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Two new additions to the Lycaenidae of Uttar Pradesh, India (Insecta: Lepidoptera)

Ratindra Pandey, Taslima Sheikh & Rupak De

Abstract

The present study added two new records of Lycaenidae for the State of Uttar Pradesh, India. Both species, *Rapala pheretima petosiris* (Hewitson, [1863]) and *Flos adriana* (de Nicéville, [1884]) are new for the Uttar Pradesh.
Keywords: Insecta, Lepidoptera, Lycaenidae, *Flos, Rapala,* Dudhwa National Park, Uttar Pradesh, India.

Dos nuevas incorporaciones a los Lycaenidae de Uttar Pradesh, India (Insecta: Lepidoptera)

Resumen

El presente estudio añade dos nuevos registros de Lycaenidae para el Estado de Uttar Pradesh, India. Ambas especies, *Rapala pheretima petosiris* (Hewitson, [1863]) y *Flos adriana* (de Nicéville, [1884]), son nuevas para Uttar Pradesh.
Palabras clave: Insecta, Lepidoptera, Lycaenidae, *Flos*, *Rapala*, Dudhwa Parque Nacional, Uttar Pradesh, India.

Introduction

Rapala pheretima (Hewitson, [1863]) has only one subspecies found in India i.e., *Rapala pheretima petosiris* (Hewitson, [1863]). According to Gasse (2018), This subspecies is only seen in the Satpura Range in Southeast of Madhya Pradesh and Northern part of Chhattisgarh on rare occasions. it is found in the N Eastern Ghats in Orissa and S West Bengal. It is fairly widespread in the Himalayas up to 1500 m elevation, extending from the western limit of eastern Uttarakhand i.e., in Kumaon and all the way to Arunachal Pradesh in the east and entire Northeastern part of India excluding Mizoram; it is also reported from central, Northeastern, and Southeast part of Bangladesh. This subspecies is mentioned as *R. pheritimus,* in Evans (1932), and as *R. pheritima* in Cantlie (1962).

According to Varshney & Smetacek (2015), this subspecies is distributed from Uttarakhand to N. E. India. This species is historically known to occur from Odisha and Nepal eastward into the eastern Himalaya, NE India, Myanmar, Indochina, and Malay Peninsula (Cantlie 1962; Evans 1932; Wynter-Blyth, 1957).

According to Gasse (2018), *Flos adriana* (de Nicéville, [1884]) is scarce in the Himalayas, reaching up to 1100 m in elevation from Eastern part of Uttarakhand towards Nepal, also seen in Sikkim, can be seen in Northern West Bengal, and also found in Bhutan up to Arunachal Pradesh State and Northeast India to south of the Brahmaputra i.e., is in eastern Assam as well as in Manipur. Evans (1932) names this species as *Amblypodia adriana,* o subspecies is listed under this species.

According to Varshney & Smetacek (2015), *Flos adriana* (de Nicéville, [1884]) is seen from Uttarakhand to Northeast region of India.

Materials and methods

On 15-VII-2023 authors surveyed the openly accessible portions of the Dudhwa National Park (28º29'24.7"N 80º38'44.5"E) in district Lakhimpur-Kheri, Uttar Pradesh which is at an altitude of around 150 m. During the Rhopalocera survey, two Rhopalocera species were seen and photographed i.e., *Flos adriana* (de Nicéville, [1884]) and *Rapala pheretima petosiris* (Hewitson, [1863]). Later on, again the area was explored on 16-VII-2023 and the two species were again spotted and photographed. The identification was done with the help of available literature like (Kehimkar, 2016; Evans, 1932). Were photographed with the help of DSLR Nikon D750 / Nikon D3100. No collection or killing was done. Distribution map has been prepared with ArcGIS 10.5 software by using original base map of India (Figure 5).

Study area

Dudhwa National Park (latitude 28º29'24.7"N and longitude 80º38'44.5"E) lies in district Lakhimpur-Kheri, Uttar Pradesh. It has an area of 490.29 square kilometers. The Dudhwa National Park is remnant of the formerly huge Terai forests of Uttar Pradesh's plains, and it runs parallel to the Himalayan foothills. It is distinguished by a complex of Sal forests, tall grasses, and marshes that are subject to annual flooding. It is one of India's most endangered ecosystems.

The National Park is a component of India's main Terai Protected Area Complex, the Dudhwa Tiger Reserve. The Terai-Bhabhar Biogeographic Subdivision of the Upper Gangetic Plains (7a) Biogeographic Province is represented only by the Dudhwa National Park and Tiger Reserve. According to Champion & Seth (1968), the region's vegetation is of the North Indian Moist Deciduous type. Some of the best Sal forests in the nation can be found there. There are many different types of plants and plant communities, according to current documentation. Many of these have conservation-related importance.

It is the only location in the nation where the nominate subspecies of the *Rucervus duvaucelii duvaucelii*, has a population that is capable of sustaining itself. The Reserve is home to five different deer species. There is a sizable *Pantera tigris* Linnaeus, 1758 population. There are some severely endangered species, like the *Caprolagus hispidus* (Pearson, 1839) and *Hubaropsis bengalensis* (Gmelin, 1789). The *Rhinoceros unicornis* (Linnaeus, 1758) population has been successfully introduced back into the wild in Dudhwa. The Wildlife (Protection) Act of 1972's Schedule-1 lists eleven reptile and amphibian species, nine bird species, and thirteen mammal species that are all thought to be endangered (Anonymous, 2006).

Results

Systematic position
Class Insecta Linnaeus, 1758
Order Lepidoptera Linnaeus, 1758
Family Lyacenidae Leach, 1815

Rapala pheretima petosiris (Hewitson, [1863]). (Figures 1-3)

Description male: Upper side brown with a rufous center, rear wings are tailed. The underwing side is a rufous-brown color. The anterior wing features two large spots before to the middle, while the posterior wing has two or three spots. Both wings are spanned beyond the center by a brown band that is slightly undulated on the anterior wing and bordered with white on both sides and is broken into spots on the posterior wing. A silver spot above the lobe, a large silvery blue spot between them, and the caudal mark on the posterior wing.

Female: The only difference between the female and the male on the underside is that the female's markings on the posterior wing are smaller and have a slightly different shape. The female is rufous brown above and blue-glossed.

Flos adriana (de Nicéville, [1884]) (Figure 4)

Description male: Upper side is a deep, glossy purple-blue with a 2 mm black border that widens to around 3 mm near the apex.

Female: It is with lighter purple on the topside and a wider border. Short tail on the hindwing.

Discussion: Two Lycaenidae species, *Flos adriana* (de Nicéville, [1884]) and *Rapala pheretima petosiris* (Hewitson, [1863]) are being reported along with photographs for the first time from the state of Uttar Pradesh. There is no previous record or sighting of these species from Uttar Pradesh State. The available literature, articles, papers, books were consulted to cross check the distribution of these species from this region of India and after checking the literature and current checklist on Butterflies of India by Paul Van Gasse (2018), an updated version, these two species are claimed as the first sightings and thus new addition to the Rhopalocera fauna of Uttar Pradesh. The current study coincides with the previous articles written on the same State, the previous articles (Behera, 2016; Bura et al. 2016; de Rye Phillipe, 1902; Director, 2015; (Kanaujia et al. 2015; Kumar, 2012, 2014, 2017, 2020; Kumar & Rana, 2018; (Kumar et al. 2016, 2020; Sarkar & Mandal, 2018; Sharma, 2007; Champion & Seth, 1968; Kumari & Sheikh, 2021; Sheikh et al. 2023; De et al. 2023). The current study is also correlated with the other studies which were done in other states and based on the format of those articles, the current article is prepared. The articles with similar work based on new records from other states (Sheikh & Parey, 2019a, 2019b; Sheikh & Malik, 2020; Parey & Sheikh, 2021; Riyaz et al. 2021; Sheikh, 2022; Sheikh & Parey, 2022; Gupta & Sheikh, 2021; Khan & Sheikh, 2022; Sheikh & Mishra, 2022; Dar et al. 2022a, 2022b; Sheikh & Hassan, 2023. Of the two, none is listed in the Wildlife (Protection) Act, 1972 (Anonymous, 2006) and the Wildlife (Protection) Amendment Act, 2022 (Anonymous, 2022).

Conclusion

From the point of view of a survey of Rhopalocera, the state of Uttar Pradesh is largely uncharted territory; more research could lead to a large number of new records and rediscoveries in the future. Since this is the first time the species have been reported from the State, they add to the State's known biodiversity.

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Rupak De
1/303, Vardaan Khand
Gomti Nagar Extension
Uttar Pradesh
INDIA / *INDIA*
E-mail: rupakde@rediffmail.com
https://orcid.org/0000-0001-5125-7816

Ratindra Pandey
Uttar Pradesh Tourism Development Corporation Ltd.
216, Ravindra Palli, Ayodhya Road
Lucknow, Uttar Pradesh
INDIA / *INDIA*
E-mail: ratindrapandey@gmail.com
https://orcid.org/0000-0002-1288-0936

*Taslima Sheikh
Department of Zoology
Sunrise University Alwar
Rajasthan 185234
INDIA / *INDIA*
E-mail: sheikhtass@gmail.com
https://orcid.org/0000-0002-8112-1562

*Autor para la correspondencia / *Corresponding author*

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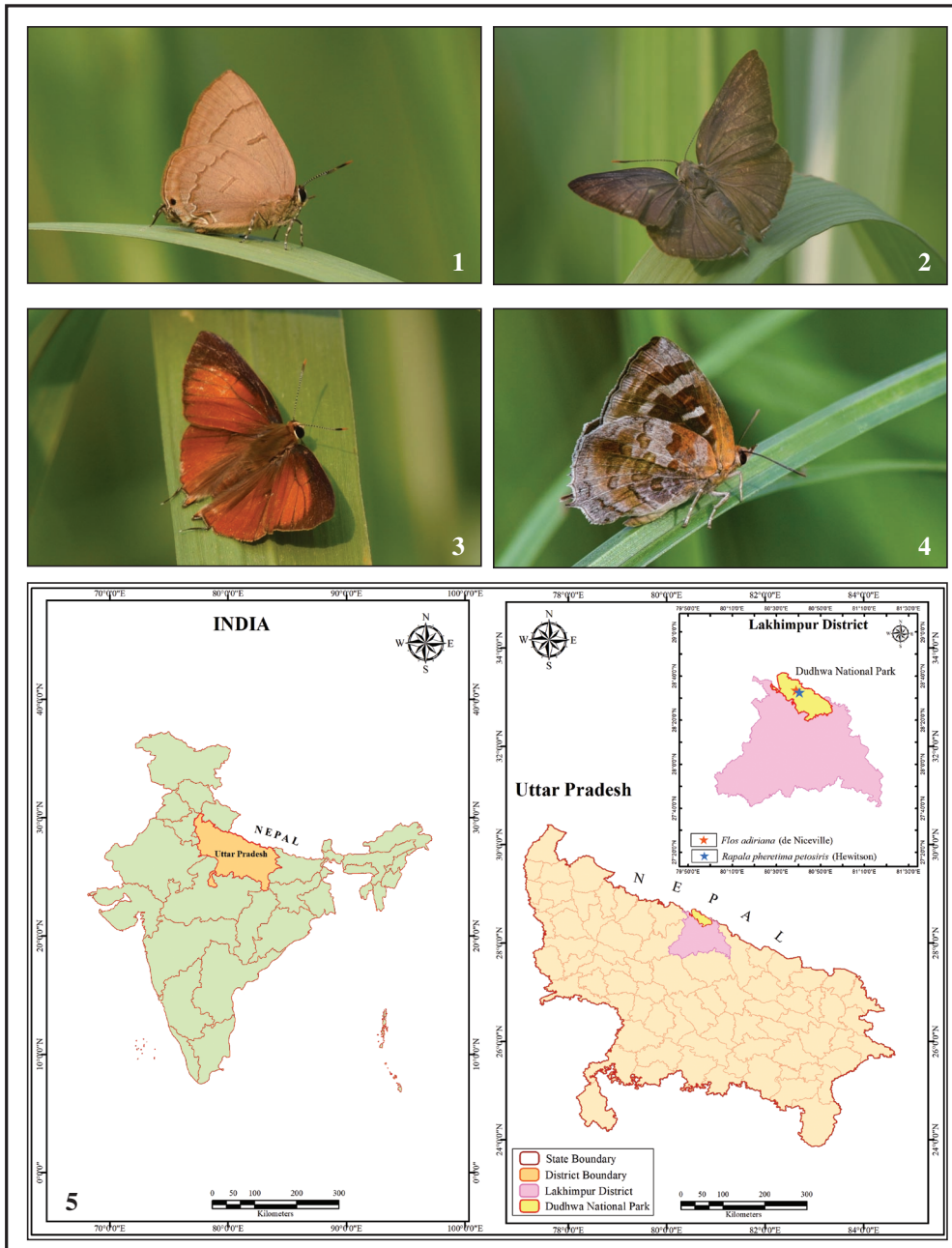

Figures 1-5. 1. *Rapala pheretima petosiris* (Hewitson, [1863]) (Underwing). **2.** *Rapala pheretima petosiris* (Hewitson, [1863]) (Upperwing Female). **3.** *Rapala pheretima petosiris* (Hewitson, [1863]) (Upperwing Male). **4.** *Flos adriana* (de Nicéville, [1884]) (Underwing). **5.** Map shows the location of *Rapala pheretima petosiris* Hewitson and *Flos adriana* de Nicéville.