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CONTENTS

NEW RECORDS OF TWO SKIPPER BUTTERFLIES (LEPIDOPTERA: HESPERIIDAE) FROM BANGLADESH

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Reviewer: Peter Smetacek

ABSTRACT

During field surveys of butterflies at Madhobkunda Eco Park, located in the northeastern region of Bangladesh, two species from the Hesperiidae family were recorded for the first time in Bangladesh, namely, *Pithauria marsena* (Branded Straw Ace) and *Celaenorrhinus nigricans* (Small-banded Flat).

Keywords: Small-banded Flat, Branded Straw Ace, Bangladesh, Madhobkunda Eco Park, First record.

INTRODUCTION

Bangladesh, a part of the Indo-Malayan biogeographic realm with tropical and sub-tropical forests that hold enormous biodiversity, is considered one of the richest biodiversity regions (Wikramanayake *et al*., 2002). The study of butterfly diversity and distribution in biodiversity-rich regions is necessary for conservation initiatives. Butterfly research in Bangladesh has advanced significantly over the past few decades (Chowdhury *et al*., 2021; Hossain, 2023) and nearly 500-550 butterfly species are predicted to be found in Bangladesh based on habitat variation and floral composition (Larsen, 2004). But, the latest literature on butterfly diversity confirmed the presence of 421 species in Bangladesh (Hossain, 2023) which suggests that much work still needs to be done.

This study reports two butterfly species, *Pithauria marsena* Hewitson, 1866 (Branded Straw Ace) and *Celaenorrhinus nigricans* de Nicéville,1885 (Small-banded Flat) (Hesperiidae).

The discovery of *P. marsena* and *C. nigricans* from Madhobkunda Eco Park provides important evidence of ongoing range dynamics and underscores the ecological significance of this protected site. These findings not only contribute to fill important gaps in regional biodiversity data but also reflect broader biogeographic patterns shaped by environmental change.

MATERIALS AND METHODS

The study was conducted at Madhobkunda Eco Park (Figure 1), located in Baralekha Upazila under Moulvibazar District in northeastern Bangladesh. Madhobkunda Eco Park (MEP) is a part of the greater Juri Forest Range with tropical mixed evergreen forest. MEP is located between 24°30'-24°32' N and 92°37'-91°39' E and occupies 265.68 acres with an average annual rainfall of 390 cm and temperatures ranging between 12° and 32°C (Islam *et al*., 2022). Gangamara River flows along the Patharia Hill, where a waterfall cascades and runs throughout the year. *P. marsena* was recorded in December 2023 and *C.*

nigricans was recorded in February 2025 from the study area.

The geographic coordinates were taken by GPS (Garmin eTrex 10). *P. marsena* was photographed with Nikon D7200, 70-300mm lens and *C. nigricans* was photographed with Nikon D500, 200-500mm lens. The average temperature was 27.8°C and humidity was 59% during the observation period. The temperature and humidity were measured using a digital thermometer (hygrometer HTC-1). The butterflies were identified following keys from Evans (1932) and Kehimkar (2016).

To study potential range expansion, we retrieved geo-referenced records for both species from GBIF and the ifoundbutterflies repository. After filtering, we retained six historical records for *Celaenorrhinus nigricans* and three for *Pithauria marsena*. Because historical sample sizes were low and insufficient for constructing range polygons (e.g., convex or concave hulls) or kernel-density envelopes, we follow recommendations from studies on small sample range estimation and report nearest-neighbor distance as a metric of observed range extension. The nearest-neighbor distance was calculated using the Haversine method available in geosphere package in R statistical software.

RESULTS

Systematic accounts

***Pithauria marsena* (Hewitson, 1866)** (Fig. 2a and Fig. 2b)

Material examined: 1♂: Madhobkunda Eco Park, Moulovibazar, Bangladesh, N 24°38'17.8", E 92°13'27.0", 21 Dec 2023, photographed by Uzzal Das.

During a field survey on butterfly diversity along the hill stream of Madhobkunda Eco Park a single male of *P. marsena* was found. The specimen was resting on a semi-wet stone near the waterfall. It was found during a sunny day in winter at 3:03 PM

Remarks: *P. marsena* has some similarity with *Pithauria stramineipennis* Wood-Mason & de Nicéville,1887 (Light Straw Ace*)* and *Pithauria murdava* Moore, 1865 (Dark Straw Ace) but can be distinguished from them based on photographs. Upperside of the forewings have prominent male black brand above veins 1b in *P. marsena* which rules out *P. stramineipennis* and *P. murdava.* Only *P. stramineipennis* has hitherto been reported from Bangladesh (Hossain, 2023).

General distribution: India (Sikkim-Arunachal, NE India), Myanmar (Kehimkar, 2016) .

Range Extension: For *P. marsena*, the new record is situated 158.40 km from the nearest known site and all historical records are more than 150 km away from the new documented locality. This distance places the new observation well outside the cluster of historical occurrences for this species.

***Celaenorrhinus nigricans* (de Nicéville, 1885)** (Fig. 3a and Fig. 3b)

Material examined: 1♂ Madhobkunda Eco Park, Moulovibazar, Bangladesh, N 24°38'16.9", E 92°13'18.4", 27 Feb 2025. Photographed by Uzzal Das.

During a field survey of butterfly diversity along the hill stream of Madhobkunda Eco Park a single male of *C. nigricans* was found. The specimen was resting on a semi-dry leaf beside the main stream. It was found on a sunny day in spring at 10:37 AM.

Remarks: There are many species from genus *Celaenorrhinus* on the Indian subcontinent but only three species were known from Bangladesh: *Celaenorrhinus leucocera* Kollar, 1844 (Common Spotted

Flat), *Celaenorrhinus munda* Moore, 1884 (Himalayan Spotted Flat) and *Celaenorrhinus asmara* Butler, 1879 (White Banded Flat) (Kehimkar, 2016). Absence of yellow spots on hind wing and lower apical spot on upper forewings is detached, out of line and nearer to the outer edge in *Celaenorrhinus nigricans* rules out *Celaenorrhinus leucocera, Celaenorrhinus munda and Celaenorrhinus putra* (Kehimkar, 2016). Absence of compact white band of 3 spots and no middle spot projects out in *Celaenorrhinus nigricans* rules out *Celaenorrhinus asmara* (Kehimkar, 2016). Thus, the specimen shown in Fig.3 and Fig.4 stands out as *C. nigricans.*

General distribution: India (Sikkim-Arunachal, NE India), Myanmar, Bhutan Kehimkar (2016).**Range Extension:** For *C. nigricans* (Small Banded Flat), the new record lies 86.42 km from the nearest known site. Among the historical records, no locality falls within 80 km of the new site. This distance places the new observation well outside the cluster of historical occurrences for the species.

DISCUSSION

In both species, the newly observed localities lie well outside the spatial clusters formed by historical occurrences, supporting their interpretation as genuine range extensions rather than incidental outliers. Range extensions of tropical insects have increasingly been attributed to warming temperatures, altered phenology, and changes in forest microclimate, all of which can allow species to colonize formerly unsuitable areas. Continued monitoring and surveys are required to determine whether these represent undocumented populations or recent arrivals responding to environmental change. Besides, first occurrence of two species will increase the country's known Lepidopteran diversity. Probably, a large number of butterfly species are yet to be recorded in Bangladesh and need more exploration efforts to build a comprehensive national butterfly checklist.

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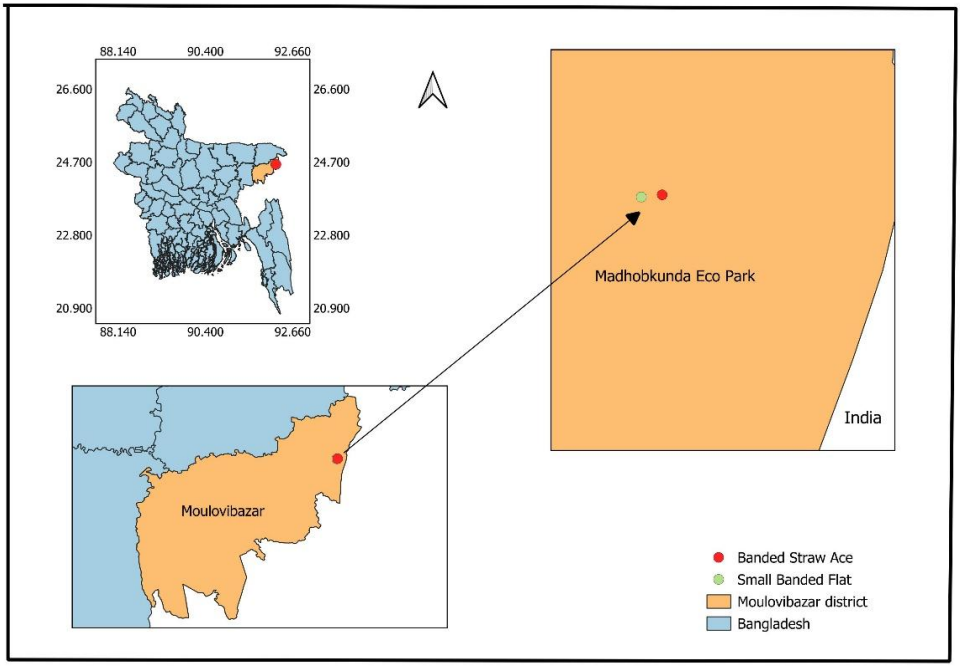

Fig 1 Study Area Map of Madhobkunda Eco Park, Moulovibazar, Bangladesh, ged dot showing detection site of Branded Straw Ace and green dot showing detection site of Small Banded Flat.

Fig 2a: *Pithauria marsena* underside

Fig 2b: *Pithauria marsena* upperside

Fig 3a: *Celaenorrhinus nigricans* Upperside

Fig 3b: *Celaenorrhinus nigricans* Underside

Fig 4: Habitat of *Pithauria marsena*

Fig 5: Habitat of *Celaenorrhinus nigricans*