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NOTE

RANGE EXTENSION OF THE INDIAN TORTOISESHELL AGLAIS CASCHMIRENSIS AESIS (FRUHSTORFER, 1912) (LEPIDOPTERA: NYMPHALIDAE) INTO THE HILLS OF MANIPUR, INDIA

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The butterflies of Manipur in northeastern India are not well known and poorly studied. Earlier studies on butterflies of the area pertain to Tytler (1914, 1915a, 1915b), Evans (1932), Talbot (1947), Wynter-Blyth (1957) and Kehimkar (2008). Recently, the Zoological Survey of India (ZSI) under the state fauna series have documented 106

species from Manipur (Gupta 2004; Mondal & Maulik 2004; Alfred & Ramakrishnan 2005). Later, Singh et al. (2011) reported 136 species from Keibul Lamjao National Park (KLNP), Bishenpur District while Singh & Varatharajan (2015) listed 159 species from Manipur. Despite the very rich diversity, the area remains less studied about butterflies in the last few decades thus there is little knowledge on the butterflies of Manipur.

The authors started the study of the butterfly fauna of Manipur voluntarily in 2013 with permission from the Principal Chief Conservator of Forests (PCCF), Manipur Forest Department, Government of Manipur (India). The study was conducted in different locations (Chandel District, Imphal East & West districts, Senapati District and Ukhrul District) of Manipur during all the seasons, to obtain a complete checklist on the butterfly fauna of Manipur. The butterflies were photographed using a DSLR camera. The butterflies were identified using guidebooks and the species that could not be identified by the authors were confirmed with help from experts in India and other countries.

The genus Aglais Dalman, 1816 is represented by three species in India namely Indian Tortoiseshell Aglais

RANGE EXTENSION OF THE INDIAN TORTOISESHELL AGLAIS CASCHMIRENSIS AESIS (FRUHSTORFER, 1912) (LEPIDOPTERA: NYMPHALIDAE) INTO THE HILLS OF MANIPUR, INDIA

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caschmirensis (Kollar, [1844]) [Jammu & Kashmir to Himachal Pradesh, Uttarakhand to Arunachal Pradesh and Nagaland], Ladakh Tortoiseshell Aglais ladakensis (Moore, 1878) [Jammu & Kashmir to Sikkim] and Mountain Tortoiseshell Aglais rizana (Moore, 1872) [Jammu & Kashmir to Sikkim] (Varshney & Smetacek 2015). In India, the species Aglais caschmirensis (Kollar, [1844]) is represented by two subspecies; Aglais caschmirensis caschmirensis (Kollar, [1844]) which is a western subspecies known from the Kashmir Valley (Jammu & Kashmir) to Kulu (Himachal Pradesh) (Varshney & Smetacek 2015) and Aglais caschmirensis aesis (Fruhstorfer, 1912) distributed through Uttarakhand to Arunachal Pradesh and Nagaland (Greeshma 2010; Naro 2012; Varshney & Smetacek 2015). Amongst the three,

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Aglais caschmirensis (Kollar, [1844]) is the most common Himalayan species found in all kinds of habitat (Haribal 1990) though the species has never been recorded from Manipur so far (Gupta 2004; Mondal & Maulik 2004; Alfred & Ramakrishnan 2005; Singh et al. 2011; Singh & Varatharajan 2015).

During the present survey, Aglais caschmirensis aesis (Fruhstorfer, 1912) was recorded from different parts of the Manipur State (Table 1; Fig. 1). The first record of A. c. aesis (Fruhstorfer, 1912) (Image 1) from Manipur was from Heingang Hills, Imphal east District on 18 December 2013. The butterfly was seen basking in the sun with open wings on the surface of a rock on the side of a footpath. The butterfly was photographed again (Image 2) from Khundrakpam Village, Imphal east District on several occasions (04 March 2013; 19 March 2013; 21 July 2014; 30 March 2015; 19 April 2015), a location that is about 10km north from the first record. The butterfly was seen flying near a garden with cultivated exotic flowers such as Chrysanthemum sp., Tagetes sp. (Compositae) and nectaring on the flowers. A few caterpillars were also seen feeding on Urtica dioica Linn. (Urticacae) which is commonly called 'stinging nettle' or 'bull nettle' (Image 6). The third record was from the Ukhrul District that is situated east of Imphal. The butterfly was photographed (Image 3) from the Shirui Kashong hill range, near the Shirui Guest House on 14 April 2014. The butterfly was seen nectaring on the flowers of Lantana camara (Verbenaceae) and flying near the rest house in the foothills of Shiroi Kashong Hills. On the next day, 15 April 2014, the butterfly was seen basking on the open ground on stones with open wings at the Shirui Kashong Peak. The species was also sighted in the months of October and November at Sihai Village, Khayang Village and its adjoining hills, situated in the eastern part of the Shirui Kashong Hill range, Ukhrul District. The species was also photographed (Image 4) from Phungreithang, near Ukhrul Town on 19 February 2015. The fourth record of the butterfly was from Senapati District, which is situated north of Imphal. The butterfly was photographed from Mao (Image 5) in the Senapati District on 05 June 2014. On the website, Butterflies of India (www.ifoundbutterflies.org/sp/791/ Aglais-caschmirensis) the sighting of the butterfly A. caschmirensis from Phuba Khuman Village in the Senapati District, Manipur, on during 21 November 2014 has been reported (Valappil & Kunte 2017).

It was noted that the butterflies were mainly seen sitting on exotic flowers in gardens, basking in open grounds and on the rocks and seen flying flying very close to the ground. It has been recorded on the wing from March to December. Hence, the butterfly is a resident of Manipur and is well established throughout the valley and hills of Manipur.

In recent literature, the easternmost distribution of *Aglais caschmirensis* is recorded as Sikkim and Bhutan (Haribal 1992; Kehimkar 2008). Older literature too, including Evans (1932), Wynter-Blyth (1957) mentions the easternmost distribution as Sikkim. But Gupta & Shukla (1988) recorded the species from Kameng District,

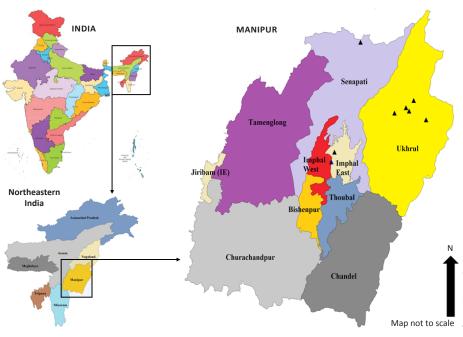


Figure 1. Distribution of Aglais caschmirensis aesis (Fruhstorfer, 1912) in Manipur. The black triangles show the recorded locations. Map prepared using DIVA-GIS 7.1 by

Map not to scale Jatishwor Singh Irungbam.

Table 1. Details of places where Aglais caschmirensis aesis was reported during 2013-2016 in Manipur, northeastern India

	Location	District	Longitude & Latitude	Altitude (m)	Month of record/s
1	Heingang Hills	Imphal East	24.8665806 N & 93.9637083 E	800	December
2	Khundrakpam	Imphal East	24.8914889 N &93.9832361 E	786	March, April, July
3	Shirui Kashong Peak	Ukhrul	25.1062 N & 94.4571 E	2546	April
4	Shirui Guest House	Ukhrul	25.1264444 N & 94.4357222 E	1947	April
5	Sihai Khullen village	Ukhrul	25.168375 N & 94.486894 E	1837	October, November
6	Khayang village	Ukhrul	25.055125 N & 94.569344E	1672	October, November
7	Phungreithang	Ukhrul	25.0945556 N & 94.3605416 E	1883	October, November
8	Mao	Senapati	25.5092889 N & 94.1353972 E	1753	June



Image 1. Aglais caschmirensis aesis (Fruhstorfer, 1912), Heingang Hills, Imphal East District on 18 December 2013.



Image 2. Aglais caschmirensis aesi (Fruhstorfer, 1912), Khundrakpam Village, Imphal East District on 19 April 2015.

Arunachal Pradesh and found the caterpillars feeding on Girardinia heterophylla Dec. and Urtica dioica Linn. (Urticacae). Recently, the butterfly was recorded from the Eaglenest Wildlife Sanctuary ((Athreya 2006; Singh & Das 2016; Sondhi & Kunte 2016); Kameng Protected Area Complex, western Arunachal Pradesh (Sondhi & Kunte 2016) and also from Rupa Valley of Arunachal Pradesh where the larval host plants, i.e., Urtica sp. Linn. (Urticaceae) are well established in the area (Greeshma 2010; Kunte 2016), Pakke Tiger Reserve and Sessa Orchid Wildlife Sanctuary (Sondhi & Kunte 2016) from Kameng Protected Area Complex in very recently, the butterfly was recorded from the neighboring State Nagaland (Chizami), where the butterfly was seen on wing throughout the year and recorded from March to October (Naro 2012).

The work of Tytler (1914, 1915a, 1915b) which covers the Naga Hills and Manipur does not report the presence of this species in the area. Recent studies conducted in Manipur valley by Singh et al. (2011) and Singh & Varatharajan (2015) also have not recorded A. caschmirensis from the valley. Even Kunte et al. (2012) have not recorded the species from the Balpakram National Park, Baghmara Reserve Forest and Siju Wildlife Sanctuary in southern Garo Hills, and Nokrek National Park in Western Garo Hills, Meghalaya. The studies of Borang et al. (2008) at the higher elevations of Dibang-Dihang Biosphere Reserve, central Arunachal Pradesh also have no records of A. c. aesis (Fruhstorfer, 1912). There is no record of the A. c. aesis (Fruhstorfer, 1912) in the neighboring countries of Bangladesh (Larsen 2004; Shihan 2016) and Myanmar (Tytler 1940; Kinyon 2004). Thus, the present records of A. c. aesis (Fruhstorfer, 1912) in Manipur extends its known range significantly eastwards from western Arunachal Pradesh and Nagaland. And Manipur is now its eastern most distribution range.

The butterfly is very common in its recorded areas and well established in the hills and valleys of Manipur. Currently, the butterfly is recorded from Imphal East, Senapati and Ukhrul districts of Manipur. Further investigation on the butterfly fauna in all the districts



Image 3. Aglais caschmirensis aesis (Fruhstorfer, 1912) (underside), Shiroi Kashong Hills on 15 April 2014.



Image 4. Aglais caschmirensis aesis (Fruhstorfer, 1912), Phungreithang near Ukhrul Town on 19 February 2015.



Image 5. Aglais caschmirensis aesis (Fruhstorfer, 1912), Mao in the Senapati District on 05 June 2014.



Image 6. Caterpillar of Aglais caschmirensis aesis (Fruhstorfer, 1912) feeding on Urtica dioica Linn. (Urticacae).

will confirm the actual status of the species in Manipur. It is very likely, though, that the butterfly is moving into the most districts of Manipur now, as it has extended its distribution eastwards across the Himalayas during the past decades.

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