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Shankar Kumar

Asst. Professor, Government
Post Graduate College,
Ranikhet, Almora, Uttarakhand,
India

Kamla Singh

Ex-GM (ONGC), 21/II Vasant
Vihar, Dehradun, Uttarakhand,
India

Raj Shekhar Singh

CEO, A Walk in The Woods,
21/II Vasant Vihar, Dehradun,
Uttarakhand, India

Param Jit Singh

Ex-PCCF (Uttarakhand Forest
Department), 21/II Vasant
Vihar, Dehradun, Uttarakhand,
India

Corresponding Author:**Shankar Kumar**

Asst. Professor, Government
Post Graduate College,
Ranikhet, Almora, Uttarakhand,
India

Recent observations of lesser brimstone (*Gonepteryx mahaguru* Gistel, 1857) (Lepidoptera: Peridae) in Uttarakhand, India

Shankar Kumar, Kamla Singh, Raj Shekhar Singh and Param Jit Singh

Abstract

There is only one published record of this species from Uttarakhand, India. It was recorded from Deoria Tal, Rudrapur District, Garhwal Zone of Uttarakhand [18]. In Uttarakhand the Lesser Brimstone (*Gonepteryx mahaguru* Gistel, 1857) is reported 'uncommon' [19]. Lesser Brimstone was observed by our team at Okhalkanda, Kumaon Zone, Uttarakhand of India on 16th and 17th February 2020. In Okhalkanda area on 16th February 2020, a single Lesser Brimstone butterfly was seen basking on a wet mud patch at 1200 hrs, 1605 m, ASL.

On 17th February 2020 at 12:45 hrs another single Lesser Brimstone *Gonepteryx mahaguru* was seen along the roadside in the same area. This finding provided impetus for further study and updating the distribution of Lesser Brimstone in Uttarakhand. During Field survey from 17th March 2020 to 21st March 2020 in Khirsu area, Pauri Garhwal Zone, the Lesser Brimstone was observed at four places in the stretch between Khirsu and Khankra. On 20th March 2020, it was observed on Khirsu-Khankra road, Pauri Garhwal Zone, on the stretch from 18 km to 24 km from Khirsu. Four lesser brimstone butterflies were observed chasing each other near roadside. After one km, on a wet mud patch, a pair (one male and one female) of Lesser Brimstone was observed in mating ritual. The female was rejecting the advances of male by upturning the abdomen, while the male was hovering over her. Single specimen was observed near a small source of water after travelling 2 km on the road. Three km later, near a causeway, single specimen was observed, circling the wet mud. This causeway was also visited by Common Brimstone, Large Cabbage White, Tailed Cupid, Common Emigrant and Rice Swift.

Keywords: Okhalkanda, Kumaon Zone, Khirsu, Khankra, Pauri Garhwal Zone, Uttarakhand, lesser brimstone *Gonepteryx mahaguru*, new records

1. Introduction

Butterflies are an indicator of the health of any ecological system. They are a good food source for predators and as important pollinators. Uttarakhand, a hilly state of India, is situated in the Himalayan belt, consisting of Siwalik foothills to snow clad mountains and cold deserts. It shares its international boundaries with Tibet in the North and Nepal in the West. This small state hosts a significant proportion of India's butterfly diversity; some of them are very rare and endemic. Evans [1] had documented nearly 450 species of butterflies from this hilly region. In the last two decades, researchers have added some more species to this list. Some of them are Redbreast Jezebel [12], Bath White & Desert Bath White [13], Red Pierrot [10], Redspot [11], Transparent Six-lineblue, Spangled Plushblue & Aberrant Oakblue [14]. Beside it Black-veined Branded Redeye [3], Common Ciliate Blue & Blank Swift [4], White-line Bushbrown & Obscure Branded Swift [5], Powdered Oakblue & Common Tinsel [6], Narrow Spark [7], Newar Three-ring [8], White-striped Snow Flat [9] are some recent and significant records of butterflies from Uttarakhand. Lesser Brimstone *Gonepteryx mahaguru* was recorded after many years in Kumaon Zone of Uttarakhand after sustained observations during regular surveys. During field survey in from 17th March 2020 to 20th March 2020, eight butterflies (Lesser Brimstone) were observed at four places in Khirsu-Khankra road.

2. Materials and Methods

2.1 Study area

This document is the result of regular field visits, observations and photo-documentation of butterflies carried out in the Uttarakhand. Lesser Brimstone *Gonepteryx mahaguru* was observed and photographed at Okhalkanda, Kumaon Zone of Uttarakhand, when it was

basking on wet mud patch. The Okhalkanda Reserved Forest (29°39'59469"N and 79°67'54694"E) abounds with open area, bushes, trees and flowering plants, (Fig. 1, Google Map of Okhalkanda, Fig.2, Google Map of Khirsu-Khankra area). The areas exhibit wide range of floral and faunal variety. The Area has large number of trees, shrubs, wild flowers and a variety of medicinal plants. From the butterflies point of view, these areas can be described as biodiversity rich area and make this a perfect area to study and document butterflies, nectar plants and larval host plants.



Fig 1: Map of the Okhalkanda, Kumaon Zone, Uttarakhand. Courtesy- Google Earth ©2018 Google. Image©2019 Maxar Technologies.

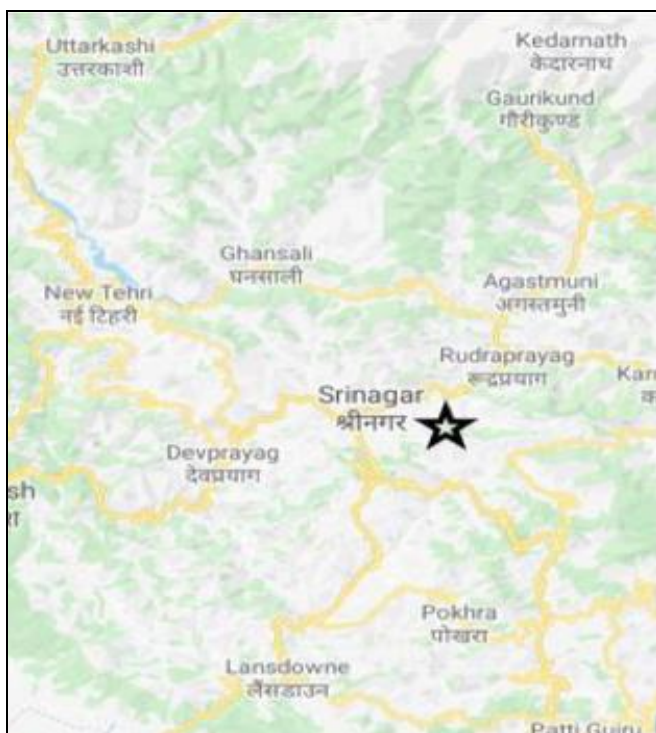


Fig 2: Google Map of Khirsu-Khankra area), Courtesy- Google Earth ©2018 Google. Image©2019 Maxar Technologies.

2.2 Methodology

A number of observations were made on daily basis to find the relative abundance of butterfly fauna in Okhalkanda, Kumaon Zone and Khirsu-Khankra, Pauri Garhwal Zone of Uttarakhand. These observations were made at various fixed spots within the study area by point and line-transect methods [17]. The encountered species were counted along the line transects. Information related to the activities of each individual species along with the habitat, i.e. location, altitude, weather conditions, GPS details were also documented. Lesser Brimstone *Gonepteryx mahaguru* butterflies were photographed by a digital single-lens reflex (DSLR) camera with a 70–300 mm lens. Identification was confirmed with the help of ID keys provided by Evans [1], Wynter-Blyth [16] and Kehimkar [2].

3. Results and Discussion

3.1 Recent Observations of Lesser Brimstone (*Gonepteryx mahaguru* Gistel, 1857)

Lesser Brimstone *Gonepteryx mahaguru* is a medium sized butterfly, which belongs to the Pieridae (Whites and Yellows) family. Under this species there is a single subspecies, *Gonepteryx mahaguru mahaguru* Gistel, 1857 (Lesser Brimstone) found in India [15]. Varshney and Smetacek [15] found the range of this subspecies from Kashmir east to Nepal and it's Status is listed as 'uncommon'. This is the first time that we are reporting frequent sightings of Lesser Brimstone *Gonepteryx mahaguru* from Kumaon Zone and Pauri Garhwal Zone of Uttarakhand.

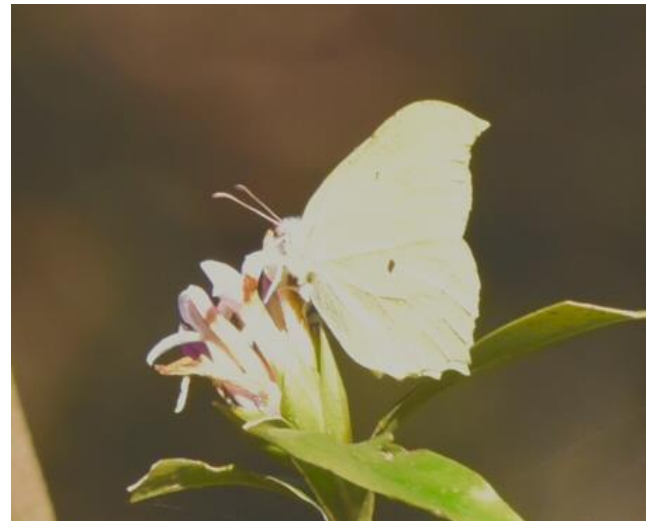


Fig 3: Lesser Brimstone *Gonepteryx mahaguru* photographed at Okhalkanda, Kumaon Zone.

A single specimen of Lesser Brimstone *Gonepteryx mahaguru* was first recorded (Fig. 3) when it was basking on wet mud patch at 12:00 hrs (IST), 1605 m above sea level (asl) on 16th February, 2020 at Okhalkanda, Kumaon Zone, Uttarakhand, India. Another butterfly was observed from 12:45 hrs for few minutes at the roadside. It kept on flitting from one plant to another. It sat mostly on a variety of small shrubs along the road. It was moving continuously. Two sightings of this butterfly in two days indicate that this species is not as rare as previously described, but its status in Uttarakhand needed further field studies. With this objective we visited Khirsu-Khankra area from 17th March to 20th March 2020 to look for Lesser Brimstone; a total of eight Lesser Brimstones were sighted.

4. Conclusion

There is only one published record of this species from Uttarakhand, India. It was recorded from Deoria Tal, Rudraprayag District, Garhwal Zone of Uttarakhand^[18]. The recent sightings of two Lesser Brimstone butterflies in two days in Okhalkanda, Kumaon Zone and eight specimens in Khirsu-Khankra, Garhwal Zone in a single day indicates that this species is common. It was probably overlooked. It must have been seen by many observers but mis-identified or hastily listed as Common Emigrant (*Catopsilia* genus). Similar is the case of confusion or hasty identification of Albatross species (*Appias* genus) with Cabbage species (*Pieris* genus). The observation and identification of Lesser Brimstone *Gonepteryx mahaguru* indicates that there is urgency to plan and complete scientific field surveys to understand the ecology of this species and many more other butterflies, which have no recent records in Uttarakhand. This record will encourage butterfly enthusiasts to study and to document the butterflies of Uttarakhand. It will be a welcome step in updating the status and distribution of butterfly species.

5. Acknowledgements

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