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Cover Photo by Peter Smetacek of a *Salassa mizorama* Moth

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EXTENSION OF THE KNOWN DISTRIBUTION OF THE COMMON GEM BUTTERFLY *PORITIA HEWITSONI* (LEPIDOPTERA: LYCAENIDAE) TO BASTAR, CHHATTISGARH

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Reviewer: Peter Smetacek
Keywords: Bastar, Kanger Valley National Park, Butterfly, India, Range Extension.

Introduction

The Common Gem butterfly *Poritia hewitsoni* Moore, [1866] has been reported from Uttarakhand to North East India (Varshney & Smetacek 2015) within India. Globally it occurs from Uttarakhand to Malaysia and Vietnam (Smetacek ([2016]).

Material and Methods

An opportunistic survey was conducted on 31 October, 2018 in Nagalsar Beat of Kanger Valley National Park, Bastar and Chhattisgarh. The paths followed on foot were randomly chosen and the main criterion for choosing suitable paths was the likelihood of encountering butterflies along the way.

Nagalsar Beat is a dense forest which has Sal (*Shorea robusta*) and Bamboo (*Bambusa sp.*) as major vegetation along with thick undergrowth. During the survey RN photographed a solitary male Common Gem basking in the sun, flying frequently and settling again to bask.

The photograph was sent to AS and it was identified using Smetacek ([2016]).

Discussion

The species is known to feed on Sal (Kehimkar, 2008), and occurs at low elevation with stragglers ascending to 1500 m (Smetacek ([2016]). The discussed elevation is also the elevation limit of Sal in the West Himalaya. Previously, Singh, (2003) reported the species from Dehradun reporting a westward range extension from Kumaon. In all probability this butterfly is likely to be found in other Central Indian regions on the Sal belt which have previously not been explored.

Acknowledgement

We thank Peter Smetacek, Butterfly Research Centre, Bhimtal, Uttarakhand, for his help in writing this note.

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FIRST RECORD OF LAUGHING DOVE (*SPILOPELIA SENEGALENSIS* LINNAEUS, 1766) (COLUMBIFORMES) IN SIKKIM, EASTERN HIMALAYA

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Reviewer: Bikram Grewal

Key words
New records; Laughing Dove; Sikkim; Eastern Himalaya

Abstract
Laughing Dove *Spilopelia senegalensis* Linnaeus, 1766 is a widely distributed bird in India. However, the species is unrecorded in most of the Himalayan region. An adult Laughing Dove was recorded in Singhik Reserved Forest, Sikkim Himalaya. The species is a first record in the state of the Eastern Himalayas.

Introduction
The Laughing Dove has a broad distributional range in Africa and Asia (Brahmia et al., 2015), native to most of sub-Saharan Africa, the Middle East and southern Asia; India and Bangladesh (Baptista et al., 1997). However, this species is unrecorded in most of the Himalayas, northeast India and Sri Lanka; they are found in dry cultivation and scrub-covered hills (Grimmett et al., 2016). In India, the species was recorded from Western Ghats (Aravind et al. 2001), Tamil Nadu (Samson et al., 2016) and Ladakh (Pfister, 2001). The species is a slim small bird, long fairly tail, brownish-pink head and underparts (Grimmett et al., 2016). The species easily distinguished from a similar species Spotted Dove *Spilopelia chinensis* Scopoli, 1786 due to lack of the black and white-collar, instead of having a black and copper-brown patch on the base of the throat (Birdlife Australia, 2019). This article will add a new species, *S. senegalensis* in the checklist of the bird of the Sikkim Himalayas which extends its distribution range towards the Eastern Himalayas.

Methods
Our opportunistically observation took place during the usual birding in the Singhik Reserved Forest, North Sikkim. The species were identified based on Grimmett et al. (2016) and Baptista et al. (2019).

Results
We encountered an adult Laughing Dove in the temperate forest of Singhik Reserved Forest, North Sikkim (Figure 1). The bird was sitting on the branch of a tree with the two Spotted Doves (Figure 2). The dominant forest tree was *Alnus nepalensis* D. Don, 1825,

Macaranga denticulata Blume Mull.Arg., 1866, *Juglans regia* L., 1753 and *Engelhardia spicata* Blume, 1982, etc. The species stayed in the landscape for about 15 days.

New record

Spilopelia senegalensis, Figure 2: India, North Sikkim, Singhik Reserved Forest (27˚30' 56"N & 88˚ 33'15"E, 1500m), observed and took photographs by Thinlay Namgyal Lepcha on dated 09th August 2019 (one adult).

Identification

Laughing Dove is similar in size and appearance to the Turtle Dove *Streptopelia turtur* Linnaeus, 1758 (Faria, 2019). However, *S. senegalensis* is differing from the Turtle Dove due to lack of black colouration on the scapulars and inner wing coverts and the different pattern of the neck feathers (Jonsson, 1994). *S. senegalensis* easily distinguished from a similar species *S. chinensis* due to lack of the black and white-collar, instead of having a black and copper-brown patch on the base of the throat (Birdlife Australia, 2019).

Discussion

Sikkim Himalaya is a part of Eastern Hindu-Kush Himalayas contiguous with one of 34 global biodiversity hotspots (Mittermeier et al., 2004). In a total of 550 species of bird has been reported from the landscape (Acharya & Vijyan, 2011). Our new record of Laughing Dove further adds a new species in the checklist of the bird of the Sikkim Himalayas. The Laughing Dove is commonly found in India except most of the Himalayas region and northeast India (Grimmett et al., 2016). The elevation range of the species is recorded up to 2416 m.a.sl (above sea level) [The Internet IBC Bird Collection, 2019]. However, the species recorded in Ladakh (Pfister, 2001) at 4350 m.a.sl, claimed the highest elevation record. Our record of the species was at 1500 m.a.sl in the temperate forest of Sikkim Himalaya. The major threats of the species in India are habitat fragmentation causes a number of the species killed on the road, are reported from Western Ghats (Samson, 2016) and Rajasthan (Chhangani, 2004). The species was recorded in India with associated species viz. Hill Pigeons *Columba rupestris* Pallas, 1811 (Pfister, 2001) and Eurasian-collared Dove *Streptopelia decaocto* Frivaldszky, 1838 (Samson, 2016 & Chhangani, 2004). But, we encountered the species with the Spotted Dove as an associated species in the forest. Based on the literature, the species might come under anthropogenic pressure and climate change, which may they are searching for new suitable habitat in the Himalayas. Therefore, we recommend long-term monitoring of the sensitive species of the bird in respect to climate change.

Acknowledgement

We are grateful to the Forest Environment and Wildlife Department, Govt. of Sikkim and Barapathing Rage (T) for the support during the field study. Thank goes to the Director of BNHS for support. Lastly, field suggestion and encouragement by Dr. B.K. Acharya, Dr. Bharat Kumar Pradhan, Nischal Gautam (Joint Director Forest) and friends are highly appreciated. Our thanks go to the reviewer for his input in our article.

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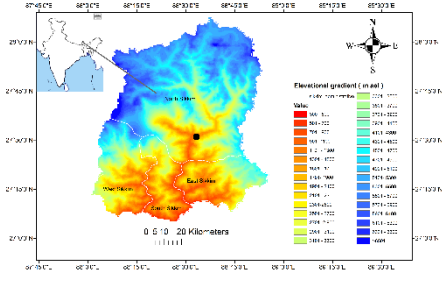

Fig.1: (A) Digital elevation model of the study area in the Sikkim Himalayas with a point location of Laughing Dove.

Fig.2: Photographic record of Laughing Dove (middle position) in Singhik Reserved Forest of the Sikkim Himalayas.

CONFIRMATION OF PALE GREEN AWLET *BURARA GOMATA* (LEPIDOPTERA: HESPERIIDAE) FROM EASTERN NEPAL

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Reviewer: Peter Smetacek

Abstract

The Pale Green Awlet, *Burara gomata* (Moore, [1866]) was first recorded in 1990 during a Japanese expedition in Eastern Nepal. The specimen was taken to Japan, and the species was not listed in the checklist of butterflies of Nepal. During a survey in Sankhuwasabha district across buffer zone of Makalu National Park, an individual of this species was recorded.

Introduction

B. gomata has 7 sub-species that range from India to China, Indo-China, Thailand, Malay Peninsula, Sumatra, Java, Borneo, Palawan, Philippines and Suwalesi region (Vane-Wright & De Jong, 2003). Among these, two subspecies are recorded from the Indian sub-continent *viz*, *B. gomata gomata* and *B. gomata kanara* (Evans, 1926). *B. gomata gomata* was described from Darjeeling and has a known distribution from Darjeeling, Sikkim and Assam to Vietnam whereas *B. gomata kanara* occurs in southern India (Chiba, 2009). The subspecies *B. gomata gomata* has several records from north east India (Das *et al*., 2017) particularly in protected areas. In Nepal, a Japanese expedition recorded *B. gomata gomata* from Sankhuwasabha district in 1990 (Morishita & Inomata, 1998). This was the only record of the species from Nepal which is also its westernmost range. The publication of that discovery was based on a specimen which was taken to Japan. The species has not been recorded since that initial discovery. The species has not been listed by Smith (2010; 2011) in the lists of Nepal butterflies. This appears to be an oversight.

Materials and methods

Opportunistic butterfly surveys were carried out in the Eastern Himalaya of Nepal for the purpose of understanding the species richness of that area. During a visit to the buffer zone of Makalu Barun National Park, an individual of *B. gomata* was photographed on 17 October, 2018 from Makalu rural-municipality, Sankhuwasabha district (N 27.56824 and E 87.30830, 1175m). The species was photographed mudpuddling early in the morning, around 7:30 a.m. on farmland, situated at the edge of a forest that borders the Arun river, one of the tributaries of Koshi river. The species was initially observed fluttering around the wet mud and then

puddling on a rock for around 5 minutes. The identity of the photographed specimen was confirmed by comparing it with the Kehimkar (2016) and website images of Butterflies of India (Kunte *et al*., 2019). The species although similar in appearance to Small Green Awlet *Burara amara* (Moore, [1866]) can easily be distinguished by the presence of a broad whitish streak from base through cell to outer edge on underside of hindwing (Kehimkar, 2016). Of the two subspecies in India *viz B. gomata gomata* and *B. gomata kanara*, the latter has a shorter dark streak at the end of vein 5 which does not reach cell end on the ventral hind wing unlike *B. gomata gomata* in which the streak reaches cell end (Chiba, 2009). Moreover, *B. gomata kanara* is recorded only from the southern parts of India.

Result and Discussion

The present record of the subspecies is the second, 38 years after its initial discovery in Nepal. The first record was from September, which is within the known flight period of the butterfly from May to September (Kehimkar, 2016) but the present record extends the known flight period to October. Though the previous record was from the same district, detailed information on the site locality and behavioral description were not mentioned. Both these butterflies were, however, recorded at nearby sites i.e. Num in same district i.e. Sankhuwasabha, indicating that the species might be established in the locality. The present site of the record lies about 100 km northwest of Darjeeling, India confirming the western most distribution range of the subspecies, *B. gomata gomata*. The long period between the two records of the species may be due to the lack of surveys in the area. The present record confirms the presence of the species in Nepal.

Acknowledgement

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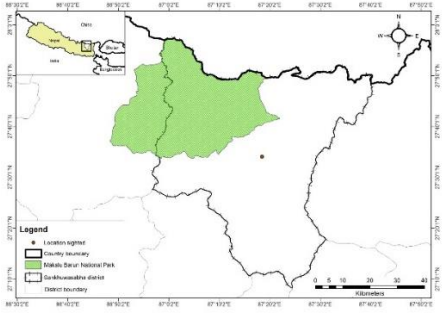

Fig.1: Map showing the site of record in Nepal.

Fig.2: *Burara gomata gomata*, Sankhuwasabha dist, Nepal (1175m).

ADDITIONS TO THE AVIFAUNA OF ATHGARH FOREST DIVISION, CUTTACK, ODISHA, EASTERN INDIA

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Reviewer: Bikram Grewal

Abstract

Eleven species of birds White-rumped Spinetailed Swift *Zoonavena sylvatica*, Green-billed Malkoha *Phaenicophaeus tristis*, Changeable Hawk Eagle *Nisaetus cirrhatus*. Lesser Yellow-naped Woodpecker *Picus chlorolophus*, Small Minivet *Pericrocotus cinnamomeus*, Bar-winged Flycatcher-shrike *Hemipus picatus*, Hair-crested Drongo *Dicrurus hottentottus*, Indian Scimitar Babbler *Pomatorhinus horsfieldii*, Brown-cheeked Nun Babbler *Alcippe poioicephala*, Asian Verditer Flycatcher *Eumyias thalassinus* and Orange-headed Thrush *Geokichla citrina* are reported for the first time from Athgarh Forest Division of Odisha. Eastern India.

Introduction

Athgarh Forest Division (20º21'19.2" N - 20º40'27.6" N; 85º52'0.72" E - 84º55'42.8" E) with an area of about 1500 km^2, is situated on the left bank of river Mahanadi in Cuttack district, Odisha. The AFD (Athgarh Forest Division) comprises of five ranges including 37 reserve forests. This Forest Division is surrounded by Cuttack Forest Division in the East and in the West by Satkosia Tiger Reserve (STR). Besides, Dhenkanal Forest Division and Chandaka Wildlife Sanctuary along with Nayagarh Forest Division also share their boundaries to the North and South respectively. Forest types are mainly Peninsular Sal forest, Dry Mixed-deciduous Forest, patches of Thorny Scrub forest, etc. (Champion & Seth, 1968).

In AFD, the first report on avifauna was published by Pradhan *et al*. (2013), who listed 61 species of birds from Ansupa Lake. After then Palei *et al.* (2014) reported 122 birds under 49 families from the entire Athgarh Forest division. Recently Palei *et al*. (2018) reported Spot-bellied Eagle-owl *Bubo nipalensis* from Deobhin Reserve Forest of AFD. Most recently Payra *et al*. (2019), with the compilation of Pradhan *et al*. (2013) reported 147 species of birds from Ansupa and its adjoining areas. Here, in this present paper we report noteworthy records of 11 species of birds, for the first time from Athgarh Forest Division.

Materials and Methods

In between March to September 2015, several opportunistic surveys were carried out in Balikiari Reserve Forest (20.552°N, 85.038°E, 233 m a.s.l.), Tersing (20.582°N, 85.047°E, 435 m a.s.l.) and Barasingha (20.543°N, 85.048° E, 209 m a.s.l.) of Athgarh Forest Division. All these areas are situated in Narsingpur West Range, where Balikiari Reserve Forest and Barasingha characterised by undulating terrain with many seasonal streams, dams and dry deciduous forest. But Tersing, a small compartment under Kholo beat located on the border line between AFD and STR, is characterised by Dry deciduous forest along with patches of moist deciduous forest, hill streams and a pond. Forest

transects, reservoirs, hill streams, seasonal streams, ponds, village woodlands were surveyed between 6.00 a.m to 4.00 p.m and night surveys were also conducted for the nocturnal species. During the survey we took photographs with the help of digital camera (Nikon D3200 with 70-300 Tele-Macro lens) and then the species were identified with the help of photographic guide books of Grimmett *et al.* (2011); Arlott (2015) and Grewal *et al.* (2016).

Result and Discussion

During the study period 11 species belongs to five orders and eleven families are newly recorded for Athgarh Forest Division. Details of all the records are discussed below.

1.White-rumped Spinetailed Swift *Zoonavena sylvatica* (Caprimulgiformes: Apodidae) - Four individuals were observed on 3rd September 2015. They were rapidly hovering over the pond, situated at the hill top of Tersing, surrounded by moist deciduous Forest. The bird can be identified by the characteristics of whitish underparts with greyish brown throat and breast. In Indian region it is distributed in Himalayas (Uttarakhand and Sikkim); in East India (Odisha, South-west West Bengal); Central India (Maharashtra) and in South West India (from Goa to Kerala) (Grimmett *et al.* 2011; Arlott 2015; Chantler & Boesman, 2019). But Grewal *et al.* (2016) does not include its distribution in East and South West India. In Odisha it was first reported during late nineteenth century by Ball (1878) from Sambalpur district. Since then after a long gap of about 95 years it was reported by Abdulali (1972) from Pithabata range of Similipal Biosphere Reserve. Afterwards from Similipal Biosphere Reserve it was reported by Anon (1995) and Nayak & Naik (2014). Except these earlier records, no published records are available on the occurrence of this bird from Odisha. Here we report another locality of this resident bird in Odisha from Tersing of Athgarh Forest Division.

2.Green-billed Malkoha *Phaenicophaeus tristis* (Cuculiformes: Cuculidae) - First we observed one individual on 1st September 2015 from Balikiari Reserve Forest, and then, on 3rd September we observed one individual from Tersing. Both the individuals were recorded under dense vegetation of forest.

3.Changeable Hawk Eagle *Nisaetus cirrhatus* (Accipitriformes: Accipitridae)- One individual was observed on 6th March 2015, in Balikiari Reserve Forest while perching on a branch of Ficus tree at the height of about 25m.

4. Lesser Yellow-naped Woodpecker *Picus chlorolophus* (Piciformes: Picidae) - on 3rd September 2015 one individual was recorded near Tersing, while it was foraging on a tree trunk in an open forest area.

5. Small Minivet *Pericrocotus cinnamomeus* (Passeriformes: Campephagidae) - Two Individuals (one male and one female) were observed on 28th May, 2015 foraging in a Ficus tree near the Village area of Balikiari Reserve Forest

6. Bar-winged Flycatcher-shrike *Hemipus picatus* (Passeriformes: Vangidae) - Single individual was recorded in Balikiari Reserve Forest on 6th March 2015. It was perching on a tree at about 10m height, at the edge of the forest.

7.Hair-crested Drongo *Dicrurus hottentottus* (Passeriformes: Dicruridae) - One pair was observed in the early morning near the Barasingha Beat office, on 8th march 2015. They were perched on a tree branch in the open area of Forest.

8.Indian Scimitar Babbler *Pomatorhinus horsfieldii* (Passeriformes: Timaliidae) - One individual was photographed on 6th March 2015, near the Balikiari Reserve Forest. It was perching under the dense forest, close to the stream.

9.Brown-cheeked Nun Babbler *Alcippe poioicephala* (Passeriformes: Leiothrichidae) - Two individuals were observed on 1st September 2015, near a hill

stream of Balikiari Reserve Forest. The stream was shaded by tree branches.

10.Asian Verditer Flycatcher *Eumyias thalassinus* (Passeriformes: Muscicapidae) - One individual was observed on 6th March 2015, in Balikiari Reserve Forest. It was perching on a tree branch near the stream.

11.Orange-headed Thrush *Geokichla citrina* (Passeriformes: Turdidae) - a single individual was recorded near Balikiari Reserve Forest, on 6th March 2015. Initially it was perching under the Bamboo shrubs, but after a few minutes later it came to the open area of forest.

Conclusion

The observations reported in this present study may prove as a valuable reference to continue biodiversity studies and will help to expand the information on avifaunal distribution in Athgarh Forest division, as well as in Odisha. Record of White-rumped Spinetailed Swift *Zoonavena sylvatica* in Athgarh Forest Division as third known locality of this bird in Odisha, indicates the necessity of further systematic surveys in different less explored areas of Odisha, to understand the distribution, habitat requirements of such elusive species in Odisha.

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BUTTERFLIES (LEPIDOPTERA: PAPILIONOIDEA) OF CHHATTISGARH, INDIA

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Abstract
An updated checklist comprising 159 species of butterflies of Chhattisgarh, based on field data collected between September, 2013 and November, 2019 and compilation of previous works is presented. 19 species have been added of which 8 are range extensions and 11 species are confirmatory record from the state. 7 species reported by previous workers require confirmation and are thus placed on a tentative list.

Introduction
A total of 174 species of butterflies were reported from present day Madhya Pradesh and Chhattisgarh by Chandra *et al*. (2007) on the basis of literature of the Central Provinces (Forsayeth (1884), Swinhoe (1886), de Nicéville (1890), Betham (1890, 1891), Witt (1909), Evans (1932), Talbot (1939, 1947) and Wynter-Blyth (1957)). The list also included recent studies and stray records of butterflies of Madhya Pradesh and Chhattisgarh including those by Singh (1977); Gupta & Shukla (1987); Chaudhary (1995); Chandra *et al*., (2000a, b & 2002); Singh & Chandra (2002); Siddiqui & Singh (2004) and Chandra (2006).

In present day Chhattisgarh, an area-specific study was conducted by Chandra *et al*. (2014) in 10 districts out of the 27 districts of the new state, in which 137 species were reported. Dubey *et al*. (2015) added 5 species to the butterflies fauna of Chhattisgarh. Further, Sisodia *et al.* (2019) added 6 species during the course of data collection as part of this study.

Material and Methods

Study Area
In this study, three previously unsurveyed districts were investigated, namely Raigarh, Mungeli and Janjgir-Champa in addition to districts surveyed by Chandra *et al*., (2014).

Chhattisgarh is situated between 17º to 23º7' North latitude and 80°40'to 83°38'East longitude. It comprises an area of 1,35, 194 square kilometers divided into 27 districts.

Chhattisgarh is host to a variety of forest types including dry-deciduous, moist-deciduous, grasslands, bamboo and small patches of evergreen forests (Chandra *et al*., 2014) whose subsurface water systems feed into its major river, Mahanadi and other smaller rivers like Sheonath, Hasdeo, Mand, Eeb, Pairi, Jonk, Kelo, Udanti, Indrawati, Arpa and Maniyari.

Temperature in Chhattisgarh varies between 30° and 48°C (86° and 118°F) in summer and between 0º and 25 °C (32ºand 77 ºF) during winter. The northern and southern part of Chhattisgarh has hilly terrain and central Chhattisgarh comprises plains.

Methods
This study is a result of opportunistic surveys undertaken between September, 2013 and November, 2019. Data was collected from eight districts, namely Bastar, Bilaspur, Jashpur, Raipur, Sarguja, Raigarh, Mungeli and Janjgir-Champa. Likely sites were visited during the day time on sunny days at suitable seasons, the paths followed on foot were randomly chosen and the main criterion for deciding suitable paths was the likelihood of encountering butterflies along the way. The criteria varied according to season.

In this study, genera that require physical handling or dissection in order to establish specific status i.e. *Mycalesis* Hubner, 1818, *Baoris* Moore, [1881], *Telicota* Moore, [1881], *Borbo* Evans, 1949 and *Pelopidas* Walker, 1870 are not included.

The specimens were identified using Evans (1932), Kehimkar (2008, 2016), Varshney & Smetacek (2015), Bhakare & Ogale. 2018 and Smetacek [2016]. Families and subfamilies of butterflies have been arranged and tabulated according to Varshney & Smetacek (2015).

Results

The present study has resulted in the addition of 19 species of butterflies (Appendix-1) to the previously published list by Chandra *et al.* (2014), which reports 137 species and Dubey *et al.* (2015) which reports 5 species from the state of Chhattisgarh. New additions to butterflies of Chhattisgarh and a complete, updated list is presented in Appendix-2.

There are seven species (Appendix-3) which have been put on a tentative list, since there have been no further records of these species since the original reports. Varshney & Smetacek (2015) do not include these species from Chhattisgarh, so their presence requires confirmation.

Perusal of the list by Chandra *et al.* (2014) brought to light misidentification of two species whose presence they had reported only on the basis of photographic evidence. These are *Catochrysops panormus* (C. Felder, 1860) which is actually *Catochrysops strabo* (Fabricius, 1793) and *Petrelaea dana* (de Niceville, [1884]) which is actually *Prosotas dubiosa* (Semper, [1879]). Sisodia (2019) photographed *P. dana* in Bastar and therefore, *P. dana* is retained on the list of Chhattisgarh butterflies on the basis of this record while *C. panormus* is hereby removed from the list of Chhattisgarh butterflies until convincing evidence of its presence is examined.

Discussion

Kehimkar (2016) provided general distribution of species in South Asia while Varshney & Smetacek (2015) provided state-wise distribution of species within India.

The distribution of *Zeltus amasa* (Hewitson, 1865) Fluffy Tit which was earlier recorded from Goa to Kerala, Sikkim to N.E. India and *Neopithecops zalmora* (Butler, [1870]) Quaker which was earlier recorded from Andaman & Nicobar Is., Gujarat to Kerala, Jammu & Kashmir to N.E. India and Odisha is hereby extended to Chhattisgarh. They are the first records from Central India.

The generosity of Jagdeoram Bhagat, Rahul Singh and Nileshkumar Kshirsagar in sharing their confirmatory records of the presence of *Curetis thetis* (Drury, [1773]) Indian Sunbeam, *Euploea sylvester* (Fabricius, 1793) Double Banded Crow and *Spalgis epius* (Westwood, 1852) Common Apefly is gratefully acknowledged. In addition to these, the presence of *Prosotas nora* (C. Felder, 1860) Common Lineblue; *Azanus ubaldus* (Stoll, [1782]) Bright Babul Blue; *Megisba malaya* (Horsfield, [1828]) Malayan; *Chilades lajus* (Stoll, [1780]) Lime Blue; *Polyura agraria* (Swinhoe, 1887) Anomalous Nawab, *Charaxes psaphon* Westwood, 1874 Plain Tawny Rajah; and *Ypthima asterope* (Klug, 1832) Common Threering is also hereby confirmed from Chhattisgarh. These butterfly species were perhaps always present but escaped the surveys conducted earlier. This indicates that there is a possibility of further species being added to the list in due course.

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Appendix-1 (New Additions to the State)

S. N	Scientific Name	Common Name	Recorded from	Distribution in India (Varshney & Smetacek (2015))	Remarks
FAMILY: LYCAENIDAE					
Subfamily: CURETINAE					
1.	*Curetis acuta* Moore, 1877	Angled Sunbeam	Jashpur, Bastar	Himachal Pradesh to N.E. India; Gujarat to Kerala; Madhya Pradesh to Odisha	Recorded on 19/iv/19

2.	*Curetis thetis* (Drury, [1773])	Indian Sunbeam	Jashpur	Andaman & Nicobar Is., Gujarat east to Odisha and south to Kerala	Recorded on 03/x/17
Subfamily: PORITINAE					
3.	*Poritia hewitsoni* Moore, [1866]	Common Gem	Bastar	Uttarakhand to N.E. India	Recorded on 31/x/18
Subfamily: MILETINAE					
4.	*Spalgis epius* (Westwood, 1852)	Common Apefly	Jashpur	Uttarakhand to N.E. India; Gujarat to Kerala and east to W. Bengal; Andaman & Nicobar Is.	Recorded on 09/v/19
Subfamily: THECLINAE					
5.	*Horaga onyx* (Moore, 1858)	Common Onyx	Jashpur	Maharashtra to Kerala; Himachal Pradesh to N.E. India; Andaman & Nicobar Is.	Recorded on 11/iv/19
6.	*Zeltus amasa* (Hewitson, 1865)	Fluffy Tit	Bastar	Goa to Kerala, Nepal to N.E. India	Recorded on 21/x/17
7.	*Rapala varuna* (Horsfield, [1829])	Indigo Flash	Jashpur	Himachal Pradesh to Uttarakhand; Maharashtra to Kerala, W. Bengal; Andaman & Nicobar Is., Sikkim to N.E. India	Recorded on 18/iv/19
Subfamily: POLYOMMANTINAE					
8.	*Petrelaea dana* (de Niceville, [1884])	Dingy Lineblue	Bastar	Uttarakhand to N.E. India; Maharashtra to Kerala; Jharkhand and Andaman Is.	Recorded on 24/vii/18
9.	*Prosotas nora* (C. Felder, 1860)	Common Lineblue	Raipur, Raigarh	Andaman & Nicobar Islands, throughout India except arid regions	Recorded on 04/viii/17
10.	*Azanus ubaldus* (Stoll, [1782])	Bright Babul Blue	Raigarh	Throughout India except N.E. States	Recorded on 12/viii/17

11.	*Neopithecops zalmora* (Butler, [1870])	Quaker	Bastar	Andaman & Nicobar Is., Gujarat to Kerala, Jammu & Kashmir to N.E. India and Odisha	Recorded on 21/x/17
12.	*Megisba malaya* (Horsfield, [1828])	Malayan	Bastar	Andaman & Nicobar Is., Uttarakhand to N.E. India, Odisha, Maharashtra to Kerala, Sikkim, South India to W. Bengal.	Recorded on 21/x/17
13.	*Chilades lajus* (Stoll, [1780])	Lime Blue	Raipur, Raigarh	Throughout India	Recorded on 26/vi/17
14.	*Chilades parrhasius* (Fabricius, 1793)	Small Cupid	Jashpur	Rajasthan to Kerala; eastwards to Uttar Pradesh; Himachal Pradesh and Uttarakhand.	Recorded on 20/v/19
FAMILY: NYMPHALIDAE					
Subfamily: DANAINAE					
15.	*Euploea sylvester* (Fabricius, 1793)	Double Branded Crow	Raipur	Peninsular India, Sikkim and Assam, Andaman Islands	Recorded on 18/vi/17
Subfamily: CHARAXINAE					
16.	*Polyura agraria* (Swinhoe, 1887)	Anomalous Nawab	Janjgir-Champa, Raipur	Gujarat to Madhya Pradesh and Kerala, Himachal to N.E. India	Recorded on 11/x/16
17.	*Charaxes psaphon* Westwood, 1874	Plain Tawny Rajah	Raigarh, Bastar	Peninsular India as far north as Gujarat, Madhya Pradesh, Odisha to N.E. India	Recorded on 11/viii/17
Subfamily: SATYRINAE					
18.	*Ypthima asterope* (Klug, 1832)	Common Threering	Jashpur	Throughout India	Recorded on 20/v/19
Subfamily: HELICONIINAE					
19.	*Vagrans egista* (Cramer, [1780])	Vagrant	Bastar	Uttarakhand to N.E. India; Jharkhand, Odisha, W. Bengal.	Recorded on 24/vii/19

Appendix- 2 (Updated List)
District-wise distribution of butterflies recorded from Chhattisgarh. *Note: New district records are in bold and S no. ** denotes that the species has been recorded in the present study as well.*

S.N	Scientific Name	Common Name	Distribution in Chhattisgarh	Distribution in India (Varshney & Smetacek (2015))	Remarks
Superfamily: PAPILIONOIDEA					
A. Family: PAPILIONIDAE					
I. Subfamily: PAPILIONINAE					
1.**	*Pachliopta aristolochiae* (Fabricius, 1775)	Common Rose	Bastar, Kabirdham, Raipur, **Raigarh**	Throughout India	
2.	*Pachliopta hector* (Linnaeus, 1758)	Crimson Rose	Bastar	Peninsular India to W. Bengal. Straggler to the Andamans and Uttarakhand	
3.**	*Papilio clytia* Linnaeus, 1758	Common Mime	Bastar, Bilaspur, Jashpur, Koriya	Throughout India except Jammu & Kashmir, Punjab and Rajasthan, below 2750 m elevation	
4.**	*Papilio crino* Fabricius, 1793	Common Banded Peacock	Bastar, Kabirdham, Koriya, **Jashpur**	Peninsular India as far north as W. Bengal	
5.**	*Papilio demoleus* Linnaeus, 1758	Lime Butterfly	Bastar, Dantewara, Kanker, Koriya, Raigarh, Raipur, Surguja, **Janjgir-Champa, Bilaspur, Mungeli, Jashpur**	Throughout India below 2000 m elevation	
6.**	*Papilio polymnestor* Cramer, [1775]	Blue Mormon	Bastar, Dantewara, Kabirdham, Surguja, Raipur, **Raigarh, Bilaspur, Jashpur**	Peninsular India as far north as W.Bengal and Bangladesh, to Madhya Pradesh and Gujarat	
7.**	*Papilio polytes* Linnaeus, 1758	Common Mormon	Bastar, Dantewara, Durg, Kabirdham, Koria, Surguja, Raipur, **Raigarh, Jashpur**	Throughout India below 2000 m elevation	

8.**	*Graphium agamemnon* (Linnaeus, 1758)	Tailed Jay	Bastar, **Raipur, Jashpur**	Uttarakhand to N.E. India, Andaman Island and central Nicobar Islands, Kerala to Gujarat and W. Bengal	
9.**	*Graphium doson* (C & R. Felder, 1864)	Common Jay	Bastar, **Raipur, Bilaspur, Jashpur**	J&K to N.E. India, Delhi, South India to W. Bengal	
10.**	*Graphium nomius* (Esper, 1799)	Spot Swordtail	Bastar, Korba, Jashpur, Koriya, **Mungeli, Jashpur**	Delhi, Rajasthan, Sikkim, Uttarakhand, Uttar Pradesh, Bihar, throughout drier parts of Southern India to W. Bengal	
B. Family: HESPERIIDAE					
I.Subfamily: COELIADINAE					
11.	*Burara jaina* (Moore, [1866])	Orange Awlet	Bastar	Andaman & Nicobar Is; Maharashtra to Kerala; Himachal Pradesh to N.E. India	Reported in Dubey *et al*. (2015)
12.**	*Badamia exclamationis* (Fabricius, 1775)	Brown Awl	Bilaspur, Koriya, Bastar, **Raigarh**	Throughout India, Andaman Islands	
13.**	*Hasora chromus* (Cramer, 1780)	Common Banded Awl	Bastar, Koriya, Raipur, **Raigarh, Jashpur**	Throughout India and Andaman & Nicobar Islands	
14.	*Hasora vitta* (Butler, 1870)	Plain Banded Awl	Bastar	Sikkim to N.E. India; Goa to Kerala; Andaman & Nicobar Is.	Reported in Dubey *et al*. (2015)
II. Subfamily: PYRGINAE					
15.	*Coladenia indrani* (Moore, [1866])	Tricolored Pied Flat	Surguja	Gujarat eastwards to W. Bengal and southward to Kerala, Himachal Pradesh to N.E. India excluding Manipur	

16.	*Tagiades japetus* (Stoll, [1781])	Suffused Snow Flat	Bastar	Andaman &Nicobar Islands, Gujarat to Kerala, Uttarakhand to N.E. India, Madhya Pradesh to W. Bengal	as Common Snow Flat in Chandra *et al*.,(2014)
17.	*Odontoptilum angulatum* (C. & R. Felder, 1862)	Chestnut Angle	Bastar	Maharashtra to Kerala; Himachal Pradesh to N.E. India	Reported in Dubey *et al*. (2015)
18.	*Caprona ransonnetti* (Felder, 1868)	Golden Angle	Bilaspur, Bastar	Gujarat east to Jharkhand and south to Kerala	
19.	*Celaenorrhinus ambareesa* (Moore, 1866)	Malabar Flat	Kabirdham	Peninsular India south from Gujarat and Madhya Pradesh	
20.**	*Celaenorrhinus leucocera* (Kollar, 1844)	Common Spotted Flat	Bastar	Gujarat eastwards to W. Bengal and southwards to Kerala, Jammu & Kashmir to N.E. India, Andaman & Nicobar Islands	
21.	*Spialia galba* (Fabricius, 1793)	Indian Skipper	Bastar, Bilaspur, Kanker, Surguja	Throughout India	
III. Subfamily: HESPERIINAE					
22.**	*Iambrix salsala* (Moore, [1866])	Chestnut Bob	Bastar	Gujarat to Kerala, Uttarakhand to N.E. India	Reported in Dubey *et al*. (2015)
23.**	*Notocrypta curvifascia* (C. & R. Felder, 1862)	Restricted Demon	Bastar	Andaman & Nicobar Islands, Maharashtra to Kerala, Himachal to N.E. India	
24.**	*Udaspes folus* (Cramer, [1775])	Grass Demon	Bastar, Bilaspur, **Jashpur**	Gujarat to West Bengal and south to Kerala, Himachal to N.E. India	
25.	*Suastus gremius*	Indian Palm Bob	Bilaspur, Surguja	Throughout India	

	(Fabricius, 1798)				
26.	*Cupitha purreea* (Moore, 1877)	Wax Dart	Bastar	Maharashtra to Kerala; Jharkhand; Sikkim to N.E. India	Reported in Dubey *et al*. (2015)
27.	*Pseudoborbo bevani* (Moore, 1878)	Bevan's Swift	Bastar	Gujarat east to W. Bengal and southwards to Kerala, Jammu & Kashmir to N.E. India	
28.	*Borbo cinnara* (Wallace, 1866)	Rice Swift	Bastar	Throughout India except Jammu & Kashmir	
29.	*Pelopidas mathias* (Fabricius, 1798)	Variable Swift	Bastar, Surguja	Throughout India including Andaman & Nicobar Islands	as Small Branded Swift in Chandra *et al.* (2014)
30.	*Baoris farri* (Moore, 1878)	Paintbrush Swift	Bilaspur	Maharashtra southwards to Kerala and eastwards to W. Bengal, Uttarakhand to N.E. India, Andaman & Nicobar islands	
31.	*Caltoris kumara* (Moore, 1878)	Blank Swift	Bastar, Bilaspur	Gujarat eastwards to Chhattisgarh and southwards to Kerala, Sikkim to N.E. India	
32.	*Telicota bambusae* (Moore, 1878)	Dark Palm Dart	Bastar	Throughout India except Rajasthan	as *Telicota ancilla* (Herrich-Schäffer) in Chandra *et al.*, 2014

33.	*Telicota colon* (Fabricius, 1775)	Common Palm Dart	Sarguja	Gujarat to W. Bengal and southwards to Kerala, Delhi to Uttar Pradesh, Uttarakhand to Sikkim	as Pale Palm Dart in Chandra *et al.*, 2014
C. Family: PIERIDAE					
I.Subfamily: COLIADINAE					
34.**	*Catopsilia pomona* (Fabricius, 1775)	Common Emigrant	Bastar, Bilaspur, Durg, Jashpur, Kanker, Kabirdham, Korba, Raigarh, Raipur, Surguja	Throughout India	
35.**	*Catopsilia pyranthe* (Linnaeus, 1758)	Mottled Emigrant	Bastar, Bilaspur, Durg, Kabirdham, Kanker, Koria, **Raigarh**, Raipur, Surguja	Throughout India	
36.**	*Eurema brigitta* (Stoll, [1780])	Small Grass Yellow	Bastar, Dantewara, Kanker, **Raigarh**	Throughout India including Andaman & Nicobar Islands	as *Eurema brigitta* (Cramer) in Chandra *et al.*, 2014
37.**	*Eurema hecabe* (Linnaeus, 1758)	Common Grass Yellow	Bastar, Dantewara, Durg, Raipur, **Raigarh**, Jashpur, Kabirdham, Kanker, Surguja	Throughout India including Andaman & Nicobar Islands	
38.**	*Eurema laeta* (Boisduval, 1836)	Spotless Grass Yellow	Bastar, Bilaspur, Dantewara, Kanker, **Raigarh, Raipur**	Throughout India	
II. Subfamily: PIERINAE					
39.**	*Leptosia nina* (Fabricius, 1793)	Psyche	Bastar, **Raigarh, Bilaspur**	Throughout India	
40.	*Colotis aurora* (Cramer, [1780])	Plain Orange Tip	Bastar	Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu	as *Colotis eucharis* (Fabricius)in Chandra *et al.*, 2014

41.	*Colotis fausta* (Olivier, 1804)	Large Salmon Arab	Bastar	Delhi, Haryana, Gujarat, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Uttar Pradesh	
42.	*Appias lyncida* (Cramer, [1777])	Chocolate Albatross	Bastar, Dantewara	Sikkim to N.E. India, South Nicobar Island, Maharashtra to Kerala	
43.**	*Belenois aurota* (Fabricius, 1793)	Pioneer	Bilaspur, Surguja, **Jashpur**	Throughout India except N.E. States	
44.**	*Cepora nerissa* (Fabricius, 1775)	Common Gull	Bastar, Dantewara, Kanker, Raipur, Sarguja, **Bilaspur**	Andhra Pradesh, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, W. Bengal	
45.**	*Delias eucharis* (Drury, 1773)	Common Jezabel	Bastar, Dantewara, Koriya, Raigarh, Raipur, Surguja**, Jashpur**	Throughout India except Andaman & Nicobar, Lakshadweep	
46.	*Delias hyparete* (Linnaeus, 1758)	Painted Jezabel	Bastar, Dantewara	Sikkim to N.E. India, Andhra Pradesh, Odisha, Tamil Nadu	
47.**	*Pareronia hippia* (Fabricius, 1787)	Common Wanderer	Bastar, Dantewara, Kabirdham, Kanker, Jashpur, Raipur, **Bilaspur**	Throughout India except J&K, Punjab and Rajasthan	
D. Family: RIODINIDAE					
I.Subfamily: RIODININAE					
48.**	*Abisara echerius* (Stoll, [1790])	Plum Judy	Bastar, Dantewara, Surguja, Koriya, Raipur, **Raigarh, Jashpur**	Assam, Manipur, Kerala, Tamil Nadu	There is uncertainty about the distribution of this taxon and

					Abisara bifasciata in India so the present placement is tentative.
E. Family: LYCAENIDAE					
I.Subfamily: CURETINAE					
49.**	*Curetis acuta* Moore, 1877	Angled Sunbeam	**Jashpur, Bastar**	Himachal Pradesh to N.E. India; Gujarat to Kerala; Madhya Pradesh to Odisha	
50.**	*Curetis thetis* (Drury, [1773])	Indian Sunbeam	**Jashpur**	Andaman & Nicobar, Gujarat east to Odisha and south to Kerala	
Subfamily: PORITINAE					
51.**	*Poritia hewitsoni* Moore, [1866]	Common Gem	**Bastar**	Uttarakhand to N.E. India	
Subfamily: MILETINAE					
52.**	*Spalgis epius* (Westwood, 1852)	Common Apefly	**Jashpur**	Uttarakhand to N.E. India; Gujarat to Kerala and east to W. Bengal; Andaman & Nicobar Is.	
II. Subfamily: APHNAEINAE					
53.**	*Spindasis vulcanus*(Fabricius, 1775)	Common Silverline	Bastar, Korba, Koriya, Surguja	Throughout India	
III. Subfamily: THECLINAE					
54.**	*Arhopala amantes* (Hewitson, 1862)	Large Oakblue	Bastar, Bilaspur, Korba, Jashpur, Koriya	Gujarat to Andhra Pradesh and southwards to Kerala, Arunachal to Manipur	
55.**	*Arhopala atrax* (Hewitson, 1862)	Indian Oakblue	Bilaspur, Korba, Jashpur, Surguja, **Raipur**	Peninsular India, Jammu & Kashmir to N.E. India	
56.	*Arhopala centaurus*	Centaur Oakblue	Bastar	Andaman & Nicobar Islands,	as Western

	(Fabricius, 1775)			Maharashtra to Kerala, Uttarakhand to N.E. India	Centaur Oakblue in Chandra *et al.*, 2014
57.**	*Zesius chrysomallus* Hübner, [1819]	Redspot	Korba, **Jashpur**	Maharashtra to Kerala, Uttarakhand, Uttar Pradesh to N.E. India	
58.**	*Amblypodia anita* Hewitson, 1862	Purple Leaf Blue	Bastar, **Janjgir-Champa, Raipur**	Andaman &Nicobar Islands, Gujarat to Kerala and W. Bengal, Manipur	as Leaf Blue in Chandra *et al.*, 2014
59.	*Iraota timoleon* (Stoll, [1790])	Silverstreak Blue	Bastar	Gujarat to Madhya Pradesh and Kerala, Andaman & Nicobar Isalands, Odisha, Uttarakhand to N.E. India	as Blue Silverstrea k in Chandra *et al.*, 2014
60.**	*Loxura atymnus* (Stoll, 1780)	Yamfly	Bastar, Bilaspur, Koriya, **Jashpur**	Maharashtra and Madhya Pradesh to Kerala, Uttarakhand to W. Bengal & N.E. India, Andaman & Nicobar	
61.**	*Horaga onyx* (Moore, 1858)	Common Onyx	**Jashpur**	Maharashtra to Kerala; Himachal Pradesh to N.E. India; Andaman & Nicobar Is.	
62.**	*Tajuria cippus* (Fabricius, 1798)	Peacock Royal	Bastar, Bilaspur, **Jashpur**	Andaman & Nicobar, throughout India except arid regions	
63.	*Tajuria jehana* Moore, 1883	Plains Blue Royal	Bastar	Peninsular India, Uttarakhand to N.E. India	
64.**	*Chliaria othona* (Hewitson,	Orchid Tit	Bastar, Koriya, Raipur, **Jashpur**	Maharashtra to Kerala, Uttarakhand	

	1865)			to N.E. India, Andaman Islands	
65.**	*Zeltus amasa* (Hewitson, 1865)	Fluffy Tit	**Bastar, Jashpur**	Goa to Kerala, Sikkim to N.E. India	
66.	*Deudorix isocrates* (Fabricius, 1793)	Common Guava Blue	Bastar	Throughout India	
67.**	*Rapala iarbus* (Fabricius, 1787)	Common Red Flash	Bastar, Bilaspur, **Jashpur**	Sikkim to N.E. India, Jammu & Kashmir, Odisha, Punjab, Peninsular India, Uttarakhand, Uttar Pradesh and W. Bengal	as Indian Red Flash in Chandra *et al.*, 2014
68.**	*Rapala manea* (Hewitson, 1863)	Slate Flash	Bastar, **Jashpur**	Throughout India, Andaman & Nicobar Island	
69.**	*Rapala pheretima* (Hewitson, 1863)	Copper Flash	Jashpur	Uttarakhand to N.E. India	
70.**	*Rapala varuna* (Horsfield, [1829])	Indigo Flash	**Jashpur**	Himachal Pradesh to Uttarakhand; Maharashtra to Kerala, W. Bengal; Andaman & Nicobar Is., Sikkim to N.E. India	
IV. Subfamily: POLYOMMATINAE					
71.	*Anthene emolus* (Godart, 1824)	Ciliate Blue	Korba	Bihar, Sikkim, Maharashtra southwards, to Kerala and eastwards to W. Bengal and N.E. India	
72.**	*Petrelaea dana* (de Niceville, [1884])	Dingy Lineblue	**Bastar**	Uttarakhand to N.E. India, Maharashtra to Kerala, Jharkhand and Andaman Islands	
73.**	*Prosotas dubiosa* (Semper,	Tailless Lineblue	Bastar, Durg, **Raigarh, Raipur, Bilaspur, Jashpur**	India including Andaman & Nicobar Islands	

	[1879])				
74.**	*Prosotas nora* (C. Felder, 1860)	Common Lineblue	**Raipur, Raigarh, Bilaspur, Jashpur**	Andaman & Nicobar Islands, throughout India except arid regions	
75.**	*Caleta decidia* (Hewitson, 1876)	Angled Pierrot	Bastar, Dantewara, **Jashpur**	Peninsular India, Sikkim to N.E. India	as *Caleta caleta* (Hewitson)in Chandra *et al.*, 2014
76.	*Jamides alecto* (Felder, 1860)	Metallic Cerulean	Bastar	Maharashtra to Kerala, Jharkhand, N.E. India, Andaman & Nicobar Islands	
77.**	*Jamides celeno* (Cramer, [1775])	Common Cerulean	Bastar, Dantewara Jashpur, **Raigarh, Raipur, Bilaspur**	Gujarat south to Kerala and eastwards to W. Bengal, Uttarakhand to N.E. India	
78.**	*Catochrysops strabo* (Fabricius, 1793)	Forgetmenot	Bastar, Bilaspur, Dantewara, Kabirdham, Korba, **Raipur, Janjgir-Champa, Jashpur**	Throughout India including Andaman & Nicobar Islands	
79.**	*Lampides boeticus* (Linnaeus, 1767)	Pea Blue	Bastar, Bilaspur, Dantewara, Kanker, Bilaspur	Throughout India including Andaman & Nicobar Islands	
80.**	*Syntarucus plinius* (Fabricius, 1793)	Zebra Blue	Bastar, Dantewara, Kabirdham, **Raipur, Bilaspur, Raigarh, Jashpur**	Throughout India except Jammu & Kashmir	
81.**	*Castalius rosimon* (Fabricius, 1775)	Common Pierrot	Bastar, Bilaspur, Dantewara, Kanker, Surguja, **Raigarh, Raipur, Janjgir-Champa, Jashpur**	Throughout India including Andaman and Nicobar Islands	
82.**	*Zizeeria karsandra* (Moore, 1865)	Dark Grass Blue	Bastar, Dantewara, Kanker, Raipur, Surguja, **Jashpur**	Throughout India, Andaman & Nicobar Islands	as *Zizeeria knysna* (Trimen) in Chandra

					et al., 2014
83.**	*Pseudozizeeria maha* (Kollar, [1884])	Pale Grass Blue	Dantewara, **Raipur, Raigarh, Bilaspur, Jashpur**	Gujarat to Jammu & Kashmir, eastward to N.E. India, Maharashtra to Kerala and Andhra Pradesh	
84.**	*Zizina otis* (Fabricius, 1787)	Lesser Grass Blue	Bastar, Dantewara, Kanker	Throughout India, W. Bengal and Sikkim to N.E. India, Andaman & Nicobar Islands	
85.**	*Zizula hylax* (Fabricius, 1775)	Tiny Grass Blue	Bastar, Dantewara, Kanker, Jashpur	Throughout India, Andaman & Nicobar Islands	
86.**	*Everes lacturnus* (Godart, [1824])	Indian Cupid	Jashpur	Himachal to N.E. India, Uttar Pradesh and Bihar, Andaman & Nicobar Islands, Gujarat southwards to Andhra Pradesh and Kerala	as *Chilades parrhasius* (Fabricius) in Chandra *et al.*, 2014
87.**	*Azanus ubaldus* (Stoll, [1782])	Bright Babul Blue	**Raigarh**	Throughout India except N.E. States	
88.**	*Neopithecops zalmora* (Butler, [1870])	Quaker	**Bastar**	Andaman &Nicobar Islands, Gujarat to Kerala, Jammu & Kashmir to N.E. India and Odisha	
89.**	*Megisba malaya* (Horsfield, [1828])	Malayan	**Bastar**	Andaman & Nicobar Islands, Uttarakhand to N.E. India, Odisha, Maharashtra to Kerala, Sikkim, South India to W. Bengal.	
90.**	*Acytolepis puspa* (Horsfield, [1828])	Common Hedge Blue	Bastar, **Raipur, Jashpur**	Andaman &Nicobar Islands, Gujarat to Kerala	
91.**	*Euchrysops*	Gram Blue	Bastar, Dantewara,	Throughout India	

	cnejus (Fabricius, 1798)		Kanker, Surguja, **Bilaspur, Raipur, Jashpur**		
92.	*Freyeria trochylus* (Freyer, 1845)	Grass Jewel	Surguja, Kabirdham	South India, North India from Punjab to N.E. India	
93.**	*Chilades pandava* (Horsfield, [1829])	Plains Cupid	Bastar, Kabirdham, Jashpur, Koriya, Raipur	Throughout India	
94.**	*Chilades lajus* (Stoll, [1780])	Lime Blue	**Raipur, Raigarh,Bilaspur, Jashpur**	Throughout India	
95.**	*Chilades parrhasius* (Fabricius, 1793)	Small Cupid	**Jashpur**	Rajasthan to Kerala; eastwards to Uttar Pradesh; Himachal Pradesh and Uttarakhand.	
F. Family: NYMPHALIDAE					
I.Subfamily: DANAINAE					
96.**	*Danaus chrysippus* (Linnaeus, 1758)	Plain Tiger	Bastar, Bilaspur, Korba, Koriya, Durg, Dantewara, Jashpur, Raigarh, Surguja, Raipur	Throughout India	
97.**	*Danaus genutia* (Cramer, [1779])	Common Tiger	Bastar, Bilaspur, Kabirdham, Korba, Koriya, Raigarh, Raipur, Surguja**, Jashpur**	Throughout India	
98.**	*Parantica aglea* (Stoll, [1782])	Glassy Tiger	Bastar	Gujarat to Kerala, Chhattisgarh, Odisha, W. Bengal	
99.**	*Tirumala limniace* (Cramer, [1775)	Blue Tiger	Bastar, Dantewara Raigarh, Raipur, Surguja**, Jashpur**	Throughout India including Andaman & Nicobar Island and Lakshadweep	
100.	*Tirumala septentrionis* (Butler, 1874)	Dark Blue Tiger	Bastar	Gujarat east to Odisha and south to Kerala, Himachal Pradesh to N.E. India, Andaman & Nicobar Islands	
101.**	*Euploea core* (Cramer, [1780])	Common Crow	Bastar, Bilaspur, Dantewara, Durg, Jashpur,	Throughout India, Andaman & Nicobar Islands	as Common Indian

			Kabirdham, Raigarh, Raipur		Crow in Chandra *et al.*, 2014
102.**	*Euploea mulciber* (Cramer, [1777)	Striped Blue Crow	Bastar	Andhra Pradesh, Chhattisgarh, Odisha, Jammu & Kashmir to N.E. India, Andaman Islands	
103.**	*Euploea sylvester* (Fabricius, 1793)	Double Branded Crow	**Raipur**	Peninsular India, Sikkim and Assam, Andaman Islands	
II. Subfamily: CHARAXINAE					
104.**	*Polyura agraria* (Swinhoe, 1887)	Anomalous Nawab	**Janjgir-Champa, Raipur**	Gujarat to Madhya Pradesh and Kerala, Himachal to N.E. India	
105.**	*Polyura athamas* (Drury, [1773])	Common Nawab	Bastar	Andaman Islands, Himachal Pradesh to N.E. India, Peninsular India south of Gujarat and Jharkhand	
106.**	*Charaxes bernardus* (Fabricius, 1793)	Tawny Rajah	Bastar**, Raipur, Jashpur**	Andaman Is..; Sikkim to N.E. India; Uttarakhand	
107.**	*Charaxes psaphon* Westwood, 1874	Plain Tawny Rajah	**Raigarh, Bastar**	Peninsular India as far north as Gujarat, Madhya Pradesh, Odisha to N.E. India	
108.**	*Charaxes solon* (Fabricius, 1793)	Black Rajah	Bastar, Bilaspur, **Raipur**	Rajasthan to Kerala, Delhi, Himachal Pradesh to Sikkim and W. Bengal	
III. Subfamily: SATYRINAE					
109.**	*Elymnias hypermnestra* (Linnaeus, 1763)	Common Palmfly	Bastar, Dantewara, **Raipur, Raigarh, Jashpur**	Maharashtra to Kerala, Punjab to N.E. India, Gujarat	
110.**	*Melanitis leda* (Linnaeus, 1758)	Common Evening Brown	Bastar, Bilaspur, Dantewara, Kanker, Koriya, Raipur, Surguja**, Jashpur**	Throughout India	

111.	*Melanitis zitenius* (Herbst, 1796)	Great Evening Brown	Bastar, Dantewara	Andaman Islands, Maharashtra to Kerala, Andhra Pradesh, Chhattisgarh, Himachal Pradesh to N.E. India	
112.	*Lethe drypetis* (Hewitson, 1863)	Tamil Treebrown	Bastar, Bilaspur	Goa to Kerala; Chhattisgarh and Odisha	
113.**	*Lethe europa* (Fabricius, 1775)	Bamboo Treebrown	Bastar, Raipur, **Jashpur**	Punjab and Himachal Pradesh to N.E. India, Andaman Islands, Gujarat eastwards to Odisha and southwards to Kerala, Southern Nicobar Islands	
114.	*Lethe rohria* (Fabricius, 1787)	Common Treebrown	Bastar, Kabirdham	Rajasthan east to W. Bengal and south to Kerala, J&K to N.E. India	
115.	*Mycalesis lepcha* (Moore, 1880)	Lepcha Bushbrown	Bilaspur	N.E. India, Himachal to Uttarakhand	
116.	*Mycalesis mineus* (Linnaeus, 1758)	Dark-Brand Bushbrown	Bilaspur, Kabirdham	Himachal Pradesh to N.E. India, Andaman & Nicobar island, Peninsular India from Gujarat to W.Bengal to Kerala, Lakshadweep	as Dark Branded Bushbrown in Chandra *et al.*, 2014
117.	*Mycalesis perseus* (Fabricius, 1775)	Common Bushbrown	Bastar, Dantewara, Kabirdham, Kanker, Raipur, Surguja	Himachal Pradesh to N.E. India, Peninsular India south of the Himalaya to Kerala	
118.	*Mycalesis visala* Moore, [1858]	Long-Brand Bushbrown	Bastar, Dantewara, Kanker	Andaman Islands, Kerala to Odisha, Uttarakhand to N.E. India, Gujarat to Goa and Madhya Pradesh to W. Bengal	

119.**	*Orsotriaena medus* (Fabricius, 1775)	Nigger	Bastar, Dantewara	Maharashtra, MP and Chhattisgarh, south to Kerala, Uttarakhand to N.E. India, Haryana to Odisha, Andaman & Nicobar Islands	
120.**	*Ypthima asterope* (Klug, 1832)	Common Threering	**Jashpur**	Throughout India	
121.**	*Ypthima huebneri* Kirby, 1871	Common Fourring	Bastar, Dantewara, Surguja, Raipur, **Jashpur**	Throughout India	
122.**	*Ypthima ceylonica* Hewitson, 1865	White Fourring	Bastar, Dantewara	Goa eastwards to Odisha and southwards to Kerala	
IV. Subfamily: LIMENITIDINAE					
123.**	*Neptis hylas* (Linnaeus, 1758)	Common Sailer	Bastar, Bilaspur, Dantewara, Kanker, **Raigarh, Raipur, Jashpur**	Andaman Island, Uttarakhand to N.E. India, Southern Nicobar Island, Gujarat, Madhya Pradesh and Jharkhand southwards to Kerala	
124.**	*Neptis jumbah* Moore, [1858]	Chestnut-streaked Sailer	Bastar, Bilaspur, **Jashpur**	Andaman Islands, Gujarat eastwards to W. Bengal and southwards to Kerala, Sikkim to N.E. India	
125.**	*Phaedyma columella* (Cramer, 1780)	Short-banded Sailer	Bilaspur, Koriya, **Raigarh, Jashpur**	Nicobar Islands, Gujarat eastwards to W. Bengal and southwards to Kerala, Uttarakhand to N.E. India	
126.**	*Pantoporia hordonia* (Stoll, [1790])	Common Lascar	Bastar, Dantewara, **Jashpur**	Andaman Islands, Maharashtra eastwards to W. Bengal and southwards to Kerala, Uttarakhand to N.E. India	

127.**	*Athyma nefte* (Cramer, [1780])	Colour Sergeant	Bastar, Jashpur, Koriya	Uttarakhand to N.E. India, Karnataka to Kerala and northwards to Odisha	
128.**	*Athyma perius* (Linnaeus, 1758)	Common Sergeant	Bastar, Bilaspur, Dantewara, Kabirdham, Koriya**, Jashpur**	Kerala north to Maharashtra, MP and Jharkhand, Himachal Pradesh to N.E. India	
129.	*Athyma ranga* Moore, [1858]	Blackvein Sergeant	Bastar, Dantewara	Karnataka to Kerala, Sikkim to N.E. India	
130.**	*Athyma selenophora* (Kollar, [1844])	Staff Sergeant	Bastar, Bilaspur, Dantewara, Kabirdham, Jashpur	N.E. India, Goa east to Jharkhand and southwards to Kerala	
131.**	*Moduza procris* (Cramer, [1777])	Commander	Bastar, Bilaspur, Kabirdham, Jashpur, Raipur, **Raigarh**	Andaman Islands, Uttarakhand to N.E. India, Gujarat eastwards to Odisha and southwards to Kerala	
132.**	*Tanaecia lepidea* (Butler, 1868)	Grey Count	Bastar, Bilaspur, Dantewara, Korba, Koriya, Jashpur, Surguja	Uttarakhand to N.E. India, Maharashtra eastwards to Odisha and southwards to Kerala	
133.**	*Euthalia aconthea* (Cramer, [1777])	Common Baron	Bastar, Surguja, Kabirdham, **Raipur, Jashpur**	Throughout India	
134.**	*Euthalia lubentina* (Cramer, [1777])	Gaudy Baron	Bastar, Jashpur	Maharashtra to Kerala, Gujarat eastwards to Haryana, Odisha and W. Bengal, Himachal Pradesh to N.E. India	
135.**	*Euthalia nais* (Forster, 1771)	Baronet	Bastar, Dantewara, Korba, Surguja, Koriya, **Janjgir-Champa, Raigarh, Raipur, Jashpur**	Tamil Nadu to Gujarat and Rajasthan, eastwards to W. Bengal and along the Himalaya from	

				Uttarakhand to W. Bengal	
V. Subfamily: HELICONIINAE					
136.	*Argynnis hyperbius* (Linnaeus, 1763)	Indian Fritillary	Bastar, Dantewara, Kanker	Kerala, Tamil Nadu, Rajasthan to MP, Gujarat, Uttar Pradesh, J&K to N.E. India	
137.**	*Phalanta phalantha* (Drury, [1773])	Common Leopard	Bastar, Bilaspur, Dantewara, Kabirdham, Kanker, Koriya, Raipur, **Janjgir-Champa, Jashpur**	Throughout India	
138.**	*Vagrans egista* (Cramer, [1780])	Vagrant	Bastar	Uttarakhand to N.E. India; Jharkhand, Odisha, W. Bengal.	
VI. Subfamily: BIBLIDINAE					
139.	*Ariadne ariadne* (Linnaeus, 1763)	Angled Castor	Bastar	Andaman & Nicobar Islands, Peninsular India from Gujarat and W. Bengal to Kerala, Uttarakhand to N.E. India	
140.**	*Ariadne merione* (Cramer, [1777])	Common Castor	Bastar, Raigarh, **Raipur, Bilaspur, Jashpur**	Gujarat to Kerala and Andhra Pradesh, J&K to N.E. India, Delhi, MP, Bihar to Odisha	
VII. Subfamily: CYRESTINAE					
141.**	*Cyrestis thyodamas* Boisduval, 1846	Common Map	Jashpur	Andaman Islands, Gujarat to Kerala, J&K to Uttarakhand, Sikkim to N.E. India	
VIII. Subfamily: NYMPHALINAE					
142.**	*Vanessa cardui* (Linnaeus, 1758)	Painted Lady	Bastar, Bilaspur Koriya, **Raipur, Jashpur**	Throughout India	
143.**	*Junonia almana* (Linnaeus,	Peacock Pansy	Bastar, Bilaspur, Dantewara, Kabirdham, Kanker,	Throughout India	

	1758)		Koryia, Surguja, Raipur, **Raigarh, Jashpur**		
144.**	*Junonia atlites* (Linnaeus, 1763)	Grey Pansy	Bastar, Kabirdham, Korba, Koriya, Bilaspur, Dantewara, Kanker, Raigarh, Raipur**, Jashpur**	Throughout India except arid regions	
145.**	*Junonia hierta* (Fabricius, 1798)	Yellow Pansy	Bastar, Bilaspur, Durg, Kabirdham, Korba, Koriya, Surguja, **Raigarh, Raipur, Jashpur**	Throughout India	
146.**	*Junonia iphita* (Cramer, [1779])	Chocolate Pansy	Bastar, Kabirdham, Bilaspur, Dantewara, Kanker, Surguja, Koriya, Raipur, **Raigarh, Jashpur**	J&K to N.E. India, Peninsular India to MP	
147.**	*Junonia lemonias* (Linnaeus, 1758)	Lemon Pansy	Bastar, Bilaspur, Dantewara, Kabirdham, Kanker, Koriya, Raipur, **Raigarh, Jashpur**	Sikkim to N.E. India, J&K to Uttarakhand, Rajasthan to Kerala and eastwards to Jharkhand	
148.**	*Junonia orithya* (Linnaeus, 1758)	Blue Pansy	Bastar, Bilaspur, Dantewara, Jashpur, Kabirdham, Kanker, Koriya, Surguja, Raipur, **Raigarh**	Sikkim to N.E. India, Nicobar Islands, J&K to Kerala and W. Bengal	
149.**	*Hypolimnas bolina* (Linnaeus, 1758)	Great Eggfly	Bastar, Bilaspur, Durg, Kabirdham, Koriya, Raipur, Surguja, **Raigarh, Janjgir-Champa, Jashpur**	Throughout India except very arid region	
150.**	*Hypolimnas misippus* (Linnaeus, 1764)	Danaid Eggfly	Bastar, Bilaspur, Dantewara, Jashpur, Surguja, Dantewara, **Raigarh**, **Raipur, Jashpur**	Throughout India	
151.**	*Kallima inachus* (Boisduval,	Orange Oakleaf	Bastar, Kabirdham	J&K to Uttarakhand, Jharkhand, Eastern	

	1846)			Ghats, MP and Gujarat, N.E. India	
IX. Subfamily: ACRAEINAE					
152.**	*Acraea violae* (Fabricius, 1793)	Tawny Coster	Bastar, Bilaspur, Dantewara, Koriya, Raipur, **Raigarh**	Throughout India	

Appendix-3 (Tentatively Included Species)

Since there have been no further records of these species and subsequent literature Varshney & Smetacek (2015) do not include these species, their presence in Chhattisgarh requires confirmation.

S no.	S no.**	Scientific Name	Common Name	Remarks
FAMILY: PIERIDAE				
Subfamily: PIERINAE				
153.	16.	*Pieris canidia* (Linnaeus, 1768)	Indian Cabbage White	Despite its report by Chandra *et al*., 2014, it is not reported from the study by Varshney, R.K. & Smetacek, P (eds.) 2015, thus further confirmation is required.
FAMILY: LYCAENIDAE				
Subfamily: CURETINAE				
154.	80.	*Curetis bulis* (Westwood, 1852)	Bright Sunbeam	Despite its presence in Chandra *et al*., 2014, it does not feature in Varshney, R.K. & Smetacek, P (eds.) 2015, thus further confirmation is required.
Subfamily: POLYOMMATINAE				
155.	88.	*Niphanda cymbia* de Niceville , 1884	Pointed Pierrot	Despite its presence in Chandra *et al*., 2014, it does not feature in Varshney, R.K. & Smetacek, P (eds.) 2015, thus further confirmation is required.
156.	87.	*Tarucus callinara* Butler, 1886	Spotted Pierrot	Androconia and male genitalia needs to be examined on this genus to assign species rank. Thus further confirmation is required.
157.	89.	*Tarucus nara* (Kollar, 1848)	Striped Pierrot	Androconia and male genitalia needs to be examined on *Tarucus* to assign them species rank. Thus further confirmation is required.
158.	98.	*Pithecops corvus* Fruhstorfer 1919	Forest Quaker	Despite its presence in Chandra *et al.* (2014), it does not feature in Varshney & Smetacek (2015). Presence of this species in CG & MP requires confirmation.
FAMILY: NYMPHALIDAE				
Subfamily: HELICONIINAE				

159.	50.	*Phalanta alcippe* (Stoll, [1782])	Small Leopard	Despite its presence in Chandra *et al.*, 2014, it does not feature in Varshney, R.K. & Smetacek, P (eds.) 2015, thus further confirmation is required.
*Note: S no. ** denotes the serial no. in which the above discussed species have appeared in* Chandra *et al.*, 2014				

FIRST REPORT OF *PHACOPTERON LENTIGINOSUM* BUCKTON, 1896 (INSECTA: PSYLLOIDEA: PHACOPTERONIDAE) FROM ODISHA, INDIA

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Psyllids are small phloem feeding sternorrhynchous insects with more than 4000 described species worldwide. Immatures of most of the species are monophagous and oligophagous in which related psyllids species tend to develop on related plant species (Burckhardt *et al*., 2018).

Psyllids occurs on the tropics and the south temperate regions except Antarctica. There are eight families of psyllids namely Psyllidae, Triozidae, Aphalaridae, Liviidae, Calophyidae, Carsidaridae, Homotomidae and Phacopteronidae (Ouvrard, 2018).

The family Phacopteronidae consists of two genera (*Phacopteron* and *Pseudophacopteron*) and three species. Among the two genera the *Phacopteron* genus includes *Phacopteron lentiginosum* Buckton, 1896. Earlier, *P. lentiginosum* was reported by different authors from different part of the Indian subcontinent namely, Bihar (Mathur, 1975), Karnataka (Mathur, 1975), Kerala (Mathur, 1975; Hayat *et al*., 2012), Maharashtra (Buckton, 1896), Sikkim (Mathur, 1975), Tamil Nadu (Kieffer, 1906; Mani, 1948, Kandasamy, 1986; Raman, 1987), West Bengal (Mathur, 1975), Uttarakhand (Mani, 1948; Mathur, 1975; Hayat *et al*., 2012); Nepal (Hodkinson, 1986); Pakistan (Hodkinson, 1986) on the host plant *Garuga pinnata* (Burseraceae) (Burckhardt *et al*., 2018). The species has so far not been reported from Odisha.

During a field survey to Khandadhar waterfall, Sundargarh district, Odisha (21.764643 N, 85.108498 E) on 8. xii. 2018, samples were collected from dried, fallen leaves of a *Garuga pinnta* tree. Even after the leaf fall, live adult specimens were found inside the galls. The psyllid immature and adults were collected and stored in 70% ethyl alcohol. The specimen photographs were then sent to Daniel Burckhardt, Natural History Museum, Basel, Department of Biosciences for identification. The specimens were identified as *P. lentiginosum*. This confirms the presence of this psyllid in Odisha and represents an eastward extension to the known distribution of this species on the Indian subcontinent.

Acknowledgement

I would like to thank Dr. Daniel Burckhardt, Natural History Museum, Basel, Department of Biosciences for identification of the specimens, Dr. Manoj Kumar Tripathy, Professor in Entomology, Department of Natural Resource Management, College of Forestry, OUAT, Odisha for being my mentor in this whole process.

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Fig.1: *Phacopteron lentiginosum*

Fig.2: Galls on *Garuga pinnata*

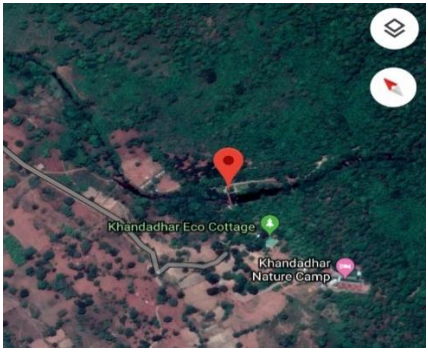

Fig.3: Specimen Collection Map

Fig.4: Immature of *Phacopteron*

RECORD OF *MYCALESIS ADAMSONI* (WATSON, 1897) (LEPIDOPTERA: NYMPHALIDAE) FROM POKHARA AND GODAVARI, NEPAL

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Key Words: *Mycalesis adamsoni*, Nymphalidae, Butterfly, Nepal

Abstract
M. adamsoni (Watson, 1897) was recorded in Pokhara valley in April, May, August and September during monthly butterfly survey from 2017 to 2018. The confirmation of the species in Godavari area was based on photographic evidence collected in 2011. This note reports the westward range extension of *M. adamsoni* to the central midlands of Nepal.

Introduction

Mycalesis adamsoni (Watson, 1897) is a locally common butterfly species. It inhabits broadleaf forests with dense bamboo undergrowth in hilly regions with heavy rainfall. Its global distribution ranges from Australia to Vietnam, Thailand, Laos and Burma (= Myanmar) (*Watson, 1897*). *Evans (1932) reported this species as rare from Manipur (India) and* northern Myanmar. Gogoi (2013) recorded many individuals of *M. adamsoni* from Assam, India. This paper presents records of *M. adamsoni* from Pokhara and Kathmandu valley of Nepal. The nearest colony of *M. adamsoni* is reported from Assam.

Material and Methods

A monthly butterfly survey was conducted in Pokhara (800 m above m.s.l.) from 2017 to 2018.

In 2017 on August 7, 11, 17 & 30) and September, 2 &18, *M. adamsoni* was recorded and photographed in two different forest areas: Banpale forest, Institute of Forestry (IOF) and Raniban forest of Pokhara Valley. In 2018 on April 6, 21 and 30 and May 11, individuals were recorded from Banpale Forest, IOF and Raniban forest. In addition to the above, there was a photographic record from Godavari area by MSL in 2011 (1500 m above m.s.l.) but it was not identified until recently. The habitat of *M. adamsoni* comprises forest dominated by *Castanopsis* and *Schima* species in Pokhara.

Material Examined

The identifying key of this species is, the origin of v7 is pushed back before end cell on hindwing (Evans, 1932) which was clearly noticeable and wingspan measured was 50 to 61mm.

Result and Discussion

During the survey, a healthy population of *M. adamsoni* was observed in their flight period. Dry season forms were noted in the month of

April and May whereas wet season form were noted in August and September. *M. adamsoni* was observed settling on dry leaves of small bushes near forest trails and basking on stones in the forest near a lake. Watson (1897) reported this species from 560 m to 1400 m from Thailand whereas in Nepal this species was recorded between 800 m and 1500 m elevation. This study shows Pokhara as the westernmost habitat from where the species has been recorded till date. The two study areas considered in this survey, Pokhara and Kathmandu valleys, are about 200 km apart and the nearest known colony is found in Assam. The unexpected record of a healthy population in two valleys suggests that this species was present earlier but misidentification led to the exclusion of this species from the known butterfly fauna of Nepal. It is likely that other populations of the species occur in the intervening areas between Assam and Pokhara but so far they have not been located.

The species has two broods, a dry season brood in April and a wet season brood in August and September. The limited flying time of the species may be one of the reasons that it has been overlooked so far.

Acknowledgement

Authors are grateful to the Principal, Institute of Forestry, Pokhara Campus for granting permission to conduct this study and to Colin Phillip Smith for confirmation of species as a new record for Nepal.

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Fig.1: *M. adamsoni*, verso view, Raniban Forest.

Fig.2: *M. adamsoni*, recto view, Banpale Forest IOF.

Fig.3: Dry season form of *M. adamsoni*

Fig.4: Wet season form of *M. adamsoni*

BUTTERFLIES FEEDING ON HUMAN BLOOD: FIRST OBSERVATION FROM INDIAN REGION

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Reviewer: Peter Smetacek
Key Words: Assam, North-east India, feeding behaviour, Lycaenidae, Hesperiidae, attractants, odour.

Abstract: The first case of Indian butterflies feeding on human blood is reported from Assam.

Introduction

Adult butterflies obtain nutrition and mineral supplements from nectar and pollen of flowers, overripe fruits, tree sap, human perspiration, excreta (faeces, scat, dung, droppings and urine), decaying flesh of dead animals, and puddle on mud (Wynter-Blyth, 1957; Boggs & Jackson, 1991; Plotkin & Goddard, 2013; Kehimkar, 2016; Bodri, 2018). A Nymphalid butterfly, *Dryas iulia* (Fabricius, 1775) has also been reported to feed upon tears (lacryphagy) of caimans (de la Rosa, 2014). In the tropical region many nocturnal moths (largely males) belonging to Pyralidae, Erebidae, Geometridae, Thyatiridae, Notodontidae, and Sphingidae, were reported to feed on wounds and lachrymal fluid from the eyes of large mammals, including humans (Krenn, 2010). In Lepidoptera, only adult male *Calyptra* moths (ten out of seventeen described species) are well-known for blood-feeding or hematophagy. These moths pierce the skin, with the help of proboscis and then suck the blood from the host mainly from large mammals, including humans (Snyder, 2016).

Previously, butterflies feeding on human blood was only reported from Bavaria, Germany during July 2007, where two Nymphalidae butterflies *Erebia ligea* (Linnaeus, 1758) and *Erebia pronoe* (Esper, 1780) were observed to feed on fresh blood from a woollen sock (Blood feeding butterflies 5362.JPG., 2018). From the Indian sub-region, no butterflies have been reported to feed upon blood. Especially, members of Lycaenidae and Hesperiidae have never been observed to feed upon blood. Here we report for the first time blood feeding by two Lycaenidae butterflies *Neopithecops zalmora* (Butler, [1870]) and *Jamides alecto* (C. Felder, 1860); and one Hesperiidae butterfly *Odontoptilum angulata* (C. & R. Felder, 1862) from North-eastern region of India.

The Panbari Reserve Forest (26°36'N & 93°30'E) is protected under the Kaziranga National Park and the Reserve forest comes under the Golaghat and Karbi Anglong districts of Assam. The average elevation of this Reserve forest is ranges from 80- 360m. The undisturbed semi-evergreen forest and forest streams of this reserve provide suitable habitat for butterflies. This reserve forest is home to 116 of Lycaenidae (Gogoi, 2015) and 137 species of Hesperiidae (Gogoi, 2013).

Observation

During a butterfly survey in Panbari Reserve Forest on 7.x.2014 at about 12:30 pm we observed two individuals of Lycaenidae

butterfly *N. zalmora* and *J. alecto* were come to feed on fresh blood, which had flowed onto the first author's shoe (Fig 1 & 2). Due to leech bites on legs, the shoes were soaked in blood and for this reason, the shoes were taken off and places by a forest trail while we rested. Butterflies that were attracted to the blooded shoes were observed to feed on the blood for about five minutes, and then we moved on along the forest trails in search of butterflies. After that, at about 1:00 pm we observed another Hesperiidae butterfly *O. angulata* come to feed on the blood of the second author's leg. At first, it had been fluttering around the second author's body, then it finally settled on the bleeding wound on his leg) (Fig 3).

Discussion

In Lepidoptera, blood feeding by the *Calyptra* moths was hypothesised as a salt acquisition strategy, to increase their mating success (Zaspel *et al*. 2011). Here, in case of our present observation we can assume that, to acquire salt and sugar, these butterflies came to feed on blood. As the blood contains sodium and sugar, which are known to be important for butterflies. Other than sodium and sugar, blood also contains essential minerals like calcium, magnesium, potassium, iron, zinc, copper, etc. But no experiment has been carried out, to find out mineral preference of butterflies other than sodium and sugar of blood.

According to Otis *et al.* (2006), the butterflies at a puddling site attract other butterflies for puddling at that site. But how the first butterfly is attracted to the puddling site remains a mystery. Recently, Inoue *et al*. (2019) hypothesized that odours emitted from the decaying materials such as ammonia, hydrogen sulphide and organic acids may serve as attractants for butterflies to puddling sites. Many butterflies use floral scents or fermentation odour to locate flowers and overripe fruits (Ômura & Honda, 2009; Sourakov *et al.* 2012). But how they locate an animal or a human being with bleeding wounds or simply the blood to feed upon is still unknown to us. Studies show that the blood odour component trans-4,5-epoxy-(E)-2-decenal (TED) produces behavioural responses in large predators, which acts as an attractant (Pettersson *et al.* 2018). It is not known whether the odour of blood serves as an attractant for butterflies. The butterflies observed feeding on blood in the present note were previously known only to feed on nectar and damp soil patches, not on decaying flesh or other animal sources of minerals (Wynter-Blyth, 1957). If they were attracted to fresh blood, then they can obviously digest it, too. Therefore, feeding on blood by these butterflies may prove as a significant observation to carry out further investigation on the natural history of such butterflies, as well as feeding preferences among the Papilionoidea.

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Fig.1: *Neopithecops zalmora*

Fig.2: *Jamides alecto*

Fig.3: *Odontoptilum angulata*

FIRST REPORT OF THE GENUS *CALLEREBIA* BUTLER, 1867 (LEPIDOPTERA: NYMPHALIDAE: SATYRINAE) FROM MIZORAM, INDIA

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Within India, the genus *Callerebia* Butler, 1867 is known from the Himalaya and hills of north eastern India. Six species in the genus have been recorded north of the Brahmaputra and 2 species south of that river. The latter two are *C. orixa* Moore, 1872, which is known from N.E. India and *C. suroia* Tytler, 1914 which is so far known only from Manipur (Varshney & Smetacek, 2015). Although Varshney & Smetacek (2015) report *C. orixa* from N.E. India and there are records from Nagaland, Manipur and Meghalaya, but it has not so far been reported from Mizoram.

During surveys in Phawngpui National Park (1500 m), Lawngtlai district; Murlen (1600 m) in Champhai district and Hmuifang (1500 m) in Aizawl district, several individuals of the genus were noted flying about. One individual of *C. orixa* was photographed in Phawngpui National Park on May 3, 2014 and several were photographed in Murlen in the last week of October and first week of November, 2017. More specimens were observed in Hmuifang in November, 2019. The presence of tornal ocelli on the underside hindwing confirmed that the species is *C. orixa*, not *C. suroia*.

C. orixa appears to have at least two annual generations in Mizoram, the first in May and the second in October and November.

The genus is found in hilly areas at moderate elevation and although other members of the genus are known to feed on grasses, yet they are found along the edges or in the vicinity of dense forest and not often on open, grassy hillsides (P. Smetacek, *pers. comm.*). *C. orixa* displays the same habitat preference.

For the present, *C. orixa* is the only known member of the genus recorded from Mizoram. Perhaps further surveys in other parts of the state discover the presence of *C. suroia* eventually. However, *C. suroia* is known from higher elevation, around 2500 m elevation on Mount Shirui in Manipur. Since the highest elevation in Mizoram is Mt. Phawngpui at 2157 m, it is possible that *C. suroia* does not occur in Mizoram.

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Fig.1: *C. orixa,* verso view.

Fig.2: *C. orixa,* recto view.

Fig.3: *C. orixa* at Phawngpui National Park.

Fig.4: *C. orixa's* habitat, Hmuifang

NOTES ON TAXA OF THE SALASSA LEMAII GROUP (LEPIDOPTERA: SATURNIIDAE) WITH THE DESCRIPTION OF A NEW SPECIES FROM MIZORAM, INDIA

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Keywords: Mizoram, Saturniidae, *Salassa*, new species.

Abstract

A new species of the genus *Salassa* Moore, 1859 (Lepidoptera, Saturniidae, Salassinae) is described from Mizoram in north-eastern India: *Salassa mizorama*, **n. sp.** It is compared with its closest relatives in the genus, the species around *Salassa lemaii* Le Moult, 1933. So far, the new species is known only from males; females and preimaginal instars remain unknown. An overview about the group is given, and one recently described subspecies, *Salassa lemaii chiangmaiensis* Brechlin & Meister, 2009 is synonymized with its nominotypical species. Some shorter general notes on the genus *Salassa* are given, to clarify some taxonomic problems. *Salassa kitchingi* Brechlin, 2010, is found to be a synonym of the long-known sub-Himalayan species *Salassa lola* Westwood, 1847 whose type locality was wrongly interpreted.

Introduction

The first specimen of a species of the *Salassa lemaii*-group was collected in November 2011 by Lalawmpuia, then a research assistant at Mizoram University, Aizawl, Mizoram, India at Electric Veng, Aizawl. This specimen was in the collection of the Mizoram University, Aizawl, but has since been misplaced. In the same month and year, another specimen was collected in Hmuifang, Aizawl district, Mizoram, by the junior author. In late October and early November 2019, 26 further specimens were obtained from Hmuifang and deposited in the collection of the Butterfly Research Centre, Bhimtal, Uttarakhand and the Department of Zoology, Mizoram University (Central), Aizawl. Due to overall differences in morphology and DNA barcoding results, it was decided to make a name for it available to science.

***Salassa mizorama*, n. sp.**

Holotype (Fig. 1, dorsal view; Fig. 2: ventral view): Male, India, Mizoram, Aizawl District, Hmuifang, 23°27’01’’N 92°45’26’’E, 1472 m, 3.xi.2019, 1.00h IST, leg. P. Smetacek, in the collection of Butterfly Research Centre, Bhimtal, Uttarakhand, bearing a red holotype label.

Paratypes: 18 males, same locality as holotype, all collected between 30.x. – 4.xi.2019, 1 male with genitalia no. 2618/19 Naumann, barcode SNB-RR 0263, leg. P. Smetacek, in Butterfly Research Centre, Bhimtal, Uttarakhand; 7 males, same locality as holotype, all collected between 1.xi. – 4.xi.2019, leg. Lalnghahpuii, MZUEC 20190001 – MZUEC 20190007, in collections of Entomological Collections, Systematics and Toxicology Laboratory, Department of Zoology, Mizoram University, Aizawl, Mizoram; 1 male, India, Mizoram, Aizawl District, Hmuifang, 23°27’04.07’’N 92°45’19.41’’E, 7.xi.2011, barcode KJ624750, leg. E. Lalhmingliani, MZUEC 20110001, in collections of Entomological Collections, Systematics and Toxicology Laboratory, Department of Zoology, Mizoram University, Aizawl, Mizoram (figured in

Lalhmingliani 2015: 50, fig. 5E, as *S. lemaii*). Blue paratype labels will be added.

Etymology: The species is named for Mizoram, India, the only known state where this moth is found. Mizo is the name of the native inhabitants and Ram means land, so Mizoram means Land of the Mizos.

Description

Male: Length of forewing, measured from base to apex, 93 – 107 mm (holotype 97 mm). Head, thorax, abdomen and wings with ground colour olive suffused with fuscous scales, the complete body covered with hair-like scales; the tegulae clothed with long, white and olive hair-like scales. Base of antennae whitish, antennae quadripectinate, last five segments bipectinate, 19 – 21 mm in length, 43 segments, longest rami 1.7 mm.

Forewing elongate, with apex somewhat produced and rounded tornus. A narrow white subbasal line, originating on the costa and ending at the base of the forewing termen, where it coincides with a white band across the thorax; an ovoid, greenish-hyaline discal ocellus of 9 – 12 mm (holotype 10 mm) maximum diameter, with an inner black, middle bluish-white and outer brown ring. Postmedial fuscous band straight, with costal part whitish and 6 small hyaline fenestrae between the veins. Postmedian area less suffused with fuscous scales, the subapical and apical areas suffused with whitish scales; this area is at least 10 mm between the postmedial band the submarginal fuscous zigzag band beyond which is an orange marginal area. Cilia orange and fuscous.

Hindwing with a greenish-hyaline, discal, almost round ocellus, of 8 – 10 mm maximum diameter (holotype 9 mm), defined by an inner black, middle bluish-white and outer brown ring, and surrounded by a vivid orange ring which is narrower towards the base of the wing; some orange suffusion between the orange ring and the postmedial fuscous line, which originates on the termen, with six hyaline fenestrae between the veins. In the upper half of the wing, the postmedial line merges into a prominent black semi-circular mark encircling the upper half of the discal ocellus. Postmedian area again in ground colour, with a pair of fuscous, irregular zigzag lines, the outer one widening towards the apex.

On ventral side thorax and abdomen covered with long, dark brown hair, the last abdominal segment grey. Fore legs on dorsal side brown, on ventral side light grey, the two other pairs of legs completely light grey. Wing undersides greyish brown, forewing discal ocellus with only a narrow black and bluish-white ring on basal side while the hindwing ocellus has a complete black and bluish-white ring defining it. Postmedian band of fenestrae outwardly suffused with greenish scales, beyond which the groundcolour is suffused with whitish scales. Submarginal and marginal areas dark brown with patches of orange scales between the veins.

Distinctive characters: The combination of characters (size and form of discal ocelli, orange area around the hindwing ocellus which extends to the postmedian line, the number of fenestrae in the postmedian line, the wide distance between the postmedian and marginal lines on the forewing, the prominent black mark on the upper part of the hindwing postmedian line, and a single prominent marginal band on the hindwing [all other species have two prominent bands]) make *S. mizorama* easy to separate from other known species in the group.

Male genitalia: Uncus with a dorsal "hyperuncus", the uncus itself bent in ventral direction and ending with a 1 mm broad edge. Transtilla with two lateral round protuberances. Dorsal process of the valvae with double tips, the dorsal one rounded, the ventral one more acute; the ventral process of the valvae with two acute tips. Saccus broad and rounded, juxta with two lateral, short and acute processes. Phallus 5.5 mm long, vesica emerging to dorsal side with one rounded bulb of around 1 mm diameter.

The male genitalia of the nearest relative, *S. lemaii* are similar in their general structure, but differ from those of *S. mizorama* by a more acute tip of the uncus, smaller and more blunt dorsal and ventral processes of the valves, the ventral one without indention between the two processes, a more rounded saccus, and a juxta with lateral lobe-like processes in addition to a central knob-like protuberance. Phallus shape and size in general are similar.

So far the species is known only from adult males; females and preimaginal stages are unknown. All males were collected within a relatively short time period between 23.55 and 1.20 hrs Indian Standard Time, after this time no specimens approached the light traps.

The type locality is dominated by *Rapanea capitellata*, *Eurya* sp., *Quercus* spp., *Elaeocarpus rugosus*, *Nyssa javanica*, *Macropanax* sp., *Schima wallichii* and *Ardisia macrocarpa*. In addition, there are grassy ridges and hillsides above the forested valleys and ravines. According to Champion & Seth (1968) the area falls under their Montane Subtropical Forest category.

Taxonomic notes on other members of the *S. lemaii* group

With the description of *S. mizorama*, the number of species in the *S. lemaii* group is raised to four. All species are active in the cold season around late October to early December and inhabit areas with pristine primary forests at medium to high elevation between 950 m to almost 2000 m.

***S. lemaii lemaii* Le Moult, 1933**

S. lemaii chiangmaiensis Brechlin & Meister, 2009 **syn. nov**.:

S. lemaii chiangmaiensis was described from what appeared to be an isolated population of *S. lemaii* in northern Thailand, whose nominotypical form is known from northern Vietnam. Gaps in the known distribution of *S. lemaii lemaii* whose type locality is Northern Vietnam and *S. lemaii chiangmaiensis* from Northern Thailand, as mentioned by Zhang & Kohll (2008), are probably due mainly to the lack of surveys during the cold season and secondly, to the lack of primary forests in the intervening area; future surveys in Northern Laos should most probably result in the discovery of connecting populations.

In a series of specimens comprising 3 males and 3 females from northern Vietnam and 10 males and 1 female from northern Thailand in Collection Naumann, no stable differences could be found between the different populations. Thai specimens examined were from Doi Inthanon and Doi Pha Hom Pok, Chiang Mai Province, at around 2000 m altitude, on the Myanmar border, a so far unknown locality for the species: the differences between Vietnamese and Thai populations mentioned in Brechlin & Meister (2009) for the form of the forewing apex (caveat: The female holotype of *S. lemaii lemaii* has repaired and partly trimmed forewings), the curves of the white forewing basal line and the number and size of hyaline patches along the postmedial line (in females in Collection Naumann, only seven hyaline patches in both populations) are not visible, and even the size of specimens seems not to be significant as the smallest male from Thailand has a forewing length of only 91 mm and therefore is smaller than all known male specimens from the type locality in Northern Vietnam. The only difference between both populations seems to be the size of the discal ocellus, which is slightly larger in male and female specimens from Thailand. No differences in male genitalia between both populations could be observed (genitalia no. 2425/15 from N. Vietnam, no. 1389/06 from Thailand). These morphological observations concur with the results of systematic barcoding where both populations show no differences. Based on the above points, *S. lemaii chiangmaiensis* Brechlin & Meister, 2009, **syn. nov.**, is herewith synonymised with its nominotypical taxon.

Perhaps the type series of *S. l. chiangmaiensis* was too small to distinguish any stable specific or subspecific characters; interestingly, the third female mentioned from the Natural

History Museum, London in the original description is, in fact, a male, so the few measurements for females also contain data for a male.

***S. siriae* Brechlin & van Schayck, 2015**

Specimens of this taxon were only known from the type locality in Da Nang province in Central Vietnam. Meanwhile, specimens have been recorded from Quang Ngai Province in Central Vietnam and Lam Dong Province in Southern Vietnam (specimens in Collection Naumann), therefore

this taxon has a wider distribution than known before.

Checklist of the group around *Salassa lemaii*:

Salassa lemaii Le Moult, 1933; Locus typicus: Vietnam (N), Tam Dao; BIN Code on BOLD: AAC8986.

S. lemaii chiangmaiensis Brechlin & Meister, 2009, **syn. nov.**; Locus typicus: Thailand (N), Chiangmai Prov., Doi Inthanon N.P.

Salassa shuyiae Zhang & Kohll, 2009; Locus typicus: P.R. China, Hainan Island, Ledong Co.; BIN Code on BOLD: ABY9933.

Salassa siriae Brechlin & van Schayck, 2015; Locus typicus: Vietnam (C/E), Da Nang Prov., Ba Na Mts.; BIN Code on BOLD: ACI5793.

Salassa mizorama Naumann & Lalhmingliani, **n. sp.**; Locus typicus: India, Mizoram, Hmuifang; BIN Code on BOLD: ACQ7929.

***Salassa lola* Westwood, 1847**

Salassa kitchingi Brechlin, 2010 **syn. nov**.

S. kitchingi Brechlin, 2010, described from Nepal, fits in all details with typical specimens of *S. lola* Westwood, 1847. Although the latter was mentioned by Westwood (1847: 25) to originate from Sylhet, it appears that this is an impossible provenance of that taxon; the highest elevation in Sylhet District in north-eastern Bangladesh is less than 100 m above sea level, an altitude at which no *Salassa* species has ever subsequently been recorded. Entomological specimens sent to Europe in the mid-19th to early 20th century by British collectors based in India mainly originated from local people who collected not only in N.E. India but even in Tibet and Myanmar. This matter was mentioned in an earlier paper on *Saturnia zuleika* Hope, 1843 (Naumann & Nässig, 2010) which we cite here:

"A similar case of an implausible type locality is that of *Salassa lola* (Westwood, 1847). Westwood (1847–48: 25) also indicates "Sylhet", which was then repeated by Hampson (1893: 27) and, possibly as a result of this secondary source (because this looked like some kind of a "verification" of the locality data), was then translated into the present-day locality "Bangladesh" in a modern publication (Witt & Pugaev 2007: 3–4, in their lectotype designation for *S. lola*). *S. lola* is another typically Himalayan mountain species (and not even known to occur in the Khasi and Naga Hills at all!), living on average at even higher elevations than *Saturnia zuleika* s.l., and thus surely also does not inhabit lowlands, as has already been noted by Naumann *et al.* (2010: 116–117) — this is most likely another drastic case of an erroneous type locality in Saturniidae."

Judging from the formerly used type localities of other British authors (e. g. Hope 1843, Westwood 1847, Moore 1872) in combination with knowledge of the distribution of specimens similar with the lectotype of *S. lola* we believe that the real type locality of that species should be somewhere in Darjeeling were the British in colonial times owned tea plantations and houses to stay during summer. With all this, we believe that *S. kitchingi* Brechlin, 2010, **syn. nov.**, is the same species as *S. lola*, described already about 160 years earlier.

Acknowledgement

We are most grateful to Peter Smetacek (Butterfly Research Centre, Bhimtal, Uttarakhand, India), B. Lalnghahpuii, Lalruatthara, C. Lalrinchhana and Samuel Lalronunga of the Department of Zoology, Mizoram University, Aizawl, India) who participated in collecting the type series. The authors are grateful to Prof. G.S. Solanki, Head, Department of Zoology, Mizoram

University for his support; Chief Wildlife Warden, Environment, Forest and Climate Change Department, Government of Mizoram, India for issuing research and collection permit (A.33011/5/2011-CWLW/Vol.-II/2); Varneiha Varte (Aizawl, Mizoram, India) very generously permitted collecting at his property in Hmuifang. Thanks to Tomas Melichar (Pribram, Czech Republic) and Lallawmsanga (Aizawl, Mizoram, India) for organizing equipment and logistics. Swen Loeffler (Lichtenstein, Germany) kindly helped with data of his valuable collection material which will be part of the Naumann Collection.

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Fig.1: *Salassa mizorama* **n. sp.**, male holotype, *recto*.

Fig.2: *Salassa mizorama* **n. sp.**, male holotype, same specimen, *verso*

Fig.3: Male paratype *recto*

Fig.4: Male paratype *verso*

Fig.5: male genitalia of *S. mizorama* **n. sp**. paratype, genitalia no. 2618/19 Naumann (scale bar 10 mm).

Fig.6: *S. mizorama* male aeadeagus, of same specimen.

Fig.7: male genitalia of *S. lemaii*, genitalia no. 1389/06 Naumann (scale bar

Fig.8: Habitat of *S. mizorama* **n. sp**. in Hmuifang, Mizoram, xi.2019.

SATURNIA ROSALATA NAUMANN & NASSIG (LEPIDOPTERA: SATURNIIDAE) IN UTTARAKHAND: AN ADDITION TO THE INDIAN FAUNA

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Reviewer: Stefan Naumann

The Rosy Emperor Moth *Saturnia rosalata* Naumann & Nassig, 2010 was described from the Nepal Himalaya. The type series was collected from Seti, Bheri, Dhaulagiri, Annapurna Himal, Gandaki, Ganesh Himal and Sagarmatha. It was recorded between 3000 m to 3600 m in dense pristine forests of hemlock (*Tsuga*) and rhododendron from April to June. Hitherto, it was believed to be endemic to Nepal.

It is distinguished from other members of the genus by the rosy pink suffusion at the base of the upperside hindwing.

On 18 May, 1989, a pair of wings comprising the left fore and hindwing of a specimen of *Saturnia* Schrank, 1802 was collected from Dhakuri (30.0672° N, 79.9109°E) en route to the Pindari glacier in Bageshwar district of Uttarakhand at an elevation of 2600 m. The moth had evidently been eaten by a bird after breaking off the wings. The forewing measures 43 mm. After many years, it was identified as *S. rosalata* by Stefan Naumann. This confirms the presence of the species in the main Himalayan range in Uttarakhand and is an addition to the known Indian fauna.

Acknowledgement

We are grateful to Dr. Stefan Naumann for identifying the wings and going through this note.

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Fig.1: *Saturnia rosalata, recto*. Dhakuri, Bageshwar, Uttarakhand, India.

Fig.2: *Saturnia rosalata, verso*. Dhakuri, Bageshwar, Uttarakhand, India.

Fig.3: *Saturnia rosalata* paratype Nepal. *Recto.*

Fig.4: *Saturnia rosalata* paratype Nepal. *Verso.*

TWO NEW SPECIES OF *LOEPA* MOORE (LEPIDOPTERA: SATURNIIDAE) FROM THE INDIAN SUBCONTINENT

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Reviewer: Sankaraman H.
Keywords: Himalaya, Nepal, Mizoram, Tripura, Saturniidae, *Loepa*, new species.

Abstract
Two species of the genus *Loepa* Moore, 1859, are described as new from the Indian subcontinent: *Loepa macrops* **n. sp.** from Nepal and northwestern India, a member of the *miranda*-group with relatively large ocelli on all four wings; and the small *Loepa nigra* **n. sp.** from the northeastern Indian states of Mizoram and Tripura, a relative of the sub-Himalayan *L. sikkima* Moore, 1865 in the *katinka*-group which in most specimens show much fuscous suffusion on the forewings. For both taxa males and females are known and figured; the preimaginal instars are unknown at present.

Introduction
The genus *Loepa* currently comprises around 50 described species in Asia, all of which are yellow, partly suffused with black, pink, or orange scales. A preliminary and tentative phylogenetic grouping of the species of the genus was proposed by Naumann (1995: 82); three species-groups, namely of *L. oberthuri* (Leech, 1890), *L. miranda* Moore, 1865 and *L. katinka* (Westwood, 1847) were later again defined in more detail by Yen *et al.* (2000). Within the *miranda*-group, three well-defined subgroups were recognized further due to the different genitalic morphology and the form and colouration of their wings. The placement of the species into these subgroups is also supported by the results of the COI barcode, from the Canadian Centre for DNA Barcoding (CCDB) in Guelph, Canada. Two of those groups were intensely revised (Naumann & Loeffler, 2012; Naumann *et al*., 2012) while the third one, the *miranda*-subgroup, is still under revision.

In this paper, we describe two new species viz., L. macrops, n. sp and L. nigra, n. sp. from miranda and katinka-groups, respectively**.**

Older literature is not very helpful for determination in many cases, since due to similarity, several taxa were often combined under a single species (e.g. Hampson, [1893]; Arora & Gupta, 1979), but also in more recent literature, authors sometimes did not identify species properly. The specimens determined as *L. sikkima* in Allen (1993) are surely *L. katinka*, and the specimen figured as *L. katinka* therein is most probably a specimen of the taxon described below (judging from the poor quality of the photo); surprisingly, the male figured as *L. miranda* does not originate from Nepal, but from northern Thailand, and therefore is certainly not *L. miranda.* The specimen is now in the senior author's collection. Also the handling of the genus by D'Abrera (1998) did not help clear the taxonomic confusion.

***Loepa macrops*, n. sp.**
Holotype (Fig. 1, *recto*; Fig. 2: *verso*): Male, Nepal (E), Mount Everest District, 2900 m, 25.viii. – 20.ix.1999, leg. V. Gurko, Kauf IB Prag x.1999, coll. Stefan Naumann; genitalia no 1879/09 Naumann; barcode SNB 0792. — A red holotype label will be added

accordingly. The holotype will be deposited within the Rainer Seegers Foundation in the collections of ZMHU Berlin.

Paratypes (in total 12 males, 1 female): 7 males, same data as holotype, one with barcode SNB 0793, 6 in coll. Stefan Naumann, 1 in coll. Butterfly Research Centre, Bhimtal, India. 1 male, same data, barcode SNB 2637, coll. Swen Loeffler > coll. Stefan Naumann. 1 female, Nepal (C), Kakani, 2070 m, 17.viii.1991, leg. T. W. Harman; material bought from Tony Harman in Turville Heath, Henley on Thames, Oxfordshire, 11.vii.2009, coll. Stefan Naumann. 1 male, Nepal (C), Magwanpur, Daman, vii.2009, leg. Alok Kumar, coll. Swen Loeffler > coll. Stefan Naumann; barcode SNB 263. 2 males, India, Uttarakhand, Dogalbitta, N 30.29303° E 79.10768°, 2400 m, 28. – 30.vii.2008, leg. Bretschneider; barcode SNB 2639; coll. Swen Loeffler > coll. Stefan Naumann. 1 male, India, Himachal Pradesh, Village Upper Gutdi N 32.556889 E 76.010313, 2000 m, 23. vii. 2011, leg. Alok Mahendroo, genitalia no. 2619/19 SNB, barcode SNB-RR 0264, collection of Butterfly Research Centre. Blue paratype labels will be added.

Etymology: *L. macrops* **n. sp**. is named after the relatively large ocelli on all four wings, compared to related species.

Description

Male (Figs. 1 – 4): Length of forewing, measured from base to apex, 54 – 62 mm (holotype 59 mm).

Head, thorax, abdomen and wings with bright, light yellow ground colour and typical pattern for the genus *Loepa*. Collar violet grey, tegulae yellow. The antennae ochreous brown, quadripectinate, only last 5 segments bipectinate, 13 mm in length, 35 segments in total, longest rami 1.5 mm long.

Forewing elongate, apex somewhat produced with rounded tornus, the outer margin concave. Antemedial line of intense carmine colour. The rounded forewing ocellus of 8.0 – 10-5 mm maximum diameter (holotype 9.0 mm), orange brown, separated from the costa by a narrow, sharply defined black semicircle, followed distally by a narrow pinkish white line and a vertical pale line representing the pupil of the ocellus. Costa violet grey until the proximal postmedial line, beyond which it is yellowish grey as far as the distal double black postmedial lines beyond which there is a pinkish grey subapical patch crossed by the outer of the two distal postmedial black lines, which is white as it crosses this patch. A black subapical spot with some pink suffusion around it. The erect submarginal line white, interrupted along the wing venation, embedded in yellowish olive patches. Cilia yellow.

Hindwing antemedial line black, turning to carmine near the dorsum. Hindwing ocellus almost circular, of 7.0 – 9.0 mm diameter (holotype 7.5 mm), defined proximally by an obscure black ring, with violet and white semicircle within the ocellus and an obscure white vertical mark representing the pupil of the ocellus. Triple postmedial lines, proximal one grey, marginal one bluish, submarginal area as in forewing.

On ventral side frons darker yellow, thorax and abdomen with yellow ground colour, all legs pink. On the forewing the carmine antemedian line and the orange brown colour and black half ring of the ocellus is missing, giving that a more pinkish and generally smaller impression. Hindwing with black antemedial line. The postdiscal and marginal markings as on upperside.

Male genitalia (Figs. 15, 16): Uncus long, acute and fused up to its tip. Dorsal process of the valves round and elongate, the ventral process acute and small-based. Both processi are connected with an internal longitudinal vertical protuberance. Sacculus distinctive, saccus long with rounded end, juxta rounded, strongly sclerotized on lateral and ventral side, there elongated with an internal process. The phallus of around 4 mm length, with two left and right lateral sclerotized processes at its

end; the vesica emerging to dorsal side, with left and right dorsolateral field of sclerites.

Female (Figs. 6, 7): The single known female is very similar to the males in all characters, and differs from those only by some sexual dimorphic characters such as different anatomy of antennae and more rounded wings. It has a forewing length of 61 mm, the forewing discal spot has a diameter of 9.5 mm, that of the hindwing of 8.5 mm. The antennae are 13 mm long, completely bipectinate, there are 35 segments, the longest rami are 1.2 mm long.

The preimaginal instars are unknown.

Distinctive characters and discussion: *L. macrops* is the nearest relative of *L. miranda* (Fig. 5) and replaces this species in Nepal and north-western India. There exists one male specimen labelled to originate from Lahore (Pakistan) ex collection R. Gschwandner, stored in Naturhistorisches Museum Vienna, Austria which should be conspecific with our type series. However, the labelled locality lies in the lowlands of north-eastern Pakistan and is almost certainly not the correct origin of the specimen, therefore we hesitate to include this specimen in the type series. It most probably originates from the mountain areas north of Lahore, now in Jammu and Kashmir which would expand the known distribution of *L. macrops* westwards. This distribution is yet to be confirmed.

We figure here the male lectotype of *L. miranda* from the collections of The Natural History Museum, London for comparison (NHM collection no. BMNH(E) 1626468). The labels announced in the lectotype designation (BOLD-label, designation and violet lectotype label) by Brechlin & Kitching (2010) will in due course be attached to the specimen. The forewings of this (and other conspecific specimens) are more falcate and prolongated, and the more ovoid wing ocelli are smaller in size, of only 5.5 – 8.0 maximum diameter. Within the BOLD barcoding campaign *L. miranda* gets a BIN no. AAB0772 and is clearly separated from the new species *L. macrops* with BIN no. AAB0779.

***Loepa nigra*, n. sp.**

Holotype (Fig. 8, dorsal view; Fig. 9: ventral view): Male, India, Mizoram, Khawmawi, 22.50° N 92.77 E, 130 m, iv.1997, via Yamamura; coll. Stefan Naumann. — A red holotype label will be added accordingly. The holotype will be deposited within the Rainer Seegers Foundation in the collections of ZMHU Berlin.

Paratypes (in total 8 males, 1 female): 4 males, same data as holotype, one with barcode SNB 6131, one with genitalia no. 2622/19 Naumann, coll. Stefan Naumann; 2 males, same data as holotype, coll. Butterfly Research Centre, Bhimtal, India. 1 female, India, Mizoram, Lawngtlai, 29.ix.2013, in Entomological Collections, Systematics and Toxicology Laboratory, Department of Zoology, Mizoram University, Aizawl, Mizoram. 2 males, India Tripura, Vanghmun, 23°59'N, 92°16'E, 19.iv.1995, leg. Bishal Chakma, coll. Swen Loeffler > coll. Stefan Naumann; barcode SNB 3424 & 3425; genitalia no. 1468/06 Naumann. – Blue paratype labels will be added.

Etymology: *L. nigra* n. sp. is named for the fuscous subapical area of the forewing and the darkened wing margins.

Description

Male (Figs. 8 – 10): Length of forewing, measured from base to apex, 36 – 41 mm (holotype 37 mm).

Head, thorax, abdomen and wings with intense dark yellow ground colour and typical pattern for the genus *Loepa*. Collar dark grey, tegulae yellow. The antennae ochreous brown, quadripectinate, only last two segments bipectinate, 8 mm in length, 24 segments in total, longest rami 0.8 mm long. The rami are very compact and densely fringed with short hairs.

Forewing slender and elongate, apex somewhat produced with rounded tornus, the outer margin strongly concave. Antemedial line broad, pink, with carmine margins. The

ovoid forewing ocellus large, complex, of 11.5 – 14.0 mm maximum diameter (holotype 11.5 mm), in general of chestnut brown colour, edged with black, proximal white and then black semicircular marks with white and dark grey centre. The ocellus touches the dark grey costa, the postdiscal area dusky, suffused with fuscous scales, the submarginal and marginal area, distal to the double postmedial zigzag line, of yellowish olive colour, the submarginal lunulate line white, connected throughout its length. Subapical area with inner violet and outer crimson red suffusion on either side of the white submarginal line and black subapical patch.

Hindwing without black suffusion, antemedian line black on its upper half, sharply angled until it touches the ocellus, thence to the dorsum it is pink and not sharply defined. Hindwing ocellus almost round, of 7.0 – 8.5 mm diameter (holotype 7.0 mm), with proximal whitish semicircular mark, ochreous and black crescents, followed by an inner light brown pupil, all this surrounded by a chestnut brown ring. Postmedian line doubled, proximal one grey, marginal one bluish, followed by a dusky, yellowish olive marginal area with complete white submarginal lunulate line.

On ventral side thorax and abdomen yellow, all legs pink. On the forewing the pink antemedian line and the chestnut brown portion of the ocellus is missing, giving that a more pinkish and generally smaller impression. The black subapical suffusion and subapical pink and violet portions plus subapical black spot, the dusky marginal area and the white submarginal line similar to upperside. Hindwing with violet lower half of the antemedial line, hindwing ocellus also with reduced chestnut brown portion and a pink subapical spot. Otherwise similar to upperside.

Male genitalia (Fig. 17): Uncus long, slender and divided into two rounded lobes for the apical 0.5 mm. Valves with larger dorsal, rounded process with small lateral indention, and a smaller, acute ventral process, ending in the inner part of the valves with a widening. Saccus long and slender, juxta rounded, anellus thickened in its lateral and ventral part. Phallus slender, ca. 4 mm in length, with two lateral ends, vesica emerging to left lateral side with a left lateral sclerite, from there a thorn emerging backward. The genitalia are very similar to those of the sub-Himalayan *L. sikkima* (Figs. 18, 19) which have a deeper indentation between the two apical processes of the uncus, the valves have a more compact, rounded dorsal process with longer lower prolongation and a more rounded ventral process, ending internally with a small lobe. The saccus and phallus of the latter are broader.

Female (Figs 11, 12): The single known female is a very worn specimen, where not all characters can be easily determined. It is missing the antennae, legs, its abdomen and portions of the scales and ornamentation. It has a forewing length of 43 mm, the forewing ocellus has a maximum diameter of 10 mm, that of the hindwing of 7.0 mm. The forewing antemedian line pink as well, the darkened portion is found only in the upper subapical area, there suffused with a pink field. The dusky postmedian area similar to the male, also with complete white submarginal line. Hindwing with missing pink portion of the antemedian anal part, otherwise this and the complete underside similar to the male.

The preimaginal instars of *L. nigra* n. sp. remain unknown.

Distinctive characters and discussion: *L. nigra* n. sp. can easily be distinguished from its nearest relative, the sub-Himalayan *L. sikkima* (Figs. 13, 14), by the combination of its smaller size with larger wing ocelli, the more slender forewing with concave outer margin (that of *L. sikkima* more compact and with straight margin), more often complete yellow specimens without dark or black suffusion of the forewing and marginal area, plus details in the male genitalia (see above). For *L. sikkima* we measured a forewing length

of 39 – 45 mm, and forewing ocellus maximum diameter of 11.0 – 12.5 mm, that of the hindwing with 6.0 – 7.0 mm. The male antennae are a little longer with 8.5 mm on average, with 26 segments and longest rami of 1.0 mm. The white submarginal line often is broken along the veins.

For comparison we figure a syntype of *L. sikkima* from the collections of The Natural History Museum with black suffusion on the forewing (collected in Sikkim by Captain J. L. Sherwill who is mentioned in Moore's introduction (1865a)), and a specimen from Darjeeling, West Bengal, without any black suffusion. Moore cites W. S. Atkinson in his original description as follows: "*L. katinka* [Westwood, 1847; publication year cf. Naessig (2007)] also occurs in Darjeeling (but sparingly), and is always larger than the dark form, which appears earlier in the year (beginning of August). *L. sikkima* inhabits the hot valleys, *whereas L. katinka* is found at from 5000 to 7000 feet elevation." This is confirmed by material in our hands from Nepal and India, the species was found only at elevations of 330 – 850 m. *L. nigra* n. sp. is also a lowland species, reported from altitudes of 150 – 370 m.

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Fig.1: *Loepa macrops* n. sp., male holotype, Nepal, dorsal view, coll. Naumann.

Fig.2: *Loepa macrops* n. sp., male holotype, Nepal, ventral view, coll. Naumann.

Fig.3: *Loepa macrops* n. sp., male paratype, Nepal, dorsal view, coll. Loeffler > coll. Naumann.

Fig.4: *Loepa macrops* n. sp., male paratype, Himachal Pradesh, dorsal view, Butterfly Research Centre.

Fig.5: *Loepa miranda*, male lectotype, dorsal view, NHM London.

Fig.6: *Loepa macrops* n. sp., female paratype, Nepal, dorsal view, coll. Naumann.

Fig.7: *Loepa macrops* n. sp., female paratype, Nepal, ventral view, coll. Naumann.

Fig.8: *Loepa nigra* n.sp., male holotype, India, Mizoram, dorsal view, coll. Naumann.

Fig.9: *Loepa nigra* n.sp, male holotype, India, Mizoram, ventral view, coll. Naumann.

Fig.10: *Loepa nigra* n. sp., male paratype, India, Tripura, dorsal view.

Fig.11: *Loepa nigra* n. sp., female paratype, India, Mizoram, Entomological Collections, Systematics and Toxicology Laboratory, Department of Zoology, Mizoram University, Aizwal, Mizoram, dorsal view.

Fig.12: *Loepa nigra* n. sp., female paratype, India, Mizoram, Entomological Collections, Systematics and Toxicology Laboratory,Department of Zoology, Mizoram University, Aizwal, Mizoram ventral view.

Fig.13: *Loepa sikkima*, male syntype, India, Sikkim, dorsal view, NHM London.

Fig.14: *Loepa sikkima*, male. India, West Bengal, dorsal view, coll. Naumann.

Fig.15: *Loepa macrops* holotype, Nepal, male genitalia no. 1879/09 Naumann.

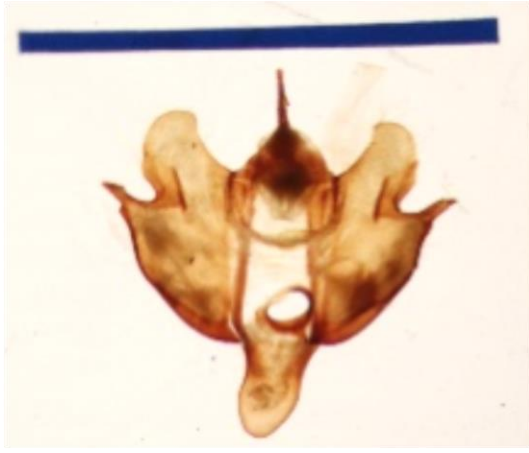

Fig.16a: *Loepa macrops* paratype, India, Himachal Pradesh, male genitalia no. 2619/19 Naumann.

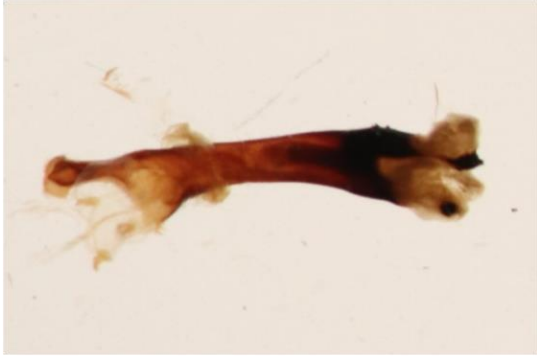

Fig.16b: *Loepa macrops* paratype, India, Himachal Pradesh, aedeagus, phallus separate.

Fig.17a: *Loepa nigra* paratype, India, Mizoram, male genitalia no. 2622/19 Naumann.

Fig.17b: *Loepa nigra* paratype, India, Mizoram, male aedeagus, phallus separate

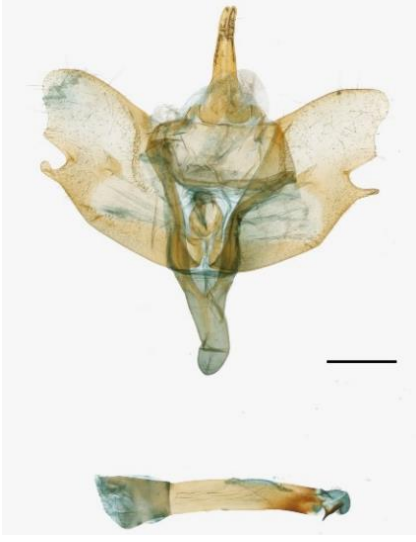

Fig.18: *Loepa sikkima*, India, West Bengal, genitalia no. 1899/09 Naumann.

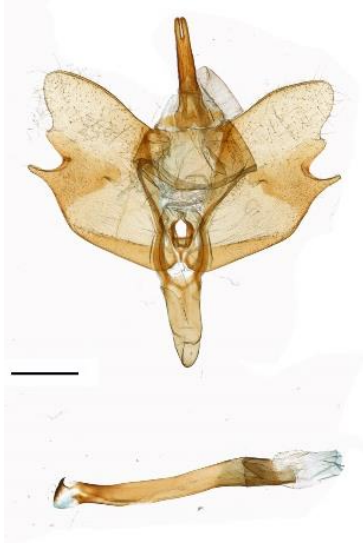

Fig.19: *Loepa sikkima*, Nepal (E), male genitalia no. 1952/09 Naumann.

Scale bars for figs. 15, 18, & 19 = 1 mm; for figs. 16 & 17 = 10 mm.

BRAHMEA HEARSEYI WHITE, 1862 (LEPIDOPTERA: BRAHMAEIDAE) IN ODISHA, INDIA

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Reviewer: Sankaraman H.

In India, the family Brahmaeidae is represented by two Himalayan species. *Brahmea hearseyi* White, 1862 which occurs at lower elevation and *B. wallichi* (Gray,1831) which occurs at slightly higher elevation in forests of *Quercus*.

Brahmea hearseyi is reported from Uttarakhand (Smetacek, 2008) along the Himalaya to the N.E. Himalaya, W. China, Myanmar, Sundaland and the Philippines (Holloway, 1987). It occurs in hilly areas with dense forest and heavy rainfall. In Borneo, it is a lowland species, ascending the hills to 1200 m elevation (Holloway, 1987) while Smetacek (2008) reported it from 1500 m elevation in the western Himalaya.

During a survey of moths attracted to artificial light in Taptapani, Ganjam district, Odisha, (N 19.489193 E 84.395527; 550 m) on July 28, 2019, a single individual of this species was attracted. Since it was such an unusual record, the specimen was taken and deposited in the collection of the Butterfly Research Centre, Bhimtal.

The present record extends the known distribution of this species, genus and family to peninsular India.

The examined specimen is a male, with a forewing length of 58 mm, a wingspan of 130 mm.

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Fig.1: *Brahmea hearseyi,* Ganjam district, Odisha