

## Notes on the status of *Colias verhulsti* BERGER, 1983 (Lepidoptera: Pieridae)

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**Abstract:** This paper gives details of the history, type locality, distribution, flight period, and taxonomy of *Colias verhulsti* BERGER, 1983. The taxon *Colias verhulsti* is found to be merely a seasonal form (dry-season) and is placed as a synonym of *Colias lesbia andina* STAUDINGER, 1894 (new synonymy).

**Keywords:** Lepidoptera, Pieridae, *Colias*, *lesbia*, *verhulsti*, taxonomy.

### Anmerkungen zum Status von *Colias verhulsti* BERGER, 1983 (Lepidoptera: Pieridae)

**Zusammenfassung:** Angaben zur Geschichte, Typuslokalität, Verbreitung, den Flugzeiten und zur Taxonomie von *Colias verhulsti* BERGER, 1983 werden gegeben. Das Taxon *Colias verhulsti* wird als eine saisonale Form (Trockenzeitform) und damit nur ein Synonym von *Colias lesbia andina* STAUDINGER, 1894 identifiziert (n. syn.).

### History

*Colias verhulsti* BERGER, 1983 was originally published as “*C. verhulsti* n. sp.”, thus as a species. Since its original publication I can only find the following references to *C. verhulsti*:

- VERHULST (1984) treated it as a species; he also said that at the time he originally discovered it, i.e. before the description, it was determined as “*C. lesbia andina* FABRICIUS” (sic).
- BERGER (1986) treated it as a species of the subgenus *Similicolas* BERGER.
- DESCIMON (1986) mentioned it as a species but did not comment on its status.
- BERGER (1987) mentioned it as a species but made no further comment on its status.
- VERHULST (1998) treated it as a species; much of the information in this paper is taken from VERHULST (1984).
- SORIMACHI (2000) inexplicably listed it as a subspecies of *C. vauthierii* GUÉRIN-MÉNEVILLE, [1830], with no explanation for such a treatment.
- VERHULST (2000–2001) treated it as a species; the entry in this book is in essence a copy of VERHULST (1998).
- LAMAS (2004) listed it as a subspecies of *C. lesbia* (FABRICIUS, 1775); this seems to be a common opinion.

### Type locality

The type locality is determined by the holotype for which the data is: “Pérou, Cuzco: Chincheros, 4000 m, 2. VIII. 1982 (J. VERHULST)”; thus the type locality is: Peru, Cuzco Department, Chinchero (13°24' S, 72°3' W) at 4000 m elevation (“Chincheros” is a locality in Apurímac Department, often confused with the Cuzcoan Chin-

chero). Paratypes were collected at the type locality and also at Cuzco, Cuzco Department (13°31' S, 71°59' W), at altitudes between 2800 and 4000 m. All type specimens were collected between 9. VII. and 9. IX. between the years 1978 and 1982.

### Distribution

As well as the type localities, VERHULST (1984, 1998, 2000–2001) mentions specimens caught in the Cordillera Blanca in Ancash department at the same time of year. VERHULST (2001) also identifies the specimens he figures on pl. 76, figs. 5–8, as *C. verhulsti*; these are from Liebig, in Entre Ríos Province, Northern Argentina, not “entre Ríos et Liebig” (i.e., between Liebig and Ríos) as given in the text. BERGER (1983) says that the species has also been captured in Bolivia, but at an unspecified locality. I have seen specimens matching the *C. verhulsti* phenotype from various localities, from Amazonas Department, Peru, to Buenos Aires Province, Argentina.

### Flight period

All of the specimens identified by VERHULST (2000–2001) as *C. verhulsti* were caught during the dry-season. He admits that he hasn't been able to look for *C. verhulsti* during the summer (wet-season, i.e. January to March), so he hasn't been able to observe or compare specimens from the two seasons. He also says that there are at least two broods, which look alike, between June and September. All of the specimens of *C. verhulsti* that I've seen were caught during the dry-season (or winter) months.

### Status

The phenotype of the *C. verhulsti* holotype and part of the type series (Fig. 1) is very different from typical wet-season *C. lesbia* (Fig. 2); the coloration is especially different. However, many other specimens identified by VERHULST (2001) as *C. verhulsti* are hardly any different from typical *C. lesbia*, this shows that the phenotype is very variable.

VERHULST (1998, 2000–2001) quotes a capture of *C. lesbia andina* STAUDINGER, 1894 at Pisac, Cuzco (13°25' S, 71°51' W), as confirmation that *C. verhulsti* is a separate species. This specimen was caught in January, during the wet-season; it is therefore evidence (confirmation could only be obtained by rearing *in-situ*) that *C. verhulsti* is nothing more than the dry-season form of *C. lesbia*. Specimens from the same areas as those identified as *C. verhulsti*, but caught during the wet-season, are typical for *C. lesbia*. Indeed, during a trip to the Cuzco area in Febru-



**Colour plate:** Specimens of *Colias lesbia andina* STAUDINGER, 1894; all from Peru, Cuzco Dept., Cuzco; all in coll. R. WORTHY. **Fig. 1:** *Colias verhulsti*, ♂ paratype (= dry-season form of *C. lesbia andina*). 2800–3400 m, 17. VII. 1978, leg. J. VERHULST. **Fig. 2:** *C. lesbia andina*, ♂ (= wet-season form). Sacsayhuaman, 3300–3400 m, 28. II.–1. III. 2005, leg. A. KIRYANOV. **Fig. 3:** *C. lesbia andina*, white ♀. Sacsayhuaman, 3300–3400 m, 28. II.–1. III. 2005, leg. A. KIRYANOV. **Fig. 4:** *C. lesbia andina*, yellow ♀. 27. I. 2001.

ary 2005, Alexander KIRYANOV (pers. comm.) found only typical *C. lesbia andina*; no specimens of the *C. verhulsti* phenotype were recorded. Also, examination of specimens from wet- and dry-seasons from various departments in Peru strongly suggests that *C. lesbia* and *C. verhulsti* are seasonal forms of the same species. The Liebig, Entre Ríos, locality mentioned by VERHULST (2001) is in a well-collected area for the winter form of *C. lesbia* and I have examined a large series of *C. lesbia* from most months of the year from this locality. Specimens from the winter months are a good match for the specimens VERHULST (2001) figures; those from the summer months are typical of Argentine *C. l. lesbia*.

VERHULST (2000–2001) identifies specimens from three different areas as belonging to *C. verhulsti*. These represent the dry-season forms of three different subspecies of *C. lesbia*: those from Ancash are *C. lesbia dinora* KIRBY, 1881 (= *meieri* BERGER, 1983), those from Cuzco are *C. lesbia andina* STAUDINGER, 1894 and those from Entre Ríos are *C. lesbia lesbia* (FABRICIUS, 1775) (= *pyrrhothea* (HÜBNER, 1823)). It is highly likely that this form occurs wherever *C. lesbia* flies throughout the year.

## Conclusion

*C. verhulsti* is a seasonal (dry-season) form of *C. lesbia*. As the type locality is in Cuzco Department, Peru, *C. verhulsti* is a junior subjective synonym of *Colias lesbia andina* STAUDINGER, 1894, **syn. nov.**

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