

Confirmation of the presence of *Hestina persimilis zella* Butler, 1869 from Union Territory of Jammu and Kashmir, India after 110 years (Lepidoptera: Nymphalidae)

Taslina Sheikh & Muhammad Asghar Hassan

Abstract

Two subspecies of the genus *Hestina* Westwood, 1850 are known to occur in India: *H. persimilis persimilis* (Westwood, [1850]) and *H. persimilis zella* Butler, 1869. Of these, *H. persimilis persimilis*, is widely distributed throughout the Himalayan Mountain range in India, Nepal, and Bhutan. In India, it is recorded from the northwestern (Jammu & Kashmir), eastern (Orissa) and northeaster parts (Sikkim and Arunachal Pradesh). On the other hand, *H. persimilis zella* is a little-known species that is only reported from the northwestern parts (Jammu & Kashmir and Uttarakhand) of India and northern areas of Pakistan (Khyber Pakhtunkhwa and Islamabad). The present study provides the first confirmation of new locality data in Jammu and Kashmir after its original description, which dates back to 1912.

Keywords: Lepidoptera, Nymphalidae, *Hestina persimilis*, India.

Confirmación de la presencia de *Hestina persimilis zella* Butler, 1869 en el territorio de la Unión de Jammu y Cachemira, India, después de 110 años (Lepidoptera: Nymphalidae)

Resumen

Se conocen dos subespecies del género *Hestina* Westwood, 1850 en la India: *H. persimilis persimilis* (Westwood, [1850]) y *H. persimilis zella* Butler, 1869. De ellas, *H. persimilis persimilis* está ampliamente distribuida por la cordillera del Himalaya en India, Nepal y Bután. En la India, se ha registrado su presencia en el noroeste (Jammu y Cachemira), el este (Orissa) y el noreste (Sikkim y Arunachal Pradesh). Por otro lado, *H. persimilis zella* es una especie poco conocida de la que sólo se tiene constancia en las zonas noroccidentales (Jammu y Cachemira y Uttarakhand) de India y en las zonas septentrionales de Pakistán (Khyber Pakhtunkhwa e Islamabad). El presente estudio proporciona la primera confirmación de datos de una nueva localidad en Jammu y Cachemira después de su descripción original, que data de 1912.

Palabras clave: Lepidoptera, Nymphalidae, *Hestina persimilis*, India.

Introduction

Se conocen dos subespecies del género *Hestina* Westwood, 1850 en la India: *H. persimilis persimilis* (Westwood, [1850]) y *H. persimilis zella* Butler, 1869. De ellas, *H. persimilis persimilis* está ampliamente distribuida por la cordillera del Himalaya en India, Nepal y Bután. En la India, se ha registrado su presencia en el noroeste (Jammu y Cachemira), el este (Orissa) y el noreste (Sikkim y Arunachal Pradesh). Por otro lado, *H. persimilis zella* es una especie poco conocida de la que sólo se tiene constancia en las zonas noroccidentales (Jammu y Cachemira y Uttarakhand) de India y en las zonas septentrionales de Pakistán (Khyber Pakhtunkhwa e Islamabad).

El presente estudio proporciona la primera confirmación de datos de una nueva localidad en Jammu y Cachemira después de su descripción original, que data de 1912.

Palabras clave: Lepidoptera, Nymphalidae, *Hestina persimilis*, India.

Introduction

In the Jammu and Kashmir history study of Lepidoptera fauna dates back to the middle of the 19th century when an Austrian entomologist Vincenz Kollar explored it and described many new taxa from this region (Kollar, 1844, 1848). During the British rule on the Indian subcontinent (1857-1947), Holland (1896) and Tytler (1926) deserve special mention in this regard. However, after Independence not much work has been done on this second largest insect order from Jammu and Kashmir. Over the last decade, only some regional researchers and photographers have explored some parts of the Union territory extensively and not only added to the known distributional records (Qureshi et al. 2013a, 2013b, 2014; Sharma & Sharma, 2017a, 2017b, 2018a, 2018b, 2020) but also published many new regional records for the Union Territory or new country records for India (Sharma & Sharma, 2017a, 2017b, 2018a, 2018b; Sheikh & Parey, 2019a, 2019b; Sharma & Sharma, 2020; Gupta & Sheikh, 2021; Sheikh, 2021; Singh & Sheikh, 2021; Parey & Sheikh, 2021; Dar et al. 2022a, 2022b; Sheikh & Mishra, 2022; Khan & Sheikh, 2022; Sheikh & Mishra, 2023). *Hestina persimilis* is legally protected in India under the Schedule II of the Wildlife (Protection) Act, 1972. Recent studies on the Rhopalocera fauna of Jammu and Kashmir and its surrounding states by Kumari & Sheikh (2021), Singh & Sheikh (2021), Sheikh & Gupta (2022), and Sheikh & Mishra (2023) contributed to the rediscovery of a few little-known Nymphalidae, Papilionidae, and Lycaenidae species, including *Stibochiona nicea* (Gray, 1846), *Papilio agestor* Gray, 1831, *Zesius chrysomallus* Hübner, 1819, and *Lycaena panava* (Westwood, 1852).

Two subspecies of *Hestina persimilis* are found in India: *Hestina persimilis persimilis* and *Hestina persimilis zella*. *Hestina persimilis zella* is rare found along Himalayas with altitude ranging from 750-2100 m, from northeastern parts of Kyber Pakhtunkhwa (Hazara and Manshera) province to Islamabad Capital (Margalla Hills) in Pakistan through Jammu and Kashmir, Himachal Pradesh to Uttarakhand in India. Whereas *Hestina persimilis persimilis* is rarely found in Northeastern Ghats in northeastern Orissa (Meghasani Hills, 1150 m), and also rarely found along Himalayas with altitude ranges from 500-2000 m to Nepal through Sikkim to West Bengal, Bhutan to Arunachal Pradesh and Hills of northeastern India to Brahmaputra (Meghalaya, Nagaland, and Manipur).

In Varshney & Smetacek (2015) catalogue, *Hestina persimilis persimilis* is found in Odhisa; Sikkim to Northeast India and *Hestina persimilis zella* is found from Jammu and Kashmir to Uttarakhand.

In Jammu and Kashmir, its distribution was mentioned as Kashmir by Fruhstorfer (1912), later this was cited by many authors, like Varshney & Smetacek (2015) and Gasse (2018) in India.

Materials and Methods

On 11-IX-2022, the first author during her survey on exploring the butterfly fauna of Salana area of Bani tehsil in Kathua district of Jammu and Kashmir Union Territory where she found *Hestina persimilis zella* (Figures 1-2) mudpuddling on soil and rock. Later on, she again found three more individuals mudpuddling on soil. Later, she took the field photographs of *Hestina persimilis zella* by a Canon Eos 1300 D and recorded the coordinates of the area (32°44'48.8" N, 74°48'37.4" E) at an altitude of around 1500 m a.s.l. Kathua district is located between 75.5173° E longitude and 32.3865° N latitude. The average annual rainfall is 1360 mm. The study area experiences a sub-tropical climate. It shares border with Punjab (Pakistan) and Himachal Pradesh (India). The vegetation around the sighting was; *Isodon rugosus* (Schrad. Ex Benth.) Spach (Lamiaceae), *Prinsepia utilis* Royle D. Potter, *Rubus niveus* Thunb., *Rubus ellipticus* Sm. (Rosaceae), *Melia azedarach* L. (Meliaceae), *Alnus nitida* (Spach)

Endl. (Betulaceae), *Berberis lycium* Royle (Berberidaceae), *Juglans regia* L. (Juglandaceae), *Cedrus deodara* (Roxb.) G. Don (Pinaceae), and many more.

Hestina persimilis zella was identified based on Evans (1932), Wynter-Blyth (1957), Kehimkar (2016), and Smetacek (2018). The distribution map was prepared with ArcGIS 10.5 software (Esri, Redlands, CA) by using the original base map of India (Figure 3-4).

Results

Hestina persimilis (Westwood, [1850])

Hestina persimilis zella Butler, 1869 (Figures 1-2)

In *Hestina persimilis zella*, the upper forewing black bar mid cell; under hindwing dorsum not yellow paler, white marking wider, but in *Hestina persimilis persimilis*, darker, white markings narrower. Apex forewing more produced.

Author found three individuals of *Hestina persimilis zella* Butler, 1869, (Figures 1a, 1b) mudpuddling on soil and one individual on rock and another was flying. Many other species like *Papilio machaon* Linnaeus, 1758, *Graphium cloanthus* (Westwood, 1841), *Graphium sarpedon* (Linnaeus, 1759), *Papilio protenor* Cramer, [1775], *Libythea celtis lepita* Moore, [1858], *Junonia iphita* (Cramer, [1779]), etc., were mudpuddling along with this species.

Discussion

The diversity and taxonomic studies on several Rhopalocera species have been studied in Jammu and Kashmir. In recent years, the following authors has reported several new records to the butterfly fauna of Jammu and Kashmir and India (Sheikh & Parey, 2019a; 2019b; Sharma & Sharma, 2020; Gupta & Sheikh, 2021; Sheikh, 2021; Singh & Sheikh, 2021; Parey & Sheikh, 2021; Dar et al. 2021; Sheikh & Gupta, 2022; Sheikh & Mishra, 2022). Work is done in other Indian states like Uttar Pradesh, a red spot (*Zesius chrysomallus* Hübner, 1821) is rediscovered after 108 years by Kumari & Sheikh (2021). Today's results of this finding coincide with the previous work done in Jammu and Kashmir and Uttar Pradesh by various authors and current study in this article is also adding a rediscovery of *Hestina persimilis zella* after 110 years in Jammu and Kashmir Union Territory. The immatures of *Hestina persimilis zella* feeds on *Celtis australis* (Cannabaceae) and authors are of the opinion that, the larval host plant was eaten by cattle like cow and sheep's and that's why *Hestina persimilis zella* was not seen in this long period of time. Now somewhere, this plant has started growing in wild and now has also appeared again. Forest authorities are directed to act on the lesser availability of its larval host plant. By protecting its larval host plant, we can restore a good population of *Hestina persimilis zella* in India.

Conclusion

Distribution of *Hestina persimilis zella* was initially reported from Kashmir by Fruhstorfer (1912), which later cited by many researchers, like Varshney & Smetacek (2015), Gasse (2018), and (Sheikh et al. 2021). After 1912, *Hestina persimilis zella* is recorded after 110 years from Jammu & Kashmir, India. Additional research and a comprehensive long-term survey are still required to get significant diversity of butterfly species in Jammu and Kashmir. In the Union Territory of Jammu & Kashmir, the majority of the areas are still unexplored; regular surveys in the future may result in several new records and rediscoveries.

Acknowledgements

The authors are grateful to Mr. Lovish Garlani for the confirmation of *Hestina persimilis zella*.

References

- Dar, A. A., Jamal, K., Shah, M. S., Ali, M., Sayed, S., Gaber, A., Kesba, H., & Salah, M. (2022a). Species richness, abundance, distributional pattern, and trait composition of butterfly assemblage change along an altitudinal gradient in the Gulmarg region of Jammu & Kashmir, India. *Saudi Journal of Biological Sciences*, 29(4), 2262-2269. <https://doi.org/10.1016/j.sjbs.2021.11.066>
- Dar, A. A., Shah, M. S., & Jamal, K. (2022b). Butterfly (Lepidoptera: Heterocera) Fauna of Bangus Valley, Jammu & Kashmir, India. *Entomological News*, 130(3), 308-317. <https://doi.org/10.3157/021.130.0311>
- Evans, W. H. (1932). *The identification of Indian Butterflies*. Journal of Bombay Natural History Society.
- Gasse, P. V. (2018). *Butterflies of the Indian Subcontinent - Annotated Checklist*. http://www.biodiversityofindia.org/images/2/2c/Butterflies_of_India.Pdf.
- Gupta, S., & Sheikh, T. (2021). First Record of Spotted Small Flat *Sarangesa purendra* (Moore, 1882) (Lepidoptera: Hesperidae) from Union Territory of Jammu and Kashmir, India. *Revista Chilena de Entomología*, 47(3), 545-548.
- Holland, W. J. (1896). List of the Lepidoptera collected in Kashmir by Dr. W. L. Abbot. *Proceedings of the United States National Museum*, 18(1065), 275-279.
- Kehimkar, I. (2016). *BNHS Field Guides: Butterflies of India*. Journal of Bombay Natural History Society.
- Khan, A. N., & Sheikh, T. (2022). *Callerebia hybrida* Butler, 1880 (Lepidoptera; Nymphalidae) a new addition the butterflies of Union territory of Jammu and Kashmir, India. *Indian Entomologist*, 3(2), 39-41.
- Kollar, V. (1844). Lepidoptera (Rhopalocera). In V. Kollar & L. Redtenbacher. Aufzählung und Beschreibung der von Freiherrn Carl v. Hügel auf seiner Reisedurch Kaschmir und das Himalayagebirge gesammelten Insecten.- In C. F. Hügel. *Kaschmir und der Reich der Siek*, 4(2), 393-564, 582-585. Hallberger's Verlagshandlung.
- Kollar, V. (1848). Lepidoptera (Rhopalocera). In V. Kollar & L. Redtenbacher. Aufzählung und Beschreibung der von Freiherrn Carl v. Hügel auf seiner Reisedurch Kaschmir und das Himalayagebirge gesammelten Insecten.- In C. F. Hügel. *Kaschmir und der Reich der Siek*, 4(2), 397-398, 403-496. Hallberger's Verlagshandlung.
- Kumari, P., & Sheikh, T. (2021). A note on the rediscovery of Redspot butterfly, *Zesius chrysomallus* Hübner, 1819 (Lepidoptera: Lycaenidae: Theclinae) from Uttar Pradesh State, with a new larval host plant record for India. *Revista Chilena de Entomología*, 47(2), 399-404.
- Parey, S. H., & Sheikh, T. (2021). *Butterflies of Pirpanjal Range of Kashmir Himalaya*. Corvete Press.
- Qureshi, A. A., Bhagat, R. C., & Bhat, D. M. (2014). Diversity of butterflies (Lepidoptera: Papilionoidea and Hesperioidea) of Dachigam National Park, Jammu and Kashmir, India. *Journal of Threatened Taxa*, 6(1), 5389-5392. <https://doi.org/10.11609/JoTT.o2886.5389-92>
- Qureshi, A. A., Bhagat, R. C., & Pathania, P. C. (2013a). Rhopalocera Diversity (Lepidoptera) of District Kupwara from Jammu and Kashmir State (India). *Biological Forum*, 5(1), 100-106.
- Qureshi, A. A., Dar, R. A., Tahir, S. I., & Bhagat, R. C. (2013b). Butterfly-fauna of Gulmarg, Kashmir, J & K State. *IOSR. Journal of Agriculture and Veterinary Sciences*, 2(5), 40-45. <https://doi.org/10.9790/2380-0254045>
- Sharma, S., & Sharma, N. (2018a). New Nymphalid butterfly records from Jammu and Kashmir. *Journal of Threatened Taxa*, 10(11), 12602-12606. <https://doi.org/10.11609/jott.3874.10.11.12602-12606>
- Sharma, S., & Sharma, N. (2018b). New Lycaenid butterfly records from Jammu and Kashmir. *Journal of Threatened Taxa*, 10(7), 11984-11987. <https://doi.org/10.11609/jott.4046.10.7.11984-11987>
- Sharma, S., & Sharma, N. (2020). On the rediscovery and new additions of Skippers (Lepidoptera: Papilionoidea: Hesperidae) from Jammu and Kashmir, India. *Revista Chilena de Entomología*, 46(4), 591-599. <http://dx.doi.org/10.35249/rche.46.4.20.05>
- Sharma, S., & Sharma, N. (2017a). Two new species of butterflies from Jammu and neighborhood in Jammu and Kashmir. *Journal of Wildlife and Research*, 5(1), 10-13.
- Sharma, S., & Sharma, N. (2017b). New butterfly records from the Jammu Shiwaliks in Jammu and Kashmir. *Journal of Threatened Taxa*, 9(10), 10856-10859. <https://doi.org/10.11609/jott.3180.9.10.10856-10859>
- Sheikh, T. (2021). Addition of Chestnut Angle *Odonopilum angulatum* (C. Felder, 1862) to the butterfly fauna of Union Territory of Jammu and Kashmir, India. *Life Sciences Leaflets*, 141, 7-11.
- Sheikh, T., & Gupta, S. (2022). Rediscovery of white-bordered copper, *Lycaena panava* (Westwood, 1852) (Lepidoptera: Lycaenidae) from Union Territory of Jammu and Kashmir, India. *Life Sciences Leaflets*, 144(2), 01-05.
- Sheikh, T., & Mishra, S. (2022). First report of continental swift *Parnara ganga* (Evans, 1937) (Lepidoptera: Hesperidae) from Jammu and Kashmir Union Territory, India. *Munis Entomology & Zoology*, 17(supplement), 1683-1686.

- Sheikh, T., & Mishra, S. (2023.) A note on the reconfirmation of tawny mime, *Papilio agestor* Gray, 1831 (Lepidoptera: Papilionidae) from union territory of Jammu and Kashmir, India after 115 years. *Munis Entomology & Zoology*, 18(1), 629-633.
- Sheikh, T., & Parey, S. H. (2019a). Six new records of butterflies (Lepidoptera: Insecta) from Jammu and Rajouri Districts of Jammu and Kashmir Himalaya. *Journal of Wildlife Research*, 7(3), 42-46.
- Sheikh, T., & Parey, S. H. (2019b). New records of butterflies (Lepidoptera: Insecta) from Jammu and Kashmir Himalaya. *Records of Zoological Survey of India*, 119(4), 463-473.
- Sheikh, T., Awan, M. A., & Parey, S. H. (2021). Checklist of Butterflies (Lepidoptera: Rhopalocera) of Union territory Jammu and Kashmir, India. *Records of Zoological Survey of India*, 121(1), 127-171.
- Singh, S., & Sheikh, T. (2021). Rediscovery of Popinjay, *Stibochiona nicea* (Gray, 1846) (Lepidoptera: Nymphalidae: Nymphalinae) from Union Territory of Jammu and Kashmir, India. *Revista Chilena de Entomología*, 47(3), 497-499.
- Smetacek, P. (2018). *A naturalist's guide to the Butterflies of India, Pakistan, Nepal, Bhutan, Bangladesh, and Sri Lanka*. John Beauf Publishers.
- Talbot, G. (1939). Butterflies (Papilionidae, Pieridae). *The Fauna of British India including Ceylon and Burma, 1*, Today and Tomorrow's Printers and Publishers.
- Tytler, H. C. (1926). Notes on some new and interesting butterflies from India and Burma. Part 1. *Journal of Bombay Natural History Society*, 31(2), 248- 260.
- Varshney, R. K., & Smetacek, P. (2015). *A Synoptic Catalogue of the Butterflies of India*. Butterfly Research Centre. Bhimtal and Indov Publishers.
- Wynter-Blyth, M. A. (1957). *Butterflies of the Indian Region*. Bombay Natural History Society.

*Taslima Sheikh
 Department of Zoology
 Sunrise University Alwar
 Rajasthan - 301028
 INDIA / INDIA
 E-mail: sheikhtass@gmail.com
<https://orcid.org/0000-0002-8112-1562>

Muhammad Asghar Hassan
 Institute of Entomology
 Guizhou University
 Guiyang, 550025
 R. P. CHINA / P. R. CHINA
 E-mail: kakojan112@gmail.com
<https://orcid.org/0000-0003-2590-5781>

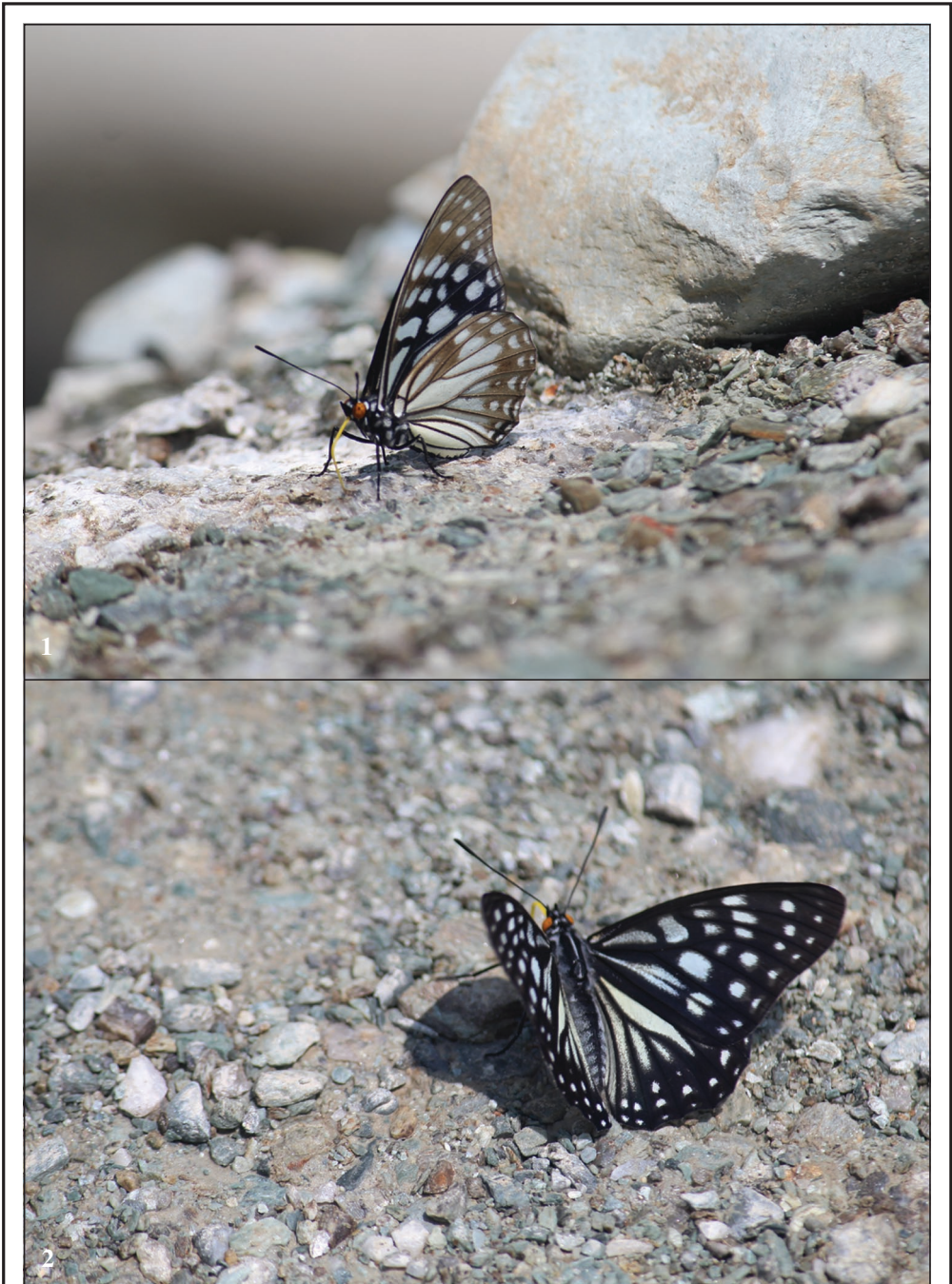
*Autor para la correspondencia / *Corresponding author*

(Recibido para publicación / *Received for publication* 14-X-2022)

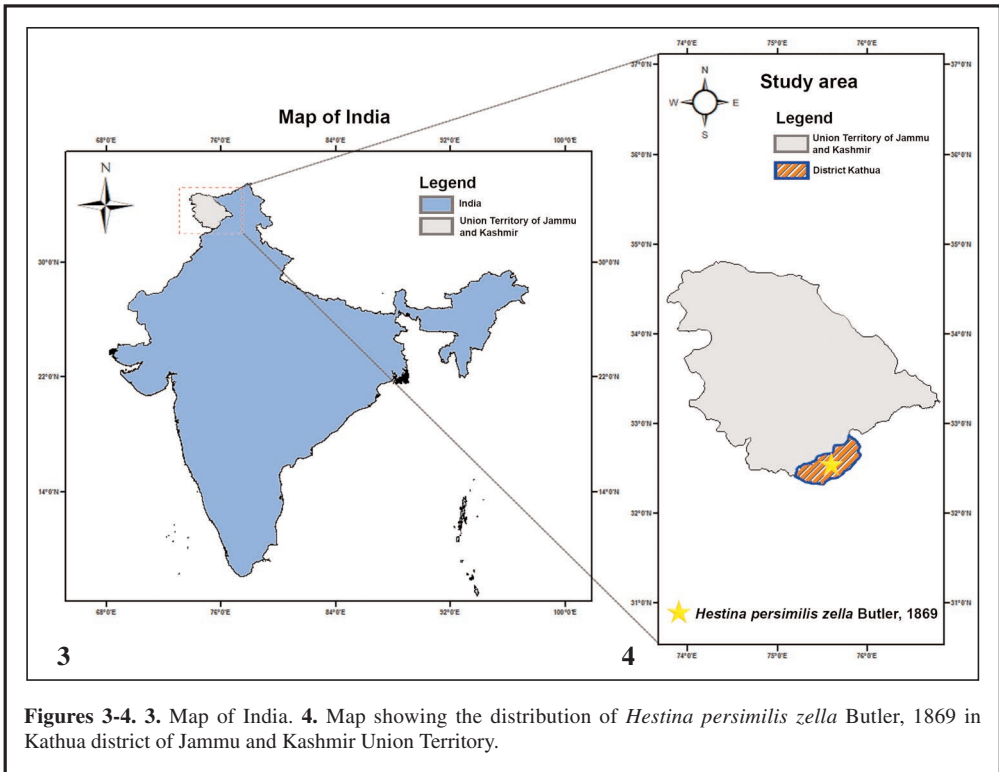
(Revisado y aceptado / *Revised and accepted* 4-XII-2022)

(Publicado / *Published* 30-VI-2023)

Derechos de autor: El autor(es). Este es un artículo de acceso abierto distribuido bajo los términos de la Licencia de Reconocimiento 4.0 Internacional de Creative Commons (CC BY 4.0), que permite el uso, distribución y reproducción sin restricciones en cualquier medio, siempre que se cite al autor original y la fuente. / **Copyright:** The author(s). This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.



Figures 1-2. 1. *Hestina persimilis* (Westwood, [1850]) underwing. 2. Openwing.



Figures 3-4. 3. Map of India. 4. Map showing the distribution of *Hestina persimilis zella* Butler, 1869 in Kathua district of Jammu and Kashmir Union Territory.