

Case 3488***Papilio danae* Fabricius, 1775 (currently *Colotis danae*; Insecta, Lepidoptera, PIERIDAE): proposed conservation of prevailing usage by the suppression of *Papilio danae* Hufnagel, 1766**

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Abstract. The purpose of this application, under Article 23.9.5 of the Code, is to conserve the combination *Papilio danae* Fabricius, 1775 (Lepidoptera, PIERIDAE) which, as *Colotis danae*, is well-established as the valid name for a common and widespread butterfly with many subspecies in circa 50 countries in Africa, Arabia, and Asia. The name is threatened by the primary homonym *Papilio danae* Hufnagel, 1766. It is proposed that Hufnagel's name be suppressed for the purposes of homonymy under the plenary power of the Commission, in the interest of nomenclatural stability.

Keywords. Nomenclature; taxonomy; Insecta; Lepidoptera; PIERIDAE; *Papilio*; *Colotis*; *Callosune*; *Colotis danae*; *Papilio eborea*; butterflies; Asia; Arabia; Africa.

Present status

1. *Colotis danae* (Fabricius, 1775) (Lepidoptera, PIERIDAE Swainson, 1820) is now generally recognised as the nominate Indian subspecies of the beautiful – and unmistakable – ‘Scarlet [Crimson] Tip’. It was, as were all species of butterflies (PAPILIONOIDEA Latreille, 1802) named by Fabricius in 1775, described in the genus *Papilio* (the type locality was listed as ‘India orientali. Mus. tottianum’; two syntypes

are in the Zoological Museum, University of Copenhagen). Most other species now placed in the genus *Colotis* Hübner, 1819, were first described in a variety of genera, chiefly *Teracolus* Swainson, 1833 and *Callosune* Doubleday, 1847; *Papilio danae* was designated as type species of the latter by Scudder (1875). Afrotropical species of *Colotis* were also occasionally described in the genera *Papilio* Linnaeus, 1758, *Pieris* Schrank, 1801, *Pontia* Fabricius, 1807, *Euchloe* Hübner, 1819, *Anthocharis* Boisduval, Rambur & Graslin, 1833, *Idmais* Boisduval, 1836, *Anthopsyche* Wallengren, 1857, *Thestias* Boisduval, 1836, or *Madais* Swinhoe, 1909.

2. Though established in 1819 the generic name *Colotis* remained largely unused, apparently mainly because its type species was not understood. Hübner (1819, p. 97) had included seven species in the genus, five of which now belong in *Colias* Fabricius, 1807, the type genus of the subfamily COLIADINAE Swainson, 1821, while only two were true *Colotis* (as currently understood), belonging to the PIERINAE. Scudder (1875, pp. 146–147) designated *Papilio amata* Fabricius, 1775 as the type species but, owing to confusion with *C. calais* Cramer, 1775 (and its subsequent redescription by Stoll, 1781), it was considered that the genus *Colotis* was based on a misidentification and *Colotis* remained unused for another 25 years (see Hemming, 1967, for a summary of this complex issue).

3. Kirby (1871) did not mention *Colotis* at all, but Kirby (1896) did use the name *Colotis* as valid, though he retained *danae* in the genus *Callosune* Doubleday, 1847, of which it was the type species. Bingham (1907), in a major book in the ‘Fauna of British India’ series, was the first to use the name *Colotis* for all the Indian species. In a brief paper, Talbot (1931) accepted that *Colotis* should be used as the valid name for species formerly included in *Teracolus* Swainson, 1833 (and by implication *Callosune*) with the words: ‘The genus *Colotis* was obviously meant by Hübner to characterize species well known to all later authors as *Colias*. It was unfortunate that a totally different insect was selected by Scudder as the type. The name is thus restricted and *Teracolus* must sink’. In his influential identification guide to all Indian butterflies, Evans (1932) followed Bingham in considering *Colotis* the senior synonym of all other generic names previously used.

4. Talbot (1939a) revised the PIERIDAE in the ‘Fauna of British India’, now using *Colotis* for all the Indian species, reflecting his view in *Lepidopterorum Catalogus* (Talbot, 1934). In the same year, Talbot (1939b) revised the species-level taxonomy of the African *Colotis*. This established (i) the use of *Colotis* also for all African taxa, as well as (ii) the use of *C. danae* for the current African subspecies that had previously been applied at the species level (*Thestias annae* Wallengren, 1857, *Pontia eupompe* Klug, 1829, *Teracolus pseudacaste* Butler, 1876, and *Teracolus walkeri*, Butler, 1884).

5. At present, the combination *Colotis danae* (see para. 10 for an exception) is unanimously considered the valid specific name of this species in about 50 countries in Africa, Arabia, and India (a list of more than 38 cases of usage of the combination between 1907 and 2007 is held by the Commission Secretariat).

Homonymy

6. Koçak (1981) correctly pointed out that the Indian *Papilio danae* Fabricius, 1775 is a junior primary homonym of the European *Papilio danae* Hufnagel, 1766. He considered the latter to be a valid name and therefore proposed that the valid name

for the species currently known as *C. danae* should be *Papilio eborea* Stoll, 1781 (Stoll, 1781, p. 120–121, 249, pl. 352, figs C–F). Stoll was actually continuing the work of Cramer (1775), and Cramer is sometimes erroneously cited as the author of *eborea*.

6. *Papilio danae* Hufnagel, 1766 was described in a very obscure journal and the type is presumed lost. On the few occasions it has been mentioned, it was considered to be a synonym of *Papilio semele* Linnaeus, 1758, currently known as *Hipparchia semele* (SATYRINAE Boisduval, 1833), a widespread European nymphalid butterfly (e.g. Kudrna, 1977). The name has only been mentioned occasionally, even in synonymy, since the early 19th century, and probably ever since its description in 1766. It has not been used as a valid species-group name for 200 years or more (except by Koçak and his associates, see para. 10).

7. The combination *Papilio danae* was also proposed by Cramer (1775) for a Neotropical species of NYMPHALIDAE from ‘Surinam’. However, the Commission (Opinion 516, Opinions and Declarations 19: 1–44, 16 May, 1958) ruled that names published by Cramer (1775) should be deemed to have been published on 31 December and they are therefore junior synonyms of those described by Fabricius (1775). *Papilio danae* Cramer, 1775 is currently known as *Historis odius dious* Lamas, 1995 (NYMPHALIDAE, COEINI Scudder, 1893 – Neotropical). *P. danae* Cramer is thus a junior homonym, it is not an available name, and it is not relevant to the present issue.

Conservation of *Papilio danae* Fabricius, 1775, as a valid name

8. In the authoritative catalogue on African butterflies (Ackery et al., 1995) the authors stated, with reference to Koçak (1981): ‘The name *Colotis danae* Fabricius has been in widespread use since its establishment. We propose to make an application to the I.C.Z.N. to here set aside the principle of priority in order to maintain stability by conserving *Colotis danae* Fabricius as a valid taxon’. Such an application has not yet been made.

9. The name *danae* has been unequivocally used for the nominate Indian species, now placed in *Colotis*, since 1775. The combination *Colotis danae*, in various subspecies, has consistently been used for the Indian population since 1907, and for the African populations since the 1940s. Several thousand publications include references to the combination *Colotis danae*, and the combination ‘*Colotis danae*’ yields about 1,700 references (‘hits’) using the internet search engine ‘Google’. In contrast ‘*Papilio danae* Hufnagel’ and ‘*Hipparchia danae* Hufnagel’ yield 12 hits in all, none as a valid name except for references to its original description.

10. While there is no doubt that *Papilio eborea* Stoll, 1781 is a redescription of *Papilio danae* Fabricius, it is rarely mentioned in the literature (e.g. Kirby, 1896) and then mainly as a junior synonym of *Colotis danae*. Chainey (2005) states that no type material has been located, but that it represents a valid species (with reference to Bridges, 1988, who accepted the view of Koçak, 1981). However, only in recent publications by Koçak and his collaborators (e.g. Kemal, 2004; Koçak & Kemal, 2007; and in various computer-generated lists) is *eborea* actually being used as the valid name. It would be a barely understood replacement name for the well-known *Colotis danae*. The combination ‘*Colotis eborea*’ receives four hits in ‘Google’, while ‘*Callosune eborea*’ and ‘*Teracolus eborea*’ yield none. The original combination

'*Papilio eborea* Cramer' receives two hits. Most of these simply treat the name in summary lists that also contain *Colotis danae*, or with the caution that the status of the name is uncertain. The current draft list of names of world butterflies of the family PIERIDAE under the Taxome Project (2008) does include the combination *Colotis eborea* as the valid name by Lamas (2008), but this has not yet been formally published. G. Lamas (pers. comm.) informed us that in view of its history and usage he would prefer to see *Colotis danae* conserved. Consultations with other lepidopterists show support for the application since it was first mooted by Ackery et al. (1995).

11. *Colotis danae* has been used as an indicator species in many studies: e.g. biogeographical (Bernardi, 1989; Larsen, 1984, 1987); ecological (Fitzherbert et al., 2006; Gardiner, 2004; Larsen, 1987/1988); and molecular (Nazari, in prep.). Such studies are of wider interest because the species is represented in the Indian subcontinent as well as in Africa, increasing the desirability of nomenclatural stability. The species has been bred on numerous occasions and the early stages are figured in several of the papers listed in this application, and in the additional list of references held by the Secretariat. From such documentation, as well as from earlier papers, the name *Colotis danae* (and, by inference, its original combination *Papilio danae*) has also permeated into botanical, general, and popular natural history literature.

12. It would serve no useful purpose to change the established usage of *Colotis danae* (Fabricius, 1775) to maintain a primary homonym (*Papilio danae* Hufnagel, 1766) that has hardly appeared in print since its publication. Its adoption would cause unnecessary confusion, not least since the combination *Colotis danae* is currently used in 50 or more countries in two major biogeographical regions, with several currently recognised subspecies, and at least 25 other names that are either placed in synonymy or infrasubspecific. The fact that its potential replacement name, *Papilio eborea*, has rarely been mentioned, and then mainly as a junior synonym or in name lists, would only compound the confusion.

13. Since this issue concerns a genuine case of primary homonymy raised in 1981 and 1995, and since *Colotis danae* has recently been treated as invalid by Koçak and collaborators, it can only be resolved through a ruling by the Commission in order to maintain nomenclatorial stability and to reduce potential future confusion.

14. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to suppress the name *danae* Hufnagel, 1766, as published in the binomen *Papilio danae*, for the purposes of the Principle of Homonymy;
- (2) to place on the Official List of Specific Names in Zoology the name *danae* Fabricius, 1775, as published in the binomen *Papilio danae*;
- (3) to place the name *danae* Hufnagel, 1766, as published in the binomen *Papilio danae*, on the Official Index of Rejected and Invalid Specific Names in Zoology.

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Acknowledgement of receipt of this application was published in BZN **66**: 2.

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