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

1. D'Abrera's Revisions

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Abstract: Over the years, many taxa of *Delias* have been revised, synonymized, given a new status or used in a new combination. Most but not all of these revisions have been formalized by later authors. In this publication the status of seventeen taxa synonymized by D'Abrera (1971, 1977, 1990) are examined and clarified.

Rangkuman: Bertahun-tahun lamanya banyak takson *Delias* direvisi, menjadi sinonim, diberi status yang baru atau digunakan dalam kombinasi yang baru. Kebanyakan revisi ini - tetapi tidak semuanya - diformalkan oleh pengarang yang kemudian. Dalam publikasi ini kedudukan dari tujuh belas takson, yang sudah dinyatakan sinonim oleh D'Abrera (1971, 1977, 1990), diperiksa dan diklarifikasi.

Key-words: D'Abrera, synonyms, **syn. nov.**

Introduction

In the course of preparing an updated list of all Papuan *Delias*, the uncertain status of certain species, subspecies and forms has become evident. Among others, taxa revised by D'Abrera (1971, 1977, 1990) are often ignored by more recent authors.

Pioneering expeditions to New Guinea in the early 20th century resulted in descriptions of many new species and subspecies of *Delias*. Alfred Meek's ascent of Mount Goliath on the south side of central mountain range at 140° EL (Jordan, [1912]), was followed by publication of the results of the Wollaston expeditions to the Snow Mountains, also on the south side at 137° 10' EL (Rothschild, 1915). Later collectors explored the Kobowre Mountains (the former Weyland Mountains,) at 135° 50' EL, where rivers flow both to the north and to the south coasts (Joicey & Talbot, 1922), the Paniai Lake area at 136° 50 EL which drains to the south (Roepke, 1955), and the Mamberamo area to Lake Habbema near Mount Trikora, the former Wilhelmina Top (at 138° 40' EL) where the rivers also flow to the south (Roepke, 1955).

The differences observed between individuals of the same species from these widely dispersed locations have resulted in the description of numerous subspecies, some of doubtful validity for two reasons. First, the larger numbers of specimens from individual locations that are now available for study show the occurrence of varieties within *Delias* populations that were not recognized when first described. Secondly, the distance between the various historic localities is relatively large (1° longitude = about 110 km). Mount Goliath is separated from the Carstensz Mountains by approximately 300 km and from the Kobowre Mountains by 450 km. The Baliem Valley is approximately 300 km distant from the Kobowre Mountains. Recent collections from intervening locations have demonstrated the difficulty in defining boundaries between certain subspecies. Between the Paniai Lakes and the Baliem Valley, extensive material has now been collected from more than twelve localities at average intervals of 25 km. The variation in certain characteristics, previously used to distinguish subspecies, are not in fact discontinuous or abruptly defined but instead appear to exhibit gradual clinal variation, often on a west-east axis.

Delias races in the more isolated mountain areas such as the Birds Head (containing the Arfak, Wasior and Fakfak mountain ranges), Foja Mountains and the Cyclops Mountains, are, as would be expected, more clearly distinguished from sibling subspecies.

Revisions

Among the *Delias* from Papua, the former Netherlands New Guinea, now the combined Indonesian Provinces of Papua and Papua Barat, D'Abrera (1971, 1977, 1990) proposed a significant number of new synonyms.
D'Abrera's method of indicating new synonyms is not consistent; in most cases it is indicated by placing the synonymized taxon in brackets behind the senior name, e.g. *Delias alepa kunupiensis* Joicey & Talbot (= *orthobasis* Roepke), some with brief explanation in the text such as "no significant differences", others with more detailed reasoning. In two cases only D'Abrera used the term synonym; "*Delias carstensziana* Rothschild = *alcicornis* Roepke ***syn. n.***" and "*Delias mariae menooensis* J&T = *walshae* Roepke ***syn. n.***" His classification is weakened by this inconsistent approach and has infrequently been cited by later authors.

A summary of D'Abrera's synonyms and comments are presented below:

D. carstensziana Rothschild (= *alcicornis* Roepke ***syn. n.)***
"According to Roepke (1955: 207), *alcicornis* differs from *carstensziana* in 'having the colour of the forewing underside lemon chrome, instead of bright orange'. I

find little evidence of this. On examining the small series of ♂♂ of *carstensziana* including the type at the British Museum (Nat. Hist.), I felt that there was a certain amount of variation in the yellow colouration to which Roepke refers, and that this was due perhaps to the processes of age. Roepke viewed these same specimens a good forty years after they were captured. I examined specimens of the supposed new race (= *alcicornis* - author) almost thirty years after they were netted. There is some darkening of the yellow into orange here as well. The illustration is of one of these latter specimens, and should be compared with the figure on plate LV of Talbot's monograph."

D. catisa (= *wisseliana* Roepke; *aurostrigata* Roepke)
D'Abrera downgrades the two new subspecies published by Roepke, *aurostriga* and *wisseliana*. "I can find no significant differences in external characters between specimens from the localities cited by Roepke."

D. phippsi Joicey & Talbot (= *wisseli* Roepke)
"I find little evidence of significant differences between this species and the specimens named *wisseli* by Roepke from the Arabu river area. Apart from the slightly narrower black border of the ♂ f.w.r. of the Arabu specimens, they are quite identical with *phippsi* from the Weyland Mountains."

D. kummeri (= *similis* Talbot; *fumosa* Roepke)
"There are no really significant differences between this species and the two races described by Talbot and Roepke respectively."

D. ligata weylandensis Joicey & Talbot (= *interpolata* Roepke)
"Roepke describes specimens from the Mt Sigi area as *interpolata*. Apart from one or two specimens which have smaller subapical spots on f.w.v., there is no great difference between Roepke's new subspecies and *weylandensis*."

D. alepa kunupiensis Joicey & Talbot (= *orthobasis* Roepke)
"Specimens from the Mt Sigi area, called *orthobasis* by Roepke, are not significantly different from *kunupiensis*."

D. catocausta Jordan (= *nigerrima* Roepke)
"In 1911, a single damaged specimen was captured some forty miles distant from Mt Goliath, and was later designated subspecies *nigerrima* by Roepke. It hardly differs from Mt Goliath material and until further material comes to hand, I regard it as synonymous with *catocausta*."

D. discus larseni Lück & Gehlen (= *captorima* van Eecke)
No comment.

D. mariae menooensis Joicey & Talbot (= *walshae* Roepke ***syn. n.)***
No comment.

D. wollastoni Rothschild (= *bryophila* Roepke, Toxopeus MS.)
"Specimens from the Archbold Expeditions (Moss Forest, West Irian), designated subspecies *bryophila* by Roepke, agree exactly with the (up to time) unique specimen of *wollastoni* in the British Museum (Nat. Hist.). There had been some misunderstanding by Toxopeus and Roepke of both the text and plates of Rothschild's description of *wollastoni*. Rotschild's description of the colour of the disco-cellular patches on the h.w.v. as being 'crimson-maroon' did not match the plate of that description. In the plate the colour of these patches is closer to crimson than the chocolate colour of the actual specimen, and evident in the specimen used in my illustration."

D. gabia zarate Grose-Smith (= *felsina* Fruhstorfer; *marinda* Hulstaert; *aurantimacula* Joicey & Talbot)
"After examining the rich material in the British Museum (Nat. Hist.), I feel that apart from the three races already mentioned (*gabia* Boisduval, *zarate* Grose-Smith and *callistrate* Grose-Smith – author) there is no real justification for maintaining the large number of subspecific names associated with the very widely distributed and variable butterfly."

D. mysis lara Boisduval (= *intermedia* Mitis; *oisyme* Fruhstorfer)
"A very variable race ♂ and ♀ differ from *mysis* mainly on the h.w.v. "

Yagishita *et al.* (1993) continued to recognise eleven of these taxa at subspecies level; only *nigerrima*, and *captorima*, *bryophila*, *intermedia* and *oisyme* were maintained as synonyms with *nigerrima* and *captorima* treated as subspecific synonyms, *bryophola* as an infraction and *intermedia* and *oisyme* as forms of *D. mysis lara*.

Parsons (1999) adopted the synonyms of D'Abrera when reviewing the species that occur in PNG. He listed *intermedia* von Mitis and *oisyme* Fruhstorfer as synonyms of *D. mysis lara*; *felsina* Fruhstorfer, *marinda* Hulstaert and *aurantimacula* Joicey & Talbot as synonyms of *D. gabia zarate* Grose-Smith; *alcicornis* Roepke as a synonym of *D. carstensziana* Rothschild, and *similis* Talbot and *fumosa* Roepke as synonyms of *D. kummeri* Ribbe.

This publication confirms the status of the various subspecies synonymized by D'Abrera, except for *walshae* which is now recognised as a good species, and *alcicornis,* which is proposed as a form name, *D. carstenziana* f. *alcicornis* (see below).

walshae
(figs 9-17)

When Talbot published his monograph, only seven species were known in Group 15 (the clathrata group): *D. elongatus, D. clathrata (*two subspecies), *D. inexpectata, D. catocausta, D. mira* (three subspecies), *D. mariae* (two subspecies) and *D. klossi.* The current classification, augmented by recent discoveries and splitting of existing species, consists of three subgroups: the clathrata subgroup with two species, the mariae subgroup with seven species, the mira subgroup with five species and two outlying species. Yagishita (1993) treated *walshae* as a full species with two newly described subspecies. Van Mastrigt (2000) raised *menooensis* to full species level with *boschmai* Roepke as subspecies, however at the time he was not aware of Morita (1996b) who had re-classified *D. mariae boschmai* as *D. boschmai* stat. nov.
Based on comparison with recently collected material from intervening localities, there is no justification for treating the allopatric taxon *walshae* as a synonym of *mariae menooensis* as D'Abrera does. The taxonomy of van Mastrigt (2000) is therefore retained.

alcicornis
(figs 24-31)

Roepke described ssp. *alcicornis* which differs from the typical *carstensziana* by having the colour of the forewing underside lemon chrome instead of bright orange. D'Abrera disagreed with the distinguishing characteristic of Roepke's new subspecies– and considered that the variation in the yellow colouration to which Roepke refers was due perhaps to ageing processes. This is not in fact correct. Recently collected material shows that two forms occur sympatrically in some populations in Baliem valley and in localities in the central mountain range, both west and east of the Baliem valley. Toxopeus (in Roepke p. 208) differentiates two "forms"; one in which both sexes have a pinkish or purplish hue on the underside of the hindwing, and a second in which the underside of the hindwing is greenish grey.

This difference is also related the colouration on the underside of the forewing: when the hindwing underside has a purplish hue, the underside of the forewing is orange; when the underside of the hindwing is a greenish grey, the underside of the forewing is yellow. The first form is found in all *carstensziana* from the Mount Carstensz (Puncak Jaya) and Tembagapura, although some variety is found in the forewing colouration from dark orange to quite pale orange, while the second

form is a majority in the Baliem Valley area, the type locality of *alcicornis*. For this reason it is proposed to use *D. carstensziana* f. *alcicornis* for the form with the yellow underside of forewing and greenish grey underside of hindwing.

Footnote

Since the publications of D'Abrera (1971, 1977, 1990) a number of new *Delias* subspecies have been described from Papua. Some of these originate from locations within the geographical range of previously synonymized subspecies, resulting in taxonomic confusion or illogical distribution maps when the earlier classification is not re-instated. A further complication arises from the inconsistent criteria used by different authors to define subspecies.

The focus of forthcoming studies will be the problem of identifying morphological and geographical boundaries between the currently recognized taxa. Further species and subspecies will be reviewed in the second part of this article to be published later in 2013.

References

Boisduval, J.B.A. Dechauffeur de. 1836. Histoire Naturelle des Insectes, Species Géneral Lépidoptères I, pp. I-XII,1-690 (460-462)

Butler, A.G. 1865. Description of Six New Species of Exotic Butterflies in the Collection of the British Museum - Proc. zool. Soc, Lond. 23 May, 455-459.

D'Abrera, B. 1971, 1977, 1990. Butterflies of the Australian Region, 1st, 2nd and 3rd (Revised.) Edition: 1-415 (416). Lansdowne Press, Melbourne (126-153).

Davenport, Chris & Henk van Mastrigt. 2009. Revision of *Delias mysis* (Fabricius, 1775) and closely related species (Lepidoptera: Pieridae) - SUGAPA **3** (2), Oktober-Desember 2008 (20 Jan. 2009): 15-31.

Fruhstorfer, H, 1910. in: Seitz, 1927: The Indo-Australian Rhopalocera - Text; Alfred Kernen, Publisher, Stuttgard: I-VIII, 1-1197 (128-135).

Fruhstorfer, H, 1910. in: Seitz, 1927: The Indo-Australian Rhopalocera - Plates; Alfred Kernen, Publisher, Stuttgard: 1-175 (51-56).

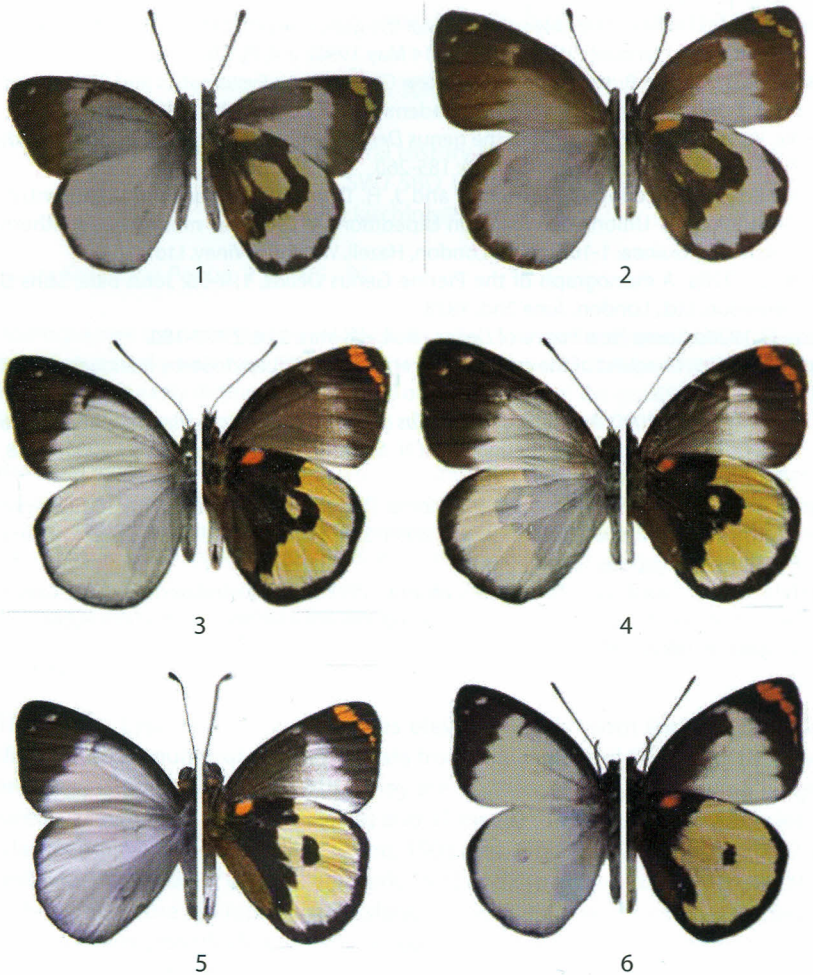
Grose-Smith, H. 1900. Descriptions of New Species of Butterflies, captured by Mr. A.S. Meek, at Milne Bay, Brit. New Guinea, in the Museum of the Hon. Walter Rothschild, at Tring - Nov. Zool. vii(1), 86-89 (87).

Hulstaert, G. 1924. Rhopalocères nouveaux des Indes Hollandaises - Bull. Annls. Soc. r. ent. Belg. Tome 64, Bruxelles, 1924 vi. 73-81. (75-76).

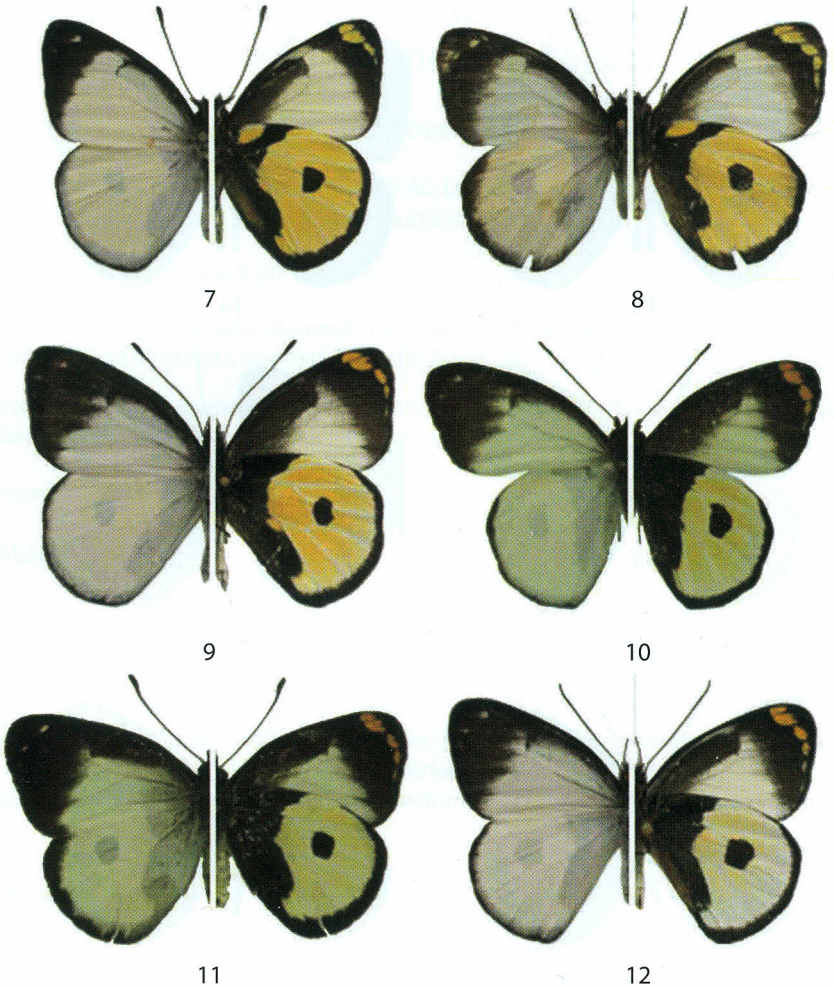
Joicey, J.J. & G. Talbot. 1922. New Forms of the Genus *Delias* (Pieridae) from New Guinea, Ceram and Buru - Bull. Hill Mus. i, pt. 3. (14 Sept.) pp. 303-319.

Jordan, K. [1912]. On new or little-known *Delias* from New Guinea. - Novit. zool. 18: 580-593 (1911).

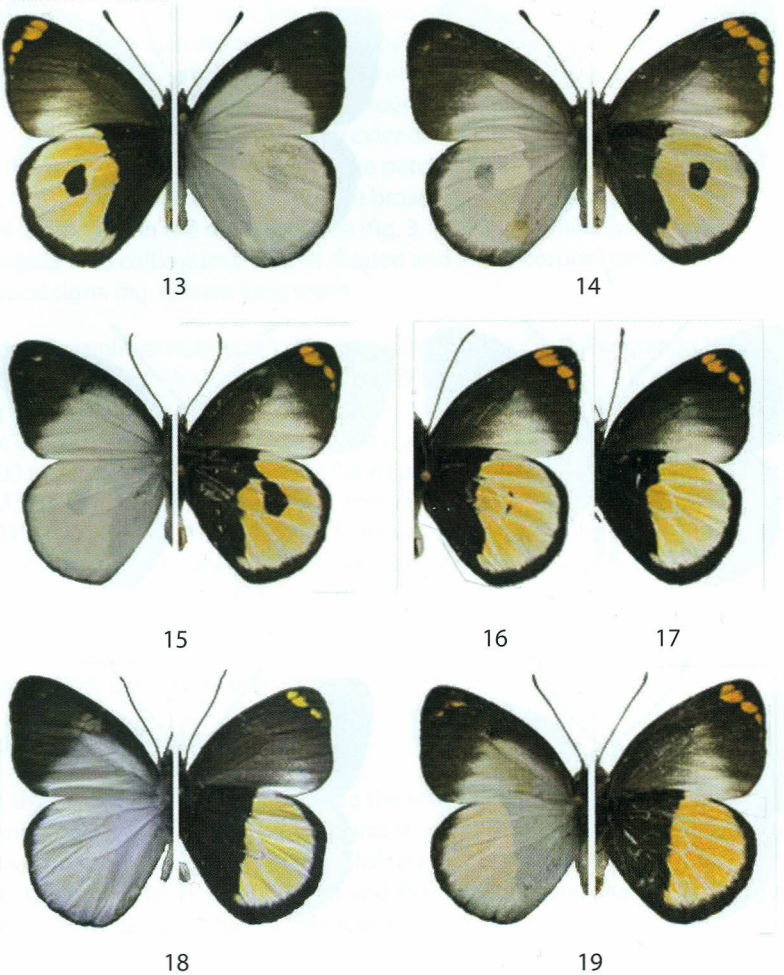
Lück R. & B. Gehlen, 1911. Eine neue *Delias* - Fauna Exot. I.(9):33.
Mitis. 1843: p. 110.
Morita, Sadayuki. 1996b. Five new subspecies of the genus *Delias* from Irian Jaya, INDONESIA (Lepidoptera Pieridae) - Wallace Vol. 2 (14 May 1996): 2-4, Pl. XIII: 2-10.
Parsons, M. 1999. The Butterflies of Papua New Guinea: their Systematics and Biology, pp. I-XVI, 1-736, Pl. 1-162 (132 col.); HB. Academic Press, London. ISBN 0-12-545555-0.
Roepke, W. 1955b. The Butterflies of the genus *Delias* H¸bner (Lepidoptera) in Netherlands New Guinea - Nova Guinea, Vol.6 (2): 185-260.
Rothschild, W. 1915c in: W. Rothschild and J. H. Durrant, Lepidoptera of the British Ornithologists' Union and Wollaston Expeditions in the snow mountains, southern Dutch New Guinea: 1-168, pl. I-II. London, Hazell, Watson & Viney, Ltd.
Talbot, G. 1928a. A monograph of the Pierine Genus *Delias*, 1: 1-56. John Bale, Sons & Danielson, Ltd., London. June 2nd, 1928.
Talbot, G. 1928c. Some New Forms of *Delias* - Bull. Hill Mus. 2 pt. 2:177-180.
Tuzov, V. K. 1995. Checklist of the genus *Delias* H¸bner, 1819 (Lepidoptera, Pieridae) - Actias 2 (1-2): 111-123.
van Mastrigt, Henk, 2000. A review of the *Delias clathrata* group from Irian Jaya and Papua New Guinea (Lepidoptera: Pieridae) - NEN, Marktleuthen 48. Band (May 2000): 3-68, 72-93, incl. Colour Pl. I-XI: figs 1-189.
Yagishita, A. *in:* A. Yagishita, S. Nakano & S. Morita. [1993a]. An illustratated list of the Genus *Delias* Hübner of the World <text>. i-xiv; 1-384. Ed. Yasusuke Nishiyama; Khepera Publishers Singapore, Tokyo 1993.
Yagishita, A. *in:* A. Yagishita, S. Nakano & S. Morita, [1993b]. An illustratated list of the Genus *Delias* Hübner of the World. i-ix; 1-409; i-vi. Ed. Yasusuke Nishiyama; Khepera Publishers Singapore, Tokyo 1993.



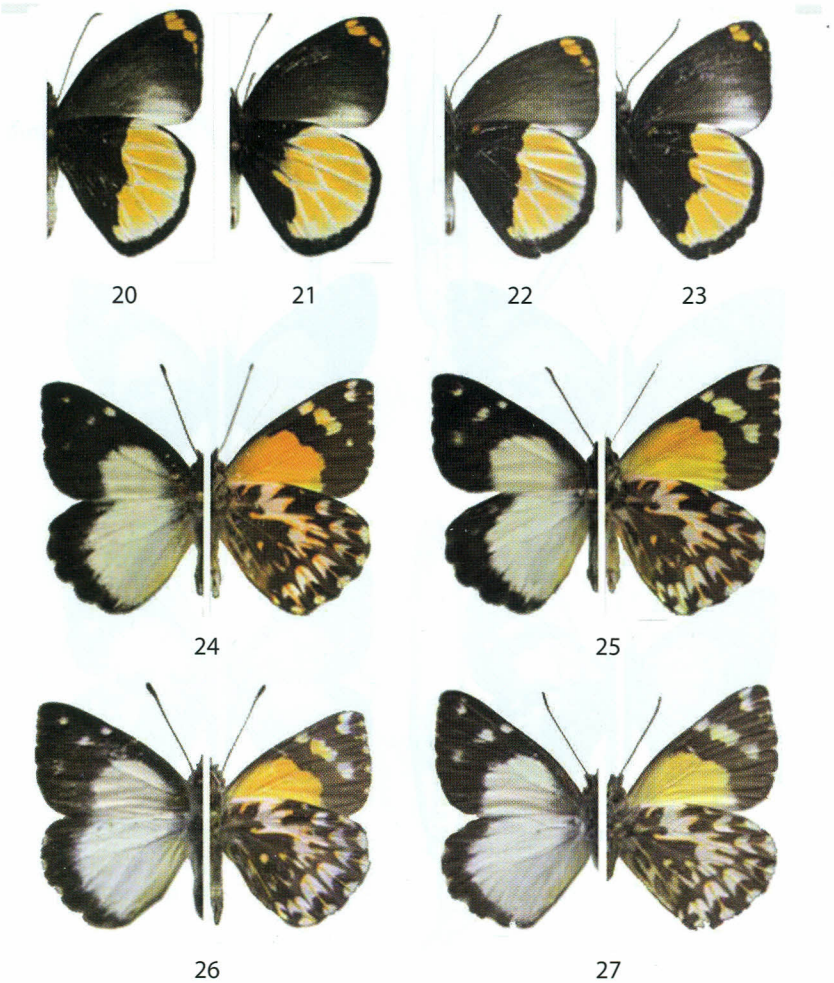
Figs 1-2. *Delias mariae*: 1. HT ♂; 2. AT ♀ (NHM).
Figs 3-5. Upp./und. *Delias menooensis menooensis*: 3. HT ♂; 4 PT ♀ (NHM); 5. ♂ (KSP 21897).
Fig. 6. *Delias menooensis boschmai* HT ♂ from R. Arabu (NCB-RMNH).



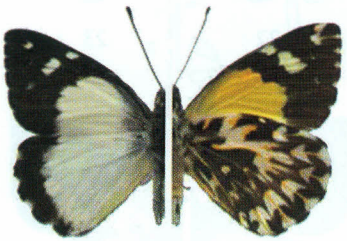
Figs 7-8. Upp./und. *Delias sigit sigit*: 7. Male (KSP 21985); 8.♀ (KSP 22007).
Figs 9. Upp./und. *Delias walshae ilu*♂ from Mulia (KSP 22008).
Figs 10-12. Upp./und. *Delias walshae walshae*: 10. HT♂; 11. AT♀ (both in NCB-RMNH); 12.♂ from Makki (Baliem Valley), R. Meragu (KSP 22070).



Figs 13-17. (upp.)/und.) of *Delias walshae sanaea* ♂ from Pass Valley:
13. from R. Biong (KSP 22019); 14. from R. Ibem (KSP 22049);
15-17. from R. Suwagi KM 48 (KSP 22062, 22063, 22065).
Figs 18-19. Upp./und. *Delias hemianops*: 18. PT ♂ from Okbibab, R. Okse (KSP 26992); 19. PT ♀ from Okbibab, R. Lukon (KSP 22104).



Figs 20-23. Und. *Delias hemianops*: 20. ♂ from Nipsan, R. Yango (KSP 22100); 21. ♂ from Okbibab, R. Lukon (KSP 22099); 22. From R. Okse (KSP 22091); 23. From R. Mong (KSP 22081).
Figs 24-27. Upp./und. *Delias carstensziana carstensziana* ♂: 24-25. From Tembagapura (KSP 6013, 6022); 26-27. From Ilaga (KSP 6026, 6038).



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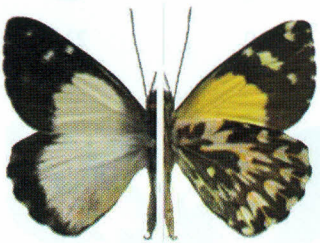

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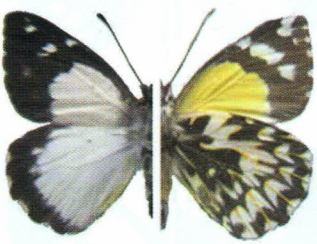

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Figs 28-31. Upp./und. *Delias carstensziana carstensziana* ♂ from Baliem Valley (KSP 6081, 6059, 6086, 6068)