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# BIONOTES

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**On Any Aspect Related with Life Forms**

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Cover Photo by Parixit Kafley of a Common Gem Butterfly

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It has been known for a long time that spiders can fly. In 1883, the volcano of Krakatoa erupted and covered 70% of the island under a sheet of lava. Scientists saw this as a golden opportunity to study the re-introduction of life, imagining that completely lifeless solidified lava would be first colonised by primitive algae, to be followed by various plants and eventually, insects, birds, reptiles and mammals. The first animal discovered there, long before plants had colonized the area, was, in fact, a spider, who had flown in from some neighbouring or distant land mass. Of course, spiders are predators and need some other animal to feed upon, so that poor spider, despite its pioneering effort, could not have survived long on the barren rock that was Krakatoa at the time.

The spider's method of flight was called ballooning, since that was the level of our understanding. A spider preparing for flight aims the tip of its abdomen upwards and releases a strand of silk. This was believed to get taken up by the breeze and carry the spider to altitudes of more than 4000 m and across hundreds of kilometers of ocean. It was obvious that this was not well understood, since it did not explain how large spiders were transported through the air with a few strands of silk that in no way resembled a wing, nor did it explain why most ballooning flight takes place when wind velocity is low, less than 3 metres per second.

A team at the University of Bristol published a paper in the journal Current Biology on July 5, 2018, showing that the spiders are, in fact, using an electrostatic charge to fly. This revolutionises our understanding of flight.

The principle is simple: the spider's body is negatively charged from the earth, while the atmosphere is positively charged. In order to fly, the spider stands on tiptoe with its abdomen pointing upwards and release strands of silk. This gets negatively charged and the repulsion from the negatively charged earth is enough to permit the spider to sail up into the air and, conditions pemitting, be carried for hundreds of miles without wings.

The word to describe this flight without wings, of course, is levitation. Throughout history, there have been claims of levitation, which is why the word came into existence. Levitation is the ability to drift into the air and stay there with no external support or movement. This is exactly what the spiders did in a polycarbonate box in the laboratory of the University of Bristol, where, in order to prove that wind was not a factor being used by the spiders, researchers charged the base of the box negatively and the air inside positively, as is normal out of doors. Spiders placed on a cardboard strip in the box were able to float about without any effort. As soon as the charge was cut, they fell to earth.

Among the better documented persons capable of levitating was the 17$^{th}$ century Catholic priest, St. Joseph of Cupertino. He would rise into the air while saying Mass in front of his parishioners. He also levitated before Pope Urban in Rome. Tibetan Buddhist monks are also said to have this power, by which they could travel across the harsh terrain effortlessly. While this seemed wonderful as long as one does not know how it is done, if one considers spiders, well, they have been doing it all

along, except we hid it behind another word, ballooning.

If one considers that the body of St. Joseph and other levitators was simply more negatively charged than other humans, then, atmospheric conditions permitting, he would be able to drift through the air quite like a spider.

While this clears up some mysteries from the past, it opens up unlimited frontiers for the future. Suddenly, fixed wing aircraft and helicopters, with the dependence on drag and lift forces, is passé; what used to be called free floating or levitation is here!

For transporting goods, both locally and long distance, levitation offers untold possibilities. The same for personal transport, since all one would need is something like a nebulizer for oneself and off we would go! One could do it with a sort of back pack, or go in style in levitating armchairs!

The only challenge that this wonderful discovery faces is from lobbies who would go out of business if this method of transport became widespread. For this, one needs to spread the word as far as possible. The only reason the development of electric cars was delayed so long was because the inventors were relatively unknown and kept that way. With social media here now, the time for cartels to dictate terms is over. It is time to tomtom the implications of this discovery and make it so widespread that anyone can reproduce the experiments and take the thing forward.

Then, in another few decades, the possibility of children flying to school will be very real and traffic jams caused by large, nearly empty cars will be a thing of the past. Instead, there will be an air shuffle to the workplace and a dodging of flying birds. Most of all, there will be silence. While modern cars are superficially silent, the thunder of the engines nevertheless assaults our subconscious senses, since the only thing that has been damped out is the audible range of the sound spectrum. Levitation will be silent.

Most major discoveries by humans are first commandeered for the purpose of killing each other. One hopes that this discovery will not face a similar fate, and that its positive civilian use will overshadow any recent mental constructs like national borders, economics and terrorism in the name of religion. Humans used the knowledge of how to fly first in gaining air superiority during the First World War and the bombing of civilian populations by both sides during World War 2. Today, when the frontier of killing machines has shifted to outer space and energy rays, perhaps levitating will be too primitive to get more than civilian attention to make the world a better place.

https://www.cell.com/current-biology/fulltext/S0960-9822(18)30693-6?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS0960982218306936%3Fshowall%3Dtrue

# SIGHTINGS OF *JAMIDES BOCHUS* (STOLL, [1782]) AND *PROSOTAS NORA* (C. FELDER, 1860) (INSECTA: LEPIDOPTERA: LYCAENIDAE) FROM URBANIZED PARTS OF NEW DELHI, INDIA

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The population of Delhi has increased seventy fold during the last century, with concurrent expansion of urban or concretized landscape (Anonymous, 1912; Anonymous, 2011). Presently, the urbanized portion of Delhi is dotted with numerous parks and gardens harbouring domesticated flora. An evident effect of urbanization of a geographical area is change in the species composition of plants and animals, and, in fact, urbanization introduces novel ecosystems (Lepczyk *et al*., 2017; Donahue & Lambert, 2015). Insects such as butterflies, which require larval host plants for their survival and are sensitive to the effect of urbanization, can act as an indicator of biodiversity in urban settings (Clark *et al*., 2007; Fontaine *et al*., 2016; Dennis *et al*., 2017). Also, butterflies are well documented and surveyed, they are relatively easy to identify and there is a wealth of information about their life histories.

The first partial list of butterflies of Delhi was prepared by Longstaff (1912), mentioning 21 species. An elaborate list of 62 butterflies was made by Jandu (1942, 1943) and Donahue (1967) listed 77 species of butterflies. The list was expanded to include 86 species by Larsen (2002). Recently, a checklist of 115 species of butterflies seen in Delhi was published by Biswas *et al*. (2017). The increase in the butterfly count over time, as evident from these lists, could be the effects of gradual changes in the pattern of floral diversity and habitat due to horticultural practices and urbanization. Alternatively, it may merely be the result of increased observation.

Here, we report the recent sightings of two species of butterflies, *Jamides bochus* (Dark Cerulean) and *Prosotas nora* (Common Lineblue) from the urbanized areas of Delhi. Both the species of butterflies have been reported to be sighted rarely in Delhi by earlier workers (Donahue, 1967; Larsen, 2002).

*Jamides bochus* was sighted on three occasions between October, 2018 and February, 2019. All the individuals sighted were males as was evident from the iridescent blue coloration of the upperside of their wings. The first sighting took place during the afternoon of October 2, 2018. The butterfly was fluttering around hedges in bright sunlight at District Park, Pitam Pura, Northwest Delhi. The second and third sightings were on the campus of Acharya Narendra Dev College, Govindpuri, Kalkaji in Southeast Delhi, on November 12, 2018 and February 5, 2019. Individuals were observed for more than one minute and the underside of the wings was photographed with digital SLR (Nikon D 500) and cell phone (Motorola G5S Plus) cameras, after the butterflies briefly settled on foliage.

A male *Prosotas nora* was sighted on one occasion on August 14, 2018 in Shalimar Bagh Garden, Shalimar Bagh, Northwest Delhi. The butterfly was found pudding on the ground. It was observed for about two minutes and photographs of the upperside and underside of wings were taken with a digital SLR camera (Nikon D 500).

Three sightings of *Jamides bochus* and one of *Prosotas nora* in urbanized parts of Delhi as reported here, may be of significance. These Lycaenids are common along the foothills of Himalayas. They have been infrequently recorded from Delhi. One specimen of *Jamides bochus* was recorded in the year 1985 from Hauz Khas Park (Larsen, 2002)- a large green area with semi-natural vegetation and in late 1990s, from Sanjay Van- a forested area (Dr. Surya Prakash *pers. comm.*). There is only one record of *Prosotas nora* from 1962 of three male butterflies (Donahue, 1967; Larsen, 2002). Our recent sightings may reflect gradually changing floristic pattern of Delhi, particularly in the urbanized areas, favouring the existence of both these Lycaenids. It would be useful to encourage the host plants of *Jamides bochus*, i.e.*Pongamia pinnata* and *Millettia peguensis* and that of *Prosotas nora* i.e. *Pithecellobium dulce* in urbanized Delhi; in fact, the increased presence of these plants could be the reason for the recent, relatively frequent sightings of these two butterflies species (Palot, 2012). Another explanation for the increased sightings of *Jamides bochus* could be its facultative migration into Delhi, as this butterfly is known to migrate (Palot, 2012; Ravikantachari *et al*., 2018).These speculations, however, need to be validated by long-term studies.

**Acknowledgement**

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# *GAEANA CONSORS* (ATKINSON, 1884) (HEMIPTERA:CICADIDAE) IN CENTRAL NEPAL

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## Introduction

The taxon *Gaeana consors* (Atkinson, 1884) has been reported from the north eastern part of India, Myanmar (=Burma), Thailand and the south eastern part of China (Price *et al*., 2016). The areas from which the species has been reported from both China and India are east of Nepal. Earlier, *G. consors* was considered a synonym of *Gaeana maculata* (Drury, 1773)(Distant, 1892) and therefore the geographical distribution of the two species is not clear.

## Observation

A Chiroptera and Lepidoptera survey was conducted from 26th to 29th April, 2018 in a small town called Kushma (824 m elevation; 28°13'06"N, 83°40'45"E) in Parbat district, central Nepal. During the survey, the remains of insects in caves were collected to get a general idea about the prey of bats. Other insects around the area were also photographed.

A colourful, large cicada was photographed on 26th and 27th April, 2018. The first sighting was near the Laleshwor cave and only one live individual was observed. The second sighting was near Kushma Bridge where many individuals were found dead on the side of the road. Firstly, three dead individuals were collected assuming the cicada was a moth but later, when it was confirmed that it was not a Lepidoptera, we didn't take the specimens with us.

## Result and Discussion

The identity of the cicada was established as *Gaeana consors* Atkinson after comparing the photographs of the Nepalese specimens with material at the Butterfly Research Centre, Bhimtal, India. It turned out that this was a range extension for the species to Nepal, westwards from its previous known distribution east of Sikkim. The species was not reported in two publications on cicadas of Nepal (Naruse & Takagi, 1977; Sanborn, 2015), hence the need to report the presence of this species.

The specimen recorded near Laleshwor cave was perhaps a straggler, since the species is usually found in low river valleys with dense forest cover (Peter Smetacek, *pers. comm*.).

## Acknowledgement

We are obliged to Peter Smetacek of the Butterfly Research Centre, Bhimtal, for access to the collection of cicadas and for discussions regarding the species.

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# FIRST RECORD OF BLUE-CHEEKED BEE-EATER (*MEROPS PERSICUS* PALLAS, 1773) (AVES: MEROPIDAE) FROM THE SOUTHERN TIP OF INDIA

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The Blue-cheeked Bee-eater *Merops persicus* is a local resident found in small numbers in the more arid north-western parts of the subcontinent. Resident populations are vastly augmented in summer by extralimital breeding visitors in the west, especially Pakistan (Baluchistan, Sind, north eastern Punjab) and North Western India (Western Rajasthan,Saurashtra, Delhi) (Ali & Ripley, 1987).

It is known to migrate across the Arabian Sea during spring (Rasmussen & Anderton, 2005). The Blue-cheeked Bee-eater *Merops persicus* is considered as a vagrant or rare passage migrant to South India and was first reported from Goa (Holt, 2009). *M. persicus* was first recorded from Kerala at Uppungal, Kole wetlands in Central Kerala (Sreenivasan, 2013). It was again reported from Kerala at Changaram wetlands, Alappuzha District (George, 2014). Mannar & Sumesh (2015) reported that the species attempted nesting at Changaram wetlands, Alappuzha District of Kerala during 2014.

An avian study was conducted by Warblers and Waders, Birdwatchers and Nature Lovers Forum, Thiruvananthapuram, Kerala on 16 June 2018 at Punchakari wetlands adjoining the Vellayani lake ( 8˚26'44'N; 76˚59'33'E) Thiruvananthapuram, Kerala. It is 8 km from Thiruvanthapuram city. It was an overcast and drizzling from 07.00 am to 10 .00 am. A flock of 8 *Merops* species were perching on the electric cables, at a height of four meters, near the canal bund road. The birds were very similar in appearance to *Merops philippinus* but had blue cheeks and white throats as their distinguishing field characters. Field photographs were taken using Canon 550 D mounted with Canon 300 mm Usm zoom lens. This species was identified as *Merops persicus* based on field observation and photographs following description given by Ali & Ripley (1987) .

The flock of *M. persicus* was found feeding along with resident *Merops* species, Green Bee-eater (*M. orientalis*). *M. persicus* was observed in full breeding plumage. This was the first authentic sighting *of M. persicus* from extreme southern India. This flock was observed at the wetlands for a week before disappearing. The occurrence of *M. persicus* at Punchakari-Vellayani wetlands during the month of June is noteworthy given its habit of preferring the north and north east Subcontinent during the time (Grimmett, Inskipp & Inskipp, 2013)

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# REDISCOVERY OF THE NARROW SPARK BUTTERFLY *SINTHUSA NASAKA PALLIDIOR* FRUHSTORFER, 1912 (LEPIDOPTERA: LYCAENIDAE: THECLINAE) FROM UTTARAKHAND, INDIA

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**Abstract**

*Sinthusa nasaka pallidior* is reported from Bageshwar district in Uttarakhand, the first published report from the western Himalaya in over a century.

**Intoduction**

In India, *Sinthusa* Moore, 1884 is represented by three species i.e. *S. nasaka* (Horsfield, [1829]), *S. chandrana* (Moore, 1882) and *S. virgo* (Elwes, 1887). *S. nasaka pallidior* Fruhstorfer, 1912 and *S. chandrana chandrana* (Moore, 1882) are known from the western Himalaya. Within India, *S. nasaka pallidior* is reported from Himachal Pradesh to Uttarakhand (Varshney & Smetacek, 2015).

Evans (1932) listed this subspecies as "Rare" with a distribution from Kangra to Kumaon. Mackinnon & de Niceville (1899) recorded this species in JulyAugust from Mussoorie and July-September from Dehradun in Garhwal. After these initial records, there is no record of this butterfly from Garhwal (Singh & Sondhi, 2016). Hannyngton (1910) found this species common at Nalena, Nainital on the flowers of *Machilus odoratissima* (Wall. ex Nees) during April and May, 1909. It was the last report of this species from the Western Himalaya.

## Material and Methods

A survey was conducted to understand the ecology and status of butterflies in Bageshwar district of Uttarakhand, India. A single individual of *Sinthusa nasaka pallidior* Fruhstorfer, **1912** was recorded from Song (Saung) village (30°2'16.8"N & 79°57'16.56"E, 1585 m) of Kapkot Block in Bageshwar district in the month of May, 2017. Further surveys were organized in that area during June, 2017 and June, 2018.

Between May, 2017 and June, 2018, a total of 06 individuals of *S. nasaka* were recorded from Bageshwar district of Uttarakhand, India. The first sighting was on 14 May 2017, when a single individual was observed resting on a leaf at 11:30 hrs (IST) near a path to village Song of Kapkote block in Bageshwar. It was feeding on flowers of *Machilus odoratissima.* Another male of this species was recorded at Sumgarh village (30°1'36.48"N & 79°57'19.44"E,1418m) of Bageshwar district on 17th June, 2017 at 02:05 hrs (IST). Four individuals were also recorded alongside the river Saryu from Song village during the survey organized in June, 2018.

## Conclusion

The present surveys resulted in the sighting of 06 individuals of *S. nasaka pallidior*. These records confirm the continued presence of this species in Uttarakhand after a century.

This butterfly appears to be inordinately fond of the flowers of *Machilus odoratissima*, although it is not clear whether it plays a role in pollinating the tree or not.

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# EXTENSION OF THE KNOWN DISTRIBUTION OF THE VAGRANT BUTTERFLY *VAGRANS EGISTA* (CRAMER, [1780])(LEPIDOPTERA: NYMPHALIDAE) TO BASTAR, CHHATTISGARH

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**Keywords**: Bastar, Kanger Valley National Park, Butterfly, India, Range extension

## Introduction

Within India, *Vagrans egista* (Cramer, [1780]), is known from Uttarakhand to North East India; Jharkhand, Odisha and West Bengal (Varshney & Smetacek, 2015). Kehimkar (2008) has noted the species from Uttaranchal (= Uttarakhand) to Arunachal Pradesh, Northeast, West Bengal and Odisha from India and Wynter-Blyth (1957) reports it from Dehradun to Sikkim; Assam; Bengal and Odisha. Evans (1932) mentions the species from Dehradun to Kumaon; Sikkim; Bengal and Odisha from India.

Recently, *Vagrans egista sinha* (Kollar, 1844) was reported from Himachal Pradesh, India, extending its known distribution westwards (Mehra, Kirti & Sidhu, 2016).

## Material and Methods

Opportunistic surveys were undertaken on 24 and 25 July, 2018 in Kurandi Range of Kanger Valley National Park, Bastar, 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.

Kurandi range is a dense forest which has Sal (*Shorea robusta*)and Bamboo (*Bambusa* sp.) as major vegetation along with thick undergrowth. During the survey, in between regular thunderstorms a Vagrant was photographed at 4.29 pm on the damp forest track with a group of puddling Lineblues (*Prosotas* sp.), Cupids (*Chilades* sp.) and Pierrots (*Castalius* sp.) on scat.

The species was identified with the help of the photograph using Kehimkar (2008) and later Peter Smetacek confirmed the identity.

## Discussion

The genus is not known to migrate, so it is likely that the specimen observed is from a resident population. The discovery of the Chhattisgarh population suggests that the peninsular Indian and Himalayan populations of the species might be linked via the reported population in Odisha and the Eastern Ghats. This addition to the

known fauna of Chhatisgarh indicates how little is known of the butterfly community in the state. Doubtless, there will be several further additions to the known fauna in the coming years.

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# *ORSOTRIAENA MEDUS MEDUS* (LEPIDOPTERA: NYMPHALIDAE) FROM EAST GODAVARI DISTRICT, ANDHRA PRADESH, INDIA

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The Nigger *Orsotriaena medus* (Fabricius, 1775) is a widespread Asian butterfly, reported from Sri Lanka and Uttarakhand in the west to Papua New Guinea and New Britain in the east. Along this range there are several described subspecies. On the Indian subcontinent, two subspecies are found, i.e. *O. medus medus* (Fabricius, 1775) from the west Himalaya to China and Papua New Guinea and *O. medus mandata* (Moore, 1857) from Sri Lanka and southern India. The subspecies are distinguished primarily by the white discal line on the underside, which is broad and tapers towards the costa in *O. m. mandata* and is narrow and of even width in *O. m. medus*.

The geographical dividing line between these two subspecies is not very clear. Although Varshney & Smetacek (2015) reported *O. m. mandata* from Maharashtra, Madhya Pradesh and Chhatisgarh south to Kerala and *O. m. medus* from Uttarakhand to N.E. India; Haryana to Odisha; Andaman Is., the inclusion of Madhya Pradesh and Chhatisgarh in the distribution of *O. medus mandata* appears to be erroneous, since Chandra et al. (2007) report *O. m. medus* from Dantewara and Bastar districts of Chhatisgarh and there appear to be no reliable records from Madhya Pradesh.

A.S.S. photographed an individual of *O. medus medus* near Nagalsar village, Kanger Valley National Park, Bastar district, Chhatisgarh on 21.x.2017, thereby confirming the presence of this subspecies in the area.

On 9 March, 2018, a specimen of this species was recorded in the Junglestar Eco Camp (latitude 17.63470 N longitude 081.63283 E; elevation 438m above msl), G.M. Valasa Panchayat, Maredumili Mandal near Papikonda National Park, East Godavari District, Andhra Pradesh.

*Orsotriaena medus medus* (Fabricius, 1775)

**Material examined**: 1 male; Forewing length: 23 mm; wing expanse: 50 mm; 9.iii.2018. Leg. et Coll. Peter Smetacek, Bhimtal, Uttarakhand.

The appearance of this subspecies in Andhra Pradesh extends its known distribution southwards from Bastar and Dantewara districts in Chhatisgarh to East Godavari district in Andhra Pradesh. Since there do not seem to be any reports of this butterfly from Madhya Pradesh in its present form, i.e. after Chhatisgarh was separated from it, this species is hereby taken off the list of Madhya Pradesh butterflies until it is physically recorded from there.

Although the species feeds on rice, *O. medus* appears to have a somewhat restricted distribution on the Indian subcontinent, with no reports so far from the drier parts of the peninsula.

**Acknowledgement**

We are grateful to the Andhra Pradesh Forest Department for organizing the first Butterfly Meet in the state and especially to J. S. N. Murthy, Chief Conservator of Forests (retd.) without whose support this would not have been possible.

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# *GAEANA CONSORS* (ATKINSON, 1884) (HEMIPTERA: CICADIDAE) IN THE KUMAON HIMALAYA, UTTARAKHAND, INDIA

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The cicada *Gaeana consors* (Atkinson, 1884)(Hemiptera: Cicadidae) was described from China and subsequently reported from other parts of South Asia and S.E. Asia (Sanborn, 2014; Thai & Yang, 2009). Within India, it was reported from Sikkim, Assam, Naga and Khasi Hills (Distant, 1906; Sanborn, 2014), equivalent to the hill districts of West Bengal, Assam, Nagaland and Meghalaya in today's terms.

During a survey of the Lepidoptera of Pithoragarh district, Uttarakhand, individuals of this species were recorded in the valley of the eastern Dhauli Ganga river. Material examined: 3 exs.: Baram (29°51'N 80°21'E; 800 m above msl) Pithoragarh district, Uttarakhand, India. 15 May, 2012. Length excluding tegumina: 30-37 mm; Expanse of tegumina: 88-96 mm. *Leg. et Coll.* Smetacek, Butterfly Research Centre, Bhimtal, India.

Distant (1906) gave a length excluding tegumina of 35 mm for males and 33 mm for females and a measurement of the expanse of the teguminae of 90-102 mm. of a composite species comprising *Gaeana maculata* and *G. consors*. The present measurements, add to the known size of the species *G. consors*. For the sake of clarity, the expanse of the teguminae of the 3 specimens under consideration was measured from the centre of the thorax to the apex of the tegumina and the result doubled.

This is a considerable extension westward to their known distribution. The species appears to be well established in the area around Baram, for it was quite common at that season.

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# A NEW LARVAL HOST PLANT, FICUS RACEMOSA, OF THE COPPER FLASH BUTTERFLY RAPALA PHERETIMA (HEWITSON, 1863) FROM ASSAM, INDIA

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## Introduction

*Rapala pheretima* (Hewitson, 1863), the Copper Flash, is a common Asian Lycaenid with a known distribution from Uttarakhand along the Himalaya to N.E. India and southwards to Sumatra and Borneo. The flat woodlouse-like caterpillars of many species have specialized secretory organs to attract and reward ants of various species in return for the protection that they receive from the ants (Kehimkar, 2016). *Rapala pheretima* is known to have a similar relation with adults of the weaver ant *Oecophylla smaragdina* (Fabricius, 1775)(Formicidae) during its larval stage. *R. pheretima* is also known to be polyphagous, with the caterpillars having been bred on a variety of host plants belonging to different families. Some of the known host plants are *Mangifera indica*, *Pithecellobium jiringa*, *Aganope thyrsiflora*, *Vigna unguiculata*, *Eugenia aquea*, *Syzygium fruticosum*, *Syzygium zeylanicum*, *Averrhoa carambola*, *Macadamia integrifolia*, *Dimocarpus longan*, *Lepisanthes rubiginosa*, *Litchi chinensis*, *Nephelium lappaceum* and *Shorea sumatrana* in different parts of its range (Robinson et al., 2001).

## Material and methods

An opportunistic observation was carried out on 27 January 2019 at the author's address in Gangmouthan of Biswanath district of Assam, India (26° 46.243'N, 093° 18.778'E) following the discovery of a single final instar Lycaenid caterpillar (fig. 1) attached to a fallen leaf of *Ficus racemosa* Linn. (Moraceae)(fig. 2). The caterpillar was brought to my attention by my father, Mr. Kishor Kafley, and it was immediately put inside a glass container with a plastic lid for further observation. The caterpillar was provided with more green leaves from the same tree. Two weaver ants were also captured from the same tree and introduced into the container keeping in mind their association with the caterpillar. Eventually the final instar caterpillar pupated (fig. 3), and on 23-02-2019 emerged as a butterfly (fig. 4) which was then curated as a voucher specimen.

## Observations

The caterpillar which was brought to my attention (fig. 1) had a thin, dark dorsal stripe on a pinkish-orange background. It also had broad lateral dark green stripes on each side with faint creamish-yellow above. The caterpillar was feeding restlessly on the green leaves of *Ficus racemosa* which were provided in plenty. It stopped feeding once it entered the pre-pupal stage. The pupal stage lasted for around 22 days, which ended with the eclosion of a female *Rapala pheretima* on 23-02-2019.

## Discussion

*Rapala pheretima* which was not known to feed on any of the *Ficus* species is now known to feed on *Ficus racemosa*, a large deciduous tree distributed throughout the Indian subcontinent.

## Conclusion

The above discussion has made it clear that *Rapala pheretima* is dependent on *Ficus racemosa* for food and a combination of both the tree and colonies of weaver ants provide a suitable habitat for the Lycaenidae butterfly to breed. The current record adds Moraceae to the known families of larval hostplants of this butterfly.

## Acknowledgment

I would like to thank my family members, neighbors, colleagues and teachers for their constant support in continuing my research on the local biodiversity and its conservation. This note was the result of joint effort, as I was out of station often and my family members have been very helpful in maintaining and rearing the insects left in their care.

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Obituary

# **MARTIN WOODCOCK** (1935- 2019)

By BIKRAM GREWAL

A few days ago, I was woken by an early morning call from a birding friend. It was bad news, for he informed me that Martin Woodcock, the great bird artist and author, has passed away. I never had the privilege of meeting him, but he played a significant role in my birding life. When we were younger, there was a limited choice of birding guidebooks. The only ones available were those produced by the great birdman Salim Ali. Although text was impeccable, the accompanying illustrations left much to be desired. So when, in 1983, the publishing house Collins brought out **Birds of India by Martin**, we were delighted. Despite its limited scope, covering only 545 birds, its illustrations were superbly done and that set the benchmark for all other guidebooks that followed.

To me, however it was Martin's **Birds of Southeast Asia**, that was the real treasure. For those of us who birded in the northeastern part of India, Salim Ali's Birds of the Eastern Himalayas was limited in scope with inadequate illustrations. It was Martin's excellent guide to the neighbouring region that was our recourse when birding in this very rich area. Published in 1975, some of its 1448 descriptions cover species found there.

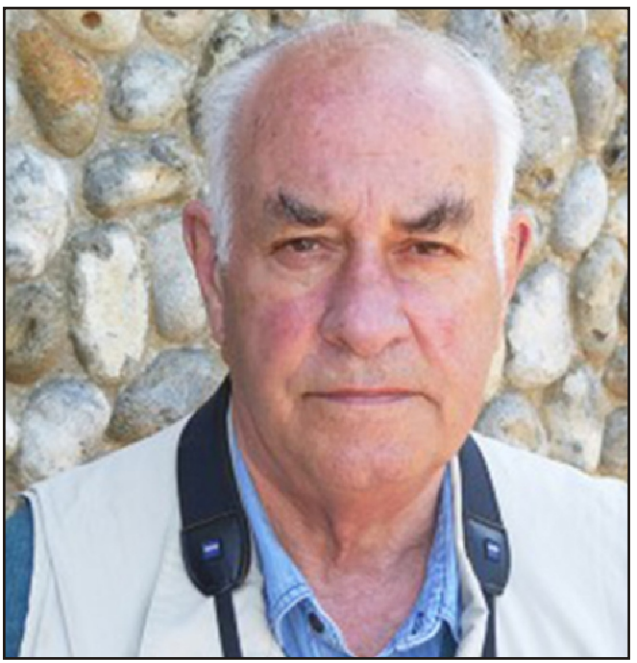
Martin will always be remembered, not for his work on Asian birds, but his contribution to the avi-fauna of Africa. His eight Volume **Birds of Africa** is such a monumental work that it is impossible to replicate. Martin Woodcock's parents surely had a premonition when they named him, for they chose a bird that rises to the highest parts of the atmosphere and a bird that is firmly on the ground, a combination of traits he personified. The magnificient work he left behind would not be possible without the power to dream on the wings of a martin, nor the ability to plod through reams of paper and pick nuggets out of the mud like a woodcock. He has left for a place where he will forever hear the whisper of wings.

*Figure 1. Rapala pheretima larva*

*Figure 2. Ficus racemosa*

*Figure 3. Rapala pheretima pupa*

*Figure 4. Rapala pheretima imago*



*Martin Woodcock and his iconic book*