

New Hesperiiidae additions to the Papilionoidea fauna of Uttar Pradesh, India (Insecta: Lepidoptera)

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Abstract

This research article unveils significant additions to the Papilionoidea fauna of Uttar Pradesh, India. Through meticulous observation and documentation, two species belonging to the Hesperiiidae family were discovered within the region. The first species, *Caprona ransonnettii* (Felder, 1868), and the second, *Burara oedipodea* (Swainson, 1820), were identified and recorded as novel findings in the area. These discoveries were made through comprehensive field surveys, which included systematic observations and detailed recording of butterfly species in various habitats over an extended period. Such findings contribute valuable insights into the biodiversity of Uttar Pradesh's Papilionoidea fauna. The study sheds light on the distribution and presence of these species, enhancing our understanding of the ecological dynamics within the region. These results underscore the importance of continued research and conservation efforts to preserve the rich diversity of Papilionoidea species in Uttar Pradesh, India.

Keywords: Insecta, Lepidoptera, Papilionoidea, Hesperiiidae, *Caprona ransonnettii*, *Burara oedipodia*, biodiversity, conservation, Uttar Pradesh, India.

Nuevas incorporaciones de Hesperiiidae a la fauna de Papilionoidea de Uttar Pradesh, India (Insecta: Lepidoptera)

Resumen

Este artículo de investigación desvela importantes adiciones a la fauna de Papilionoidea de Uttar Pradesh, India. Mediante una meticulosa observación y documentación, se descubrieron en la región dos especies pertenecientes a la familia Hesperiiidae. La primera especie, *Caprona ransonnettii* (Felder, 1868) y la segunda, *Burara oedipodea* (Swainson, 1820), fueron identificadas y registradas como hallazgos novedosos en la zona. Estos descubrimientos aportan información valiosa sobre la biodiversidad de la fauna de Papilionoidea de Uttar Pradesh. El estudio arroja luz sobre la distribución y presencia de estas especies, mejorando nuestra comprensión de la dinámica ecológica de la región. Estos hallazgos subrayan la importancia de continuar con los esfuerzos de investigación y conservación para preservar la rica diversidad de especies de Papilionoidea de Uttar Pradesh (India).

Palabras clave: Insecta, Lepidoptera, Papilionoidea, Hesperiiidae, *Caprona ransonnettii*, *Burara oedipodia*, biodiversidad, conservación, Uttar Pradesh, India.

Introduction

According to the Editors of Encyclopaedia Britannica (2017), Skippers, part of the Hesperiiidae family, comprise roughly 3,500 insect species within the Lepidoptera order, found globally and known

for their swift, darting flight pattern. They are termed an intermediary group between butterflies and moths. While their adult form shares similarities with moths in head and body structure, skippers often rest with their first pair of wings held vertically, akin to butterflies. Unlike many moths, they typically lack wing-coupling structures (frenula). Their antennae, clubbed like butterflies', usually terminate in a slender hooked tip. Despite their small size, skippers possess robust wing muscles allowing them to reach speeds of up to 30 km (20 miles) per hour. Larvae primarily feed on plants such as legumes and grasses, often residing inside folded or rolled leaves, sometimes woven together. Pupation takes place within thin cocoons made of silk or a blend of silk and leaves.

Uttar Pradesh, India, harbours a diverse array of wildlife, including numerous Papilionoidea species. The Hesperidae family, commonly known as skippers, comprises a significant portion of this biodiversity. In recent years, efforts have been made to document and conserve Papilionoidea diversity in the region, leading to several significant discoveries.

As per Paul Van Gasse, 2018 checklist on Indian subcontinent, *Caprona ransonnetii* (Felder, 1868), has one subspecies present in India: *C. ransonnetii potiphera* (Hewitson, 1873): Commonly sighted in Peninsular India, particularly in the Western Ghats region, this subspecies can be found at elevations reaching up to 2400 meters. Its distribution spans from Kerala and Tamil Nadu northward through various states, including SE Gujarat, Madhya Pradesh, Chhattisgarh, Jharkhand, and S and C West Bengal. Historically, it was also present in NW Bangladesh, and there is a dated record from SE Rajasthan (Mount Abu). As per the Ifoundbutterflies website, this subspecies is seen in Andhra Pradesh, Chhattisgarh, Goa, Gujarat, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Uttarakhand & West Bengal (Saji & Churi, 2024), Jammu & Kashmir (Sheikh & Parey, 2019). Genus *Caprona* Wallengren, 1857 has three species in India: *Caprona ransonnetii*, *Caprona alida* (de Nicéville, 1891), and *Caprona agama* (Moore, [1858]). Out of them, two are present in Uttar Pradesh except *Caprona alida*. The observed host plant of this subspecies in India are *Erinocarpus nimmonii* J. Graham, *Helicteres isora* L., *Triumfetta rhomboidea* Jacq., *Urena lobata* L. (Malvaceae) (Nitin et al. 2018). And expected host plant in Uttar Pradesh as per the availability of plant species are *Urena lobata* and *Triumfetta rhomboidea*. Another Species in current study is *Burara oedipodea* (Swainson, 1820), only one subspecies is found in India i.e., *B. oedipodea belesis* (Mabille, 1876): Found sparingly in the Himalayan region, this subspecies is primarily located at altitudes up to 300 meters, although occasional sightings extend up to 1500 meters. Its range spans from Himachal Pradesh (west to Kangra) eastward through Uttarakhand, Nepal, Sikkim, N West Bengal, and Bhutan to Arunachal Pradesh and the northeastern states of India (excluding Mizoram) also found in Jammu and Kashmir (Sheikh et al 2021). This subspecies is also known as *aegina* or *athena* in certain sources. (Note: Previously identified as *Ismene oedipodea* in Evans, 1932, and as *Bibasis oedipodea* in Evans, 1949). As per Ifoundbutterflies website, this subspecies is seen in Uttarakhand, Assam, Meghalaya and Arunachal (Anonymous, 2024) *Hiptage benghalensis* (L.) Kurz (Malpighiaceae) is the larval host plant of this Papilionoidea as per found website (Anonymous, 2024) and same plant is expected to be the host plant of this subspecies in Uttar Pradesh also as per its availability in the region.

Materials and methods

STUDY AREA

In 15-VI-2023, the authors embarked on a survey of Dudhwa National Park, located in the Lakhimpur-Kheri district of Uttar Pradesh. The surveyed area, positioned at approximately 150 meters altitude (28°29'24.7"N 80°38'44.5"E), was chosen due to its accessibility. Dudhwa National Park, situated in the district of Lakhimpur-Kheri, Uttar Pradesh, encompasses an area measuring 490.29 square kilometres. It stands as a vestige of the once expansive Terai forests that graced the plains of Uttar Pradesh, running parallel to the foothills of the Himalayas. Characterized by a diverse ecosystem consisting of Sal forests, towering grasslands, and marshes susceptible to yearly inundation, Dudhwa

National Park represents one of India's most imperiled habitats. Functioning as an integral part of the Dudhwa Tiger Reserve, the National Park contributes to India's primary Terai Protected Area Complex. Within the Terai-Bhabhar Biogeographic Subdivision of the Upper Gangetic Plains (7a) Biogeographic Province, Dudhwa National Park and Tiger Reserve serve as the sole representatives, emphasizing their critical importance in conserving this unique ecosystem (Pandey et al. 2024). The primary focus of the survey was on the Papilionoidea species. During the survey, two species of HesperIIDae were encountered and documented: *Caprona ransonnettii* and *Burara oedipodea*.

Methods

Following this initial survey, the researchers returned to the area for an additional week to conduct further observations. All observations were entirely visual. During this period, both previously identified species were consistently observed and photographed. Species identification was aided by consulting relevant literature sources, including works by Kehimkar (2016) and Evans (1932). It's noteworthy that no specimens were collected or harmed during the survey process. 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).

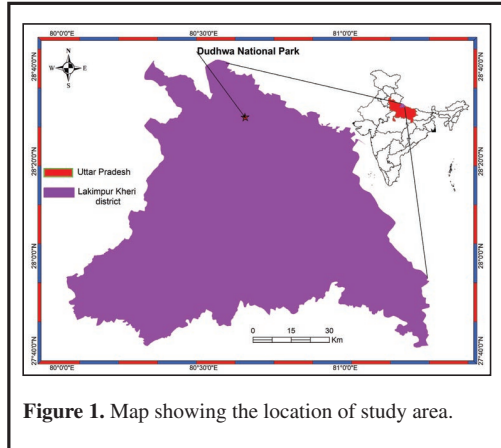


Figure 1. Map showing the location of study area.

Results

During the field surveys, four individuals of *Caprona ransonnettii* and six individuals of *Burara oedipodea* were observed and photographed within Uttar Pradesh, including Dudhwa National Park. External morphological characters confirmed the identity of these specimens, thereby establishing their presence in the region. These findings represent the first documented records of both species in Uttar Pradesh.

Systematic position

Class Insecta Linnaeus, 1758
 Order Lepidoptera Linnaeus, 1758
 Family HesperIIDae Latreille, 1809
 Subfamily Coeliadinae Evans, [1937]

Burara oedipodea (Swainson, 1820) (Figure 2)

Identification features: Paler bands in central area on Under forewing. Under hindwing low tip area suffused with orange. Small black spot at underside hindwing and underside forewing bases.

Material examined: INDIA, Uttar Pradesh: Dudhwa National Park, 28030.5'N 80°40.8'E, 185 m, 24-VIII-2023, observed more than eight individuals by Brij Lal.

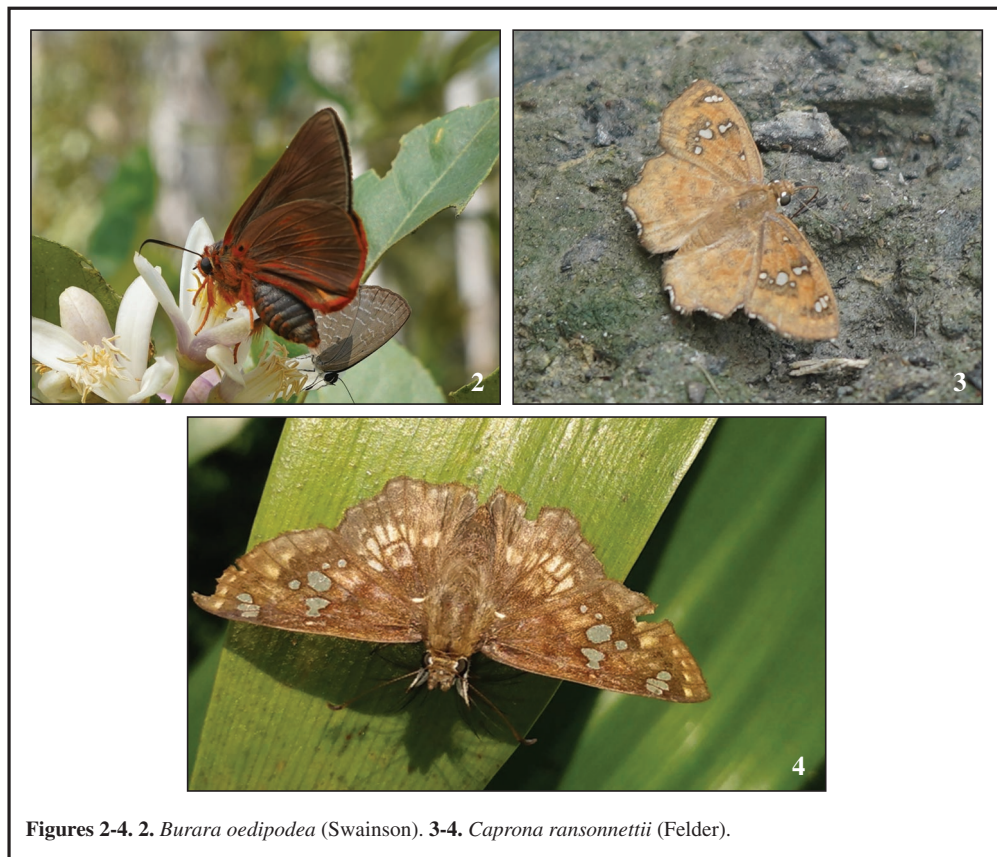
Subfamily Pyrginae Burmeister, 1878

Caprona ransonnettii (Felder, 1868) (Figure 3-4)

Identification features: The species has three semi-transparent white spots on the forewing before the apex, two spots within the end of the cell, and additional spots along the veins. The hindwing

features a broad pale ochreous band with brown veins and a spot within the cell, while the outer discal area is suffused with grey-brown. Cilia alternate with white.

Material examined: INDIA, Uttar Pradesh: Dudhwa National Park, 28°30.5'N 80°40.8'E, 185 m, 24-VIII-2023, observed more than eight individuals by Brij Lal.



Figures 2-4. 2. *Burara oedipodea* (Swainson). 3-4. *Caprona ransonnettii* (Felder).

Discussion

The documentation of *Caprona ransonnettii* and *Burara oedipodia* within Uttar Pradesh, specifically within the Dudhwa National Park, expands our knowledge of the distribution of these species in this region of India. The Indian Rhopalocera updated checklist by Gasse (2018) does not include records of their occurrence in this area. To ensure the reliability and credibility of our findings, we crosschecked all previous literature available on the region regarding these two species, excluding records published in predatory journals.

Current study aligns with previous research conducted within the same state, as evidenced by articles authored by Behera (2016), De Rye Phillipe (1902), Sarkar & Mandal (2018), Sharma (2007), Kumari & Sheikh (2021), Sheikh et al. (2023), De et al. (2023), and Khan et al. (2024a). Additionally, our study correlates with research conducted in other states, following a similar format to those articles. Examples of similar work from this region and other states include Sheikh & Parey (2019), Gupta &

Sheikh (2021), Khan & Sheikh (2022), De et al. (2024), Pandey et al. (2023), Khan et al. (2024b) and Sheikh et al. (2024). The presence of these two Hesperidae species within a protected area underscores the importance of such areas for conserving biodiversity and emphasizes the need for continued monitoring and documentation efforts. This discovery highlights the importance of ongoing research to enhance our understanding of Rhopalocera distribution and contribute to their conservation in India.

Dudhwa, spread over approximately 811 sq km of marshes, grasslands, and dense forests. Dudhwa National Park plays a crucial role in providing habitat for a wide range of species of conservation concern, is an ideal and protected home for over 38 species of mammals, 16 species of reptiles, and numerous species of birds. Mammals include *Panthera tigris* Linnaeus, 1758, *Rhinoceros unicornis* (Linnaeus, 1758), *Rucervus duvaucelii* (G. Cuvier, 1823), *Elephas maximus* Linnaeus, 1758, *Rusa unicolor* Kerr, 1792, *Axis porcinus* Zimmermann, 1780, *Axis axis* Erxleben, 1777, *Muntiacus muntjak* Zimmermann, 1780, *Sus scrofa* Linnaeus, 1758, *Macaca mulatta* Zimmermann, 1780, *Semnopithecus entellus* (Dufrenoy, 1797), *Melursus ursinus* (Shaw, 1791), *Boselaphus tragocamelus* Pallas, 1766, *Hystrix indica* Kerr, 1792, *Lutra lutra* (Linnaeus, 1758). Reptiles include various species of turtles, *Python molurus* (Linnaeus, 1758), *Varanus bengalensis* (Daudin, 1802), *Crocodylus palustris* Lesson, 1831, *Gavialis gangeticus* (Gmelin, 1789). Of the nearly 1300 birds found in the Indian subcontinent, over 450 species can be seen in Dudhwa Reserve. These include *Buceros bicornis* Linnaeus, 1758, *Gallus gallus* (Linnaeus, 1758), *Pavo cristatus* Linnaeus, 1758, *Houbaropsis bengalensis* (Gmelin, 1789), *Haliaeetus leucoryphus* (Pallas, 1771), *Spilornis cheela* Latham, 1790, *Pandion haliaetus* (Linnaeus, 1758), *Terpsiphona paradisi* (Linnaeus, 1758), Picidae family species, *Copsychus malabaricus* (Scopoli, 1788), *Pitta brachyura* (Linnaeus, 1766), *Oriolus oriolus* (Linnaeus, 1758), *Chalcophaps indica* (Linnaeus, 1758), etc. During winter, the vast and varied water bodies attract a large variety and number of migratory birds, making the reserve a favorite haunt of bird watchers (UPEcoTourism, 2024).

Future suggestions based on the findings of the paper:

1. **Long-term Monitoring Programs:** Establish long-term monitoring programs to track the population dynamics of *Caprona ransonnettii* and *Burara oedipodea* in Uttar Pradesh. Continuously monitoring their populations will help in assessing their conservation status and identifying any potential declines or threats.
2. **Habitat Conservation and Restoration:** Implement habitat conservation and restoration initiatives targeted at preserving the habitats of *Caprona ransonnettii* and *Burara oedipodea*. This may involve restoring degraded habitats, protecting key breeding sites, and creating corridors to connect fragmented habitats.
3. **Community Engagement:** Engage local communities in Papilionoidea conservation efforts through education and awareness programs. Encourage community participation in habitat restoration activities and promote sustainable land-use practices that benefit of Papilionoidea habitats.
4. **Research on Threats:** Conduct further research to identify and understand the specific threats facing *Caprona ransonnettii* and *Burara oedipodea* in Uttar Pradesh. Investigate factors such as habitat loss, climate change, pesticide use, and invasive species, and develop mitigation strategies accordingly.
5. **Policy Integration:** Advocate for the inclusion of Papilionoidea conservation priorities in regional and national biodiversity conservation policies. Work with policymakers to develop and implement measures that safeguard Papilionoidea habitats and address conservation challenges.
6. **Collaborative Conservation Efforts:** Foster collaboration among researchers, conservation organizations, government agencies, and local stakeholders to coordinate conservation efforts

effectively. Establish partnerships to share resources, expertise, and data for more comprehensive conservation initiatives.

7. **Capacity Building:** Invest in capacity building initiatives to strengthen the skills and knowledge of local communities, researchers, and conservation practitioners involved in Papilionoidea conservation. Provide training opportunities on monitoring techniques, habitat management, and community engagement strategies.
8. **Awareness Campaigns:** Launch awareness campaigns to educate the public about the importance of Papilionoidea conservation and the role of *Caprona ransonnettii* and *Burara oedipodea* in ecosystem health. Use various communication channels, including social media, workshops, and outreach events, to reach a wide audience.

By focusing on these future suggestions, stakeholders can enhance conservation efforts and contribute to the long-term survival of *Caprona ransonnettii* and *Burara oedipodea* in Uttar Pradesh, India.

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References

- Anonymous (2024). *Burara oedipodea* (Swainson, 1820) - Branded Orange Awlet. In K. Kunte, S. Sondhi & P. Roy (Chief Editors). *Butterflies of India* (Vol. 4(12)). Indian Foundation for Butterflies. <https://www.ifoundbutterflies.org/burara-oedipodea>.
- Behera, S. K. (2016). Observations on Butterflies (Lepidoptera) of Dudhwa Tiger Reserve, Uttar Pradesh, India. *Indian Forester*, 142(3), 245-252.
- Britannica, T. Editors of Encyclopaedia (2024). skipper. *Encyclopedia Britannica*. <https://www.britannica.com/animal/skipper-insect-Lepidoptera-order>
- De, R. Pandey, R. Khan, A. A., & Sheikh, T. (2023). Butterfly Diversity in Shaheed Chandra Shekhar Azad Bird Sanctuary, Nawabganj, Unnao, Uttar Pradesh. *Munis Entomology & Zoology*, 18(2), 1767-1779.
- De, R. Pandey, R., & Sheikh, T. (2024). First Photographic Evidence of *Abisara bifasciata suffusa* Moore, 1882 - Two Band Plum Judy From Uttar Pradesh, India. *Munis Entomology & Zoology*, 19(1), 255-260.
- De Rye, Ph. (1902). Butterflies of Lucknow. *Journal of the Bombay Natural History Society*, 14(1902-03), 481-493.
- Evans, W. H. (1932). *The Identification of Indian Butterflies* (2nd Edition). Bombay Natural History Society.
- Evans, W. H. (1949). *A catalogue of the Hesperiiidae from Europe, Asia, and Australia in the British Museum Natural History*. British Museum (Natural History). <https://doi.org/10.5962/bhl.title.105941>
- Gasse, P. V. (2018). *Butterflies of The Indian Subcontinent - Annotated Checklist*. http://www.biodiversityindia.org/images/2/2c/Butterflies_of_India.Pdf.
- Gupta, S., & Sheikh, T. (2021). First Record of Spotted Small Flat *Sarangesa Purendra* (Moore, 1882) (Lepidoptera: Hesperiiidae) from Union Territory of Jammu and Kashmir, India. *Revista Chilena de Entomología*, 47(3), 545-548. <http://doi.org/10.35249/rche.47.3.21.11>
- Kehimkar, I. (2016). *BNHS Field Guides: Butterflies of India*. Bombay Natural History Society.
- Khan, N. A., & Sheikh, T. (2022). *Callerebia hybrida* Butler, 1880 (Lepidoptera, Nymphalidae) A New Addition to The Butterflies of Union Territory of Jammu and Kashmir, India. *Indian Entomologist*, 3(2), 39-41.
- Khan, A. A., Pandey, R., De, R., & Sheikh, T. (2024a). New records and an updated checklist of the family Hesperiiidae (Lepidoptera) from Uttar Pradesh, India. *Natura Somogyiensis*, 42, 13-24.
- Khan, A. A., De, R., Pandey, R., & Sheikh, T. (2024b). First photographic evidence of *Flos asoka* (de Nicéville,

- [1884]) (Lycaenidae: Theclinae: Arhopalini) in Uttar Pradesh, India: Recent confirmation and ecological insights. *Biological Diversity and Conservation*, 17(2), 99-104.
- 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. <https://doi.org/10.35249/rche.47.2.21.24>.
- Kunte, K., Sondhi, S., & Roy, P. (2024). *Butterflies of India* (Vol. 4(21)). Indian Foundation for Butterflies. <https://www.ifoundbutterflies.org>.
- Nitin, R., Balakrishnan, V. C., Churi, P. V., Kalesh, S., Prakash, S., & Kunte, K. (2018). Larval host plants of the butterflies of the Western Ghats, India. *Journal of Threatened Taxa*, 10(4), 11495-11550. <https://doi.org/10.11609/jott.3104.10.4.11495-11550>
- Pandey, R. Sheikh, T., & De, R. (2023). Two New Additions to The Lycaenidae of Uttar Pradesh, India (Insecta: Lepidoptera). *SHILAP Revista de lepidopterología*, 51(204), 755-760. <https://doi.org/10.57065/shilap.796>
- Saji, K., & Churi, P. (2024). *Caprona ransonnettii* (R. Felder, 1868) - Golden Angle. In K. Kunte, S. Sondhi & P. Roy (Chief Editors). *Butterflies of India* (Vol. 4 (12)). Indian Foundation for Butterflies. <https://www.ifoundbutterflies.org/caprona-ransonnettii>.
- Sarkar, D., & Mandal, R. (2018). A Rapid Assessment of Butterfly Diversity Around Narora Atomic Power Plant Township, Uttar Pradesh, India. *Nebio*, 9(2), 219-222.
- Sharma, N. (2007). Butterflies of Sur Sarovar Bird Sanctuary, Keetham, Agra (Uttar Pradesh, India). *Records of Zoological Survey India*, 107(2), 103-112. <https://doi.org/10.26515/rzsi/V107/I2/2007/159157>
- Sheikh, T. De, R., & Pandey, R. (2023). *Acraea issoria* (Hübner, [1819]) - Yellow Coster: A New Addition to the Butterfly Fauna of Uttar Pradesh, India. *Munis Entomology & Zoology*, 18(2), 1754-1756.
- Sheikh, T., & Parey, S. H. (2019). 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., 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.
- Sheikh, T. De, R., & Pandey, R. (2024). A new addition to the Nymphalidae of Uttar Pradesh, India (Insecta: Lepidoptera). *SHILAP Revista de lepidopterología*, 52(205), 23-28. <https://doi.org/10.57065/shilap.843>
- UP Ecotourism. (2024). *Dudhwa National Park*. <https://upecotourism.in/DudhwaNationalPark.aspx>

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