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Tajuria yajna yajna (Doherty, 1886), a new record in Himachal Pradesh, India (Lepidoptera: Lycaenidae)

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Abstract: During an opportunistic field survey in the Balh Valley of the district Mandi in Himachal Pradesh *Tajuria yajna yajna* (Doherty, 1886) was documented for the first time. The species has never been reported from Himachal Pradesh and hence the present study extends the known distribution range of *T. y. yajna* in the North West Himalayas. The study also reports a new larval host plant and the first detailed description of the life history of *T. y. yajna* from India.

Keywords: Western Himalayas, Rhopalocera, Lycaenidae, Range extension, Himachal Pradesh.

Introduction

Tajuria yajna (Doherty, 1886) is a small-sized Lycaenid butterfly species commonly known as Chestnut and Black Royal. The genus *Tajuria* Moore, (1881) comprises fifteen species in the Indian region, of which five species are reported from Himachal Pradesh. *Tajuria yajna* comprises five subspecies, of which two are reported from India, namely *T. y. yajna* and *T. y. istroidea* (Varshney & Smetacek 2015, Van Gasse 2021). The species *T. y. yajna* is typically found in the Western Himalayas and was earlier reported only from the Mussoorie-Kumaon region of Uttrakhand (Evans 1925), while *T. y. istroidae* distribution extends from Nepal to Bhutan (Sondhi & Kunte 2018). The present study extends the distribution of *T. y. yajna* in the northwest Himalayas up to district Mandi, Himachal Pradesh. *T. yajna* (Doherty, 1886) has been categorized under both Schedule I and II of the Indian Wildlife (Protection) Amendment Act 2022. Moreover, the Northwestern species *T. y. yajna* is listed as Critically Endangered under the Red Data Book of the Indian Butterflies (Gupta & Mondal 2005). The *T. y. yajna* is a very rare species but is mostly seen near its larval host plant *Helixanthera ligustrina* (Wall.) (Fig. 1).

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Material and methods

During a faunistic survey in June 2020 in the forest area near the Mandal village of the Balh Valley, Mandi district of Himachal Pradesh, *T. y. yajna* was documented for the first time (Fig.2). During the survey, only a single specimen was recorded. The identification was done based on the taxonomic keys provided (EVANS 1932, PEILE 1937, SONDHI & KUNTE 2018). Numerous field surveys of the same region conducted in recent years revealed the presence of larval host plants of *T. y. yajna* i.e. *Helixanthera ligustrina*, also known as *Loranthus ligustrinus*. It is a hemiparasitic epiphyte and grows primarily in the wet tropical biome (Fig. 1A.). It has small-sized elliptic leaves and produces red color flowers (Fig. 1B., 1C.). *T. y. yajna* has been observed flying around its host plant and near tree canopies as well as around the forest edges. The elevation of the studied area is around 900-1000 m.

Results

In August 2022, a single specimen was seen ovipositing on its host plant. During the study, it was found that a female lays a single egg at a time. The egg laying is done in May and August while pupal stages can be seen in June and September which indicates that *T. y. yajna* is a bivoltine species. The larvae prefer to feed on fresh leaves. The present study provides the first-ever life history of *T. y. yajna*.

Here we report *T. y. yajna* of the subfamily Theclinae in the family Lycaenidae as a new state record. Diagnostic features of adult, egg, larva, and pupa are discussed and photographic evidence is provided.

Diagnostic features:

Adult: Underwings are chestnut-brown, hindwing with two tails. The discal line on the underside is reddish-brown, outwardly white-edged. Male without a tuft or brand (SONDHI & KUNTE 2018). Male: upper forewing uniform black, upper hindwing blue patch from vein 5 to costa. Female: quite different, upper forewing lower discal area is pale blue while upper hindwing is also pale blue, both the upper wings with dark marginal area. (EVANS 1932, PEILE 1937) (Fig. 3).

Egg: The female lays a single white-colored spherical egg, which seems like a typical Lycaenid egg. The upper surface of the egg has rounded grooves (Fig. 4).

Larva: Third instar about 1 cm in size, yellowish-brown in color with numerous irregular red color markings on the dorsal-lateral sides. A single dorsal-central row of red spots with a hook-shaped marking on the posterior end. The larva's body is covered with numerous white-colored cilia (Fig. 5).

Chrysalis: Sized about 1 cm, yellowish-green in color. In the anterior half of the dorsal side, there is an inverted V-shaped marking, followed by a bulged brown spot in the center, followed by brown-colored irregular markings in the posterior half. The lateral sides are plain green and without any prominent markings (Fig. 6).

Fig. 1: *Helixanthera ligustrina* - Larval host plant of *Tajuria yajna yajna* (Doherty, 1886). A: *Helixanthera ligustrina* parasitising another tree, B: Leaves and Flowers of *H. ligustrina,* C: Closeup of the flower of *H. ligustrina*

Fig. 2: An adult of *Tajuria yajna yajna* (Doherty, 1886

Fig. 3: An Upper wing picture of *Tajuria yajna yajna* (Doherty, 1886) [Female]

Fig. 4: An egg of *Tajuria yajna yajna* (Doherty, 1886)

Fig. 5: Larva of *Tajuria yajna yajna* (Doherty, 1886).

Fig. 6: Chrysalis of *Tajuria yajna yajna* (Doherty, 1886), displaying dorsal and lateral sides

Discussion

A detailed study of old literature on Indian Rhopalocera reveals that *T. y. yajna* has never been reported from Himachal Pradesh. EVANS (1932) mentions the *T. yajna* species from the Mussoorie-Kumaon region. The species was last documented in Uttrakhand in January 2015 (SONDHI & KUNTE 2018). Other publications specifically focused on Himachal Pradesh (MOORE 1882, DE RHE-PHILIPE 1931, WYNTER-BLYTH 1940-1946, MANI 1986, ARORA et al. 2009, GARLANI 2022, BHARDWAJ et al. 2023) do not list this species from the state. Hence, the present record of *T. y. yajna* extends the known distribution range westwards. The larval host plant *Helixanthera ligustrina*, reported during the study is a new hostplant for the species. It is a stem parasitic plant and found in good numbers in Balh Valley of district Mandi. However, the host plant has been observed in district Kangra as well, indicating that *T. y. yajna* is expected to be seen in Kangra, as many *Tajuria* species have already been reported from there. Moreover, recent development activities have caused a decline in the total number of plants of *Helixanthera ligustrina*, raising concern for the survival of Royal butterfly species in the region.

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