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Cover Photo by Rajib Dey of *Cupitha pureea*

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RE-DISCOVERY OF SMALL SILVERFORK, *LETHE JALAUROIDA* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM GARHWAL, UTTARAKHAND, INDIA

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Reviewer: Peter Smetacek

Abstract

This short note reports the rediscovery of Small Silverfork, *Lethe jalaurida* (de Nicéville, 1881) from Gopeshwar, Chamoli District, Uttarakhand, India after a gap of 120 years.

Introduction

The butterfly identification and collection in Uttarakhand (erstwhile United Provinces) started during the pre-Independence period. A list of 271 butterfly species was published by Doherty (1886) from Kumaon. Mackinnon & de Nicéville (1899) studied butterflies in Mussoorie and adjacent areas and published a list of 323 species. The Mussoorie area was further explored by Ollenbach (1929). For the past few decades, Smetacek (2001, 2002, 2011), Singh (2005a, 2005b) published papers on the butterflies of Uttarakhand. Many independent butterfly enthusiasts and researchers have contributed significantly to the rediscoveries, range extensions and observations of butterflies of Uttarakhand (Kumar *et al.*, 2018, 2019, 2020; Venkatesh, 2016; Joshi, 2020). Our team has been studying and documenting butterflies in Uttarakhand for the past few years. At regular intervals, we surveyed Chamoli, Gopeshwar, Chopta and Rudranath areas.

The present short note presents the rediscovery of Small Silverfork, *Lethe jalaurida* (de Nicéville, 1881) from Gopeshwar, Chamoli District, Garhwal Zone, Uttarakhand, India. It was last recorded from Garhwal (Sangla valley, Har-ki-noon area, Govind Pashu Vihar) by Mackinnon & de Nicéville in 1899 and now rediscovered after 120 years

from Garhwal. It is listed in Schedule II of the Indian Wild Life (Protection) Act, 1972.

Materials and Methods

Study Area

The Gopeshwar to Rudranath trek is a beautiful path with very few villages and rich biodiversity. The number of pilgrims visiting the sacred shrine of Rudranath is small. The study area (Fig. 2) contains mostly evergreen forest dominated by oak (*Quercus* sp.) and deodar (*Cedrus deodara*) species associated with bamboo (*Arundinaria* sp.), birch (*Betula utilis*), rhododendron (*Rhododendron arboreum*) and scattered yew (*Taxus baccata*).

Methodology

The Gopeshwar-Rudranath trek was surveyed between 20.viii.2020 to 23.viii.2020 and it was visited again from 25.ix.2020 to 27.ix.2020. While surveying and documenting butterflies of this area, Small Silverfork, *Lethe jalaurida* (de Nicéville, 1881) was photographed with a digital single-lens reflex camera. It was photographed from many angles to confirm the identity. The identification of the butterfly was confirmed as Small Silverfork, *L. jalaurida* with the help of Evans (1932), Wynter-Blyth (1957) and Sondhi & Kunte (2018).

Observations

L. jalaurida (Fig. 1) is a montane species found between 2100 m to 3300 m during June to September. The type locality is the Jalauri Pass in Himachal Pradesh. According to Varshney & Smetacek (2015), the nominate subspecies is distributed from Himachal Pradesh to Uttarakhand.

This species was observed at Moli-kharak (30°27'58" N; 79°20'23" E), 13 km from Gopeshwar, Chamoli District of Garhwal in the shrubby area near the opening of forest, alongside the path. This sighting was made at 12:45 hrs (IST) on September 21, 2020. Only a single individual was recorded throughout the whole survey. The sky was partly cloudy. The butterfly was moving actively and soon flew away.

It is noteworthy that it was not recorded by Singh & Sondhi (2016) during a detailed survey of Garhwal.

Discussion and Conclusion

Unlike other members of the genus, which are local and locally common at suitable seasons, this butterfly was only observed once and did not stay in the area. This seems to be the main reason why it has not been recorded in the recent past. However, the present record confirms that the butterfly is still present in the western Himalaya. The type material was recorded in July 1897 and the present record from September suggests that there are two generations a year. It was not recorded in August in the present study, although this does not mean that they are not actually on the wing in that month, merely that they were not recorded.

Acknowledgment

The second author is thankful to Prof. (Dr.) Hema Prasad, Principal, Government Post Graduate College, Ranikhet, Almora for her valuable guidance to execute the study successfully.

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Fig.1: *Lethe jalaaurida* at Gopeshwar, Chamoli, Uttarakhand



Fig.2: A glimpse of habitat of *Lethe jalaaurida*

AEGLE MARMELOS (RUTACEAE): A NEW LARVAL HOST PLANT FOR THE BLUE MORMON BUTTERFLY *PAPILIO POLYMNESTOR*

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Reviewer: Peter Smetacek

The Bombay Natural History Society (BNHS) Nature Reserve is a forested area spread over 33 acres and is nestled between Dadasaheb Phalke Chitra Nagari (aka Film City) and Sanjay Gandhi National Park (SGNP) in Mumbai City of Maharashtra, India. The Reserve also has a small butterfly garden spread over an area of around quarter of an acre. The Blue Mormon *Papilio polymnestor* Cramer, 1775 (Insecta: Lepidoptera: Papilionidae) is a seen mostly during the monsoon in the forests of SGNP and BNHS Nature Reserve, Mumbai.

On 1.viii.2017, the authors saw a *P. polymnestor* laying eggs on the leaves of Wood Apple *Aegle marmelos* (Rutaceae), locally called Bel. As we tried to collect an egg, we found that a small parasitoid wasp was possibly laying eggs in it. We could not identify the wasp species as the photographs were not clear and it was too small for our photography equipment (see image). We successfully reared *P. polymnestor* caterpillars on the diet of *A. marmelos* leaves in September- October 2017, 2018 and 2019, but proper data was not maintained.

On 16.ix.2020, we saw a *P. polymnestor* laying eggs on a Limbu or Lemon *Citrus limon* plant and Bel *Aegle marmelos* tree. Again, on 20.ix.2020 we saw a *P. polymnestor* laying two eggs each on two Lemon species, viz., *Citrus limon* and Idilimbu *Citrus aurantifolia* and *Aegle marmelos* tree within a few minutes.

It laid one egg on one leaf and flew to another leaf. We could not manage to photograph eggs on the *A. marmelos* tree as the eggs were laid high up in the tree.

We searched for caterpillars and we found them on both *Citrus* species as well as on *A. marmelos* plants. We reared four caterpillars on a diet of *A. marmelos* leaves. All were observed feeding on the leaves and grew well. We cleaned the frass from the containers every day and added fresh *A. marmelos* leaves to the breeding box. On 25.ix.2020, we had four caterpillars of different sizes being reared.

The first one started pupating on 29.ix.2020 and a pupa was seen on 30.ix.2020. The pupa became black the next day. On 2.x.2020 it became blackish green, oozed liquid and broke. Parasitoids were seen in the container.

The second caterpillar was seen pupating on 30.ix.2020. A pupa was seen on the floor of the container the next day. On 12.x.2020, the pupa became green and black at 7 am. An adult emerged from the pupa at 10 am. Unfortunately, it did not eclose properly and had deformed wings.

The third caterpillar pupated on 9.x.2020. The pupa became creamy yellow on 10.x.2020 and was seen leaking the next day. Parasitoids were seen in the container on 11.x.2020.

The fourth caterpillar was found dead on 30.ix.2020 in the container. No parasitoids were seen. Nitin Kawthankar (*pers. comm.*) found two caterpillars of *P. polymnestor* on an

A. marmelos tree on 8.x.2019, at Pal village, Taluq Vengurla in Sindhurdurg district of Maharashtra. He observed the caterpillars again on 11.x.2019. He found a freshly eclosed *P. polymnestor* drying its wings on the same plant on 28.x.2019. He shared two images of the bird dropping stage and final instar with RK. The previously reported larval host plants of *P. polymnestor* were summarised by Robinson *et al.* (2010) and later Nitin *et al.* (2018) as *Garcinia xanthochymus* (Clusiaceae), *Atalantia racemosa*, *Atalantia wightii*, *Citrus maxima*, *Citrus limon*, *Glycosmis pentaphylla*, *Murraya koenigii*, *Paramignya monophylla* (Rutaceae). Regular egg laying, findings of caterpillars and its rearing on a diet of *Aegle marmelos* leaves till eclosion of the adult butterfly confirms *A. marmelos* to be a larval host plant for *P. polymnestor*.

Note on eggs laying

On 26.vii.2019, a *P. polymnestor* was seen laying eggs on a *Citrus limon* plant. It laid eggs on the underside of leaves, two eggs on the stem and one on a coir rope tied to the trunk of the same plant.

Note on parasitoids of *P. polymnestor*

A *P. polymnestor* was seen laying several eggs on the leaves of *Aegle marmelos* on 01.viii.2017. When the first author reached out to the egg, it was found that an unidentified

parasitoid wasp was perched next to it and possibly laying eggs in it. On 24.ix.2020, one egg was found infested with fungus. On 1.x.2020, five eggs of *P. polymnestor* were seen infested with fungus in the breeding box. We also found 5 eggs similarly parasitized on a *Citrus* plant. In the above rearing experience, two of the three pupae were killed by parasitoid wasps. But before the pupal stage, many eggs are parasitized by tiny wasps, killing them in the egg stage itself.

Acknowledgements

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Fig. 1: Parasitoid wasp on Blue Mormon Egg on Bel leaf



Fig. 2: Bird excreta mimicking stage of caterpillar



Fig.3: Caterpillar final instar



Fig.4: Caterpillar ready for pupation



Fig.5: Pupa



Fig.6: Freshly eclosed, deformed Blue Mormon

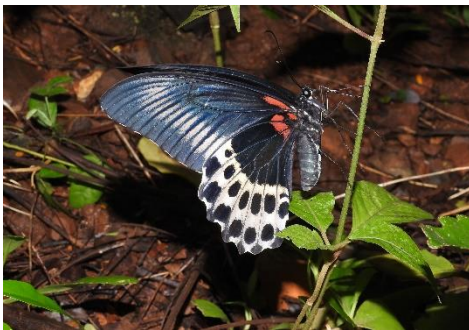


Fig.7: Freshly eclosed Blue Mormon seen in the Butterfly Garden



Fig.8: Parasitized Pupa



Fig.9 & 10: Parasitized Blue Mormon Egg

CONFIRMATORY RECORD OF WAX DART *CUPITHA PURREEA* MOORE, 1881 (INSECTA: LEPIDOPTERA: HESPERIIDAE) FROM JHARKHAND, INDIA

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Reviewer: Piet van der Poel

Abstract

The presence of *Cupitha purreea* in Jharkhand is confirmed almost 74 years after its first report based on a single specimen from South Bihar by Morrison-Godfrey (1947).

Introduction

On 23.ii.2020, a single nectaring individual of *Cupitha purreea* (Moore) was sighted and photographed by the authors on flowers of *Psydrax dicoccos* (Figure 1) from Ancient Siddheswar temple (23.37° N; 86.23° E) in Musaboni block of East Singhbhum district, Jharkhand, India along with *Jamides bochus* (Stoll, [1782]), *Rapala iarbus* (Fabricius, 1787), *Rapala varuna* (Horsfield, [1829]), etc. The species were identified using Kehimkar (2016) for the butterfly and eFlora group for the plant.

C. purreea was also observed near Dharagiri falls (23.40° N; 86.29° E) in Ghatsila block of the same district on the next day during a diligent search (Figure 2). Previous records in the literature are from South Bihar (Morrison-Godfrey, 1948), which corresponds to present-day Jharkhand. Major P.W. Morrison Godfrey stated in his article entitled 'Butterflies of South Bihar' that *C. purreea* was rare in the region. During his survey, he observed and collected a single male in July, 1907.

The global distribution of the taxon is in South India, Sikkim to Myanmar, Andaman Islands, Thailand, Laos, Vietnam, Langkawi, W.

Malaysia, Tioman, Borneo, Sumatra, Nias, Java, Philippines and Sulawesi (Inayoshi, 2020). Varshney & Smetacek (2015) also listed the species in Jharkhand, based on Morrison-Godfrey's observation from East - Central part of the state. The present record, more than 200 km south of the previous known locality, from Southern Jharkhand confirms the presence of *C. purreea* in Jharkhand after a gap of 74 years.

Acknowledgement

The authors are thankful to the reviewer for improving the draft during the preparation of the manuscript.

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Indinov Publishing, New Delhi. ii + 261 pp. + 8 pls.



Fig.1: *Cupitha purrea* recorded from 23.37° N; 86.23° E



Fig.2: *Cupitha purrea* recorded from 23.40° N; 86.29° E

NEW RECORD OF TAWNY RAJAH *CHARAXES BERNARDUS* (INSECTA: LEPIDOPTERA: NYMPHALIDAE) FROM KUMAON, UTTARAKHAND, INDIA

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Reviewer: Peter Smetacek

Introduction

Uttarakhand is divided into two administrative zones, Kumaon and Garhwal. Kumaon comprises a cross section of the Himalayan range west of Nepal, ranging from the low lying Tarai-Bhabhar in the south to lofty snow-clad mountains in the north. Due to the great biodiversity of this region, a large number of insect species, especially butterflies, occur here.

Tawny Rajah *Charaxes bernardus* (Fabricius, 1793) has three subspecies recorded from India namely, *C. b. agna* Moore, 1878 (Andaman Is.), *C. b. hierax* C. & R. Felder, [1867] (E. Himalaya and N.E. India) & *C. b. hemana* Butler, 1870 (W. Himalaya, Uttarakhand) (Varshney and Smetacek, 2015). According to Mackinnon and de Nicéville (1899), "Three males and two females only obtained near Mussoorie in September at 4,000 feet elevation; Dr. Butler records it from "Mussuri" and North of "Landour" & Mr. Moore records it from "Massuri" and the "Uglar" valley north to Landour, this being probably a misprint for "Aglar"."

In the present study, we have sighted Tawny Rajah *Charaxes bernardus hemana* from four different sites of Kumaon during a butterfly survey organized from August, 2019 to September, 2020. These sightings confirm the

presence of this species in Kumaon for the first time.

Observations

A single individual was observed at 1045 hrs on 16.ix.2019 near the Police Station of Chorgalia (29.126686 N; 79.681724 E), altitude 306 m, district Nainital near the highway. It was feeding on human excreta. Another individual was observed at 1230 hrs on 26.viii.2020 near Machali Van of Nandhaur Wildlife Sanctuary (29.133650 N; 79.704343 E), altitude 361m, when it was resting near a forest road. Two individuals were also recorded from Balighat (29.876373 N; 79.784768 E), altitude 931m, of Bageshwar district. One was observed feeding on scat of a carnivore and the other was mud puddling near the motor road. These sightings were made at 1130 hrs on 12.ix.2020. Five individuals of Tawny Rajah were also sighted the next day at Song Village (30.033588 N; 79.955751 E), 1869 m of Bageshwar district. Hence a total of nine individuals of Tawny Rajah were observed during the survey.

These individuals are the first members of the species ever recorded from Kumaon, although the species is known from both east and west of this area. Chorgalia and Nandhaur are at low elevation where the Gangetic plain meets the

Himalaya, while Balighat and Song are in the interior of the division, suggesting that the species occurs throughout the region at suitable elevation, unlike species like *Graphium doson*, that occurs along a narrow belt at low elevation below the outermost range of the Himalaya, never venturing into the interior.

In our opinion the main reasons behind the notable presence of this species in Kumaon are the low incidence of forest fires and the favourable weather throughout the year 2020. Although this species was probably always present in the area surveyed in small numbers, it went unrecorded because of the lack of surveys at the right place and right time. In short, the slight change in atmospheric/environmental conditions i.e. temperature, precipitation, humidity, forest

fires and other minor factors affect the population of certain butterfly species.

Acknowledgment

The corresponding author is thankful to Prof. (Dr.) Hema Prasad, Principal, Government Post Graduate College, Ranikhet, Almora for her valuable guidance to complete the study successfully.

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Fig.1 & 2.: The UP and UN of Tawny Rajah clicked at Song Village, Bageshwar of Kumaon

Fig.3: Tawny Rajah at Chorgalia, Haldwani, Nainital of Kumaon

BURMEIA LEESI MINET, 2013 (LEPIDOPTERA: EPICOPEIIDAE): A NEW GENUS AND SPECIES FOR INDIA

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The genus *Burmeia* Minet, 2013 was erected for the taxon *leesi* from Myanmar. It was described on the basis of a pair taken in eastern Kachin state, Myanmar. Nothing was known about the biology of the species. According to Minet (2002), "The only specimens that I was able to find in BMNH collections are the holotype and paratype, both from Htawgaw (26°00'N, 98°20'E) in eastern Kachin (extreme N.-E. of Burma). They were caught at an elevation of about 3000 m. This moth flies by day in all probability. Indeed, the two specimens from Htawgaw were taken by Major-General Harry C. Tytler, who was a collector of butterflies (Talbot, 1939). Moreover, their date of capture – 27.vii.1927 – is also mentioned by Tytler (1940: 116) for a butterfly of the genus *Euthalia* Hübner (with a slightly different spelling of the locality in question: Hthawgaw).

"Female. Wingspan: 31.5 mm. Forewing length: 19 mm

"Male. Wingspan: 28.5 mm. Forewing length: 17 mm. Head.

"Type-series – Holotype male with four labels: "Htawgaw. N. Burma. 10,000 [feet]. 27-7-[19]27", "Burma. H.C. Tytler. B.M. 1938-678", "*Burmeia leesi* Minet. Holotype", "[Uran.] genitalia slide No. 182". Paratype, 1 female with three labels, the first two as above ("Htawgaw ...", "Burma ..."), the third specifying "*Burmeia leesi* Minet. Paratype". Both specimens in BMNH (The Natural History Museum, London)."

The species has recently been reported from China (Xizang and Yunnan provinces) at an elevation of 2500 to 3000 m in July (Huang *et*

al., 2019). The authors mention that the species was found in company of *Psychostrophia nymphidiaria* (Oberthur, 1893) (Epicopeiidae) but we did not find any of the latter species in the present study.

Material examined

India, Arunachal Pradesh, Lower Dibang district, Mayodia, 28°13'58.08" N, 95°54'32.70" E, 2300 – 2600 m., 8 males, 2-9.vii.2019. *Leg. et Coll.* Peter Smetacek, Butterfly Research Centre, Bhimtal, Uttarakhand.

Forewing length: 17 – 19 mm; wingspan: 38 – 42 mm (see below for definition of wingspan). Remarks: A day-flying species, usually found flying singly in the dense forest. The flight is weak and erratic, reminiscent of Zygaenidae. The moth settles frequently to visit flowers on bushes and small trees. Although Huang *et al.* (2019) report them visiting wet mud, artificial light, human faeces, etc.; we only found them flying erratically around the forest and twice visiting flowers. As noted by Huang *et al.* (2019), the moths are active on sunny as well as overcast days.

There appears to be a single annual brood, since the moth was not seen in March, April, May, October, November, or December. It is unlikely that there is a generation during January or February at that elevation, when it usually snows in that area. The original pair from Myanmar were taken on 27.vii.1927, the present specimens were taken in the first week of July, while Huang *et al.* (2019) recorded it throughout July.

The wingspan given by Minet (2002) appears to be measured in a straight line across the

forewing apices, while I have given the wingspan/expanse as the figure obtained by measuring from the centre of the thorax to the apex of a forewing and doubling the result *vide* Evans (1932). Minet's (2002) measurement can give different results for the same specimen, depending on the angle of the forewings to the body while Evans' (1932) measure will remain fixed regardless of the position of the forewings.

Huang *et al.* (2019) give a scale bar in their illustration of a pair of the species, which, when measured, gives one a forewing length of 19 mm for the male and 21 mm for the female and an expanse of 42 - 46 mm for the species.

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Fig.1 &2: *Burmeia leesi* from Mayodia, Arunachal Pradesh, India, Underside and Upperside

REPORT ON ADULT BEETLE *CELOSTERNA SCABRATOR* (FABRICIUS, 1781) (COLEOPTERA: CERAMBYCIDAE: LAMIINAE) FEEDING ON VEGETABLE PIGEONPEA

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Keywords: *Celosterna scabrator*, Cerambycidae, *Cajanus cajan*, vegetable pigeonpea

Introduction

Celosterna scabrator (Fabricius) is a longhorn beetle belongs to the subfamily Lamiinae under Cerambycidae. It is a polyphagous pest on many agriculturally important crops like, *Acacia arabica* (L.) Delile; *A. catechu* (L.) Willd., Oliv.; *Cassia siamea* Lam.; *Casuarina equisetifolia* L.; *Eucalyptus tereticornis* Sm.; *Mangifera sp.*; *Pithecolobium dulce* (Roxb.) Benth.; *Prosopis juliflora* (S. W.) DC.; *P. spicigera* L.; *Punica granatum* L.; *Shorea robusta* Roth; *Pyrus malus* L.; *Tectona grandis* L. f.; *Vitis vinifera* L and *Zizyphus jujuba* Mill. (Beeson and Bhatia, 1939; Beeson, 1941; Chatterjee and Singh, 1968; Duffy, 1968; Nair, 1968; Sivaramkrishnan, 1986; Naik *et al.*, 2011). It is widespread in many states of India such as Andhra Pradesh, Bihar, Chhattisgarh, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Odisha, Uttarakhand and Uttar Pradesh (Beeson and Bhatia, 1939; Duffy, 1968; Ranga Rao *et al.*, 1979; Majumder *et al.*, 2014; Mitra *et al.*, 2015; More and Prashanth, 2019;).

Adult beetles of *C. scabrator* feeding on *Cajanus cajan* (L.) varieties, ICP 7035, ICPL 87091, BRG-1 and BRG-3 were observed during the period of my PhD research work conducted at College of Horticulture, Bagalkot.

Material and methods

A field experiment was conducted at College of Horticulture, Bagalkot to study the seasonal incidence of insect pests on different varieties (BRG-1, BRG-3, ICP-7035, ICPL-87091) of vegetable pigeonpea during 2019-20. During the period of investigation, adults of *C. scabrator* feeding on upper portion of vegetable pigeonpea was noticed during the month of November, 2019. Thereafter, pigeonpea plants of different varieties were monitored regularly from morning (6 a.m.) to late evening hours (10 p.m.) till the harvest of green pods. Beetles feeding on shoots of pigeonpea plants were collected manually, pinned and examined. The collected insect specimens were identified to species level using the identification keys provided by Sangamesh (2015). The identity was later confirmed by sending the specimens to Sangamesh, R. H., Department of Agricultural Entomology, Kerala Agricultural University, Kerala.

Result and discussion

In general, Cerambycid beetles attack perennial plants, especially cultivated and forest trees. However, during the course of Ph.D research work, it has been noticed that the adults of *C. scabrator* were feeding on vegetable pigeonpea. The adults are nocturnal

in nature and they were settled on the shoots of vegetable pigeonpea during night time (6.00 p.m to 10.00 p.m.). In most cases, longhorn beetles act as internal feeders on their host plants as reported earlier (Sivaramakrishnan, 1986; More & Prashanth, 2019). However, adult beetles were found scraping the shoots of vegetable pigeonpea (Fig. 1) and scraped material was observed on the leaves and under the surface of the plants (Fig. 2). A similar feeding fashion by adults of *Aristobia reticulator* (Voet) on pigeonpea was also reported from Arunachal Pradesh (Kumawat *et al.*, 2017). The scraped plants became weak, turned brownish, and led to the terminal death of the affected plants. The adult beetles were more active during the evening and night hours. However, it was rarely observed during morning hours. It was also confirmed that grubs of *C. scabrator* were not noticed on the infected plants during the investigation. The incidence of *C. scabrator* on vegetable pigeonpea was recorded about 25.71 per cent during 2019-20.

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Fig.1



Fig.2



Fig.3

Fig. 1-3: Damaging behavior of *C. scabrator*

1. Adult beetle. 2. Scraped material on surface of leaf. 3. Damaged pigeonpea plant due to scraping of beetle.

FIRST RECORD OF *PRIONOMMA BIGIBBOSUM* (COLEOPTERA: CERAMBYCIDAE) FROM NEPAL

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Introduction

The Cerambycidae fauna of Nepal has been well, if not extensively studied. Weigel (2006) and Lazarev (2019) reported some 470 species of Cerambycidae recorded in Nepal.

Prionomma (Ancyloprotus) bigibbosum (White, 1853) (syn. *Ancyloprotus bigibbosus* White, 1853) (Cerambycidae: Prioninae: Prionini) is a large and striking longhorn beetle, with two characteristic bumps in the middle of pronotum after which it is named "bigibbosum". It measures about 20 lines in length (White, 1853) which roughly converts to 42.3 mm. It is known from Assam, Maharashtra, Manipur, Meghalaya in India up to Myanmar (Mitra *et al.*, 2016), so it was always expected to be found in Nepal. The other related *Prionomma* is *P. atratum* (Gmelin, 1789), recorded from southern India, Arunachal Pradesh and Sri Lanka (Kumawat *et al.*, 2015) but lacks the bumps on pronotum. The peak period for *P. bigibbosum* adult activity is July (Behere *et al.*, 2017).

White (1853) described the color as blackish brown, although in the present specimen it appeared more blackish, probably because it was observed at night in the rain. Two transverse bumps on the pronotum were clearly visible. The shoulders of elytra were somewhat prominent and punctured. Deeply excavated head between the eyes and in front with a slight keel in the middle of excavation. Femora of forelegs with many small warts are visible in the photo as well. Tibiae of forelegs were flattened and curved. Metathorax with

longish ferruginous hairs which are visible on other segments of the thorax as well.

Observation

An individual was observed on the rainy night of 5.vii.2019 at 8:52 PM in Pokhara, Nepal at Sarangkot (28°14'41.7"N 83°58'18.8"E), 1157 masl, inside the premises of Belgian Hotel, about 6 meters away from a light-trap set up during National Moth Week, 2019. It was photographed a few times after which it flew away.

Identification was further confirmed by Sangamesh Hiremath of India, which was corroborated by Mr. Alain Drumont of Belgium on the basis of photographs. It was advised to look for the species again and get a specimen, but unfortunately, the species was never found again.

Discussion

Prioninae are mostly large and very conspicuous Cerambycids. It is very unlikely that they go unnoticed and the fact that it was not included in any of the previous checklists, even in the most recent one, and that this particular species was sighted only once despite many efforts, suggests that it occurs at low density at the extremity of its northern distribution.

Acknowledgements

The authors are grateful to Mr. Sangamesh Hiremath and Mr. Alain Drumont for confirming the species.

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Fig.1: Two characteristic bumps in the middle of pronotum



Fig.2: *Prionomma (Ancyloprotus) bigibbosum* (White, 1853)

REDISCOVERY OF TIGER HOPPER *OCHUS SUBVITTATUS* (INSECTA: LEPIDOPTERA: HESPERIIDAE) FROM UTTARAKHAND, INDIA

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Introduction

Tiger Hopper *Ochus subvittatus* (Moore, 1878) is a small butterfly. A single subspecies is recorded from India namely, *O. s. subradiatus* Moore, 1878, distributed from Uttarakhand to north-east India (Varshney & Smetacek, 2015). It was last documented from Uttarakhand by Evans in 1949. It is worth mentioning here that this species was not recorded from Garhwal by Singh & Sondhi (2016). During a survey organized at various sites of Kumaon from March 2016 to September 2020, we have recorded a total of 09 (nine) individuals of *O. subvittatus*. These are the first records of this butterfly from Uttarakhand after a long gap and hence claimed as “rediscovery”.

Observations

During a field survey, two individuals (Figs. 1 & 2) of *O. subvittatus* were observed at 1130 hours on 15.ix.2016 at Balighat (29.87688 N; 79.78657 E), altitude 932 m, district Bageshwar, Uttarakhand near a forest opening. It was resting on a blade of grass. A single individual was also recorded at 1030 hours on 02.x.2016 near the motor road at Baram, Pithoragarh (29.85217 N; 80.35675 E), altitude 847 m. In 2020, a total of 06 (six) individuals were observed from Tuped village (29.8672 N; 79.8065 E), altitude 1012 m, of Bageshwar district. Two were mud-puddling and the others were resting near the motor road. These individuals were recorded at 1140

hours on 11.ix.2020. Sites where *O. subvittatus* was photographed have been shown in figure 3.

The sighting of this species after a long time indicates the lack of the detailed surveys in Uttarakhand. Bageshwar is a hot spot for the butterfly fauna and hence immediate attention should be given so that the documentation and conservation of butterflies present there can be completed. In our opinion this species was always present there. The main reason behind the absence for a long time, is the small size of this species, due to which it can be easily overlooked by beginners. Another reason is the absence of observations at the right time and right place. We suggest that repeated systematic and scientifically planned surveys should be organized in different sites of Kumaon and Garhwal throughout the year to document the diversity of butterflies. There are many more butterfly species which are yet to be rediscovered or added to the known fauna of the state.

Acknowledgments

The corresponding author is thankful to Prof. (Dr.) Hema Prasad, Principal, Government Post Graduate College, Ranikhet, Almora for her support to complete the study successfully.

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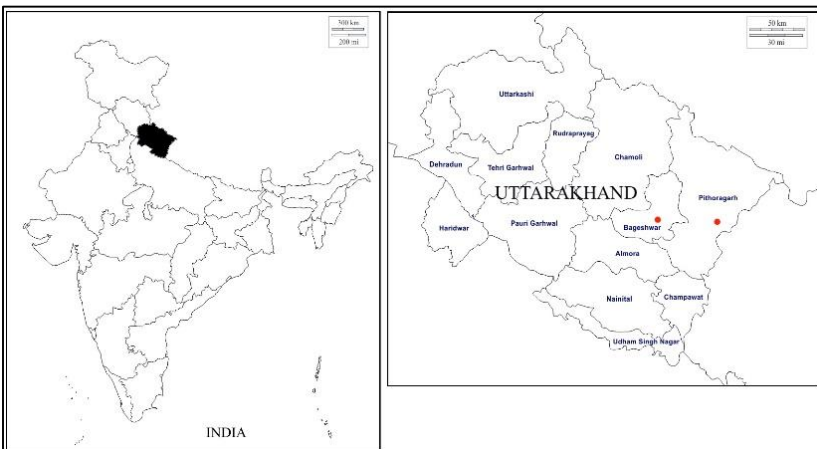


Fig.3: The red dots represents the sites where *Ochus subvittatus* was observed.

NEW HESPERIIDAE (INSECTA: LEPIDOPTERA) LARVAL HOST PLANT ASSOCIATIONS FROM WEST BENGAL, INDIA

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Abstract

Imperata cylindrica (L.) Raesch., is documented as a larval host plant of *Ampittia dioscorides*, *Pelopidas agna*, *Parnara bada* and *Borbo cinnara*.

Keywords: Larval host plant, immature stages, HesperIIDae, West Bengal, India.

Introduction

Bell (1909 - 1927); Sevastopulo (1973), Kunte (2000, 2006) and Nitin *et al.* (2018) described several additions to our knowledge of the larval host plants of butterflies in India. Sengupta *et al.* (2014) had made a checklist of 143 larval host plants during their work from Neora Valley National Park, West Bengal. From West Bengal and North-eastern Himalayan states, 64 species were documented by Karmakar *et al.* (2018) and 68 species of host plants were recorded from Taki (Ghosh & Saha, 2016) in North 24 Parganas district of West Bengal.

Materials and Methods

A diligent field survey was carried out around the author's address in Madhyamgram, North 24 Parganas district, West Bengal (22.70° N and 88.45° E). The place is next to a water body and is overgrown with grasses and sedges like *Imperata cylindrica*, *Cyperus* spp., *Cynodon dactylon*, *Apluda mutica*, *Phragmites australis* etc. On 25.v.2020, a female *Ampittia dioscorides* (Fabricius, 1793) was sighted ovipositing on leaf blades of *Imperata cylindrica* growing in a small overgrown patch of the wetland. Another single egg and a 3rd instar caterpillar of an unknown Hesperiid, which was later identified as *Pelopidas agna* (Moore, [1865]) from examining the eclosed adult, was found by the author on the same day in the same patch of *I. cylindrica*. The author could observe the

caterpillar's head peeping out from the concealed leaf as it was busy feeding. The author collected eggs and caterpillars and put them in a clay pot along with *I. cylindrica* in his home garden. On 03.vii.2020, another single 4th instar caterpillar of an unknown Hesperiid, which was later identified as *Parnara bada* (Moore, 1878), was observed on the same patch of *Imperata* grasses after regular searching. Finally, a large number of caterpillars of another unknown Hesperiid, which was later identified as *Borbo cinnara* (Wallace, 1866), were sighted by the author in July 2020. The author could notice similarities between the feeding pattern of *P. agna* and *B. cinnara* whereas feeding of caterpillars of *A. dioscorides* and *P. bada* not only differed from the former two but also from each other. All the caterpillars completed their life cycle by feeding on the *Imperata* leaves provided. The life history of all these species for India has already been described in detail. The observations of the author is similar to Bell (1925c, 1926) and Bhakare & Ogale (2018). All eclosed butterflies were identified using Evans (1949); Kehimkar (2016) and Bhakare & Ogale (2018). The larval host plant was identified using the keys provided by Ibrahim *et al.* (2018) and confirmed by plant experts on eFloraofIndia Google Group (2007).

Results

Imperata cylindrica (L.) Rausch. was described as the larval host plant for *Pseudoborbo bevani*, *Pelopidas mathias*, *Arnetta mercara*, *Baracus hamptoni*, *Caltois kumara*, *Potanthus diana*, *Taratrocera ceramus*, *Telicota bambusae*, *Oriens gola*, *Parnara guttata*, *Potanthus omaha*, *Potanthus trachala*, *Potanthus lydia*, *Telicota besta*, *Melanitis leda*, *Lethe rohria*, *Mycalesis francisca*, *Mycalesis perseus*, *Orsotriaena medus*, *Polytremis lubricans* (Sengupta *et al.* 2014; Nitin *et al.* 2018; Robinson *et al.* 2001) but no earlier information about *Ampittia dioscorides*, *Pelopidas agna*, *Parnara bada* and *Borbo cinnara* (Table No. 01) can be found regarding their larval association with these plants.

Family: Hesperidae

1. *Ampittia dioscorides* (Fabricius, 1793) Bush Hopper

The distribution of Bush Hopper is from Maharashtra to West Bengal in the east and Kerala in the South; Himachal Pradesh to North-East India (Varshney & Smetacek, 2015) which was easily identified by its distinctive yellow with black spots on the under hindwing and chequered hair fringe (Kehimkar, 2016). The larva and pupa was examined using Bell (1925c).

2. *Pelopidas agna* (Moore, [1865]) Obscure Branded Swift

The distribution of Obscure Branded Swift is Andaman & Nicobar Islands; Jammu & Kashmir; Kerala to Gujarat and West Bengal (Varshney & Smetacek, 2015). The observed larva and pupa was identified based on photographs following keys developed by Bhakare & Ogale (2018) and web-based resources (<http://www.butterflycircle.com>). A freshly eclosed specimen was characterized by its heavy spined mid tibia; the upper forewing all spots narrower and inconspicuous (Evans, 1949, Omoto, 1959). In addition, an imaginary line drawn through the two radial spots would

usually bypass the lower end of the stigma (Young *et al.*, 2016).

3. *Parnara bada* (Moore, 1878) Ceylon Swift
The distribution of Ceylon Swift in India is from Jammu & Kashmir to N.E. India, Kerala to West Bengal and Gujarat (Varshney & Smetacek, 2015). Bell (1926) described the various stages of its life cycle. The larvae have a distinct neck with rounded or long semi-circular; cellular-rugose head (slightly bilobed), and right behind it a thin black collar mark can be found on the dorsum of the prothorax. A dorsal line depressed slightly as far as apex of clypeus with minute setae. The greyish green to yellowish body marked with equally minute tubercles and long setae emanate from the posterior end. The pupa head is square in front; short in segment 2 and thorax likely snout. The proboscis length goes beyond the ends of wings but is only produced free as far as the middle of segment 10. The cremaster is formed as a pointed-triangular shape at apex or end. Chiba & Eliot (1991) made addition to its keys in their revision of the *Parnara* Moore, [1881] genus. The bred specimen was characterized by its unspined mid tibia and lower end cell spot on UNH, also with smaller and irregular spots in spaces 2-5, as well as in space 6.

4. *Borbo cinnara* (Wallace, 1866) Rice Swift
The Rice Swift has been recorded throughout India (Varshney & Smetacek, 2015; Seikh 2018). The larva and pupa was checked based on the web-based resources (<https://butterflycircle.blogspot.com>). The freshly eclosed adult butterfly was examined by its unspined mid tibia, uniformly greenish ochreous scales at thorax and base (Ek-Amnuay, 2012). In addition, a large and prominent spot at the forewings at the dorsal area next to dorsum, placing it as female (Young *et al.*, 2016). Under hindwing have three discal spots in spaces 2, 3 & 6 (Evans, 1949) and no cell spot (Bhakare & Ogale, 2018).

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Table: 1 Earlier recorded larval host plant of 4 species

Butterfly name	Larval host plants	Family	References
<i>Ampittia dioscorides</i> (Bush Hopper)	<i>Oryza</i> spp.	Poaceae	Robinson <i>et al.</i> , 2010, Davidson <i>et al.</i> , 1897, Swinhoe, 1913; Bell, 1925c; Wynter-Blyth, 1957
	<i>Oryza sativa</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Leersia hexandra</i>	Poaceae	Kalesh & Prakash, 2015
<i>Pelopidas agna</i> (Obscure Branded Swift)	<i>Axonopus compressus</i>	Poaceae	Kalesh & Prakash, 2015
	<i>Ischaemum ciliare</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Microstegium</i> sp.	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Oryza</i> spp.	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Oryza sativa</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Paspalum conjugatum</i>	Poaceae	Robinson <i>et al.</i> , 2010
<i>Parnara bada</i> (Ceylon Swift)	<i>Pennisetum</i> sp.	Poaceae	Naik & Mustak, 2020
	<i>Brachiaria mutica</i>	Poaceae	Kalesh & Prakash, 2015
<i>Borbo cinnara</i> (Rice swift)	<i>Oryza sativa</i>	Poaceae	Davidson <i>et al.</i> , 1897; Bell, 1926
	<i>Setaria barbata</i>	Poaceae	Kalesh & Prakash, 2007, Nitin <i>et al.</i> , 2018
	<i>Setaria pumila</i>	Poaceae	Wynter-Blyth, 1957, Kunte, 2000, Nitin <i>et al.</i> , 2018
	<i>Poaceae</i>	Poaceae	Davidson <i>et al.</i> , 1898, Pant & Chatterjee, 1950, Robinson <i>et al.</i> , 2010, Nitin <i>et al.</i> , 2018
	<i>Axonopus compressus</i>	Poaceae	Kalesh & Prakash, 2007, Nitin <i>et al.</i> , 2018
	<i>Rottboellia cochinchinensis</i>	Poaceae	Kalesh & Prakash, 2007, Nitin <i>et al.</i> , 2018
	<i>Brachiaria mutica</i>	Poaceae	Kalesh & Prakash, 2007; Nitin <i>et al.</i> , 2018
	<i>Phragmites karka</i>	Poaceae	Kalesh & Prakash 2015, Nitin <i>et al.</i> , 2018
	<i>Stenotaphrum dimidiatum</i>	Poaceae	Kalesh & Prakash, 2015, Nitin <i>et al.</i> , 2018
	<i>Stenotaphrum secundatum</i>	Poaceae	Kalesh & Prakash, 2015; Nitin <i>et al.</i> , 2018
	<i>Andropogon</i> sp.	Poaceae	Wynter-Blyth, 1957; Kunte, 2000; Nitin <i>et al.</i> , 2018
<i>Arundo donax</i>	Poaceae	Nitin <i>et al.</i> , 2018	

	<i>Cymbopogon</i> sp.	Poaceae	Wynter-Blyth, 1957; Kunte, 2000; Nitin <i>et al.</i> , 2018
	<i>Eragrostis</i> sp.	Poaceae	Wynter-Blyth 1957, Kunte 2000, Nitin <i>et al.</i> , 2018
	<i>Ischaemum</i> sp.	Poaceae	Wynter-Blyth, 1957; Kunte, 2000; Nitin <i>et al.</i> , 2018
	<i>Oryza</i>	Poaceae	Robinson <i>et al.</i> , 2010, Nitin <i>et al.</i> , 2018
	<i>Oryza sativa</i>	Poaceae	Robinson <i>et al.</i> , 2010; Wynter-Blyth, 1957; Kunte, 2000; Nitin <i>et al.</i> , 2018
	<i>Pennisetum</i> sp.	Poaceae	Wynter-Blyth, 1957; Kunte, 2000; Nitin <i>et al.</i> , 2018
	<i>Apluda mutica</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Eleusine indica</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Miscanthus sinensis</i>	Poaceae	Robinson <i>et al.</i> , 2010
	<i>Paspalum conjugatum</i>	Poaceae	Robinson <i>et al.</i> , 2010



Fig.1: Life history of *Ampittia dioscorides*



Fig.2: Life history of *Pelopidas agna*



Fig.3: Life history of *Parnara bada*

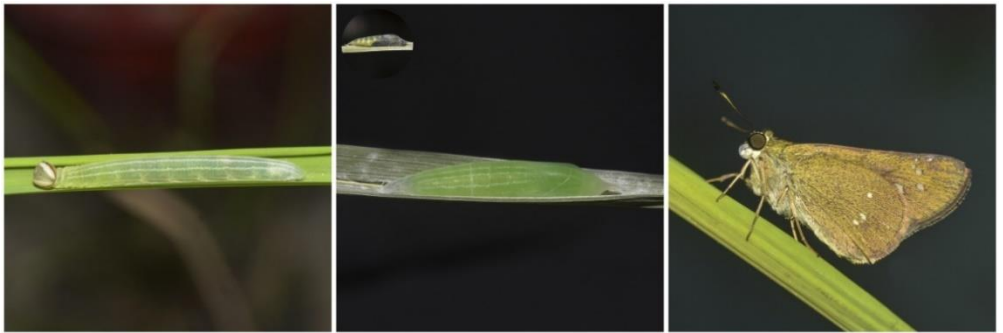


Fig.4: Life history of *Borbo cinnara*

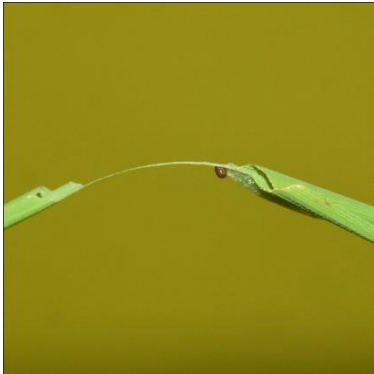


Fig.5: Feeding pattern of *A. dioscorides*



Fig.6: Feeding pattern of *P. agna*



Fig.7: Feeding pattern of *P. bada*



Fig.8: Feeding pattern of *B. cinnara*



Fig.9: Habitat of *Imperata cylindrica*

SOME NEW DISTRIBUTION RECORDS OF LYCAENID BUTTERFLIES IN NEPAL

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Introduction

Butterflies frequently travel from one place to another. This leads to their appearance in new places every now and then. Their colonization of that area mainly depends upon habitat structure and availability of their food plants (Abideen *et al.*, 2015). Moreover, they can be taken as vital ecological indicators and their distribution can be related to factors like habitat loss, fragmentation, land use and most of all, climate change (Thomas *et al.*, 1998).

Nepal is home to 660 species of butterflies (Smith, 2011a). Colin Smith has classified the distribution of butterflies of Nepal into 4 categories. The West (W), area encompassing Karnali watershed, The Center (C) encompassing Gandaki watershed, The East, encompassing Koshi and Mechi watersheds and Kathmandu (K) encompassing Bagmati watershed (Smith 2011b). However, it is inevitable that these distribution records, most of which were taken decades ago, have changed over time, and the species in the east (E) and the west (W) have frequently been seen in Kathmandu (K) and other central Nepal regions (C) as well.

The present note supplements a previous paper on Hesperiid (K.C., 2020), highlighting findings during the past 2 years (2019-2020) in which anomalous records of Lycaenidae butterflies with reference to Colin Smith's distribution records (1994; 2011a; 2011b; 2016) have been presented. Most findings are based on photographic records. ID keys from Evans (1927; 1932) have been followed.

Observations

Lycaenidae

1. *Taraka hamada mendesia* Fruhstorfer, 1918
- Forest Pierrot

Only recorded from the east earlier, this species is very common in the central hills. Several individuals were seen in Lamjung, Bhorletar (28°09'57" N; 84°13'02" E) and Kaski, Lakeside (28°26'29" N 83°96'85" E) in central Nepal from March-October.

2. *Sinthusa nasaka pallidior* Fruhstorfer, [1912] - Narrow Spark

This was only recorded from west and Kathmandu earlier; however, several individuals were seen in central Nepal, Bandipur, Tanahun, (27°56'27"N; 84°24'59"E) flying around bushes of *Rubus paniculata* SM. along with *Sinthusa chandrana* (Moore, 1882) in March, 2020, at 800 masl.

3. *Catochrysops panormus exiguus* (Distant, 1886) - Silver Forget-Me-Not

Recorded only from Kathmandu in the past, a mating pair was seen in Bhorletar, Lamjung (28°09'57" N; 84°13'02" E) in March, 2020 at around 460 masl. The costal spot on the underside forewing is closer to postdiscal band while it is midway between discal and postdiscal band in *C. strabo strabo* (Fabricius, 1793).

4. *Tarucus waterstradii dharta* Bethune-Baker, [1918] - Assam Pierrot

Three individuals were seen in Bhorletar, Lamjung (28°09'57" N; 84°13'02" E). They were only recorded from Sankhuwasabha, east

and as near as Parsa before (Smith, 1994). The discal spots on sp. 5 on UnFW and UnHW were not coalesced to postdiscal band (Evans, 1932) unlike in *Tarucus ananda* (de Nicéville, [1884]) and the UnHW discal spots 3,4 and 5 are fused together forming a forming a straight bar parallel to and well separated from postdiscal line (Basu *et al.*, 2019). Our records were from April, May and June 2020, at around 460 masl.

5. *Everes argiades diporides* Chapman, 1908 - Chapman's Cupid

An individual was recorded at Bandipur, Tanahun (27°56'13"N; 84°24'04"E), central Nepal, in March at 1121 masl. It was earlier recorded only from west and Kathmandu.

6. *Neopithecops zalmora* (Butler, [1870]) - Common Quaker

Although recorded only from the east before *vide* Smith (2011), they were quite common in Neulapur, Bardiya (28°27'43"N; 81°15'10"E), west in late February, 2020, at 170 masl.

7. *Heliophorus brahma* (Moore, [1858]) - Golden Sapphire

This butterfly was only documented from the east and Kathmandu valley earlier. One individual was observed at Kaadey, Kaski (28°17'29"N; 83°49'23"E), central Nepal at 1750 masl in October, 2020.

8. *Tarucus* Moore, 1881 sp.

A peculiar *Tarucus* sp. was encountered at AFU, in Rampur, Chitwan (27°39'10"N; 84°21'12"E), central Nepal at 160 masl, on 14.iii.2020. The other related *Tarucus* from Nepal, *Tarucus callinara* Butler, 1886, has spotted and broken post discal spots and unH discal spots 5, 6 and 7 are equidistant and in line (Evans, 1932). The sighted individual has UnhW discal spot 6 much closer to 7 and far away from 5. The postdiscal line is somewhat regular but not as in *T. nara* (Kollar, 1848) in which it is much like a stripe. The individual could very well have been *T. venosus* Moore, 1882 which is not recorded from Nepal. Other possibilities are *T. balkanica* (Freyer, 1844) and *T. indica* Evans, 1932 none of which are

recorded from Nepal. The species cannot be confirmed without upperwing, male genitalia and androconia, but is mentioned to alert future workers to examine specimens of the genus in the area.

Discussion

The record of these butterflies in new regions of Nepal proves the flow of species from one part to another, and in most cases, extension of species from the west and the east to central areas. It could also be that these species were always there but never before seen due to scanty exploration. In most cases, the anomalous species were seen in March-May and not in other months. These months are also the best months to observe butterflies in Nepal, including September-November. Further studies could reveal more hidden secrets regarding the distribution of butterflies in Nepal.

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Fig.1: Assam Pierrot, underside



Fig.2: Assam Pierrot, upperside



Fig.3: Chapman's Cupid



Fig.4: Common Quaker



Fig.5: Golden Sapphire



Fig.6: Narrow Spark



Fig.7: Silver Forget-me-not Blue



Fig.8: Forest Pierrot



Fig.9: *Tarucus* sp.

ERANTHEMUM ROSEUM (ACANTHACEAE) AS NEW LARVAL HOST PLANT FOR THE BENGAL SPOTTED FLAT CELAENORRHINUS PUTRA (MOORE, [1866])

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Introduction

The Bombay Natural History Society (BNHS) Nature Reserve is a forested area spread over 33 acres and is nestled between Dadasaheb Phalke Chitra Nagari (aka Film City) and Sanjay Gandhi National Park in Mumbai City of Maharashtra, India. The Reserve also has a small butterfly garden spread over an area of around quarter of an acre.

The Bengal Spotted Flat butterfly *Celaenorrhinus putra* (Moore, [1866]) (Insecta: Lepidoptera: HesperIIDae) is a rare Hesperiid. Historically, the species was known to occur in Eastern Himalayas and Northeast India (Evans 1949). The species has been reported to occur in South India in since 2013 and has been photographed in Western Ghats from Mumbai southwards to Kerala (Bhakare *et al.* 2020). It was recently reported by RK from BNHS Nature Reserve in Mumbai, Maharashtra (Kasambe, 2018).

Since September 2020, we were rearing caterpillars of Malabar Spotted Flat *Celaenorrhinus ambareesa* butterflies (Family HesperIIDae). We got its caterpillars on *Strobilanthes callosus* as well as on *Eranthemum roseum* which are known larval host plants of the species.

Observations

On 14 (two) and 15 October 2020 (one) we found three caterpillars on *Eranthemum roseum* plants with dark brown head; those

were resting in triangular cells (made by cutting and folding a part of the same leaf) with its back towards the leaf surface, head turned round to one side (see image). The cells were on the upper surface of the top leaf of the plant (see image). Parts of two leaves were eaten leaving the veins intact.

We reared these caterpillars on a diet of the leaves of *E. roseum* and cleaned the container of frass every day. All ate well and two pupated in the respective cells on 27 October 2020 (collected on 14 October) and 22 October 2020 (collected on 15 October) on the upperside of leaves. Third caterpillar, collected on 14 October 2020, pupated on 23 October 2020 between two leaves by weaving them together (see images). The pupae were shiny brown and also had antenna cases.

Three adult *C. putra* butterflies eclosed from the pupae on 2 and 5 November 2020 and 30 October 2020 (see images). The adult *C. putra* butterfly can be distinguished from similar looking Common Spotted Flat *C. leucocera* by the absence of white spots between cell and costa. Also, the male and female *C. putra* can be differentiated, as the male have white antennae (see images).

Meanwhile we found few more caterpillars of the *C. putra* on *E. roseum* plants and documented different larval stages (see image).

The only larval host plant reported for the species is *Strobilanthes ciliata* (Kalesh & Prakash 2015; Nitin *et al.* 2018) (Acanthaceae). The above observations, rearing of *C. putra* caterpillars on a diet of *E. roseum* plants to eclosion proves *E. roseum* to be a new larval host plant for the species in India.

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Fig.1: Caterpillar initial instar



Fig.2: Caterpillar final instar



Fig.3: Caterpillar cells on leaf



Fig.4: Pupating



Fig.5: Pupa



Fig.6: Pupa resting between two leaves



Fig.7: Freshly eclosed female



Fig.7: Freshly eclosed male

FIRST RECORDS FOR NEPAL OF TWO SKIPPER BUTTERFLIES: *GEROSIS SINICA* AND *CEPHRENES ACALLE*

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Reviewer: Peter Smetacek

Abstract

This article presents two species which have, apparently erroneously, been reported from Nepal before in Smith (2010) and in Thapa (1998), and are reported here with photographic evidence.

Introduction

Gerosis sinica (C. & R, Felder, 1862) *narada* (Moore, 1884) White Yellow-breast Flat

Gerosis sinica was described by C. & R. Felder as *Pterygospidea sinica* from Sylhet in N.E. Bangladesh. Evans (1932 & 1949) listed it as *Daimio sinica narada* from Sikkim. *Gerosis bhagava* and *G. phisara* were listed for Nepal by Colin Smith (1994, 2010). *G. sinica* was listed for Nepal with “no data available” by Thapa (1998), not indicating a source. Smith (2010) did not list it and referred to it under “Redundant Names” specifying “Mistake – phisara (female)”. It is not clear on which information this conclusion was based. In his unpublished Butterfly Updates of 2017, Colin Smith reported a picture taken by Vandana Subedi in May 2017 in Pokhara (Figure 1), which first appeared to him to be *G. sinica*. He noted that after much searching he concluded that it was a female *G. bhagava*. Evans (1949) indicated that *G. bhagava* differs from *G. sinica* by the upper forewing cell spot being larger than the spot in space 3. Thus, this identification of Fig.1 is questionable. Peter Smetacek (personal communication) judged it to be a female of *G. phisara*, much like the picture of its female in Kehimkhar (2016).

According to Evans (1949), *G. sinica* differs from *G. phisara* by having a white band in the center of the upper side of the abdomen with the abdomen ends being brown, and having the upper hindwing area unsullied, while *G. phisara* only has thin white stripes on the

abdomen. The individual in Fig.1 appears to be somewhat in between and it could be argued that it may be a somewhat worn *G. sinica*. It is assumed more likely that it is *G. phisara*.

In November and December 2016, I photographed two *Gerosis* butterflies near Pokhara (Fig. 2 & 3). Initially, I listed them as *G. bhagava*, since *G. sinica* was not listed for Nepal and the differences specified in Evans (1932) appeared to indicate that it could well be *G. bhagava*. When checking information for the new catalogue of butterfly species of Nepal, I had access to Evans (1949) and determined that both were actually *G. sinica*, as was confirmed by Peter Smetacek. The two individuals photographed near Pokhara were seen near forest edges on the SE and NE side of Phewa Lake at 800-820m elevation. Both were visiting flowers, of *Lantana camara* and another flowering plant.

Van Gasse (2018-unpublished MS) lists *Gerosis sinica* from Sikkim to NE India. The records reported here extend the known distribution area of *G. sinica* westward from Sikkim to Central Nepal.

Cephrenes acalle (Hopffer, 1874)

Cephrenes acalle was described as *Hesperia acalle* by Hopffer. Evans (1949) and Smith (2010) listed it as *C. chrysozona*. Subspecies *oceanica* (Mabille, 1904) was described as *Telicota oceanica* and reported from “Océanic sans localité précise”, which Evans (1949) somehow interprets as “Oceania (probably

Assam)". However, Funet lists "Papua" as type locality. *C. acalle* is reported from large parts of India, including lower elevations in the Himalayas from Sikkim to Arunachal Pradesh (Van Gasse, 2017 and Varshney & Smetacek, 2015).

C. acalle was listed in Smith (2010) based on a list of species provided to him by Wolfgang Dierl in 1974. This list, supposedly, included all the butterfly species collected during four German zoological expeditions to Nepal between 1962 and 1973. Apparently, no detailed account of these four expedition was ever published. Dierl's list also included three other species that have not been recorded for Nepal by anybody else. These four species are listed without pictures in the Illustrated Checklist of Butterflies of Nepal (Smith, 2011). In 2016, Colin Smith indicated that he doubted the reliability of the records of these four and some other species. Dierl's list contained only names and no dates, locations or elevations (of butterfly species collected). In 2020, after repeated requests, the German Zoologische Staatssammlung München (ZSM) reported that it only had specimens from Nepal in its collection of one of these four species, *Ionolyce helicon* (Pointed Lineblue). The collection contained no specimens from Nepal of Dierl's *Arhopala bazaloides* (Tamil Oakblue), *Colias berylla* (Everest Clouded Yellow) and *C. acalle* (Plain Palm Dart). Consequently, these three species were to be removed from the species list of butterflies of Nepal.

On 3 August 2019, I photographed 6 or 7 individuals of *C. acalle* at the Annapurna Eco-village in Astam at 1490m elevation, not far from Pokhara (Fig. 4 - 6). Most of them stayed together visiting one bunch of zinnia (*Zinnia elegans*) flowers for some 7 hours and hardly moved. On my next visit, nine days later, one female *C. acalle* was observed on the same bunch of zinnia's for a brief period of time around 10 a.m. in the morning.

One may assume that some other species which were presented on Dierl's 1974 list were also misidentified. Although this may be the case, it has little or no impact on the information in Colin Smith's database, since Dierl's list provided no additional information on the reported species.

Thus, my observation in Astam now becomes the first published record of *C. acalle* for Nepal. It represents an extension of the known distribution area of *C. acalle* from Sikkim westward to Central Nepal. The total number of butterfly species in Nepal is now about 665 (Van der Poel and Smetacek, in preparation). Although a fairly large number of new species have been reported for Nepal since 2015, the number is only slightly higher than the 660 reported in Smith 2010, since a fair number of species, such as three of the species reported by Dierl, were removed.

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Fig.1: *Gerosis phisara* female



Fig.2: *Gerosis sinica*, upperside



Fig.3: *Gerosis sinica*, underside



Fig.4: *Cephrenes acalle*, female upper side



Fig.5: *Cephrenes acalle*, female, underside



Fig.6: *Cephrenes acalle*, male

**CONFIRMATION OF *RAGADIA CRISILDA* (HEWITSON 1862)
(LEPIDOPTERA: SATYRINAE) AND *MATAPA CRESTA*
(EVANS 1949) (LEPIDOPTERA: HESPERIINAE) IN WEST
BENGAL, INDIA**

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Reviewer: Peter Smetacek

Introduction

Ragadia crisilda and *Matapa cresta* are recorded from Buxa Tiger Reserve (26.73 N; 89.61 E) and (26.72 N; 89.60 E) Alipurduar district, West Bengal, India. A single individual of *Ragadia crisilda*, (Fig.1) sitting on a leaf was observed and photographed on 17th November, 2020, at Jayanti riverbed, Buxa Tiger Reserve (26.73 N; 89.61 E). The next day, on 18th November, the authors again spotted a single individual at the same spot sitting on the ground in the shade. It was observed for a few seconds before it disappeared in the bushes.

The authors diligently searched for it for the next three days but couldn't find any at that location. The species is previously recorded in the literature from Assam, Meghalaya, Sikkim, Arunachal, NE in India and also found in Myanmar and Bhutan (Varshney & Smetacek, 2015; Kehimkar, 2016).

Another single individual of *Matapa cresta* (Fig.2) was found puddling on wet riverbed in the afternoon on 16th November, 2020 at Guye Nala area of Buxa Tiger Reserve ((26.72 N; 89.60 E). The previous distribution of the

species lies from Sikkim to NE India and also in Andaman (Varshney & Smetacek, 2015; Kehimkar, 2016). Both the species were photographed using a DSLR camera (Model no: Canon 80D) with 55-250mm kit lens, and Digitech DFL-210T PRO-C flash. The presence of the *R. crisilda* and *M. cresta* in Buxa Tiger Reserve is not very unusual as the place is very close to Bhutan and Sikkim and since both are known to be a low elevation species (Kehimkar, 2016). This record confirms the presence of *Ragadia crisilda* and *Matapa cresta* in West Bengal.

Acknowledgements

The authors are thankful to Mr Rajib Dey for his suggestions to prepare the manuscript.

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Fig.1: *Ragadia crisilda*



Fig 2: *Matapa cresta*

***PSILOGRAMMA VATES* (LEPIDOPTERA: SPHINGIDAE) IN GUJARAT**

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Introduction

The hawk moth *Psilogramma vates* was described by Butler (1875) from Sri Lanka as *Diludia vates*. Butler (1876) inversely synonymized this species with *D. abietina*. Moore (1882) also reported it from Sri Lanka. Kirby (1892) corrected the inverted synonymy made by Butler (1876). Swinhoe (1892) included *D. vates* from India but only on the basis of hearsay. Hampson (1892) treated it as junior synonym of *Pseudosphinx discistriga* (Walker, 1856) along with *Psilogramma increta* (Walker, [1865]), *Psilogramma melanomera* (Butler, 1875), *Meganoton rubescens* (Butler, 1876), *Megacorma obliqua* (Walker, 1856) with a distribution “China and throughout India and Ceylon”. Rothschild & Jordan (1903) placed *vates* as a synonym of *Psilogramma menephron* (Cramer, [1780]) from the “Oriental Region”. Bell & Scott (1937) followed this treatment and noted that it occurred “throughout the Indian Sub-region, China and eastwards to the Solomon Islands”. D’Abrera (1986) did not include *P. vates*. Kitching & Cardiou (2000) synonymized *P. vates* with *P. increta*.

Eitschberger (2001) reinstated *vates* as a valid species in the genus *Psilogramma*. Rothschild & Jordan. The distribution of the species on the Indian mainland remains unclear, evident from the chaotic taxonomic history of the species.

Observation

On 2 October, 2017, a series of 10 male and 5 female specimens of *Psilogramma* were attracted to a mercury vapour lamp reflected

off a white wall in Bakore, Mahisagar district, Gujarat. Since it was unclear which *Psilogramma* species it was or whether there were more than one species, all the variants available were taken. On examination of the collected materials, they turned out to consist of a single species, *P. vates* (Fig. 1-4) with pale, intermediate and dark forms, active at the same time and further confirmed by Ian Kitching, NHM, London)

Material Examined

15 exs. (10 males; 5 females). Forewing Length: 39-42mm; expanse: 86-92mm. 2.x.2017, Bakhore, Mahisagar district, (23° 35’N 73° 58’E), Gujarat, India. Leg. et Coll. Smetacek, Bhimtal.

Result and Discussion

Hitherto, this taxon was not reported from Gujarat previously and the present records constitute a westward extension to the known distribution of the species. The number of individuals attending the light suggest that it is well established in the area.

Acknowledgement

We are grateful to Ian J. Kitching, The Natural History Museum, London, for confirmation of the identity of this species.

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Fig.1



Fig.2



Fig.3



Fig.4

Fig.1, 2, 3 & 4: *Psilogramma vates*, Bakhor, Gujarat, 2017, showing different color morphs

AN ADDITION TO THE KNOWN AGANAINAE FAUNA (INSECTA: LEPIDOPTERA: EREBIDAE) OF INDIA

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Introduction

According to Holloway (1998), the genus *Agape* Felder, 1875 is characterized by the bright yellow ground colour with orange spots or fasciae on the forewing. At the base of the forewing and on the thorax occur small black spots, the abdomen is banded with yellow and blue-black, often with the apex broadly the latter colour. The male lacks a retinaculum; the antennae are filiform, with short cilia.

The genus includes five species of which only *A. chloropyga* (Walker, 1854) occurs on the Asian mainland; remaining the four found on Pacific islands. *A. chloropyga* is also known from Sundaland, Moluccas, New Guinea, Queensland (Holloway, 1998) and Cambodia (Bayarsaikhan *et al.*, 2016).

Although in the generic treatment, Bayarsaikhan *et al.* (2016) noted that species of the genus are light yellow, with orange spots or fascia on the forewing, yet in describing the species *chloropyga*, it is noted that *A. chloropyga* differs from any other Aganaine by having golden yellowish wings with five brown spots at the median area and two black spots at the basal area of the forewing.

It is possible that the description of the genus followed Holloway (1998) but the description of the species was based on the material before the author and described in their own language.

Material Examined

India, Mizoram, Aizawl District, Hmuifang, 23°27'01''N 92°45'26''E, 1472 m, 4.xi.2019, 12.30 h IST. 1 male, Leg. Peter Smetacek, Coll. Butterfly Research Centre, Bhimtal.

Forewing length: 31 mm: Expanse: 70 mm.

Differs from the generic and specific description by Holloway (1998) in that the spots on the forewing are brown, as noted by Bayarsaikhan *et al.* (2016) in their description of the specimens they examined from Laos.

This is an addition of a genus as well as species to the known Indian fauna. Only a single specimen was seen and recorded in over a week of surveys in the Hmuifang area. It was attracted to a mercury vapour lamp reflected off a white sheet.

Acknowledgement

We are grateful to Prof. Esther Lalhmingliani of Mizoram University for her kind help and support.

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Fig.1: Adult of *Agape chloropyga* (Walker, 1854), dorsal view



Fig.2: Adult of *Agape chloropyga* (Walker, 1854), ventral view

A NEW RECORD OF *FLOS CHINENSIS* (INSECTA: LEPIDOPTERA: LYCAENIDAE) FROM WESTERN HIMALAYA, INDIA

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Introduction

Flos (Doherty, 1889) is a genus of butterflies in Lycaenidae family. The species of this genus are commonly known as plushblues and are found in the Indo-Malayan Ecozone (Seitz 1912–1927). There are 14 species listed in this genus, half of which are known from India viz. *F. adriana* (de Nicéville, 1883), *F. fulgida* (Hewitson, 1863), *F. asoka* (de Nicéville, 1883), *F. areste* (Hewitson, 1862), *F. chinensis* (C. & R. Felder, 1865), *F. apidanus* (Cramer, 1773) and *F. diardi* (Hewitson, 1862) (Varshney & Smetacek, 2015). The first three species are known to have their distribution in western Himalaya. In this paper, we have documented an addition, Chinese Plushblue *Flos chinensis* (C. & R. Felder, 1865) from the western Himalaya. It is interesting to note here that the central Himalaya in Nepal, have five species i.e. *F. asoka*, *F. adriana*, *F. chinensis*, *F. areste*, and *F. fulgida* (Smith, 1994); out of which, the first three species have been recorded from its neighboring state Uttarakhand, during the past 10 years (Smetacek, 2011; Venkatesh, 2016). So, there is a high probability of the remaining two

specie occurring in Uttarakhand. On reviewing the literature, it became clear that W.C. Hewitson (1863–1878) examined a specimen of this species from North India with missing locality data. Although it was believed by L. de Niceville (1890) that perhaps Hewitson mistook *Flos chinensis* for a similar looking Sikkim species, which he had since described as *Nilasera asoka* (*Flos asoka*, de Niceville, 1883), but the latter is tailed, while the former is tailless. Given as *Amblypodia chinensis* in Evans (1932) with a distribution from Sikkim to Assam. P.v. Gasse (2013) listed it as “Not Rare” from central Nepal to Arunachal and north-east India. Recently Varshney & Smetacek (2015) documented this species from Sikkim to north-east India.

Observations

A single individual of *F. chinensis* was observed during a butterfly survey at 0930 hours on 18.vi.2017 at Saung village (30.02671 N, 79.95240 E), altitude 1430 m, district Bageshwar, Uttarakhand, (Fig. 1). It was resting on the leaf of a ginger plant, *Zingiber officinale*. We also observed a single individual of Powdered Oakblue, *Arhopala*

bazalus (Hewitson, 1862), which was resting on the leaf of Oak species. It indicates that both the species share same habitat. The study area was dominated by Oak species. This species was not sighted during subsequent surveys conducted at the same site during the next two months although we observed *A. bazalus* in the same location. The site of observation is shown in Fig. 2.

Conclusion

The discovery of *F. chinensis* leads us to draw conclusions that either it is present in western Himalaya and overlooked during past surveys organized in that area or it is a range extension of this species into the western Himalaya. It is imperative that extensive surveys at likely locations in Uttarakhand should be conducted to determine the status of this species of butterfly so that further efforts can be made to conserve and protect them in this region.

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Fig.1: A photograph of *Flos chinensis* clicked at Saung Village, Bageshwar.

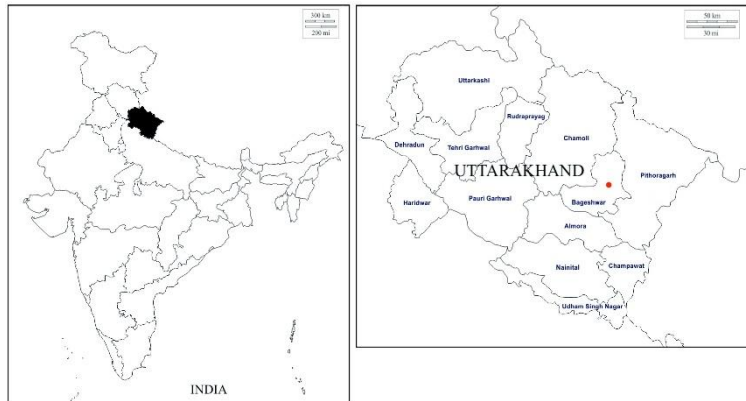


Fig.2: The site where *Flos chinensis* was recorded shown by a red dot in the map.

LIFE CYCLE OF *OLIGONYCHUS ORYZAE* (HIRST, 1926), AN IMPORTANT PEST OF PADDY ON THREE DIFFERENT *KHARIF* CULTIVARS AND *BORO* CULTIVAR UNDER LABORATORY CONDITIONS

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Abstract

The study on life cycle of *Oligonychus oryzae* (Hirst, 1926) on *Kharif* early cultivar, IET 11870, *Kharif* mid-early cultivar, IET 11271, *Kharif* late cultivar, IET 12133 and *Boro* cultivar, IET 12055 reveals that the life cycle was completed in 11.24 ± 1.38 days, 12.29 ± 1.89 days, 11.99 ± 1.57 days and 12.97 ± 1.62 days on early, mid-early, late cultivars of *Kharif* and *Boro* cultivar, respectively. The corresponding figures for oviposition period were 16.0 ± 2.22 days, 17.03 ± 2.97 days, 16.91 ± 2.51 days and 17.19 ± 2.27 days, respectively while the corresponding figures for fecundity were 21 ± 1.10 eggs, 22 ± 0.97 eggs, 19.2 ± 1 eggs and 21.61 ± 0.87 eggs, respectively. It was observed that there is not much difference regarding life stages, total time taken to complete the life cycle as well as in oviposition and fecundity among the 4 cultivars studied and therefore, all the 4 cultivars appeared to be preferred hosts for this mite.

Keywords: *Oligonychus oryzae*, West Bengal, life cycle, IET 11870, IET 11271, IET 12133, IET 12055.

Introduction

Oligonychus oryzae (Hirst, 1926) is an important pest of paddy in different parts of India. In Karnataka, Andhra Pradesh, Tamil Nadu and West Bengal, it causes greater damage compared to other parts of India, causing the appearance of white patches on leaves which later turn yellow and start drying, causing 25% loss (Nagarjan, 1957; Banerjee, 1989). The damage may extend up to 25%. Devitalization and retardation of growth also occur. This mite is commonest during the pre-monsoon season. The population dwindles during the monsoon period, reappears in lesser numbers during the post-monsoon period and is scarce during winter months. In the case of West Bengal, it is not as serious a pest as *Steneotarsonemus spinki* Smiley, 1967 but yet it has been recorded in some pockets of South

24 Parganas, Hooghly and Nadia districts. The study of the life cycle was published by Misra & Israel (1968) from Odisha. Thereafter, no study was done on the life cycle of this mite, especially under conditions in West Bengal and hence, this study was undertaken.

Material and Methods

The mite infestation on paddy was observed in and around Canning area in South 24 Parganas district of West Bengal and the mites were collected therefrom for life cycle study. The early, mid-early and late *Kharif* cultivars and *Boro* cultivars which were selected were IET 11870, IET 11271, IET 12133 and IET 12055, respectively. The laboratory culture and the technique for life cycle study followed conventional methods (Helle & Sabelis, 1985; Gupta, 2012). This study was done under

laboratory conditions maintaining temperature and RH regimes of $30 \pm 1^\circ\text{C}$ and $75 \pm 2\%$ (pre-monsoon), $27.5 \pm 1^\circ\text{C}$ and $85 \pm 2\%$ (monsoon), $25 \pm 1^\circ\text{C}$ and $65 \pm 2\%$ (post-monsoon) and $18 \pm 1^\circ\text{C}$ and $65 \pm 2\%$ (winter season), respectively. The observations were recorded with regard to duration of different life stages along with pre-oviposition, oviposition, post-oviposition periods, fecundity, longevity and sex ratio. The data thus collected were subjected to statistical analysis and are presented in Table-1.

Results and Discussions

The duration of different life stages egg-adult period, pre-oviposition, oviposition, post-oviposition periods, fecundity, longevity, sex ratio, etc. have been given in Table1.

A perusal of that Table reveals the following:

Incubation period: Among the 3 cultivars of *Kharif* season, this duration was shortest in the case of early cultivar IET-11870 where it was 3.7 ± 0.37 days and the maximum was 4.1 ± 0.28 days in the case of mid-early cultivar (IET-11271). Not much difference existed between early cultivar IET-11870 and late cultivar IET-12133 as in the former case, it was 3.7 ± 0.37 days and in the latter case it was 3.8 ± 0.31 days. However, in the *Boro* cultivar i.e. IET-12055, the duration was shortest which was 2.9 ± 0.37 days.

Larval period: The larval period was shortest in *Kharif* early cultivar IET-11870 which was 2.40 ± 0.40 days and it was highest in case of *Kharif* mid-early cultivar IET-11271 where it was 3.29 ± 0.36 days. It was followed by 3.0 ± 0.29 days and 3.03 ± 0.37 days in case of *Kharif* late cultivar IET-12133 and *Boro* cultivar IET-12055, respectively.

1st Quiescent stage: There was not much difference in the duration of 1st Quiescent stage which ranged between 0.89 ± 0.37 days (*Kharif* mid-early cultivar IET-11271) and the maximum was 0.94 ± 0.48 days in *Kharif* early cultivar IET-11870.

Protonymphal period: Not much difference existed in duration of protonymphal period in

4 cultivars as was evident from the fact that it was 2.64 ± 1.13 days, 2.33 ± 1.890 days, 2.58 ± 1.72 days and 2.47 ± 1.64 days in case of *Kharif* early cultivar IET-11870, *Kharif* mid-early cultivar IET-11271, *Kharif* late cultivar IET-12133 and *Boro* cultivar IET-12055, respectively.

Deutonymphal period: This period was minimum (2.97 ± 0.39 days) in *Kharif* early cultivar IET-11870 and was maximum (3.7 ± 0.3 days) in *Boro* cultivar IET-12055. Among *Kharif* mid-early cultivar IET-11271 and *Kharif* late cultivar IET-12133, the difference in duration was very marginal.

Total developmental period (egg- adult): This period was shortest in *Kharif* early cultivar IET-11870 which was 11.24 ± 1.38 days and which was very close to *Kharif* late cultivar IET-12133 where it was 11.99 ± 1.57 days. The maximum duration was 12.97 ± 1.62 days in *Boro* cultivar IET-12055 followed by 12.29 ± 1.89 days in case of *Kharif* mid-early cultivar IET-11271.

Pre-oviposition period This period was more or less of similar duration in all 4 cultivars selected in present study and that was 2.21 ± 0.34 days, 2.36 ± 0.24 days, 2.29 ± 0.31 days and 2.39 ± 0.49 days in case of *Kharif* early cultivar IET-11870, *Kharif* mid-early cultivar IET-11271, *Kharif* late cultivar IET-12133 and *Boro* cultivar IET-12055, respectively.

Oviposition period: Although the duration for the completion of life cycle was shortest in *Kharif* early cultivar IET-11870 but the oviposition period in the same cultivar was shorter (16.0 ± 2.22 days) as compared to other two cultivars like *Kharif* mid-early cultivar IET-11271 where it was 17.03 ± 2.97 days and *Boro* cultivar IET-12055 where it was 17.19 ± 2.27 . However, the oviposition period in case of *Kharif* late cultivar IET-12133 was quite close to *Kharif* early cultivar IET-11870.

Post-oviposition period: As regards postoviposition period, the shortest duration was 2.81 ± 0.44 days in case of *Boro* cultivar IET-12055 and the longest duration was 3.03

± 0.51 days in case of *Kharif* mid-early cultivar IET-11271.

Fecundity: No difference existed between *Kharif* early cultivar IET-11870 and *Boro* cultivar IET-12055 as in case of the former the fecundity was 21 ± 1.10 eggs and in the latter it was 21.61 ± 0.87 eggs. The fecundity was highest in case of *Kharif* mid-early cultivar IET-11271 where it was 22 ± 0.97 eggs while this was poorest in case of *Kharif* late cultivar IET-12133 and that was 14.2 ± 2.42 eggs.

Sex ratio: In case of *Boro* cultivar IET-12055 the sex ratio was more female biased where it was 1:5.1 whereas it was 1:3.7 in *Kharif* early cultivar IET-11870, 1:4 in case of *Kharif* mid-early cultivar IET-11271 and 1:4.02 in case of *Kharif* late cultivar IET-12133.

Discussion

From the analysis of the entire result, it appeared that the shortest life cycle was in the case of *Kharif* early cultivar IET-11870, which was close to *Kharif* late cultivar IET-12133, but so far as fecundity is concerned, *Kharif* mid-early cultivar IET-11271 was slightly better as compared to other cultivars. Regarding longevity, the longest period was *Boro* cultivar IET-12055 where the female lived for the longest period. In the same cultivar, the sex ratio was also more female biased as compared to other cultivars. But the overall, there was no significant or noticeable difference among the cultivars and whatever differences existed was more or less marginal in nature.

As regards incubation period, Nayal *et al.* (2007) reported the life cycle of *Oligonychus oryzae* and Saha *et al.* (1999) reported the life cycle of *Oligonychus coffeae* (Nietner, 1861). In both cases, the duration as mentioned was much higher (4.70 ± 1.09 days) in *Oligonychus oryzae* and 6.33 ± 0.52 days in *Oligonychus coffeae*, respectively. In the case of *Eutetranychus uncatus* Garman, 1952, Lal & Mukherjee (1979) reported higher incubation period than what was observed in the present case. Maity & Chakraborty (1978) also

reported a higher incubation period for *Panonychus citri* (McGregor, 1916).

Regarding larval period, the duration as was observed in the present case was shorter than the one reported by Lal & Mukherjee (1979) in case of *Eutetranychus uncatus* where it was 4.62 days.

Regarding, egg to adult period, the present observation is quite close to the observations made by most of the previous workers, like on *Oligonychus oryzae* (Nayak *et al.*, 2007), *Oligonychus coffeae* (Saha *et al.*, 1999) and *Tetranychus neocaledonicus* Andre, 1933 (Mallikarjunappa & Nageschandra, 1989)

Regarding fecundity, the number of eggs per female observed in the present case was much lower compared to *Oligonychus coffeae* (Saha *et al.*, 1999) where it was 68.50 ± 1.38 eggs but it was close to that reported by Mallikarjunappa & Nageschandra (1989) in the case of *Eutetranychus hicoriae* (McGregor, 1950) where it was 13.77 ± 3.48 eggs.

As regards longevity, the present observation was quite similar to Saha *et al.* (1999), who reported 15.60 ± 3.71 days in case of *Oligonychus coffeae* but compared to the observation made on *Oligonychus oryzae* (Hirst) by Nayak *et al.* (2007), the present observation is of shorter duration.

Acknowledgements

The authors are thankful to Dr. Kinkar Saha, Entomologist, Rice Research Institution, Chuchura, West Bengal for valuable suggestions offered while conducting the study and to the Secretary, Ramakrishna Mission Ashrama, Narendrapur for providing laboratory facilities.

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Table- 1. Life cycle of *Oligonychus oryzae* on *Kharif* (early, mid-early and late cultivars) and *Boro* cultivar (2015-16).

	<i>Kharif</i> Early cultivar (IET- 11870)		<i>Kharif</i> Mid- early cultivar (IET- 11271)		<i>Kharif</i> Late cultivar (IET- 12133)		<i>Boro</i> cultivar (IET- 12055)	
Stages	Mean \pm SD(Days)	Range	Mean \pm SD (Days)	Range	Mean \pm SD(Days)	Range	Mean \pm SD(Days)	Range
Incubation	3.7 \pm 0.37	1.3- 8.7	4.1 \pm 0.28	0.9- 9.9	3.8 \pm 0.31	1.2- 8.8	2.9 \pm 0.37	0.1-7.8
Larva	2.40 \pm 0.40	1.6- 7.4	3.29 \pm 0.36	1.71- 8.29	3 \pm 0.29	0.2-8	3.03 \pm 0.37	1.97- 8.03
1 st Quiescent	0.94 \pm 0.48	0.46- 5.94	0.89 \pm 0.37	0.11- 5.89	0.99 \pm 0.5	0.01- 5.99	0.09 \pm 0.63	0.1-5.8
Protonymph	2.64 \pm 1.13	0.06- 7.64	2.33 \pm 1.89	0.67- 7.33	2.58 \pm 1.72	0.42- 7.58	2.47 \pm 1.64	0.53- 7.47

2 nd Quiescent	0.96 ± 1.13	0.04-5.96	1.02 ± 0.27	0.98-6.02	1 ± 0.2	0.04-6	1.19 ± 0.34	0.81-6.19
Deutonymph	2.97 ± 0.39	2.03-7.97	3.01 ± 0.26	1.99-8.07	3.09 ± 0.31	1.91-8.09	3.7 ± 0.3	1.3-8.7
3 rd Quiescent	0.86 ± 0.29	0.14-5.86	0.93 ± 0.33	0.07-5.93	0.92 ± 0.27	0.08-5.92	0.89 ± 0.34	0.11-5.89
Total developmental period (egg-adult)	11.24 ± 1.38	6.24-16.24	12.29 ± 1.89	7.29-17.29	11.99 ± 1.57	6.99-16.99	12.97 ± 1.62	7.97-17.97
Pre-oviposition period	2.21 ± 0.34	0.79-7.24	2.36 ± 0.29	0.64-7.36	2.29 ± 0.31	0.71-7.29	2.39 ± 0.49	0.61-7.39
Oviposition period	16.0 ± 2.22	11-27	17.03 ± 2.97	12.03-22.03	16.91 ± 2.51	11.91-21.91	17.19 ± 2.27	12.19-22.19
Post-oviposition period	2.86 ± 0.46	2.14-7.86	3.03 ± 0.51	1.97-8.03	2.93 ± 0.5	0.07-7.93	2.81 ± 0.44	0.19-7.87
Longevity	15.0 ± 2.26	10-20	16.9 ± 3.39	11.9-21.9	15.87 ± 2.9	10.87-20.87	17.33 ± 3.15	12.33-22.33
Fecundity Eggs/female	21 ± 1.10	16-26	22 ± 0.97	17-27	19.2 ± 1	14.2-2.42	21.61 ± 0.87	16.61-26.64
Sex ratio (male:female)	1:3.7		1:4		1:4.02		1:5.1	

A NEW ALTITUDINAL RECORD FOR *PORITIA HEWITSONI* (INSECTA: LEPIDOPTERA: LYCAENIDAE) FROM UTTARAKHAND, INDIA

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Reviewer: Peter Smetacek

Introduction

The Common Gem butterfly, *Poritia hewitsoni* Moore (1866) (Poritiinae: Lycaenidae), is endemic to the Oriental (Indo-Australian) region. Its distribution extends from Uttarakhand in northern India in the west, to north Thailand in the east, through the lower Himalayan tracts in Nepal, Sikkim, W. Bengal (Darjeeling), Bhutan up to parts of northeast India, south-east Bangladesh (Chittagong hill tracts) and north Myanmar (Evans, 1932; Singh, 2003; Ek-Amnuay, 2012).

Observation

One butterfly, probably a male, was observed at 9.06 am on 28.ix.2020 basking at an altitude of 1770-80 msl (29°50'00"N; 74°41'34" E) in a chir pine forest (*Pinus roxburghii*) with thick undergrowth of grasses and shrubs close to a resort in Gunnu area near Lansdowne, Uttarakhand. The individual was observed for more than 5 minutes and the underside of the wings were photographed with a digital Nikon P 900 camera after the butterfly settled on foliage. It did not open its wing to bask, therefore it was not possible to photograph the upperside of the wings. The butterfly kept sitting for a long time even after being photographed.

Discussion

P. hewitsoni occurs in lower midlands from 160 m to 1050 m as a locally abundant, fairly common species found at all seasons (Smith,

2006; Singh, 2003). The species has been recorded at low elevation, with stragglers ascending the Himalaya to 1500 msl. (Smetacek, 2016). The current sighting confirms that this species can ascend up to 1780 m. It appears to have been a straggler, since no other specimens were observed.

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Fig.1: *Poritia hewitsoni*

EXTENSION OF THE KNOWN DISTRIBUTION OF THE CLUB SILVERLINE BUTTERFLY, *SPINDASIS SYAMA* (HORSEFIELD, 1829) (LEPIDOPTERA: LYCAENIDAE) TO SATPURA TIGER RESERVE, MADHYA PRADESH

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Abstract

A Club Silverline was recorded at Satpura Tiger Reserve on 8th September, 2017 at 12:21 pm near Ramya Kund in Pachmarhi at an approx. elevation of 1100 m.

Keywords: Satpura Tiger Reserve, range extension, India, butterflies

Introduction

Club Silverline (*Spindasis syama*) is a Lycaenid butterfly that occurs in Odisha and from Sikkim to Myanmar (Evans, 1932). Wynter-Blyth (1957) noted that it is a jungle species which is common at low elevations. Kehimkar (2008) reports this species to be found from Sikkim to Arunachal Pradesh, Northeast and Odisha, commonly seen from March to November up to an elevation of 1200 m. Kehimkar (2008) also noted that it flies in sunshine and is a forest dweller. Kehimkar (2016) has reported the species from West Bengal, Jharkhand, Nepal, Bhutan and Bangladesh as well.

Material and Methods

Butterflies of Satpura Tiger Reserve were surveyed between 8-10th September, 2017 as part of the Butterfly Survey cum Awareness Camp in Pachmarhi under the joint aegis of Satpura Tiger Reserve and State Ecotourism Development Board. The purpose of this camp was to create awareness among people regarding the lifecycle, habitat and importance of butterflies and to identify the various

species of butterflies found in Satpura Tiger Reserve.

During the survey on 8th September 2017 the butterfly was sighted and photographed at 12:21 pm by the first author near Ramyakund at an approx. elevation of 1100 m. The path leading to Ramya Kund offers vast hilly forests landscape covered with bamboo thickets, jamun and sal trees. Club Silverline was spotted sitting on bush on a hillside.

Field identification was not possible, but it was clearly something new, so the second author also photographed the species as a backup record. After returning to the camp site Ashok Sengupta identified it as a Club Silverline and later Peter Smetacek confirmed the identity.

Discussion

This is the first record of Club Silverline from Central India. The genus is not known to migrate, so it is likely that the specimen observed is from a resident population. The present record extends the known distribution of this species over 600 km south and west of its previous known range limits in Odisha and Nepal. Hoshangabad district has not been well surveyed for butterflies and there is every likelihood that further new records of butterflies will emerge when proper surveys are undertaken.

Acknowledgement

We are grateful to Ashok Sengupta for providing on field identification, Peter

Smetacek, Butterfly Research Centre, Bhimtal, Uttarakhand, for his help in writing this note and to the State Forest Department, Madhya Pradesh for organizing the Camp.

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<http://www.madhyapradesh.tourism.com/touristattractions/pachmarhi.html>



Fig.1: *Spindasis syama*

EDITORIAL: REGARDING A CASE OF PLAGIARISM**PETER SMETACEK***Butterfly Research Centre, Bhimtal
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Publication of the December 2020 issue of BIONOTES was delayed due to several reasons. It was eventually published on February 13, 2021 but immediately withdrawn. The reason was that in that issue, we carried a note titled, "First confirmed record of Crimson Rose *Pachliopta hector* (Linnaeus, 1758) from Chilla, Rajaji Tiger Reserve, Garhwal Zone, Uttarakhand" by Shankar Kumar, Vineet Bahuguna, Param Jit Singh and Devanshi Singh. This note reported the presence of this butterfly outside the Garhwal Mandal Nigam Resthouse, where it was photographed by Mrs. Saroj Kukreti, Manager, Garhwal Mandal Vikas Nigam guesthouse, Chilla.

The purported photograph was sent to Mr. Param Jit Singh by Vineet Bahuguna, senior management consultant with the Garhwal Mandal Vikas Nigam, for identification. They claimed to have seen this butterfly near the guest house and photographed it. Recognizing that this was a new record for Garhwal, Mr. Param Jit Singh and Devanshi Singh visited the area twice to try and obtain further evidence of this species in the area. On one occasion, they were accompanied by Vineet Bahuguna. Needless to say, they were unable to locate this butterfly.

Mr. Param Jit Singh asked Saroj Kukreti for the original photo, which she claimed to have taken but she stated that she had accidentally deleted it.

Mr. Param Jit Singh, Dr. Shankar Kumar and Devanshi Singh therefore relied upon the observation by Vineet Bahuguna and Saroj Kukreti, wrote the abovementioned note and submitted it for publication in BIONOTES.

I reviewed the note and since I have a record of a specimen of *Pachliopta hector* collected in Naukuchiatal on 15.iv.1949, and I have seen a specimen of this butterfly near Dehra Dun but did not report it because of lack of evidence, I trusted the report and recommended publication.

As soon as it was published, Mr. Gaurav Joshi, Haldwani, Uttarakhand, pointed out that the photograph was his, taken with a cell phone camera on 31.i.2016 at 10.39 am at Gingee Fort in Tamil Nadu. He had uploaded it on Facebook on a forum called Uttarakhand Photography Club on 16.v.2018 at 7.45 pm. He has since then submitted the series of original photographs to me, whose data confirms what is stated above.

This is therefore an open and shut case of plagiarism and scientific fraud by Vineet Bahuguna and Saroj Kukreti. The note was withdrawn.

The BIONOTES team requests contributors to kindly confirm any records submitted to them, even if the people belong to normally respectable organizations like the Garhwal Mandal Vikas Nigam. We also strongly condemn the contemptible action by Vineet Bahuguna and Saroj Kukreti.



Fig.1: Gaurav Joshi's post in Facebook as mentioned in text.