

A review of the status of some *Delias* Hübner, 1819 (Lepidoptera: Pieridae) in Papua, Indonesia

3. Notes on some recent publications

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Abstract: Over the last twenty years a number of papers have been published in which taxa of *Delias* have been revised, synonymised, given a new status or used in a new combination. In this article these revisions are summarised and evaluated in order to arrive at an updated classification of all *Delias* in Papua.

Rangkuman: Selama dua puluh tahun terakhir sejumlah karangan diterbitkan di mana takson-takson dari *Delias* direvisi, dinyatakan sinonim, diberikan status baru atau digunakan dalam kombinasi baru. Dalam publikasi ini revisi-revisi tersebut dirangkum dan dievaluasi agar mendapat klasifikasi aktual dari semua *Delias* di Papua.

Key-words: revisions, synonyms, new status, new combination.

Introduction

After the publications on taxonomic revisions proposed by D'Abrera (1971, 1977, 1990) in SUGAPA **7** (3), issued in March 2013, and by Yagishita (1993) and Parsons (1999) in SUGAPA **8** (1), issued November 2013, this article covers recent papers, published over the last twenty years in various journals concerning taxonomical revisions on species of the genus *Delias* in Papua, Indonesia.

Abbreviations

P.N.G. - Papua New Guinea.

Revisions

Morinaka et al., (1991-1999) revised the *Delias eichhorni* complex and recognized two groups, the first including *eichhorni* Rothschild, 1904 (s. str.), antara Roepke,

1955, and *frater* Jordan, [1912]; the second with *heliophora* Roepke, 1955, *germana* Roepke, 1955 and the new described *muliensis*. All taxa mentioned above were brought to species level.

Van Mastrigt (1996b) renamed *Delias campbelli maria* Toxopeus, 1937 as *D. c. cyclops*, because the name was pre-occupied by *mariae* Joicey & Talbot 1916. However this subspecies was later synonymised with *D. campbelli campbelli* by Parsons (1999).

Van Mastrigt (2000) reviewed the *clathrata* group: subspecies *D. mira roepkei* Sanford & Bennett, 1955 was raised to species level with *cieko* included as a subspecies; *reissingeri* was declared a synonym of *cieko*. Subspecies *cieko* was described by Arima (1996) as *Delias mira cieko* from Waniak, Papua. Van Mastrigt (1996), unaware of Arima's publication, mistakenly published the same form as *D. mira reissingeri*.

Delias hemianops sanaeae, from Pass Valley, was published by Sakuma (1999) as a new subspecies of *Delias hemianops* Gerrits & Van Mastrigt, 1992. Van Mastrigt (2000) transferred *sanaeae* to *walshae* creating the combination *D. walshae sanaeae*.

Davenport & van Mastrigt (2009) published a revision of *Delias mysis* (Fabricius, 1775) and closely related species. Separation of *lara* from *mysis* is based on the sympatry of *nemea* and *lara* in the Merauke area and results in the following classification: *D. mysis mysis* (Fabricius, 1775), with subspecies *aestiva* Butler, 1897, *aruensis* Mitis, 1893 and *nemea* Fruhstorfer, 1910, *Delias lara lara* (Boisduval, 1836), with the subspecies *hideyoeae* Nakano, 1995 on Japen, *goodenovii* Rothschild, 1915 from Goodenough Islands, *rosseliana* Rothschild, 1915 from Rossell Islands and *maga* Grose-Smith, 1897 from Sud-Est Island, *Delias euphemia* Grose-Smith, 1894 from Biak and *Delias doylei* Sanford & Bennett, 1955 from Kup in the central mountain range of P.N.G. Therefore only *D. mysis nemea*, *D. lara lara*, *D. lara hideyoeae* and *D. euphemia* occur in Papua. *D. aestiva* has recently been raised to species level by Braby (2012) following study of its unique habitat and foodplant preferences. It is possible that *D. mysis nemea*, also a mangrove forest specialist, may eventually prove to be a distinct species.

Funahashi (2010) reviewed *Delias nais* and *Delias zebra* on the island of New Guinea, concluding that *D. zebra* was not a valid species but rather an 'endemic phenotype' or local form of *D. nais*.

Van Mastrigt & Davenport (2012b) found that within subspecies *denigrata*, *holophaea* and *nais*, from west to east, the subspecific identity of individuals is often difficult to confirm and that the differences between these populations

represent a gradual cline from west to east rather than three separate subspecies. Their classification has a single species in Papua with three subspecies: *D. nais nais* (including *denigrata*, *holophaea* and *zebra*), *D. nais odilae* and the newly described *D. nais beehleri* from the Foja Mountains.

The form *zebra* is found only in the nominate race.

Van Mastrigt (2011a) replaced *D. luteola* (a form-name brought to species level by Yagisgita, 1993) with *D. raymondi* which as a subspecies name, has priority, and added the subspecies *shirahataii* and *ogawai* (both described by Morita, 1996 as subspecies of *callista*) to *D. raymondi*, while the subspecies *miyashitai* Yagishita, 1993 (described as *D. lutuola miyashitai*) is combined with *D. callista*.

Tuzov & Churkin (1998) published *Delias rileyi extremus* from Pass Valley. **Van Mastrigt (2013)** synonymised this taxon with *D. langda watlangku* Gerrits & Van Mastrigt (1993).

Funahashi (2012) published a taxonomic review of *Delias aroae* species complex *s. str.* from New Guinea, comprising the following species and subspecies:

Delias aroae aroae (Ribbe, 1900), including *balimensis* Roepke, 1955, occurring in the eastern part of Papua and *Delias aroae yabensis* Joicey & Talbot, occurring from the Baliem Valley eastwards.

Delias angiensis (originally described as *D. aroae angiensis*) from the Arfak Mountains is maintained as a specific rank. *Delias pheres* Jordan, [1912] east from the Baliem Valley and *Delias pheres approximata* Joicey & Talbot, 1922 from the Kobowre Mountains to the Baliem Valley.

Delias subapicalis subapicalis Orr & Sibatani, 1985, only in eastern Star Mountains, P.N.G. and *D. subapicalis sibatani* Van Mastrigt, 2003 from the western Star Mountains to Pass Valley, Papua, Indonesia.

Delias inopinata inopinata Lachlan, 2000, found only in P.N.G. and *D. inopinata orri* Van Mastrigt, 2003 from the western Star Mountains, Papua.

Van Mastrigt & Davenport (2012a) published some notes on *Delias albertisi* (Oberthür, 1880), proposing the following classification of species and subspecies in Papua: *D. albertisi albertisi* (Oberthür, 1880), from the Arfak Mts, *Delias albertisi albiplaga* Joicey & Talbot, 1922 from the Kobowre Mts, *D. putih putih* Van Mastrigt, 1996 from the south side of the Kobowre Mts to the Kamu Valley and *D. putih tamamitsui* Morita, 1996 from Mogomogo, Paniai.

Van Mastrigt (2012a) published a review of *Delias hypomelas* group on New Guinea, concluding that *argentata* Roepke, 1955 is a form of *D. hypomelas* and proposing that only the following species be recognised: *D. hypomelas* Rothschild & Jordan, 1907 (including: *conversa* Jordan, [1912], *rubrostriata* Joicey & Talbot,

1922, *fulgida* Roepke, 1955, *lieftincki* Roepke, 1955, *argentata* Roepke, 1955, *argentata clutus* Yagishita, 1993 and *destrigata* Van Mastrigt, 1995), recognising the forms *f. rubrostriata*, *f. argentata* (including *f. sanguinea* Roepke, 1955), *f. clutus* and *f. destrigata*. *D. ormoensis* Van Mastrigt, 2006 and *D. papuana* Van Mastrigt, 2009, both from the Foja Mts.

Van Mastrigt (2012b) listed the *Delias* of the western Star Mountains and proposed several revisions. The taxon *D. niepelti henki* Yagishita, 1997 is considered to be a junior synonym of *D. niepelti neagra* (Jordan, [1912]). The *eichhorni* group members *soror* Van Eecke, 1944 and *far* Schröder & Treadaway, 1982 as treated as subspecies of *D. frater* Jordan, [1912] and *D. luctuosa kuning* Van Mastrigt, 1990 and *D. luctuosa versicolor* Lachlan, 2000 are considered to represent a form (*f. kuning*), with a much wider distribution than only the Star Mts and is found in other populations of *D. luctuosa archboldi* Roepke, 1955 *s. str.*

Gotts & Ginn (2005) recognise the population of *Delias rileyi yofona* in the Korupun area as a distinct subspecies, *D. rileyi erici*. **Van Mastrigt (2013d)** reviewed *Delias rileyi* synonymised this subspecies with *Delias rileyi yofona*.

Muller et al. (2012) published a phylogeny of the genus based on genetic analysis at species level. This study demonstrates the existence of 14 principal clades or groups within the genus and sheds light on the relationships between certain taxa in Papua, including the following:

- *D. sagessa* and *D. abrophora* are shown to be distinct species;
- *D. isocharis* and *D. strix* are supported as distinct species;
- *D. meeki arfakensis* (misidentified as *D. anamesa* by Muller) is shown to be a different species from both *D. meeki* and *D. niepelti* found in PNG.

Conclusion

With this third review of recent publications on New Guinea *Delias*, a near complete view of the current taxonomic status of the *Delias* in Papua is reached. However, there are still a number of taxonomic questions to be solved in future including the following issues.

- No further examples of *D. daniensis* Van Mastrigt, 2003 have been found, which suggests that it may be an aberration of *pheres* Jordan, [1912] rather than a valid species.
- Recent collections of *arabuana* Roepke, 1955 raise the question whether *arabuana* is a valid species or a form or subspecies of *mesoblema* Jordan, [1912].

- Recently found extensions of the distribution area of *awongkor* Van Mastrigt and the presence of *flavistriga* Roepke, 1955 in the Star Mountains raise questions about the alliance of these two taxa.
- The classifications of the *mariae* and *mira* subgroups are still uncertain.
- The status of *D. catocausta eefi* Van Mastrigt, 1990 should be verified.
- Opinion on the *niepelti-meeki* complex is far from unanimous. Genetic analysis of central Papuan populations is required before a final opinion can be reached.
- The status of *D. langda* Gerrits & van Mastrigt, 1993 is questionable and it may in fact be a dark form of *D. oktanglap* Van Mastrigt, 1990.
- The status of *D. raymondi* and *D. telefominensis* may be re-considered when genetic data is available.

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