

A study of *Delias rileyi* from Irian Jaya, Indonesia (Lepidoptera: Pieridae)

HENK VAN MASTRIGT & ATUHIRO SIBATANI

MASTRIGT, H. VAN & A. SIBATANI, 1991. A STUDY OF *DELIAS RILEYI* FROM IRIAN JAYA, INDONESIA (LEPIDOPTERA: PIERIDAE). – *ENT. BER., AMST.* 51 (1): 2-6.

Abstract: The recent acquisition of new material of *Delias rileyi* Joicey & Talbot, 1922, from various localities in the western part of the central mountain ranges of Irian Jaya, Indonesia, leads to the recognition of three subspecies, one of which is here described as new.

Henk van Mastrigt, Kotak pos 25, Wamena 99501, Indonesia.

Atuhiro Sibatani, 31 Kamotutitoyo, Hinooka, Yamasina-ku, Kyoto 607, Japan.

Introduction

The description of *Delias rileyi* Joicey & Talbot, 1922 was based on a single male specimen, collected by the Pratt brothers in the Weyland Mountains in 1921. Since 1976, new material has become available from various areas in the western part of the central mountain range in Irian Jaya (former Dutch New Guinea). *D. rileyi* appears to be very rare from the Weyland Mountains to the southern slopes of the Carstensz Range. However, more eastwards (about 138°E and not 136°E as mentioned by Sibatani and Nishizawa, 1982), *rileyi* is not rare and can be locally common. Until now, no females have been found.

Depositories

- AS – Private collection of Atuhiro Sibatani, Kyoto, Japan
BMNH – British Museum (Natural History), London
BT – Private collection of Bernard Turlin, Andrésy, France
CT – Private collection of Collin G. Treadaway, Limbach, Federal Republic of Germany
HM – Private collection of Henk van Mastrigt, Jayapura

- MZB – Museum Zoologicum Bogoriense, Bogor, Indonesia
TN – Private collection of Takashi Nishizawa, Tokyo, Japan
ZMA – Instituut voor Taxonomische Zoölogie, Zoölogisch Museum, Amsterdam

The identity of *Delias rileyi*

After the original description of *D. rileyi* by Joicey and Talbot (1922) and their illustration of the species in 1924, Talbot repeated the description in his monograph (1929b), along with an additional description of the male genitalia. These descriptions were based on a single male type-specimen from Menoo Valley (Weyland Mountains), taken by the Pratt brothers in 1921.

Roepke (1955) and d'Abrera (1972, 1977) did not mention *D. rileyi*, but recently attention has focussed on this species again after new material was studied by Sibatani & Nishizawa (1982). This material comprises 16 males from Ilu and Mulia and 13 males from Ilaga, collected by T. Nishizawa in 1976/77, and 2 males from "near Paniai", collected by R. Straatman in 1978.

In 1982, Schröder & Treadaway described a new species *Delias yofona* from "Wissel Lake", but Sibatani (1988) regarded *D. yofona* "a local population (or plausibly a good subspecies) of *D. rileyi*".

Our present studies show that the single type-specimen of *D. yofona* does not differ from specimens "from Paniai", which were treated by Sibatani & Nishizawa (1982) as representing an unnamed local population of *D. rileyi*.

Study of *rileyi*-material in collections leads us to recognise three distinct and isolated subspecies (fig. 1).

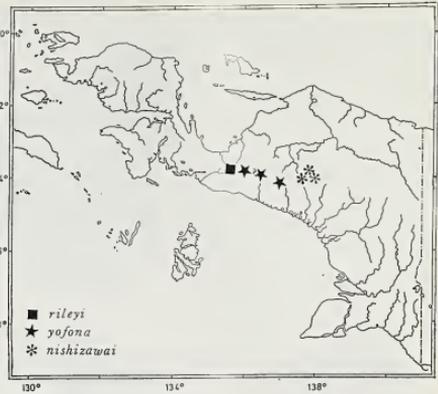


Fig. 1. Distribution of the *Delias rileyi* subspecies.

***Delias rileyi* Joicey & Talbot, 1922**

On the upperside *D. rileyi* is close to *D. cuningputi* (Ribbe, 1900); the underside of the hind wing looks most like *D. lecerfi* Joicey & Talbot, 1922. In general *D. rileyi* can be characterized as follows: Upperside of fore wing proximally for about 1/3 white; sometimes two subapical and two terminal small white spots in broad black border, which is much broader at apex than at tornus. Upperside of hind wing translucent white with black border of variable breadth. Underside of fore wing proximally white; dark brown border narrower than on upperside, with three yellow apical spots and three or four small yellow/white terminal spots. Underside of hind wing dark brown with five golden marginal spots; in each of cells M₁, M₂, M₃, CU₁ and CU₂ a thin golden median streak is in line with a small marginal spot of the same colour; on top of discal cell a golden spot. Costal margin with thin white line, entering on one or two places about 2-4 mm into cell SC+R₁, bearing three golden spots: a very small one in the base, a larger one about 4 mm from the base (not always in white part) and the third one is a stripe along the bottom of the distal one of these white intrusions.

D. rileyi belongs to the *geraldina* group as defined by Talbot (1929a), which currently comprises more than 20 species.

The subspecies of *D. rileyi* have a specific pattern on the underside of hind wing.

Key to subspecies of *Delias rileyi*

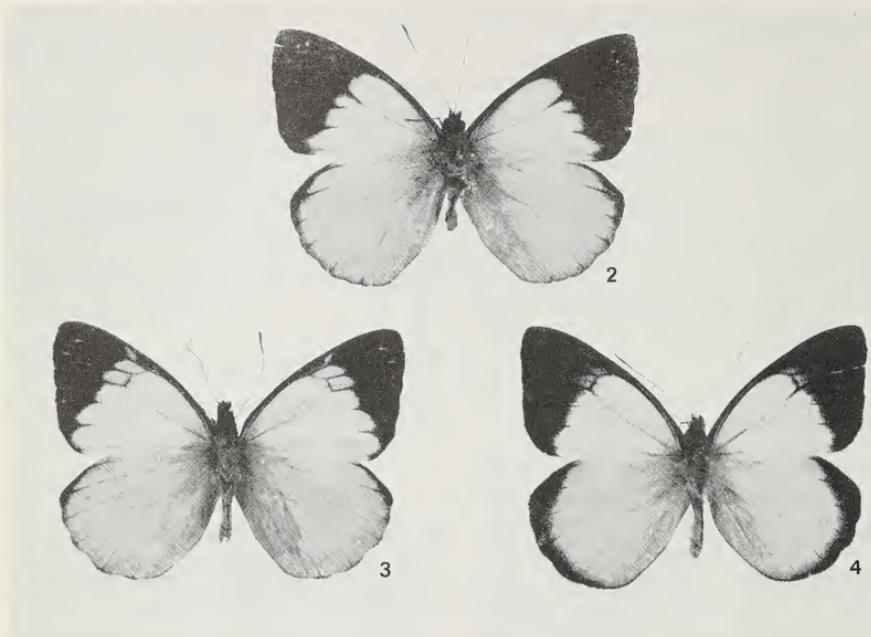
1. Upperside hind wing with broad continuous black border extending from SC+R₁ to ₁A+₂A *D. rileyi nishizawai*
 — Upperside hind wing with partial black border extending only from SC+R₁ to M₁ and with black veintips at M₂, M₃ and CuA₁ 2
2. Underside hind wing and fore wing border dark brown with small yellow points and stripes *D. rileyi rileyi*
 — Underside hind wing and fore wing border gold-brown with larger yellow points and stripes *D. rileyi yofona*

Descriptions of the subspecies

***Delias rileyi rileyi* Joicey & Talbot, 1922**
(Figs. 2 & 5)

Delias rileyi Joicey & Talbot, 1922: 306-307; Joicey & Talbot, 1924: Pl. vii, Fig. 3; Talbot, 1928: 26, 46; Talbot, 1929b: 169-170; Talbot 1932: 82; Sibatani & Nishizawa, 1982: 179-181 (partim); Sibatani, 1988: 81-82 (partim).

Material examined. "Menoo Valley, 6,000 to 8,000 feet, Weyland Mnts, North Dutch New Guinea, January 1921 (Prat Bros.)", ♂ holotype *Delias rileyi*, BMNH; Modio, River Wapai, 29.v.1984, Van Mastrigt, 1 ♂, HM; Modio 1450 m, 30.v.1984, Van Mastrigt, 1 ♂, MZB.



Figs. 2-4. Subspecies of *Delias rileyi*, uppersides of ♂ holotypes. 2, *D. rileyi rileyi*; 3, *D. rileyi yofona*; 4, *D. rileyi nishizawai*. Natural size.

Description

♂. Upperside of fore wing proximally white; black border reaches to black LDC, with two very small white subapical spots. Inner edge of black border serrate. Upperside of hind wing translucent white: pattern of underside partly visible from above. Black border from cell RS until middle of cell M_1 1-2 mm wide; in other cells only some black suffusion on ends of veins. Underside of fore wing proximally white; dark brown border in cells M_3 , CU_1 and CU_2 about 1.5 mm narrower than on upper-side. An irregular white tortuous stripe from costa to vein M_3 , separates broad discocellular bar from reduced brown border, which bears three small yellow subapical spots, followed by one yellow and two or three white terminal spots. From base of discal cell along costa turns a dark yellow streak. Underside of hind wing with very dark brown ground colour.

Length of fore wing: 28-30 mm.
♀. Unknown.

Delias rileyi yofona Schröder & Treadaway, 1982 (Figs. 3 & 6)

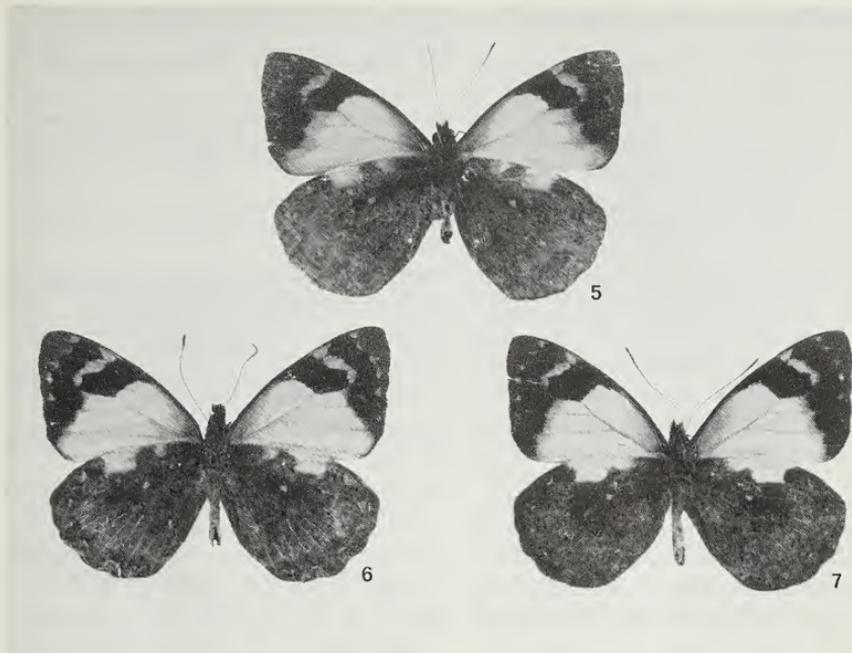
Delias yofona Schröder & Treadaway, 1982: 335-336, Abb. 1

Delias rileyi; Sibatani & Nishizawa, 1982: 179-181, Figs. 3, 4 (partim); Sibatani 1988: 81-82 (partim).

Material examined. "Neuguinea, West Irian, Wissel Lake, 2000 m, v.1980, R. Straatman" ♂ holotype *Delias yofona*; CT; Tuguwai (Paniai) 1850 m, 23.ii.1987, Van Mastrigt, 1 ♂, HM; Tembapura 1850 m, 17.xi.1979, Van Mastrigt, 1 ♂, HM; near Paniai (136° 14'E 3° 55'S, 1740 m), x.1978, R. Straatman, 2 ♂♂, AS; Kamu Valley, ix.1989, Van Mastrigt, 1 ♂, HM.

Description

♂. Upperside of fore wing proximally white; black border about 2 mm narrower than in



Figs. 5-7. Subspecies of *Delias rileyi*, undersides of ♂ holotypes. 5, *D. rileyi rileyi*; 6, *D. rileyi yofona*; 7, *D. rileyi nishizawai*. Natural size.

rileyi rileyi; black veins M_3 and M_2 connect border with black LDC; 2-4 small white subapical and terminal spots. Inner edge of black border serrate. Upperside of hind wing as in *rileyi*. Underside of fore wing proximally white; brown border in cells M_3 , Cu_1 and Cu_2 about 0.5 mm narrower than on upperside. An irregular white tortuous stripe from costa to vein M_3 or sometimes connected with white part, separates broad discocellular bar from reduced brown border, which bears six yellow subapical and terminal spots. A dark yellow streak runs from base of discal cell along costa. Underside of hind wing lighter brown and with more obvious yellow parts.

Length of fore wing: 26-30 mm.

♀. Unknown.

***Delias rileyi nishizawai* subsp. nov.**
(Figs. 4 & 7)

Delias rileyi; Sibatani & Nishizawa, 1982: 179-181, figs. 1, 2 (partim); Sibatani, 1988: 81-82 (partim).

Types. Holotype ♂: "Ilaga, River Namunggun, 2350 m, 27.xi.1988, Agus Murip", ZMA; Paratypes: same data, 1 ♂, ZMA; 2 ♂♂, HM, 2 ♂♂, BT; 2 ♂♂, MZB; same data but 12.xii.88, 1 ♂, HM; 2 ♂♂, BT; Ilaga, 31.iii-4.iv. 1977, T. Nishizawa, 12 ♂♂, TN; 1 ♂, AS; Ilaga, 26.x.1983, Van Mastrigt, 2 ♂♂, HM; same data but 26.iii.1989, 2 ♂♂, ZMA; Ilaga River Nakimo, 2050 m, 2.xi.1985, Van Mastrigt, 1 ♂, ZMA; same data but 5.xi.1985, 1 ♂, HM; same data but 8.xi.1985, 2 ♂♂, HM; Ilaga, 19.v.1988 & 22.v.1988, Van Mastrigt, 2 ♂♂, HM; 2 ♂♂, BT; Ilaga, 10.viii.1988, Agus Murip, 1 ♂, HM; 1 ♂, HM; Ilaga - River Jila, 27.viii.1988, Agus Murip, 1 ♂, HM; same data but 9.iv.1989, 2 ♂♂, MZB; Ilu-Mulia, 1-12.ix.1976, T. Nishizawa, 13 ♂♂, TN, 3 ♂♂, AS.

Description

♂. Upperside of fore wing as in *rileyi rileyi*, but without subapical spots and inner edge of black border smooth, not serrate. Upperside of hind wing translucent white. Black border, which extends from cell RS to $2A$, is broadest in cell M_3 (3 mm), about 1 mm in cell CuA and narrows to both ends. Underside of fore wing proximally white; dark brown border narrower than on upperside: in cell M_3 about 3 mm, in Cu_1 about 2 mm and in Cu_2 about 1 mm. An irregular white tortuous stripe from costa to vein M_3 , sometimes connected with white part, separates broad discocellular bar from reduced brown border, which bears three small yellow subapical spots, followed by one yellow and 2-3 white terminal spots. A dark yellow streak from base of discal cell filling 2/3 of discal cell. Underside of hind wing as in *rileyi rileyi*, only yellow markings more reduced and white parts slightly larger.

Length of fore wing: 26-29 mm (average: 27 mm).

♀. Unknown.

Derivation: In honor to Takashi Nishizawa, who collected *D. rileyi* at Ilaga, Mulia and Ilu in 1977/78 and who – together with A. Sibatani – in 1982 again focussed attention on this species, largely forgotten in the literature.

Acknowledgements

We acknowledge the help of our colleagues of the British Museum of Natural History in London and the Instituut voor Taxonomische Zoölogie (Zoölogisch Museum) in Amsterdam, who allowed us to study material of the *Delias rileyi* ssp., and Mr. T. Nishizawa (Tokyo) and Mr. B. Turlin (Andrésy, France) who showed us their private collections. Thanks are extended also to Mr. C. G. Tread-

way (Limbach) who gave us opportunity to depict the holotype of *D. rileyi yofona*. Special thanks are due to Mr. Ph. Ackery (BMNH) for his advices, corrections and criticism.

Finally we acknowledge Drs. Soemaryoto S., head of Sub Balai Konservasi Sumber Daya Alam Irian Jaya II (subdivision Department of Forestry) who gave permission to the first author to collect and to study butterflies in Irian Jaya.

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Accepted: 3.iv.1990