

A new high elevation record of *Carterocephalus avanti* (De Niceville 1886) (Hesperioidea: Hesperiiidae) from Nepal

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Abstract

Carterocephalus avanti (De Niceville 1886), a rare Hesperiiidae Himalayan butterfly found distributed only in four districts (Mustang, Manang, Humla and Solukhumbu) of Nepal. A very limited information is available on this species from Nepal. We collected detail evidences of habitat types, behavior and occurrence record of geographic parameter from this study. This study confirmed that *C. avanti* has been recorded at the new highest elevation of 4231 m (Lat. 28°40'48.04" N and Long. 83°54'37" E) and hence noticed the high elevation range extension of this species in Nepal.

Keywords: *Carterocephalus avanti*, high elevation, Annapurna conservation area, Nepal

Introduction

Carterocephalus avanti (De Niceville 1886) is the rare Hesperiiidae butterfly of Nepal [4] which is commonly known as Orange and Silver Mountain Hopper. This species is distributed in the Himalayan regions of Nepal [5] along with other countries including India, Bhutan and Tibet [4]. Prior studies recorded this species from western highland regions [3, 4] and Sagarmatha National Park of the eastern part of the country [2]. Precisely, its distribution has been observed in only four districts of Nepal; Mustang and Humla [4, 5], Manang [3, 5] and Solukhumbu [2] within an elevation range between 2622m-3900m [4]. However, its elevational ranges were much narrower in Annapurna Conservation Area (ACA) i.e. 2878 m-2895m [3, 5]. It appears in the month of April till June end annually [4]. Yet there are limited records of this species from previously recorded districts. Thus, this study aim to redefine an elevation record of this species from the study site and to glean decisive information on behavior and preferred habitat types.

Material and Methods

The study was conducted in Manang district (Figure 1) (28°27' to 28°54' N and 83°50' to 84°34' E), western Himalayan Nepal. The district lies within trans-Himalayan region of Annapurna conservation area. In this study we collected data on preferred habitat types, behavior and elevation records. Global Positioning System (GPS) was used to record the geographical parameters of its sighted site. In order to find its clear distribution and elevational ranges throughout the countryside, study and consultations with previous published records were made. Identification of *C. avanti* was based on Smith (1989)

[4] and Smith (2011) [5] and further confirmation were also made from Bhaiya Khanal.

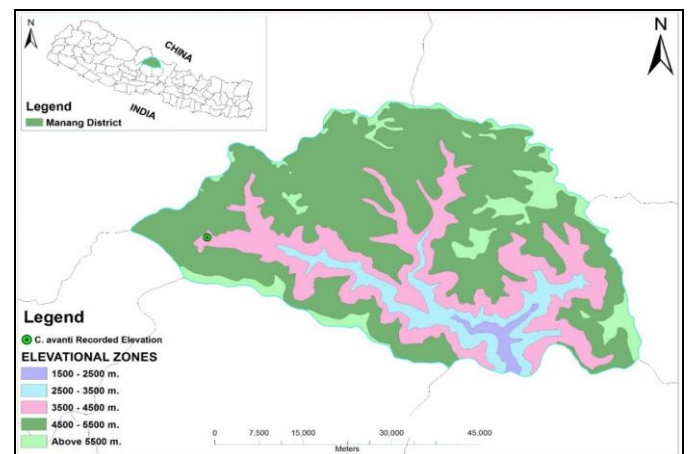


Fig 1: Elevational zones of study site showing sampling site (Green Ball) of *Carterocephalus avanti*.

Results

On 12 May 2018 we recorded two individuals of *C. avanti* at 4231m of elevation having geographical stand of 28°40'48.04" N and 83°54'37" E in the southern part of study site. During the survey period we sighted it having short time flight (Approx. 5-10 seconds) covering short distance (Approx. 1-5m) flying behavior. It was seen basking with open and folded wings on ground, rocks and on vegetation like *Iris kamaonensis* (Figure 3) under morning sun. Basically it was observed preferring the habitat like open steppe slopes with dry bushes coverage

(Figure 2). Although during sighting period sex of the species was unknown.

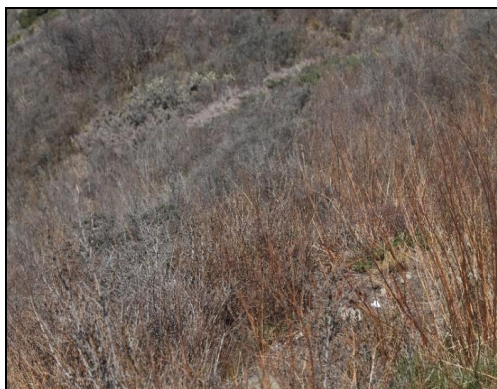


Fig 2: Habitat types recorded of *Carterocephalus avanti*

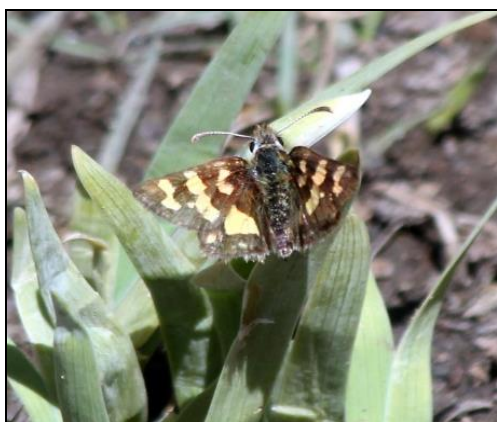


Fig 3: *Carterocephalus avanti* preferring *I. kamaonensis*

Discussion

In the previous publications, the information related to behavior and habitat of *C. avanti* were unknown which this study has considered. However, the previous record of elevational ranges of *C. avanti* was given as 2622-3900m in Nepal [4] and restricted upto 2895 m at ACA [5]. The information collected from this study signify the new elevation records of its distribution in Nepal and basically to the upper limit elevation in the ACA. Hence, our finding clearly elicited the upward elevational range extension of this species. The study was conducted during April-May from lower elevation range i.e. 2000 m upto higher elevation range i.e. 5200 m for butterfly survey in Manang district. However this species was recorded from only at a single elevation point. During the observation period, this species was frequently seen visiting to the vegetation like *I. kamaonensis* and *Caragana sukiensis*. However the host and larval food plants of *C. avanti* are still unknown. Previously, it was recorded by Khanal (1982) [3] and Smith (2011) [5] with the number of individual two and one respectively from the study sites (Table 1).

The field identical characters of *C. avanti* includes, Upper Forewing; very large orange spots and irregular but no costal streak, discal band conjoined to sub-apical and to spot near end cell. Upper hindwings; single very large central orange spot triangular and no sub-basal yellow spot, a sub-marginal

dash in 5. Underside hind wing; irregular whitish spots divided. Hairy outgrowth from the edge of the hind wings. Thorax very hairy and abdomen black.

Habitat destruction, and fragmentation and food plant depletion due to road construction are the major threats to butterfly species observed in this regions. However, such extension could also be coincided with the global climate change [1]. To answer this confounded supportive information, it is very essential to conduct detail scientific assessment on this species and other butterfly species as well to characterize the spatial patterns and temporal trends of distribution. Moreover, such study helps to find out the majors threats of the butterfly species and hence reinforces to make strong conservation implication.

Table 1: Record History of *Carterocephalus avanti* De Niceville 1886 from Manang District.

Geographical Location	Elevation (m)	Frequency recorded	Reference
Khangshar, Manang	4231	2	Present study
Dhikurpokhari Manang	2895	1	Smith 2011 ^[5]
Bradang, Manang	2878	2	Khanal 1982 ^[3]

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