An illustrated and annotated checklist of *Deudorix* Hewitson, 1863 and *Virachola* Moore, 1881, taxa occurring in North Maluku and Maluku, Indonesia (Lepidoptera: Lycaenidae)

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Abstract: This paper covers the species and subspecies of the lycaenid genera *Deudorix* Hewitson, 1863 and *Virachola* Moore, 1881 that occur in the Indonesian provinces of North Maluku and Maluku. Seventeen described *Deudorix* taxa (8 species) and two *Virachola* taxa (2 species) are recognised as occurring there. We briefly outline the views on the taxonomic status of *Virachola*, treated here as a full genus. The identity of the *Deudorix* taxon *turbo* Fruhstorfer, 1912 is discussed in detail and we conclude that in the absence of any types, *turbo* must be considered as a *nomen dubium*. Eight new taxa are described: *Deudorix epijarbas* ***joyae*** **ssp. n.** (holotype = HT male, RMNH; TL: Halmahera), *Deudorix epijarbas* ***ruthae*** **ssp. n.** (HT male, RMNH; TL: Seram), *Deudorix rathsi* ***terang*** **ssp. n.** (HT male, RMNH; TL: Halmahera), *D. littoralis* ***malutara*** **ssp. n.** (HT male, RMNH; TL: Halmahera), *Deudorix littoralis* ***malpusat*** **ssp. n.** (HT male, RMNH; TL: Seram), *Deudorix parsonsi* ***vicarorum*** **ssp. n.** (HT male, Osaka Museum of Natural History; TL: Halmahera), *Deudorix diovis* ***hoarei*** **ssp. n.** (HT male, NHMUK; TL: Bacan), *Deudorix diovis* ***okuboi*** **ssp. n.** (HT male, Osaka Museum of Natural History; TL: Ambon). We synonymise *Deudorix tenebrosa* Tennent, 2000 with *D. parsonsi* Tennent, 2000, **syn. n.** *D. elioti perbella* Murayama, 1983 and *D. epijarbas timorleste* Lane & Müller, 2006 are synonymised with *D. epijarbas mesarchus*, **syn. n.** The *D. parsonsi* female is formally described. We revive the status of the taxon *affinis* Rothschild, 1915 to *Virachola democles affinis* **stat. rev.** Some new island locality records are introduced, a map shows the islands discussed in the text and all taxa are illustrated in colour. Male genitalia of all the new subspecies are illustrated, along with those of other *epijarbas* species-group taxa found in Maluku. They are shown at approximately 15:1 magnification.

Keywords: Lepidoptera, Lycaenidae, Theclinae, *Deudorix*, *Virachola*, *turbo*, *nomen dubium*, new subspecies, new synonomies, new locality records, Indonesia, North Maluku, Maluku.

Illustriertes und kommentiertes Verzeichnis der Arten von *Deudorix* Hewitson, 1863 und *Virachola* Moore, 1881, die in den Nordmolukken und Molukken (Indonesien) vorkommen (Lepidoptera: Lycaenidae)

Zusammenfassung: Diese Arbeit beschreibt die Arten der Lycaenidengattungen *Deudorix* Hewitson, 1863 und *Virachola* Moore, 1881, die in den indonesischen Provinzen Nordmaluku und Maluku vorkommen. Aus dem Untersuchungsgebiet sind 17 Taxa von *Deudorix* sind (gehörend zu 8 Arten) und 2 Taxa von *Virachola* (2 Arten) bekannt. Wir beschreiben kurz die unterschiedlichen Interpretationen des taxonomischen Status von *Virachola* (von uns als eigenständige Gattung behandelt). Die Identität des *Deudorix*-Taxons *turbo* Fruhstorfer, 1912 wird im Detail diskutiert, und wir interpretieren in Ermangelung irgendwelcher Typenfalter, daß *turbo* als ein *nomen dubium* angesehen werden muß. Acht neue Taxa werden beschrieben: *Deudorix epijarbas* ***joyae*** **ssp. n.** (Holotypus = HT Männchen, in RMNH; TL: Halmahera), *Deudorix epijarbas* ***ruthae*** **ssp. n.** (HT Männchen, RMNH; TL: Seram), *Deudorix rathsi* ***terang*** **ssp. n.** (HT Männchen, RMNH; TL: Halmahera), *D. littoralis* ***malutara*** **ssp. n.** (HT Männchen, RMNH; TL: Halmahera), *Deudorix littoralis* ***malpusat*** **ssp. n.** (HT Männchen, RMNH; TL: Seram), *Deudorix parsonsi* ***vicarorum*** **ssp. n.** (HT Männchen, Osaka Museum of Natural History; TL: Halmahera), *Deudorix diovis* ***hoarei*** **ssp. n.** (HT Männchen, NHMUK; TL: Bacan), *Deudorix diovis* ***okuboi*** **ssp. n.** (HT Männchen, Osaka Museum of Natural History; TL: Ambon). *Deudorix tenebrosa* Tennent, 2000 wird mit *D. parsonsi* Tennent, 2000 synonymisiert, **syn. n.** *D. elioti perbella* Murayama, 1983 und *D. epijarbas timorleste* Lane & Müller, 2006 werden mit *D. epijarbas mesarchus* synonymisiert, **syn. n.** Das unbekannte Weibchen von *D. parsonsi* wird formal beschrieben. Das Taxon *affinis* Rothschild, 1915 bekommt einen revidierten Status als Subspecies: *Virachola democles affinis* **stat. rev.** Einige neue Inselnachweise werden vorgestellt. Eine Karte zeigt die im Text erwähnten Inseln. Alle behandelten Arten werden farbig dargestellt. Die männlichen Genitalarmaturen aller neuen Unterarten werden abgebildet, zusammen mit denen anderer Taxa aus der *epijarbas*-Artengruppe von Maluku (Maßstab ca. 15:1).

Introduction

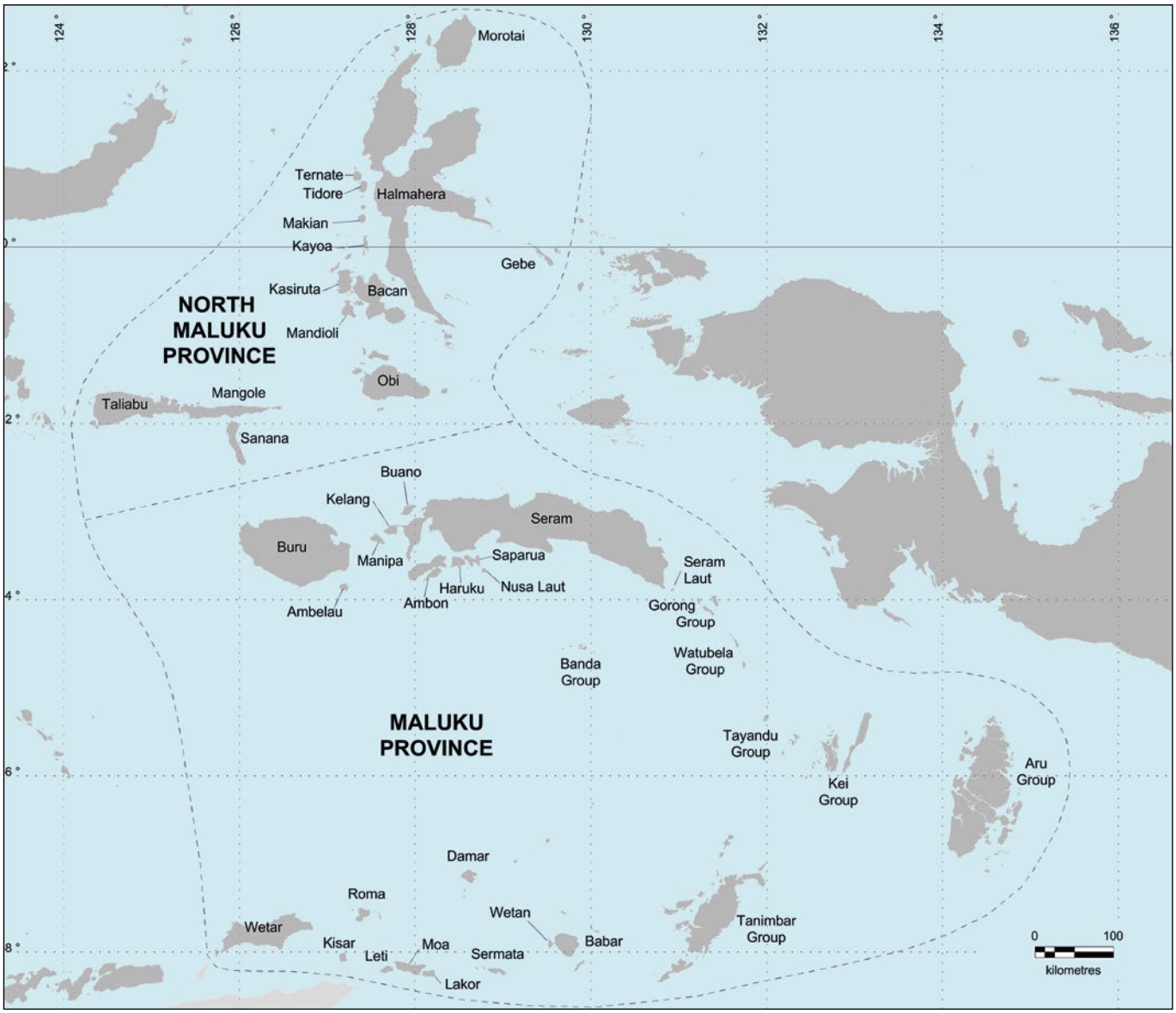
***Deudorix* Hewitson, 1863** and ***Virachola* Moore, 1881** (Lycaenidae, Theclinae, Deudorigini) are the 6th and 7th genera to be published in NEVA in the series on the lycaenid genera of the provinces of North Maluku (Maluku Utara) and Maluku.

- The status of *Virachola* Moore, 1881, sometimes treated as a subgenus or a synonym of *Deudorix*, is discussed and treated here as a distinct genus.
- We discuss the identity of the *Deudorix* taxon *turbo* Fruhstorfer, 1912 and conclude it should be treated as a *nomen dubium*.
- We describe 8 new subspecies, make 3 new synonyms and provide some new island locality records.
- Where available, both surfaces of both sexes of each Maluku taxon are illustrated life-size. Some taxa from outside Maluku are also figured to show differences from the newly described taxa. To reduce the number of plates needed, specimens are illustrated "halved", showing the upperside on the left and the underside on the right. In most cases we have depicted the left half of the butterfly, but where the right side is in significantly better condition, we have shown this and flipped the image to allow easier comparison of similar taxa.

- In order to confirm classification of the new taxa, we dissected the male genitalia of about 35 Maluku *epijarbas* species-group specimens. Examples of the genitalia of all the new subspecies are illustrated, along with those of other *epijarbas* species-group taxa found in Maluku. They are shown at approximately 15:1 magnification.
- For the biogeography of the region see Vane-Wright & Peggie (1994) and Rawlins et al. (2014: 5–8) but for the purposes of this paper we make the following key points:
- The term Maluku is used to include both the Indonesian political Provinces of North Maluku (= Maluku Utara) and Maluku.
- The province North Maluku comprises: the Sula islands, the islands we term "northern Maluku" (see below), Obi and Gebe.
- The province Maluku comprises: the islands we term "central Maluku" (see below), the Gorong, Watubela and Tayandu Island groups, the Banda Islands, the Kei Islands, the islands of Southwest Maluku (including Wetar), the Tanimbar Islands and the Aru Islands.
- We use the biogeographical term "northern Maluku" to mean the islands of Morotai, Halmahera, Ternate, Bacan, Kasiruta and Mandioli and some associated smaller islands.
- The biogeographical term "central Maluku" is used to mean the islands of Buru, Ambelau, Manipa, Kelang, Buano, Seram, Ambon, Haruku, Saparua, Nusa Laut, Geser and Seram Laut.

A map shows the islands of Maluku and North Maluku. The Indonesian western half of the Island of New Guinea along with its associated offshore islands (previously variously known as Irian, Irian Jaya, West Irian, Irian Barat) now consists of two political provinces: West Papua and Papua. We use the term "New Guinea" in its geographical sense to mean the whole island including these two Indonesian Provinces along with the mainland part of the country of Papua New Guinea.

We have examined the collections of the Natural History Museum, London (NHMUK) and specimens and photographs from some other public and private collections.



Map: The islands of North Maluku and Maluku.

Abbreviations used

ANIC	The Australian National Insect Collection, Canberra.
AT	Allotype (= PT).
CARR	Coll. Andrew Rawlins, Rainham, Kent, UK.
CAS	California Academy of Sciences Collection, San Francisco, USA.
CAYI	Collection Akira Yagishita, Ibaraki, Japan.
CCMS	Collection Chris Müller, Sydney, Australia.
coll.	collection.
fw(s)	forewing(s).
FwL	forewing length.
HT	holotype.
hw(s)	hindwing(s).
KSP	Koleksi Serangga Papua, Cenderawasih Universitas (UNCEN), Waena, Papua, Indonesia.
LT	lectotype.
MS	Manuscript.
NARI	National Agricultural Research Institute, Port Moresby, PNG.
NHMUK	The Natural History Museum, London, UK.
OMNH	Osaka Museum of Natural History, Japan.
PD	post-discal.
PNG	The country of Papua New Guinea.
PT	Paratype.
RMNH	Naturalis Biodiversity Center, Leiden, The Netherlands (formerly Rijksmuseum voor Natuurlijke Historie).
SMTD	Senckenberg Museum für Tierkunde, Dresden, Germany.
ssp.	subspecies.
ssp. n.	subspecies nova.
ST	syntype.
stat. rev.	status revivisco (status revived).
syn. n.	new synonym.
TL	Type locality.
uns	underside(s).
ups	upperside(s).

The genera *Deudorix* Hewitson, 1863 and *Virachola* Moore, 1881

Deudorix Hewitson (1863: 16)

Type species: (*Dipsas*) *epijarbas* Moore (1858: 32), by original designation.

Virachola Moore (1881: 104)

Type species: *Deudorix perse* Hewitson (1863: 18, pl. 8, figs 24, 25 ♂, 26 ♀), by original designation.

Note 1: The taxonomic relationship between *Deudorix* and *Virachola*. — Most species of *Deudorix* and *Virachola* are found in the Afrotropical Region. The brief discussion here focuses on the taxa found in the Indo-Australian Region. However, we include some remarks from Stempffer (1967: 99–108) in his excellent work on the genera of African Lycaenidae. Stempffer noted that Karsch (1895: 315–317) and Druce (1891: 364–366) had between them erected 6 genera for African species of *Deudorix* (*sensu* Aurivillius). He added that most modern authors had made use of these genera and had also assigned some species to the Indo-Malayan genus *Virachola*. He noted "There is no African species that agrees precisely in all morphological characters with *Deudorix epijarabas*, and so would fall into typical *Deudorix*." He then placed all species under Karsch and Druce's genera or under *Virachola*. However, on pages 108–109, he discussed in detail the characteristics of Karsch and Druce's genera and concluded "I agree with Aurivillius [1899], who concluded that all these subdivisions of *Deudorix* were at most subgenera or even only simple groups of species." Subsequent authors have treated these genera in various ways. With reference to the Indo-Australian Region, *Virachola* has been variously treated as a distinct genus, a subgenus or a direct synonym of *Deudorix*.

- Fruhstorfer (1912: 263) considered *Virachola* a synonym of *Deudorix*.
- In his Indo-Australian volume Seitz (1926: 998–1001) placed *isocrates* Fabricius, 1793, *perse* Hewitson, 1863 and *smilis* Hewitson, 1863 — all typical *Virachola* species — under *Deudorix*.
- Eliot (1973: 439), in his seminal work on the higher classification of Lycaenidae, split the tribe Deudorigini into two — the *Capys* Hewitson, 1865 and *Deudorix* sections. He included both *Virachola* and *Deudorix* as distinct genera within the latter.
- D'Abrera (1977: 304, 1986: 623, 1990: 304) and Common & Waterhouse (1981: 519, 1982: 296–299) treated *Virachola* as a full, distinct genus. They noted that *Deudorix* is restricted to the Oriental and Australian Regions, whereas *Virachola* is well represented in tropical Africa with a few species in the Oriental and Australian Regions.
- Seki et al. (1991: 94) treated *Virachola* and *Deudorix* as distinct genera noting that *Deudorix* ♂♂ lacked secondary sexual characters, whereas *Virachola* ♂♂ had a single homogenous brand on the ups HW. He recorded 3 *Deudorix* and 3 *Virachola* species from Borneo.
- Eliot *in* Corbet & Pendlebury (1992: 337) treated *Virachola* and *Deudorix* separately, including both within his key to separate the Deudorigini genera. However, on page 339 he noted that *Virachola* was "doubtfully separable from *Deudorix,* the only difference being the possession by the males of a hindwing scent brand at the base of spaces 7 and 6 associated with a hair tuft on the forewing dorsum."
- Ackery et al. (1995: 613) placed *Virachola* as a subgenus of *Deudorix*.
- Parsons (1998: 403, 407 & 409) considered *Deudorix, Rapala* and *Virachola* were all closely related. He speculated that *Virachola* might be considered as a *Deudorix* synonym or a subgenus but in the end treated all 3 as distinct genera, referring to comments by Common & Waterhouse (1981).
- Tennent (2000: 9–10) treated *Virachola* as a synonym of *Deudorix*. Tennent (2002: 78) referred to "the subgenus *Virachola*" and then listed the two Solomon Islands "*Virachola*" species simply as *Deudorix eagon* and *Deudorix wabens* (both described by Tennent 2000).
- Vane-Wright & de Jong (2003: 137) stated that *Deudorix* was "A genus of about 35 species (excluding the African members, many of which are often placed in the genus or subgenus *Virachola* Moore, 1881)".
- Braby (2000: 744–746, 2004: 254–257) included the Australian *Virachola* species — *smilis* and *democles* — under *Deudorix*.
- Tennent & Rawlins (2010: 27) treated *Virachola* as a subgenus of *Deudorix*.
- Treadaway & Schroeder (2012: 44) listed *Virachola* and *Deudorix* as distinct genera.

As can be seen, the status of *Virachola* is largely a matter of opinion. We prefer not to use subgenera and consider that the species generally treated under *Virachola* are sufficiently distinct to warrant retaining the genus *Virachola*. However, we acknowledge that this is just another opinion!

Note 2: Number of species of *Deudorix* and *Virachola*. — There is a considerable discrepancy in the numbers of species given by

different authors. This is partly because of how each author has viewed the status of *Virachola* and the genera erected by Karsch and Druce to hold African *Deudorix* species (*sensu* Aurivillius) – see earlier.

- D'Abrera (1986 [Oriental Region], 1977 & 1990 [Australian Region]) included 7 species of *Virachola* and 18 species of *Deudorix*. In his Afrotropical volume (1980) he listed 27 *Virachola* species but no *Deudorix*, instead listing them under Karsch and Druce's genera – see earlier.
- Parsons (1998: 409) wrote that *Virachola* contained about 30 species and occurred throughout Africa, with only a few species in the Indo-Australian Region. He stated (p. 409) that *Deudorix* contained at least 27 species, mainly in Africa, with 9 species in PNG.
- Tennent (2000: 9) noted that *Deudorix* was "a genus of some 60 described species (including those previously placed in *Virachola* Moore)" ranging from Africa to the western Pacific. However, Tennent (2002: 78) wrote: "A genus of ca. 125 species, which occurs from the Afrotropics to the Oriental, Australian and Pacific Regions."
- As noted above, Vane-Wright & de Jong (2003: 137) considered that there were about 35 species of Indo-Australian *Deudorix*.
- Tennent (2000) described 9 new *Deudorix*/*Virachola* species, and further species and subspecies have been described since.

It is clear *Deudorix* and *Virachola* need further revision across their range, but here we focus just on the taxa found in Maluku.

We estimate there are about 30 species of *Deudorix* and 15 species of *Virachola* in the Indo-Australian Region. In Maluku we have records for 8 species of *Deudorix* and 2 species of *Virachola*.

Note 3: The key works on the Indo-Australian *Deudorix* and *Virachola* taxa. – These include Hewitson (1863), Fruhstorfer (1912), Seitz (1926), d'Abrera (1971, 1977, 1986, 1990), Common & Waterhouse (1981), Corbet & pendlebury (1992), Parsons (1998) and Tennent (2000, 2002).

Annotated checklist of the *Deudorix* taxa of North Maluku and Maluku

Parsons (1998: 403) split the *Deudorix* (excluding *Virachola*) taxa present in PNG into 2 groups: the *epijarbas* species-group and the *epirus* species-group – characterised by creamy uns with striking bands. Both species-groups occur in Maluku. We consider that the northern Maluku taxon *D. novellus* falls outside these species-groups and occupies a separate grouping, along with its sister-species *D. toxopeusi* Tennent et al., 2010 from New Guinea.

The *Deudorix epijarbas* species-group

Members of the *epijarbas* species-group have grey or brown uns with darker bands outlined by white lines. The ups of the ♂♂ are dark brown to black with orange to red patches. Many species are superficially similar, but the species present in Maluku can be separated by subtle differences in pattern, particularly of the uns. ♂♂ can also be identified by diagnostic characters in the genitalia.

- Parsons (1998: 403) considered the group to contain about 14 species, including 3 he referred to as "*Deudorix* species a, b and c". Tennent (2000) described 9 new species of *Deudorix*. These included 7 in the *epijarbas* species-group: *confusa, emira, brilligi, tenebrosa* (= Parsons' "*Deudorix* Species a"), *parsonsi* (= Parsons' "*Deudorix* Species b"), *mulleri*, *rathsi* (= Parsons' "*Deudorix* Species c").
- The other 2 species described were "blue" *Deudorix* (i.e. *Virachola* species) – *eagon* and *wabens*.
- Tennent (2008: 20) described *D. pewcaecus* from New Caledonia.

Thus, the group now contains approximately 20 species; 5 occur in Maluku. Of the Maluku species, 2 – *parsonsi* and *diovis* – have an orange frons. The other 3 – *epijarbas*, *rathsi* and *littoralis* – have a white frons. This feature is very useful for separating taxa.

On the identity of *D. epijarbas turbo* Fruhstorfer, 1912

Fruhstorfer (1912: 266) described *turbo* (just the ♂) as the next taxon after *D. epijarbas megakles* (TL Sulawesi), noting clear differences in *turbo* and *megakles* specimens. We confirm *megakles* represents a valid subspecies of *D. epijarbas* – see later –, and this is widely accepted.

Fruhstorfer wrote: "♂ Oberseits stark verdunkelt, der rotbraune Discalfleck geht nur bis zur hinteren Mediana statt bis zur Zellwand wie bei den übrigen Rassen. Unterseite der Vorderflügel fast ohne Spur von weissen Binden oder Linien." This translates as "♂ upperside strongly darkened, the red-brown discal patch reaching only to the lower median vein instead of to the cell-wall as in the other races. Underside of the forewings almost without a trace of white bands or lines."

Fruhstorfer (1912: 266) gave the "Patria" as "Waigi (Coll. Fruhstorfer), [Key], (Nicéville), Amboina, Halmaheira (Pagenstecher)." Unfortunately, he didn't specify a HT.

Parsons (1991: 121) noted "after an extensive search, the whereabouts of the types of *turbo* are still unknown to me (possibly destroyed)" and Parsons (1998: 405) reiterated "the whereabouts of the types of *turbo* are unknown".

In his first list of types in the Fruhstorfer collection, Talbot (1923: 82), under *Rapala,* included several of the new *epijarbas* subspecies described by Fruhstorfer (1912), including *megakles,* the taxon described just before *turbo*. However, *turbo* was not included.

We have checked the NHMUK without success, and Stefan Schröder (pers. comm., 2018) reported that Fritz Geller-Grimm at the Museum Wiesbaden in Germany, Hesse, stated that they had no *turbo* specimens in the Pagenstecher collection. Schröder suggested that the types may have been lost or destroyed during the 2nd World War. It seems that the types may not be found.

Joicey & Talbot (1916a: 83) described *D. littoralis* and designated a pair from Kapaur, New Guinea, as the HT ♂ (Figs. 45, 101, with genitalia) and AT ♀ (Fig. 32). Both types are in the NHMUK. As discussed below under *D. littoralis,* we consider the ♀ AT is misidentified and is an example of *D. epijarbas concolor* Joicey & Talbot, 1917. Joicey & Talbot compared the *littoralis* ♂ to *woodfordi* (Figs. 86, 87), noting much reduced brown (i.e. orange) on the ups in *littoralis*. They also listed a further 4 ♂♂ and stated: "The co-types have more extended brown on the hind wing". These 4 specimens – 3 from German New Guinea (northern PNG) and 1 from Coastal Geelvink Bay (Fig. 47) – bearing green PT labels, remain in the NHMUK.

The following year, Joicey & Talbot (1917: 220) described *D. concolor* from 1 ♂ from Waigeo. They compared it to *woodfordi* (Figs. 86, 87) and *epijarbas* but made no mention of *littoralis*. The *concolor* HT ♂ is in the NHMUK (Figs. 31, 95, with genitalia). The specimen, which has a white frons, is in poor condition, but

is clearly conspecific with *epijarbas,* and *concolor* is now widely accepted as a subspecies of *epijarbas*. D'Abrera (1977: 302, 1990: 302) listed *concolor* as a synonym of *turbo*. However, Parsons (1998: 404) wrote: "The authentic NG race is *concolor* Joicey & Talbot, 1917", noting that the taxon also occurred in the Bismarcks and Bougainville. Tennent (2006: 40) confirmed this distribution for *D. epijarbas concolor*. We consider *D. epijarbas concolor* is a valid subspecies distinct from most Maluku *epijarbas* populations, but Gorong, Kei and Aru *epijarbas* fall with *concolor* — see later.

Seitz (1926: 999, fig. 161a — the text incorrectly refers to 160a, though later it is corrected to 161a) treated *turbo, concolor* and *littoralis* all as subspecies of *epijarbas*. Seitz illustrated only the ups of the *turbo* ♂ (our Fig. 68). Unfortunately, there is no indication if this is a type specimen, or where it came from, and the painted figure is not conclusive. In the text he noted that *concolor* was very similar to *turbo* but had more extensive ups red patches. He also compared *littoralis* to *turbo* and reported that the fw red patch in *littoralis* was even more reduced than in *turbo*. These observations apply when comparing his *turbo* figure to the *littoralis* and *concolor* ♂ types, but this feature is variable even within *littoralis* and *concolor* populations from one locality.

D'Abrera (1977: 302, 1990: 302) placed *turbo* (with *concolor* a synonym — see earlier) and *littoralis* as subspecies of *D. epijarbas*.

Parsons (1991: 121) recognised that *littoralis* was a distinct species. Parsons (1998: 403) noted that there were clear differences in the genitalia and phenotypes of *epijarbas* and *littoralis,* as well as *woodfordi* and *diovis,* and noted the sympatry of all 4 in the Central Province of PNG.

Parsons (1998: 405) gave the range for *D. littoralis* as "Ambon (possibly also Halmahera), Kai, Waigeo, Sorong and mainland NG".

As we discuss later, the Waigeo and Kei records are doubtful, but we confirm the presence of *D. littoralis* in both northern Maluku (including Halmahera) and central Maluku (including Ambon). These 2 populations are distinct, and we describe them below as new subspecies:

D. littoralis malutara ssp. n. — northern Maluku.

D. littoralis malpusat ssp. n. — central Maluku.

We consider the range for nominotypical *littoralis* is New Guinea and possibly Waigeo — see below.

We have also examined large series of *D. epijarbas* across Maluku and recognise 5 *epijarbas* phenotypes as occurring there, including 2 new subspecies (described below) from northern and central Maluku:

D. epijarbas megakles — Sulawesi Region and within Maluku: Sula Islands and Buru.

D. epijarbas joyae ssp. n. — northern Maluku.

D. epijarbas ruthae ssp. n. — central Maluku (excluding Buru).

D. epijarbas mesarchus — Nusa Tenggara and within Maluku: Southwest Maluku Islands — see later.

D. epijarbas concolor — New Guinea Region (including Waigeo) and within Maluku: Gorong, Kei, Aru.

As noted earlier, Fruhstorfer (1912: 266) gave the "Patria" as "Waigi (Coll. Fruhstorfer), [Key], (Nicéville), Amboina, Halmaheira (Pagenstecher)", without specifying a HT and we have been unable to locate any types.

It is evident that the TLs included by Fruhstorfer must represent at least 3 distinct taxa.

As the first TL given by Fruhstorfer was Waigeo for a specimen(s) in his collection, the description *may* have been based on that. However, this does not really simplify matters as 4 *D. epijarbas* species-group species are recorded from Waigeo:

D. epijarbas Moore, 1858 (ssp. *concolor,* NHMUK ♂ HT: Fig. 31; CCMS: Fig. 33).

D. woodfordi Druce, 1891 (ssp. *woodfordi,* NHMUK: Fig. 88).

D. diovis Hewitson, 1863 (ssp. *diovis*, NHMUK: Fig. 76).

D. parsonsi Tennent, 2000 (ssp. *parsonsi,* NHMUK; CAYI: Fig. 64).

Parsons (1998: 405) recorded Waigeo as part of the assumed range for *D. littoralis.* However, he agreed (pers. comm., 2018) that this sole record was possibly in error. There are no *littoralis* specimens from Waigeo in the NHMUK or in any of the other public or private collections we have examined, though we consider it likely that it occurs there. If *littoralis* is present on Waigeo it is most likely to occur as the nominotypical subspecies, or possibly as a 4th subspecies.

Two ♀♀ from Waigeo previously placed with *D. epijarbas turbo* in the NHMUK are *D. woodfordi* (one is illustrated in Fig. 88). However, we think *woodfordi* is an unlikely candidate for the identity of *turbo* as there are no *woodfordi* records from anywhere in Maluku (or anywhere outside the New Guinea Region). Also, the yellowish-orange horseshoe, rather than circle or square, around the uns hw black tornal spot is diagnostic of *woodfordi*, and unlikely to have been missed by Fruhstorfer and Seitz, had it been present in Fruhstorfer's *turbo* specimens.

D. diovis is very different from the other 3 species — having an orange frons and the ♂ has much brighter and lighter orange ups patches. Also, the configuration of the hw uns PD band is highly distinct, being well disjunct/stepped at vein 7.

D. parsonsi was not described until 2000, but it also has an orange frons and does not match Fruhstorfer's description "Underside of the forewings almost without a trace of white bands or lines."

Therefore, it seems that *turbo* represents either *epijarbas* or *littoralis* (despite no confirmed record of *littoralis* from Waigeo).

Parsons (1991: 121) noted "It is possible that *littoralis* is a synonym of the earlier named *turbo* ...".

Parsons (1998: 405) noted that the original description of *turbo* by Fruhstorfer appeared to be applicable to *littoralis,* adding that, as the *turbo* types had not been located, the name *littoralis* should still stand (*D. littoralis* was described 4 years after *turbo* by Joicey & Talbot 1916a).

We agree that Fruhstorfer's brief description seems marginally more applicable to nominotypical *littoralis* than *epijarbas,* but it is inconclusive. Also, the fact that the TLs listed by Fruhstorfer must encompass at least 3 taxa, renders the determination of the identity of *turbo* impossible (unless any types are found).

Thus, we consider that ***turbo* Fruhstorfer, 1912** is a ***nomen dubium.***

Deudorix epijarbas (Moore, 1858)

Dipsas epijarbas: Moore (1858: 32); TL: Kanara, India — see note 1.

= *Thecla epijarbas:* Boisduval, MS; unpublished name.

= *Aphnaeus epijarbas:* Doubleday (1847: pt 2, 26) — *nomen nudum* — see note 1.

Range: Widespread in the Oriental, Australian and western Pacific Regions including Pakistan, India, Nepal, Bangladesh, Sri Lanka, Andaman & Nicobar Islands, Myanmar, Thailand, Laos, Vietnam, S. China, Taiwan, Peninsular Malaysia, Indonesia, Borneo, Palawan, Philippines, New Guinea, Bismarcks, Bougainville, Australia (NHMUK; Rawlins, 2007 — see notes 2 & 3).

Note 1: Moore (1858) described both sexes of *epijarbas* under *Dipsas* recording a ♂ from Canara (now called Kanara), a ♀ from N. India and a 2nd ♂ from Darjeeling. He noted: "*Thecla Epijarbas,* Boisduval, MS." — an unpublished name — and "*Aphnaeus Epijarbas,* Doubleday, List Lep. Brit. Mus. pt. II. p. 26." Doubleday (1847) merely listed "*APHNAEUS Epijarbas*" referring the name to Boisduval's manuscript. He did not describe or illustrate the taxon

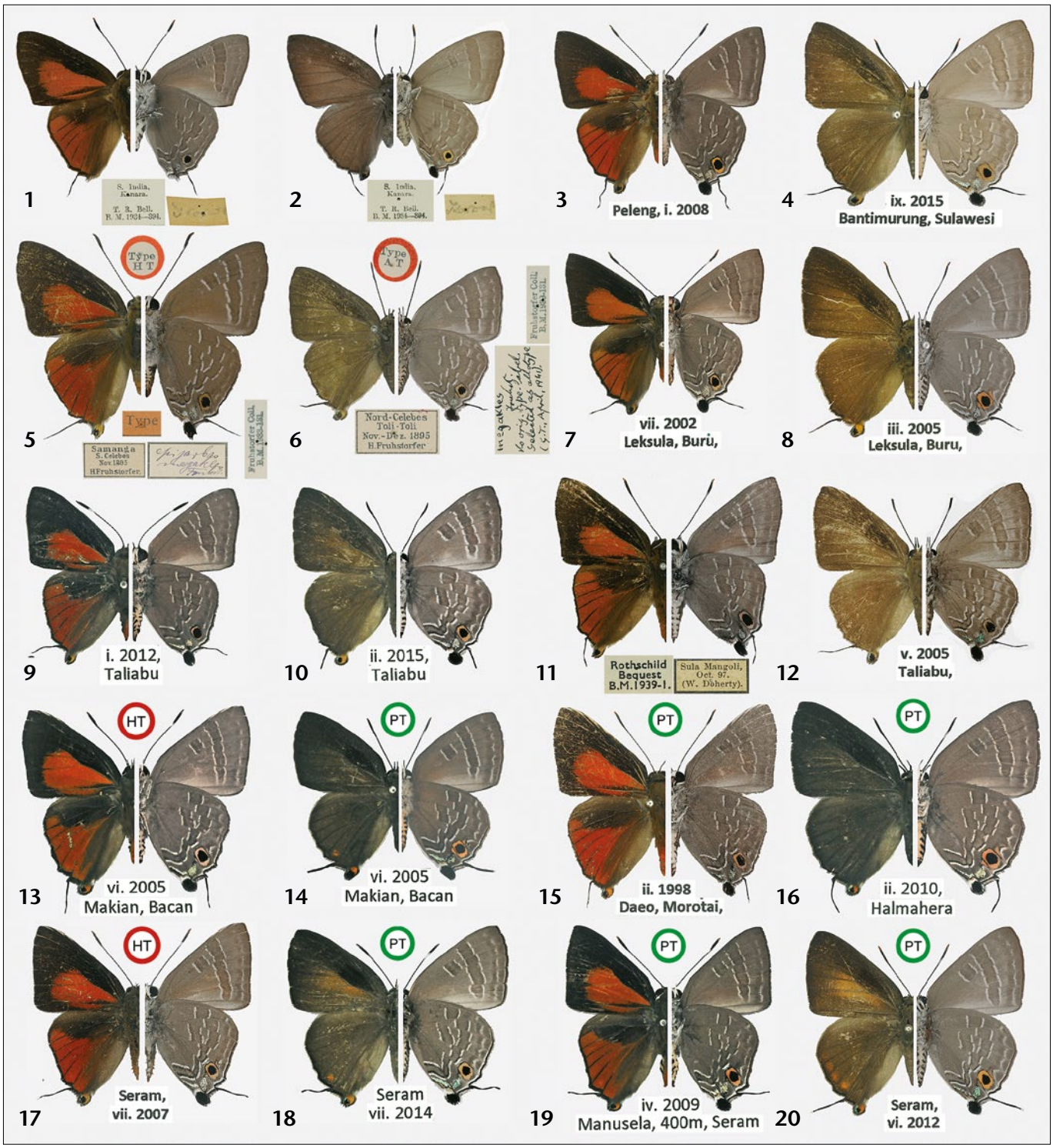
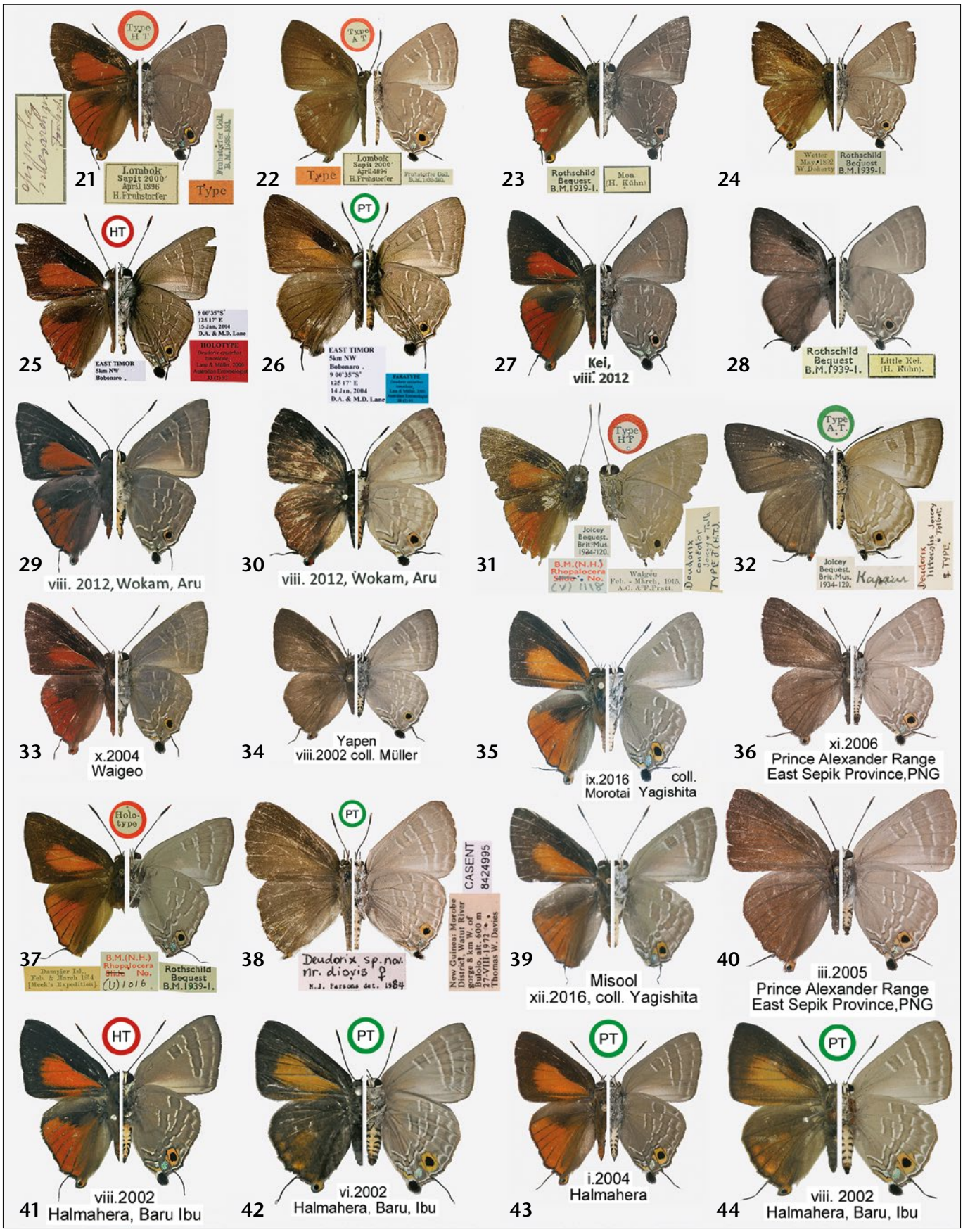


Plate 1, Figs. 1–20: Subspecies of ***Deudorix epijarbas***. — **Figs. 1–2:** *D. e.* ***epijarbas:*** **1:** ♂, ups./uns., S. India (Kanara, T. R. Bell, B. M. 1934–394, NHMUK). **2:** ♀, ups./uns., S. India (Kanara, T. R. Bell, B. M. 1934–394, NHMUK). — **Figs. 3–12:** *D. e.* ***megakles*****: 3:** ♂, ups./uns., Peleng (i. 2008, CARR). **4:** ♀, ups./uns., Sulawesi (Bantimurung, ix. 2015, CARR). **5:** ♂, HT, ups./uns., Sulawesi (Samanga, S. Celebes, xi. 1895, H. Fruhstorfer, NHMUK). **6:** ♀, AT, selected by Tite (1941), ups./uns., Sulawesi (Nord-Celebes, Toli-Toli, xi.–xii. 1895, H. Fruhstorfer, NHMUK). **7:** ♂, ups./uns., Buru (Leksula, vii. 2002, CARR). **8:** ♀, ups./uns., Buru (Leksula, iii. 2005, CARR). **9:** ♂, ups./uns., Taliabu (i. 2012, CARR). **10:** ♀, ups./uns., Taliabu (ii. 2015, CARR). **11:** ♂, ups./uns., Mangole (Sula Mangoli, x. [18]97, W. Doherty, NHMUK). **12:** ♀, ups./uns., Taliabu (v. 2005, CARR). — **Figs. 13–16:** *D. e.* ***joyae*** **ssp. n.: 13:** ♂, HT, ups./uns., Bacan (Makian, vi. 2005, RMNH). **14:** ♀, PT, ups./uns., Bacan (Makian, vi. 2005, CARR). **15:** ♂, PT, ups./uns., Morotai (Daeo, ii. 1998, CARR). **16:** ♀, PT, ups./uns., Halmahera (ii. 2010, CARR). — **Figs. 17–20:** *D. e.* ***ruthae*** **ssp. n.: 17:** ♂, HT, ups./uns., Seram (vii. 2007, RMNH). **18:** ♀, PT, ups./uns., Seram (vii. 2014, CARR). **19:** ♂, PT, ups./uns., Seram (Manusela, 400 m, iv. 2009, CARR). **20:** ♀, PT, ups./uns., Seram (vi. 2012, CARR). — For all plates: NHMUK specimen photographs are © Trustees of the Natural History Museum London, reproduced with permission.

Plate 2, Figs. 21–44: ***Deudorix epijarbas*** and ***D. rathsi.*** — **Figs. 21–34:** Subspecies of *D.* ***epijarbas***. — **Figs. 21–26:** *D. e.* ***mesarchus:*** **21**: ♂, HT, ups./uns., Lombok (Sapit, 2000', iv. 1896, H. Fruhstorfer, NHMUK). **22:** ♀, AT, ups./uns., Lombok (Sapit, 2000', iv. 1896, H. Fruhstorfer, NHMUK). **23:** ♂, ups./uns., Moa (H. Kühn, NHMUK). **24:** ♀, ups./uns., Wetar (Wetter, v. 1892, W. Doherty, NHMUK). **25:** ♂, ups./uns., East Timor (*timorleste* HT = *mesarchus*, 5 km NW Bobonaro, 15 i. 2004, D. A. Lane & M. D. Lane, ANIC). **26:** ♀, ups./uns., East Timor (*timorleste* PT = *mesarchus*, 5 km NW Bobonaro, 14. i. 2004, D. A. Lane & M. D. Lane, currently coll. D. A. Lane, destined for ANIC). — **Figs. 27–34:** *D. e.* ***concolor:*** **27:** ♂, ups./uns., Kei (viii. 2012, CARR). **28:** ♀, ups./uns., Kei (Little Kei, H. Kühn, NHMUK). **29:** ♂, ups./uns., Aru (Wokam, viii. 2012, CARR). **30:** ♀, ups./uns., Aru (Wokam, viii.



2012, CARR). **31:** ♂, HT, ups./uns., Waigeo (Waigeu, II.–III., 1915, A. C. and F. Pratt, B.M.(N.H.) Rhopalocera No. (V) 1118, NHMUK). **32:** ♀, ups./uns., New Guinea (*littoralis* AT = *epijarbas*, Kapaur, NHMUK). **33:** ♂, ups./uns., Waigeo (X. 2004, CCMS). **34:** ♀, ups./uns., Yapen (VIII. 2002, CCMS). — **Figs. 35–44:** Subspecies of *D. rathsi:* — **Fig. 35:** *D. rathsi* ?ssp.: ♂, ups./uns., Morotai (IX. 2016, CAYI). — **Figs. 36–40:** *D. r.* ***rathsi:*** **36:** ♀, ups./uns., New Guinea (Prince Alexander Range, East Sepik, PNG, XI. 2006, CCMS). **37:** ♂, HT, ups./uns., Karkar (Dampier Isl. II. & III. 1914, Meek's Expedition, B.M.(N.H.) Rhopalocera No. (V) 1016, NHMUK). **38:** ♀, PT, ups./uns., New Guinea (Morobe District, Watut River gorge, 8 km W.of Bulolo, alt. 600 m, 27. VIII. 1972, Thomas W. Davies, CAS). **39:** ♂, ups./uns., Misool (XII. 2016, CAYI). **40:** ♀, ups./uns., New Guinea (Prince Alexander Range, East Sepik, PNG, III. 2005, CCMS). — **Figs. 41–44:** *D. r.* ***terang*** **ssp. n.: 41:** ♂, HT, ups./uns., Halmahera (Baru, Ibu, VIII. 2002, RMNH). **42:** ♀, PT, ups./uns., Halmahera (Baru, Ibu, VI. 2002, CARR). **43:** ♂, PT, ups./uns., Halmahera (I. 2004, CCMS). **44:** ♀, PT, ups./uns., Halmahera (Baru, Ibu, VIII. 2002, CARR).

and therefore this is a *nomen nudum*. He noted specimens from Silhet and N. India. As Parsons (1998: 404), we are unaware of the location of the type. We illustrate a pair from Kanara (Figs. 1, 2).

Note 2: Rawlins (2007: 26) gave the range for *D. epijarbas* in detail and listed the islands in Indonesia where it is known to occur.

Note 3: The *Deudorix epijarbas* species-group taxa on New Caledonia, Fiji, Samoa and Tonga are now considered to be distinct species so these islands are not included in the range for *D. epijarbas*.

Note 4: There have been approximately 18 subspecies of *epijarbas* previously described. Seki et al. (1991: 95) synonymised 10 of these subspecies with the nominotypical. The species needs reviewing across its full range, but that is beyond the scope of this paper.

Note 5: The name *turbo* has generally been assigned to *D. epijarbas* in Maluku, but as discussed above, we consider *turbo* to be a *nomen dubium*. The populations of *D. epijarbas* in northern and central Maluku (excluding Buru) are distinctive and are described below.

Five subspecies of *D. epijarbas* occur in Maluku.

Deudorix epijarbas megakles Fruhstorfer, 1912

(Fig. 3: ♂, Peleng; Fig. 4: ♀, Sulawesi; Fig. 5: ♂ type, Sulawesi; Fig. 6: ♀ type, Sulawesi; Fig. 7: ♂, Buru; Fig. 8: ♀, Buru; Fig. 9: ♂, Taliabu; Fig. 10: ♀, Taliabu; Fig. 11: ♂, Mangole; Fig. 12: ♀, Taliabu; Fig. 89: ♂, Sulawesi, with genitalia; Fig. 90: ♂, Taliabu, with genitalia.)

Deudorix epijarbas megakles: Fruhstorfer (1912: 266); TL: north & south Sulawesi — see note 1.

Range: Sulawesi Region — Sulawesi, Talaud, Kalao, Banggai Islands, Sula Islands (politically N. Maluku) — Mangole, Sanana (NHMUK). — **New records:** Buton (2 ♂♂, viii. 2001), Peleng in the Banggai Islands (1 ♂, i. 2008; 1 ♂, vi. 2012), Taliabu in the Sula Islands (1 ♂, vii. 2003 CCMS; 1 ♀, v. 2005; 2 ♂♂, i. 2012; 1 ♂, i. 2013; 1 ♀, ii. 2015), Buru — see note 3 (Leksula: 1 ♀, ii. 2000; 3 ♂♂, vii. 2002; 1 ♂, viii. 2002; 1 ♀, iii. 2005) (all CARR unless otherwise stated).

Note 1: Fruhstorfer (1912) described *megakles* from north and south Sulawesi. He noted that the taxon differed on the uns from all known island races by the prominent and broad white edging of the transverse (i.e. PD) bands of the wings. The ♂ HT & ♀ "AT" are in the NHMUK (Figs. 5, 6)

Note 2: Seki et al. (1991: 95) synonymised *megakles* (and another 9 subspecies) with nominotypical *epijarbas*. However, Vane-Wright & de Jong (2003: 137) treated *megakles* as a valid subspecies, as do we. The uns ground colour of Sulawesi specimens is variable. We include *D. epijarbas* from the Sula Islands (Figs. 9–12) with *megakles*, although the uns of Sula ♀♀ is *usually* darker and has more contrasted markings than Sulawesi specimens.

Note 3: There is 1 ♂ in the NHMUK that bears the label: "Mt. Mada, Buru, 3000', Sept. [18]98. (Dumas)." Tennent & Rawlins (2010: 13) questioned the reliability of this label, and subsequently Rawlins & Cassidy (2016: 149) and Tennent (2016: 128) concluded that some of the specimens in the NHMUK with this label are not from Buru, but rather from Morotai, and this specimen conforms with the northern Maluku phenotype. We have examined recent specimens from Buru consistent with the *D. epijarbas megakles* phenotype and have dissected 2 ♂♂ which exhibit typical *epijarbas* genitalia.

Deudorix epijarbas joyae ssp. n.

(Fig. 13: ♂ HT, Bacan; Fig. 14: ♀ PT, Bacan; Fig. 15: ♂ PT, Morotai; Fig. 16: ♀ PT, Halmahera; Fig. 91: ♂ PT, Halmahera, with genitalia.)

Holotype ♂: Indonesia, Maluku Utara, Bacan, Makian, vi. 2005 (RMNH).

Paratypes (51 ♂♂, 12 ♀♀): **Morotai:** Daeo: 3 ♂♂, ii. 1998; 1 ♂, Daeo, i. 2003 (all CARR). — **Halmahera:** 1 ♂, 1 ♀, Baru, Ibu, iv. 2002; 1 ♀, Baru, Ibu, iv. 2002; 3 ♂♂, Baru, Ibu, viii. 2002; 3 ♂♂, x. 2002; 1 ♂, xi. 2002; 4 ♂♂, 3 ♀♀, Baru, Ibu, ix. 2004; 1 ♂, iv. 2007; 8 ♂♂, 2 ♀♀, ii. 2010; 10 ♂♂, iii. 2016 (all CARR). — **Bacan:** 3 ♂♂, 2 ♀♀, viii. 2000; 4 ♂♂, Makian, xii. 2003; 1 ♂, 1 ♀, v. 2004; 1 ♀, viii. 2004; 3 ♂♂, 1 ♀, Makian, vi. 2005 (all CARR); 1 ♂, Batchian, Hewitson Coll., 79-69, *Deudorix epijarbas*. — 7. (NHMUK); 3 ♂♂, Batchian, iii. 1892, W. Doherty, Rothschild Bequest, B.M. 1939-1. (NHMUK). — **Kasiruta:** 1 ♂, vi. 2005 (CARR).

Etymology: named for the first author's niece, Joy.

Range: endemic to northern Maluku — Morotai, Halmahera, Bacan, Kasiruta.

Diagnosis and description

♂: FwL 18–20 mm (HT: 19 mm).

(Figs. 13 [HT], 15, 91, with genitalia.)

Upperside: fw very dark brown with elongated median patch of bright orange (slightly brighter than in *ruthae* and *megakles*), occupying much of spaces 1a and 1b, more than half of space 2 and part of space 3 adjacent to cell. Hw base, costa and dorsum dark brown, remainder of wing bright orange. A tail at vein 2. Tornal lobe with outer half black, inner half orange, partially rimmed with short, narrow strip of light metallic blue along edge closest to space 1b.

Underside: deep grey. Narrowly white-edged, irregular PD bands on both wings, approximately parallel to termen. A narrowly white-edged, cell end bar on both fw and hw. A faint, narrow submarginal band of straightish white markings on fw; on hw, more articulated, in spaces 3–7. A prominent, sub-rounded, black spot in space 2 of tornal area, rimmed with an approximate rectangle of yellowish-orange. Short, narrow streaks of yellowish-orange parallel to the long sides of the "rectangle" are present in spaces 1b and 3.

A distorted, 'S'-shaped, pale metallic turquoise green (in some specimens this is turquoise blue) band usually extending from dorsum to the basal margin of the tornal spot. In the HT the section in space 1a is replaced by white.

In some specimens (including the HT) the turquoise band is faintly and narrowly bordered distally with yellow along all or part of its length. Tornal lobe black, rimmed basally with white.

♀: FwL 18–22 mm.

(Figs. 14, 16.)

Upperside: fw deep grey (darker than in *joyae* and *megakles*) but blackened from costa (base to termen) to vein 4 and including whole of cell, as well as along termen. Hw uniformly deep grey, but occasional specimens have an orange spot in space 2 close to termen (e.g. Fig. 14). Tail and tornal lobe as in ♂.

Underside: as ♂ (i.e. with deep grey ground colour — darker than in *joyae* and *megakles* ♀♀), but submarginal white markings more conspicuous, and the yellowish-orange surrounding tornal spot slightly more extensive.

Note: For key differences between this new subspecies and *megakles* and *ruthae,* see note below.

Deudorix epijarbas ruthae ssp. n.

(Figs. 17 & 92, with genitalia: ♂ HT, Seram; Fig. 18: ♀ PT, Seram; Fig. 19: ♂ PT Seram; Fig. 20: ♀ PT, Seram.)

Holotype ♂: Indonesia, Maluku, Seram, VII. 2007 (RMNH).

Paratypes (59 ♂♂, 22 ♀♀): **Seram:** 1 ♂, Puncak 9, Piliana, VII. 1997; 2 ♀♀, VII. 2002; 4 ♂♂, VIII. 2002; 3 ♂♂, VII. 2007; 1 ♂, 1 ♀, I. 2009; 1 ♂, Manusela, 400 m, IV. 2009; 1 ♂, Manusela, 400 m, VI. 2009; 3 ♂♂, 1 ♀, IX. 2010; 2 ♂♂, 1 ♀, Piliana, X. 2011; 6 ♂♂, 5 ♀♀, VI. 2012; 1 ♂, 2 ♀♀, VII. 2014; 4 ♂♂, VI. 2015; 7 ♂♂, 3 ♀♀, III. 2016; 1 ♂, 2 ♀♀, VI. 2016 (all CARR); 1 ♀, Ceram, Hewitson Coll., 79-69, *Deudorix epijarbas*. – 6.; 1 ♀, Central Ceram, Manusela, 6000 ft., X. & XI. [19]'19, C.F. & J. Pratt, 2.20, Joicey Bequest. Brit. Mus. 1934-120. (both NHMUK). – **Ambon:** 1 ♂, VII. 1996 (CCMS); 1 ♂, Hila, 17. X. 1992; 2 ♂♂, Salahuto, 25. IV. 1993; 3 ♂♂, Mt. Tuna, VII. 2002; 7 ♂♂, VII. 2015; 5 ♂♂, XI. 2015 (all CARR); 1 ♂, Amboin, Doleschall, Felder Colln., Rothschild Bequest, B.M. 1939-1.; 1 ♀, same labels as previous, but also: *D. diovis* Hew. (both NHMUK). – **Haruku:** 4 ♂♂, 1 ♀, V. 2006 (all CARR). – **Saparua:** 1 ♀, II. 2003 (CARR).

Etymology: named for the first author's niece, Ruth.

Range: endemic to central Maluku – Seram, Ambon, Haruku, Saparua.

Diagnosis and description

♂**:** FwL 17–20 mm (HT: 19 mm).

(Figs. 17, 92, with genitalia [HT], 19.)

Upperside: fw very dark brown with elongated median patch of orange (similar to *megakles*, but slightly less bright than in *joyae*), occupying most of spaces 1a and 1b, more than half of space 2 and extending weakly into space 3. Hw base, costa and dorsum dark brown, remainder of wing orange as fw. A tail at vein 2. Tornal lobe with outer half black, inner half orange, partially rimmed with short, narrow strip of light metallic blue along edge closest to space 1b.

Underside: deep grey. Narrowly white-edged, irregular PD bands on both wings, approximately parallel to termen. A narrowly white-edged, cell end bar on both fw and hw. A faint, narrow submarginal band of straightish white markings on fw; on hw, v-shaped in space 3. A prominent, sub-rounded, black spot in space 2 of tornal area, rimmed with an approximate rectangle of deep yellow. Short, narrow streaks of yellow parallel to the long sides of the "rectangle" are present in spaces 1b and 3. An irregular 'S'-shaped band of pale metallic turquoise green (in some specimens this is turquoise blue) band extending from dorsum to the basal margin of the tornal spot.

The turquoise band is faintly and narrowly bordered distally with yellow along all or part of its length. Tornal lobe black, rimmed basally with white.

♀**:** FwL 18–22 mm.

(Figs. 18, 20.)

Upperside: fw three-toned, blackish area from costa (base to termen) to vein 4 and including whole of cell; remainder of termen and dorsum dark grey; a well-developed, elongated median patch of light orange-brown occupying parts of spaces 1b, 2 and 3 closest to cell (this patch not present in *megakles* or *joyae*). Hw uniformly dark grey-brown, with a small orange patch near termen in space 2 and more commonly additional patches along termen in spaces 3, 4 and sometimes space 5. Tail and tornal lobe as in ♂.

Underside: as ♂ but with lighter grey ground colour (lighter than *joyae* ♀♀) and with submarginal white markings better developed and more arcuate in shape.

Note: The key differences separating *joyae*, *ruthae* and *megakles* are:

- The ♂ ups fw orange patch is slightly brighter in *joyae* than in *ruthae* and *megakles*.
- The ♂ uns ground colour is similar in *joyae* and *ruthae,* but some *megakles* specimens have a more chocolate tinge to the dark grey.
- The ♀ ups in *joyae* is very dark brown (darker than *ruthae* and *megakles*) and usually has no orange markings, but occasional specimens (2 of 14 examined — 1 is illustrated in Fig. 14) have a small round orange spot near the termen in space 2 of the hw. The *megakles* ♀ ups is very similar, but lighter brown, whilst *ruthae* has clearly developed orange-brown patches on the fws and always an orange spot near the termen in space 2, but usually further spots in spaces 3 and 4 and sometimes in space 5. We have examined more than 20 *ruthae* ♀♀. Fig. 20 depicts a typical *ruthae* specimen, whilst Fig. 18 is a specimen with unusually reduced ups markings.
- The ♀ uns ground colour in *joyae* is as dark as in the ♂, whilst it is paler in *ruthae,* and often paler still in *megakles*.

Deudorix epijarbas mesarchus Fruhstorfer, 1912

(Fig. 21: ♂ HT, Lombok; Fig. 22: ♀ AT, Lombok; Fig. 23: ♂, Moa; Fig. 24: ♀, Wetar; Fig. 25: ♂, *timorleste* HT = *mesarchus*, East Timor; Fig. 26: ♀, *timorleste* PT = *mesarchus*, East Timor; Fig. 93: ♂, Lombok, with genitalia.)

Deudorix epijarbas mesarchus: Fruhstorfer (1912: 266); TL: Lombok — see note 1.

= *Deudorix epijarbas timorleste:* Lane & Müller (2006: 100, figs. 15–18); TL: Bobonaro, East Timor, **syn. n.** — see note 3.

= *Deudorix elioti perbella:* Murayama (1983: 40, figs. 8, 18); TL: Flores, **syn. n.** — see note 4.

Range: Lombok, Adonara, Timor, Wetar, Moa (NHMUK), Flores (Fruhstorfer 1912, Murayama 1983) — see note 1. — **New record:** Tanimbar Islands (1 ♂, Selaru Island, III. 2016, CAYI).

Note 1: Fruhstorfer (1912) described *mesarchus* but did not specify the sex or number of specimens examined. He recorded that it was smaller than the subspecies on Java and Borneo and that the uns was brighter, more clearly whitish lined, with larger green and orange coloured stripes and rings. He noted the "Patria" as "Lombok auf 2000' H. Fruhstorfer leg. Sumbawa, Bali (Doherty)". The *mesarchus* ♂ HT and ♀ AT (= PT) are in the NHMUK (Figs. 21, 22). Fruhstorfer added that according to Röber there was a race on Flores, with the yellowish cell brightened in the ♀♀. — See notes 3 & 4.

Note 2: Seki et al. (1991: 95) synonymised *mesarchus* (and another 9 subspecies) with nominotypical *epijarbas* without giving any reason. Rawlins (2007: 27) treated *mesarchus* as a valid subspecies.

We recognise that the *epijarbas* species-group needs a thorough revision across its full range. We have been unable to locate and examine the *epijarbas* type, however we have compared the *mesarchus* types with *epijarbas* specimens from Kanara in India (the *epijarbas* TL) (Figs. 1, 2). We consider there are differences, not-

ably in the uns hw yellow-ringed black tornal spot. Therefore, we maintain *mesarchus* as a valid subspecies.

Note 3: Lane & Müller (2006: 100) described a new subspecies of *epijarbas* from 3 ♂♂ & 3 ♀♀ from East Timor – *D. epijarbas timorleste* (TL Bobonaro [= Bobonaru]).

The NHMUK holds 5 ♂♂ & 4 ♀♀ from Timor – 3 ♂♂ & 1 ♀ from Dili, East Timor, and 2 ♂♂ & 3 ♀♀ from Oinainisa (in the western Indonesian half of Timor Island). These specimens, along with others from Wetar, Moa and Adonara, have been included in the series of *mesarchus*. We have compared the *timorleste* ♂ HT and a ♀ PT and the NHMUK Timor *epijarbas* with specimens from Lombok. The uns are indistinguishable. We also find no consistent differences on the ♂♂ ups. The features noted by Lane & Müller to separate *timorleste* ♂♂ – the shade and extent of the ups orange-red, especially below the fw anal vein – seem to be variable amongst other specimens from Timor.

On the ♀ ups, the degree of orange-brown suffusion in the centre of the fw and along the hw termen tends to be more in Timor and Wetar specimens, but 2 of the Timor ♀♀ are no different from Lombok ♀♀.

Therefore, we consider *D. epijarbas timorleste* is a synonym of *D. epijarbas mesarchus.*

Note 4: Murayama (1983) described *perbella* as a subspecies of *Deudorix elioti* Corbet, 1940. He noted a HT ♂ and 1 PT ♂. He provided figures of both surfaces. His plate key indicates the HT ♂ is illustrated. However, the figures of the ups (fig. 8) and uns (fig. 18) look like different specimens. Takanami (1986: 13, fig. 37) changed the status of the taxon to *D. epijarbas perbella* and pointed out that Murayama's figured HT "♂" was a ♀. Takanami illustrated a ♀. We have examined specimens (CARR) and photographs of *epijarbas* from Flores and find them indistinguishable from some Lombok and Timor specimens – see note 3 above.

Deudorix epijarbas concolor Joicey & talbot, 1917

(Fig. 27: ♂, Kei; Fig. 28: ♀, Kei; Fig. 29: ♂, Aru; Fig. 30: ♀, Aru; Figs. 31 & 95, with genitalia: ♂ HT, Waigeo; Fig. 32: ♀, *littoralis* AT = *concolor*, New Guinea; Fig. 33: ♂, Waigeo; Fig. 34: ♀, Yapen; Fig. 94: ♂, Yapen, with genitalia; Fig. 96: ♂, Aru, with genitalia.)

> *Deudorix concolor:* Joicey & talbot (1917: 220); TL: Waigeo – see note 1.

Range: Kei – see note 2 –, Waigeo (the HT), New Guinea (NHMUK), Bismarcks (including New Britain, New Ireland and the St. Matthias Group), Bougainville (Parsons 1998). – **New records:** Gorong (5 ♂♂, ii. 2003, CARR – see note 3), Aru (2 ♂♂, viii. 2008; 2 ♂♂, 1 ♀, Wokam Island, viii. 2012, CARR – see note 4; Trangan Island, K. Nagai, pers. comm.), Yapen (1 ♂, ii. 2003, CARR; 1 ♀, viii. 2002, CCMS).

Note 1: Joicey & talbot (1917) described *concolor* from 1 ♂ from Waigeo. They compared the ups to *woodfordi* (Figs. 86, 87) and the uns to *epijarbas,* noting some specific differences. The rather damaged *concolor* HT ♂ is in the NHMUK (Figs. 31, 95).

Note 2: Kei *epijarbas* (Figs. 27, 28) have generally been treated along with other Maluku populations as *turbo,* which we consider to be a *nomen dubium*. Kei specimens differ from central and northern Maluku populations described above, but match *concolor* from Aru and the New Guinea Region, so are included here.

Note 3: We have not been able to examine any ♀♀ from Gorong Island, but the ♂♂ seem indistinguishable from Kei, Aru and New Guinea Region ♂♂, so we also include the Gorong population with *concolor*.

Note 4: We have examined 4 ♂♂ (2 illustrated in Figs. 29, 96, with genitalia) & 1 ♀ (Fig. 30) *epijarbas* species-group specimens from Aru in CARR. Dissection of 3 of the ♂♂ confirms them as *D. epijarbas* and phenotypically they match the *concolor* HT and other *D. epijarbas concolor* specimens from New Guinea.

Deudorix rathsi Tennent, 2000

(Nominotypical: Fig. 36: ♀, New Guinea; Figs. 37 & 97, with genitalia: ♂ HT, New Guinea; Fig. 38: ♀ PT, New Guinea; Fig. 39: ♂, Misool; Fig. 40: ♀, New Guinea; Fig. 98: ♂, New Guinea, with genitalia.) The ♀ PT photo is courtesy of CAS – see acknowledgements.

> *Deudorix rathsi:* Tennent (2000: 20, figs. 13, 28, 39); TL: Karkar (= Dampier Island), PNG – see note 1.
> = "*Deudorix* Species c": Parsons (1998: 406, pl. XIV, pl. 62, figs. 1710–1713, pl. 63, figs. 1714–1715) – see note 1.

Range: Maluku (see ssp. *terang* below) and nominotypical subspecies from the New Guinea Region: Karkar (= Dampier), Manam (= Vulcan) (NHMUK), New Guinea (CAS, CAYI, CCMS – see note 2). – **New record:** Misool (1 ♂, xii. 2016, CAYI).

Note 1: Parsons (1998) discussed "*Deudorix* Species c" from a ♂ from Karkar (= Dampier), a ♂ from Manam (= Vulcan) (both in the NHMUK) and a pair from near Bulolo, mainland PNG (CAS). He noted that these were the only specimens known at the time and stated that the taxon had previously been confused with *D. epijarbas,* but Rothschild (1915: 395) had treated it as *Deudorix woodfordi.* Tennent (2000) gave the name *D. rathsi* to these 4 specimens and designated the Karkar (Dampier) ♂ in the NHMUK the HT (Figs. 37, 97, with genitalia). We also illustrate the ♀ PT in CAS (Fig. 38).

Note 2: Since these publications, more *epijarbas* species-group specimens have been recognised as *rathsi.* Further examples from New Guinea include 1 ♂ & 2 ♀♀ from Prince Alexander Range, East Sepik Province, 500 m, PNG, (2005/2006, CCMS), 1 ♂ from Fakfak, West Papua (vii. 2002, CAYI) and 1 ♂ from Timika, Papua (vi. 2016, CAYI). These records and the others from Karkar, Manam and Misool indicate that *D. rathsi* is widespread in the New Guinea Region.

Note 3: A series of specimens from Halmahera in CARR and CAYI were recognised as *D. rathsi* and genital examination confirms this (Figs. 99, 100). These are the first records of the species outside the New Guinea Region. We have compared the Halmahera series with the *rathsi* types and other specimens from New Guinea. We

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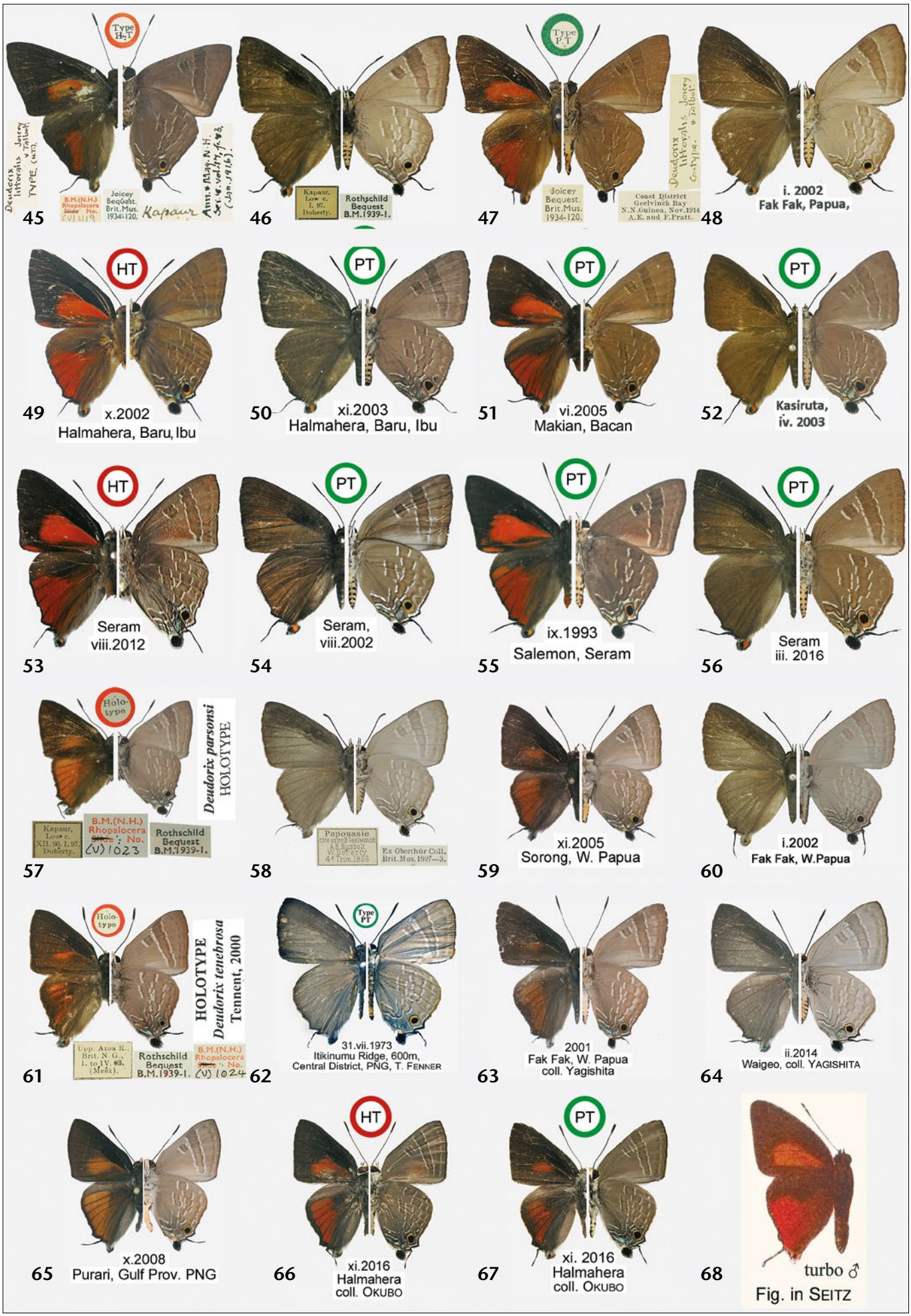
Plate 3, Figs. 45–68: ***Deudorix littoralis*** and ***D. parsonsi***. – **Figs. 45–56:** Subspecies of *D.* ***littoralis***. – **Figs. 45–48:** *D. l.* ***littoralis:*** **45:** ♂, HT, ups./uns., New Guinea (Kapaur, Rhopalocera No. (V) 1119, NHMUK). **46:** ♀, ups./uns., New Guinea (Kapaur, Low c[ountry], i. [18]97, Doherty, NHMUK). **47:** ♂, PT, ups./uns., New Guinea (Geelvinck [*sic*] Bay, xi. 1914, A. E. & F. Pratt, NHMUK). **48:** ♀, ups./uns., New Guinea (Fak Fak, W. Papua, i. 2002, CARR). – **Figs. 49–52:** *D. l.* ***malutara*** **ssp. n.: 49:** ♂, HT, ups./uns., Halmahera (Baru, Ibu, x. 2002, RMNH). **50:** ♀, PT, ups./uns., Halmahera (Baru, Ibu, xi. 2003, CARR). **51:** ♂, PT, ups./uns., Bacan (Makian, vi. 2005, CARR). **52:** ♀, PT, ups./ uns., Kasiruta (iv. 2003, CARR). – **Figs. 53–56:** *D. l.* ***malpusat*** **ssp. n.: 53:** ♂, HT, ups./uns., Seram (viii. 2012, RMNH). **54:** ♀, PT, ups./ uns., Seram (viii. 2002, CARR). **55:** ♂, PT, ups./uns., Seram (Salemon, ix. 1993, CARR). **56:** ♀, PT, ups./uns., Seram (iii. 2016, CARR). – **Figs. 57–67:** Subspecies of *D.* ***parsonsi.*** – **Figs. 57–65:** *D. p.* ***parsonsi:*** **57:** ♂, HT, ups./uns., New Guinea (Kapaur, Low c[ountry], xii. [18]96. i. [18]97, Doherty, Rhopalocera No. (V) 1023, NHMUK). **58:** ♀, ups./uns., New Guinea (côte entre B[aie] Geelwinck & B Humbolt [*sic*], W. Doherty, 4e Trim. 1896, NHMUK). **59:** ♂, ups./uns., New Guinea (Sorong, W. Papua, xi. 2005, CCMS). **60:** ♀, ups./uns., New Guinea (Fak Fak, W. Papua, i. 2002, CARR). **61:** ♂, ups./uns., New Guinea (*tenebrosa* HT = *parsonsi,* Upp[er] Aroa R., Brit.N.G., i.–iv. [19]03, MEEK, Rhopalocera No. (V) 1024, NHMUK). **62:** ♀, ups./uns., New Guinea (*tenebrosa* PT = *parsonsi,* Itikinumu Ridge, 600 m, PNG, 31. vii. 1973, T. Fenner, NARI? – see text). **63:** ♂, ups./uns., New Guinea (Fak Fak, 2001, CAYI). **64:** ♀, ups./uns., Waigeo (ii. 2014, CAYI). **65:** ♂, ups./uns., New Guinea (Purari, Gulf Prov., PNG, CCMS). – **Figs. 66–67:** *D. p.* ***vicarorum*** **ssp. n.: 66:** ♂, HT, ups./uns., Halmahera (xi. 2016, ex. coll. Okubo, OMNH). **67:** ♂, PT, ups./uns., Halmahera (xi. 2016, coll. Okubo). – **Fig. 68: "*turbo*":** ♂, ups., "*turbo*", Fig. 161a in Seitz (1926).



observe consistent differences. In particular, the Halmahera ♂♂ are much brighter and deeper coloured on both surfaces and the Halmahera ♀♀ ups have extensive orange markings compared to the plain brown of New Guinea specimens. Thus, we describe the Halmahera population as a new subspecies – see below.

Deudorix rathsi terang ssp. n.

(Figs. 41 & 99, with genitalia: ♂ HT, Halmahera; Fig. 42: ♀ PT, Halmahera; Fig. 43: ♂ PT, Halmahera; Fig. 44: ♀, PT, Halmahera; Fig. 100: ♂ PT, Halmahera, with genitalia.)

Holotype ♂: Indonesia, Maluku Utara, Halmahera, Baru, Ibu, VIII. 2002 (RMNH).

Paratypes (12 ♂♂, 7 ♀♀): Halmahera – all Baru, Ibu: 1 ♀, VI. 2002; 7 ♂♂, 2 ♀♀, VIII. 2002; 1 ♂, 2 ♀♀, IX. 2002; 3 ♂♂, X. 2002; 2 ♀♀, III. 2003 (all CARR); 1 ♂, I. 2004 (CCMS).

Etymology: *terang* means bright in Indonesian and the ♂ ups in this new taxon is a much brighter orange than in nominotypical *rathsi*.

Range: endemic to northern Maluku – Halmahera, ?Morotai – see note 2.

Diagnosis and description

♂: FwL 18–20 mm (HT: 19 mm).

(Figs. 41, 99, with genitalia [HT], 43, 100.)

Upperside: fw very dark brown with elongated median patch of bright orange (much brighter and slightly more extensive than in nominotypical *rathsi*), extending from base and occupying part of spaces 1a, 1b, 2 and 3, reaching inner margin but not entering cell. Hw base, costa and dorsum dark brown, remainder of wing bright orange (much brighter and slightly more extensive than in nominotypical). A tail at vein 2. Tornal lobe yellowish-orange with off-centre black spot and rimmed with light metallic blue on outer half of lobe.

Underside: darkish grey (deeper grey than nominotypical). Fw has a broad, relatively straight PD band, thickly edged with white. Hw PD band thickly edged with white, space 7 conspicuously displaced towards base. A thickly white-edged, cell end bar on both fw and hw. A narrow submarginal band of straightish white markings on fw; on hw generally horseshoe or v-shaped, in spaces 3–7. Hw has a large black, roughly oval spot in space 2 of tornal area, surrounded by a broad yellowish-orange ring (duller and more orange in nominotypical) that reaches into adjacent spaces 1b and 3 (slightly more extensive than in nominotypical). A patch of metallic turquoise in spaces 1a and 1b in tornal area (more extensive than in nominotypical). The turquoise line outwardly lined with yellow on dorsum (significantly broader than in nominotypical). Tornal lobe black, rimmed basally with white.

♀: FwL 19–22 mm.

(Figs. 42, 44.)

Upperside: fw dark brown with elongated median patch of orange, duller than in ♂, but more extensive, reaching into space 4 and as orange dusting in cell and along inner margin to tornus (fw uniformly brown in nominotypical). Hw dark brown with submarginal orange markings in and spaces 1a, 2, 3, 4 and faintly in 5. The markings extend almost halfway to the base in spaces 2, 3 and 4 (hw uniformly brown in nominotypical). Tail and tornal lobe as in ♂.

Underside: as ♂, but ground colour slightly lighter grey.

Note 1: Both sexes of *terang* are readily separable from those of the nominotypical. On the ups the *terang* ♂ has much brighter, deeper orange patches and the ♀ has large orange areas on both wings. The uns ground colour is darker and more contrasted with the markings. The yellow lining of the dorsum near the tornus is significantly broader and more conspicuous. The frons in both taxa is white.

Note 2: The genitalia of *D. rathsi* (Figs. 97–100) are highly diagnostic, with widely spaced socii and a distinctive anterior stout process (hump) positioned on the sociuncus. The valvae are broad for much of their length, with triangular clubs at the apices. The phallus is flared apically but is without obvious appendages or scleritisation. The valvae in *terang* are more widely spaced than in the nominotypical and the outer margins of the valvae are slightly more bulbous and smoother laterally.

Note 3: A single ♂ from Morotai (IX. 2016, CAYI, Fig. 35) is clearly different from Halmahera *D. rathsi terang* specimens. Most notably, it has an orange streak along the ups fw costa. This specimen is most likely a minor aberration, but possibly could represent a distinct subspecies. However, further Morotai material is needed to establish this and we tentatively include the Morotai population here for now.

Deudorix littoralis Joicey & Talbot, 1916

(Nominotypical subspecies: Figs. 45 & 101, with genitalia: ♂ HT, New Guinea; Fig. 46: ♀, New Guinea; Fig. 47: ♂ PT, New Guinea; Fig. 48: ♀, New Guinea).

Deudorix littoralis: Joicey & Talbot (1916a: 83); TL: Kapaur (= Fak Fak), New Guinea – see note 1.

Range: Nominotypical subspecies from the New Guinea Region – New Guinea (NHMUK), Biak (Van Mastrigt & Warikar, 2013: 54 & 132 recorded and illustrated a ♂). – **New record:** Yapen (1 ♂, VIII. 2002, CAYI). – ?Waigeo – see note 4. Subspecies *malutara* & *malpusat* from Maluku – see below.

Note 1: Joicey & Talbot (1916a) described both sexes of *littoralis* from specimens "ex Coll. Grose-Smith" collected in Kapaur (= Fak Fak). They noted a further ♂ from Geelvink Bay (Fig. 47) and 3 ♂♂ from German New Guinea (now PNG). They compared the new species to *woodfordi* (Figs. 86–88) and stated that the ♀ "more resembles the ♀ of *epijarbas*, Moore". They did not illustrate the taxon. The *littoralis* HT ♂ (Figs. 45 & 101, with genitalia) and the 4 PT ♂♂ are in the NHMUK.

Note 2: We have examined the *littoralis* AT ♀ (Fig. 32) in the NHMUK and consider it to be an example of *epijarbas*. The uns hw postdiscal band bar in space 7 is shifted significantly basally, a feature typical of *epijarbas* but not *littoralis*. In addition, it exhibits the prominent square-shaped, yellow ring round the uns hw tornal spot, typical of the eastern races of *epijarbas,* rather than the less developed circular ring shown by the HT ♂ and other New Guinea *littoralis* specimens.

Note 3: Seitz (1926: 999) treated *littoralis* as a subspecies of *epijarbas,* and d'Abrera (1990: 302) followed this. Parsons (1991: 121) recognised that *littoralis* was a distinct species. Parsons (1998: 403) reported that there were clear differences in the genitalia and phenotypes of 4 *epijarbas* species-group species (*epijarbas, littoralis, woodfordi, diovis*), noting their sympatry in the Central Province of PNG.

Note 4: As noted earlier, Parsons (1998: 405) gave the range for *D. littoralis* as "Ambon (possibly also Halmahera), Kai, Waigeo, Sorong and mainland NG" but now thinks (pers. comm., 2018)

that the Waigeo record may have been in error. We cannot find any Waigeo *littoralis* in the NHMUK and have not seen any specimens. Likewise, we have seen no *littoralis* from Kei, however the NHMUK holds 2 ♂♂ (1 labelled "Toeal" (= Tual in Kei) & 3 ♀♀ of *D. epijarbas*. The Sorong *littoralis* record is corroborated by S. Schröder (2017) who illustrated a Sorong ♂ from the KSP. Schröder also included Waigeo and Kei in the range but he confirmed (pers. comm. 2018) that these records came from Parsons.

Note 5: In the NHMUK there is a series of both sexes of *littoralis* from various locations in New Guinea. In addition, we found *littoralis* specimens from Halmahera (1 ♂), Bacan (1 ♀) and Ambon (1 ♀) all mistakenly placed with the series of *D. epijarbas* (labelled as *"D. epijarbas turbo"*) from Maluku. The Halmahera ♂ is not a typical example of *D. littoralis* – hence perhaps Parsons' doubt in including Halmahera in the range for the species – see note 4 above.

We have also examined series of Maluku *littoralis* in CARR and CAYI, and it is clear that Maluku specimens fall into 2 distinct phenotypes, both of which are also clearly separable from New Guinea *littoralis* – see below for details.

In conclusion, there are 3 subspecies of *littoralis,* 2 of which are found in Maluku and described below.

*Deudorix littoralis **malutara*** ssp. n.

(Figs. 49 & 102, with genitalia: ♂ HT, Halmahera; Fig. 50: ♀ PT, Halmahera; Figs. 51 & 103, with genitalia: ♂ PT, Bacan; Fig. 52: ♀ PT, Kasiruta.)

Holotype ♂: Indonesia, Maluku Utara, Halmahera, Baru, Ibu, x. 2002 (RMNH).

Paratypes (14 ♂♂, 4 ♀♀): **Morotai:** 1 ♂, Daeo, ii. 1998; 2 ♂♂, iv. 2014 (all CARR). – **Halmahera:** 1 ♂, Halmahera, ex J. Waterstradt, 1904, Ex Oberthür Coll. Brit. Mus. 1927-3, (NHMUK); 1 ♂, Baru, Ibu, x. 2002; 1 ♀, Baru, Ibu, xi. 2003; 2 ♂♂, ii. 2010 (all CARR). – **Bacan:** 1 ♀, Batchian [Bacan], iii. 1892, W. Doherty, Rothschild Bequest, B.M. 1939-1 (NHMUK); 1 ♂, viii. 2000; 2 ♂♂, xii. 2003; 2 ♂♂, Makian, vi. 2005; 2 ♂♂, 1 ♀, vi. 2010 (all CARR). – **Kasiruta:** 1 ♀, iv. 2003 (CARR).

Etymology: the name represents an abbreviation of Maluku Utara – North Maluku –, the range for this taxon.

Range: endemic to northern Maluku – Morotai, Halmahera, Bacan, Kasiruta.

Diagnosis and description

♂: FwL 19–22 mm (HT: 20 mm).

(Figs. 49, 102, with genitalia [HT], 51, 103, with genitalia.)

Upperside: fw very dark brown with elongated median patch of bright, slightly reddish orange (the shade of orange varies in individuals) (brighter than in nominotypical *littoralis*), mostly confined to space 1b but narrowly reaching into space 1a and 2 (only rarely extending into space 1a and 2 in nominotypical). A small patch of bright orange at tornus (rarely and barely developed in nominotypical). Hw base, costa and dorsum dark brown, remainder of wing bright, slightly reddish orange (exact hue varies between individuals) (brighter and generally more extensive than in nominotypical). A tail at vein 2. Tornal lobe well developed, orange inner half, remainder black, rimmed with light metallic blue on outer half of lobe.

Underside: dark greyish brown with slightly darker PD bands on both wings (less contrasting with ground colour than in nominotypical). Bands narrowly edged with white (less conspicuously than in nominotypical); on hw, band irregularly displaced at veins to follow termen. A narrowly white-edged cell end bar on both wings. A diffuse, faint, very narrow submarginal band of straightish white markings on fw; on hw generally v-shaped in spaces 3–7. Hw: a large black, roughly oval, spot in space 2 of tornal area, surrounded with narrow yellowish-orange ring. A turquoise, narrow, roughly 'S'-shaped band from vein 1a on dorsum across to the basal margin of the tornal spot. The turquoise line outwardly lined with yellow along dorsum to tornal spot. Tornal lobe black, rimmed basally with white.

♀: FwL 20–21 mm.

(Figs. 50, 52.)

Upperside: fw uniformly dark brown, except darker brown in cell and broadly along costa. Hw uniformly dark brown. Tail and tornal lobe as in ♂.

Underside: as ♂, but ground colour lighter and a less greyish brown.

Note: We have examined about 20 northern Maluku *littoralis* ♂♂ and only 2 lack the orange-red patch on the ups fw tornus. One of these 2 is the NHMUK Halmahera specimen – chosen as a PT rather than the HT because of this. Of more than 40 New Guinea *littoralis* ♂♂ examined (NHMUK, CARR, CAYI, CCMS), this orange-red patch (more orange than in Maluku specimens) is present in only one, whilst 3 others exhibit a trace of it.

See notes 2 & 3 under *D. littoralis malpusat* for key features distinguishing the 3 *littoralis* taxa and comments on the ♂ genitalia.

*Deudorix littoralis **malpusat*** ssp. n.

(Figs. 53 & 104, with genitalia: ♂ HT, Seram; Fig. 54: ♀ PT, Seram; Fig. 55: ♂ PT, Seram; Fig. 56: ♀ PT, Seram.)

Holotype ♂: Indonesia, Maluku, Seram, viii. 2012 (RMNH).

Paratypes (15 ♂♂, 4 ♀♀): **Kelang:** 1 ♂, Tihu, i. 2003 (CARR). – **Seram:** 1 ♂, Salemon, ix. 1993; 1 ♀, viii. 2002; 1 ♀, Salemon, ix. 2002; 1 ♂, viii. 2012; 1 ♂, vii. 2014; 2 ♂♂, vi. 2015; 1 ♂, 1 ♀, iii. 2016 (all CARR). – **Ambon:** 1 ♀, Amboina [Ambon], Hewitson Coll. 79-69. *Deudorix epijarbas* [*littoralis*] - 8. (NHMUK); 1 ♂, vii. 2007; 3 ♂♂, vii. 2015; 3 ♂♂, xi. 2018 (all CARR). – **Haruku:** 1 ♂, v. 2006 (CARR).

Etymology: the name is an abbreviation of Maluku pusat – central Maluku –, the range for this taxon.

Range: endemic to central Maluku - Ambon, Kelang, Seram, Haruku.

Diagnosis and description

♂: FwL 20–22 mm (HT: 22 mm).

(Figs. 53, 104, with genitalia [HT], 55.)

Upperside: fw very dark brown with elongated median patch of bright orange-red (redder and brighter than in both nominotypical *littoralis* and *malutara*), occupying most of space 1b and much of space 2 (thus more extensive than in nominotypical and *malutara*). A small patch of bright orange-red at tornus (as in *malutara*). Hw base, costa and dorsum dark brown, remainder of

wing bright orange-red (redder and brighter than in both nominotypical *littoralis* and *malutara*). Tail and tornal lobe as in nominotypical and *malutara*.

Underside: as in *malutara* but with slightly lighter greyish brown ground colour and well-defined white borders to the PD bands and cell end bars (forming a much starker contrast with ground colour than in nominotypical and *malutara*).

♀: FwL 20–23 mm.
(Figs. 54, 56.)

Upperside: fw dark brown, darker brown in cell and broadly along costa (similar to both nominotypical and *malutara*). Hw uniformly dark brown, as in nominotypical and *malutara*. Tail and tornal lobe as in ♂.

Underside: as ♂, but ground colour lighter and a less greyish brown.

Note 1: See note under *D. littoralis malutara* above. We have examined over 20 *littoralis* ♂♂ (CARR, CAYI) from central Maluku and all have the ups fw tornal orange-red patch.

Note 2: The 3 *D. littoralis* taxa are distinct in their facies, with the orange-red ups patches in the ♂♂ being most restricted and dullest in the nominotypical and most extensive and richest coloured in *malpusat*, with *malutara* lying between them. The degree of white edging to the uns bands in both sexes is different in each subspecies — they are relatively faint in *malutara,* more conspicuous in *littoralis* and most prominent in *malpusat*.

Note 3: The ♂ genitalia of *D. littoralis* are distinct from other species, with broad, basally bulbous valvae and small, sharp processes emanating from the apex of the phallus. The genitalia are similar in all *D. littoralis* taxa (Figs. 101–104).

Deudorix parsonsi Tennent, 2000

(Nominotypical: Fig. 57 & 105, with genitalia: ♂ HT, New Guinea; Fig. 58: ♀, New Guinea; Fig. 59: ♂, New Guinea; Fig. 60: ♀, New Guinea; Figs. 61 & 106, with genitalia: ♂, *tenebrosa* HT = *parsonsi*, New Guinea; Fig. 62: ♀, *tenebrosa* PT = *parsonsi,* New Guinea; Fig. 63: ♂, New Guinea; Fig. 64: ♀, Waigeo; Fig. 65: ♂, New Guinea; Fig. 107: ♂, New Guinea, with genitalia.)

Deudorix parsonsi Tennent (2000: 18, figs. 11, 26, 37); TL: Kapaur, New Guinea — see note 1.

= "*Deudorix* Species b" Parsons (1998: 406, pl. XIV, pl. 62, figs. 1706–1709) — see note 1.

= *Deudorix tenebrosa* Tennent (2000: 16, figs. 12, 27, 36); TL: Upper Aroa River, Central Province, PNG — **syn. n.** — see notes 2–4.

= "*Deudorix* Species a" Parsons (1998: 405, pl. XIV, pl. 62, figs. 1702–1705) — see note 2.

Range: Nominotypical subspecies from the New Guinea Region — New Guinea (NHMUK). — **New records:** Waigeo (1 ♀, II. 2014, CAYI, Fig. 64), Yapen (1 ♂, XI. 2004, CAYI). Subspecies *vicarorum*: Halmahera — see below.

Note 1: Parsons (1998: 406) gave a description of "*Deudorix* Species b" and stated it was endemic to mainland New Guinea and known from just 2 ♂♂, one from Kiunga in PNG (held in ANIC) and the other from Kapaur (= Fak Fak) in West Papua (held in the NHMUK). Noting that these 2 locations were far apart he suggested the species would eventually be found throughout New Guinea. Parsons reported that the ♀ was unknown. Tennent (2000) formally described Parsons' "*Deudorix* Species b" from these 2 ♂♂ as *D. parsonsi*. He designated the Kapaur NHMUK ♂ the HT (Figs. 57 & 105, with genitalia).

Note 2: In the same paper Tennent (p. 16) also described *tenebrosa,* based on Parsons' "*Deudorix* Species a". There were only 2 specimens known, from locations about 70 km apart in the Central Province in PNG — a ♂ in the NHMUK (Figs. 61, 106, with genitalia) and a ♀ supposedly now in the National Agricultural Research Institute (NARI) (previously the National Insect Collection = KONE) in Port Moresby, PNG. However, a thorough inspection of the NARI collections in March 2019 by C. Müller, did not reveal **any** *Deudorix epijarbus*-group specimens. We speculate that these missing specimens may have been lost during a collection move or misplaced following return of a loan. Michael Parsons kindly sent us photographs of the *tenebrosa* ♀ PT (Fig. 62), which he illustrated as "*Deudorix* Species a" (figs. 1704–1705).

Note 3: Both Parsons (1998) and Tennent (2000) noted minor differences between *parsonsi* and *tenebrosa*. Tennent noted that the *tenebrosa* uns fw had the white outer line of the cell end bar confluent with the white inner line of the PD (postmedian) band. He stated that this was unique amongst all the other *epijarbas* species-group taxa he had examined — but see below. Tennent noted that the *parsonsi* genitalia were like *tenebrosa* with the median section of the valve angular and the phallus shorter.

Note 4: As Parsons (1998: 402) predicted, further specimens of *parsonsi* have been taken in other locations in New Guinea. There are 2 ♂♂ from Timika, Papua, in CAYI and Chris Müller has collected about 20 *parsonsi* ♂♂ from mainland PNG across 4 provinces — West Sepik, East Sepik, Western Province and Gulf Province. There is individual variation in the proximity of the white bars, the extent of the ♂ ups orange-red patches on the fws and hws, the amount of orange surrounding the tornal spot (sometimes negligible at termen in some specimens) and the colour of the uns (sometimes grey, sometimes brown but always lighter than in other *epijarbas*-group species). These variations are illustrated in the specimens in Figs. 57–65.

Deudorix epijarbas group species, at least in Maluku and the New Guinea Region, appear to have a unique configuration in the pattern and proportion of orange, black and metallic blue on the ups hw tornal lobe. The *tenebrosa* and *parsonsi* HTs and other (assumed) *parsonsi* specimens examined, have the same tornal lobe pattern with restricted orange and a relatively larger area of metallic blue, and they are also well adorned with cilia.

We estimate that there are now about 40 *parsonsi* specimens in collections, but as far as we are aware, no further "*tenebrosa*" specimens have been reported.

We have examined the ♂ HTs of *parsonsi* (Fig. 57) and *tenebrosa* (Fig. 61), as well as their genitalia preparations (Figs. 105, 106) in the NHMUK. We have also examined and dissected 3 further *parsonsi* ♂♂ from PNG in CCMS. The proximity of the uns fw cell end bar to the adjacent PD band bar varies in the specimens examined. There is a clear gap between the bars in the *parsons*i HT, whereas the white lines of the 2 bars are partially touching in the Koinambe specimen (Fig. 107), and in a ♂ from East Sepik Province the bars are conjoined almost as much as in the *tenebrosa* HT. All these specimens have an orange frons.

We can see no significant differences between the genitalia of these 5 specimens to suggest that they represent distinct species.

We conclude that *parsonsi* (= Parsons' "*Deudorix* Species b") and *tenebrosa* (= Parsons' "*Deudorix* Species a") represent the same species and that the "conjoined bars" feature discussed earlier and considered by Tennent diagnostic of *tenebrosa,* is just an individual variation. We therefore synonymise the 2 taxa. Tennent described both taxa in the same paper — *tenebrosa* on page 16 and *parsonsi* on page 18. We consider that *parsonsi* should take precedence because the name is better known.

Note 5: In the NHMUK there is a series of *epijarbas* species-group specimens associated with a label for *D. epijarbas concolor*.

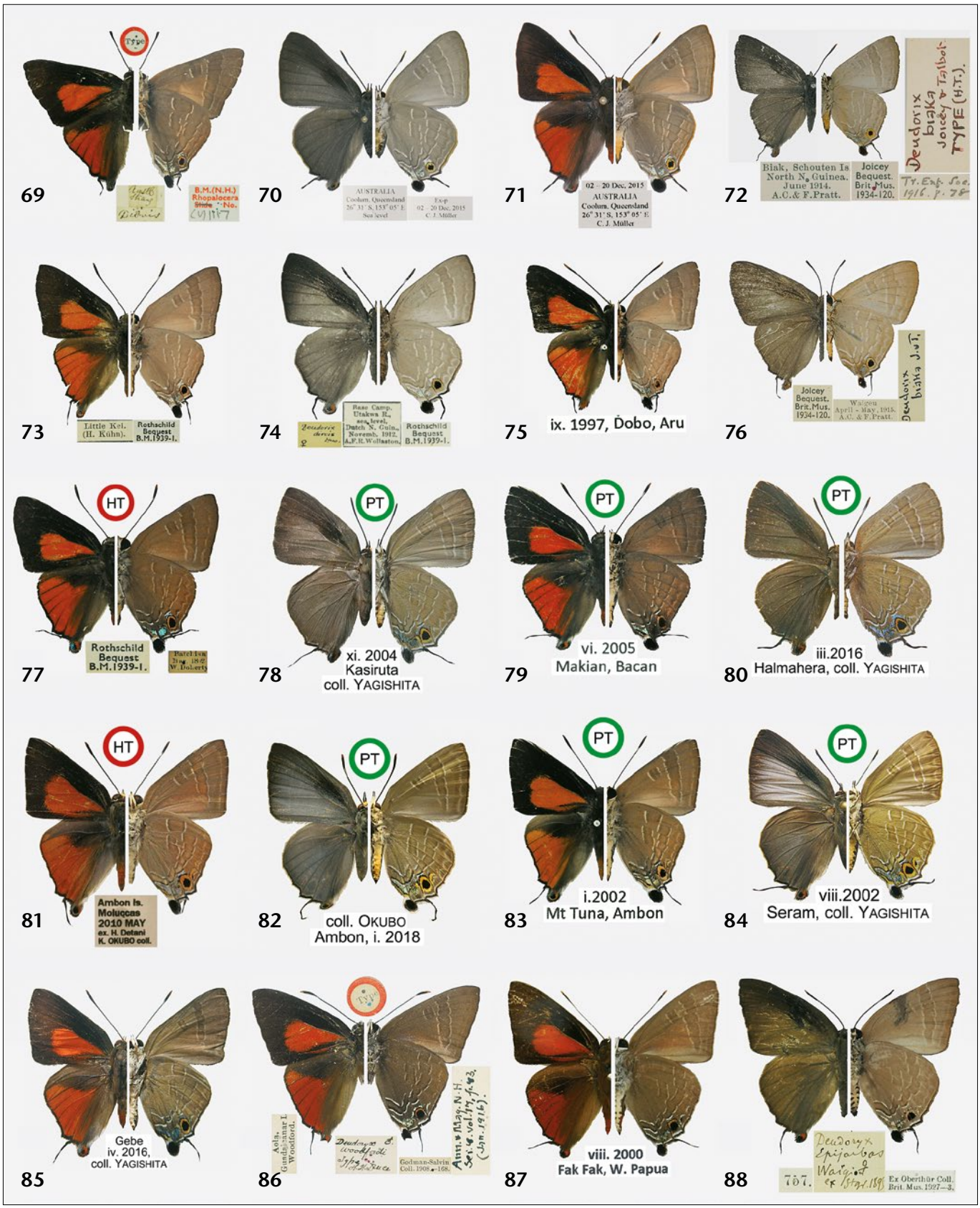


Plate 4, Figs. 69–88: ***Deudorix diovis*** and ***D. woodfordi***. — **Figs. 69–85:** Subspecies of *D. diovis*. — **Figs. 69–76:** *D. d.* ***diovis:*** **69:** ♂, type, ups./uns., Australia ("Austl Strang" [?spelling], B.M.(N.H.) Rhopalocera No. (V) 1117, NHMUK). **70:** ♀, **71:** ♂ [same data], ups./uns., Australia (Coolum, Queensland, sea level, Ex p[upa]. 2.–20. XII. 2015, C. J. MÜLLER, CCMS). **72:** ♀, ups./uns., Biak (HT *biaka* = *diovis,* Biak, Schouten Is. North N. Guinea, VI. 1914, A. C. & F. PRATT, NHMUK). **73:** ♂, ups./uns., Kei (Little Kei, H. KÜHN, NHMUK). **74:** ♀, ups./uns., New Guinea (Base Camp, Utakwa R., Dutch N. Guinea, XI. 1912, A. F. R. WOLLASTON, NHMUK). **75:** ♂, ups./uns., Aru (Dobo, IX. 1997, CARR). **76:** ♀, ups./uns., Waigeo (Waigeu, IV.–V., 1915, A. C. & F. PRATT, NHMUK). — **Figs. 77–80:** *D. d.* ***hoarei*** **ssp. n.: 77:** ♂, HT, ups./uns., Bacan (Batchian, III. 1892, W. DOHERTY, NHMUK). **78:** ♀, PT, ups./uns., Kasiruta (XI. 2004, CAYI). **79:** ♂, PT, ups./uns., Bacan (VI. 2005, CARR). **80:** ♀, PT, ups./uns., Halmahera (III. 2016, CAYI). — **Figs. 81–84:** *D. d.* ***okuboi*** **ssp. n.: 81:** ♂, HT, ups./uns., Ambon (Moloccas, v. 2010, ex H. DETANI and ex K. OKUBO coll., OMNH). **82:** ♀, PT, ups./uns., Ambon (I. 2018, coll. OKUBO, Nishinomiya City, Japan). **83:** ♂, PT, ups./uns., Ambon (Mt. Tuna, I. 2002, CARR). **84:** ♀, PT, ups./uns., Seram (VIII. 2002, CAYI). — **Fig. 85:** *D. diovis* **ssp.:** ♂, ups./uns., Gebe (IV. 2016, CAYI). — **Figs. 86–88:** *D. w.* ***woodfordi:*** **86:** ♂, Type, ups./uns., Solomon Islands (Aola, Gaudalcanar [*sic*] I., WOODFORD, NHMUK). **87:** ♂, New Guinea (West Papua, Fak Fak, VIII. 2000, CARR). **88:** ♀, ups./uns., Waigeo (ex STGR. [STAUDINGER] 1895, 707, NHMUK).

The specimens are from Aru, Kei, Waigeo, various New Guinea locations and Sudest. All have an orange frons, and most are nominotypical *D. diovis*. However, 2 of the 5 ♀♀ in this series are *D. parsonsi* (1 from between Geelvink Bay & Humboldt Bay [Fig. 58] and 1 from Mt. Goliath).

Note 6: Gotts & Pangemanan (2001: 256–257) illustrated the ups of a ♀ from Timika, noting: "The female shown here is a first. Males and females are identical on the undersides." This ♀, identified by C. Müller, previously in coll. Gotts, is now in ANIC. Nominotypical *parsonsi* is not known from Maluku, but we consider it helpful to describe the ♀ here.

Diagnosis and description of nominotypical *parsonsi* ♀

♀: FwL 18–18.5 mm.

(Figs. 58, 60, 62, 64.)

Upperside: fw medium grey-brown, darker grey-brown in cell and broadly along costa, apex and termen. Hw uniformly medium grey-brown. A tail at vein 2. Tornal lobe inner half orange, remainder black and rimmed with light metallic blue, partly obscured by long grey hairs.

Underside: light grey-brown. A darker grey-brown PD band on both wings, edged with white; band on fw relatively straight but on hw regularly displaced at veins to follow termen. A white-edged cell end bar on both wings. A narrow submarginal white line on fw and in spaces 3–7 on hw, bordered on both sides by grey-brown that is slightly darker than the ground colour. A prominent black, rounded spot in space 2 of tornal area, ringed with yellowish-orange. An irregular metallic turquoise line of variable thickness from vein 1a on dorsum to the basal margin of the tornal spot. The turquoise line outwardly lined with yellow on dorsum. Tornal lobe black, rimmed basally with white.

Note 7: We have examined photographs of 2 *epijarbas* species-group ♂♂ in coll. Okubo (Figs. 66, 67). They both have an orange frons and were taken on Halmahera by local collectors in xi. 2016. The ups of the 2 specimens vary in the extent of the orange-red markings. One (Fig. 67) very closely matches the ups of the *tenebrosa* ♂ HT (Fig. 61) The other (Fig. 66) is very similar to the Kiunga *parsonsi* ♂ illustrated by Parsons (1998: fig. 1706), which has reduced orange-red markings compared to the Kapaur (= Fak Fak) *parsonsi* HT. The Halmahera specimens do not exhibit the confluence of the cell end bar outer line with the inner line of the post-discal band present in the *tenebrosa* HT. We have examined the genitalia of 1 Halmahera ♂ (Fig. 108) and consider that it is similar to those of the *parsonsi* (Fig. 105) and *tenebrosa* (Fig. 106) HTs. We conclude that these specimens are examples of *parsonsi*. However, they differ in significant ways from nominotypical *parsonsi* from New Guinea and we consider they represent a 2nd subspecies of *parsonsi* – described below.

Deudorix parsonsi vicarorum ssp. n.

(Figs. 66, 108, with genitalia: ♂ HT, Halmahera; Fig. 67: ♂ PT, Halmahera.)

Holotype ♂: Indonesia, North Maluku, Halmahera, xi. 2016 (OMNH – ex coll. Okubo).

Paratypes (1 ♂): same data as HT (coll. Okubo).

Etymology: named for the play on English words for members of the clergy – parsons and vicars.

Range: endemic to Halmahera.

Diagnosis and description

♂: FwL 15–16 mm (HT: 15 mm).

(Figs. 66, 108, with genitalia [HT], 67.)

Upperside: fw very dark brown with a deep orange-red median patch (brighter than in nominotypical *parsonsi*), restricted to space 1b and marginally into space 2 (HT with more extensive orange-red dusting extending to base). Hw base, costa and dorsum broadly dark brown, remainder of wing bright orange-red (brighter than in nominotypical). Termen border broad (approx. 1.5 mm wide), dark brown. A tail at vein 2. Tornal lobe outer half black, inner half orange, outer half rimmed with light metallic blue, partly obscured by long grey hairs.

Underside: deep grey-brown (lighter brown in nominotypical). PD bands on both wings marginally darker than the ground colour (more contrasted in nominotypical especially on the fw), and narrower than in nominotypical, narrowly edged with white (broadly edged in nominotypical). Fw PD band relatively straight. Hw PD band irregularly displaced at veins to follow termen. A narrowly white-edged, cell end bar on both fw and hw. A narrow submarginal white line on fw and in spaces 3–7 on hw. Hw: a prominent black, roughly oval (rounded in nominotypical) spot in space 2 of tornal area, ringed with yellowish-orange and weakly extending into space 3 (restricted to space 2 in nominotypical). An irregular metallic turquoise line of variable thickness from vein 1a on dorsum across to the basal margin of the tornal spot. The turquoise line outwardly lined with yellow on dorsum. Tornal lobe black, rimmed basally with white.

♀: unknown.

Note 1: The differences from nominotypical *parsonsi* are noted in the description above. Most notably, the fw PD band is significantly darker than the ground colour, with broader white borders, in nominotypical *parsonsi*. The uns ground colour is always light brown, compared to the darker grey of *vicarorum*.

Note 2: The ♂ genitalia of *D. parsonsi* are similar to those of *D. diovis* but the valvae are evenly tapered in the former, with a less obvious opening between the base of the valvae than in *D. diovis*. In lateral view, the valvae of *D. diovis* bear a distinctive 'shoulder', while the outer margin of the valva in *D. parsonsi* is smooth. Both taxa have valvae with pronounced lateral triangular median processes in lateral view, which are much better developed in *D. parsonsi*. Also, there are pronounced apical spiked flanges in *D. parsonsi*, which are only weakly developed in *D. diovis*.

There are minor differences in the morphology of the valva of *D. parsonsi vicarorum* and the nominotypical, with those of the former being much narrower and sharply pointed.

Note 3: A close relationship between *D. parsonsi* and *D. diovis* is inferred, based on the shared orange frons and similar ♂ genitalia.

Deudorix diovis Hewitson, 1863

Deudorix diovis: Hewitson (1863: 20, pl. 7, figs. 10–12); TL: Australia.

Range: Maluku, New Guinea Region, Australia, Solomons – see note 1.

Note 1: *Deudorix diovis* was described from Australia and no further subspecies have been described until now. However, in his checklist of Pacific butterflies Tennent (2006: 40) listed "*Deudo-*

rix diovis ssp.? (SOLOMON ISLANDS: Alu, Rendova)". In note 69 on p. 162 he added: "Some *Deudorix* records from Alu and Rendova in the Solomons Archipelago (Tennent 2002d: 80) are also placed provisionally with *D. diovis*." He also stated: "*Deudorix* material from New Caledonia in the Australian Museum, Sydney, and collected there recently (John Peters, pers. comm.; Alain Renevier, pers. comm.) is placed provisionally with *D. diovis*." Tennent (2008: 20) subsequently described this taxon as *Deudorix pewcaecus*.

Note 2: A label in the NHMUK reading "*D. diovis* ssp. Batchian" is associated with 5 *diovis* ♂♂ from Bacan. These specimens, along with others from Halmahera, are clearly different from nominotypical *diovis* and we describe a new subspecies from northern Maluku.

Note 3: There is 1 ♀ from Seram in the NMHUK associated with a label indicating it is an undescribed subspecies. We have examined several *D. diovis* specimens from central Maluku and conclude they differ from both nominotypical *diovis* and the population from northern Maluku and therefore represent a 3rd subspecies of *D. diovis* which we also describe below.

All 3 subspecies are found in Maluku. A single ♂ from Gebe in CAYI probably represents a 4th subspecies — see below.

Deudorix diovis diovis Hewitson, 1863

(Figs. 69 & 109, with genitalia: ♂ type, Australia; Fig. 70: ♀, Australia; Fig. 71: ♂, Australia; Fig. 72: ♀, *biaka* HT = *diovis*, Biak; Fig. 73: ♂, Kei; Fig. 74: ♀, New Guinea; Fig. 75: ♂, Aru; Fig. 76: ♀, Waigeo.)

Deudorix diovis: Hewitson (1863: 20, pl. 7, figs 10–12); TL: Australia — see note 1.

= *Deudorix biaka:* Joicey & Talbot (1916b: 78); TL: Schouten Islands — see note 2.

Range: Maluku — Kei, Aru; New Guinea Region — Waigeo, Biak/Supiori (the *biaka* ♀ HT), New Guinea, Tagula (labelled Sudest), Manam (labelled Vulcan), east coast of Australia (NHMUK), New Ireland (Parsons 1998, Tennent 2006). — **New record:** New Britain (4 ♂♂, Talasea, West New Britain Province, 600 m, ix. 2015, CCMS) — see notes 2 & 3.

Note 1: Hewitson (1863) described and illustrated both sexes of *diovis* giving the TL simply as "Australia". He stated that the specimens were in his collection. Parsons (1998: 404) noted that the HT ♂, with genitalia vial No. 1117, was in the NHMUK (Figs. 69, 109, with genitalia). He compared the taxon to *epijarbas,* noting in particular differences in the hws of the ♂♂. He did not comment on the orange colour of the *diovis* frons (*parsonsi* also has orange frons), now considered to be a key feature distinguishing *diovis* from *epijarbas, woodfordi* and *littoralis* (all have a whitish frons).

Note 2: Joicey & Talbot (1916b) described *biaka* from a single ♀. In the introduction to their paper they wrote that the specimens were collected in the Schouten Islands, most on Biak, but a few were on Supiori. Therefore, the exact TL is unknown as the HT ♀ in the NHMUK (Fig. 72) has no locality label. Parsons (1998: 404) synonymised *biaka* with *diovis,* and we concur.

Note 3: Parsons (1998: 404) included New Ireland in the range for *diovis*. The NHMUK contains 1 ♂ *Deudorix diovis* from New Ireland, but this specimen has a mainly white frons with just a few orange scales. New Britain *diovis* ♂♂ in CCMS have similar frontes, but otherwise are similar to mainland New Guinea *diovis*. The *diovis* population in the Bismarcks may represent a new subspecies but this is outside the scope of this paper. Tennent (2006: 40) also included New Ireland in the range for *diovis.*

Note 4: Waterhouse (1934: 419) described *dido* as *Deudoryx* (*sic*) *epijarbas dido.* He described both sexes from a series taken in Kuranda, Queensland. He compared *dido* to *diovis,* noting that *diovis* ♂♂ had a much brighter ups and that *diovis* had an orange frons, whereas it was brown in *dido*. In fact, the *dido* frons is a dirty or creamy white. The *dido* HT ♂ is in the Australian Museum, Sydney.

Parsons (1998: 404) mistakenly synonymised *dido* with *D. diovis*. However, on page 405 he correctly referred to *dido* as a subspecies of *epijarbus*.

Braby (2016: 350) listed *dido* as the Australian subspecies of *epijarbas*. He noted (p. 282) the white scales "on the head between the eyes" (= frons) in *epijarbas* compared to orange and white in *diovis*. We also consider *dido* is a valid subspecies of *epijarbas*.

Note 5: As Parsons (1998: 404) also observed, in the NHMUK there is a series of typical nominotypical *diovis* (all with clearly orange frons) mistakenly placed with *D. epijarbas concolor*. They include specimens from Kei, Aru, Waigeo, various localities in New Guinea and Tagula (labelled Sudest). As a result, d'Abrera (1977: 302; 1990: 302) illustrated the uns of a *diovis* ♂, labelling it as *D. epijarbas concolor* (in the text he treated *concolor* as a synonym of *turbo*).

Deudorix diovis ***hoarei*** **ssp. n.**

(Fig. 77: ♂ HT, Bacan; Fig. 78: ♀ PT, Kasiruta; Fig. 79: ♂ PT, Bacan; Fig. 80: ♀ PT, Halmahera; Fig. 110: ♂ PT, Halmahera, with genitalia.)

Holotype ♂: Indonesia, Batchian [Bacan], iii. 1892, W. Doherty, Rothschild Bequest, B.M. 1939-1 (NHMUK).

Paratypes (11 ♂♂, 2 ♀♀): **Halmahera:** 2 ♂♂, i. 2002; 1 ♂, x. 2002 (all Ibu, Baru) (all CARR); 1 ♂, iii. 2016 (coll. Okubo); 1 ♀, iii. 2016 (CAYI). — **Bacan:** 4 ♂♂: same data as HT (NHMUK); 2 ♂♂, i. 2004; 1 ♂, Makian, vi. 2005 (all CARR). — **Kasiruta:** 1 ♀, xi. 2004 (CAYI).

Etymology: named for Seamus Hoare, friend and colleague of the first author.

Range: endemic to northern Maluku — Bacan, Halmahera.

Diagnosis and description

♂**:** FwL 17–18 mm (HT: 18 mm).

(Figs. 77 [HT], 79, 110, with genitalia.)

Upperside: fw very dark brown with elongated median patch of bright fiery orange (darker than in nominotypical *diovis*), occupying most of space 1b and about half of space 2. Hw base, costa and dorsum very dark brown, remainder of wing bright fiery orange (darker than nominotypical). A tail at vein 2. Tornal lobe well developed, inner third orange and thinly rimmed with orange on part of lobe (most of lobe thickly rimmed with orange in nominotypical), remainder of lobe black, overlain in outer part with metallic blue scales.

Underside: medium grey-brown (darker than nominotypical). Narrowly white-edged PD bands on both wings slightly darker than ground colour; fw relatively straight; hw relatively straight until vein 7, then markedly displaced basally, but leaving some overlap in approximately half the specimens examined (completely displaced, with no overlap in nominotypical). A narrowly white-edged, cell end bar on both fw and hw. A faint, narrow submarginal band of straightish white markings on fw; on hw, generally v-shaped (almost straight in nominotypical), in spaces 3–7. A large, roughly triangular, black spot (smaller, round in nomino-

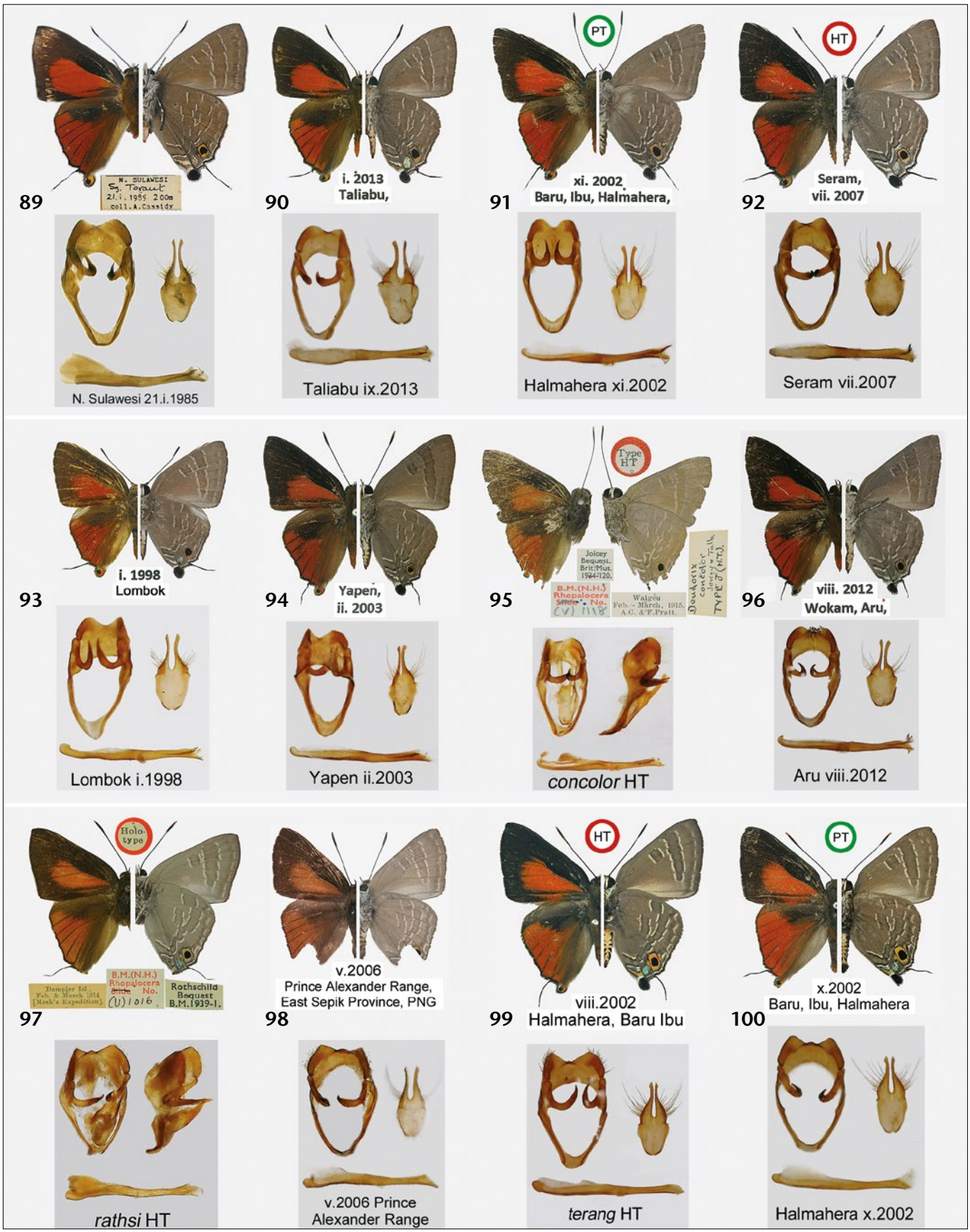


Plate 5, Figs. 89–100: Specimens with genitalia of *Deudorix* ***epijarbas*** and *D.* ***rathsi***. — **Figs. 89–96:** Subspecies of *D.* ***epijarbas***. — **Figs. 89–90:** *D. e.* ***megakles:*** **89:** ♂, ups./uns., N. Sulawesi (Sg. [Sungai = River] Toraut, 21. I. 1985, 200 m, coll. A. Cassidy). **90:** ♂, ups./uns.,Taliabu (I. 2003, CARR). — Fig. 91: *D. e.* ***joyae*** **ssp. n.:** ♂, PT, ups./uns., Halmahera (Baru, Ibu, XI. 2002, CARR). — **Fig. 92:** *D. e.* ***ruthae*** **ssp. n.:** ♂, HT, ups./uns., Seram (VII. 2007, RMNH). — **Fig. 93:** *D. e.* ***mesarchus:*** ♂, ups./uns., Lombok (I. 1998, CARR). — **Figs. 94–96:** *D. e.* ***concolor:*** **94:** ♂, ups./uns., Yapen (II. 2003, CARR). **95:** ♂, HT, ups./uns., Waigeo (Waigeu, II.–III. 1915, A. C. and F. Pratt, B.M. (N.H.) Rhopalocera No. (V) 1118, NHMUK). **96:** ♂, ups./uns., Aru (Wokam, VIII. 2012, CARR). — **Figs. 97–100:** Subspecies of *D.* ***rathsi***. — **Figs. 97–98:** *D. r.* ***rathsi:*** **97:** ♂, HT, ups./uns., Karkar (Dampier Isl. II.–III. 1914, Meek's Expedition, B.M.(N.H.) Rhopalocera No. (V) 1016, NHMUK). **98:** ♂, ups./uns., New Guinea (Prince Alexander Range, East Sepik, PNG, v. 2006, CCMS). — **Figs. 99–100:** *D. r.* ***terang*** **ssp. n.: 99:** ♂, HT, ups./uns., Halmahera (Baru, Ibu, VIII. 2002, RMNH). **100:** ♂, PT, ups./uns., Halmahera (Baru, Ibu, x. 2002, CARR).

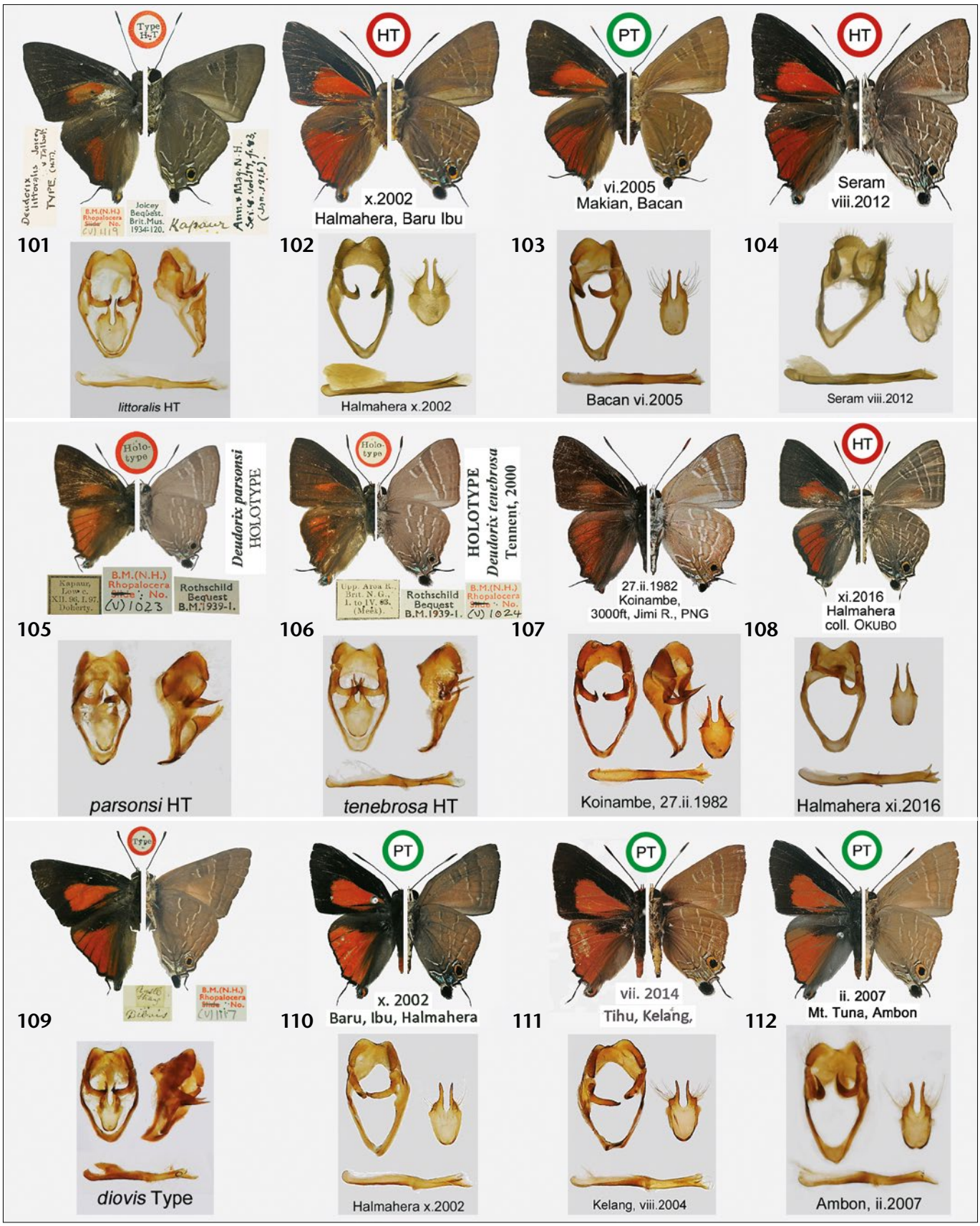


Plate 6, Figs. 101–112: Specimens with genitalia of *Deudorix* ***littoralis***, *D.* ***parsonsi*** and *D.* ***diovis***. — **Figs. 101–104:** Subspecies of *D.* ***littoralis***. — **Fig. 101:** *D. l.* ***littoralis:*** ♂, HT, ups./uns., New Guinea (Kapaur, Rhopalocera No. (V) 1119, NHMUK). — **Figs. 102–103:** *D. l.* ***malutara*** **ssp. n.: 102:** ♂, HT, ups./uns., Halmahera (Baru, Ibu, x. 2002, RMNH). **103:** ♂, PT, ups./uns., Bacan (Makian, vi. 2005, CARR). — **Fig. 104:** *D. l.* ***malpusat*** **ssp. n.:** ♂, HT, ups./uns., Seram (viii. 2012, RMNH). — **Figs. 105–108:** Subspecies of *D.* ***parsonsi***. — **Figs. 105–107:** *D. p.* ***parsonsi:*** **105:** ♂, HT, ups./uns., New Guinea (Kapaur, Low c[ountry], xii. [18]96.–i. [18]97, Doherty, Rhopalocera No. (V) 1023, NHMUK). **106:** ♂, ups./uns., New Guinea (*tenebrosa* HT = *parsonsi*, Upp[er] Aroa R., Brit.N.G., i.–iv. [19]03, Meek, Rhopalocera No. (V) 1024, NHMUK). **107:** ♂, ups./uns., New Guinea (Koinambe, 3000 ft, Jimi R[iver], 27. ii. 1982, PNG, CCMS). —**Fig. 108:** *D. p.* ***vicarorum*** **ssp. n.:** ♂, HT, ups./uns., Halmahera, xi. 2016, ex coll. Okubo, OMNH). — **Figs. 109–112:** Subspecies of *D.* ***diovis***. — **Fig. 109:** *D. d.* ***diovis*****:** ♂, type, ups./uns., Australia ("Austl Strang", Rhopalocera No. (V) 1117, NHMUK). — **Fig. 110:** *D. d.* ***hoarei*** **ssp. n.:** ♂, PT, ups./uns., Halmahera (Baru, Ibu, x. 2012, CARR). — **Figs. 111–112:** *D. d.* ***okuboi*** **ssp. n.: 111:** ♂, PT, ups./uns., Kelang (vii. 2014, CARR). **112:** ♂, PT, ups./uns., Ambon (Mt. Tuna, ii. 2007, CARR).

typical) in space 2 of tornal area, rimmed narrowly with orange. An irregular 'S'-shaped area of metallic bright blue turquoise (pale blue turquoise in nominotypical) from vein 1a on dorsum across to the basal margin of the tornal spot (more extensive and brighter metallic scaling than in nominotypical). The turquoise line outwardly lined with yellow on dorsum. Tornal lobe black, rimmed basally with white.

♀: FwL 18 mm.

(Figs. 78, 80.)

Upperside: fw medium-dark brown (darker than nominotypical), darker brown in cell and broadly along costa. Hw uniformly medium-dark brown. Tail and tornal lobe as in ♂.

Underside: generally as ♂, but lighter grey-brown. Fw PD band fully displaced at vein 7 in some specimens. Hw tornal spot larger and associated markings more developed with the yellow line reaching inner side of tornal spot.

Note 1: See notes 1 & 2 under *D. diovis okuboi* for key features distinguishing the 3 *diovis* taxa and comments on the ♂ genitalia.

***Deudorix diovis okuboi* ssp. n.**

(Fig. 81: ♂ HT, Ambon; Fig. 82: ♀ PT, Ambon; Fig. 83: ♂ PT, Ambon; Fig. 84: ♀ PT, Seram; Fig. 111: ♂ PT, Kelang, with genitalia; Fig. 112: ♂ PT, Ambon, with genitalia.)

Holotype ♂: Indonesia, Maluku, Ambon, v. 2010 (OMNH — ex coll. Okubo).

Paratypes (15 ♂♂, 2 ♀♀): **Kelang:** 1 ♂, Tihu, VII. 2014 (CARR). — **Seram:** 1 ♀, VIII. 2002 (CAYI). — **Haruku:** 1 ♂, X. 2005 (CARR). — **Ambon:** 2 ♂♂, Mt. Tuna, I. 2002; 1 ♂, Mt. Tuna, X. 2002; 1 ♂, XI. 2006; 2 ♂♂, Mt. Tuna, II. 2007; 1 ♂, X. 2012 (all CARR); 1 ♂, Mt. Tuna, V. 2016 (CAYI); 1 ♂, III. 2000; 1 ♂, X. 2006; 1 ♂, II. 2007; 1 ♂, V. 2010; 1 ♀, I. 2018 (all coll. Okubo); 1 ♂, VII. 1996 (CCMS).

Etymology: named for Dr Okubo who has a great knowledge of Indonesian butterflies and donated the HT.

Range: endemic to central Maluku — Kelang, Seram, Ambon, Haruku.

Diagnosis and description

♂: FwL 17–19 mm (HT: 19 mm).

(Figs. 81 [HT], 83, 111, with genitalia, 112, with genitalia.)

Upperside: fw very dark brown with elongated median patch of bright fiery orange (intermediate between nominotypical *diovis* and *hoarei*), occupying most of space 1b, half of space 2 and extending marginally into space 1a (similar to nominotypical but more extensive than *hoarei*). Hw base, costa and dorsum dark brown, remainder of wing bright fiery orange (intermediate between nominotypical *diovis* and *hoarei*). A tail at vein 2. Tornal lobe well developed, with a black centre, rimmed on inner two-thirds with orange, remainder rimmed with metallic blue (similar to nominotypical, with more extensive orange than in *hoarei*).

Underside: light yellowish-brown (similar to nominotypical but more yellowish). Narrowly white-edged PD bands on both wings; fw relatively straight; hw gently curved following termen until vein 7, then markedly displaced basally, so no overlap (as in nominotypical, overlaps in *hoarei*). A narrowly white-edged, cell end bar on both fw and hw.

A faint, narrow submarginal band of straightish white markings on fw; on hw, generally v-shaped ("v" more open than in *hoarei*), in spaces 3–7. A prominent, roughly oval, black spot (intermediate in size and shape between nominotypical and *hoarei*) in space 2 of tornal area, rimmed broadly with yellowish-orange (rimmed narrowly in nominotypical and *hoarei*), with yellowish-orange extending marginally into spaces 3 and sometimes 4 (restricted to space 2 in nominotypical and *hoarei*).

An irregular 'S'-shaped area of metallic pale green turquoise (greener than in nominotypical and *hoarei*) from vein 1a on dorsum to the basal margin of the tornal spot.

The turquoise line outwardly lined with yellow from dorsum to inner side of tornal spot. Tornal lobe black, rimmed basally with white.

♀: FwL 18–19 mm.

(Figs. 82, 84.)

Upperside: fw medium grey (browner in nominotypical and *hoarei*), broadly dark grey along costa (darker area only occupying costal two-thirds of cell, which is entirely darkened in nominotypical and *hoarei*). Hw uniformly medium grey. Tail and tornal lobe as in ♂.

Underside: as ♂, but tornal markings more prominent.

Note 1: The 3 *D. diovis* taxa are distinct in their facies. In the descriptions of the new subspecies *hoarei* and *okuboi,* we have noted differences from the nominotypical and each other. Here are the key points:

The nominotypical is smaller than the other 2 subspecies. The ♂ ups orange is palest in *diovis,* intermediate in *okuboi* and brightest in *hoarei.* The uns ground colour is light grey-brown in *diovis,* a darker grey-brown in *hoarei* and a light yellowish-brown in *okuboi.* The uns hw tornal turquoise markings are pale blue turquoise in *diovis,* bright blue turquoise in *hoarei* and pale green turquoise in *okuboi.* The uns hw tornal spot in space 2 is smallest and round with thin yellowish-orange ring in *diovis,* larger and roughly triangular with thin yellowish-orange ring in *hoarei*, and larger (as *hoarei*) but roughly oval with thick yellowish-orange ring in *okuboi.*

Note 2: The ♂ genitalia of *D. diovis* (Figs. 109–112) are distinct in the morphology of the valvae, which are widely spaced and curve outwards, tapering to narrow pointed apices. The opening between the valva is more chamber-like than in other species. Also prominent in *diovis* are the pronounced 'shoulders' to the valvae.

***Deudorix diovis* ssp. n?**

(Fig. 85: ♂, Gebe.)

We have also examined 1 ♂ from Gebe (IV. 2016, FwL 18 mm, CAYI, Fig. 85) which is phenotypically distinct from other subspecies. Gebe lies between northern Maluku and the New Guinea Region. It shares some features with each of the other subspecies and has some unique characteristics. The tornal lobe on the ups hw is similar to that of nominotypical *diovis*. The uns fw PD

band is much narrower and shorter (ending at vein 2) than any other *diovis* specimens we have seen. On the uns hw the displacement of the PD band at vein 7 is similar to the nominotypical and *okuboi*. The metallic blue and yellow markings in the tornal area are similar to those of *hoarei*. The black tornal spot in space 2 is different from all other subspecies – relatively large and perfectly oval with a thin, yellowish-orange ring. It is likely to represent a further subspecies, but as we have only seen this 1 specimen, we do not describe it here.

The *Deudorix epirus* species-group

The *epirus* species-group is characterised by creamy uns with striking brown bands. The group contains 4 species – in 3 the ♂♂ have bright orange-red ups, whilst the 4th (*epirus*) has a blue ups. Two species occur in Maluku.

Deudorix ceramensis Ribbe, 1901

(Fig. 113: ♂, Seram; Fig. 114: ♀, Seram; Fig. 115: ♂, Seram; Fig. 116: ♀, Seram.)

Deudorix ceramensis: Ribbe (1901: 336, pl. 6, fig. 3); TL: Seram – see note 1.

Range: endemic to Seram (NHMUK).

Note 1: Ribbe (1901) described and illustrated *ceramensis* in German from a single ♂ from the mountains behind "Illu" in Seram. Takanami (1989: 54) confirmed the HT ♂ is in the SMTD and illustrated both surfaces. He noted that the locality label stated: "Ceram Jllo". We cannot find Illu or Jllo on any map.

Note 2: Joicey & Talbot (1922: 354) described the *ceramensis* ♀ from 1 pair collected by C. F. & J. Pratt at Manusela at 6000 feet. This specimen is in the NHMUK Type Collection and bears a "Neo-AT" label (Fig. 114).

Note 3: The taxa *maudei* Joicey & Talbot, 1916b (TL: Biak) and *niepelti* Joicey & Talbot, 1922 (TL: New Ireland) were described as subspecies of *D. ceramensis.* Seitz (1926: 1000) placed *ceramensis* and *maudei* (misspelt as *mandli*) as subspecies of *D. epirus*. Both *ceramensis* and nominotypical *epirus* occur on Seram and they are now treated as related, but distinct species, e.g. d'Abrera (1977: 302, 1990: 302), Parsons (1998: 406).

Deudorix epirus (C. Felder, 1860)

Myrina epirus C. Felder (1860: 452); TL: Ambon.

Range: Maluku, New Guinea Region, Australia.

Note 1: Tennent et al. (2010: 37–43) discussed in some detail the previous confusion regarding the arrangement and distribution of subspecies of *D. epirus*. They found that the phenotypes in Maluku and the Milne Bay Islands could easily be assigned subspecific names, but it was less clear cut in New Guinea and Australia. They suggested that *D. epirus* comprised just 4 subspecies, 3 of which occur in Maluku. The 4th – *kallias* Fruhstorfer, 1908 – is found in the D'Entrecasteaux, Trobriand and Louisiade island groups. We follow that arrangement here.

Note 2: Parsons (1998: 406) included Kei in the range for *D. epirus*. We could not find any Kei *epirus* specimens in the NHMUK and we are unaware of any further records,

Deudorix epirus epirus (C. Felder, 1860)

(Fig. 117: ♂ type, Ambon; Fig. 118: ♀, Ambon; Fig. 119: ♂, Ambon; Fig. 120: ♀, Seram.)

Myrina epirus: C. Felder (1860: 452); TL: Ambon – see note.

Range: endemic to central Maluku – Ambon, Seram (BMNH), Saparua (Fruhstorfer 1908).

Note: Felder (1860), in Latin, described *epirus* from Ambon, noting the specimens were in his collection. Parsons (1998: 406) stated: "HT ♂ without data but with a label '110' (BMNH)". We illustrate this specimen (Fig. 117).

Deudorix epirus eos Hewitson, 1863

(Fig. 121: ♂ type, Bacan; Fig. 122: ♀, Morotai; Fig. 123: ♂, Halmahera; Fig. 124: ♀, *tibullus* type = *eos,* Halmahera.)

Deudorix eos: Hewitson (1863: 19, pl. 6, figs 8, 9); TL: Bacan – see note 1.

= *Sithon tibullus:* Staudinger (1888: Vol. 1: 278; Vol. 2: pl 95); TL: Halmahera – see note 2.

Range: endemic to northern Maluku – Halmahera, Bacan (NHMUK), Morotai (Tennent et al. 2010). – **New records:** Kasiruta (1 ♂, 1 ♀, xi. 2004, CAYI), Mandioli (1 ♂, iii. 1991, CAYI). Obi is excluded – see note 3.

Note 1: Hewitson (1863) described and illustrated both surfaces of the ♂ of *eos* from specimen/s in the collection of A. R. Wallace. A ♂ type is in the NHMUK (Fig. 121).

Note 2: Staudinger (1888) described and illustrated *tibullus* from a series of 4 ♀♀ from Halmahera sent to him by Dr. Platen. Staudinger only saw these ♀♀, therefore unsurprisingly did not associate it with Hewitson's *eos* HT ♂. A *tibullus* ♀ ST in the NHMUK (Fig. 124) bears a green PT label but a further label identifies it as a "cotype".

The taxon was treated as a synonym of *eos* by d'Abrera (1977: 303; 1990: 303 – misspelt as *tibillus*) and Tennent et al. (2010: 42) agreed, as do we.

Note 3: Tennent et al. (2010: 39, 42) also included Obi in the range for *eos*. This was based on a single *eos* ♀ in the NHMUK labelled "Obi, ex J. Waterstradt 1904". This label is now considered erroneous as Tennent & Rawlins (2012: 140), Rawlins et al. (2014: 13, 16, 28) and Rawlins & Cassidy (2016: 148) explained, and the specimens are thought to originate from Bacan. We are unaware of any other records from Obi and so exclude Obi from the range for *D. epirus eos*.

Deudorix epirus despoena Hewitson, 1863

(Fig. 125: ♂, Aru; Fig. 126: ♀, Aru; Fig. 127: ♂, Aru; Fig. 128: ♀, Aru; Fig. 129: ♂ type, Waigeo; Fig. 130: ♀, type, Waigeo; Fig. 131: ♂, New Guinea; Fig. 132: ♀, Waigeo.)

Deudorix despoena: Hewitson (1863: 18, pl. 6, figs. 1–3); TL: Waigeo – see note 1.

= *Deudorix epirus agimar:* Fruhstorfer (1908: 38); TL: Australia – see note 2.

= *Deudorix epirus almar:* Fruhstorfer (1908: 38); TL: Astrolabe Bay, New Guinea – see note 3.

Range: Aru, Misool, Waigeo, Mioswar, New Guinea, Australia (NHMUK). – **New records:** Batanta (1 ♂, ii. 2001), Salawati (1 ♂, v. 2003), Yapen (1 ♂, 1 ♀, viii. 2002) and from specific Aru island – Wokam (1 ♀, x. 2000) (all CAYI). K. Nagai (pers. comm) has also collected *epirus* on Maikoor and Kobroor Islands in Aru.

Note 1: Hewitson (1863) described and illustrated both sexes of *despoena* from specimens in the collections of W. W. Saunders and A. R. Wallace from Waigeo. ♂ & ♀ types are in the NHMUK (Figs. 129, 130).

Note 2: Fruhstorfer (1908) described only the ♂ of *agimar,* yet noted he had a pair from Australia in his collection. He considered the taxon differed from both Waigeo and Ambon *epirus*. Parsons (1998: 406) listed *agimar* as a distinct subspecies. He considered both *agimar* and *epirus* occurred in New Guinea, but in different areas. However, he added "*agimar* is best treated as a synonym of *epirus* as Sands & Fenner (1978) pointed out that intermediate

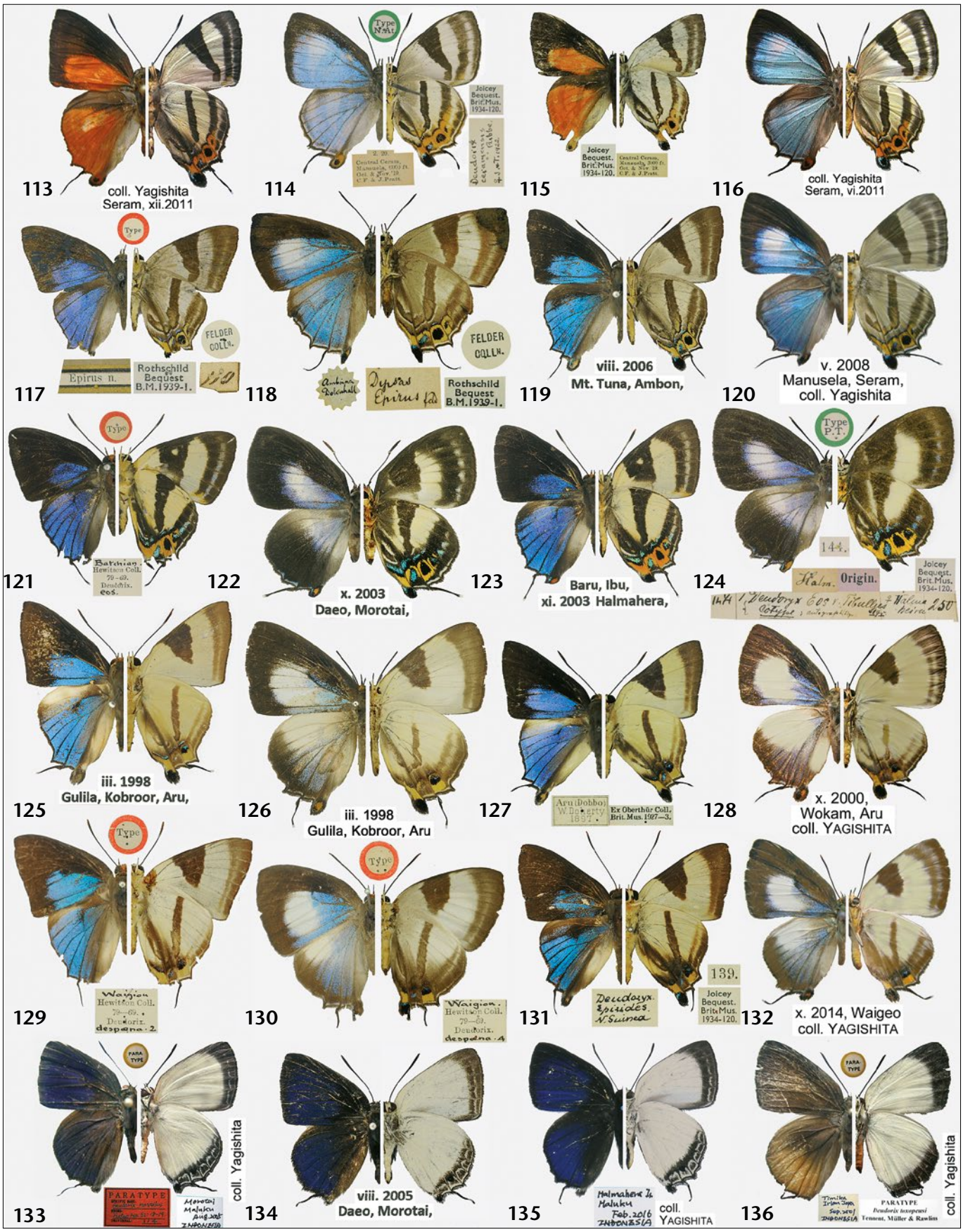
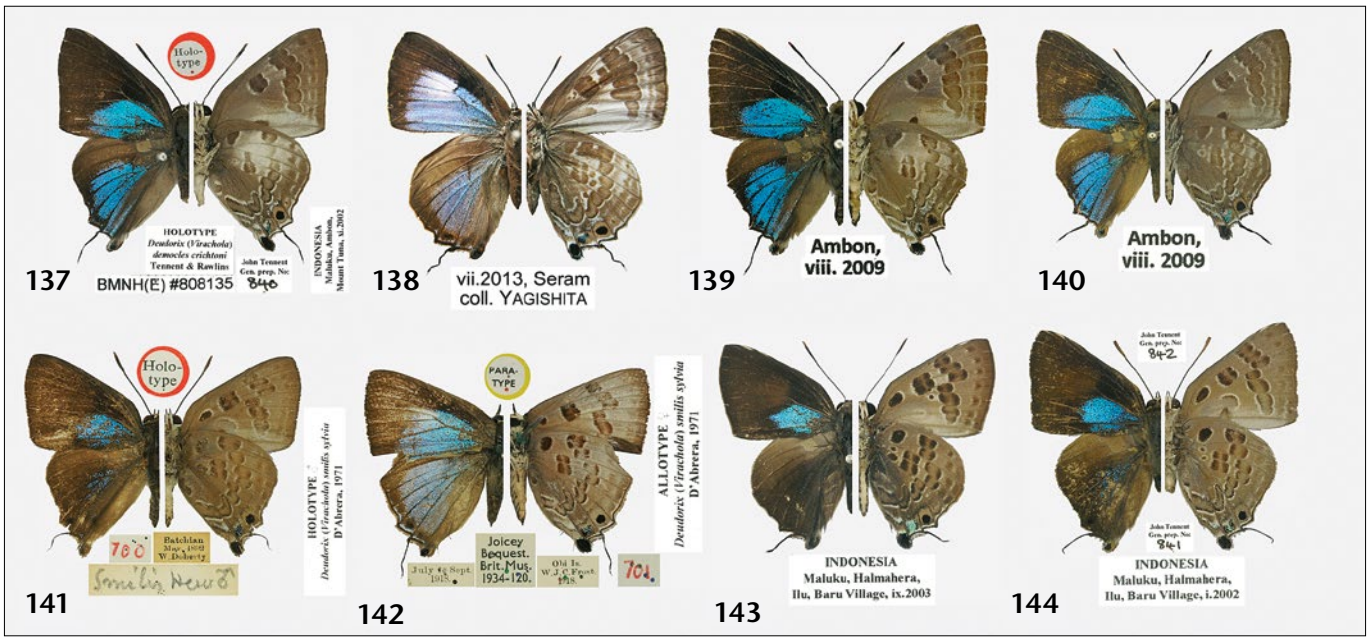


Plate 7, Figs. 113–136: *Deudorix* species. — **Figs. 113–116:** *D. **ceramensis:*** **113:** ♂, ups./uns., Seram (xii. 2011, CAYI). **114:** ♀, Neo AT, ups./uns., Seram (Central Ceram, Mansuela [Manusela], 6000 ft., x.–xi. [19]19, C. F. & J. Pratt, NHMUK). **115:** ♂, ups./uns., Seram (Central Ceram, Mansuela [Manusela], 3000 ft., x.–xi. [19]19, C. F. & J. Pratt, NHMUK). **116:** ♀, ups./uns., Seram (vi. 2011, CAYI). — **Figs. 117–132:** Subspecies of *D. **epirus.*** — **Figs. 117–120:** *D. e. **epirus:*** **117:** ♂, type, ups./uns., Ambon ("110", Felder colln., NHMUK). **118:** ♀, ups./uns., Ambon (Amboina, Doleschall, Felder colln., NHMUK). **119:** ♂, ups./uns., Ambon (Mt. Tuna, viii. 2006, CARR). **120:** ♀, ups./uns., Seram (Manusela, v. 2008, CAYI). — **Figs. 121–124:** *D. e. **eos:*** **121:** ♂, type, ups./uns., Bacan (Batchian, Hewitson Coll. 79–69, NHMUK). **122:** ♀, ups./uns., Morotai (Daeo, x. 2003, CARR). **123:** ♂, ups./uns., Halmahera (Baru, Ibu, xi. 2003, CARR). **124:** ♀, ups./uns., Halmahera (PT [ST] *tibullus* = *eos*, Halmaheira, NHMUK). — **Figs. 125–132:** *D. e. **despoena:*** **125:** ♂, ups./uns., Aru (Gulila, Kobroor, iii. 1998, CARR). **126:** ♀, ups./uns., Aru (Gulila, Kobroor, iii. 1998, CARR). **127:** ♂, ups./uns., Aru (Dobbo



[Dobo, Wamar Is], W. Doherty, 1897, NHMUK). **128:** ♀, ups./uns., Aru (Wokam, x. 2000, CAYI). **129:** ♂, type, ups./uns., Waigeo (Waigiou, Hewitson Coll. 79–69, NHMUK). **130:** ♀, type, ups./uns., Waigeo (Waigiou, Hewitson Coll. 79–69, NHMUK). **131:** ♂, ups./uns., New Guinea (*Deudoryx epirides* [*sic*], "139", NHMUK). **132:** ♀, ups./uns., Waigeo (x. 2014, CAYI). — **Figs. 133–135:** *D. **novellus**:* **133:** ♂, PT, ups./uns., Morotai (viii. 2005, CAYI). **134:** ♂, ups./uns., Morotai (Daeo, viii. 2005, CARR). **135:** ♂, ups./uns., Halmahera (ii. 2016, CAYI). — **Fig. 136:** *D. **toxopeusi**:* ♀, PT, ups./uns., New Guinea (Timika, Irian Jaya, ix. 2001, CAYI).

Plate 8, Figs. 137–144: ***Virachola*** species. — **Figs. 137–140:** *V. **democles crichtoni**:* **137:** ♂, HT, ups./uns., Ambon (Mount Tuna, xi. 2002, John Tennent Gen. prep. No: 840, NHMUK). **138:** ♀, ups./uns., Seram (vii. 2013, CAYI). **139:** ♂, ups./uns., Ambon (viii. 2009, CARR). **140:** ♂, ups./uns., Ambon (viii. 2009, CARR). — **Figs. 141–144:** *V. **smilis sylvia**:* **141:** ♂, HT, ups./uns., Bacan (Batchian, iii. 1892, W. Doherty, NHMUK). **142:** ♀, PT, ups./uns., Obi (vii.–ix. 1918, W. J. C. Frost, NHMUK). **143:** ♂, ups./uns., Halmahera (Baru, Ibu, ix. 2003, CARR). **144:** ♂, ups./uns., Halmahera (Baru, Ibu, i. 2002, John Tennent Gen. prep. No. 841, CARR).

forms occur at 1 locality in PNG". Tennent et al. (2010: 42) synonymised *agimar* with *despoena*, and we concur. We have not been able to locate any *agimar* types.

Note 3: Fruhstorfer (1908) described only the ♂ of *almar* from 1 specimen in his collection from Astrolabe Bay. D'Abrera (1977: 303, 1990: 303) treated *almar* as a synonym of *epirus*, and Parsons (1998: 406) formally synonymised the taxa. However, Tennent et al. (2010: 42) found Waigeo and New Guinea specimens indistinguishable and synonymised *almar* with *despoena*, and we follow this. We have not been able to locate the *almar* HT.

Note 4: The layout of specimens in the NHMUK collection suggests *epirus* from Aru is an undescribed species. The uns hw brown discal band varies in width and darkness. In the ♀ it varies in how close to the costa it reaches. Variations are found within both the Aru and New Guinea populations. We conclude, as Tennent et al. (2010: 42) did, that the Aru population falls with *despoena*.

The *Deudorix novellus* species-group

This small group contains just 2 species — *D. novellus* and *D. toxopeusi* Tennent et al., 2010 from Papua, Indonesia.

Deudorix novellus Yagishita, 2006

(Fig. 133: ♂ PT, Morotai; Fig. 134: ♂, Morotai; Fig. 135: ♂, Halmahera.)

Deudorix novellus: Yagishita (2006: 18, pl. 1, figs. 9–10); TL: Morotai — see note 1.

= *Deudorix detanii:* Okubo (2007: 1); TL: Morotai — see note 3.

Range: endemic to northern Maluku: Morotai (CARR, CAYI). — **New record:** Halmahera (2 ♂♂, Gunung Rotang, Oba, i. 2011 (CARR); 1 ♂, ii. 2016 (CAYI).

Note 1: Yagishita (2006) described and illustrated *novellus* from 5 ♂♂ from Morotai in northern Maluku. He noted that the HT and PTs were preserved in his collection. The HT ♂ is now in the Museum of Tokyo University (Akira Yagishita, pers. comm.).

Note 2: Yagishita (2006: 18) also recorded 2 ♀♀ from Timika, New Guinea, with a similar uns and wondered if they represented the same species. Parsons (1998: 406) discussed the *epirus* species-group and mentioned an undescribed distinctive species known by 1 ♂ from the Snow Mountains with a predominantly white uns without any median banding. This Snow Mountains ♂ (in the RMNH) and Yagishita's ♀♀ have subsequently been described as a distinct (but clearly related) species by Tennent et al. (2010): *D. toxopeusi*.

Note 3: Okubo (2007) described and illustrated *detanii* from 1 ♂ from Morotai. He also provided excellent line drawings of the genitalia. He noted that the HT ♂ would be deposited in the Osaka Museum of Natural History. This taxon is clearly a synonym of *novellus*.

Note 4: We have not seen any *novellus* ♀, so we illustrate instead the ♀ of the sister species *D. toxopeusi* (Fig. 136).

Annotated checklist of the *Virachola* taxa of North Maluku and Maluku

There are approximately 15 species of *Virachola* in the Indo-Australian Region — 2 occur in Maluku.

Virachola democles (Miskin, 1884)

Deudorix democles: Miskin (1884: 95); TL: Queensland — see note 1.

Range: central Maluku, New Guinea Region and Australia (NHMUK).

Note 1: Miskin (1884) described *democles* from the Basilisk Range in north Queensland. He didn't specify the sex or number of specimens, but his description is clearly of the ♂. He noted that the specimen(s) was in his collection. Parsons (1998: 409) indicated that the HT was a ♂ and was possibly held in the QMB (Queensland Museum, Brisbane). We located 2 ♂♂ in the QMB, both bearing labels reading: "SYNTYPE ♂ *Deudorix democles* Miskin, det. D. L. Hancock 1992". The less tatty of the 2 specimens also has a label stating "Misk. Type ♂" with "G.A.W. 27/7/[19]10, C.J.W." on the reverse side. Hancock (1992: 522–523) noted this but must have considered that this label apparently placed by G. A. Waterhouse & "C. J. W." (identity unclear) did not establish the specimen as the HT, so treated both ♂♂ as STs.

Note 2: Rothschild (1915: 395) described *Virachola affinis* from a single ♀ from Dampier Island (= Karkar). This HT ♀ is in the NHMUK.

D'Abrera (1977: 304, 1990: 304) listed *Virachola affinis* and gave the range as "New Guinea, Papua, Karkar (Dampier) I., and other islands off the eastern coast of the main island of New Guinea". He illustrated the ♀ HT as well as a ♂. He gave no locality data for the ♂. Tennent (2000: 24), who must have recognised the specimen in the NHMUK, noted that the ♂ figured by d'Abrera was taken on Sudest (= Tagula). He questioned whether these specimens were conspecific.

Parsons (1998: 409) treated *affinis* as a subspecies of *V. democles* and associated and illustrated a ♂ from Guadalcanal (held in ANIC) with it. Tennent (2000: 22-24) considered this was incorrect. He described *D. wabens* from Guadalcanal, making this ANIC specimen the only PT. He noted that the phenotypes and the ♂ genitalia of *democles* (from Australia) and *wabens* differed, indicating that they were not conspecific.

As Tennent pointed out, based on uns markings, the Sudest ♂ is the most likely partner for the *affinis* ♀ HT, but as no "*affinis* group" ♂♂ are known from Karkar and no ♀♀ from Tagula, the taxonomic status of *affinis* remains unclear. Tennent (2000, 2001) treated *affinis* as a distinct species and not, as Parsons suggested, a subspecies of *democles*. We have examined over 10 specimens of both sexes of *affinis* from various localities in mainland New Guinea and the Bismarcks in CCMS. They are generally very similar, but with some minor distinctions, to Australian nominotypical *democles*, so we treat *affinis* as ***Virachola democles affinis* stat. rev.**

Thus, there are 3 described subspecies of *democles;* 1 occurs in Maluku.

Virachola democles crichtoni Tennent & Rawlins, 2010

(Fig. 137: ♂ HT, Ambon; Fig. 138: ♀, Seram; Fig. 139: ♂, Ambon; Fig. 140: ♂, Ambon.)

Deudorix (*Virachola*) *democles crichtoni:* Tennent & Rawlins (2010: 27, figs. 8–12); TL: Ambon — see note 1.

Range: endemic to central Maluku — Ambon (NHMUK). — **New records:** Buru (Allyn Museum — see note 2), Seram (CAYI — see note 3).

Note 1: Tennent & Rawlins (2010) described *crichtoni* from 3 ♂♂ from Ambon. The HT ♂ is in the NHMUK (Fig. 137).

Note 2: A ♂ in the Allyn Museum, Gainesville, ex Mark Simon collection, lacks the whitened areas on the costal half of the uns hw which is present in the *crichtoni* HT. However, this is a variable feature in Ambon specimens (see Figs. 137, 139, 140) so we include the Buru population with *crichtoni*. Photographs of the specimen were kindly sent by Jade Badon via Chris Müller.

Note 3: A specimen in CAYI represents the first record of a ♀ and the first record from Seram (Fig. 138).

Virachola smilis (Hewitson, 1863)

Deudorix smilis: Hewitson (1863: 18, pl. 8, figs 22, 23); TL: East India — see note 1.

Range: India, Myanmar, Peninsular Malaysia, Borneo, Indonesia (NHMUK), Andaman Islands, Australia (Common & Waterhouse 1981), Thailand, Laos, Cambodia, Vietnam (Saito & Inayoshi 2018), Palawan, Philippines (Treadaway & H. Schroeder 2012).

Note 1: Hewitson (1863) described and illustrated only the *smilis* ♀. He noted that the specimen/s was in the collection of the East India Museum. We are unaware of the location of the type, but it is not in the NHMUK Type Collection nor listed in the NHMUK data base.

Note 2: There are 6 recognised subspecies of *V. smilis;* 1 occurs in Maluku.

Virachola smilis sylvia d'Abrera, 1971

(Fig. 141: ♂ HT, Bacan; Fig. 142: ♀ PT, Obi; Fig. 143: ♂, Halmahera; Fig. 144: ♂, Halmahera.)

Virachola smilis sylvia: d'Abrera (1971: 304); TL: Bacan — see note 1

Range: Bacan, Obi (NHMUK), Halmahera (Tennent & Rawlins 2010).

Note 1: D'Abrera (1971) briefly described both sexes of *sylvia,* giving the range as "Obi, Bacan". He illustrated the ups of a pair, but did not record which was the HT, or the locality data for either specimen. As Tennent & Rawlins (2010: 28) noted, d'Abrera also did not affix any name or type labels to the specimens. However, Tennent & Rawlins were able to identify the specimens in the NHMUK and place the appropriate labels on them. They illustrated both surfaces of both sexes and the ♂ genitalia of a specimen from Halmahera. We clarify here that the HT ♂ (Fig. 141) is from Bacan and the "allotype" (PT) ♀ (Fig. 142) bears a Frost Obi label.

Acknowledgements

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