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New record of *Notocrypta feisthamelii alysos* (Moore, 1866) (Lepidoptera: Hesperiidae)- spotted demon from Jammu and Kashmir, India

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Abstract

This study reports the first record of *Notocrypta feisthamelii alysos* (Moore, [1866]) Spotted Demon, from the Lohai Malhar Tehsil of District Kathua in Jammu and Kashmir, India. The butterfly and day-flying moth survey, conducted from March to June 2024, revealed the presence of this species, marking a significant addition to the butterflies fauna of Jammu and Kashmir, India. This paper details the observations, habitat, and potential ecological implications of this newly reported butterfly.

Key words: Butterfly survey, Taxonomy, New distributional record, Larval host plant, Himachal Pradesh.

1. Introduction

Notocrypta feisthamelii alysos is a butterfly belonging to the family Hesperiidae. Widely distributed across various parts of India, this species had not previously been recorded in Jammu and Kashmir. The documentation of butterfly species is crucial for understanding biodiversity, and the present study adds a significant new record for the region. The study of Rhopalocerous (butterfly) fauna in Jammu and Kashmir (J&K) has a rich history dating back to the mid-19th century. Austrian entomologist Vincenz Kollar was among the pioneers in this field, contributing significantly to the exploration and description of many new taxa from the region. His publications in 1844 and 1848 were instrumental in establishing a foundation for the understanding of butterfly species in J&K. During the British colonial period in India, which lasted from 1857 to 1947, several British entomologists were actively involved in collecting and studying butterflies in Kashmir. Prominent contributors from this era include Lang (1868), Moore (1872, 1875), Holland (1896), and Tytler (1926). Following India's

independence, there was a significant gap of several decades during which comprehensive studies on the butterfly fauna of Jammu and Kashmir were notably absent. However, the last decade has seen a resurgence in interest, with local researchers and photographers taking a renewed initiative to explore and document the region's butterfly fauna. Key contributors to this recent wave of research include Sharma & Sharma (2020), and Sheikh & Parey (2019a, b). These contemporary studies have not only expanded the understanding of butterfly distribution within the Union Territory (UT) of J&K but have also led to the publication of numerous new records for the region.This paper presents the results of a butterfly survey conducted in the Lohai Malhar Tehsil of District Kathua, Jammu and Kashmir. The first record of *Notocrypta feisthamelii alysos* expands the known range of this species and provides insights into the local Rhopalocera diversity.

2. Materials and methods

The study was conducted in the Lohai Malhar Tehsil of District Kathua, located in the Jammu region of Jammu and Kashmir, India. The area is characterized by its varied topography, including hills, valleys, and forests, and experiences a temperate climate with distinct seasonal variations. From March-June 2024, a day-flying moth survey was conducted in Lohai Malhar Tehsil (32.710765° N, 75.679725° E) within the district, which is situated at an altitude of approximately 1970 meters. The region is dominated by vegetation such as Cedrus deodara, various species of Pinus, and Quercus species. These forests provide a unique habitat, supporting a diverse array of flora and fauna, including Lepidoptera. This tehsil is bordered with Himachal Pradesh State where this species is already known (Garlani, 2024), and which has made possibility for the range extension of these species to Jammu and Kashmir also. To visualize the distribution of the observed species, a distribution map was generated using ArcGIS 10.5 software, utilizing an original base map of India (Figure 1). The butterfly and day-flying moth survey was conducted randomly from March to June 2024. On March 25, April 18 and May 28, 2024 during morning hours two-three specimens of Notocrypta feisthamelii alysos on each day were observed and photographed. Later on, same species was observed on June 10, 2024 at the same place within same habitat. Visual identification was the primary method used, supplemented by photographic documentation for later verification. Researchers utilized relevant literature, including works by Kehimkar (2016) and Evans (1932 & 1949), to aid in species identification.

3. Results

During the survey, a total of three individuals of *Notocrypta feisthamelii alysos* was observed in different locations within the study area. The first sighting occurred on March 25, 2024, near a dense forest edge basking on *Geranium* sp. leaf (Figure: 2), with subsequent sightings on April 18 and May 28, 2024, and June 10 in similar habitats.

TAXONOMIC HIERARCHY

Class Insecta Linnaeus, 1758

Order Lepidoptera Linnaeus, 1758

Family Hesperiidae Latreille, 1809

Subfamily: Hesperiinae Latreille, 1809

Genus *Notocrypta* de Nicéville, 1889

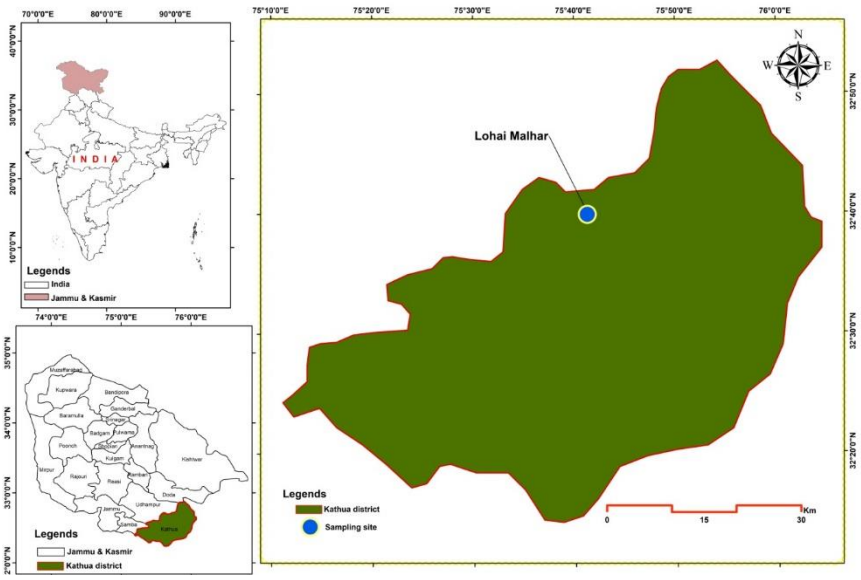

Figure 1. Map showing the location of study area

Notocrypta feisthamelii alysos (Moore, [1866]) **(Figures 2-3)**

Plesioneura alysos Moore, [1866]; Proc. zool. Soc. Lond. 1865 (3): 789; Type locality: Bengal. Holotype. (♂, NHML)

Plesioneura alysos; Wood-Mason & de Nicéville, 1881, J. Asiat. Soc. Bengal 49 Pt.II (4): 241; Moore, [1881], Lepid. Ceylon 1 (4): 178, pl. 67, f. 3a-b

Identification features: Notocrypta feisthamelii alysos displays dark fuliginous brown wings on the upperside, with a broad, irregular, semi-transparent white band on the forewing, accompanied by small translucent spots near the apex. The underside is paler, mirroring the upperside pattern, with the forewing's outer margin and hindwing's outer half suffused with purple-grey. The antennae are brown with a subapical white streak. The Forewing discal band touches the Costa in *N. feisthamelii,* While the discal band doesn't reach the costa in other closely related species.

Note: The species (*N. feisthamelii*) named in honour to the French entomologist "Joachim François Philibert Feisthamel".

Habitat: The species was found in shaded areas near forest edges, often in close proximity to streams or other water sources. The habitat is characterized by dense vegetation, providing the necessary cover and resources for the species. The plants like *Geraium* species, *Oxalis* species, various grasses (Poaceae), *Berberis lyceum*, *Rubus ellipticus* and trees like *Quercus* sp., *Pinus* sp., and *Cedrus deodara.*

Behavior: The butterflies were observed basking on *Geranium* species leaf for around 10 minutes. Also one more individual with torn wings was seen sucking minerals from dry soil (Figure: 3) for around 20 minutes.

Distribution in Indian subcontinent: According to the IFoundButterflies website, *Notocrypta feisthamelii alysos* is reported from Arunachal Pradesh, Assam, Himachal Pradesh, Manipur, Meghalaya, Nagaland, Sikkim, and Uttarakhand (Anonymous, 2024; Garlani, 2024). The 2018 checklist by Paul Van Gasse identifies *Notocrypta feisthamelii alysos* (Moore, [1866]), commonly known as the Himalayan Spotted Demon, as the only subspecies of *Notocrypta feisthamelii* in India. This subspecies primarily inhabits the Himalayas at elevations up to 2700 meters, ranging from Northwest Punjab (Murree) in Pakistan, across Himachal Pradesh, Uttarakhand, Nepal, Sikkim, Northern West Bengal, and Bhutan, to Arunachal Pradesh and the hilly regions of Northeastern India south of the Brahmaputra River. While not documented in Mizoram, it is present in Northeastern and Southeastern Bangladesh. The current study confirms its presence in Jammu and Kashmir, where it had previously not been officially recorded.

Expected larval host plants in Jammu & Kashmir: Curcuma sp., *Zingiber* sp., *Alpinia* sp., and *Musa* sp. These plants are found in the locality and are reported as larval host plants from India and other parts of Indian Subcontinent (Vane-Wright & de Jong, 2003); (Anonymous, 2024).

Material examined: India. Jammu & Kashmir: Lohai Malhar, 28°30.6′N 80°40.6′E, 185 m, 28 May, 2024, observed more than four individuals by Kewal Parihar.

Figures 2-3: 2. *Notocrypta feisthamelii alysos* Moore sunbasking on *Geranium* sp., 3. *Notocrypta feisthamelii alysos* sucking minerals from dry soil.

4. Discussion

The recent observation and first record of *Notocrypta feisthamelii alysos* in Jammu and Kashmir is a significant addition to the Rhopalocera fauna of the region, marking a notable

range extension for this species. Previously, *N. feisthamelii alysos* was documented in various parts of India, including the neighbouring state of Himachal Pradesh (Garlani, 2024), but it had not been recorded this far north until now. The proximity of Lohai Malhar Tehsil to the Himachal Pradesh border likely facilitated the species' range extension into Jammu and Kashmir, suggesting that the butterfly's distribution may be broader than currently documented. This finding underscores the importance of conducting thorough faunal surveys in under-explored regions like Jammu and Kashmir. The region's unique topography and varied habitats provide ideal conditions for a diverse array of species, some of which may have gone unnoticed in previous studies. The current checklist on butterflies of Jammu and Kashmir (Sheikh et al., 2021) and other recent literature, including Sheikh & Parey (2019a, b), Parey & Sheikh (2021), Gupta & Sheikh (2021), Singh & Sheikh (2021), Sheikh (2021), Sheikh & Gupta (2022), Khan & Sheikh (2022), Sheikh & Mishra (2022, 2023a, b), , and Sheikh & Hassan (2023a, b), were thoroughly reviewed to verify the absence of prior records of this species in the Union Territory. This meticulous cross-referencing confirms that *N. feisthamelii alysos* is indeed a new distributional record for Jammu and Kashmir, further highlighting the need for continued biodiversity documentation in this region.

Ecological Significance and Conservation Status: The presence of *Notocrypta feisthamelii alysos* in the study area underscores the importance of conserving forested habitats in Jammu and Kashmir. Although *Notocrypta feisthamelii alysos* has not been evaluated by the IUCN, the conservation of its habitat in Jammu and Kashmir is essential. Preserving these natural habitats is not only vital for the survival of *N. feisthamelii alysos* but also for the broader ecosystem that supports a diverse range of species.

5. Conclusions

The first record of *Notocrypta feisthamelii alysos* from Jammu and Kashmir is a noteworthy addition to the region's Rhopalocera fauna and signifies a potentially broader distribution of the species in northern India. This discovery emphasizes the need for continued faunal surveys and research to fully document the butterfly diversity in underexplored regions like Jammu and Kashmir. The conservation of natural habitats in these areas is critical for preserving the biodiversity they support and ensuring the long-term survival of species like *N. feisthamelii alysos.*

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Conflict of interests

The authors declare that they have no competing interests.

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