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Journal of Threatened TAXA

10.11609/jott.2025.17.3.26571-26762

www.threatenedtaxa.org

26 March 2025 (Online & Print)

17(3): 26571-26762

ISSN 0974-7907 (Online)

ISSN 0974-7893 (Print)



Open Access





Publisher

Wildlife Information Liaison Development Societywww.wild.zooreach.org

Host

Zoo Outreach Organizationwww.zooreach.org

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Cover: A bag worm with its beautiful heap of junk. Acrylics on 300 GSM paper by Dupati Poojitha based on a picture by Sanjay Molur.



The discovery of a male Malay Crestless Fireback *Lophura erythrophthalma* (Raffles, 1822) (Aves: Galliformes: Phasianidae) at Ulu Sat Forest Reserve, Machang, Kelantan, Peninsular Malaysia

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Abstract: A study was conducted in the Ulu Sat Forest Reserve, Machang to record the presence of terrestrial vertebrate animals by using the camera trapping method from April 2023 until May 2023, and seven camera trap units (Reconyx Hyperfire) were used. During the study, a male Malay Crestless Fireback *Lophura erythrophthalma* was recorded. This discovery is considered something important and needs to be documented because this species has been classified as 'Critically Endangered' by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species. We believe that the record of this species can increase efforts in the management and conservation of the area.

Keywords: Avian conservation, biodiversity assessment, camera trapping survey, critically endangered species, forest reserve management, ground-living birds, habitat restoration, terrestrial fauna.

Lophura erythrophthalma is a galliform, endemic to Peninsular Malaysia and Sumatra, Indonesia (del Hoyo et al. 1994; Johnsgard 1999). There are few records from Borneo, where it appears to be rare and localized, especially in the southwestern side (Holmes 1989; Wilkinson et al. 1991a,b). Additionally, there are several records from Sumatra, namely from the Riau and Jambi regions (van Marle & Voous 1988; Danielsen & Heegaard 1995; eBird 2021). It is not a widespread species and appears to be localized, indicating a moderately small population size.

This species was once recorded to have a relatively high density of six individuals/km² in Peninsular

Editor: Rahul Kaul, Wildlife Trust of India, New Delhi, India.

Date of publication: 26 March 2025 (online & print)

Citation: Wahad, A.H., W.H.I.W.M. Hizam, M.H.S. Ab Razak, A. Amir, K. Hambali, H. Husain, M.S. Abdullah, E. Ngadi, M.A.I.A. Wahab & A. Jambari (2025). The discovery of a male Malay Crestless Fireback *Lophura erythrophthalma* (Raffles, 1822) (Aves: Galliformes: Phasianidae) at Ulu Sat Forest Reserve, Machang, Kelantan, Peninsular Malaysia. *Journal of Threatened Taxa* 17(3): 26737-26740. <https://doi.org/10.11609/jott.9128.17.3.26737-26740>

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Funding: The Conservation, Food & Health Foundation (R/CFHF/A0800/00386A/005/2022/01062).

Competing interests: The authors declare no competing interests.

Acknowledgements: We would like to thank the funder, The Conservation, Food & Health Foundation (R/CFHF/A0800/00386A/005/2022/01062). Thank you also to the Department of Wildlife and National Parks (DWNP) and the Forestry Department of Peninsular Malaysia for approving this study. Not forgetting the Faculty of Earth Sciences, Universiti Malaysia Kelantan who always provided support and assistance in terms of services, equipment, and facilities throughout the course of this study.



Malaysia (Davison & Scriven 1987; Johnsgard 1999). It is unclear whether current pressures such as hunting and fragmentation allow such densities to persist anywhere. A recent three-month camera trap study in Peninsular Malaysia (August–October 2019) in a supposedly suitable habitat recorded only captures from 12 locations (totaling the equivalent of 542 days of survey effort) (Hamirul et al. 2021). Establishing robust population estimates for this species should be considered a priority, as well as clearly identifying patches of forest that still exist.

According to Wells (1999) and Eaton et al. (2016), *L. erythrophthalma* prefers lowland, primary, and well-regenerated, closed canopy and evergreen forests, below 300 m. This species has been found to tolerate lightly logged forests or selective logging (Danielsen & Heegaard 1995; Johnsgard 1999; Hamirul et al. 2021). Precise details about this species' habitat preferences and ecological interactions with another similar species, *L. rufa*, are lacking. According to Wells (1999), when *L. rufa* is present, *L. erythrophthalma* appears to avoid valley-bottom habitats. The population of *L. rufa* was found to increase especially in slope areas where *L. erythrophthalma* looks to be excluded and these two species look to have habitat ranges that do not overlap with each other (Johnsgard 1999; Wells 1999).

In 2000, the population of this species appears to have fallen drastically from a suspected 10,000–19,999 mature individuals, even though there are no reliable estimates (BirdLife International 2024). The main threats to this species are habitat loss, degradation, and fragmentation due to large-scale clearing for oil palm plantations and to a lesser extent, rubber and timber.

In this article, the presence of a male *L. erythrophthalma* inhabiting the isolated Ulu Sat Forest Reserve in Machang District, Kelantan, Peninsular Malaysia was reported. It was recorded by a camera trap used for the initial observation of terrestrial vertebrate animals at the location. This discovery is expected to encourage the conservation efforts of *L. erythrophthalma* and the forest reserve area.

Study area

The study focused on the collection of terrestrial vertebrate animal data in the Ulu Sat Forest Reserve from April 2023 to May 2023. This forest is a protected area located in Machang District, Kelantan in Peninsular Malaysia (Image 1). The type of forest in the Ulu Sat Forest Reserve area is a thick tropical rainforest consisting of dipterocarp hills and lowlands. This site is an ecologically important forest habitat for the watershed in Kelantan. It also plays an important role in ecotourism because it receives visitors for recreational activities throughout the year (Hazizi et al. 2020). In addition, it is also connected to the Greater Taman Negara Complex on the east side. The size of the Ulu Sat Forest Reserve is about 148 km². This forest is also famous for its rich biological diversity which has been proven as a result of the Ulu Sat Scientific Expedition carried out on 11–15 August 2018 (Radhi et al. 2020). Preserving the integrity of the Ulu Sat Forest Reserve is essential to safeguarding its unique biodiversity and supporting a sustainable ecosystem in the area.

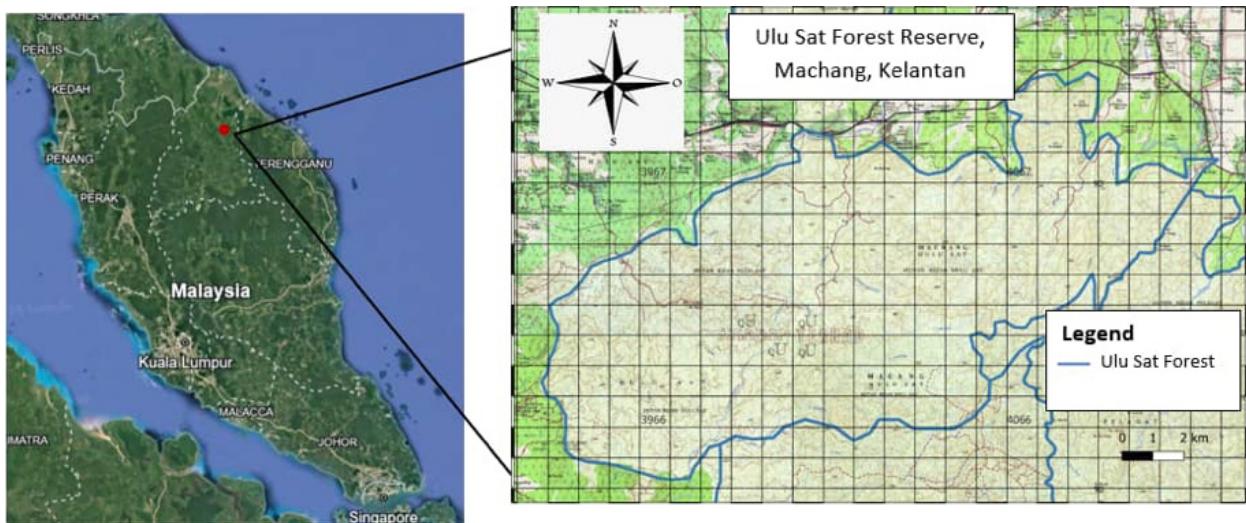


Image 1. Study area

MATERIAL AND METHODS

In this study, seven camera trap units (Reconyx Hyperfire) were installed at a spacing of 2 km in Ulu Sat. The distribution of camera traps is on the east side of Ulu Sat. A total of two camera traps have been placed in the valley area, four camera traps in the slope area, and one more camera trap at the peak. Camera traps were placed on trees bordering animal paths at a height of approximately 0.5 m above the ground to permit the detection of medium and large-sized mammals (Jansen et al. 2014). The camera traps were programmed at a one second interval between three series of image and equipped with 16GB SD capacity cards. The location of each camera was recorded with a Global Positioning System (Garmin GPSMAP 64s).

RESULTS

The camera traps installed in the study area recorded 41 images of terrestrial vertebrates from the period starting from April 2023 until May 2023 (48 days). On 17 May 2023, four consecutive images show a male *Lophura erythrophthalma*. Out of the four consecutive images, the best one was selected at 0943 h (Image 2). Around the capture location is composed of plants such as *Artocarpus elasticus*, *Endospermum diadenum* and *Xylopia ferruginea*. The presence of some types of these plants were found to support the presence of other vertebrates species. Among other vertebrates species

that have also been photo-captured at the same trap location were Common Barking Deer *Muntiacus muntjac*, Wild Boar *Sus scrofa* and White-thighed Surili *Presbytis siamensis*, showing the use of sympatric habitats.

DISCUSSION

A photo of an adult male Malay Crestless Fireback *Lophura erythrophthalma* in the lowland forest was recorded on 17 May 2023 at 0943.31 h, flat land with medium to large trees separated from each other (less dense) and dim because they are protected by the tree canopy. This study supports the findings of Wells (1999) and Eaton et al. (2016) who stated that *L. erythrophthalma* likes to inhabit lowland and closed canopy areas and evergreen forests. The photo is not very full, but adequate to allow identification. For male *L. erythrophthalma*, it has fine vermiculation on the wings, orange (flame) back, purple back, and pale orange tail (Image 3) (eBird 2021).

The discovery of this species is felt to be very important and needs to be documented because *L. erythrophthalma* has been categorized as Critically Endangered after being re-evaluated on 21 September 2021 by the IUCN Red List of Threatened Species (BirdLife International 2022). This is because the habitat loss factor in the range of this species is rapid and as a species that is completely dependent on ground-level forests. Apart from that, the fragmented forest has also



Image 2. A male Malay Crestless Fireback *Lophura erythrophthalma* photographed at Ulu Sat Forest Reserve, Machang, Kelantan.



Image 3. Full picture of a male Malay Crestless Fireback *Lophura erythrophthalma* by Neoh Hor Kee: Image provided by eBird (www.ebird.org) and created [01 August 2022]. © Neoh Hor Kee.

opened up access to smaller patches of forest for hunting activities. Combining all these threats, the population of *L. erythrophthalma* is showing a faster decline pattern and if it is not contained and restored early it may be at great risk of extinction (BirdLife International 2022).

According to Savini et al. (2021), the Thai-Malay Peninsular's plains are losing forest at a very fast rate, and this loss is accompanied by fragmentation effects that raise the risk of extinction and hunting activities. This species is suspected to have suffered a severe decline in recent times due to habitat loss and hunting, to the extent that the population size is now considered much lower (no firm estimates can be made). Finding robust population estimates for this species needs to be considered important and prioritized, as well as clearly defining patches of forest that still exist for management and conservation efforts.

Of the 41 independent images recorded throughout the study, only one independent image (2.44%) of *L. erythrophthalma* (as part of four image sequences) indicated that the *L. erythrophthalma* species is relatively rare in the forest reserve. Dedicated work on this species' ecology is required to ascertain its true status.

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