

First record of *Aglossa caprealis* (Hübner, [1809]) with description of male from India (Lepidoptera: Pyralidae, Pyralinae)

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Abstract

This study documents the first occurrence of *Aglossa caprealis* (Hübner, [1809]) in India, with a specimen collected in the Shopian district of the Kashmir Valley. Based on observations from similar habitats, the species' tentative range includes the Kashmir region, northern Jammu, and potentially extends to Pakistan, Afghanistan, Turkmenistan, and Iran. An IUCN Red List assessment using the GeoCAT tool classifies the species as Least Concern (LC), with an estimated extent of occurrence (EOO) of 207,099,692.893 km². This first confirmed record in the Indian subcontinent highlights a significant range expansion and provides critical insights into its South and Central Asian distribution.

Keywords: Lepidoptera, Pyralidae, Pyralinae, *Aglossa caprealis*, faunistic, species distribution, Kashmir, India.

Primer registro de *Aglossa caprealis* (Hübner, [1809]) con la descripción del macho de la India (Lepidoptera: Pyralidae, Pyralinae)

Resumen

Este estudio documenta la primera aparición de *Aglossa caprealis* (Hübner, [1809]) en la India, con un espécimen recogido en el distrito de Shopian, en el Valle de Cachemira. Según las observaciones realizadas en hábitats similares, el área de distribución provisional de la especie incluye la región de Cachemira, el norte de Jammu y, potencialmente, se extiende hasta Pakistán, Afganistán, Turkmenistán e Irán. Una evaluación de la Lista Roja de la UICN utilizando la herramienta GeoCAT clasifica la especie como «Preocupación menor» (LC), con una extensión estimada de ocurrencia (EOO) de 207 099 692,893 km². Este primer registro confirmado en el subcontinente indio pone de relieve una importante expansión de su área de distribución y proporciona información fundamental sobre su distribución en Asia meridional y central.

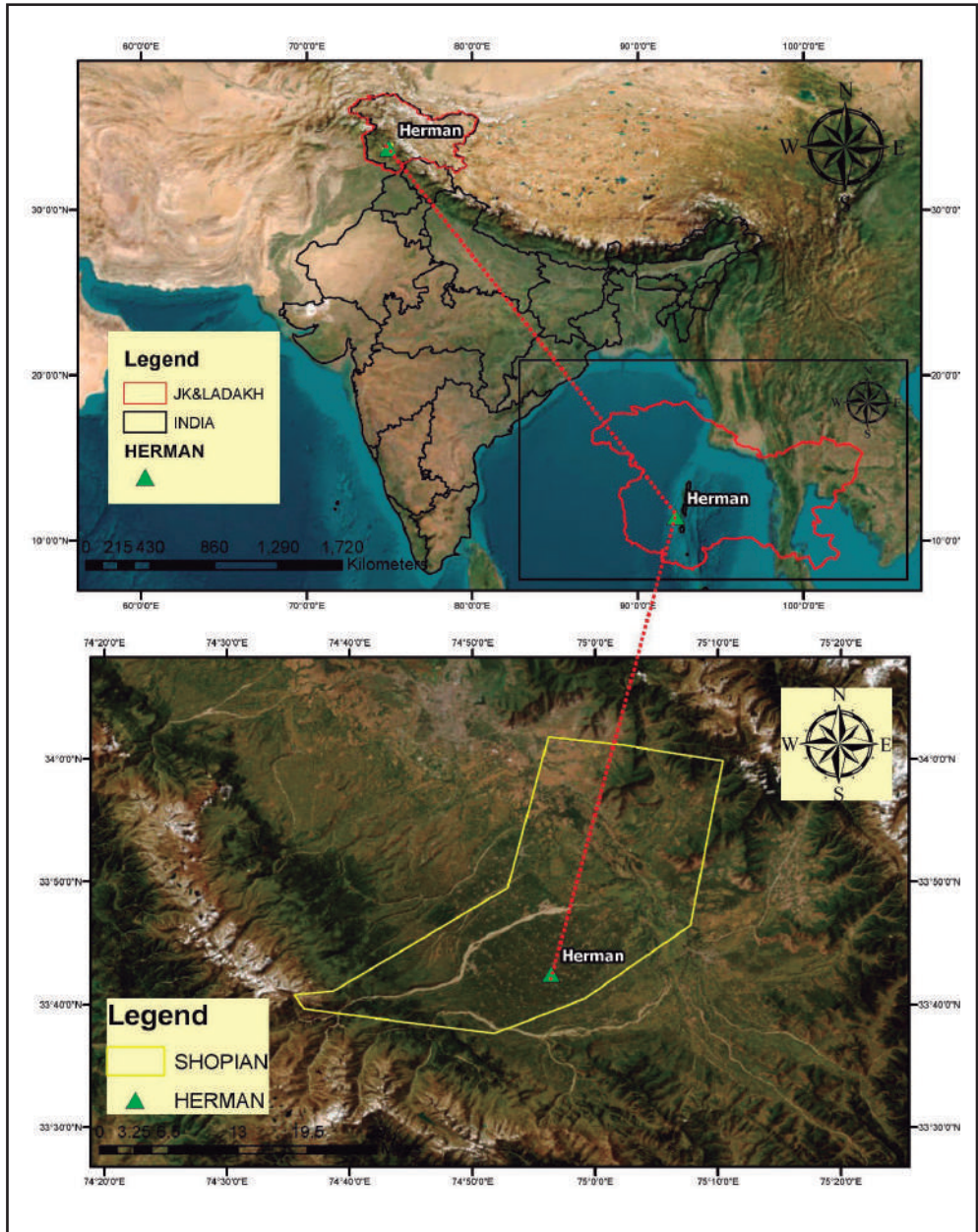
Palabras clave: Lepidoptera, Pyralidae, Pyralinae, *Aglossa caprealis*, faunística, distribución de especies, Cachemira, India.

Introduction

In India, research on the Pyraloidea superfamily began with Hampson's pioneering work in 1896, which was published as part of the *Fauna of British India series*. This early effort documented the distribution and taxonomy of 1,136 species. Since Hampson's contribution, numerous researchers both from India and internationally have periodically added new species and distribution records to the knowledge of Indian Pyraloidea (Rao & Sivaperuman, 2021; Singh et al. 2020; Mathew, 2006; Raha et al. 2017; Murthy et al. 2015). A more recent catalog of Indian Pyraloidea, lists 1,695 species, spread across 509 genera (Singh et al. 2022). Within the Pyralidae family, 518 species are identified, encompassing 182 genera, with the subfamily Pyralinae containing 171 species from 47 genera in India. Five genera -

Endotricha Zeller, 1847, *Hypsopygia* Hübner, [1825], *Pyralis* Linnaeus, 1758, *Sacada* Walker, 1862, and *Stemmatophora* Guenée, 1854 are notably species-rich, each having over ten species, with *Hypsopygia* being the most diverse, including 24 species.

Figure 1. Map of Tehsil Herman, Shopian District, India showing location of collection site.



A recent study by Riyaz et al. (2024) introduced *Pyalis farinalis* (Linnaeus, 1758) as a newly recorded species in India. Moreover, Riyaz & Ignacimuthu (2023) added two new species to the biodiversity records for the Jammu and Kashmir Union Territory: *Pyalis pictalis* (Curtis, 1834), and *Botyodes diniasalis* (Walker, 1859). These discoveries broaden the known range of these moth species in the region, enhancing the country's biodiversity records. Among the various genera, *Aglossa* Latreille, 1796 stands out, with several species documented in India. Noteworthy species include *Aglossa asiatica* Erschoff, 1872, found in the Northwest Himalayas, and *Aglossa dimidiatus* (Haworth, 1809), distributed in the Nilgiris and South India. Other species such as *Aglossa pinguinalis* (Linnaeus, 1758) are also present in the Northwest Himalayas, while *Aglossa tanya* Corbet & Tams (1943) is reported only in India (Singh et al. 2022).

Materials and Methods

An adult male specimen of *Aglossa caprealis* was photographed and collected indoors on August 19, 2024, at an elevation of 1,596 meters in Tehsil Herman (33°42'18"N, 74°56'23"E), located in the Shopian district of the Kashmir Division, Jammu & Kashmir Union Territory, India (Figure 1). The specimen was captured at night using a ProTac HL headlamp and ethyl acetate vials wrapped in cotton. It was photographed with a Xiaomi Redmi Note 8 Pro smartphone equipped with a 20 mm macro lens. The specimen was obtained during the author's exploration of the diverse insect life in Kashmir Valley. Subsequent taxonomic analyses, including the dissection and preparation of the genitalia, were carried out. The abdomen of the specimen was treated with KOH at 135°C for several minutes, cleaned, and the genitalia were then prepared. After rinsing in distilled water, the genitalia were preserved in glycerin for further examination. The region, predominantly rural with large agricultural areas, receives an annual precipitation of 660 mm and maintains an average temperature of 25°C (Riyaz et al. 2021; 2022; 2023; 2024; Riyaz & Reshi, 2021; Shiekh & Mishra, 2023). Both the specimen and its genitalia have been deposited in the insect museum of the Xavier Research Foundation at St. Xavier's College, Palayamkottai, India, under voucher number XRF-KMR-277. The identification of *Aglossa caprealis* was confirmed by examining the male specimen's morphological features and genitalia, utilizing online platforms like Pathpiva (<https://pathpiva.fr/aglossa-caprealis/>) and Lepiforum (https://lepiforum.org/wiki/page/Aglossa_caprealis), as well as relevant literature, including Solis & Shaffer (1999), Watt (1965), Trematerra (1987), and Goater et al. (2023).

Results

TAXONOMICAL POSITION

Superfamily Pyraloidea Latreille, 1809
Family Pyralidae Latreille, 1809
Subfamily Pyralinae Latreille, 1809
Tribe Pyralini Latreille, 1809

Aglossa Latreille, 1796. *Précis Charact. Gen. Ins.*, 145

TS: *Pyalis pinguinalis* Linnaeus, 1758. *Syst. Nat.* (Ed. 10), 533, by subsequent monotypy

Aglossa caprealis (Hübner, [1809])

Pyalis caprealis Hübner, [1809]. *Samml. Eur. Schmetz.*, pl. 23, fig. 153

LT: Europe

Species Description

Adult: Wingspan: 25 mm; head and neck dorsally dark-colored; forewings exhibit a shiny brownish-gray ground color interspersed with pale yellowish markings and lines; reniform spot distinct, dark, circular, and encircled by a pale ring; antemedial (AM) line prominent, thick, sharply angled, forming a shallow zigzag pattern; subterminal (ST) line broad, straight at the costa and inner margin, with the central section forming a thin, jagged U-shaped curve.

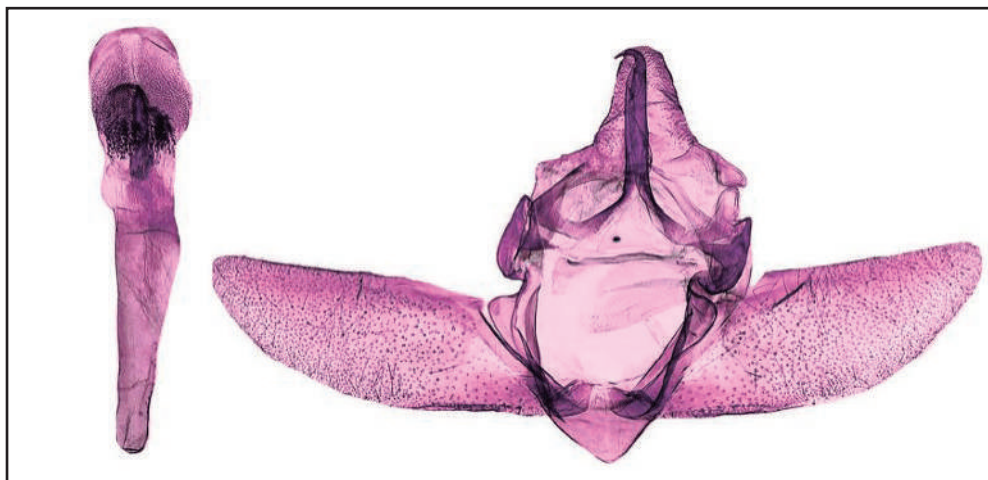
Male Genitalia: Uncus slender, tapering slightly towards the apex but of near-uniform width throughout, with no spine clusters present ventrally; the structure is slightly curved, moderately sclerotized, and smooth.

Figure 2. Mounted Adult male *Aglossa caprealis*.



Tegumen is highly sclerotized and broad; vinculum well developed, connecting strongly with the tegumen; Juxta simple, small, and minimally sclerotized. Valvae symmetrical, broad, and relatively simple in form, with the ventral surface bearing fine hairlike setae, though not arranged in radiating rows; costal setae are absent. Aedeagus elongated and cylindrical, with the vesica bearing spinelike cornuti and showing heavy sclerotization. The vesica is slightly reflexed and moderately spined, contributing to the functional morphology of the genitalia.

Figure 3. Male genitalia of *Aglossa caprealis*.



Based on previous observations in similar ecological habitats, the authors suggest a tentative distribution range for this species encompassing the entire Kashmir region and northern areas of the Jammu division within the state of Jammu and Kashmir, India. Additionally, the authors propose the potential occurrence of the species in northern regions of Pakistan, Afghanistan, Turkmenistan, and Iran, which are geographically connected to the current known location. According to the IUCN Red List assessment using the GeoCAT tool, based on current and historical records, the species is classified as *Least Concern* (LC) with an estimated extent of occurrence (EOO) of 207,099,692.893 km² (Figure 4). This record is particularly significant as it represents the first confirmed evidence of *Aglossa caprealis* in the Indian subcontinent, marking a noteworthy range extension of the species into India's political boundaries. The discovery of this species in this region holds substantial biogeographical importance and adds to our understanding of its broader distribution across South and Central Asia.

Figure 4. IUCN Red List assessment of *Aglossa caprealis* using the GeoCAT



Conclusion

The Pyraloidea is a vast superfamily of moths within the order Lepidoptera, comprising more than 16,000 species globally, with the Pyralidae family accounting for 6,000 species and the Crambidae family for 11,000 species. These species occupy a variety of habitats, ranging from forests to deserts and from lowland areas to high-altitude regions. While many Pyraloidea species are notorious agricultural pests that can inflict substantial damage on crops, others serve beneficial roles as biological control agents against harmful insect pests. Pyraloidea are typically small to medium in size, often recognizable by their elongated snouts and triangular forewings.

In the Kashmir Valley, a key biodiversity hotspot within the Himalayas, the revision and documentation of insect species, especially moths, has been relatively sparse. Despite existing records, the region's full diversity remains underexplored, with many species still awaiting formal documentation. This study marks an important addition, confirming the first record of *Aglossa caprealis* from the Indian subcontinent. The record emphasizes the need for further entomological surveys and research in the region, which could uncover additional species and provide insights into the biogeographical distribution of these moths. With rapid environmental changes and threats to biodiversity, it is crucial to expand knowledge of the insect fauna in areas like the Kashmir Valley to inform conservation efforts and enhance our understanding of distributions across South Asia.

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Conflict of Interest

The authors declare that they have no known financial interests or personal relationships that could have influenced the work presented in this article.

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