

SHORT COMMUNICATION

New sighting records of butterflies in Bornadi Wildlife Sanctuary, Assam, India

Manab Jyoti Kalita, Malabika Kakati Saikia*, Monish Kumar Thapa, Prasanta Kumar Saikia

Animal Ecology and Wildlife Biology Laboratory, Department of Zoology, Gauhati University, Guwahati - 781014, Assam, India.

*Corresponding author e-mail: malabika8370@gmail.com (Malabika Kakati Saikia)

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Abstract

During rigorous field investigations as a part of butterfly research work in Bornadi Wildlife Sanctuary of Assam, from June 2018 to July 2022, three rare species of butterflies viz., Small Grass Jewel-*Freyeria putli* (Kollar, 1844) and Witch-*Araotes lapithis* (Moore, 1858) from the family Lycaenidae and Veined Scrub Hopper-*Aeromachus stigmata* (Moore, 1878) from the family Hesperidae have been sighted in Bornadi and its adjacent areas along with other species of butterflies. The three species were previously not sighted from this area. Recording of these species within a small area of 26.22 km² is very important information as they are inhabitants of specific locations and habitat types, recorded only in certain ecological pockets of India and the Eastern Himalayan landscape.

Keywords: *Lycaenidae*, *Hesperidae*, *Freyeria putli*, *Araotes lapithis*, *Aeromachus stigmata*, Eastern Himalayan

1. Introduction

The family Lycaenidae is recognized as one of the largest butterfly families, encompassing over 6,000 species globally. India itself harbours more than 521 species of Lycaenidae, of which the majority of these butterflies have a blue upper side. Whereas, the family Hesperidae harbours altogether 3500 skippers across the world, out of which India supports 321 species (Evans, 1932). Often confused with moths, the hesperidae butterflies could be differentiated from the other butterflies by the stoutness of their bodies compared to their small, angular wings and the thin hook called apiculus at the end of the club of the antenna (Kehimkar, 2008, 2016). According to the Wildlife Protection Act of India, 1972, the family Lycaenidae has a maximum of 46 Schedule I and 115 Schedule II species, and Hesperidae only three (3) schedule-II species in India (WPA, 1972). Recently, butterfly workers have emphasized on different ecological, distribution-based, and molecular-based works of all the families of butterflies. Thus, large numbers of new sightings of these groups have been made. During research-based field surveys starting from April 2018 through July 2022, three rare species of butterflies have been recorded in three locations of Bornadi Wildlife Sanctuary and its adjacent areas (Figure 1). Bornadi Wildlife Sanctuary (26.22 km²) is situated in the Udalguri and Baksa District of Assam, India, at the base of the Himalayas, bordering Bhutan to the north. The Sanctuary also shares the northern border of the Jomotshongka Wildlife Sanctuary of Bhutan (Birdlife International, 2022).

The recorded species Small Grass Jewel *Freyeria putli* (Kollar 1844) and Witch *Araotes lapithis* (Moore, 1858) are included in the Lycaenidae family. The former has very limited distribution records in northeast India (Anonymous, 2023c), whereas the latter species is a Schedule II species as per the Wildlife Protection (Act) of 1972 and is found only in Northeast India and Bangladesh to Myanmar (Kehimkar, 2016). The species Veined Scrub Hooper *Aeromachus s. stigmata* (Moore, 1878) under the Family Hesperidae is found to be distributed in India (Jammu and Kashmir to Arunachal), Pakistan, Nepal, and Bhutan (Kehimkar, 2016).

2. New sighting record of small grass jewel *Freyeria putli* adjacent to Bornadi WLS

The Small Grass Jewel *Freyeria putli* (Kollar, 1844) belongs to the Blues Family Lycaenidae, sub-family (Polyommatae), occurring in Sri Lanka, South India, North India to N.E. India, and Burma (Evans, 1932; Varshney and Smetacek, 2015). Morphological characters show that its upper side is dark brown and under the hindwing with a marginal row of Jeweled metallic spots. The upper hindwing dark marginal spots in males are faint and not orange-crowned, and below brown and Jeweled spots are not prominently orange-crowned. The basal and costal spots are black, the rest dark brown, but under the forewing, there are no spots in the cell or costa internal to the discal band, no spot in cell or on costa internal to the discal band. Wingspan ranges from 15-22 cm. Two species were recorded of the genus *Freyeria* in the Indian subcontinent viz., *Freyeria trochilus* (Freyer, 1845) and *Freyeria putli* (Kollar 1844) (Evans, 1932; Kehimkar, 2016). Kakati and Saikia (2006) have also recorded the Small Grass Jewel species *Freyeria putli* in Manas National Park without any live photographs. Again, no such records were found in any literature from the entire Northeast India. However, the record of this Small Grass Jewel was found in other Indian states, viz. Andhra Pradesh, Rajasthan, Tamil Nadu, Karnataka, West Bengal, Maharashtra, Kerala, New Delhi, Uttar Pradesh, Jharkhand, Gujrat, Madhya Pradesh, and Mysore, etc. (Anonymous, 2023a).

Small Grass Jewel-*Freyeria putli* (Kollar, 1844) has been recorded outside the boundary of Bornadi Wildlife Sanctuary on the Bogamati Picnic spot at the elevation of 171m MSL on 28 January 2020 at 11:30 hours (Coordinates: 26° 48' 22.79" N Latitude to 91°42'19.40"E Longitude), where the species was basking on the rock surface of the Bornadi river bed (See Plate-1). During observation, the first author observed the species only once and a photograph has been taken. The location is situated nearly five kilometers inside the Indian territory of the Indo-Bhutan international Border (see Figure 1). The species was not observed during later surveys; however, it may be overlooked because it was a very small butterfly and associated with riverside habitat.



Figure 1. Study area map of Bornadi Wildlife Sanctuary and its adjacent areas along with three newly sighted butterflies in the study area.



Figure 2. Small Grass Jewel *Freyeria putli* (Kollar, 1844) in the river bed rock surface adjacent to Bornadi Wildlife Sanctuary.

3. New Sighting record of Witch-*Araotes lapithis* in Bornadi WLS.

The *Araotes lapithis* (Moore, 1858), commonly known as Witch, is an elusive butterfly of the blues under the Family Lycaenidae (Sub-Family: *Theclinae*) occurring in the Indo-Malayan realm. The species is legally protected under Schedule II of the Indian Wildlife Protection (Act), of 1972 (Kirti and Sindhu, 2015). Though the species *Araotes lapithis* has been reported across North-East India, mostly at low elevations only, it was also recorded in high-altitude areas of Bhutan (Wangchuk et al., 2021). Again, according to Evans (1932) and Larsen (2004), the occurrence of this elusive butterfly was rare in sighting. The species was also recorded in Sikkim, Alipurduar district of West Bengal, Dimapur district of Nagaland, and Tripura (Das et al., 2012). The species has been reported from a few other localities of Assam plains, viz., Kaziranga National Park (Gogoi, 2015), Barail Wildlife Sanctuary (Gogoi et al., 2016), Nambor-Doigrung Wildlife Sanctuary (Mudai et al., 2015), Dihira Reserve Forest of Baksa District (Chaudhury, 2018), also reported from Dosdewa Khasi Village of Karimganj District (Gassah, 2018; Ismavel, 2017), Bhutankhuti of Assam (Basumatary, 2018). Most of the recent distribution localities of Assam and its adjacent areas have been referred to by the Indian Biodiversity Portal and the Indian Foundation of Butterfly Portal (Anonymous, 2023a). No other records were found to date in the state of Assam. However, the species was also recorded at higher altitudes in Bhutan (Wangchuk et al., 2021).

The species of *Araotes lapithis* (Moore, 1858) was observed on December 30th, 2019, by the first author inside the Bornadi Wildlife Sanctuary within the coordinates of 26°46' 51.51" N Latitude and 91°45' 15.58" E Longitudes at the height of 180m MSL. The day was sunny during observation time, and altogether, three (3) individuals were sighted and photographed at around 10:21 hours of the day inside the woodland forest of Bornadi Wildlife Sanctuary. The individuals were observed to settle on different ferns from the same locations of the woodland habitat (see Figure 3).

4. New sighting record of Veined Scrub Hopper *Aeromachus s. stigmata*

The Skipper butterfly *Aeromachus stigmata* (Moore, 1858) is commonly known as the Veined Scrub Hopper under the family Hesperidae and subfamily Hesperinae. Two subspecies of the

genus *Aeromachus* are found in India such as *Aeromachus stigmata obsoletus* (Moore, 1878) and *Aeromachus s. stigmata* (Moore, 1878). All two subspecies were distributed in Northeast India and Jammu and Kashmir to Arunachal Pradesh (Varshney and Smetacek, 2015). Reports of *Aeromachus s. stigmata* and *Aeromachus stigmata obsoletus* were also reported from various localities in Northeast India and other parts of viz., *Aeromachus stigmata obsoletus* was reported from Nagaland and Manipur state of Northeast India, whereas, the other Sub-species *Aeromachus s. stigmata* was reported from various locations in Arunachal Pradesh, Sikkim, Uttarakhand, and West Bengal (Anonymous, 2023b).



Figure 3. Witch- *Araotes lapithis* (Moore, 1858)

In Assam, the species *Aeromachus s. stigmata* (Moore, 1878) was reported from Jeypore RF, Dehing Patkai National Park and Kaziranga National Park (Gogoi, 2013a, Gogoi, 2013b), and Barail Wildlife Sanctuary (Gogoi et al., 2016). However, the species was reported from the Mothonguri area of Manas National Park in 2010 (Anonymous, 2023b). No other distribution records of this species were found in the entire northeast of India.

The Veined Scrub Hopper-*Aeromachus s. stigmata* (Moore, 1858) was newly recorded on 22nd February 2021 at 13:20 hours inside the woodland forest of Bornadi Wildlife Sanctuary (Coordinates: 26°46' 57.33" N latitude, - 91°45' 12.50" E longitudes). The observed species was seen sun basking and settling down on grasses. Then the photograph of this species was taken at the same location of the study area. The sighting location was more than ten kilometers away from the Bhutan Border and the altitude was 182m MSL. This was the first record of the species from the Bornadi Wildlife Sanctuary, Assam. It was a very rare sighting of this skipper species within the study area as no other sighting of this species was made throughout the study period since 2018 to date (see Figure 4).



Figure 4. Veined Scrub Hopper *Aeromachus stigmata* in the understory of woodland habitat

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Authors' contributions

PKS and MB conceptualized the work, wrote and edited the manuscript while MJB and MKT wrote the first draft of the manuscript. All the authors read the final edited manuscript and approved the same. PKS and MB supervised the research work.

Conflict of interests

The authors have no conflict of interests.

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