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Journal of Threatened Taxa

10.11609/jott.2026.18.4.28607-28738
www.threatenedtaxa.org

26 April 2026 (Online & Print)
18(4): 28607-28738
ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)

ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

Publisher
Wildlife Information Liaison Development Society
www.wild.zooreach.org

Host
Zoo Outreach Organization
www.zooreach.org

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Cover: Long-tailed Shrike *Lanius schach* resting on a dry branch after courtship. Digital illustration on Procreate. © Aakanksha Komanduri.

Journal of Threatened Taxa | www.threatenedtaxa.org | 26 April 2026 | 18(4): 28724–28728

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

https://doi.org/10.11609/jott.10345.18.4.28724-28728

#10345 | Received 31 December 2025 | Final received 09 February 2026 | Finally accepted 21 March 2026

OPEN ACCESS

SHORT COMMUNICATION

First national record of Yellow Owl Butterfly *Neorina hilda* Westwood, 1851 (Lepidoptera: Nymphalidae: Satyrinae) for Nepal

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Abstract: The present finding reports the first national record of *Neorina hilda* Westwood, 1851 (Nymphalidae: Satyrinae), commonly known as the Yellow Owl Butterfly from Nepal. A single adult individual was observed and photographed at Taplejung District (27.363° N, 87.724° E), eastern Nepal, on 29 July 2025. This species was recorded in an upper temperate mixed broad-leaved evergreen forest at an elevation of 2,625 m. Previously known from northeastern India and extending through Myanmar to southeastern Asia, this finding expands the current known geographical range of the species to the west. This record has important implications for butterfly conservation planning and habitat connectivity assessments in the eastern Himalaya where a detailed assessment is recommended.

Keywords: Butterfly diversity, community forest, eastern Himalaya, ecological connectivity, forest habitat, Habre center, habitat protection, Kangchenjunga landscape, range extension, threats.

नेपाली सार: यस खोजबाट निम्फालिडे परिवारमा पर्ने निओरिना हिल्डा वेस्टवुड, १८५१ नामक पुतली नेपालमा पहिलो पटक राष्ट्रिय रुपमा अभिलेख गरिएको छ। २९ जुलाई २०२५ मा पूर्वी नेपालको ताप्लेजुङ जिल्लाको देउराली भित्रि सामुदायिक वनमा अवस्थित हिमालयन हाब्रे केन्द्र परिसरबाट यस प्रजाति पहिलो पटक अभिलेख गरिएको थियो। माथिल्लो समशीतोष्ण मिश्रित चौडा-पात सदाबाहार वन पारिस्थितिक प्रणालीमा पर्ने अभिलेखित स्थान समुद्री सतहबाट २,६२५ मिटरको उचाईमा रहेको छ। यस खोजले अभिलेखित पुतली पूर्व उल्लेखित वितरण दायरा उत्तरपूर्वी भारत तथा म्यानमार हुँदै दक्षिणपूर्व एशिया सहित नेपालको पूर्वी क्षेत्र सम्म रहेको प्रमाणित गर्दछ। साथै यस खोजले नेपालको पूर्वी हिमाली भेग पुतली विविधता र वितरणको लागि महत्वपूर्ण क्षेत्र रहेको र थप पुतली केन्द्रित अध्ययन र अनुसन्धानको खाचो रहेको प्रस्ट पर्दछ।

The Yellow Owl *Neorina hilda* Westwood, 1851 is a rare Satyrinae butterfly belonging to the Nymphalidae family, distributed across the eastern Himalaya and southeastern Asia. This elusive species is currently protected under Schedule II of India's Wildlife (Protection) Amendment Act, 2022, reflecting its conservation significance. The *N. hilda* is a distinctive butterfly species of eastern Himalayan broadleaf and cool temperate sub-alpine forests (Chettri 2015), often observed flying along forest paths and resting on the ground, tree trunks, and bare hillsides.

The genus *Neorina*, commonly known as "owl" butterflies, was proposed by Westwood in 1850 and comprises five distinct species: *crishna* (Westwood, 1851), *lowii* (Doubleday, 1849), *patria* (Leech, 1891),

Editor: Aijaz Ahmad Qureshi, Islamic University of Science & Technology, Awantipora, India. **Date of publication:** 26 April 2026 (online & print)

Citation: Limbu, N. (2026). First national record of Yellow Owl Butterfly *Neorina hilda* Westwood, 1851 (Lepidoptera: Nymphalidae: Satyrinae) for Nepal. *Journal of Threatened Taxa* 18(4): 28724–28728. https://doi.org/10.11609/jott.10345.18.4.28724-28728

Funding: This study received no external funding.

Competing interests: The author declares no competing interests.

Acknowledgements: I extend my heartfelt gratitude to Mr. Mahendra S. Limbu for his invaluable support in the taxonomic identification and to Butterfly Watchers Nepal, particularly Ms. Arpana Khanal, for confirming species' identification. I also acknowledge the dedicated contributions of colleagues from the Red Panda Network, Red Panda Network Nepal, Deurali Bhitri Community Forest, and Himali Conservation Forum. Special thanks are extended to Dr. Damber Bista, PhD, Mr. Sonam Tashi Lama, and Mr. Sanej P. Suwal for their constructive review of the manuscript.

neosinica (Lee, 1985), and *hilda* (Westwood, 1851). The species exhibits a robust body structure with distinct morphological features that facilitate identification. *Neorina hilda* can be distinguished from others by its characteristic broad yellow discal bands and specific ocellar patterns (Evans 1932; Wynter-Blyth 1957; Mani 1986).

N. hilda is patchily distributed across an altitudinal range of 2,100–2,700 m (7,000–9,000 ft) corresponding to the temperate broadleaf forest ecoregion of the eastern Himalaya (Kunte et al. 2024). This ecoregion supports rich butterfly diversity, with species richness peaking at mid-elevations due to favourable climate and vegetation (Dewan et al. 2024). The forests occurring at elevations of 2,600–3,000 m in the eastern Himalayan region are classified as broadleaf-evergreen forests (Negi et al. 2024) and are dominated by *Quercus lamellosa* (oak), *Castanea* species (chestnut), *Rhododendron* spp., *Magnolia* spp., and various laurel species, providing better canopy cover and vegetation structure for *N. hilda*.

This note aims to report the first national record of *Neorina hilda* in Nepal, expanding its known geographical range and highlighting its conservation implications for the eastern Himalayan region.

Materials and Methods

The Himalayan Habre Center (Habre Center) is located on a hilltop (27.363° N, 87.724° E) along the Pathibhara trail in Deurali-Bhitri Community Forest in Taplejung District, Nepal (Image 1). It borders the forest-edge areas of the adjacent Yamabung and Sayapatri-Pokhari community forests. These forests are dominated by *Rhododendron* spp., *Magnolia* spp., and various broad-leaved trees collectively forming an upper temperate mixed broad-leaved forest zone.

This finding is based on opportunistic observation while walking around the Habre Center on a sunny day, 29 July 2025, at 1144 h (NPT time zone). Photographs and video were captured using a Sony camera (model ZV-1F) equipped with a 2.0/7.6 mm lens, and identified based on its distinct morphological and taxonomic characteristics by comparing against the illustrated checklist of Nepal butterflies (Smith 2006; van der

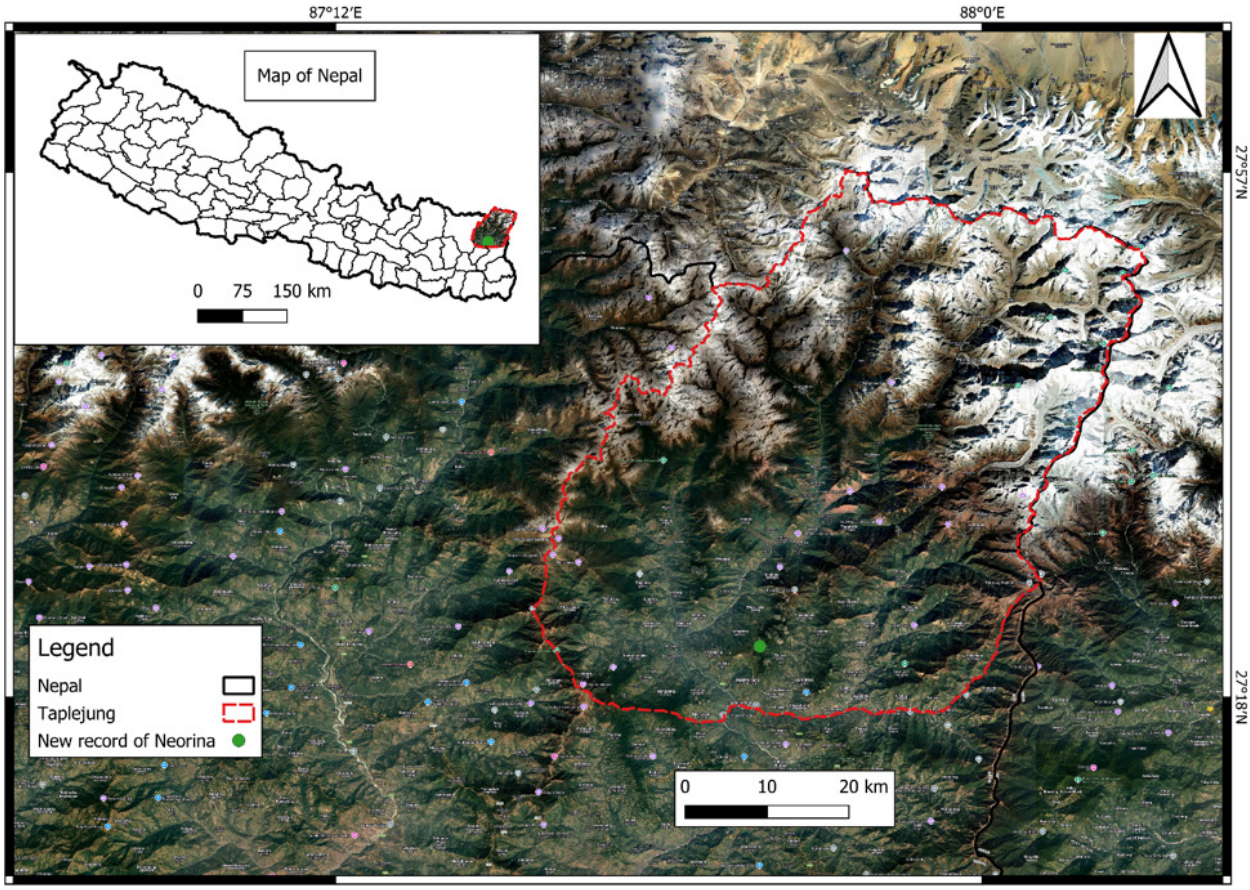

Image 1. Map showing new distribution record of *Neorina hilda* from Taplejung, Nepal.

Poel & Smetacek 2022). Expert consultation was also conducted to validate the identification (M.S. Limbu & S.P. Suwal, pers. comm. July 2025).

Results

A single individual of *Neorina hilda*, having a partially damaged hindwing, was observed gliding along the forest margin near the Habre Center before landing on a stone (Images 4 & 5).

The size of an adult *N. hilda* ranges 96–104 mm (Bingham 1905). Morphologically, N. *hilda* shares similar characteristics with *N. patria* (White Owl), particularly in having a well-defined subapical ocellus equal in size to that of *N. patria*. *N. hilda* differs significantly by lacking a tail at v3 and possessing a broad yellow discal band at the upper side of the forewing (Image 5), which is white in *N. patria* (Leech 1893). *Neorina hilda* can be distinguished from its other species with the same genus by its distinct pale-yellow bands and by the presence of a large, black, white-centered ocellus with a proximal yellow outline, accompanied by two smaller, blue-spotted subanal ocelli (Images 4 & 5). While Lethe *Europa* superficially resembles *N. hilda*, it can be readily distinguished by its white (rather than yellow) forewing discal band, which is also narrower. Other *Lethe* species, including *L. confusa*, *L. verma*, and *L. rohria,* possess distinctive white forewing discal bands but are considerably smaller in size compared to *N. hilda. Thaumantis diores* (Amathusini) closely resembles *N. hilda* in general appearance and size; however, it lacks the characteristic broad discal band entirely, making differentiation straightforward Wynter-Blyth 1957; (Leech 1893; Evans 1932; Mani 1986). Hence, this recording of *N. hilda* cannot be confused with any other species.

After clear identification, the species was confirmed as a new record for Nepal by examining existing literature, including the annotated checklist of Nepal's butterflies, which previously listed 695 species (Smith 2006; van der Poel & Smetacek 2022; van der Poel 2024). This new record brings the total to 696 species.

Discussion

One individual of *N. hilda* recorded in Taplejung, eastern Nepal, indicates a low population density of the species in the area. Its hindwing was partially damaged, suggesting a possible predatory encounter, most likely

Image 2. Surrounding forest habitats of Sayapatri-Pokhari and Yamabung community forests around the recorded area. © Nishan Limbu.

Image 3. *Neorina hilda* from the observation, whose hindwing can be seen partially damaged (possibly from a predator attack). © Nishan Limbu.

Image 5. Forewing of *Neorina hilda* have two ocelli with two white small dots above and below the ocelli. © Nishan Limbu.

Image 4. Forewing and hindwing of *Neorina hilda* have two white-centered white ocelli with a yellow band on the forewing, with clearly showing mud-puddling behavior. © Nishan Limbu.

with birds, which are known predators of butterflies in forest-edge habitats. The observation site was also situated at the forest edge characterized by strong wind currents and frequent bird gliding activity, which may increase predation pressure.

During the observation, *N. hilda* repeatedly visited three times on the recently cemented stone surface, displaying mud-puddling behaviour (Image 4). This is a well-documented phenomenon in Satyrinae, where individuals extract essential nutrients such as sodium from inorganic substrates. This behaviour is consistent with reports of butterflies seeking sodium and other nutrients from moist, earthy surfaces. Such behaviour is ecologically significant as it supplements their diet and supports physiological functions like reproduction and flight (Lamie et al. 2025). After each foraging attempt, it returned to the surface before eventually flying off into the surrounding forest.

Neorina hilda is documented from the Moruo area, southeastern Tibet (Evans 1932), Myanmar (Shizuya et al. 2005), Yunnan Province, China (Lo & Bi 2019), Bhutan (Singh et al. 2015), and from northeastern India (Kunte et al. 2024; Lepcha & Thapa 2025). Whereas the new occurrence record from Nepal further expands its easternmost distribution range of the species (Image 1), and indicates the possibility of this species further west. Besides, the finding highlights the importance of the eastern Himalayan broad-leafed forest as habitat of this species.

The forest in the region is experiencing a high threat due to rapid developmental projects such as roads, dams, and human settlements, resulting in significant loss of forest cover. The recent controversy on cable car construction to Pathibhara Temple at the summit is ongoing, while hundreds of ecologically important trees, such as rhododendron, have already been wiped out. This has undoubtedly disrupted the habitat for many faunal species, including the threatened Red Panda *Ailurus fulgens*, Clouded Leopard *Neofelis nebulosa*, Chinese Pangolin *Manis pentadactyla*, and Himalayan Black Bear *Ursus thibetanus*. Little known is the fact that there have been records of species only recorded in Taplejung District and nowhere else in Nepal, such as

Single Silverstripe *Lethe ramadeva* (de Nicéville, 1887) and the Freak *Calinaga buddha* (Moore, 1857) (Tamang & Panthee 2021; Tamang & Motoki 2022).

Given the site's transitional nature between human-modified and forested zones, further assessment could unveil seasonal occurrence**,** population stability, and habitat specificity of *N. hilda* in this region. This record also underscores the need for systematic monitoring and ecological studies to determine its conservation status, especially in light of potential threats from habitat disturbance and climate variability. Given the protected status of this species in India, its occurrence in eastern Nepal also highlights the need for regional collaboration in butterfly conservation. Additionally, the extension of the known range to eastern Nepal clearly indicates butterfly-rich habitat around the areas requiring an immediate need of detailed ecological studies focusing on the butterfly diversity.

Conclusion

This study reports the first national record of *Neorina hilda* in Nepal, specifically from Taplejung District. The finding expands the known geographical distribution of this rare and protected butterfly species, contributing to Nepal's butterfly discovery, which now stands at 696 species. The confirmation of this species in the Deurali-Bhitri Community Forest suggests the potential ecological connectivity with the adjoining forest habitats in India. As only a single individual was observed, further systematic monitoring and ecological studies are crucial to assess population status, seasonal occurrence, and habitat choices in the Kangchenjunga Landscape in eastern Nepal. This finding also suggests the need for a detailed study on the butterfly distribution and diversity in the region with protection and management of the forested areas as well as mud-puddling sites.

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NAAS rating (India) 5.64

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Journal of Threatened Taxa

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

April 2026 | Vol. 18 | No. 4 | Pages: 28607–28738
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Publisher & Host

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