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NOTE

NOTES ON THE HAIRSTREAK BUTTERFLIES *EUASPA* MOORE, 1884 (LEPIDOPTERA: LYCAENIDAE) WITH NEW DISTRIBUTION RECORDS TO THE INDIAN EASTERN HIMALAYA

Gaurab Nandi Das, Subrata Gayen, Motoki Saito & Kailash Chandra

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The genus *Euspa* Moore, 1884 (Lycaenidae: Theclinae: Theclini) was described from a single male specimen of *Myrina milionia* Hewitson, 1869 (currently *Euspa milionia*) collected by Hewitson from Shimla in Himachal Pradesh, India (Moore 1884). The description was imprecisely elaborated, based on a few superficial morphological characters (de Nicéville 1890). Later, de Nicéville (1890) articulated the generic description in detail based on wing venation and wing maculation, after examining specimens from Kulu (Himachal Pradesh) and Mussoorie (Uttarakhand) of India. Subsequently, Shirôzu & Yamamoto (1956) did phylogeny and generic revision of the tribe Theclini, based on the external male and female genitalia of the type specimens of *E. milionia* Hewitson, 1869. Koiwaya (2002) described six new species of *Euspa* from different countries of southeastern Asia such as Myanmar, Laos, and Vietnam, of which two were described from India, namely: *E. miyashitai* Koiwaya, 2002 from Darjeeling in West Bengal and *E. mikamii* Koiwaya, 2002 from Arunachal Pradesh. Sidhu (2007) described the male and female genitalia of *E. milionia* from Uttarakhand and Himachal Pradesh. Koiwaya (2007) recognized 12 species under this genus and more recently described *E. uedai* from China (Koiwaya 2014).

NOTES ON THE HAIRSTREAK BUTTERFLIES *EUASPA* MOORE, 1884 (LEPIDOPTERA: LYCAENIDAE) WITH NEW DISTRIBUTION RECORDS TO THE INDIAN EASTERN HIMALAYA

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Most recently, Huang (2016) described *E. zhengi* from China, aggregating 14 species worldwide.

In India, four species of *Euspa* are reported till date, namely: *E. milionia milionia* (Hewitson, [1869]), *E. pavo* (de Nicéville, 1887), *E. mikamii* Koiwaya, 2002, and *E. miyashitai* Koiwaya, 2002 (Varshney & Smetacek 2015). The global distribution of all species of *Euspa* (Koiwaya 2007) revealed that *E. milionia* is the most widely distributed species in the region, from the northwestern Himalaya to Taiwan (Fig. 1), although the majority of the species are known from a few locality records alone. This paper contributes to the global distribution range

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of *E. motokii* Koiwaya, 2002 with the first record from India and a new locality record for *E. mikamii* Koiwaya, 2002 from the Dihang-Dibang Biosphere Reserve (DDBR) in Arunachal Pradesh, India.

***Euaspa motokii* Koiwaya, 2002**

E. motokii Koiwaya, 2002, *Gekkan-Mushi*, 377: 2–8

Type locality: Naungmon in Kachin State, Myanmar.

Distribution: Myanmar and northeastern India.

Diagnostic: *Euaspa motokii* can be identified from all other congeners by the following characters: on subterminal area of underside of forewing in space 1b to 2 having a less prominent blackish mark, which is being prominent in similar species *E. forsteri* (Esaki & Shirôzu, 1943); two discal white zig-zag lines on underside of hindwing (Image 2iic); two subbasal white markings on the underside of hindwing, the one oval shape in cell and the other semi-circular in space 7 (Image 2iid).

Current record: On 07 June 2017, a single individual was photographed (Image 2ii) at around 11.00h near Anini (28.784°N & 95.876°E; 1369m) in DDBR, Arunachal

Pradesh. The individual was sighted in a subtropical broadleaved evergreen forest, where it was active on a leaf of an oak sapling (*Castanopsis* sp.) at a height of about 2m from the ground level. *Castanopsis* is known as the foodplant of some *Euaspa* species including *E. motokii* (Koiwaya 2007).

Remarks: *Euaspa motokii* was described by Koiwaya (2002) on the basis of a male specimen collected by one of the authors in this paper (Motoki Saito) in 2000 from the Kachin State of Myanmar at 1200–1600 m. Subsequently, the eggs were collected by his colleague from *Castanopsis* spp. and the early stages were documented. Two specimens from these rearing eggs were illustrated in Koiwaya (2007). Known specimens, however, are still only a few, including the holotype specimen collected in the wild; this species was thought to be endemic in Myanmar. The present record extends the distribution range of the species from Myanmar to the eastern Himalaya of India.

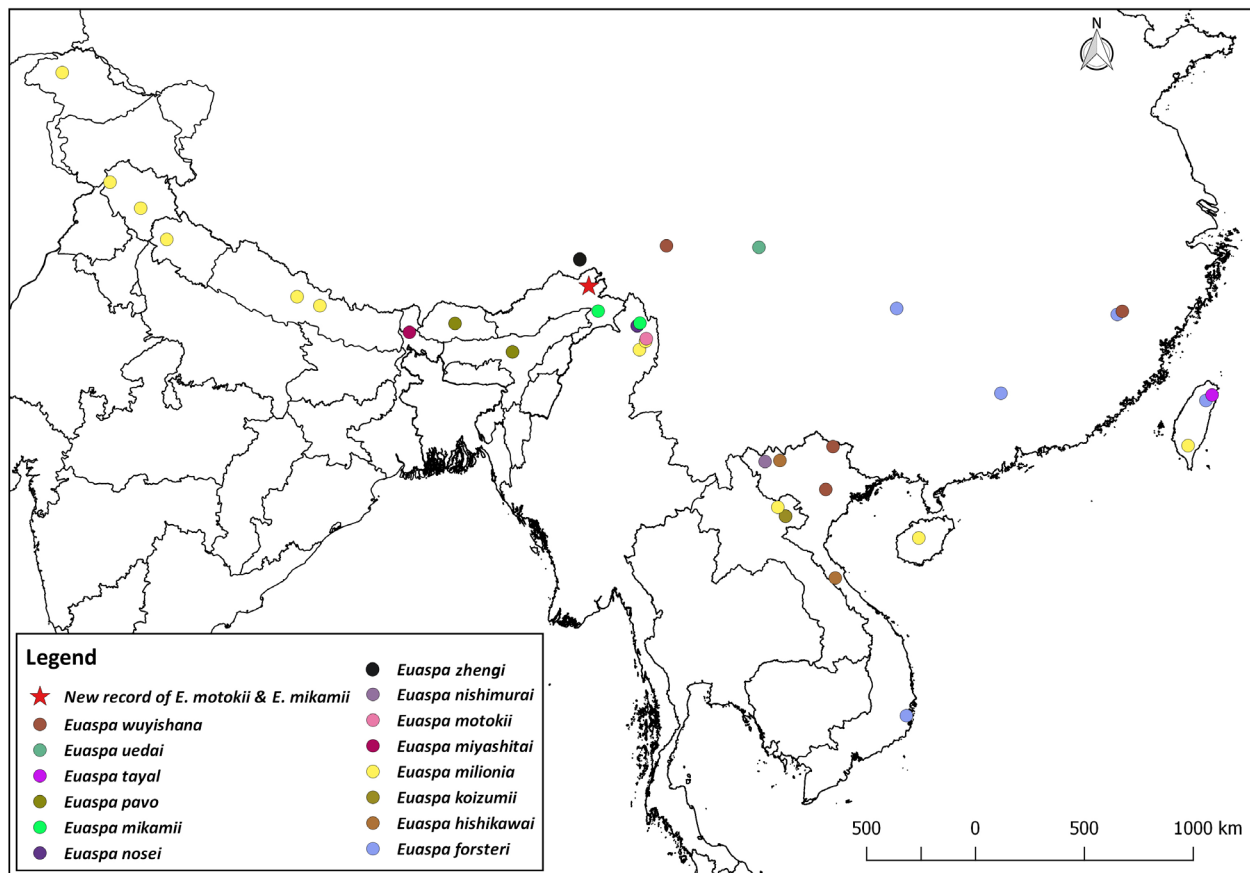


Figure 1. Distribution of 14 species of the genus *Euaspa*, including current records of *E. motokii* and *E. mikamii* from Arunachal Pradesh (★) (data extracted from Huang 2016 and Zhuang et al. 2018).

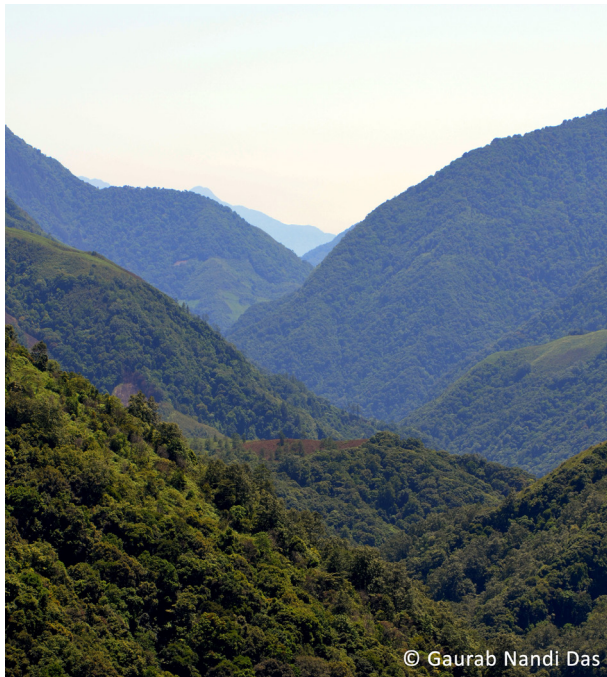


Image 1. Dihang Valley in Arunachal Pradesh, India.

***Euaspa mikamii* Koiwaya, 2002**

E. mikamii Koiwaya, 2002, *Gekkan-Mushi*, 377: 2–8

Type locality: Lohit in Arunachal Pradesh, India.

Distribution: Northeastern India and Myanmar.

Diagnostic: *Euaspa mikamii* can be identified from all other congeners by the following characters: forewing with median orange marking most extensive among other congeners (Image 2ia); hindwing subternus is more produced than other *Euaspa* species; median

and postmedian greyish-white fascia of underside of hindwing is almost straight, thus forming a somewhat V-shaped mark (Image 2ib).

Current record: On 7 June 2017, a single individual was photographed (Image 2i) at around 11.15h near Anini (28.784°N & 95.876°E; 1369m) in DDBR, Arunachal Pradesh, within a patch of subtropical broadleaved evergreen forest.

Remarks: *Euaspa mikamii* was described from 2400m in Lohit District, Arunachal Pradesh, based on a specimen collected on 19 July 1991 (Koiwaya 2002). After its description, it was only reported from Mapanput (27.332°N & 97.883°E) in Kachin State, Myanmar (Zhuang et al. 2018). A detailed literature review on the butterflies of Arunachal Pradesh revealed no record of the species from India since its description in 2002 (Horsfield & Moore 1857; Evans 1912; South 1913; Gupta & Shukla 1988; Radhakrishnan 1988; Varshney & Shukla 1988; Borang et al. 2008; Gogoi 2012; Sondhi & Kunte 2014, 2016; Singh 2015, 2017; Singh & Das 2016). Thus, the current record extends the distribution of the species in the eastern Himalaya and is the second record from India.

Conclusion

The centre of origin of zephyrus hairstreaks is in the temperate zone of eastern Asia (between 25°N and 35°N), whereas the maximum species richness and endemism are reported from the Sino-Himalayan and Sino-Japanese sub-regions (Zhuang et al. 2018). Among zephyrus hairstreaks, the species of *Euaspa* are particularly distributed in the Himalaya and eastern

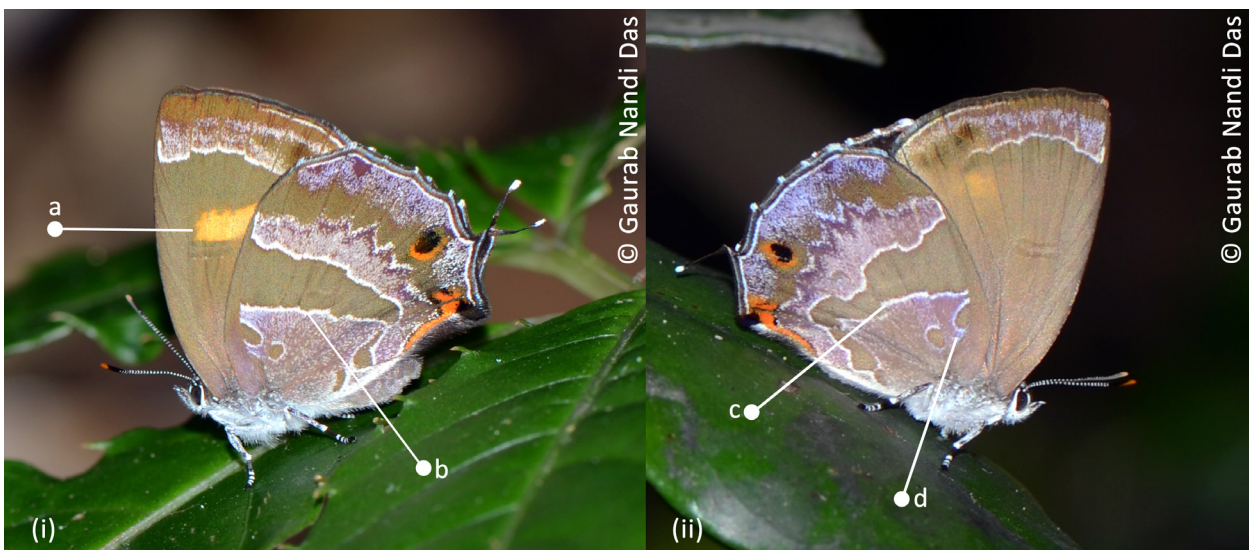


Image 2. *Euaspa* species recorded from Dihang-Dibang Biosphere Reserve in Arunachal Pradesh, India: i - *E. mikamii* | ii - *E. motokii*.

Asia. The knowledge on the geographical distribution and ecology of the Himalayan zephyrus species are in the nascent stage due to incomplete investigations and explorations, except some records and early-stage studies from the Himalaya (Saito 2017). The current record of two *Euspa* species from Arunachal Pradesh reveals the need for systematic sampling in the remotest corners of the Indian Himalayan region.

An extensive survey in all major forest types is essential to unveil the complete distribution of the elusive and under-recorded butterflies in the region. Ongoing sampling in DDBR uncovers the typical habitats where these two species were recorded under development activities. Thus, prioritizing community engagement is mandatory for regular assessment and habitat monitoring, endorsing environmental awareness for long-term viability and conservation of this enigmatic group of butterflies.

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