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Rediscovery of butterflies *Arhopala bazalus* Hewitson, 1862 and *Catapaecilma major* Druce, 1895 from Uttarakhand, India

Shankar Kumar, Raj Shekhar Singh, Paramjit Singh and Sundar Kumar

Abstract

In this paper, we have documented the rediscovery of two butterflies: Powdered Oakblue *Arhopala bazalus* Hewitson, 1862 and Common Tinsel *Catapaecilma major* Druce, 1895 from a remote village Loharkhet, Bageshwar district of the hilly state Uttarakhand, India. *Arhopala bazalus* was rediscovered about 60 years after it was last recorded from Kumaon region of Uttarakhand. Similarly, *Catapaecilma major* was rediscovered after a gap of about 87 years. The present findings are based on the survey carried out in various parts of Bageshwar districts from 09th to 11th September 2016. A total of 06 specimens of Powdered Oakblue *Arhopala bazalus* were recorded from the same site during the study period. Another single sighting of this species was made by the first author on 16th October 2016 from the Sikhar Hill, Shama of Bageshwar district. A single specimen of Common Tinsel *Catapaecilma major* was observed when it was puddling near a water stream on 10th September 2016 at 11:00 hrs (IST) near a dirt road at Loharkhet village. The forest types of the study area have been classified as ranging from semi-evergreen to evergreen with a predominance of Oak species. There is a sufficient gap of more than half sanctuary in updating the distribution records and hence claiming the rediscovery of these rare butterflies is justified. These records are definitely important in the context of updating the status and distribution of the butterfly fauna in Uttarakhand.

Keywords: Loharkhet, Pindari glacier, *Arhopala bazalus*, *Catapaecilma major*, Bageshwar, rediscovery

1. Introduction

Butterflies are one of the most conspicuous species of Earth's biodiversity. Butterflies are the wild indicators of the ecosystem; these insects tell us everything about the healthier ecosystem. These are effective pollinators, butterflies visit the flower to eat nectar and this is a mutually beneficial relationship. These have different requirements for differing habitat types for mating, breeding, and nectaring and are, thus, in sync with the diversity and quality of their habitats.

The present study aims to document the status and distribution of rare butterflies found in Loharkhet, Bageshwar district of Uttarakhand state of India. Uttarakhand, a hilly state of India, hosts a significant proportion of India's butterfly diversity, where many species are endemic; some of them are very rare and have no recent records. Evans (1932) [2] recorded about 450 species of butterflies from this region. During the past two decades, there are many reports of rediscoveries and range extensions for several species of butterflies from Uttarakhand; some of the butterflies which were recently reported from Uttarakhand are *Talicauda nyseus* Guérin Menéville [12], *Zesius chrysomallus* Hübner [13], *Nacaduba kurava* Moore, *Flos asoka* de Nicéville and *Arhopala abseus indicus* Riley [15]. Beside it, *Matapa sasivarna* Moore [6], *Anthene emolus* Godart & *Caltoris kumara* Moore [7], *Heteropsis malsara* Moore & *Pelopidas agna* Moore [8] and *Gerosis phisara* Moore & *Caleta decidia* Hewitson [9] are some recent and significant records for Uttarakhand. A study to find out the diversity of butterflies at Loharkhet, Bageshwar, was carried out over a period of 3 days from 09th to 11th September 2016. The two butterflies, Powdered Oakblue *Arhopala bazalus* and Common Tinsel *Catapaecilma major* were rediscovered after a long time and hence new additions into the checklist of butterflies of Uttarakhand.

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2. Materials and Methods

2.1 Study area

The study area (Loharkhet village and adjacent areas) lies in the northern part of the Bageshwar district in the Kumaon Himalaya and exhibits a wide variety of suitable habitats for the luxuriant growth and development of flora and fauna. Loharkhet is situated at an elevation of 1,760 meters above sea level. The study area contains mostly evergreen forests. This region is dominated by Oak species associated with Bamboo (subfamily Bambusoideae), Deodar (*Cedrus deodara*), Chir pine (*Pinus roxburghii*), and Rhododendron (*Rhododendron arboreum*) and *Taxus baccata* in some extent.

The area has large and viable populations of five pheasants: Himalayan Monal (*Lophophorus impejanus*), Satyr Tragopan (*Tragopan satyra*), Koklass Pheasant (*Pucrasia macrolopha*), Cheer Pheasant (*Catreus wallichii*) and Kaleej Pheasant (*Lophura leucomelanos*). Altitudinally Loharkhet is located in the temperate zone. Broadly, three seasons can be recognized for the study area, viz. summer (April-June), rains (July-September) and winter (October-March). Winter experiences serve cold and the main precipitations is received in the form of snow. The mean annual rainfall of the Central Himalaya is 2000mm. The world-famous Pindari glacier is situated at a distance of 40 km from Loharkhet.

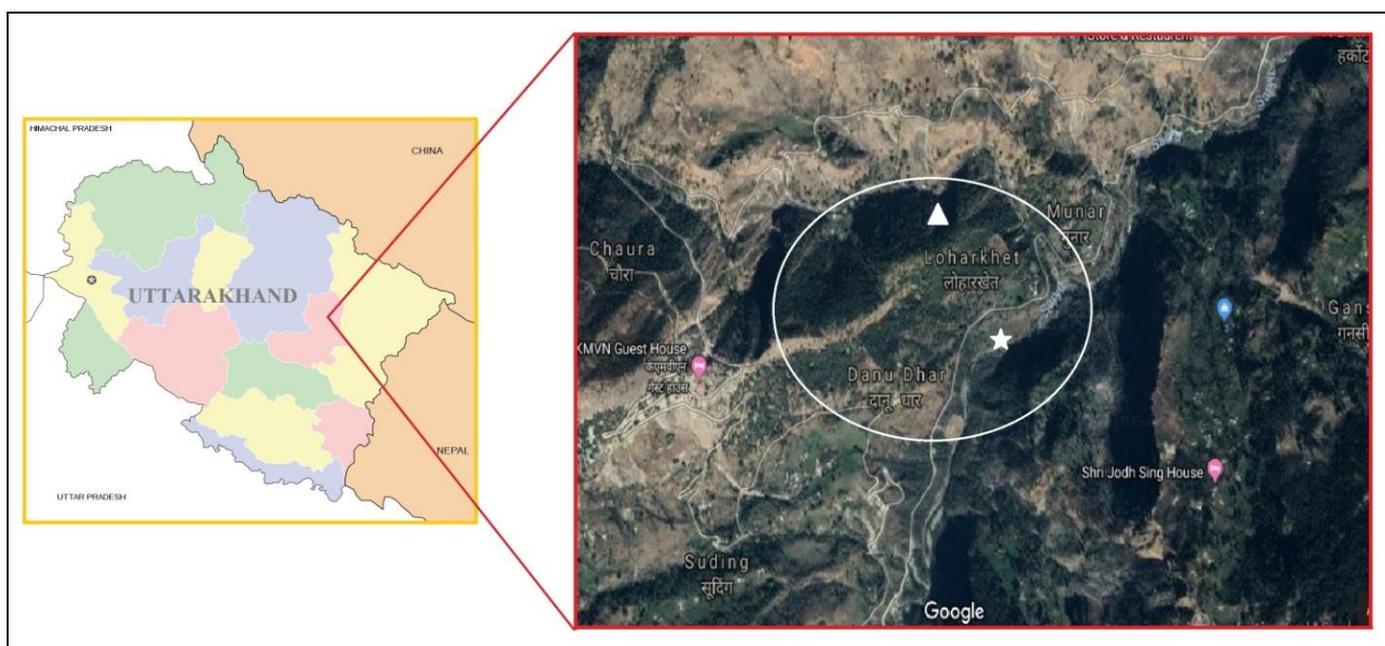


Fig 1: Map of the study area. White triangle shows the site where Powdered Oakblue *Arhopala bazalus* was first recorded and the site where Common Tinsel *Catapaecilma major* was recorded marked as a star. Courtesy- Imagery ©2018 Terra Metrics, Map data ©2018 Google.

2.2 Methodology

The survey was carried out at various spots within the study area by point and line transect methods^[1]. The transect counts were done between 10:00 hrs (IST) and 15:45 hrs (IST), and transect walks were carried out in warm and bright weather (19-28° C with 60% sunshine). The number of individuals encountered along the line transect was counted and details of location/site, activities, date, habitat, altitude and GPS coordinates were noted for each species. During the survey, Powdered Oakblue *Arhopala bazalus* and Common Tinsel *Catapaecilma major* were recorded and photographed by a digital single-lens reflex (DSLR) camera using a 70–300 mm lens. Both the species were photographed from different angles to get enough photographs to confirm the identification of the species. The identifications were confirmed with the help of literature by Evans (1932)^[2], Wynter-Blyth (1957)^[17] and Kehimkar (2016)^[5].

3. Results and Discussion

3.1 Powdered Oakblue *Arhopala bazalus* Hewitson, 1862

Powdered Oakblue *Arhopala bazalus* Hewitson, is a beautiful butterfly belonging to the family Lycaenidae. In India, there is only a single subspecies *ssp. teesta* (de Nicéville, 1886) listed under this species. This species is found in evergreen forests. The plant family *Fagaceae* and *Dipterocarpaceae* are the larva host plant of this species. According to Varshney and Smetacek (2015)^[16], this species is found from Uttarakhand

to northeast India. Globally it is found in Nepal, Bhutan, and Myanmar^[5]. It is listed as “Not rare” by Paul Van Gasse (2013)^[4] ranging Kumaon to Arunachal, northeast India, and Burma to Karens. A single specimen of this species was last recorded and documented from Kumaon region of Uttarakhand by Evans (1957)^[3] nearly 60 years ago. He listed the distribution of this species as Sikkim to Karens. Our sighting of this species is the first one reported since then; therefore it constitutes a rediscovery of the species in the state of Uttarakhand, India.

A single specimen of Powdered Oakblue *Arhopala bazalus* was first recorded (Fig. 2) when it was resting on a Oak leaf at 10:39 hrs (IST) on 10th September 2016 at Loharkhet, Bageshwar (30°02'56.03" N and 79°57'35.91" E). A total of 06 specimens were recorded the same day from the same site. The first author also sighted a female of this species on 16th October 2016 at the Sikhar Hill, Shama of Bageshwar district while it was feeding on Oak tree sap. We interpret this species is not as rare as previously thought, but its status in Uttarakhand can be reliably assessed only after further studies are conducted.

3.2 Common Tinsel *Catapaecilma major* Druce, 1895

Common Tinsel *Catapaecilma major* Druce, is a member of the family Lycaenidae. The larval food plant of this species is *Terminalia* (Combretaceae). Evans (1932)^[2] described this species as *Catapaecilma elegans*, Common Tinsel with two

subspecies: *C. elegans myosotina* with range Sri Lanka and south India, and *C. elegans major* with range Orissa and Mussoorie to Burma. In India, there are three subspecies listed under this species [16]

1. *C.m.callone* Fruhstorfer, 1915 ranging from Maharashtra to Kerala.
2. *C.m.major* Druce, 1885 ranging from Uttarakhand to Sikkim.
3. *C.m.anais* Fruhstorfer, 1915 ranging from Manipur, Meghalaya and Nagaland.

The global distribution of this species is from Nepal, Bhutan, Myanmar, and Sri Lanka [5]. According to Varshney and Smetacek (2015) [16], subspecies *major* is distributed from Uttarakhand to Sikkim. Paul Van Gasse (2013) [4] added its

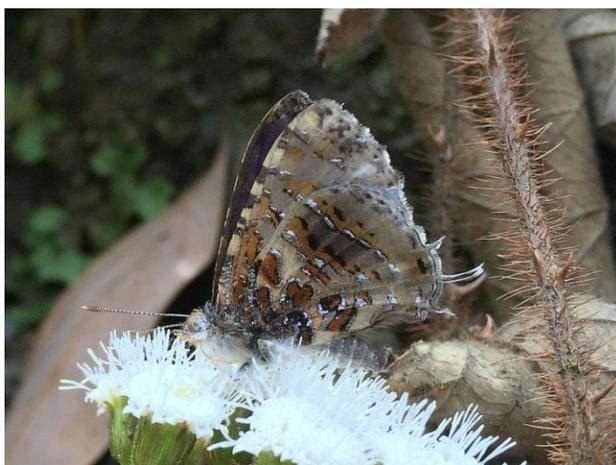


Fig 2 & 3: Powdered Oakblue *Arhopala bazalus* (Left) and Common Tinsel *Catapaecilma major* (Right) at Loharkhet, Bageshwar, Uttarakhand.

4. Conclusion

The Kumaon Himalayas have been explored relatively poorly as far as insect communities are concerned. The rediscovery of two new butterflies also needs to be understood in the context of the lack of past surveys in the region. In Uttarakhand, there are at least 51 species of butterflies [14], which have no recent records. Lack of proper scientific research, documentation and awareness are the main reasons for the present status of these two butterflies in Uttarakhand. The larvae of Powdered Oakblue feed on Oak species and due to forest fires especially in the Bageshwar District of Uttarakhand, the Powdered Oakblue as well as other Oakblue population is facing the threat. Oakblues are generally seen perched on shrubs and grass, so forest fires are very harmful to them. There are currently no regional targeted measures for the protection and conservation of butterflies in Uttarakhand.

Such new records of two species to Uttarakhand state, during a three-day study, highlight the conservation importance of the Kumaon Himalaya. This area holds immense potential for developing ecotourism focused around butterfly watching and conservation. We hope that the recent sightings and the information provided above will spur interest in the ecology and conservation of both the species.

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(*ssp. major*) range Chhattisgarh and Odisha. Our sighting of this species is only the second record of the species in the past 87 years throughout its range in Uttarakhand. It was last documented by O.C. Ollenbach (1930) [11] from the Mussoorie region of Uttarakhand. Mackinnon and Nicéville [10] also recorded this species from Mussoorie and Dehradun in 1899. There is no other record of this species in the literature or preserved specimens from Uttarakhand [14,16].

A single individual of Common Tinsel *Catapaecilma major* was photographed (Fig. 3), when it was puddling near a water stream on 10th September 2016, at 11:00 hrs (IST) near a dirt road at Loharkhet village (30° 2' 42.41" N and 79°57' 44.93" E). This butterfly was rediscovered from a single site and only one specimen was seen, it is imperative that search for more sites and sightings are a top conservation priority.

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