An illustrated and annotated checklist of *Arhopala* Boisduval, 1832, taxa occurring in North Maluku and Maluku, Indonesia (Lepidoptera: Lycaenidae) – Part 3: The *centaurus* species-group

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Abstract: This paper is the 3rd in the series covering the species and subspecies of the lycaenid genus *Arhopala* Boisduval, 1832 that occur in the Indonesian provinces of North Maluku and Maluku and deals with the *centaurus* species-group, *sensu* Evans (1957). We recognise 18 described taxa (10 species) as occurring there. The authorship and date of publication of the taxon *micale* Blanchard, 1848 are discussed. Two new subspecies are described from Gebe: *Arhopala philander* ***ladysueae*** **ssp. n.** (holotype = HT male, NHMUK) and *Arhopala lata* ***detanii*** **ssp. n.** (HT male, NHMUK). Some new island locality records are introduced, a map shows the islands discussed in the text and all taxa are illustrated in colour.

Keywords: Lepidoptera, Lycaenidae, Theclinae, *Arhopala, centaurus* species-group, *micale*, new subspecies, new locality records, Indonesia, North Maluku, Maluku.

Illustriertes und kommentiertes Verzeichnis der *Arhopala*-Arten (Lepidoptera: Lycaenidae, Theclinae), die in den Nordmolukken und Molukken (Indonesien) vorkommen — Teil 3: Die *centaurus*-Artengruppe

Zusammenfassung: Dies ist die dritte Publikation einer Serie über die Arten und Unterarten der Lycaenidengattung *Arhopala* Boisduval, 1832 aus den indonesischen Provinzen Nordmaluku und Maluku. Sie befaßt sich mit der Artengruppen von *Arhopala centaurus sensu* Evans (1957). 18 beschriebene Taxa (mit 10 anerkannten Arten) sind von dort bekannt. Die korrekte Autorenschaft und das Publikationsjahr von *micale* Blanchard, 1848 werden diskutiert. Zwei neue Unterarten werden von Gebe beschrieben: *Arhopala philander* ***ladysueae*** **ssp. n.** (holotype = HT Männchen in NHMUK) und *Arhopala lata* ***detanii*** **ssp. n.** (HT Männchen in NHMUK). Einige neue Inselnachweise werden gegeben, eine Karte zeigt die besprochenen Inseln, und alle Taxa werden farbig illustriert.

Introduction

***Arhopala* Boisduval, 1832** (Lycaenidae, Theclinae, Arhopalini) is the 5th genus to be published in NEVA in the series on the lycaenid genera of the Indonesian provinces of North Maluku (Maluku Utara) and Maluku. As this is a large group we have split the genus into sections for publication. In the 1st part (Rawlins et al. 2018a) we covered the introduction to the genus and the *anthelus* and *theba* species-groups. Part 2 (Rawlins et al. 2018b) covered the *democritus* and *eumolphus* species-groups.

This 3rd part covers the *centaurus* species-group, *sensu* Evans (1957). We recognise 18 taxa, comprising 10 species as occurring there. Two new subspecies are described, and we introduce some new locality records. The confusion over the authorship and date of publication of the taxon *micale* Blanchard, 1848 is discussed in some detail.

For the biogeography of the region see Rawlins et al. (2014: 5–8) but for the purposes of this paper we make the following key points:

- We use the term Maluku 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.
- We use the biogeographical term "central Maluku" to mean the islands of Buru, Ambelau, Manipa, Kelang, Buano, Seram, Ambon, Haruku, Saparua, Nusa Laut, Geser and Seram Laut.

A map shows these islands of Maluku and North Maluku. Here we note that 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.

Where available, both surfaces of both sexes of each taxon are illustrated. To reduce the number of plates needed, the 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.

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

Abbreviations used

AT	Allotype (no special status now, according to IUCN rules).
CARR	Coll. Andrew Rawlins, Rainham, Kent, UK.
CSSK	Coll. Stefan Schröder, Köln, Germany.
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.
NHMUK	The Natural History Museum, London, UK.
PNG	The country of Papua New Guinea.
PT	Paratype.
SMTD	Senckenberg Museum für Tierkunde, Dresden.
ssp. n.	subspecies nova.
TL	Type locality.
uns	underside.
ups	upperside.

Arhopala Boisduval, 1832

Type species: *phryxus* Boisduval, 1832, designated by Scudder (1875: 120).

Annotated checklist of the *Arhopala "centaurus* species-group" taxa of North Maluku and Maluku

Introduction to the *centaurus* species-group

Evans (1957: 113–118) placed this species-group under the genus *Narathura* Moore, 1879, but this genus is now considered a synonym of *Arhopala,* as discussed in *Arhopala* part 1 (Rawlins et al. 2018). Evans included 15 species in his *centaurus* species-group.

Parsons (1998: 386) pointed out that the species in this group are very similar and quite variable so often look alike. He noted Evans' frequent misidentifications of species in his NHMUK arrangement, and that Evans' key was impossible to use for the identification of New Guinea species in this group. Parsons revised the group and raised three subspecies to species status giving a total of 18 species in the group. He followed d'Abrera (1977: 311) and listed *eupolis* as a synonym of *centaurus* but these two taxa represent distinct species.

Vane-Wright & Gaonkar (2006) resolved the confusion over the identities and range of the species *Arhopala centaurus* and *A. eupolis*. They demonstrated that *A. pseudocentaurus* is a synonym of A. *centaurus centaurus* and that the TL of *A. centaurus* is Java, not Australia. They recorded 12 subspecies of *A. centaurus* ranging across the Oriental Region from Nepal, southern India and Sri Lanka to China and the Philippines. In Indonesia, they recorded the species from Batu, Pagai, Sumatra, Java, Kangean, Bali, Lombok and Sumbawa. *A. centaurus* is not known from Maluku. Vane-Wright & Gaonkar also demonstrated that *A. eupolis* Miskin, 1890 is the correct name for the taxon variously known as *Arhopala centaurus eupolis* (e.g. by Waterhouse & Lyell 1914: 124) or *Arhopala centaurus centaurus* (e.g. by d'Abrera 1977: 311, 1990: 311, Common & Waterhouse 1982: 261, Parsons 1998: 386–387, Braby 2004: 232).

In summary, *Arhopala araxes*, *A. centaurus* and *A. eupolis* are all three distinct species.

Fruhstorfer (1914: 159) described *Arhopala alkisthenes* from 1 ♂ and 4 ♀♀ in his collection from "Friedrich Wilhelmshafen" in German New Guinea. A ♂ in the NHMUK bearing a type label along with appropriate data labels can be considered as the HT (Fig. 69). There are specimens in the NHMUK from a variety of locations in the New Guinea Region: Yapen, Mioswar, Numfor (labelled Mefor), Amberfron (?= Rumberpon), New Guinea, Manam (labelled Vulcan), Karkar (labelled Dampier) (NHMUK). In addition, there are 2 ♂♂ (1 is illustrated in Fig. 67), each with 1 identical label: "Batchian" handwritten above a typed section reading "Brit. Mus. 1924-483." They clearly match the *alkisthenes* HT ♂. These are the only reported *alkisthenes* specimens from outside the New Guinea Region and we doubt their provenance, so we tentatively exclude *alkisthenes* from the Maluku *Arhopala* checklist.

Checklist

Arhopala araxes Felder & Felder, 1865

Arhopala araxes Felder & Felder (1865: 224, pl. 29, figs. 3–5); TL: Sulawesi.

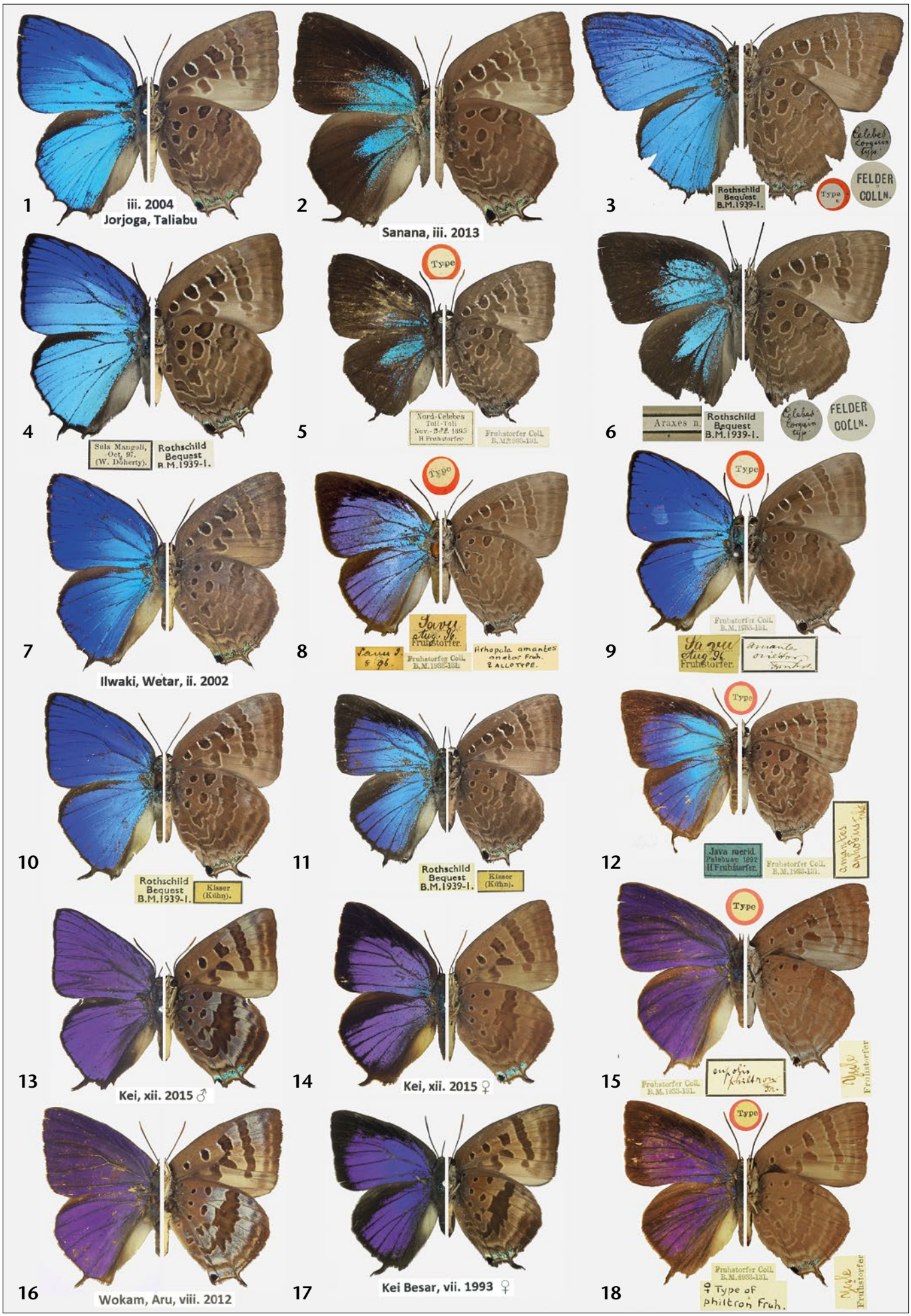
= *Amblypodia amantes* "Variety *a*": Hewitson (1862: 4); TL: Makassar, Sulawesi.

= *Arhopala amantes grandiosa:* Fruhstorfer (1914: 161); TL: Bonthain, E. Sulawesi.

Range: Indonesia — Sumatra, Java, Lesser Sunda Islands, Sulawesi Region, S. W. Maluku (NHMUK).

Note: Evans (1957: 114) listed 9 subspecies of *araxes* including his new subspecies *talauta*. Five of these (*tindali, eurisus, eupolis, philtron, asopus*) are no longer included under *A. araxes*.

Plate 1, Figs. 1–18: Subspecies of *Arhopala araxes* and *A. eupolis eupolis*. — **Figs. 1–6:** *A. araxes araxes:* **1:** ♂, ups./uns., Taliabu (Jorjoga, iii. 2004, CARR). **2:** ♀, ups./uns., Sanana (iii. 2013, CARR). **3:** ♂, type, ups./uns., Sulawesi (Celebes, Lorquin Typ., Felder Colln., NHMUK). **4:** ♂, ups./uns., Mangole (Sula Mangoli, Oct. [18]97, W. Doherty, NHMUK). **5:** ♀, ups./uns., Sulawesi (Nord-Celebes, Toli-Toli, Nov.- Dec. 1895, H. Fruhstorfer, NHMUK). **6:** ♀, type, ups./uns., Sulawesi (Celebes, Lorquin Typ., Felder Colln., NHMUK). — **Figs. 7–12:** *A. araxes onetor:* **7:** ♂, ups./uns., Wetar (Ilwaki, ii. 2002, CARR). **8:** ♀, type, ups./uns., Savu (Aug. [18]96, Fruhstorfer, NHMUK). **9:** ♂, type, ups./uns., Savu (Aug. [18]96, Fruhstorfer, NHMUK). **10:** ♂, ups./uns., Kisar (Kisser, Kühn, NHMUK). **11:** ♀, ups./uns., Kisar (Kisser, Kühn, NHMUK). **12:** ♀, ups./uns., Java (type *aphobus* = *onetor*, Java merid. Palabuan 1892, H. Fruhstorfer, NHMUK). — **Figs. 13–18:** *A. eupolis eupolis:* **13:** ♂, ups./uns., Kei (xii. 2015, CARR). **14:** ♀, ups./uns., Kei (xii. 2015, CARR). **15:** ♂, ups./uns. Yule (type *philtron* = *eupolis*, Fruhstorfer Coll., NHMUK). **16:** ♂, ups./uns., Aru (Wokam, viii. 2012, CARR). **17:** ♀, ups./uns., Kei (Kei Besar, vii. 1993, CARR). **18:** ♀, ups./uns. Yule (type *philtron* = *eupolis*, Fruhstorfer Coll., NHMUK). — In all plates all NHMUK specimen photographs © Trustees of the Natural History Museum London, reproduced here with permission.



Parsons (1998: 387) followed d'Abrera's (1971: 311) earlier synonymy of *tindali* Ribbe, 1899 with *eurisus* Druce, 1891, from the Bismarcks and Solomons, but raised *eurisus* to a full species. Tennent (1999: 197–202) also treated *eurisus* as a full species. However, he considered *tindali* a distinct species and treated *A. styx* Evans, 1957, as a junior synonym of it.

Parsons (1998: 386) mistakenly considered *eupolis* a synonym of *centaurus* and synonymised *philtron* with *centaurus/eupolis*. He retained *asopus* as a "doubtfully distinct" subspecies of *centaurus/eupolis*. As noted above, Vane-Wright & Gaonkar (2006: 307) demonstrated that *Arhopala centaurus* was an Oriental species with its TL as Java, whilst *eupolis* was an altogether different butterfly with TL in Australia.

Four subspecies of *araxes* remain – *talauta* Evans, 1957 restricted to Talaud, *verelius* Fruhstorfer, 1914 from Kalao and *onetor* and *araxes* which are both represented in Maluku.

Arhopala araxes araxes Felder & Felder, 1865

(Fig. 1: ♂, Taliabu; Fig. 2: ♀, Sanana; Fig. 3: ♂ type, Sulawesi; Fig. 4: ♂, Mangole; Fig. 5: ♀, Sulawesi; Fig. 6: ♀ type Sulawesi.)

Arhopala araxes araxes Felder & Felder (1865: 224, pl. 29, figs. 3–5); TL: Sulawesi – see note 1.

= *Amblypodia amantes* "Variety a" Hewitson (1862: 4); TL: Makassar, Sulawesi – see note 2.

= *Arhopala amantes grandiosa* Fruhstorfer (1914: 161); TL: Bonthain, E. Sulawesi – see note 5.

Range: restricted to the Sulawesi Region including the Sula islands: Sulawesi, Sangir, Mangole (NHMUK), Banggai (Bethune-Baker 1903), Muna, Buton, Wangi Wangi, Tomea, Binongko, Peleng, Taliabu (Tennent & Rawlins 2010). – **New records:** Salayer (2 ♀♀, ii. 2016), Kabaena (1 ♂, 1 ♀, iv. 2015), Timpaus (1 ♂, 1 ♀, viii. 2004), Sanana (4 ♂♂, 6 ♀♀, iii. 2013) (CARR).

Note 1: The Felders (1865) described *araxes* in Latin and illustrated both sexes from Lorquin specimens from Sulawesi. They illustrated both surfaces of the ♂ and the upperside of the ♀ and stated that the specimens were in the Felder collection. Evans (1957: 114) noted that the ♂ "type" was in the NHMUK (Fig. 3).

Note 2: Hewitson (1862) described *Amblypodia amantes* from Sri Lanka. He very briefly described a different ♀ from Makassar (Sulawesi) which he called "Variety *a*". Felder & Felder (1865: 224) treated "*A. Amantes* var. *a* Hewits." as a synonym of *araxes* and subsequently Hewitson (1869: 14a) followed this.

Note 3: Bethune-Baker (1903: 43) recorded specimens of *Arhopala araxes* from Sulawesi, Banka (= Banggai) and Mangole in the Sula islands and noted how it differed from *amantes*.

Note 4: Fruhstorfer (1914) described both sexes of *grandiosa* in German and stated that the specimens from Bonthain in "Ost-Celebes" [east Sulawesi], were in his collection. He noted that *A. amantes grandiosa* replaced *A. amantes araxes* in east Sulawesi and that the ♀ of *grandiosa* had a considerably narrower hw black border. Fruhstorfer stated that he had 7 ♂♂ and 10 ♀♀ *araxes* from Maros (near Bantimurung) in southwest Sulawesi and 1 remarkably darkened, small rainy-season ♀ from Toli Toli, north Sulawesi.

In the NHMUK type collection there are spaces for both ♂ and ♀ *grandiosa* types occupied by 2 labels saying: "♂ Missing" and "♀ Missing". We could not locate these types. However, in the main collection there is an unusually small *araxes* ♀ (Fig. 5) from north Sulawesi. It is not especially dark. It bears 3 labels:

- 1. Red and white circular Type label.
- 2. "Nord-Celebes, Toli-Toli, Nov.–Dez. 1895, H. Fruhstorfer".
- 3. "Fruhstorfer Coll. B.M. 1933-133."

The data for this specimen demonstrate it is not a *grandiosa* type but its labels and small size indicate it is surely the small, dark *araxes* ♀ that Fruhstorfer referred to (see note 4). It is therefore not a type specimen.

Note 5: Evans (1957: 114) treated *grandiosa* as a synonym of *araxes* and we concur.

Note 6: Evans (1957: 114) separated the population from Talaud, naming it *A. araxes talauta,* but included the specimens from Sangir with the nominotypical subspecies. Vane-Wright & de Jong (2003: 123) followed this, as do we.

Arhopala araxes onetor Fruhstorfer, 1914

(Fig. 7: ♂, Wetar; Fig. 8: ♀ type, Savu; Fig. 9: ♂ type, Savu; Fig. 10: ♂, Kisar; Fig. 11: ♀, Kisar; Fig. 12: ♀ type *aphobus* = *onetor*, Java.)

Arhopala amantes onetor: Fruhstorfer (1914: 161); TL: Savu – see note 1.

= *Arhopala amantes aphobus:* Fruhstorfer (1914: 160); TL: East Java – see note 2.

Range: Sumatra, Java, Sumbawa, Sumba, Alor, Savu, Timor: Kissar, Wetar, Moa (NHMUK), Flores, Leti, Sermata (Rawlins 2007). – **New record:** Pantar (3 ♂♂, ii. 2017) (CARR).

Note 1: Fruhstorfer (1914: 161) briefly described both sexes of *onetor* in German. He noted 2 ♂♂, 2 ♀♀ from Savu collected by A. Everett in August 1896, as well as 1 ♂ from Sumbawa and 1 ♀ from Sumba in his collection. Evans (1957: 114) noted that the ♂ "type" was in the NHMUK (Fig. 9). There is also a ♀ bearing a type label (Fig. 8). The data labels on these specimens (Savu, Aug. [18]96, Fruhstorfer Coll.) confirm they are part of the original syntypic series.

Note 2: Fruhstorfer (1914: 160) described only the ♀ of *aphobus*. However, for the "Patria" he recorded 2 ♀♀ he had collected at the base of the Tengger Mountains in East Java and 2 ♂♂ from West Sumatra in his collection. The next taxon (on the following page) he described was *Arhopala amantes onetor*. Evans (1957: 114) stated that the *aphobus* ♂ "type" from Java was in the NHMUK. This clearly did not match Fruhstorfer's description. There are 2 ♀♀ in the NHMUK bearing the same 4 labels:

- Red and white circular Type label.
- Handwritten "*amantes aphobus* Fruhst."
- "Fruhstorfer Coll. B.M. 1933-131."
- "Java merid. Palabuan 1892, H. Fruhstorfer".

The Tengger Mountains are in East Java and include the famous Mount Bromo. The only town that we know of named Palabuan is in West Java, nowhere near the Tengger massif. However, the specimens do match the *onetor* ♀ type and despite the discrepancy in location data, we think it likely these are the 2 ♀♀ STs referred to in Fruhstorfer's description. One of these is illustrated in Fig. 12.

Note 3: Seitz (1926: 951) included both *aphobus* and *onetor* as distinct taxa, but Evans (1957: 14) considered them synonyms and acting as the first reviser, gave precedence to *onetor* without giving any reason.

Note 4: The ranges of *Arhopala araxes onetor* and *Arhopala centaurus centaurus* overlap in Sumatra, Java and Sumbawa (NHMUK; Vane-Wright & Gaonkar 2006).

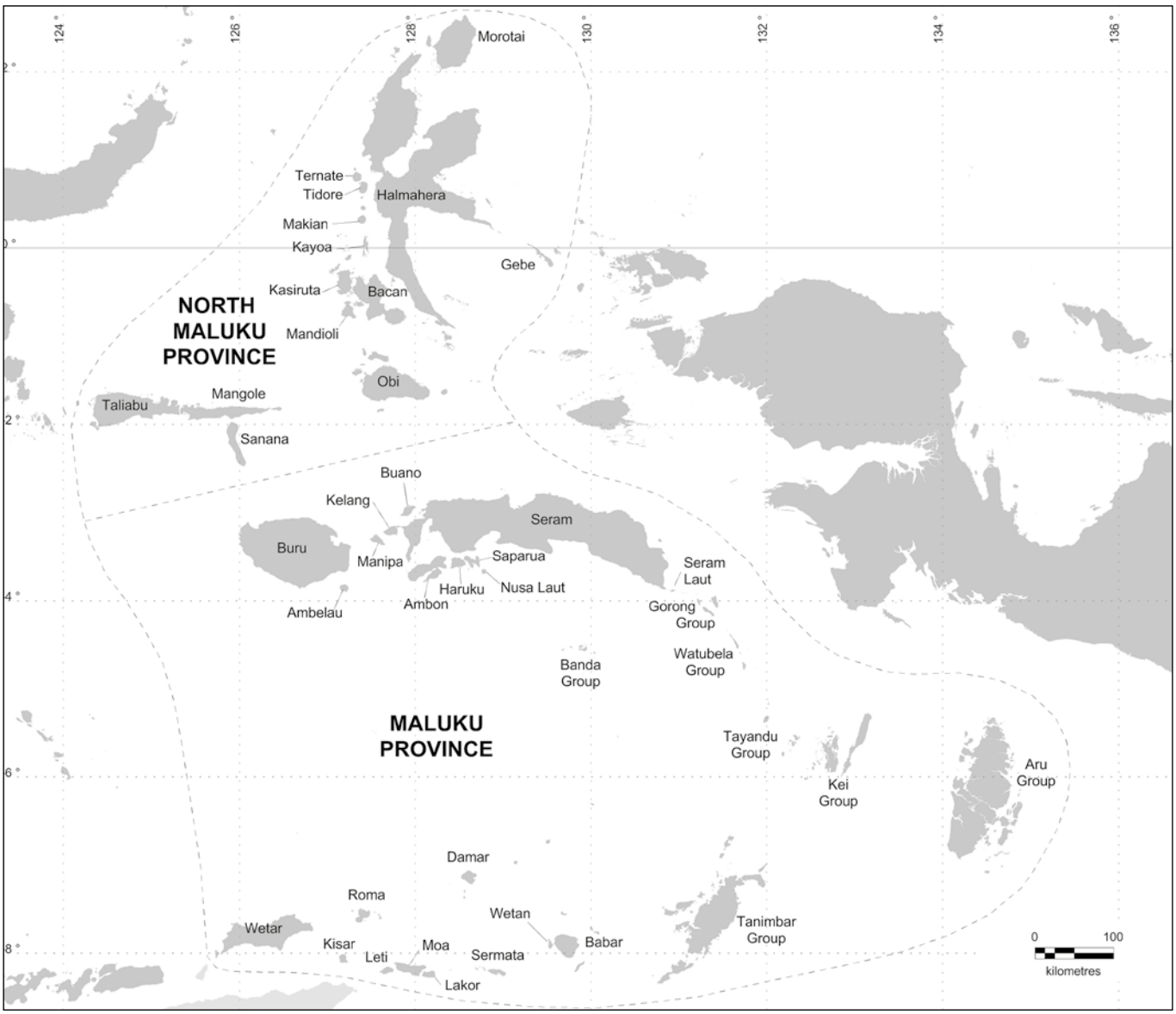
Arhopala eupolis (Miskin, 1890)

Amblypodia eupolis: Miskin (1890: 42); TL: Cooktown & Cardwell, Cape York.

= *Arhopala eupolis philtron:* Fruhstorfer (1914: 136); TL: Yule Island.

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

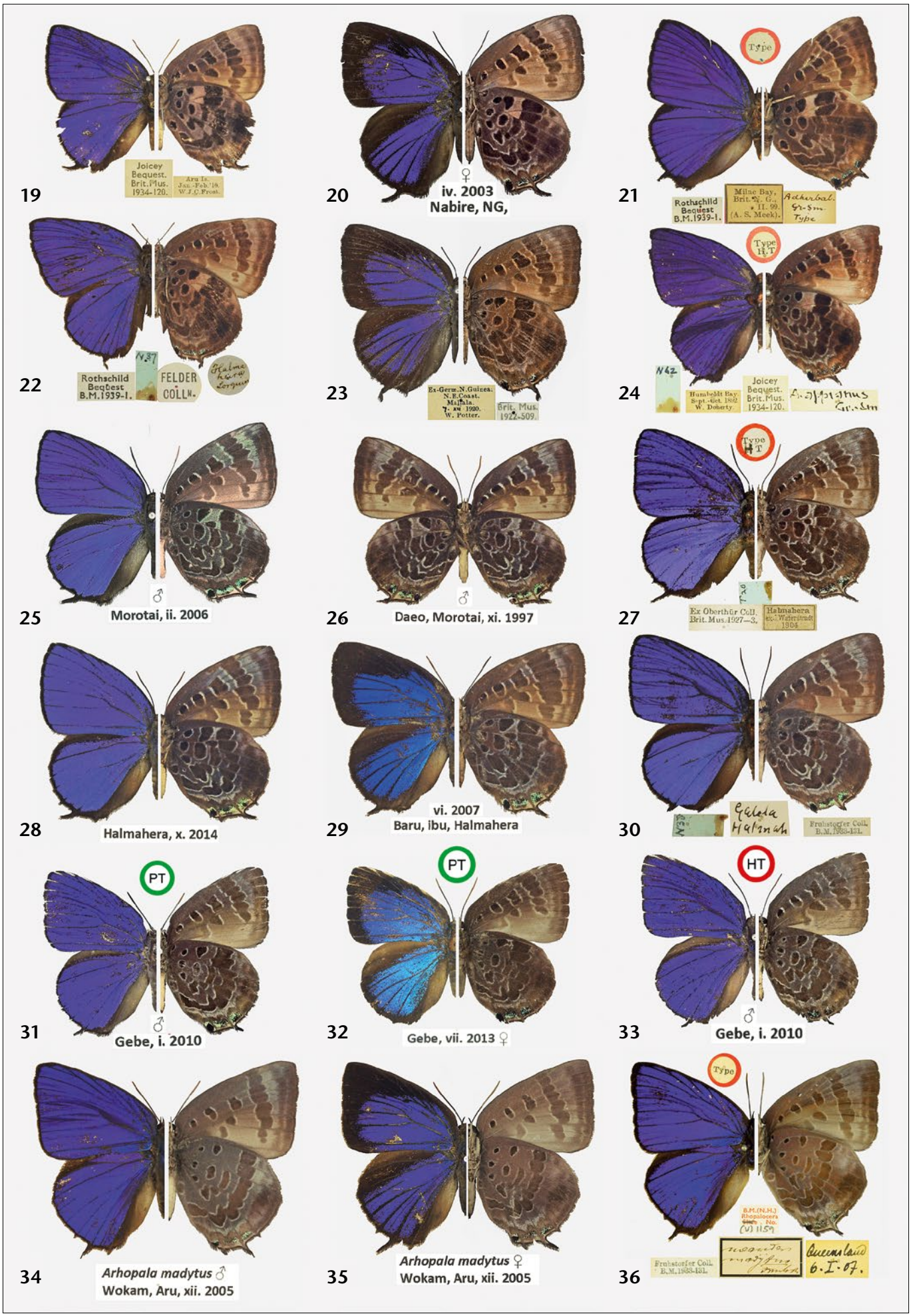
Note 1: This taxon has often been mistakenly considered a synonym of *A. centaurus* and sometimes a subspecies of *A. araxes* (e.g. Evans 1957: 114) but its correct taxonomic status as a full species distinct from both was clearly demonstrated by Vane-Wright & Gaonkar (2006). As a result, *A. eupolis* is now considered to

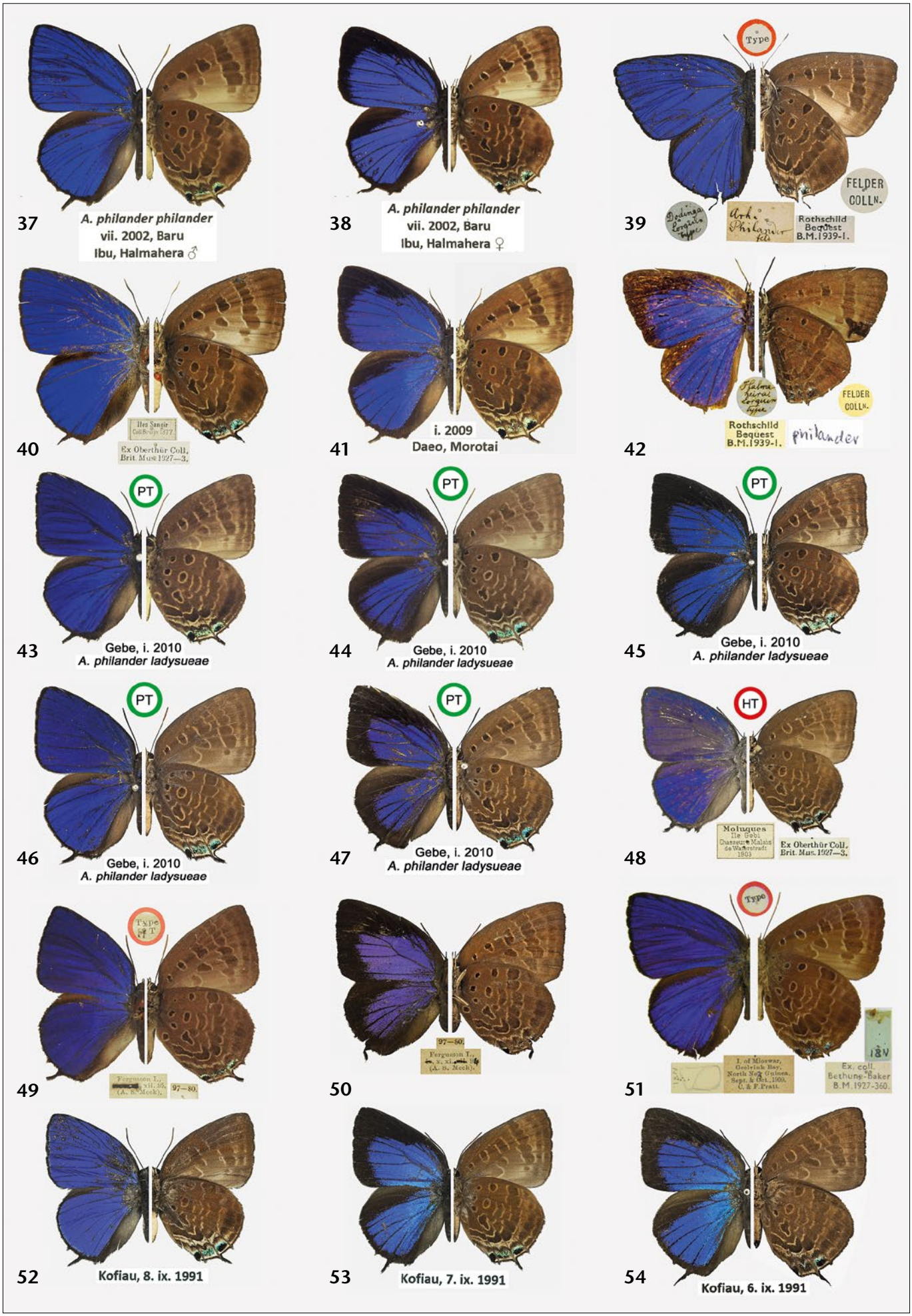


Map: Provinces of North Maluku and Maluku showing the island names used in the text.

Plate 2, Figs. 19–36: *Arhopala adherbal,* Subspecies of *A. lata, A. madytus.* — **Figs. 19–24:** *A. adherbal:* **19:** ♂, ups./uns., Aru (I.–II. [19]16, W. J. C. Frost, NHMUK). **20:** ♀, ups./uns., New Guinea (Nabire, IV. 2003, CARR). **21:** ♂, type, ups./uns., New Guinea (Milne Bay, Brit. N.G., II. [18]99, A. S. Meek, NHMUK). **22:** ♂, ups./uns., Halmahera (Halmaheira, Lorquin, Felder Colln., NHMUK). **23:** ♀, ups./uns., New Guinea (Ex-Germ. N. Guinea, N.E. Coast, Mallala, 7. XII. 1920, W. Potter, NHMUK). **24:** ♂, ups./uns., New Guinea (type *appianus* = *adherbal*, Humboldt Bay, IX.-X., 1892, W. Doherty, NHMUK). — **Figs. 25-33:** Subspecies of *A. lata*. — **Figs. 25-30:** *A. lata lata:* **25:** ♂, ups./uns., Morotai (II. 2006, CARR). **26:** ♂, uns., Morotai (Daeo, XI. 1997, CARR). **27:** ♂, HT, ups./uns., Halmahera (ex. J. Waterstradt, NHMUK). **28:** ♂, ups./uns., Halmahera (X. 2014, CARR). **29:** ♀, ups./uns., Halmahera (Baru, Ibu, VI. 2007, CARR). **30:** ♂, ups./uns., Halmahera (Galela, Halmah., Fruhstorfer Coll., NHMUK). — **Figs. 31–33:** *A. lata* ***detanii*** **ssp.n.: 31:** ♂, PT, ups./uns., Gebe (I. 2010, CARR). **32:** ♀, PT, ups./uns., Gebe (VII. 2013, CARR). **33:** ♂, **HT**, ups./uns., Gebe (I. 2010, NHMUK). — **Figs. 34–36:** *A. madytus:* **34:** ♂, ups./uns., Aru (Wokam, XII. 2005, CARR). **35:** ♀, ups./uns., Aru (Wokam, XII. 2005, CARR). **36:** ♂, type, ups./uns., Australia (Queensland, 6. I. [19]07, NHMUK).

Plate 3, Figs. 37–54: Subspecies of *Arhopala philander*. — **Figs. 37–42:** *A. philander philander:* **37:** ♂, ups./uns., Halmahera (Baru, Ibu, VII. 2002, CARR). **38:** ♀, ups./uns., Halmahera (Baru, Ibu, VII. 2002, CARR). **39:** ♂, type, ups./uns., Halmahera (Dodinga, Lorquin type, Felder Colln., NHMUK). **40:** ♂, ups./uns., Location? ("Iles Sangir", Coll Bruijn, 1877, Ex Oberthür Coll., NHMUK). **41:** ♀, ups./uns., Morotai (Daeo, I. 2009, CARR). **42:** ♀, type, ups./uns., Halmahera (Halmaheira, Lorquin type, Felder Colln., NHMUK). — **Figs. 43–48:** *A. philander* ***ladysueae*** **ssp. n.: 43:** ♂, PT, ups./uns., Gebe (I. 2010, CARR). **44:** ♀, PT, ups./uns., Gebe (I. 2010, CARR). **45:** ♀, PT, ups./uns., Gebe (I. 2010, CARR). **46:** ♂, PT, ups./uns., Gebe (I. 2010, CARR). **47:** ♀, PT, ups./uns., Gebe (I. 2010, CARR). **48:** ♂, **HT**, ups./uns., Gebe (Ile Gebi, Chasseurs Malais de Waterstradt, 1903, NHMUK). — **Figs. 49–50:** *A. philander gander:* **49:** ♂, **HT**, ups./uns., Fergusson I[sl.]. (XII. [18]95, A. S. Meek, NHMUK). **50:** ♀, ups./uns., Fergusson I[sl.]. (X., XI. [18]94, A. S. Meek, NHMUK). — **Fig. 51:** *A. philander pratti:* ♂, HT, ups./uns., Mioswar Island (Geelvink Bay, IX. & X. 1909, C. & F. Pratt, NHMUK). — **Figs. 52–54:** *A. philander* ssp.: **52:** ♂, ups./uns., Kofiau (8. IX. 1991, CARR). **53:** ♀, ups./uns., Kofiau (7. IX. 1991, CARR). **54:** ♀, ups./ uns., Kofiau (6. IX. 1991, CARR).





comprise 2 subspecies: the nominotypical and *asopus* Waterhouse & Lyell, 1914. The latter is restricted to the north of the Northern Territory and north-eastern Western Australia.

The nominotypical subspecies is represented in Maluku.

Arhopala eupolis eupolis (Miskin, 1890)

(Fig. 13: ♂, Kei; Fig. 14: ♀, Kei; Fig. 15: ♂ type *philtron* = *eupolis*, Yule Island; Fig. 16: ♂, Aru; Fig. 17: ♀ Kei; Fig. 18: ♀ type *philtron* = *eupolis*, Yule Island.)

Amblypodia eupolis: Miskin (1890: 42); TL: Cooktown & Cardwell, Cape York – see note 1.

= *Arhopala eupolis philtron:* Fruhstorfer (1914: 136); TL: Yule Island – see note 3.

Range: Maluku (Kei, Aru), New Guinea, Yule Island, Louisiade Islands, Queensland (NHMUK). – **New records** from specific Aru Islands: Wokam (1 ♂, viii. 2012, CARR), Maikoor (K. Nagai, pers. comm.).

Note 1: Miskin (1890) described *eupolis* from a syntypic series of both sexes collected at Cooktown and Cardwell in Queensland, Australia and noted that the specimens were in his collection. They are now in the Queensland Museum in Brisbane.

Note 2: Bethune-Baker (1903: 41–42) added Kei to the range noting he had received "a perfectly typical ♀" from "Tokal Key" from Dr. Staudinger.

Note 3: Fruhstorfer (1914) described *philtron* from 2 pairs from Yule Island (PNG) in his collection. He noted that nominotypical *eupolis* was until then only known from Queensland and the Kei Islands.

Evans (1957: 114) treated both *philtron* and *eupolis* as subspecies of *araxes* and noted that the *philtron* ♂ "type" was in the NHM-UK (Fig. 15).

Parsons (1998: 387) synonymised *philtron* with *centaurus* (recte *eupolis*).

Arhopala adherbal Grose Smith, 1902

(Fig. 19: ♂, Aru; Fig. 20: ♀, New Guinea; Fig. 21: ♂ type, Milne Bay, New Guinea; Fig. 22: ♂, Halmahera; Fig. 23: ♀, New Guinea; Fig. 24: ♂ type *appianus* = *adherbal,* NG.)

Arhopala adherbal: Grose Smith (1902: 10, pl. 25, fig. 3); TL: Milne Bay, New Guinea – see note 1.

= *Arhopala appianus:* Grose Smith (1902: 11, pl. 25, fig. 4); TL: Humboldt Bay, New Guinea – see note 2.

Range: Maluku: Halmahera, Aru, Waigeo, Amberfron Island (?= Rumberpon), New Guinea (NHMUK). – **New records** from specific Aru Islands: Kobroor, Maikoor (K. Nagai, pers. comm.).

Note 1: Grose Smith (1902) described only the *adherbal* ♂ from a Meek specimen/s from Milne Bay and noted that the specimen/s was in the collection of the Hon. Walter Rothschild. Evans (1957: 115) noted that the ♂ "type" was in the NHMUK (Fig. 21).

Note 2: Grose Smith (1902) described only the ♂ of *appianus* from a Doherty specimen/s from Humboldt Bay, as the very next taxon after *adherbal*. He noted some differences on the underside and stated that the specimen/s was in his collection. Evans (1957: 115) noted that the ♂ "type" was in the NHMUK (Fig. 24) and treated *appianus* as a synonym of *adherbal*. Both Parsons (1998: 388) and Schröder (2015: 3) agreed, as do we.

Arhopala lata (Evans, 1957)

Narathura lata: Evans (1957: 115); TL: Halmahera.

Range: Halmahera (NHMUK), Morotai (Tennent & Rawlins 2010). – **New record:** Gebe – see note 2.

Note 1: Evans (1957) separated *lata* as a distinct species largely based on "unh a spot at the base of space 6 (a unique feature), which may be conjoined to the discal spot in space 6." He also noted "Unf discal band broad and straight." In his key for *adherbal* he noted "Unh no spot at base of space 6" and "Unf discal band curved". He noted the NHMUK held the *lata* ♂ HT and 6 further ♂♂ from Halmahera and just 1 *adherbal* ♂ from Halmahera (in addition to *adherbal* specimens from other locations).

We have examined a total of 18 *lata* specimens from Halmahera and 9 from Morotai. One ♂ from Morotai (Fig. 26) and 2 ♂♂ from Halmahera have the underside hw spot at the base of space 6 present on 1 hw, but absent on the other side. Curiously in all 3 cases the spot was missing on the left wing. Schröder (2015: 4) noted that Rawlins (pers. comm. 2014) considered *lata* maybe conspecific with *adherbal*. However, all the *lata* specimens have the characteristic dark brown ground colour demonstrated by the *lata* HT, whereas the *adherbal* HT has a red-brown underside ground colour. Other *adherbal* specimens from different locations consistently exhibit this feature. There are further differences in the underside markings. The width of the median bands in *lata* varies quite considerably (see Figs. 25–30) but is always *at least* as wide as in *adherbal* (Figs. 19–24). It is not uncommon that the postdiscal bands in *lata* are very close to the discal markings and sometimes they coalesce. In general, underside markings are more clearly outlined with white in *lata,* thus strongly contrasting with the dark underside colour. The green tornal scales are much more developed in *lata*. The *lata* female upperside is bluer, rather than the purple colour of *adherbal* and *lata* specimens have broader wings, whereas the *adherbal* wing shape is squarer.

We now conclude that *lata* and *adherbal* are distinct species.

Note 2: We have examined 2 ♂♂ and 1 ♀ from Gebe, which are clearly conspecific with *lata*. However, they exhibit some minor but consistent differences and we consider they represent a distinct, 2nd subspecies of *lata*, which we describe below. Both subspecies are restricted to Maluku.

Arhopala lata lata (Evans, 1957)

(Fig. 25: ♂, Morotai; Fig. 26: ♂, Morotai (underside only, asymmetric); Fig. 27: ♂ HT, Halmahera; Fig. 28: ♂, Halmahera; Fig. 29: ♀, Halmahera; Fig. 30: ♂, Halmahera.)

Narathura lata: Evans (1957: 115); TL: Halmahera.

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

Arhopala lata detanii ssp. n.

(Fig. 31: ♂ PT, Gebe; Fig. 32: ♀ PT, Gebe; Fig. 33: ♂ HT, Gebe.)

Holotype ♂: Indonesia, Gebe, i. 2010 (NHMUK).

Paratypes (1 ♂, 1 ♀): 1 ♂, same data as HT; 1 ♀, Gebe, vii. 2013 (CARR).

Etymology: named for Hiromi Detani, in our opinion, the foremost expert on the butterflies of Indonesia.

Range: Gebe.

Diagnosis and description

♂ (Figs. 31, 33): FwL 22.5–23 mm (HT: Fig. 33, Fwl: 23 mm).

Upperside: Both wings shining metallic purple-blue, the border a thread. Space 7 of the hindwing purple-blue basally, otherwise black. Anal fold dark greyish-brown. A long tail at vein 2.

Underside: Dark brown with the markings a darker chocolate-brown, outlined with white. Paler in spaces

1a–1b. The forewing with a broad postdiscal band, the spots generally increasing in width from space 2 towards the costa. No spot in space 1b. On the distal side of the postdiscal band a greyish-white area. Hindwing postdiscal band very broad, not dislocated at veins 1b and 2. The spots in spaces 6 and 7 quadrate and very large, the spot in space 6 overlapping the cell-end bar. No basal spot in space 6. A slightly darker marginal patch present in spaces 4–5. Black tornal spots in spaces 1a & 2 and green metallic tornal scales in spaces 1a–2. A band of grey scales along the outer margin of the postdiscal band in spaces 1a–2.

♀ (Fig. 32): FwL 22.5 mm.

Upperside: Pale purple-blue on the fw and a contrasting lighter, almost turquoise-blue on the hw. Wide black borders, especially on the fw, reaching a maximum of 5 mm at the apex; costa black, with only a narrow band of blue scales at the base of spaces 9-11. Blue on the hindwing is restricted to spaces 1b-5. Spaces 6 and 7 only basally blue, otherwise dark brown. Veins dusted with black.

Underside: As ♂.

Note 1: We have compared the 3 Gebe specimens with 27 examples of nominotypical *lata*. This new *lata* subspecies is much smaller with FwL 22.5–23 mm. The FwL of nominotypical *lata* ranges between 23 and 28 mm, but almost all are within the bracket 24.5 to 27 mm. Apart from the size differential, the ♂ undersides of nominotypical *lata* and *detanii* are indistinguishable. The Gebe ♀ upperside has different shades of purple-blue on the fw and hw, which does not occur in nominotypical *lata*. The Gebe ♀ fw upperside is slightly paler purple-blue than in nominotypical *lata*, whilst the hw is an altogether different shade — a lighter, almost turquoise-blue. The underside (both sexes) fw postdiscal band spots increase in width from space 2 towards the costa in Gebe specimens, but this is not the case in the nominotypical subspecies. The spot at the base of space 6 on the underside hw, present in all 27 *lata* specimens examined (albeit, unilaterally in 3 cases), is missing in all 3 Gebe specimens. All the nominotypical *lata* specimens have well developed underside fw postdiscal spots in space 1b, whereas these are absent in the Gebe subspecies, but we note that in some *Arhopala* taxa this is a variable feature.

Note 2: The female has broken tail stubs, but we are confident it has tails similar to the male.

Arhopala madytus Fruhstorfer, 1914

(Fig. 34: ♂, Aru; Fig. 35: ♀, Aru; Fig. 36: ♂ type, Queensland.)

Arhopala meander madytus: Fruhstorfer (1914: 159); TL: Queensland, Australia — see note 1.

Range: Aru (including Wamar), Waigeo, New Guinea, Misima (label = St. Aignan), Woodlark, Tagula (label = Sudest), Rossel, Australia (NHMUK), Kiriwina (in the Trobriand islands), Normanby (Tennent 2006), Yapen (KSP). — **New records** from specific Aru Islands: Wokam (2 ♂♂, ix. 2000; 1 ♂, 1 ♀, xii. 2005; 2 ♂♂, iv. 2007), Kobroor (Gulila, 2 ♂♂, iii. 1998) (CARR), Maikoor, Trangan (pers. comm. K. Nagai). Ambon? — see note 4.

Note 1: Fruhstorfer (1914) briefly described only the *madytus* ♂ from Queensland. Evans (1957: 115) noted that the ♂ "type" was in the NHMUK (Fig. 36).

Note 2: Evans (1957: 115) treated *madytus* as a full species, as did Parsons (1998: 388).

Note 3: Both *A. madytus* and *A. adherbal* occur in Aru and can be confused. Schröder (2015: 8) noted that *A. madytus* shows a high degree of infraspecific variability, especially with respect to its underside colouration (ranging from pink to green), the width of the postdiscal bands and the dark hw patch. However, *madytus* has much narrower postdiscal bands than *adherbal* and the fw band of *madytus* narrows towards the costa.

Note 4: There are 2 ♂♂ labelled "Amboina" in the NHMUK. Parsons (1998: 388) included Ambon in the distribution of *madytus*, presumably because of these specimens. Both carry the same 2 labels:

- "Amboine, Rey, 1900"
- "Ex Oberthür Coll. Brit. Mus. 1927-3".

Ambon is the capital, main port and hub of Maluku and on occasion specimens from other parts of Maluku (including Aru) have been mislabelled "Amboina". We are unaware of any further specimens from Ambon or anywhere in central Maluku and for now exclude Ambon from the range of *A. madytus*.

Arhopala philander Felder & Felder, 1865

Arhopala philander: Felder & Felder (1865: 226, pl. 29, fig. 9); TL: Halmahera.

Range: Maluku, New Guinea Region including the Bismarck Archipelago (NHMUK). — **New record:** Kofiau (8 ♂♂, 4 ♀♀, ix. 1991, CARR) — see note 3.

Note 1: Evans (1957: 116) listed 8 subspecies of *philander*, including 6 described in that publication. Parsons (1998: 389) considered 2 of these taxa (*leander* Evans, 1957 and *ander* Evans, 1957) as distinct species.

Note 2: We have examined 15 ♂♂, 6 ♀♀ of *A. philander* from Gebe and consider that this population represents a distinct subspecies which we describe below.

Note 3: We have examined 8 ♂♂, 4 ♀♀ of *A. philander* from Kofiau Island. These differ from Gebe and other *philander* subspecies; see notes under *A. philander ladysueae.* We consider Kofiau specimens (Figs. 52–54) represent a distinct subspecies, but as Kofiau is outside Maluku, it is not described here.

Note 4: Including the Gebe subspecies described below and the undescribed Kofiau taxon, *A. philander* comprises 8 subspecies, 2 of which occur in Maluku.

Arhopala philander philander Felder & Felder, 1865

(Fig. 37: ♂, Halmahera; Fig. 38: ♀, Halmahera; Fig. 39: ♂ type, Halmahera; Fig. 40: ♂, "Sangir"; Fig. 41: ♀, Morotai; Fig. 42: ♀ type, Halmahera.)

Arhopala philander philander: Felder & Felder (1865: 226, pl. 29, fig. 9); TL: Halmahera — see note 1.

Range: Maluku: Halmahera, Ternate, Bacan, Obi, (NHMUK), Morotai (Tennent & Rawlins, 2010) — see notes 2 & 3.

Note 1: The Felders (1865) described both sexes of *philander* from Lorquin specimens collected in Dodinga in Halmahera. They illustrated the underside and noted that the specimens were in their collection. Evans (1957: 116) noted that the ♂ "type" was in the NHMUK (Fig. 39).

Note 2: Evans (1957: 116) included "1 ♂ 'Sangir'" in his list of NHMUK specimens. Vane-Wright & de Jong (2003: 124) recorded the range of subspecies *philander* as "Kep. Sangihe [= Sangir Island Group], N Maluku" and Tennent & Rawlins (2010: 14) also included Sangir. We have examined this ♂ (Fig. 40) and it is typical *philander*. Like Evans we doubt the provenance of this specimen, which is the only putative record of nominotypical *philander* from outside Maluku.

Note 3: Evans (1957: 116) included 3 NHMUK ♂♂ from Gebe with nominotypical *philander* and Tennent & Rawlins (2010: 14)

followed this. We have examined these specimens and a further 12 ♂♂, 6 ♀♀ (I. 2010, CARR, CSSK) from Gebe. We note several consistent differences (see below) from nominotypical *philander* and consider the Gebe population represents a distinct subspecies which we describe here.

Arhopala philander ladysueae ssp. n.

(Fig. 43: ♂ PT, Gebe; Fig. 44: ♀ PT, Gebe; Fig. 45: ♀ PT, Gebe; Fig. 46: ♂ PT, Gebe; Fig. 47: ♀ PT, Gebe; Fig. 48: ♂ HT, Gebe.)

Holotype ♂: Indonesia, Moluques [Maluku], Ile Gebi [Gebe], Chasseurs Malais de Waterstradt, 1903, Ex. Oberthür Coll. Brit. Mus. 1927-3 (NHMUK).

Paratypes (14 ♂♂, 6 ♀♀): 2 ♂♂, same data as HT (NHMUK); 11 ♂♂, 5 ♀♀, Gebe, I. 2010 (CARR); 1 ♂, same data (CSSK). 1 ♀, same data (NHMUK).

Etymology: named for the first author's long-term friend "Lady Sue" Walsh.

Range: Gebe.

We have examined 15 ♂♂, 6 ♀♀ from Gebe and compared them to nominotypical *philander, gander, pratti* and the undescribed *philander* subspecies from Kofiau, and consider them distinct.

Diagnosis and description

♂ (Figs. 43, 46, 48): FwL 21–24 mm (HT: Fig. 48, FwL: 21 mm).

Upperside: Both wings shining dark purple-blue, the border a thread. Space 7 of the hindwing only purple-blue basally, otherwise black. Anal fold dark greyish-brown. A long tail at vein 2. Veins dusted with black.

Underside: Ground colour chocolate brown. Paler in spaces 1a–1b. Fw with typical *philander* pattern, with quite straight postdiscal band, tapering only slightly towards the costa. The postdiscal band on the hindwing irregular, incompletely dislocated at vein 1b and with the spots in spaces 1b and 3 shifted inwards. The spots in spaces 6 and 7 larger and quadrate, the spot in space 6 not overlapping the cell-end bar. A faint dark marginal patch in spaces 3–6. Black tornal spots in spaces 1a & 2 and green metallic tornal scales in spaces 1a–2.

♀ (Figs. 44, 45, 47): FwL 23–24 mm.

Upperside: Purple-blue with wide black borders, on the fw reaching a maximum of 7 mm at the apex; costa black, with only a very narrow band of purple-blue scales at the base of spaces 10–12. A small, faint black spot at the upper end of the cell-end bar. Purple-blue on the hindwing is restricted to spaces 1b–5 and at the very base of space 7. Veins dusted with black.

Underside: As ♂.

Note 1: As noted above, Evans (1957: 116) included 3 NHMUK ♂♂ from Gebe with nominotypical *philander*.

Note 2: Evans (1957: 116) briefly described the *philander* population from Fergusson Island (in the D'Entrecasteaux group off southeast PNG) as subspecies *gander*. In addition to the ♂ HT (Fig. 49), he recorded 21 ♂♂, 9 ♀♀ in the NHMUK. He noted that the ♀ had broad dark borders, much broader than *philander*. He indicated that the subspecies was only known from Fergusson.

Parsons (1998: 389) considered *gander* to be the subspecies found throughout the PNG mainland as well as on Fergusson, Umboi, Kairuru and Karkar islands.

Schröder (2015: 10) followed Parsons and regarded *gander* as the mainland subspecies of *philander*. He provisionally included Yapen specimens with *gander*, noting their similarity to specimens from Sorong and Timika.

Schröder maintained *pratti* Evans, 1957 as a distinct subspecies known only from Mioswar, because of the unusually broadened postdiscal bands of the HT ♂ (Fig. 51).

Note 3: Compared to the nominotypical subspecies, the Gebe ♂ upperside is a slightly darker and less shiny purple-blue and the Gebe ♀ upperside is dark purple, rather than the brighter, shinier blue of nominotypical *philander*. The Gebe ♀ has markedly wider black borders on both fws and hws. The underside ground colour of the Gebe specimens is subtly less contrasted with the colour of the spots than in nominotypical *philander*.

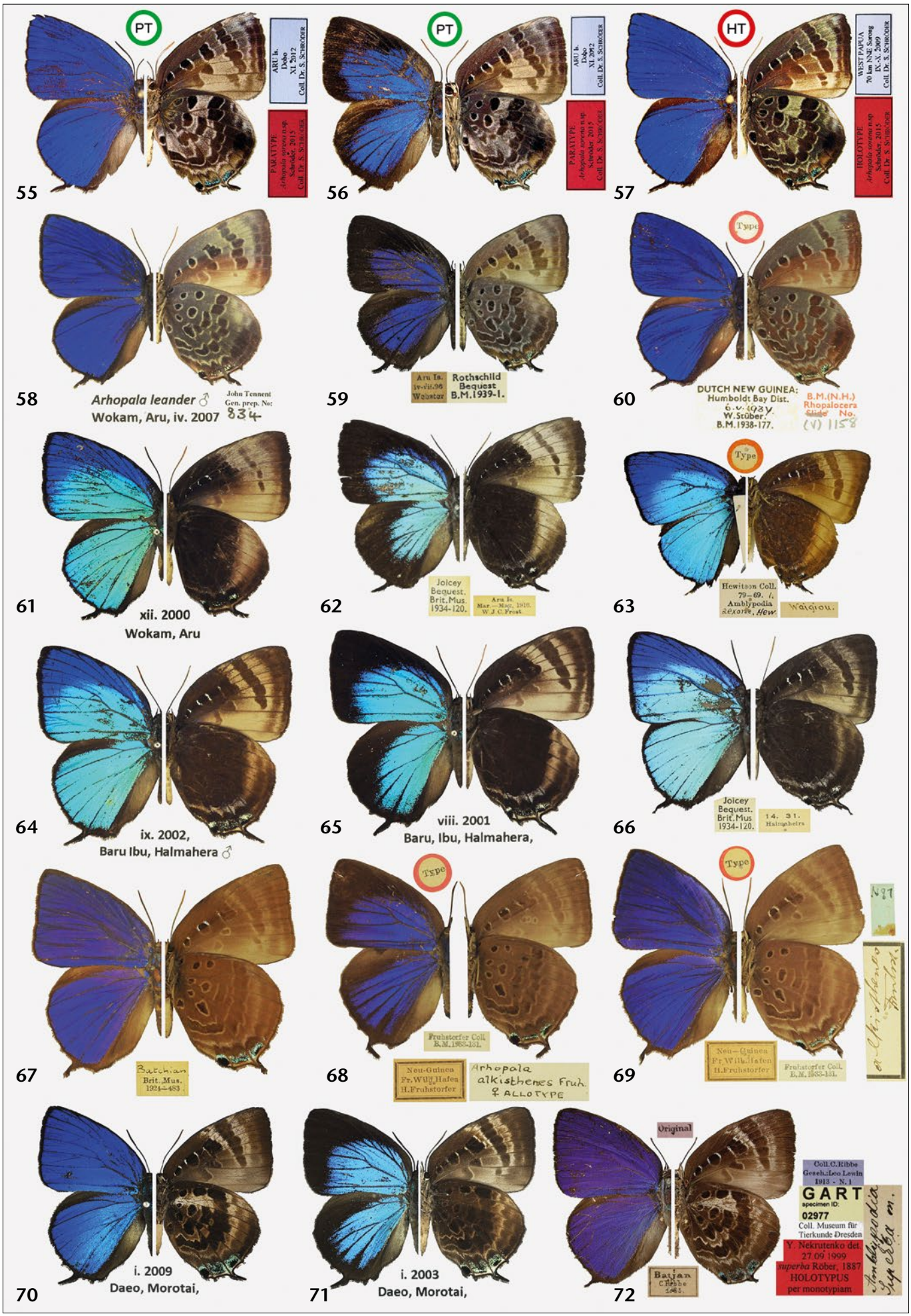
The upperside of *gander* ♂♂ from Fergusson is a darker deeper purple-blue than in Gebe ♂♂. Both Gebe and Fergusson ♀♀ exhibit some variation in the width of the upperside black borders. All the Fergusson series specimens show a redder brown and slightly lighter coloured underside with reduced blue tornal spots. In addition, all NHMUK Fergusson specimens have a noticeably anvil-shaped spot in space 2 (and often also in spaces 1b and 3) of the underside fw (Figs. 49 & 50). This is not the case in the Gebe (or Kofiau) specimens.

The upperside purple-blue colour of *A. philander* ♂♂ from Yapen, treated as subspecies *gander* by Schröder (2015: 10), is intermediate between nominotypical *philander* and Gebe ♂♂.

The upperside of Yapen ♀♀ is a much brighter and lighter blue (even lighter than nominotypical *philander*) then the darker more matt purple of Gebe ♀♀. Yapen specimen undersides exhibit a more red-brown ground colour and markings compared to the brown of Gebe specimens. We note here that *philander* from Yapen also appear distinct from the Fergusson *gander* series and may represent a further subspecies. Examples of *philander* from Sorong in New Guinea are very similar.

The NHMUK holds the *A. philander pratti* HT ♂ and a series of 31 ♂♂, 4 ♀♀ from Mioswar. The HT (Fig. 51) has very broad uds fw and hw postdiscal spots, but this specimen is an extreme example and the width varies. In some examples these spots are no wider than in some nominotypical *philander, gander* or Gebe specimens.

Plate 4, Figs. 55–72: *Arhopala sorena, A. leander,* subspecies of *A. aexone, A. alkisthenes,* subspecies of *A. micale* (partim). — **Figs. 55–57:** *Arhopala sorena:* **55:** ♂, PT, ups./uns., Aru (Dobo, XI. 2012, CSSK). **56:** ♀, PT, ups./uns., Aru (Dobo, XI. 2012, CSSK). **57:** ♂, HT, ups./uns., New Guinea (70 km NNE Sorong, IX.–X. 2009, CSSK). — **Figs. 58–60:** *Arhopala leander:* **58:** ♂, ups./uns., Aru (Wokam, IV. 2007, CARR). **59:** ♀, ups./uns., Aru (Aru Is., IV.–VII. [18]96, Webster, NHMUK). **60:** ♂, type, ups./uns., New Guinea (Dutch New Guinea, Humboldt Bay Dist., 6. V. 1934, W. Stüber, NHMUK). — **Figs. 61–66:** Subspecies of *Arhopala aexone*. **Figs. 61–63:** *A. aexone aexone:* **61:** ♂, ups./uns., Aru (Wokam, XII. 2000, CARR). **62:** ♀, ups./uns., Aru (Aru Is. Mar.- May, 1916, W. J. C. Frost, NHMUK). **63:** ♂, type, ups./uns., Waigeo (Waigiou, Hewitson Coll., NHMUK). — **Figs. 64–66:** *A. aexone chrysoana:* **64:** ♂, ups./uns., Halmahera (Baru, Ibu, IX. 2002, CARR). **65:** ♀, ups./uns., Halmahera (Baru, Ibu, VIII. 2001, CARR). **66:** ♂, ups./uns., Halmahera (Halmaheira, Joicey Bequest, NHMUK). — **Figs. 67–69:** *Arhopala alkisthenes:* **67:** ♂, ups./uns., ?New Guinea ("Batchian", Brit. Mus. 1924-483, NHMUK). **68:** ♀, type, ups./uns., Friedrich-Wilhelms-Hafen, New Guinea (Neu-Guinea, Fr.-Wilh.-Hafen, H. Fruhstorfer Coll., NHMUK). **69:** ♂, HT, ups./uns., Friedrich-Wilhelms-Hafen, New Guinea (Neu-Guinea, Fr.-Wilh.-Hafen, H. Fruhstorfer Coll., NHMUK). — **Figs. 70–90:** Subspecies of *Arhopala micale*. **Figs. 70- 72:** *A. micale superba:* **70:** ♂, ups./uns., Morotai (Daeo, I. 2009, CARR). **71:** ♀, ups./uns., Morotai (Daeo, I. 2003, CARR). **72:** ♂, HT, ups./uns., Bacan (Batjan, C. Ribbe, 1885, SMTD).



Compared to the Gebe subspecies, the upperside of both sexes of *pratti* is a darker purple (Fergusson *gander* is even more purple, though we note that Evans (1957: 116) stated that *gander* was not as dark as *pratti*) and the *pratti* underside ground colour is a lighter and redder brown.

The upperside colour of the Kofiau ♂ is a lighter, brighter and shinier purple-blue than in nominotypical *philander, gander, pratti* and the Gebe subspecies. The Kofiau ♀ has a much bluer, less purple colour than Gebe and the other subspecies. Kofiau specimens are generally smaller: FwL 21–22 mm.

Arhopala sorena Schröder, 2015

(Fig. 55: ♂ PT, Aru; Fig. 56: ♀ PT, Aru; Fig. 57: ♂ HT, New Guinea.)

Arhopala sorena: Schröder (2015: 10, pl. 7, figs. 45–50); TL: 70 km NNE of Sorong, New Guinea – see note 1.

Range: Aru, Waigeo, New Guinea (Schröder 2015) – see note 2.

Note 1: Schröder (2015) described and illustrated both sexes of *sorena* from 5 ♂♂, 1 ♀. The HT ♂ was collected near Sorong and is in the KSP. The PTs included a pair from Aru (Figs. 55 & 56) in CSSK. He noted that classification of this species was difficult and reported the similarities as well as differences from *kiriwinii* Bethune-Baker, 1903, *adherbal*, *madytus* and *leander*. The latter 3 taxa are also found in Aru and all 4 species lack the underside fw subcostal spot in space 10 that is present in *sorena*.

Note 2: Schröder (2015: 11) stated that specimens from Waigeo were slightly smaller (FwL 18 mm) and only tentatively assigned to this taxon.

Arhopala leander (Evans, 1957)

(Fig. 58: ♂, Aru; Fig. 59: ♀, Aru; Fig. 60: ♂ HT, New Guinea.)

Narathura philander leander: Evans (1957: 116); TL: Humboldt Bay, New Guinea – see note 1.

Range: Aru, Misool, Waigeo, Amberfron (?= Rumberpon), Numfor (labelled Mefor), Biak, Yapen, Ron, New Guinea, Karkar (labelled Dampier), New Britain (NHMUK). – **New records** from specific Aru Islands: Wokam (2 ♂♂, x. 2006; 1 ♂, iv. 2007), Kobroor (Gulila, 2 ♂♂, iii. 1998) (CARR) – see note 2.

Note 1: Evans (1957) described *leander* as a subspecies of *philander* from NHMUK specimens. He chose a ♂ from Humboldt Bay (now called Jos Sudarso Bay) as the HT (Fig. 60). He included more than 200 NHMUK specimens from various locations, in his list of *leander* material.

Parsons (1991: 119) recognised *leander* as a species distinct from *philander*. Parsons (1998: 390) confirmed this, noting its "distinctive facies, and large overlap in distribution with *philander*". He considered the *leander* HT ♂ was an abnormal specimen, but as Schröder (2015: 7) pointed out, it was unlikely that Evans, with so many specimens available in the NHMUK, chose an abnormal example as the HT. Schröder added that the 2 specimens figured by Parsons (1998: pl. 58, figs. 1558–1561) were not examples of *leander,* but he did not specify their true identity.

Note 2: In his list of *leander* specimens in the NHMUK, Evans (1957: 116) questioned some of the locality records by recording them in quotation marks. He noted "5 ♂, 1 ♀ 'New Britain'". 2 ♂, 1 ♀ 'Solomons'". Parsons (1998: 390) included both in his range for the species. Tennent (2006: 38) listed New Britain but not the Solomons and in a note on page 161 stated "No Solomons material is known to the author". Evans also questioned 2 specimens from "Burma" and Parsons discounted these, as do we.

Arhopala aexone (Hewitson, 1863)

Amblypodia aexone: Hewitson (1863: 5, pl. 3, figs. 20 & 24); TL: Waigeo.

Range: northern Maluku, Aru, New Guinea Region (NHMUK).

Note 1: Evans (1957: 118) listed 2 subspecies of *aexone*. He noted 2 differences between them. Firstly, the underside fw discal band was wider in *chrysoana* than in nominotypical *aexone*. However, we note that in 2 (including the HT ♂) of 10 *aexone* specimens examined, this band is as wide as in *chrysoana*. Secondly, he stated that the underside hw pale postdiscal band was narrower in *chrysoana* than in *aexone*. This feature is reliable in all 5 specimens of *chrysoana* and the 10 specimens of *aexone* that we have examined (NHMUK & CARR).

Both subspecies are found in Maluku.

Arhopala aexone aexone (Hewitson, 1863)

(Fig. 61: ♂, Aru; Fig. 62: ♀, Aru; Fig. 63: ♂ type, Waigeo.)

Amblypodia aexone: Hewitson (1863: 5, pl. 3, figs 20 & 24); TL: Waigeo – see note 1.

= *Arhopala aexone herana:* Fruhstorfer (1914: 160); TL: Finschhafen, New Guinea – see note 2.

= *Arhopala aexone natanda:* Fruhstorfer (1914: 160); TL: Kiriwina (not Fergusson Island) – see note 3.

Range: New Guinea Region – Aru (including Wamar Island), Waigeo, Biak, Numfor (labelled Mefor), New Guinea, Fergusson, Kiriwina (in the Trobriand Islands), Manam (labelled Vulcan), Woodlark, Misima (labelled St. Aignan), New Ireland (NHMUK), Batanta, Yapen (CSSK), Supiori (KSP). – **New records** from specific Aru Islands: Wokam (1 ♂, ix. 2000; 1 ♂, 1 ♀, xii. 2000; 1 ♀, x. 2006), Kobroor (Gulila, 1 ♀, iii. 1998) (CARR), Maikoor, Trangan (pers. comm. K. Nagai) – see note 4.

Note 1: Hewitson (1863) described both sexes of *aexone* from Waigeo. He illustrated the underside of the ♂ and the upperside of the ♀ and noted that the specimens were in the collection of A. R. Wallace. Evans (1957: 118) noted that the ♂ "type" was in the NHMUK (Fig. 63).

Note 2: Fruhstorfer (1914) very briefly described *herana* in German from 3 ♂♂, 1 ♀ in his collection. He noted the "Patria" as "Deutsch-Neu-Guinea, Finschhafen und Astrolabebai". Evans (1957: 118) mistakenly noted that the TL was Fergusson Island. He recorded that the ♂ "type" was in the NHMUK and synonymised *herana* with *aexone*. Parsons followed this, as do we.

Note 3: Fruhstorfer (1914) described *natanda* as the next taxon after *herana*. He noted 2 ♂♂, 2 ♀♀ in his collection, noting the "Patria" as Fergusson and Kiriwina. Evans (1957: 118) stated that the ♂ "type" was in the NHMUK. He recorded the TL as Fergusson, and subsequent authors (e.g. Parsons, 1998: 392) have followed this.

The NHMUK contains a pair of *aexone* both carrying type labels along with "Kiriwina" data labels. The ♂ also has a handwritten label stating "*aexone natanda* Fruhst.", whilst the ♀ has a label stating "*Arhopala aexone natanda* Fruh. ♀ Allotype". It may be these are both STs but if the ♂ represents the HT then the TL should be Kiriwina not Fergusson. Evans (1957: 118) synonymised *natanda* with *aexone* and Parsons followed this, as do we.

Note 4: Evans (1957: 118) included in his list of specimens from the NHMUK "1 ♂ 'Celebes'".

His placement of quotation marks round the Celebes (= Sulawesi) record indicated his suspicion that this was a locality error. This specimen is in very poor condition and carries just 1 small handwritten label stating only "Celebes". We also consider this to be a locality error and exclude Sulawesi from the range for *aexone*. We note also that Vane-Wright & de Jong (2003) did not include the species in their book on Sulawesi butterflies.

Evans also listed 1 ♀ from Buru. This specimen is a typical example of nominotypical *aexone* and bears 2 labels:

- Handwritten "Buru, Kezeli"
- "Joicey Bequest. Brit. Mus., 1934-120".

We consider this is likely to be mislabelled as (apart from the dubious "Celebes" record) this is the only record of nominotypical *aexone* from outside the New Guinea Region. A distribution of Buru plus the New Guinea Region is very unlikely.

Arhopala aexone chrysoana Fruhstorfer, 1914

(Fig. 64: ♂, Halmahera; Fig. 65: ♀, Halmahera; Fig. 66: ♂, Halmahera.)

Arhopala aexone chrysoana: Fruhstorfer (1914: 160); TL: Halmahera; see note 1.

Range: endemic to northern Maluku, Halmahera (NHMUK).

Note 1: Fruhstorfer (1914) described only the ♂ of *chrysoana* from Halmahera. The type collection in the NHMUK has a space for *chrysoana* containing a label stating: "♂ Missing" and we were also unable to locate this specimen.

Arhopala micale Blanchard, 1848

Arhopala micale: Blanchard (1848: pl. 3, figs. 11 & 12); TL: New Guinea – see note 1. – Blanchard (1854: 399, text); TL: New Guinea – see notes 1 & 2.

= *Arhopala amytis androtion:* Fruhstorfer (1914: 158); TL: Yule Island – see note 3.

= *Narathura micale centra:* Evans (1957: 117); TL: Simbang, Central New Guinea – see note 4.

Range: Maluku, New Guinea Region, Australia (NHMUK). – **New record:** Gebe (1 ♂, i. 2010, CARR).

Note 1: Regarding confusion over the authorship and date of publication of *micale*.

- The figures of *micale* were published on plate 3 in the *"Atlas d'Histoire Naturelle, Zoologie*, of the *Voyage au pôle sud et dans l'Océanie"* etc. by Hombron and H. Jacquinot (for full title see Reference section). The caption for the figures (11 & 12) states: "*Arhopala micale* (Boisd.) N^elle^ Guinée". For simplicity in the discussion below we refer to this as the "*Atlas*".
- The text was published in the "*Description des Insectes*" in Vol. 4 of "*Voyage au pôle sud et dans l'Océanie* etc." (for full title see Reference section). The title page records Blanchard as the author and the date of publication as 1853. For simplicity in the discussion below we refer to this as the "*Text*".
- **Historically:**

  Before the *Atlas* and the *Text* were published, Doubleday (1847: 24), in his list of Lepidoptera in the NHMUK included "*Amblypodia Mycale*, Boisd. MSS." He noted 2 specimens from Moulmein. This is a port town in southern Myanmar!

  Westwood *in* Doubleday & Westwood (1852: 478), Hewitson (1862: 7 and 1863: 8) cited "*micale* Boisduval MS".

  Kirby (1871: 420), Staudinger (1888: 280 & pl. 96), Bethune-Baker (1903: 36), Strand (1912: 78) and Seitz (1926: 950, pl. 149f) all attributed the taxon to Blanchard. Only Kirby gave a date: 1853.

  Evans (1957: 117) recorded Boisduval (1853) as the author of *micale* and subsequent writers such as Common & Waterhouse (1982: 262), d'Abrera (1977: 313; 1990: 313), Bridges (1988: 224; 1994: VIII: 298), Parsons (1998: 391), Tennent & Rawlins (2010: 14) and Schröder (2015: 9) have followed this.

- **Correct date established:**

  Clark & Crosier (2000: 414) showed that, although volume 4 stated 1853 on the title page, it might have been published at the end of 1853, but that the earliest certain date was 3 March 1854, therefore it should be cited as 1854.

  They wrote (p. 407): "... these text descriptions may not take priority over the plates published separately in the *Atlas d'Histoire Naturelle, Zoologie* by Hombron and H. Jacquinot. This *Atlas* was distributed in 28 livraisons, containing 40 plates and according to the *International Code of Zoological Nomenclature* (ICZN 1985: Art. 12b (7)), these binomial named plates constitute a valid indication."

  They noted that the 28 livraisons were published between 1842 and 1854, and their publication dates were unknown and consequently the indication dates on the *Text* volumes for the new species described (1853 for volume 4) had [incorrectly] taken priority.

  They established dates for the publication of each livraison using dates of the business transactions of the publisher Gide and the dates the British Library stamped the livraisons. In some cases, these were in different years, but the British Library dates correspond more closely to IUCZN rules. In any case all dates for the 25^th^ Livraison, containing "Insectes Lépidoptères" plate 3, indicated a publication date of 1848.

  Thus, they demonstrated that the binomial name along with the illustrations (figs. 11 & 12) of *Arhopala micale* on Lepidoptera plate 3 of the *Atlas*, constituted the correct publication date for *micale:* 15. xi. 1848.

  Edwards et al. (2001: 201) and Tennent (2006: 38) recognised this and both attributed *Arhopala micale* to Blanchard in 1848.

- **Confusion over author:**

  As noted above, the early authors – Westwood (1852) and Hewitson (1862 & 1863) – stated *micale* Boisduval, MS.

  Then Kirby (1871), Staudinger (1888), Bethune-Baker (1903), Strand (1912) and Seitz (1926) all attributed the taxon to Blanchard.

  Subsequently Evans (1957) stated "Boisduval, 1853" and this has been widely followed. Evans probably based this on the plate caption "*Arhopala micale* (Boisd.) N^elle^ Guinée."

  Clark & Crosier (2000) indicated that the publishers of the *Atlas* were Hombron & Jacquinot and in the reference section (p. 430) they specifically attributed some of the livraisons to Hombron & Jacquinot as the authors, but not including the 25^th^.

  It is clearly stated in the *Text* that Blanchard described the Insects and we consider he should therefore be considered the author of the Lepidoptera plates in the *Atlas*. We consider Blanchard's attribution of the name *micale* to Boisduval in the plate caption, referred to an unpublished Boisduval name, perhaps just specimen/s in Boisduval's collection labelled *micale*/*mycale*.

Note 2: Blanchard (1854: 399) gave a detailed description of *micale* in French and recorded the TL as the coast of New Guinea. He stated that the wings were entirely violet blue, with the borders and fringes [= cilia?] brownish. Figure 11 in the *Atlas* (Blanchard 1848) clearly denotes a ♂ – the upperside is violet without any black borders. The figure of the underside (fig. 12) shows a butterfly in a life-like perching position with slightly opened wings so that 1 fw costa is visible and, in this case, showing a clear black costal border. The border is much too wide for a *micale* ♂ and much too narrow for a ♀! As Hewitson (1862: 7) pointed out, the figures are not helpful in identifying the taxon.

Blanchard did not record the sex or the number of specimens, but he gave a range of 50–55 mm for the wingspan indicating more than one individual. He did not specify a HT, nor state where the specimens were held. Edwards et al (2001: 202) noted that the whereabouts of the ♂ syntypes was unknown and stated that Parsons (1998: 391) had unjustifiably referred to a holotype.

G. Lamas (pers. comm.) stated that the specimen/s illustrated by Blanchard was/were in Boisduval's collection. He added that it could be argued that any specimens labelled *micale* (or *mycale*) in Boisduval's collection could be regarded as syntypes of *micale* Blanchard and should be in the NHMUK (ex coll. Boisduval, via coll. Oberthür) or, much less likely, in Paris. We were unable to find any *micale* specimens bearing "ex Boisduval" labels in the NHMUK.

Note 3: Fruhstorfer (1914) described both sexes of *androtion* in German and stated that the specimens were in his collection. Evans (1957: 117) noted that the ♂ "type" was in the NHMUK and listed *androtion* as a synonym of *micale*. Both Parsons (1998: 391) and Tennent (2006: 39) followed this and we also concur.

Note 4: Evans (1957: 116) described 5 new *micale* subspecies in a total of 16 listed. Parsons (1998: 391) and Tennent (2006: 161) questioned the validity of some of the subspecies and Parsons synonymised one – *centra* – with *micale*. However, he (and Tennent 2006: 38–39) accepted the other 3 PNG subspecies: *micale*, *cidona* Fruhstorfer, 1914 and *riuna* Evans, 1957.

This species is widely distributed throughout New Guinea and appears in at least 2 very different forms. In some localities there is significant individual variation. As Schröder (2015: 9) stated: "A complete revision of this species is needed", but we leave that to future researchers and for now accept the 5 subspecies listed by Evans from Maluku.

We have examined 1 *Arhopala micale* ♂ from Gebe. In the absence of ♀♀, it is hard to determine the subspecific status of this specimen, but it may represent a further undescribed subspecies – see below.

Arhopala micale superba (Röber, 1887)

(Fig. 70: ♂, Morotai; Fig. 71: ♀, Morotai; Fig. 72: ♂, HT, Bacan.)

Amblypodia superba: Röber (1887: 199, pl. 9, fig. 3); TL: Bacan – see note 1.

Range: endemic to northern Maluku: Morotai, Halmahera, Ternate, Bacan (NHMUK), Mandioli (Tennent & Rawlins, 2010) – see note 3.

Note 1: Röber (1887), in German, described the ♂ of *superba* from a Ribbe specimen from Bacan. His excellent figure shows both surfaces. Y. Nekrutenko determined the HT ♂ in the SMTD, by monotypy (Fig. 72).

Note 2: Bethune-Baker (1903: 36) synonymised *superba* with nominotypical *micale,* but Seitz (1926: 950) and Evans (1957: 117) treated *superba* as a distinct subspecies, as do we.

Note 3: Evans (1957: 117) also noted 2 ♂♂ from "Celebes", 1 ♂ each from "Amboina" and "Cape York" and a ♀ from "Buru" in the NHMUK. In each case he placed these records in quotation marks indicating his suspicion of incorrect locality labels. We have examined these specimens and they all show the typical *superba* phenotype. The species *micale* is otherwise unknown from Sulawesi and central Maluku apart from a short series in the NHMUK labelled "Amboina" placed with the Aru subspecies – see under *Arhopala micale ribbei.* The subspecies *amytis* Hewitson, 1862 was described from Cape York. The "Cape York" ♂ placed by Evans with *superba* has a handwritten note beneath it, stating "Cape York! Probably N. Moluccas." A similar note is placed below the specimen with the Ambon data label. The "Buru" specimen 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.

We exclude these locations from the range for *Arhopala micale superba*.

Arhopala micale obina (Evans, 1957)

(Fig. 73: ♂, Obi; Fig. 74: ♀, Obi; Fig. 75: ♀ HT, Obi.)

Narathura micale obina: Evans (1957: 117); TL: Obi – see note 1.

Range: endemic to Obi.

Note 1: Evans (1957) very briefly described *obina* and noted that the HT was a ♂ and listed a further 5 ♂♂, 5 ♀♀ in the NHMUK. The only *obina* specimen we have found in the NHMUK bearing a type label is a ♀ (Fig. 75). The type label originally read "Type AT". But the "A" has been overwritten with an "H", thus creating a "HT" label. The type labels on the HTs of many of Evans' newly described *Arhopala* taxa are AT labels that have been doctored to "HT" or just "Type" – for other examples see illustrations of *A. lata lata (*Fig. 27), *A. philander gander* (Fig. 49) and *A. micale jona* (Fig. 77). Others merely had a simple "Type" label – e.g. *A. philander pratti* (Fig. 51) and *A. leander* (Fig. 60). We suspect that these handwritten changes were made by Evans himself, because the museum had run out of "HT" labels. He did not usually specify or label an allotype. We consider this ♀ is the *obina* HT and conclude that Evans' note that the HT was a ♂ was probably a typographical mistake.

Note 2: The Obi subspecies is quite similar to *superba* from northern Maluku, but as Evans noted, the *obina* ♀ upperside black border is noticeably narrower.

Arhopala micale ssp. n.*?*

(Fig. 76: ♂, Gebe.)

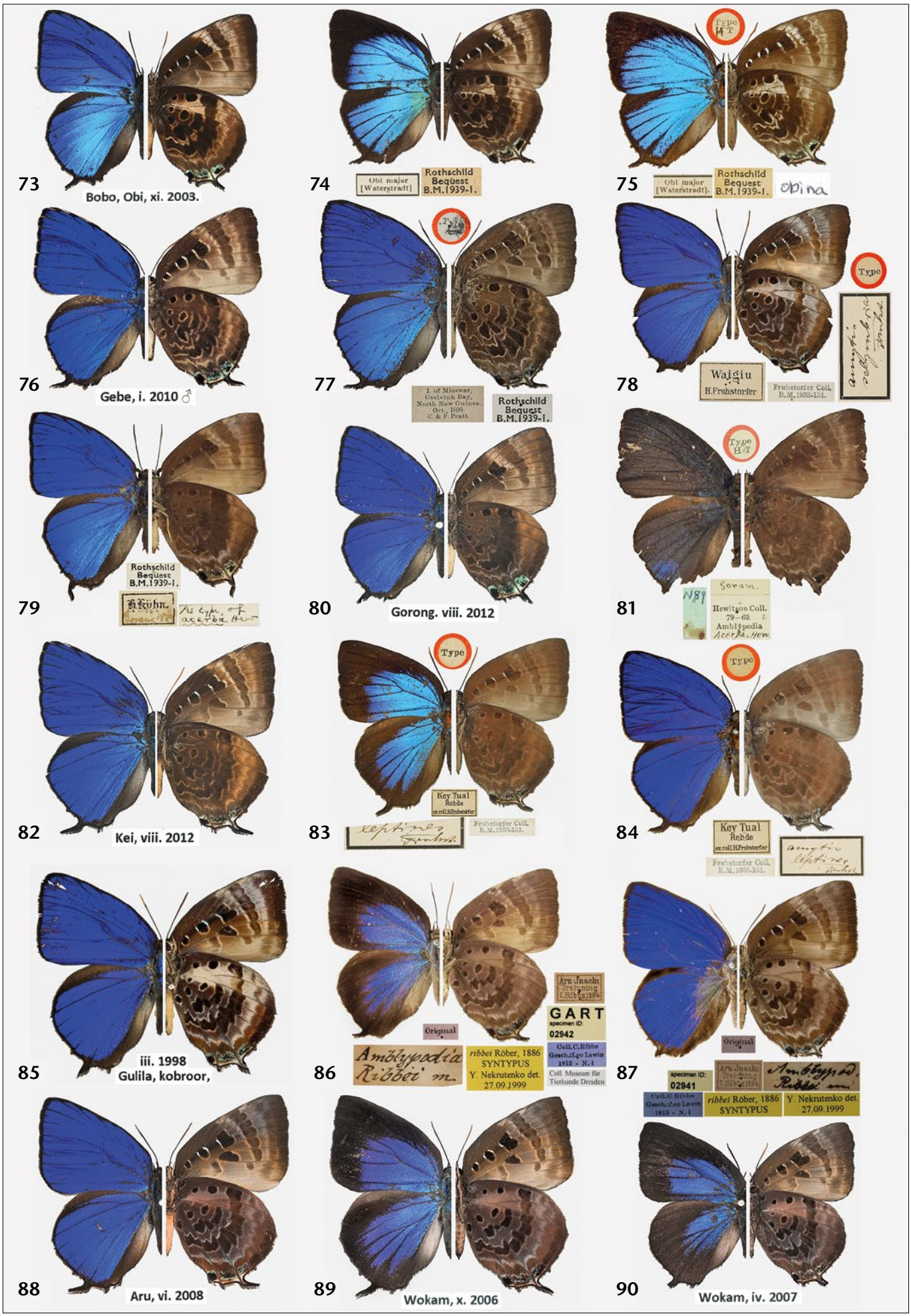
Range: Gebe (1 ♂, i. 2010, CARR).

Notes: We have seen only 1 *Arhopala micale* ♂ from Gebe. Of the Maluku subspecies, it is closest to *superba* from northern Maluku. The underside is similar to the *superba* examples without the whitened areas on the hw (Fig. 71), except that it lacks the dramatically contrasting pale areas on both sides of the fw postdiscal band. The Gebe upperside purple-blue colour is slightly darker and less iridescent, especially on the hw, compared to *superba*.

Gebe lies between Halmahera in northern Maluku and Waigeo, with the Birds Head Peninsular of the New Guinea mainland further east beyond Waigeo.

The Gebe ♂ is clearly different from ♂♂ from Waigeo - subspecies *selymbria* Fruhstorfer, 1914 (♂ type Fig. 78) - and western New Guinea, treated by Evans (1957) as *novaeguianae* Strand, 1912 (TL: Teba, New Guinea). It is quite similar to Yapen ♂♂ – subspecies *jona* Evans, 1957 (TL: Mioswar) (♂ type Fig. 77) –, but this is unlikely geographically.

Plate 5, Figs. 73–90: Subspecies of *Arhopala micale*(partim). – **Figs. 73–75:** *A. micale obina:* **73:** ♂, ups./uns., Obi (Bobo, xi. 2003, CARR). **74:** ♀, ups./uns., Obi (Obi major, Waterstradt, NHMUK). **75:** ♀, HT, ups./uns., Obi (Obi major, Waterstradt, NHMUK). – **Fig. 76:** *A. micale* ssp.?: ♂, ups./uns., Gebe (i. 2010, CARR). – **Fig. 77:** *A. micale jona:* ♂, HT, ups./uns., Mioswar Island (Geelvink Bay, x. 1909, C. & F. Pratt, NHMUK). – **Fig. 78:** *A. micale selymbria:* ♂, type, ups./uns., Waigeo (Waigiu, H. Fruhstorfer, NHMUK). – **Figs. 79–81:** *A. micale acerba:* **79:** ♂, ups./uns., Gorong (Goram, 1889, H. Kühn, NHMUK). **80:** ♂, ups./uns., Gorong (viii. 2012, CARR). **81:** ♂, **HT,** ups./uns., Gorong (Goram, Hewitson Coll., NHMUK). – **Figs. 82–84:** *A. micale leptines:* **82:** ♂, ups./uns., Kei (viii. 2012, CARR). **83:** ♀, type, ups./uns., Kei (Key Tual, Rohde, ex coll. Fruhstorfer, NHMUK). **84:** ♂, type, ups./uns., Kei (Key Tual, Rohde, ex coll. Fruhstorfer, NHMUK). – **Figs. 85–90:** *A. micale ribbei:* **85:** ♂, ups./uns., Aru (Gulila, Kobroor, iii. 1998, CARR). **86:** ♀, ST, ups./uns., Aru (Aru-Inseln, Ureiuning, 1884, C. Ribbe, SMTD). **87:** ♂, ST, ups./uns., Aru (Aru-Inseln, Ureiuning, 1884, C. Ribbe, SMTD). **88:** ♂, ups./uns., Aru (vi. 2008, CARR). **89:** ♀, ups./uns., Aru (Wokam, x. 2006, CARR). **90:** ♀, ups./uns., Aru (Wokam, iv. 2007, CARR).



In any case, in the absence of ♀♀, it is hard to establish the subspecific status of this specimen, but further material may show that it represents a new distinct subspecies of *micale*.

Arhopala micale acerba (Hewitson, 1863)

(Fig. 79: ♂, Gorong; Fig. 80: ♂, Gorong; Fig. 81: ♂ HT, Gorong.)

Amblypodia acerba: Hewitson (1863: 3, pl. 1, fig. 5); TL: Goram (= Gorong) – see note.

Range: endemic to the Gorong Islands: Gorong and Manawoka (labelled Manovolka) (NHMUK).

Note: Hewitson (1863): described only the ♂ of *acerba* from Gorong Island in the Gorong Group, which lies between central Maluku and the Kei Islands. He illustrated the underside and noted "In the Collection of A. R. Wallace". Evans (1957: 117) noted that the ♂ "type" was in the NHMUK (Fig. 81). The upperside of this specimen is discoloured.

Arhopala micale leptines Fruhstorfer, 1914

(Fig. 82: ♂, Kei; Fig. 83: ♀ type, Kei; Fig. 84: ♂ type, Kei.)

Arhopala amytis leptines: Fruhstorfer (1914: 158); TL: Kei Islands – see note 1.

Range: endemic to the Kei Islands – Kei Dullah [= Kei Tual] (NHMUK); Kei Kecil (CARR).

Note 1: Fruhstorfer (1914) briefly described both sexes of *leptines* from the "Key-Inseln". He placed *leptines* as a subspecies of *amytis* Hewitson, 1862. Evans (1957: 117) noted that the ♂ "type" was in the NHMUK (Fig. 84).

Note 2: Bethune-Baker (1903: 33) treated *amytis* as a species distinct from *micale*. Seitz (1926: 949) also treated *leptines* as a form [subspecies] of *Arhopala amytis*. Evans (1957: 117) considered both *leptines* and *amytis* to be subspecies of *micale* and we concur.

Arhopala micale ribbei (Röber, 1886)

(Fig. 85: ♂, Aru; Fig. 86: ♀ ST, Aru; Fig. 87: ♂ ST, Aru; Fig. 88: ♂, Aru; Fig. 89: ♀, Aru; Fig. 90: ♀, Aru.)

Amblypodia ribbei: Röber (1886: 70, pl. 5. fig. 5); TL: Aru – see note 1.

Range: endemic to the Aru Islands (including Wamar and Kobroor) (NHMUK). – **New records** from specific Aru Islands: Wokam (1 ♂, x. 2006; 2 ♂♂, iv. 2007; 1 ♂, 1 ♀, vi. 2008) (CARR), Maikoor, Trangan (K. Nagai, pers. comm.) – see note 3.

Note 1: Röber (1886) gave a detailed description of both sexes of *ribbei* in German and provided accurate illustrations of both surfaces of the ♂. His description gave specific wingspan lengths of 47 mm for the ♂ and 46 mm for the ♀, suggesting there may have been just 1 of each sex. He did not note where the specimens were held but stated the taxon was named in honour of Carl Ribbe. There is a pair in the SMTD that were determined by Y. Nekrutenko as STs (Figs. 86, 87).

Note 2: Bethune-Baker (1903: 35) treated *ribbei* as a variety of *Arhopala amytis* Hewitson, 1862 and noted he had the types from Aru in front of him. Seitz (1926: 949) likewise considered *ribbei* as a form of *amytis*. Evans (1957: 117–118) placed both *ribbei* and *amytis* as distinct subspecies of *micale* and we agree.

Note 3: Hewitson (1862: 4, pl. 2, figs. 7, 8) described both sexes of *amytis* and illustrated both surfaces of the ♀. He noted that the specimens were "In the Collection of the British Museum from Australia" and Evans (1957: 118) noted that the *amytis* ♂ "type" from Cape York was in the NHMUK. Hewitson also briefly described a "Variety" ♀ "In the Collection of the British Museum from Aru" and noted its darker blue upperside. He illustrated the upperside in fig. 9. We consider this Aru ♀ to be an example of *ribbei*.

Note 3: Evans (1957: 117) listed the *ribbei* specimens in the NHMUK: "5 ♂, 2 ♀, 'Amboina'. 23 ♂, 14 ♀ Aru." He placed the "Ambon" listing in quotation marks to indicate he questioned the locality data. Five of these "Ambon" specimens carry the same 2 labels:

- "Amboine, Rey, 1900"
- "Ex Oberthür Coll. Brit. Mus. 1927-3."

Apart from the ♂ labelled "Amboina" and the ♀ labelled "Buru" discussed under *Arhopala micale superba*, we are unaware of any further records of any subspecies of *micale* from central Maluku, despite extensive collecting there. We thus exclude Ambon and the rest of central Maluku from the known range for the species *micale*.

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