destruction caused by development of infrastructure especially in rural areas also plays a role in the decline of the population.

The discovery of a melanistic Leopard in Bukit Kudung emphasizes the importance of this location as a conservation area. Today, Bukit Kudung, has been developed into an ecotourism destination known as Lalang's Chalet and Campsite. Governmental and non-governmental organizations need to cooperate in ensuring the safety of the Leopard population in

Image 1. A melanistic Leopard photographed at 07.04h on 27 October 2019.

Image 2. A melanistic Leopard at 04.42h on 11 November 2019.

the area. Among the forms of recommendations and joint measures that can be highlighted is establishing an area learning centre and also gazette the area as a wildlife protected area. The location of this study area has the potential to act as an important wildlife corridor connecting the forests of Thailand (Hala-Bala Wildlife Santuary) and Jeli Permanent Forest Reserve. Members of the near-by Faculty of Earth Sciences of Universiti Malaysia Kelantan should play a vital role in raising the awareness of visitors about the necessity of normal gene pool and biodiversity conservation.

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