New locality record of the Lofty bath white butterfly *Pontia callidice* (Hübner, 1800) in Nepal

Sanej Prasad Suwal1-2* | Krishna Dev Hengaju3 | Naresh Kusi4

1Butterfly Watchers Nepal, Bhaktapur, Nepal.
2Nature Conservation and Study Centre, Kathmandu, Nepal.
3IUCN Nepal, Lalitpur, Nepal.
4Resources Himalaya Foundation, Sanepa, Lalitpur, Nepal.

*Correspondence: sanej100@gmail.com*

Abstract

Lofty bath white *Pontia callidice* is a little-known butterfly of Nepal, reported only from Darchula district, Far Western Nepal. We recorded the new distribution eastward of this species 166 km N-E far from its previous range in Talung and Gyaakhola Valley of Upper Humla in July 2017 at elevations between 4400 to 4829 m above sea level. This is also the highest elevation record of this species.

Keywords: Distribution, Pieridae, *Pontia callidice*, Trans-Himalaya, Upper Humla

1 | Introduction

The genus *Pontia* belongs to family Pieridae which occurs in Palearctic region (Sidhu et al. 2012) in flower-rich grasslands near or above timberline and plain tundra along the meadows of a river valley, meadow-steppe forbs on the peaks and slopes of small and medium-sized mountains (Sway et al. 2014). There are 11 species of *Pontia* recorded globally (Funet 1990). They are distributed in the Alps and the Pyrenees of Europe, Lebanon, Turkey, the northern Iran, central Asia from the Himalayas to Mongolia and Siberia, including the lowlands and Rocky Mountains of Alaska to California (Hemming 1937). Nepal is home to three species including Lofty bath white *Pontia callidice*, Sherpa bath white *P. sherpae* and Bath white *P. daplidice* (Smith 1994). *P. daplidice* was reported from west to central Nepal; *P. sherpae* is endemic to Nepal and reported only from central Nepal (Mustang and Manang) and *P. callidice* was known from far-western Nepal. Plants from the families like Brassicaceae (*Erysimum* sp., *Sisymbrium* sp., *Thiaspi* sp.), and Resedaceae (*Reseda* sp.) are some of its host species (Nekrutenko 1990). The species is globally least concern (Sway et al. 2014) while it is not listed under Nepal Red Data Book 1995.

*P. callidice* was previously reported from Tata, Darchula district (30.139162° N, 80.900740° E, 4490 m) in 1998 (Morishita 1998) (Table 1). There are no further records of this species in Nepal. The present study is the new distribution record of this species.
2 | Materials and methods

2.1 | Study area

The study area was Upper Humla (30.19°–30.42°N, 81.48°–81.42°E). It is located in the north-western Transhimalayan belt of Nepal bordered with the Tibet, China. Landscapes of the area comprised valleys steep mountain cliffs, rolling grasslands (Kusi et al. 2019). Vegetation was dominated by dry alpine steppe rich in sedges and graminoids such as *Stipa* spp., *Carex* spp. and *Kobresia* spp. while grasses and shrubs such as *Caragana brevifolia* and *Lonicera spinosa* dominate drier sites and rugged slopes (Miehe et al. 2016).

2.2 | Methods

We obtained observational records of this species in July 2017. We photographed the butterflies using NikonD500 DSLR and AF-S DX NIKKOR 55-200mm f/4-5.6G ED VR II lens and noted the geographical positions in a Global Positioning System (GPS) device (ETREX10).

3 | Results

We observed *P. callidice* in Talung Valley (30.203489° N, 81.700368° E, 4400 m) and Gyaukhola Valley (30.354576° N, 81.566277° E, 4829 m) of Humla district, Karnali Province, on 27 July at 1:30 hrs and 29 July 2017 at 1:15 hrs respectively (Table 1). The butterfly was basking along with *Aglais cashmirensis* and *Paralasa nepalica* near the wide river valleys of Talungkhola and Gyaukhola. The butterfly (Fig. 1) was identified with its upper side of wings white; forewing with black at extreme base; discocellulars of forewing marked with a quadrate black spot; a discal curved series of inwardly dentate spots; underside hindwing veins not prominently yellow (Evans 1927; Mani 1986; Bingham 1907; Sidhu et al. 2012). These features confirmed it as *P. callidice*. The identification was also confirmed by butterfly expert from Nepal, Prof. Dr. Bhaiya Khanal.

| S.N. | Observation location                  | Observation date | Geographic location details | Altitude (m) |
|------|---------------------------------------|------------------|------------------------------|--------------|
| 1    | Tata, Darchula                         | July 2, 1995     | 30.139162° 80.900740°        | 4490         |
| 2    | GyauKhola valley, Humla                | July 27, 2017    | 30.354576° 81.566277°        | 4829         |
| 3    | Talung valley, Humla                   | July 29, 2017    | 30.203489° 81.700368°        | 4400         |

4 | Discussion

*P. callidice* was reported from Nepal by Morishita (1998). There was no further information on this species. We obtained additional distribution records of this species after 22 years of its first record. The new locality in Upper Humla lies 166 km north-east from its observation site in Darchula. This represents an eastward extension of...
the species (Fig. 3). We observed and photographed the species as high as 4829 masl in Upper Humla which was nearly 340 m high from its previous elevation record.

*P. callidice* is distributed in the higher mountains of Europe, in Asia from the Altai to the Himalayas as well as in China (Bingham 1907; Tuzov 1997). We observed the species above tree line where the landscapes comprised of open alpine grasslands with lots of rocks and screees (Fig. 2). Similar habitat is also recommended by NCBS (2021), Sidhu et al. (2012) and Wyatt (1961). Our team has photographed the species during the month of July. Similar records were observed by NCBS (2021), Dekastle (2015), Khramov (2021) and Rowlings (2020).

### 5 | Conclusions

Our observation of *P. callidice* from Upper Humla extends the distributional range of the species eastwards in Nepal. It also provides the new highest elevation record for the species across its global distributional range. A lack of any information on the species for almost 22 years indicates an extremely low research interest. We recommend more scientific researches on the species in Nepal.

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### Authors’ contributions

Suwal, S. P. Conceptualized, investigate, and collected data, analyzed, and wrote the manuscript. Hengaju, K. D. Investigated and collected data, reviewed and edited of the manuscript. Kusi, N. Reviewed and edited of the manuscript. All authors contributed critically to the drafts and gave final approval for its publication.

### Conflicts of interest

Authors declare no conflict of interest.

### ORCID

Sanej Prasad Suwal: https://orcid.org/0000-0002-5370-2087

Krishna Dev Hengaju: https://orcid.org/0000-0002-7994-085X

Naresh Kusi: https://orcid.org/0000-0002-3485-8959

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