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Some notes on the *Delias aroae* Group

(Lepidoptera: Pieridae)

by

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Abstract: This paper describes one new species and two new subspecies of the pierid genus *Delias*, belonging to the *Delias aroae* group. A summary of the current state of knowledge of the *Delias aroae* group is presented.

Zusammenfassung: In dieser Arbeit werden eine neue Art und zwei neue Unterarten aus der *aroae*-Gruppe der Gattung *Delias* beschrieben. Das gegenwärtige Wissen um diese Gruppe wird zusammenfassend dargestellt.

Ikhtisar: Karangan ini tentang satu spesies dan dua subspecies yang baru dari genus *Delias* (Lepidoptera: Pieridae), termasuk dalam *aroae* group. Di samping itu disajikan rangkuman dari keadaan pengetahuan tentang *aroae* group sekarang ini.

Introduction

The *Delias aroae* group—part of the *aroae-cuningputi* complex—is a taxonomically difficult subgroup within the genus *Delias*. ORR & SIBATANI (1985, 1986) reviewed this group and the whole *aroae-cuningputi* complex. However, in the years since those publications more material has become available and descriptions of new taxa within these groups have been published. Recently I published the current state of knowledge of the *cuningputi* group. In this paper I summarize the current state of knowledge of the *aroae* group, provide some notes on the distribution and sympatry of a number of taxa, especially in Papua (former Irian Jaya), and describe one new species and two new subspecies.

Depositories

- EMEM Entomologisches Museum EITSCHBERGER, Marktleuthen, Deutschland
- GG Private collection of FRED GERRITS, Buderim, Australia
- HM Private collection of author, Jayapura, Papua, Indonesia
- JFL Private collection of Mr. JEAN-FRANÇOIS LABBÉ, Sandillon, France
- MZB Museum Zoologicum Bogoriense, Bogor, Indonesia
- ZMA Instituut voor Systematiek en Populatiebiologie (Zoölogisch Museum) afdeling Entomologie, Amsterdam, The Netherlands
- PNG Refers to the independent country of Papua New Guinea

Taxonomy

The identity of the *Delias aroae* group

In his "A monograph of the pierine Genus *Delias*" (Part IV) TALBOT (1929) recognized three species within the now named *aroae*-group: *Delias pheres*, including subspecies *approximata*, *hyperapproximata* and *angabungana*, *Delias aroae*, including subspecies *yabensis* and *angiensis*, and *Delias fuliginosus*, in Part VI (1937) renamed as *Delias kenricki*.

The *Delias aroae* group as determined by ORR & SIBATANI (1985) includes four subdivisions: the *aroae* species-complex, *hyperapproximata* species-complex, and the single-species groups *flavissima* and *kenricki*, which were regarded on the same level as the complexes with more species.

The *aroae* species-complex includes *D. aroae* (RIBBE, 1900), *D. balimensis* ROEPKE, 1955, *D. yabensis* JOICEY & TALBOT, 1922, *D. angiensis* TALBOT, 1928, *D. pheres* JORDAN, (1912), *D. approximata* JOICEY & TALBOT, 1922 and *D. subapicalis* ORR & SIBATANI, 1985.

The *hyperapproximata* species-complex includes *D. hyperapproximata* ROTHSCHILD, 1925, *D. angabunga* TALBOT, 1928, and *D. endela* JORDAN, 1930.

Two single species complete the *aroae* species-complex: *D. flavissima* ORR & SIBATANI, 1985 and *D. kenricki* TALBOT, 1937.

Despite their thorough review ORR & SIBATANI express their doubts about the number of "real" species and the status of some taxa. Concerning the *Delias aroae* species-complex they state "...we cannot be certain whether the complex represents two or upwards of four species." (p. 7). Concerning the three taxa within the *Delias hyperapproximata* species-complex ORR & SIBATANI express their doubt about the status of the three members which "occur in Papua New Guinea and were treated by TALBOT (1928–1937) and ROEPKE (1955) as subspecies of *D. pheres* from Papua, but since *angabungana* and *endela* are sympatric with *aroae*, itself closely allied to *pheres*, such a connection is untenable." (p. 17).

Since ORR & SIBATANI's revision in 1985 only a few articles have been published on species of the *aroae* group. SCHMITT (1992) described *D. giselea*, based on seven male specimens from Kerowagi and two male specimens from Gumini, and *D. bouyssoui* based on five male specimens from Menyamya, Morobe Province, Papua New Guinea.

YAGISHITA (1993) listed the same species as mentioned in the revision of ORR & SIBATANI and added *D. giselea* as a subspecies of *D. flavissima* and declared *D. bouyssoui* a synonym of *D. endela*.

LACHLAN (2000) described *D. inopinata*, based on 21 male specimens from Mount Akrik, 15 km NW of Tabubil, Western Province, PNG and *D. binnensis*, based on one male and one female from Mount Binnie, next to Ok Tedi mine, Western Province, PNG. The last taxon is—if not a member of the *aroae* group—a closely related species, which connects the *aroae* group with the *cuningputi* group, and so surely belongs to the *aroae-cuningputi* complex as a whole.

Some notes on the key to species of the *Delias aroae* group

ORR & SIBATANI (1985) divided the *Delias aroae-cuningputi* complex into two groups of species:

1. *Delias aroae* and allied species, characterized by underside hindwing submarginal yellow/orange spots broad and roughly triangular, at least some of them reaching termen; hindwing usually not strongly scalloped or if so then both wings dusky brown above.

2. *Delias cuningputi* and allied species, characterized by underside hindwing submarginal yellow/orange spots reduced to a thin bar, spot or crescent parallel to termen with thin lines radiating from their midpoints but seldom reaching termen; hindwings usually strongly scalloped.

D. binnienensis (LACHLAN, 2000) recently discovered on Mt Binnie near the border between PNG and Papua Province, Indonesia is a notable exception to this key as it exhibits characteristics of both groups and may therefore be similar to the ancestral form that has evolved into the otherwise distinct species groups.

Descriptions

Delias subapicalis sibatani **subspec. nov.**
(map 1; colour plate II, figs. 1-8)

Material

Holotype ♂: "IRIAN JAYA/Kab. Jayawijaya/Pass Valley 1800 m/R. Bion/10.-14.IV.1997", MZB. Paratypes (538 ♂♂ + 4 ♀♀): IRIAN JAYA, Kec. Landikma, Sumbale 950 m, Wolon River, 21.III.-1.IV.2000, 1 ♂, HM; 1 ♂, MZB; 23.-31.VII.2001, 1 ♂, HM; 1 ♂, MZB; Baliem Valley, Welesi 2000 m, Wesi River, 24.V.1991, 1 ♂, HM; Pass Valley, Suwagi River, km 48, 11.VIII.1992, 1 ♂, HM; 5.X.1992, 2 ♂♂, ZMA; 22.IX.1992, 2 ♂♂, HM; 1 ♂, MZB; 1 ♀, ZMA; 26.-28.II.1997, 1 ♂, HM; 1.-4.III.1997, 3 ♂♂, HM; 21.-26.IV.1997, 1 ♂, MZB; 28.VII.-6.VIII.1997, 2 ♂♂, HM; 3 ♂♂, MZB; 18.-24.VIII.1997, 3 ♂♂, HM; 23.-30.IX.1998, 4 ♂♂, HM; Watlangku River, 26.-31.V.1992, 3 ♂♂, HM; Wadaguh River, 31.I.-1.II.1992, 2 ♂♂, MZB; 24.-28.II.1992, 2 ♂♂, EMEM; 1 ♂, HM; Bion River, 28.-30.I.1992, 1 ♂, HM; 2 ♂♂, MZB; 18.-22.II.1992, 6 ♂♂, EMEM; 1 ♂, HM; 5 ♂♂, ZMA; 1.-3.IV.1992, 4 ♂♂, EMEM; 1 ♂, ZMA; 4.IX.1992, 1 ♂, HM; 9.IX.1992, 1 ♂, HM; 10.-13.XI.1993, 2 ♂♂, 18.-20.XI.1993, 1 ♂, HM; 18.-19.I.1994, 1 ♀, ZMA; 20.-23.II.1994, 1 ♂, HM; 2.-7.V.1995, 2 ♂♂, HM; 10.-11.VI.1995, 1 ♂, HM; 10.-14.IV.1997, 1 ♂, HM; 2 ♂♂, MZB; Ibem River, 23.-30.IX.1992, 1 ♂, HM; 9 ♂♂, ZMA; 24.-26.X.1992, 1 ♂, HM; 4.-5.II.1993, 1 ♂, HM; 2.-6.VIII.1993, 1 ♂, HM; 14.-15.IX.1993, 1 ♂, HM; 4.-7.XI.1993, 1 ♂, HM; 3 ♂♂, MZB; 21.-24.III.1994, 1 ♂, HM; 5.V.1995, 4 ♂♂, HM; 17.X.1995, 1 ♂, EMEM; 13.-20.V.1999, 3 ♂♂, HM; Bi River, 21.II.1992, 2 ♂♂, EMEM; 3.IX.1992, 1 ♂, ZMA; 10.-13.VII.1993, 3 ♂♂, HM; 3.-4.VII.1993, 1 ♂, MZB; Dibem River, 30.IX.-3.X.1992, 1 ♂, HM; Ameagi River, 30.XI.-3.XII.1992, 3 ♂♂, HM; 2 ♂♂, MZB; 2 ♂♂, ZMA; 13.XII.1992, 1 ♂, HM; V.-VI.1993, 1 ♂, HM; 13.-15.VI.1995, 1 ♂, HM; 9.-11.V.1995, 1 ♂, HM; Nipsan, 1820 m, Yango River, 5.-6.VI.2000, 1 ♂, HM; Langda, 1.-15.II.1991, 2 ♂♂, HM; 27.-28.III.1999, 2 ♂♂, HM; Bibwe River, 29.XI.1988, 1 ♂, HM; 30.XI.1988, 1 ♂, HM; 5.XII.1988, 1 ♂, HM; 7.XII.1988, 1 ♂, MZB; 14.-25.XI.1989, 1 ♂, MZB; Silme River, 10.-16.IV.1997, 1 ♂, HM; 22.-23.V.1997, 2 ♂♂, HM; 14.-19.VII.1997, 3 ♂♂, HM; 2 ♂♂, MZB; 3.-9.VII.1997, 3 ♂♂, HM; 2 ♂♂, MZB; Langda, Kerabuk, Teri & Minnyo River, 11.I.-14.II.1991, 2 ♂♂, EMEM; 25.II.-13.III.1991, 2 ♂♂, HM; 1.-20.IV.1991, 12 ♂♂, HM; 4 ♂♂, MZB; Teri River, 1.-10.V.1991, 2 ♂♂, EMEM; 4 ♂♂, ZMA; 2.V.1991, 3 ♂♂, HM; 2.-17.IX.1991, 2 ♂♂, EMEM; 8 ♂♂, ZMA; 31.III.1992, 6 ♂♂, ZMA; 20.XI.-10.XII.1991, 1 ♀, MZB; 20.III.1992, 2 ♂♂, ZMA; 31.III.1992, 1 ♀, ZMB; 20.XI.-10.XII.1992, 2 ♂♂, ZMA; Minnyo River, 1.-10.IX.1991, 1 ♂, ZMA; 17.I.-4.II.1992, 4 ♂♂, ZMA; I.1992, 2 ♂♂, ZMA; Silalumnyi & Kumknyi River, 1.-7.XII.1997, 2 ♂♂, HM; Sumtamon, Dirik, 1400 m, Onnyi River, 4.V.1991, 2 ♂♂, HM; Bime, 2.-4.VII.1991, 2 ♂♂, HM; Borme, VII.1999, 1 ♂, HM; 1100 m, Cabunge River, 29.X.1998, 1 ♂, HM; 900 m, Tagime

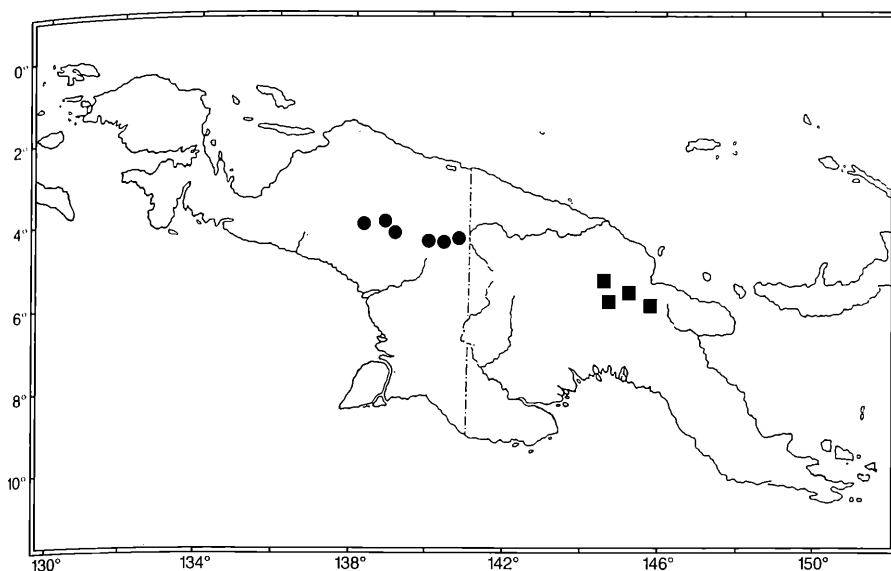
River, 15.XI.2000, 1 ♂, HM; 900 m, Ailme-Wetakime River, 8.II.2000, 1 ♂, HM; Ailme River, VII.1999, 1 ♂, HM; 23.II.2000, 2 ♂♂, HM; Pegunungan Bintang, Kec. Okbibab, Batimban, X.1996, 4 ♂♂, HM; 2 ♂♂, MZB; Sabin, 21.–23.XI.1999, 1 ♂, HM; Borban IV, Atemaka River, 12.XII.1997, 3 ♂♂, HM; Bor River, 19.XII.1997, 2 ♂♂, HM; 2 ♂♂, MZB; Simban, 17.XI.2000, 1 ♂, HM; Okkim River, 23.IX.1991, 1 ♂, EMEM; 1 ♂, MZB; 28.IX.1991, 1 ♂, EMEM; 1.II.1992, 2 ♂♂, EMEM; V.1992, 2 ♂♂, EMEM; XI.1992, 2 ♂♂, HM; I.–II.1995, 2 ♂♂, MZB; 26.–28.II.1995, 1 ♂, EMEM; 29.V.1995, 2 ♂♂, HM; 30.X.1995, 1 ♂, EMEM; 4.VII.1996, 3 ♂♂, ZMA; 24.VIII.1996, 3 ♂♂, ZMA; 21.IX.1996, 1 ♂, HM; 15.IV.1997, 1 ♂, HM; 29.I.1998, 2 ♂♂, HM; 22.IV.1999, 2 ♂♂, MZB; 17.–18.V.1999, 3 ♂♂, HM; 2 ♂♂, MZB; 4.II.2000, 1 ♂, HM; Kutmong, Okbetel, Tup River, 18.VII.1992, 2 ♂♂, HM; 22.VIII.1992, 2 ♂♂, HM; 21.V.1995, 1 ♂, MZB; 22.VIII.1995, 5 ♂♂, ZMA; 10.XI.1995, 9 ♂♂, ZMA; 21.I.1996, 1 ♂, MZB; 2 ♂♂, ZMA; Mong River, 18.VII.1995, 1 ♂, HM; 12.–13.IX.1995, 1 ♂, EMEM; 28.X.1995, 1 ♂, EMEM; 3.XI.1995, 1 ♂, EMEM; 5.XI.1995, 1 ♂, EMEM; 4.–5.I.1996, 1 ♂, HM; 12.III.1996, 2 ♂♂, MZB; 30.VIII.1996, 4 ♂♂, ZMA; 23.IX.1996, 4 ♂♂, HM; 6.I.1997, 1 ♂, HM; 18.I.1997, 2 ♂♂, HM; 25.VI.1999, 1 ♂, HM; Takpalngi River, 22.–26.IV.1995, 1 ♂, HM; 1.V.1995, 1 ♂, HM; 29.X.1995, 2 ♂♂, HM; 10.I.1996, 1 ♂, MZB; 20.I.1996, 8 ♂♂, ZMA; Metup River, 6.I.1997, 8 ♂♂, HM; 3 ♂♂, MZB; 8.IX.1997, 2 ♂♂, HM; Ngupel River, 29.IV.1997, 2 ♂♂, HM; 26.X.1998, 3 ♂♂, HM; 7.I.1999, 2 ♂♂, HM; 3 ♂♂, MZB; 23.III.1999, 2 ♂♂, HM; 17.V.1999, 4 ♂♂, HM; 4.I.2000, 1 ♂, HM; Tepi River, 9.IX.1995, 1 ♂, HM; 20.I.1997, 2 ♂♂, HM; 2 ♂♂, MZB; 24.VII.1998, 1 ♂, HM; Mum River, 14.IV.1997, 2 ♂♂, HM; Palep River, 18.X.1995, 1 ♂, HM; Lukon River, 21.VIII.1995, 12 ♂♂, ZMA; 14.X.1995, 10 ♂♂, ZMA; 2.XI.1997, 1 ♂, HM; 19.–20.III.1998, 1 ♂, MZB; Kutmong, Lukon River, 15.IV.1996, 3 ♂♂, ZMA; Okitapi River, 7.III.1996, 1 ♂, HM; Ngorin River, 27.I.1997, 1 ♂, HM; 24.VII.1997, 2 ♂♂, HM; Ngorin, Dao River, 20.IV.1995, 1 ♂, HM; 6.II.1997, 2 ♂♂, HM; 9.–13.VIII.1997, 2 ♂♂, HM; 17.III.1998, 2 ♂♂, HM; 27.X.1998, 1 ♂, HM; Ngorin, Okkim/Dou River, 26.VIII.1996, 20 ♂♂, ZMA; Kaltimung River, 22.IV.1995, 1 ♂, HM; 17.IX.1996, 2 ♂♂, HM; Yarim River, 10.VIII.1995, 2 ♂♂, MZB; 8.VI.1996, 1 ♂, HM; Sabin, Sikipka, 6.III.1996, 1 ♂, HM; Bipban, Sisilka River, 29.VIII.1996, 2 ♂♂, HM; 1 ♂, MZB; 4 ♂♂, ZMA; Dei River, 11.I.1999, 1 ♂, HM; Kulempong, Raleptina River, 20.VII.1995, 1 ♂, HM; Ferohir, 5.V.1986, 1 ♂, ZMA; Abmisibil, V.1986, 6 ♂♂, ZMA; Abmisibil, Oktanglap River, 1880 m, 29.IV.1985, 1 ♂, ZMA; 9.IX.1985, 2 ♂♂, HM; 10.IX.1985, 1 ♂, ZMA; 11.IX.1985, 1 ♂, MZB; 10.–12.IX.1985, 24 ♂♂, ZMA; 11.–16.IX.1985, 23 ♂♂, ZMA; 11.–14.IX.1985, 1 ♂, ZMA; 15.IX.1985, 2 ♂♂, ZMA; 16.IX.1985, 1 ♂, ZMA; 2.V.1986, 2 ♂♂, ZMA; 17.VII.1987, 1 ♂, MZB; 18.VII.1987, 2 ♂♂, HM; 19.VII.1987, 3 ♂♂, HM; 17.–19.VII.1987, 12 ♂♂, ZMA; 11.III.1988, 3 ♂♂, HM; 20.–22.IX.1992, 3 ♂♂, ZMA; 29.III.1996, 2 ♂♂, HM; 30.III.1996, 1 ♂, HM; 10.IX.1998, 2 ♂♂, HM; Oktero River, 11.IX.1985, 5 ♂♂, ZMA; Okbon River, 26.–29.I.1991, 2 ♂♂, HM 1.–5.VIII.1995, 1 ♂, HM; 2 ♂♂, MZB; 24.–25.VIII.1995, 1 ♂, HM; 2 ♂♂, ZMA; Okpeti River 14.IX.1985, 3 ♂♂, ZMA; 18.IX.1995, 1 ♂, HM; Okebo River, 7.VIII.1997, 1 ♂, HM.

Diagnosis

The newly described subspecies differs from *Delias subapicalis* ORR & SIBATANI, 1985 (PNC Western Highland Province and Chimbu Province) by having the row of three distinct subapical spots very reduced or absent.

Description

Male. Upperside of forewing white with black costa and black border from outside discal cell to tornus. Inner edge of black border evenly curved or more or less straight from M3 to tornus. The specimens from Langda have two small white subapical spots. Nearly all specimens from



Map 1: Distribution of *Delias subapicalis* subspecies

● *Delias subapicalis sibatanii*

■ *Delias subapicalis subapicalis*

the other localities do not have subapical spots. Upperside of hindwing translucent and white with a variable black border. Often a black line (about 2 mm wide) from apex to M2 followed by three black spots at the vein ends M3, Cu1a and Cu1b; on some others it is reduced to a thin line (less than 1 mm wide) followed by some back tips at the vein ends. Underside of forewing with black costa and black border which is much broader than on upperside, absorbing the dc-bar and having an irregular inner edge. Three yellow subapical spots with in a line three small yellow terminal spots and two thin lines along tornus. Discal cell densely covered with grey-black suffusion, leaving some yellow just below the dc-bar. The triangular part from inner margin is white anteriorly, often with a creamy to yellow bloom. Underside of hindwing is brownish black with a white median band from costa to apex, having in each cell part a yellow streak. Inner part with one humeral and three subbasal yellow spots and heavily concentrated yellow suffusion along inner margin. Brownish black border has an undulate inner edge bearing six yellow terminal spots from apex to tornus; the large first and reduced second are more or less rounded, the third, fourth and fifth triangular and the sixth one is (partly) split by thin black line.

Length of forewing: 18–25 mm (average 23.1 mm).

Female. Upperside of forewing white with a golden bloom. Black apex connected with black border which has an evenly curved inner edge and runs from outside discal cell to tornus; two or three subapical spots; dc-bar visible. Upperside of hindwing white and translucent with a silver bloom, and having a more distinct black border than on male. Underside of both wings as on male. However, the females from Pass Valley (Bion River and Ameagi River) are much more

yellow on the underside of forewing than the Langda specimens; the two females from Langda are darker on the underside of the hindwing; the streaks in the cell parts of the white median band are deep yellow to orange.

Length of forewing: 20–24 mm (average 22 mm).

Derivation of name

In honour to Mr. ATUHIRO SIBATANI, who—together with Mr. ALBERT G. ORR—revised the *Delias aroae-cuningputi* complex and contributed many other publications on Lepidoptera of New Guinea.

Delias daniensis spec. nov. (map 2; colour plate III, figs. 1–4)

Material

Holotype ♂: "IRIAN JAYA, Ilu, 3.III.1998", MZB.

Paratypes (2 ♂♂): same data, 1 ♂, ZMA; V.1994, 1 ♂, JFL.

Diagnosis

This species differs from all other members of the *aroae* group by the large yellow subapical and terminal spots on the underside of the forewing and the row of six elongated yellow terminal spots on the underside of the hindwing.

Description

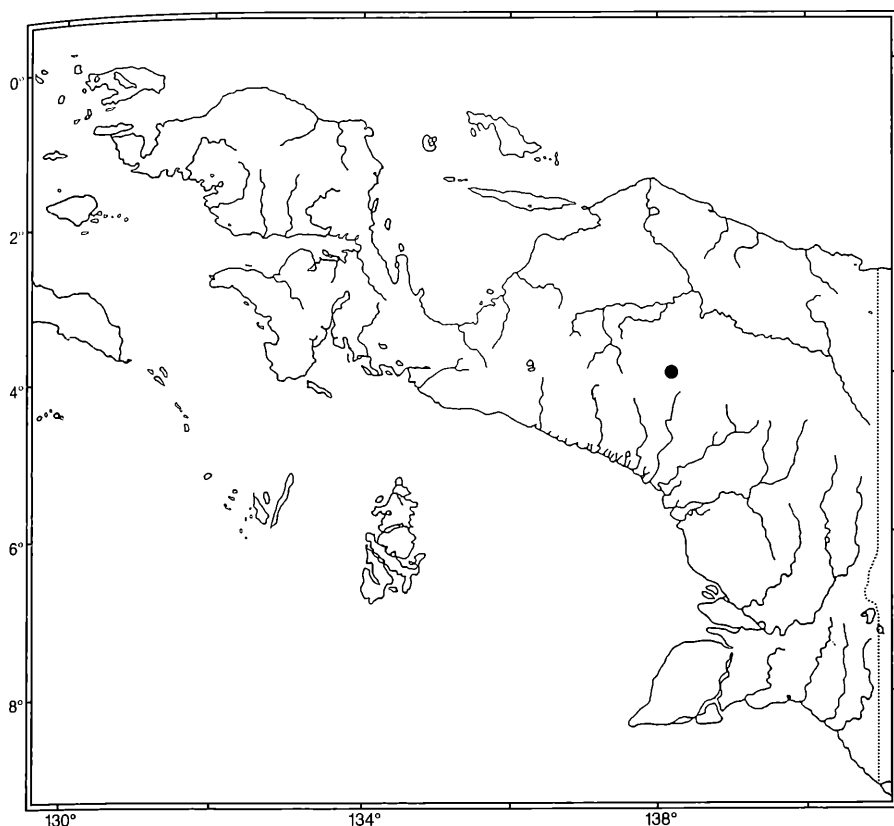
Male. Upperside of forewing white, black costa connected with black border from dc-bar to tornal part of inner margin, bearing three small, elongated subapical dots. Inner edge of black border smooth, slightly entering veins. Some greyish suffusion at basal area. Upperside of hindwing white and translucent with black border from Sc+R₁ to inside cell M₂, followed by three black spots at vein ends of M₃, Cu_{1a} and Cu_{1b}; some greyish suffusion at basal area. Underside of forewing white; black band along costa extending well into discal cell; black border, which is broader than on upperside, with three elongate subapical streaks, followed by five terminal spots, of which the last two are very small. Some grey suffusion in discal cell and cells M₃ and Cu_{1a}. Underside of hindwing greyish black covered with yellow suffusion; a white line along costa. Light median band in holotype is reduced, running from M₁ to inner margin with a yellow streak in each cell. In the two paratypes this band is vestigial, having also some greyish brown suffusion. Inner part with one humeral and three subbasal yellow spots, and heavily concentrated yellow suffusion in 1A+2A connected with postmedian yellow streak. Small large oval to elongate yellow terminal spots separated by black vein with black spot at vein end.

Length of forewing: 20–21 mm.

Female unknown.

Derivation of name

"*daniensis*" is an adjective in apposition, derived from the Dani tribe who occupy the area in which this taxon is found.



Map 2: Distribution of *Delias daniensis*

● *Delias daniensis*

Delias inopinata orri subsp. nov.

(map 3; colour plate III, figs. 5, 6)

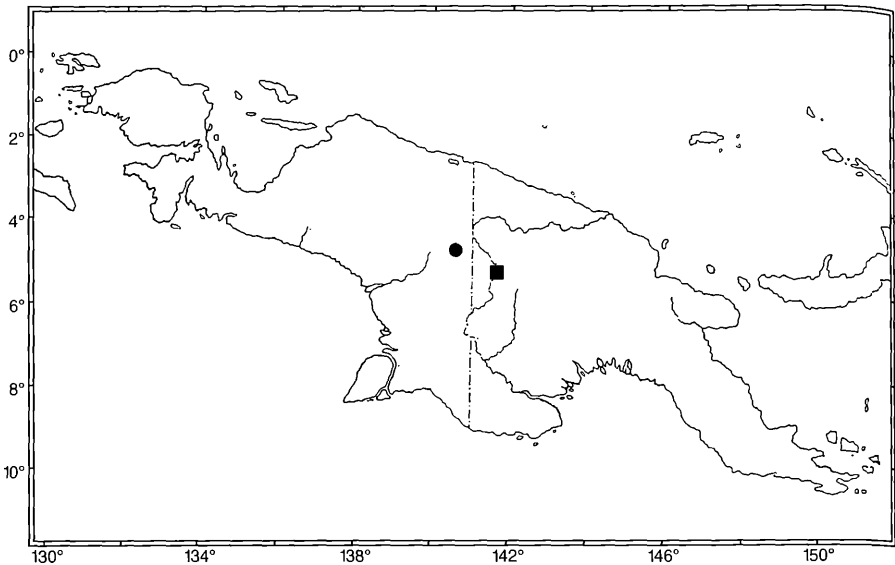
Material

Holotype ♂: "Peg. Bintang, Kec. Okbibab, Abmisibil, Okse River, 14.VI.1997, MZB.

Paratypes (22 ♂♂): same data, 1 ♂, HM; 6.-7.IV.1997, 2 ♂♂, HM; 1 ♂, MZB; 2 ♂♂, ZMA; 29.VI.1999, 8 ♂♂, HM; 2 ♂♂, MZB; 4 ♂♂, ZMA; Okbon River, 26.-29.I.1991, 1 ♂, HM; 1 ♂, ZMA.

Diagnosis

This new taxon belongs to *D. inopinata* LACHLAN, 2000, because the narrow yellow and white



Map 3: Distribution of *Delias inopinata* subspecies

- *Delias inopinata orri*
- *Delias inopinata inopinata*

median crenulate band does not reach the dorsum. However, on the forewing upperside the inner edge of the black border is curved evenly from outside the discal cell to the tornal part of inner margin and along vein M_3 about 2 mm or more distant from dc-bar, instead of a straight inner edge nearly absorbing the dc-bar in *inopinata*.

Description

Male. Upperside of forewing white, black costa connected with black border from outside cell to tornal part of inner margin; inner edge evenly curved, at least 2 mm outside black dc-bar along vein M_3 . Upperside of hindwing white and translucent, with a black border from apex to M_2 followed by black spots at M_3 and Cu_{1a} and black lines at Cu_{1b} and $1A+2A$. Underside of forewing broad black border from black costa to tornal part of inner margin, including the top of the cell. Three yellow subapical spots followed by three small yellow terminal ones. Inner part is creamy with greyish black suffusion, which is very dense in subbasal part, leaving the veins white. Underside of hindwing is brownish black with a white median band from costa to apex, having in each cell a yellow streak. Inner part with one humeral and three subbasal yellow spots and heavily concentrated yellow suffusion along inner margin. Brownish black border with undulate inner edge bearing six yellow terminal spots from apex to tornus; the first and second are more or less rounded, the third, fourth and fifth triangular and the sixth one is (partly) split by thin black line.

Length of forewing: 22–25 mm.

Female unknown.

Derivation of name

In honour of Mr. ALBERT G. ORR, who—together with Mr. ATUHIRO SIBATANI—revised the *Delias aroae-cuningputi* complex.

Alphabetical list of members of *Delias aroae-pheres* subgroup, with synonymy and some comments

Delias angabungana TALBOT, 1928

TALBOT, 1928a: 26, 50; *Delias pheres angabungana*

TALBOT, 1928b: 42; *Delias pheres angabungana*

TALBOT, 1929d: 190; *Delias pheres angabungana*

TALBOT, 1931: 84; *Delias pheres angabungana*

ROEPKE, 1955: 203, 258; *Delias pheres angabungana*

D'ABRERA, 1971: 133; *Delias pheres hyperapproximata*

D'ABRERA, 1977: 133; *Delias pheres hyperapproximata*

ORR & SIBATANI, 1985: 18–19, Figs. 7, 12; *Delias angabungana*

D'ABRERA, 1990: 133; *Delias pheres hyperapproximata*

YAGISHITA, 1993a: 122; *Delias angabungana*

YAGISHITA, 1993b: 110–111; *Delias angabungana angabungana*

TUZOV, 1995: 114; *Delias angabungana*

PARSONS, 1999: 307–308, Pl. 34, figs 849, 850; *Delias angabungana*

Distribution: PNG, Central Province, Angabunga River, Tapini area, Loloipa River.

Delias angiensis TALBOT, 1928

TALBOT, 1928a: 36, 45; *Delias aroae angiensis*

TALBOT, 1928b: 43; *Delias aroae angiensis*

TALBOT, 1929d: 192; *Delias aroae angiensis*

TALBOT, 1937: 592; *Delias aroae angiensis*

ROEPKE, 1955: 205; *Delias aroa* [sic] *angiensis*

ROEPKE, 1955: 257; *Delias argentata angiensis*

D'ABRERA, 1971: 134; *Delias aroa* [sic] *angiensis* (a doubtfully distinct ssp.)

D'ABRERA, 1977: 134; *Delias aroa* [sic] *angiensis* (a doubtfully distinct ssp.)

ORR & SIBATANI, 1985: 14 + figs; *Delias angiensis*

D'ABRERA, 1990: 134; *Delias aroa* [sic] *angiensis* (a doubtfully distinct ssp.)

SCHMITT, 1992: 70; *Delias aroa* [sic] *angiensis*

YAGISHITA, 1993a: 117; *Delias angiensis*

YAGISHITA, 1993b: 106–107; *Delias angiensis angiensis*

TUZOV, 1995: 114; *Delias angiensis*

Distribution: Indonesia, Papua Province: Birds Head, Arfak Mountains, Angi and Angigita Lake (1900–2600 m).

Delias approximata JOICEY & TALBOT, 1922 (colour plate IV, figs. 5, 6)

JOICEY & TALBOT, 1922: 309; *Delias phaeres* [sic] *approximata*

JOICEY & TALBOT, 1924: Pl. VIII, Figs. 5, 6; *Delias phaeres* [sic] *approximata*

TALBOT, 1928a: 26, 46; *Delias pheres approximata*

TALBOT, 1929d: 188–189; *Delias pheres approximata*
 ROEPKE, 1955: 203, 258; *Delias pheres approximata*
 D'ABRERA, 1971: 133 + figs; *Delias pheres approximata*
 D'ABRERA, 1977: 133 + figs; *Delias pheres approximata*
 ORR & SIBATANI, 1985: 15–16, Figs. 3, 14; *Delias approximata*
 D'ABRERA, 1990: 133 + figs; *Delias pheres approximata*
 SCHMITT, 1992: 69; *Delias pheres approximata*
 YAGISHITA, 1993a: 114; *Delias approximata*
 YAGISHITA, 1993b: 102–103; *Delias approximata approximata*
 TUZOV, 1995: 114; *Delias approximata*
 Distribution: Indonesia, Papua Province: from Weyland Mountains (type) via Paniai and Ilaga to Baliem Valley.

Delias approximata ♀ f. *rectimargo* Joicey & Talbot, 1922
 JOICEY & TALBOT, 1922: 310; *Delias phaeres* [sic] *approximata* ♀ f. *rectimargo*
 JOICEY & TALBOT, 1924: Pl. VIII, Fig. 7; *Delias phaeres* [sic] *approximata*
 TALBOT, 1928a: 26, 46; *Delias pheres approximata* ♀ f. *rectimargo*
 TALBOT, 1929c: 189; *Delias pheres approximata* ♀ f. *rectimargo*
 ORR & SIBATANI, 1985: 16, Fig. 15; *Delias approximata* ♀-f. *rectimargo*
 YAGISHITA, 1993a: 114; *Delias approximata* f. *rectamargo*
 TUZOV, 1995: 114; *Delias approximata* f. *rectamargo*
 Distribution: Indonesia, Papua Province: from Weyland Mountains (type) via Paniai and Ilaga to Baliem Valley.

Delias aroae (RIBBE), 1900
 RIBBE, 1900c: 346; *Pieris aroae*
 GROSE-SMITH & KIRBY, 1901: 33, Del. IX, Figs. 4, 5; *Delias aroae*
 ROTHSCILD, 1904a: 314, Pl. II, Fig. 4; *Delias aroae*
 FRUHSTORFER, 1910: 129; *Delias aroae*
 TALBOT, 1928a: 49, 50; *Delias aroae aroae*
 TALBOT, 1929d: 191; *Delias aroae aroae*
 ROEPKE, 1955: 204, 257; *Delias aroa aroa* [sic]
 D'ABRERA, 1971: 133; *Delias aroa aroa* [sic]
 D'ABRERA, 1977: 133; *Delias aroa aroa* [sic]
 ORR & SIBATANI, 1985: 7–11, Fig. 1; *Delias aroae*
 ORR & SIBATANI, 1985: Figs. 17–21; *Delisa* [sic] *aroae*
 D'ABRERA, 1990: 133; *Delias aroa aroa* [sic]
 SCHMITT, 1992: 69; *Delias aroa* [sic]
 YAGISHITA, 1993a: 113; *Delias aroae*
 YAGISHITA, 1993a: 122; *Delias aroea* [sic]
 YAGISHITA, 1993b: 102–103; *Delias aroae aroae*
 TUZOV, 1995: 114; *Delias aroae*
 Distribution: PNG: from Telefomin (in the highlands of Western Province) to almost the eastern end of Owen Stanley Range: both sides of Owen Stanley Range, Mount Wilhelm, Feramin (West Sepik), Mandandurugl near Kerowagi, Kundiawa (Chimbu Province), Karamuki (Madang), Goroka, Aiyura & Okapa (East Highlands Province), Komako near Kaintiba (Gulf Prov-

ince), Naniwe Mission near Menyama, Bulolo (Morobe Province), Mount Suchling (1300–2600 m), border Central, Northern and Milne Bay.

note:

<i>Delias aroae angiensis</i>	see <i>Delias angiensis</i>
<i>Delias aroae balimensis</i>	see <i>Delias balimensis</i>
<i>Delias aroae brumalis</i>	see <i>Delias yabensis</i>
<i>Delias aroae pheres</i>	see <i>Delias pheres</i>
<i>Delias aroae yabensis</i>	see <i>Delias yabensis</i>

Delias balimensis ROEPKE, 1955

ROEPKE, 1955: 203, 257; *Delias aroa* [sic] *balimensis*

D'ABRERA, 1971: 134; *Delias aroa* [sic] *balimensis* (a doubtfully distinct ssp.)

D'ABRERA, 1977: 134; *Delias aroa* [sic] *balimensis* (a doubtfully distinct ssp.)

ORR & SIBATANI, 1985: 11–13, Fig. 16; *Delias balimensis*

D'ABRERA, 1990: 134; *Delias aroa* [sic] *balimensis* (a doubtfully distinct ssp.)

SCHMITT, 1992: 71, Pl. 10, figs. 15, 20; *Delias aroa* [sic] *balimensis*

YAGISHITA, 1993a: 115; *Delias balimensis*

YAGISHITA, 1993b: 104–105; *Delias balimensis balimensis*

NISHIYAMA, Y. & H. ARIMA, 1996: 6, Pl. 1, fig. 2; *Delias balimensis*

TUZOV, 1995: 114; *Delias balimensis*

Distribution: Indonesia, Papua Province: Baliem Valley – 1600–2000 m, east of Mount Trikora.

Delias daniensis spec. nov.

Distribution: Indonesia, Papua Province: Ilu.

Delias endela JORDAN, 1930

JORDAN, 1930: 279; *Delias pheres endela*

TALBOT, 1937: 586–587; *Delias pheres endela*

ROEPKE, 1955: 204, 258; *Delias pheres endela*

D'ABRERA, 1971: 133; *Delias pheres hyperapproximata*

D'ABRERA, 1977: 133; *Delias pheres hyperapproximata*

ORR & SIBATANI, 1985: 19–20, Figs. 8, 25, 26, 32, 33; *Delias endela*

D'ABRERA, 1990: 133; *Delias pheres hyperapproximata*

SCHMITT, 1992: 69, 71, Pl. 1, figs. 14, 19; *Delias bouyssouii*

YAGISHITA, 1993a: 123; *Delias endela*

YAGISHITA, 1993b: 112–113; *Delias endela endela*

TUZOV, 1995: 114; *Delias endela*

PARSONS, 1999: 306–307, Pl. 34–35 figs 851–854; *Delias endela*

Distribution: PNG, Morobe Province, Edie Creek, Westside of Herzog Mountains, 6100 ft, Wau, Kodama Range, Mount Kaindi, Nami Creek, Kunai Creek; Menyama area; Eastern Highlands Province – Kerowagi; Western Highland Province – Waghi River, Nondugl, Lae River, Wapenamanda/Wagab area; Hagen Range Pap Creek, Timina River, Elekanda, Poketamanda. Enga Province – Porgera.

Delias flavissima ORR & SIBATANI, 1985 (syn.: *D. flavissima giselae*)

ORR & SIBATANI, 1985: 21, Fig. 9; *Delias flavissima*

SCHMITT, 1992: 69, Pl. 10, figs. 24, 25; *Delias giselae*

YAGISHITA, 1993a: 120; *Delias flavissima flavissima*

YAGISHITA, 1993a: 120; *Delias flavissima giselae*

YAGISHITA, 1993b: 109; *Delias flavissima flavissima*

YAGISHITA, 1993b: 108–109; *Delias flavissima giselae*

TUZOV, 1995: 114; *Delias flavissima flavissima*

TUZOV, 1995: 114; *Delias flavissima giselae*

PARSONS, 1999: 306–308, Pl. 35, figs 855–856; *Delias flavissima*

Distribution: PNG, Western Highlands Province, 2000–3000 m, Lae River; Chimbu Province, Kerowagi.

note:

SCHMITT's paper is a very weak publication. The author was apparently unaware of SIBATANI & ORR's publication. I, and others, can not detect consistent difference between *D. flavissima* originating from Mt Wilhelm and from Mt Hagen area. Therefore the taxon "*giselae*" is treated as a synonym of '*flavissima*'.

Delias hyperapproximata ROTHSCHILD, 1925

ROTHSCHILD, 1925: 675; *Delias pheres hyperapproximata*

TALBOT, 1928a: 26, 48; *Delias pheres hyperapproximata*

TALBOT, 1929d: 190; *Delias pheres hyperapproximata*

ROEPKE, 1955: 204; *Delias pheres hyperapproximata* [sic]

ROEPKE, 1955: 259; *Delias pheres hyperapproximata*

D'ABRERA, 1971: 133; *Delias pheres hyperapproximata* (incl. *angabungana*, *endela*)

D'ABRERA, 1977: 133; *Delias pheres hyperapproximata* (incl. *angabungana*, *endela*)

ORR & SIBATANI, 1985: 17–18, Figs. 4, 5, 11; *Delias hyperapproximata*

D'ABRERA, 1990: 133; *Delias pheres hyperapproximata* (incl. *angabungana*, *endela*)

YAGISHITA, 1993a: 121; *Delias hyperapproximata*

YAGISHITA, 1993a: 122; *Delias hypyperapproximata* [sic]

YAGISHITA, 1993b: 110–111; *Delias hyperapproximata hyperapproximata*

TUZOV, 1995: 114; *Delias hyperapproximata*

PARSONS, 1999: 306–307, Pl. 34, figs 845–848; *Delias hyperapproximata*

Distribution: PNG, Morobe Province, Rawlinson Mountains, Finistere Range and other mountainous areas of Huon Peninsula.

Delias inopinata inopinata LACHLAN, 2000

Distribution: PNG: Mount Akrik, 15 km NW of Tabubil, Western Province.

Delias inopinata orri subspec. nov.

Distribution: Indonesia, Papua Province: Star Mountains, Kec. Okbibab, Abmisibil, Okse River (south side of range).

Delias kenricki TALBOT, 1937

KENRICK, 1909: 176–177, Pl. VI, Figs. 1, 1a; *Delias fuliginosus*

TALBOT, 1928a: 27, 45; *Delias fuliginosus*
 TALBOT, 1929d: 193–194; *Delias fuliginosus*
 TALBOT, 1930a: Pl. XLII, Fig. 2; *Delias fuliginosus*
 TALBOT, 1937: 587; *Delias kenricki*
 ROEPKE, 1955: 203; *Delias pheres kenricki*
 ROEPKE, 1955: 203; *Delias (pheres) fuliginosus* (= *Delias pheres kenricki*)
 ROEPKE, 1955: 259; *Delias pheres fuliginosus*
 D'ABRERA, 1971: 133 + figs; *Delias pheres kenricki* (= *fuliginosus* [sic])
 D'ABRERA, 1977: 133 + figs; *Delias pheres kenricki* (= *fuliginosus* [sic])
 ORR & SIBATANI, 1985: 21–22, Figs. 22, 23; *Delias kenricki*
 D'ABRERA, 1990: 133 + figs; *Delias pheres kenricki* (= *fuliginosus* [sic])
 SCHMITT, 1992: 69; *Delias kenricki*
 YAGISHITA, 1993a: 124; *Delias kenricki*
 YAGISHITA, 1993a: 124; *Delias kenricki* f. *fuliginosus*
 YAGISHITA, 1993b: 112–113; *Delias kenricki kenricki*
 TUZOV, 1995: 114; *Delias kenricki* (f. *fuliginosus*)
 Distribution: Indonesia, Papua Province: Arfak Mountains.

Delias kenricki ♀ f. *ochraceus* JOICEY & NOAKES, 1915
 JOICEY & NOAKES, 1915: 59; *Delias fuliginosus* [sic] ab. ♀ *ochraceus*
 JOICEY & NOAKES, 1915: Pl. IV; *Delias Fuliginosus* [sic] ab. ♀ *Ochraceus*
 TALBOT, 1928a: 27, 45; *Delias fuliginosus* ♀ f. *ochraceus*
 TALBOT, 1929d: 195; *Delias fuliginosus* ♀ f. *ochraceus*
 TALBOT, 1930a: Pl. XLII, Fig. 3; *Delias fuliginosus* ♀ f. *ochraceus*
 ORR & SIBATANI, 1985: 22, Fig. 24; *Delias kenricki* ♀ f. *ochraceus*
 YAGISHITA, 1993a: 124; *Delias kenricki* f. *ochraceus*
 TUZOV, 1995: 114; *Delias kenricki* f. *ochraceus*
 Distribution: Indonesia, Papua Province: Arfak Mountains.

Delias pheres JORDAN, [1912] (colour plate III, figs. 7, 8)
 JORDAN, [1912]: 588–589; *Delias aroae pheres*
 TALBOT, 1928a: 26, 47; *Delias pheres pheres*
 TALBOT, 1929d: 188; *Delias pheres pheres*
 TALBOT, 1930a: Pl. XLII, Fig. 1; *Delias pheres*
 ROEPKE, 1955: 203; *Delias pheres pheres*
 D'ABRERA, 1971: 133; *Delias pheres pheres*
 D'ABRERA, 1977: 133; *Delias pheres pheres*
 ORR & SIBATANI, 1985: 14–15, Figs. 6, 13; *Delias pheres*
 D'ABRERA, 1990: 133; *Delias pheres pheres*
 YAGISHITA, 1993a: 119; *Delias pheres*
 YAGISHITA, 1993a: 119; *Delias pheres* f. *rectimargo*
 YAGISHITA, 1993b: 108–109; *Delias pheres pheres*
 TUZOV, 1995: 114; *Delias pheres*
 TUZOV, 1995: 114; *Delias pheres* f. *rectamargo* [lapsus?]
 Distribution: Indonesia, Papua Province: Mount Goliath, Langda.

note:

<i>Delias pheres approximata</i>	see <i>Delias approximata</i>
<i>Delias pheres hyperapproximata</i>	see <i>Delias hyperapproximata</i>
<i>Delias pheres kenricki</i>	see <i>Delias kenricki</i>
<i>Delias pheres endela</i>	see <i>Delias endela</i>

Delias subapicalis subapicalis ORR & SIBATANI, 1985

ORR & SIBATANI, 1985: 16–17, Fig. 10; *Delias subapicalis*

YAGISHITA, 1993a: 118; *Delias subapicalis*

YAGISHITA, 1993b: 106–107; *Delias subapicalis subapicalis*

TUZOV, 1995: 114; *Delias subapicalis*

PARSONS, 1999: 307–308, Pl. 34, figs 841–844; *Delias subapicalis*

Distribution: PNG: Central Highlands from Wapenamanda to Kaimantu, headwaters of Lai Wahgi and Ramon Rivers, Mount Kaindi (Morobe Province), near Wau and near Tapini, Mandandurugi & Genibogi (Chimbu Province); Onanunga near Kainantu (East Highlands Province), Unilavava (Unilavava, Unilava, Gailala), above Tapini (Loloipa River, Central Province).

Delias subapicalis sibatani subsp. nov.

Distribution: Indonesia, Papua Province: from Landikma, via Pass Valley, Nipsan and Langda to Abmisibil (Star Mountains).

Delias yabensis JOICEY & TALBOT, 1922 (colour plate IV, figs. 1–4)

JOICEY & TALBOT, 1922: 308–309; *Delias aroae yabensis*

JOICEY & TALBOT, 1924: Pl. VII, Figs. 8, 9; *Delias aroae yabensis*

TALBOT, 1928a: 26, 46; *Delias aroae yabensis*

TALBOT, 1929d: 191; *Delias aroae yabensis*

ROEPKE, 1955: 204; *Delias aroa* [sic] *yabensis* (incl. *brumalis*) (colour plate IV, figs. 7, 8)

ROEPKE, 1955: 203; *Delias aroa* [sic] *brumalis* (?) [sic]

D'ABRERA, 1971: 134; *Delias aroa* [sic] *yabensis*

D'ABRERA, 1977: 134; *Delias aroa* [sic] *yabensis*

ORR & SIBATANI, 1985: 13–14, Figs. 2, 29; *Delias yabensis*

D'ABRERA, 1990: 134; *Delias aroa* [sic] *yabensis*

SCHMITT, 1992: 71, Pl. 10, figs. 5, 10; *Delias aroa* [sic] *yabensis*

YAGISHITA, 1993a: 112; *Delias yabensis*

YAGISHITA, 1993b: 104–105; *Delias yabensis yabensis*

NISHIYAMA, Y. & H. ARIMA, 1996: Pl. 1, fig. 3; *Delias yabensis*

TUZOV, 1995: 114; *Delias yabensis*

Distribution: Indonesia, Papua Province: from Weyland Mountains, Paniai, Arabu and River camp, in central high mountains to PNG border.

Delias yabensis f. *brevifascia* JOICEY & TALBOT, 1922

JOICEY & TALBOT, 1922: 308–309; *Delias aroae yabensis* ♀ f. *brevifascia*

TALBOT, 1928a: 27, 46; *Delias aroae yabensis* ♀ f. *brevifascia*

TALBOT, 1929d: 192; *Delias aroae yabensis* ♀ f. *brevifascia*

ROEPKE, 1955: 204; *Delias aroa* [sic] *yabensis* f. *brevifascia*

ORR & SIBATANI, 1985: 13–14, Fig. 31; *Delias yabensis* ♀ f. *brevifascia*

YAGISHITA, 1993a: 116; *Delias yabensis* f. *brevifascia*

TUZOV, 1995: 114; *Delias yabensis* f. *brevifascia*

Distribution: Indonesia, Papua Province: Paniai, Arabu and River camp.

Discussion

The revision by ORR & SIBATANI (1985–1986) remains the best means of identifying the members of the *aroae-cuningputi* complex. However, the authors recognized that the status of various taxa were uncertain and subject to revision as knowledge advanced. With regard to the *D. aroae* species complex they note “With the exception of *D. subapicalis* which exhibits broad sympatry with *D. aroae*, we could not detect any clear cut signs of speciation, and since the remaining taxa appear to be mostly allopatric we cannot be certain whether the complex represents two or upwards of four species.”

ORR & SIBATANI suggest that *D. approximata* and *D. pheres* might be a single species, flying at slightly higher altitudes than *D. balimensis* and *D. yabensis* where sympatric, and that *D. aroae* could be conspecific with either *D. balimensis* or *D. approximata*. The recent discovery of sympatric populations of *D. aroae* and *D. pheres* in the Star Mountains, PNG (LACHLAN, 2000) confirms the distinction between these two species, however the possibility remains that other closely-related allopatric forms, such as *D. balimensis* and *D. aroae*, are in fact conspecific.

The questions, raised in their publications and the discovery of new members of this complex in recent years are an invitation to scientists to examine this complex in detail.

A note on the uncertain taxon *D. aroae brumalis* (mentioned in TOXOPEUS’ unpublished manuscript and by ROEPKE (1955) ascribed to *yabensis*) is “published in synonymy” and therefore “unavailable”. In this paper the type specimen is figured. The poor condition of the specimen makes comparison difficult. However, the yellowish tint close to the dc-bar raises some doubt and this specimen might belong to the here described *D. subapicalis sibatani*.

Sympatry

Arfak Mts	<i>angiensis, kenricki</i>
Weyland Mts	<i>yabensis, approximata</i>
Tembagapura/Carstensz Peak	<i>approximata</i>
Ilaga-Ilu-Mulia area	<i>yabensis, approximata, daniensis</i>
Baliem Valley	<i>balimensis, approximata, yabensis</i>
Pass Valley	<i>approximata, yabensis, subapicalis</i>
Korupun	<i>approximata, yabensis</i>
Langda/Mt Goliath	<i>pheres, yabensis, subapicalis</i>
Abmisibil/Snow Mts (Papua Prov.)	<i>pheres, yabensis, inopinata, subapicalis</i>
Ok Tedi/Star Mts (P.N.G.)	<i>pheres, aroae, inopinata, flavissima, binniensis</i>
Porgera/Enga	<i>aroae, subapicalis, endela</i>
Mt Hagen	<i>aroae, subapicalis, endela, flavissima</i>
Mt Wilhelm	<i>aroae, subapicalis, endela, flavissima</i>
Mt Kaindi	<i>aroae, endela</i>
Owen Stanley Mts	<i>aroae, angabungana</i>

Alphabetical list of names within *aroae* group

<i>angabungana</i>	<i>Delias angabungana</i>
<i>angiensis</i>	<i>Delias angiensis</i>
<i>approximata</i>	<i>Delias approximata</i>
<i>aroa</i> (misspelling)	<i>Delias aroae</i>
<i>aroae</i>	<i>Delias aroae</i>
<i>aroa</i> (misspelling)	<i>Delias aroae</i>
<i>balimensis</i>	<i>Delias balimensis</i>
<i>binnensis</i>	<i>Delias binnensis</i> (? member of <i>cuningputi</i> subgroup)
<i>brevifascia</i>	<i>Delias yabensis</i> ♀ f. <i>brevifascia</i>
<i>brumalis</i>	<i>Delias yabensis</i> (?)
<i>daniensis</i>	<i>Delias daniensis</i>
<i>endela</i>	<i>Delias endela</i>
<i>flavissima</i>	<i>Delias flavissima</i>
<i>fulginosus</i>	<i>Delias kenricki</i>
<i>fuliginosus</i>	<i>Delias kenricki</i>
<i>giselae</i>	<i>Delias flavissima</i>
<i>hyperapproximata</i>	<i>Delias hyperapproximata</i>
<i>hypperapproximata</i> (misspelling)	<i>Delias hyperapproximata</i>
<i>inopinata</i>	<i>Delias inopinata</i>
<i>kenricki</i>	<i>Delias kenricki</i>
<i>ochraceus</i>	<i>Delias kenricki</i> ♀ f. <i>ochraceus</i>
<i>orri</i>	<i>Delias inopinata orri</i>
<i>phaeres</i> (misspelling)	<i>Delias pheres</i>
<i>phaeres</i>	<i>Delias pheres</i>
<i>rectamargo</i> (misspelling)	<i>Delias approximata</i> ♀ f. <i>rectimargo</i>
<i>rectimargo</i>	<i>Delias approximata</i> ♀ f. <i>rectimargo</i>
<i>sibatani</i>	<i>Delias subapicalis sibatani</i>
<i>subapicalis</i>	<i>Delias subapicalis</i>
<i>yabensis</i>	<i>Delias yabensis</i>

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Explanation of colour plate II (p. 257):

Fig. 1: Upperside of *Delias subapicalis sibatani* (holotype ♂), Pegunungan Bintang, Abmisi-bil, 10.X.1983 in MZB.

- Fig. 2: Underside of *Delias subapicalis sibatani*, as fig. 1.
 Fig. 3: Upperside of *Delias subapicalis sibatani* (paratype ♀), Langda-Kerabuk, Teri River, 20.XI.–10.XII.1991 in MZB.
 Fig. 4: Underside of *Delias subapicalis sibatani*, as fig. 3.
 Fig. 5: Upperside of *Delias subapicalis sibatani* (paratype ♀), Pass Valley, Bion River, 18.–19.I.1992 in ZMA.
 Fig. 6: Underside of *Delias subapicalis sibatani*, as fig. 5.
 Fig. 7: Upperside of *Delias subapicalis sibatani* (paratype ♀), Pass Valley KM 48, Suwagi River, 22.IX.1992 in ZMA.
 Fig. 8: Underside of *Delias subapicalis sibatani*, as fig. 7.

Explanation of colour plate III (p. 259):

- Fig. 1: Upperside of *Delias daniensis* (holotype ♂), Ilu, 5.III.1998 in MZB.
 Fig. 2: Underside of *Delias daniensis*, as fig. 1.
 Fig. 3: Upperside of *Delias daniensis* (paratype ♂), Ilu, 5.III.1998 in ZMA.
 Fig. 4: Underside of *Delias daniensis*, as fig. 3.
 Fig. 5: Upperside of *Delias inopinata orri* (holotype ♂), Peg. Bintang, Abmisibil, Okse River, 14.VI.1997 in MZB.
 Fig. 6: Underside of *Delias inopinata orri*, as fig. 5.
 Fig. 7: Upperside of *Delias pheres* ♂, Peg. Bintang, Abmisibil, Okse River, 29.VI.1999 in HM.
 Fig. 8: Underside of *Delias pheres*, as fig. 7.

Explanation of colour plate IV (p. 261):

- Fig. 1: Upperside of *Delias yabensis* ♂, Peg. Bintang, Abmisibil, 16.III.1983 in HM.
 Fig. 2: Underside of *Delias yabensis*, as fig. 1.
 Fig. 3: Upperside of *Delias yabensis* ♀, Peg. Bintang, Abmisibil, 16.III.1983 in HM.
 Fig. 4: Underside of *Delias yabensis*, as fig. 3.
 Fig. 5: Upperside of *Delias approximata (pheres?)* ♂, Korupun, Asso River, 30.X.–5.XI.1991 in HM.
 Fig. 6: Underside of *Delias approximata (pheres?)*, as fig. 5.
 Fig. 7: Upperside of holotype, labelled *Delias yabensis brumalis*, Indonesia, Papua Prov., North of Baliem Valley, 1350 m, I.–II.1939.
 Fig. 8: Underside of holotype, labelled *Delias yabensis brumalis*, as fig. 7.

1	2
3	4
5	6
7	8

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Colour plate II

MASTRIGT, H. v.: Some notes on the *Delias aroae* Group (Lepidoptera, Pieridae). – *Atalanta* **34** (1/2): 55–73.

Fig. 1: Upperside of *Delias subapicalis sibatani* (holotype ♂), Pegunungan Bintang, Abmisi-bil, 10.X.1983 in MZB.

Fig. 2: Underside of *Delias subapicalis sibatani*, as fig. 1.

Fig. 3: Upperside of *Delias subapicalis sibatani* (paratype ♀), Langda-Kerabuk, Teri River, 20.XI.–10.XII.1991 in MZB.

Fig. 4: Underside of *Delias subapicalis sibatani*, as fig. 3.

Fig. 5: Upperside of *Delias subapicalis sibatani* (paratype ♀), Pass Valley, Bion River, 18.–19.I.1992 in ZMA.

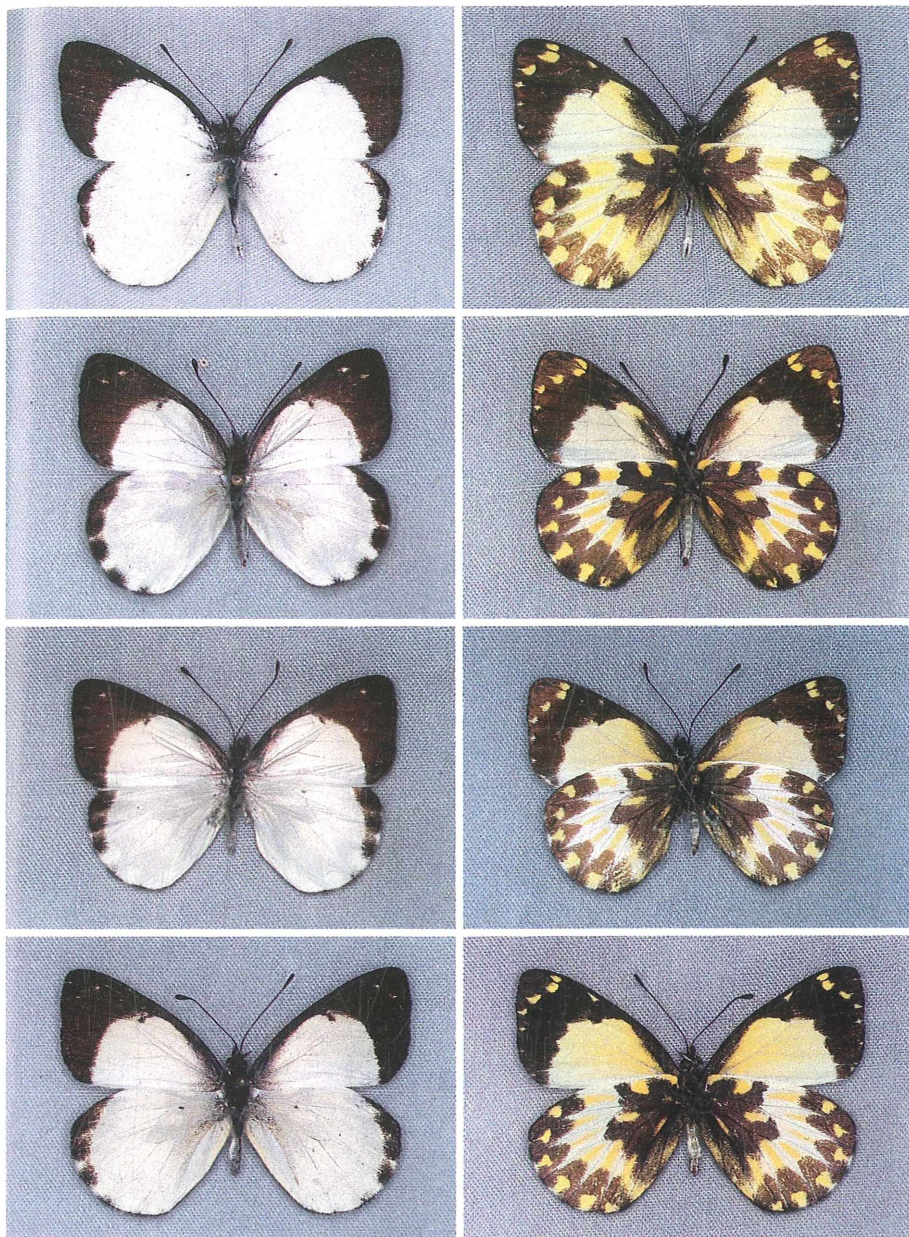
Fig. 6: Underside of *Delias subapicalis sibatani*, as fig. 5.

Fig. 7: Upperside of *Delias subapicalis sibatani* (paratype ♀), Pass Valley KM 48, Suwagi River, 22.IX.1992 in ZMA.

Fig. 8: Underside of *Delias subapicalis sibatani*, as fig. 7.

1	2
3	4
5	6
7	8

Colour plate II



Colour plate III

MASTRIGT, H. v.: Some notes on the *Delias aroae* Group (Lepidoptera, Pieridae). – *Atalanta* **34** (1/2): 55–73.

Fig. 1: Upperside of *Delias daniensis* (holotype ♂), Ilu, 5.III.1998 in MZB.

Fig. 2: Underside of *Delias daniensis*, as fig. 1.

Fig. 3: Upperside of *Delias daniensis* (paratype ♂), Ilu, 5.III.1998 in ZMA.

Fig. 4: Underside of *Delias daniensis*, as fig. 3.

Fig. 5: Upperside of *Delias inopinata orri* (holotype ♂), Peg. Bintang, Abmisibil, Okse River, 14.VI.1997 in MZB.

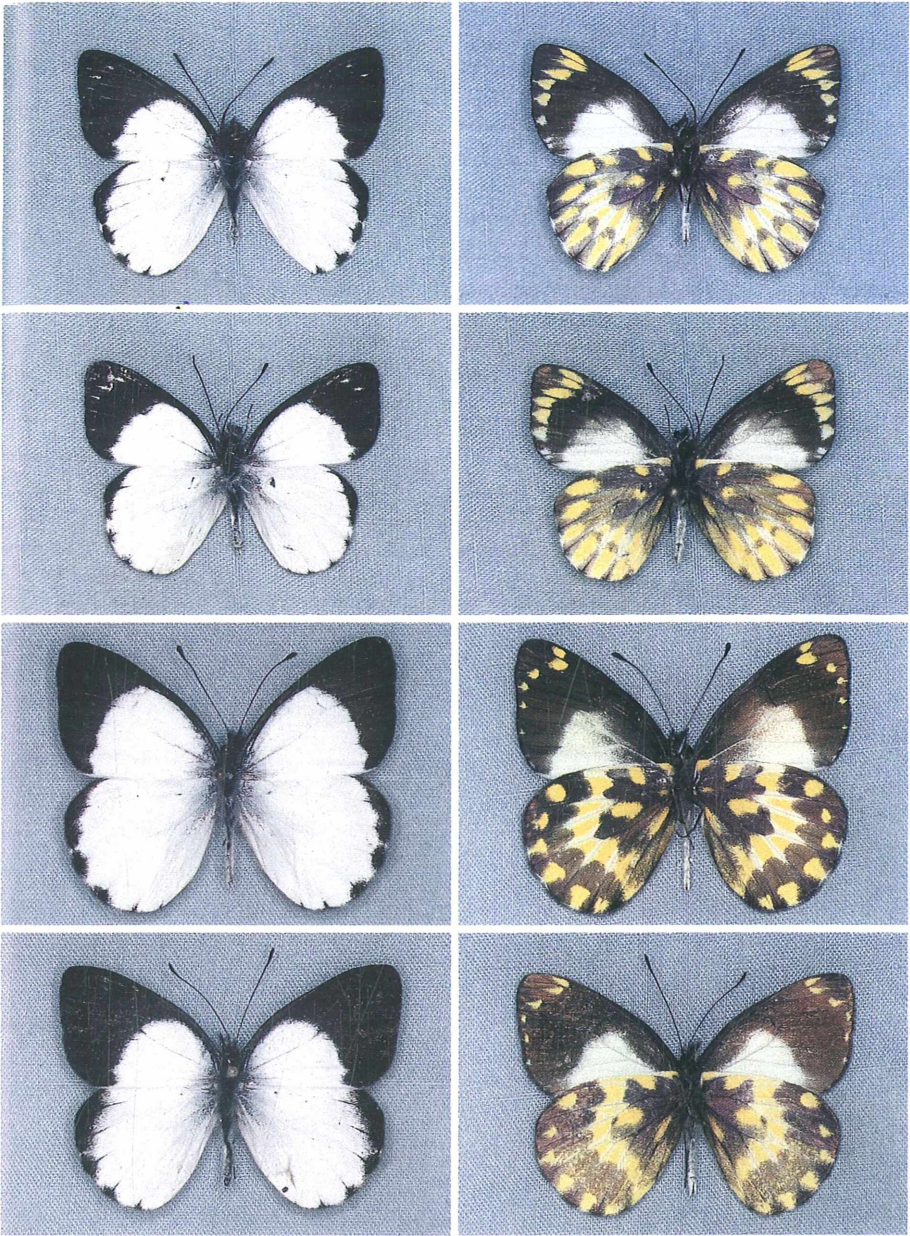
Fig. 6: Underside of *Delias inopinata orri*, as fig. 5.

Fig. 7: Upperside of *Delias pheres* ♂, Peg. Bintang, Abmisibil, Okse River, 29.VI.1999 in HM.

Fig. 8: Underside of *Delias pheres*, as fig. 7.

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5	6
7	8

Colour plate III



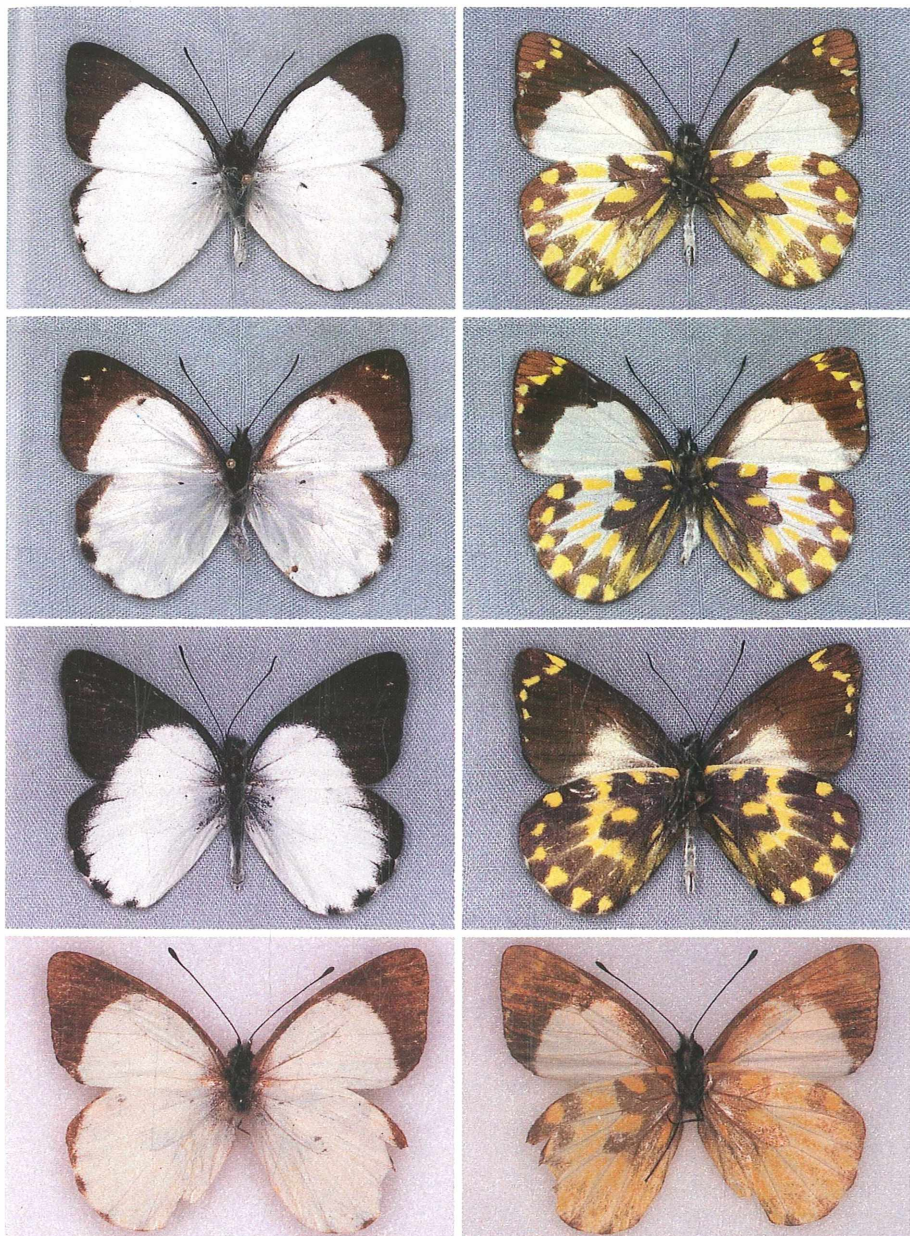
Colour plate IV

MASTRIGT, H. v.: Some notes on the *Delias aroae* Group (Lepidoptera, Pieridae). – *Atalanta* **34** (1/2): 55–73.

- Fig. 1: Upperside of *Delias yabensis* ♂, Peg. Bintang, Abmisibil, 16.III.1983 in HM.
Fig. 2: Underside of *Delias yabensis*, as fig. 1.
Fig. 3: Upperside of *Delias yabensis* ♀, Peg. Bintang, Abmisibil, 16.III.1983 in HM.
Fig. 4: Underside of *Delias yabensis*, as fig. 3.
Fig. 5: Upperside of *Delias approximata* (*pheres?*) ♂, Korupun, Asso River, 30.X.–5.XI.1991 in HM.
Fig. 6: Underside of *Delias approximata* (*pheres?*), as fig. 5.
Fig. 7: Upperside of holotype, labelled *Delias yabensis brumalis*, Indonesia, Papua Prov., North of Baliem Valley, 1350 m, I.–II.1939.
Fig. 8: Underside of holotype, labelled *Delias yabensis brumalis*, as fig. 7.

1	2
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Colour plate IV



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