On some type specimens of Lycaenidae from South East Asia (Lepidoptera)

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Abstract: The Courvoisier collection in Naturhistorisches Museum Basel has been overlooked by recent authors, although it contains a number of type specimens of taxa described in the late 19th or early 20th centuries. Examination of these specimens, along with some types in London and Munich, has resolved some taxonomic difficulties evident from more recent literature. No new taxa are described but a new arrangement is proposed for some representatives of the genus Jamides Hübner, [1919], from Sulawesi, Philippines and Maluku. A total of 4 lectotypes are designated where appropriate, to fix a number of species group names that have hitherto remained ambiguous: Lampides kondulana espada Fruhstorfer; male, NHMB; Lampides amphissa courvoisieri Fruhstorfer; male, BMNH; Lampides aleus sarsina Fruhstorfer, male, NHMB; Arhopala ganesa formosana Kato, male, NHMB. Two taxa which have previously been accorded only subspecific status, Jamides sabatus (Fruhstorfer, 1921) and Jamides aritai Hayashi, 1976, are raised to species status, stat. n. The following new combinations are proposed: Jamides alecto espada Fruhstorfer; Jamides pura spitamenes Fruhstorfer; Jamides aratus sestus Fruhstorfer, all comb. n. The following new synonyms are suggested: formosana Kato = Arhopala japonica Muray; pheda Corbet = Poritia phama courvoisieri Fruhstorfer; camarinus Takanami = Jamides sabatus Fruhstorfer; alle syn. n. Die Autorenchaft des Gattungsnamens Caleta wird revidiert; die korrekte Autorenchaft ist Hirowatari, 1992.

Introduction: Type specimens preserved mainly in Naturhistorisches Museum, Basel

I recently had the opportunity to study the Courvoisier collection of butterflies held in Naturhistorisches Museum Basel, and I examined some type specimens of South-East Asian Lycaenidae, mainly described by Fruhstorfer and Röber. Additional reference is made to specimens held in the Natural History Museum, London, which have also been examined, and Zoologische Staatssammlungen, Munich.

In this paper I list the type specimens examined in Basel and designate lectotypes when appropriate. The labels from the type specimens are described. The / mark separates data on individual labels, and my notations are in square brackets: [colour of label] or [h] = handwrit-ten and [p] = printed. Then I make further comments on the status and validity of the original names, with nomenclatural modifications as a result of superficial and genitalic examination of the type specimens.

Abbreviations (collections and other), symbols

BMNH The Natural History Museum, London (formerly British Museum [Natural History]).

f. Forma (infrasubspecific).

HT Holotype.

LT Lectotype.

NHMB Naturhistorisches Museum Basel.

PLT Paralectotype.

PT Paratype.

ZSM Zoologische Staatssammlungen München (Munich).

Genus Jamides Hübner, [1819]

Lampides kondulana espada Fruhstorfer, 1915


(13–144 (2013))
Following external examination and genitalic dissection, *espada* is treated hereinafter as a subspecies of *Jamides aleco* (C. Felder, 1860): 456 (*Jamides aleco españa* (Fruhstorfer, 1915), stat. n., comb. n.).

**Lampides súidas spitamenes** Fruhstorfer, 1915

*Lampides súidas spitamenes: Fruhstorfer (1915a: 7). Maluku, Obi. (Figs. 4–6 ♂, 61 ♂ genit.)

Fruhstorfer’s description mentions only one ♂ specimen from Obi, although he does not say where it is stored. The ♂ specimen found in Basel is very likely to be that to which Fruhstorfer refers in his description.

Holotype ♂ by monotypy: “Obi 1909 Fried. [h] /red/ Type [p] [pink]/HOLOTYPE ♂ *spitamenes* FRUHL. CASSIDY ii. 13. [h]”.

Following external examination and genitalic dissection, *spitamenes* is treated hereinafter as a subspecies of *J. pura* (Moore, 1886) (*Jamides pura *spitamenes* (Fruhstorfer, 1915), stat. n., comb. n.).

**Plebeius optimus** Röber, 1886

*Plebeius optimus:* Röber (1886: 56, pl. 4, fig. 16 ♂). E. Sulawesi. (Figs. 7–9 ♂.)

“Ost-Celebes Tombugu H. Kuhn 1885 [p]/Original [p] [mauve]/Ost Celebes 1908 Rtl. [h] [pink]” A lectotype of *optimus*, from Senckenberg Naturhistorische Sammlungen (formerly Staatliches Museum für Tierkunde), Dresden, was designated by Takanami (1989: 48). A former syntype ♂ (now paralectotype) from the Ribbe collection is located in NHMB.

Currently treated as a subspecies of *Jamides celeno* (Cramer, [1775]), following Takanami (1989: 48).

**Plebeius lucianus** Röber, 1886

*Plebeius lucianus:* Röber (1886: 54, pl. 4, fig. 11 ♂; lectotype). Maluku, Bacan. (Figs. 10–12 ♂.)

“Aru Insel Wamma Dobbo C. Rubbe 1883 [p]/Original [p] [mauve]/Aru Inseln 1906 Rt. [h] [red]”. Takanami (1989: 48) designated a lectotype (in Senckenberg Naturhistorische Sammlungen Dresden) for this taxon using a ♂ from Bacan collected by Carl Ribbe in 1885. This former syntype in NHMB also appears to have been collected by Ribbe, but from the island of Aru.

Takanami synonymised *lucianus* with *Jamides aratus batjanensis* (Röber, 1886; 54, pl. 4, fig. 10]) (see Figs. 13–14 ♂).

**Lampides amphissa courvoisieri** Fruhstorfer, 1915

*Lampides amphissa courvoisieri: Fruhstorfer (1915a: 26). (Figs. 15–17 ♂ [BMNH], 18–20 ♀ [NHMB].)

Fruhstorfer’s description refers to two specimens, one of each sex. The ♂ from Fruhstorfer’s own collection is in London, the ♀ in Basel.

Lectotype ♂ here designated: “Type [p] [red] /Nias ex coll. FRUHSTORFER [p]/ FRUHSTORFER coll. B.M. 1933-131 [p]/amphipsa courvoisieri FRUHST. [h] [in FRUHSTORFER’s hand]/LECTOTYPE ♂ courvoisieri FRUH. CASSIDY iv. 13. [h]”, in BMNH.

A ♀ in Courvoisier collection with data: “amphipsa courvoisieri FRUHST. [h]/Nias 1907 Ro. [h] [pink]/TYPUS [p] [pink]” is considered a paralectotype.

Currently treated as a subspecies of *Jamides cyta* (Boisduval, [1832]): 87, following Riley & Corbet (1938: 157).

**Lampides aetherialis sestus** Fruhstorfer, 1915

*Lampides aetherialis sestus: Fruhstorfer (1915a: 23). Timor. (Figs. 21–23 ♂.)

Fruhstorfer describes sestus from a single ♂ from the type locality Timor and states it to be in the Courvoisier collection.

Holotype ♂ by monotypy: “lucianus sestus FRUHST. [in FRUHSTORFER’s hand] /Timor 1911 Sta. [h] [pink]/TYPUS [p] [pink]/LECTOTYPE ♂ sestus FRUH. CASSIDY iii. 13 [h]”. Note that Fruhstorfer wrote “lucianus” on the label but then described sestus as a subspecies of *aetherialis*.

Now shown by genitalic dissection to be a subspecies of *J. aratus* (Stoll, [1781]) (*Jamides aratus sestus* (Fruhstorfer, 1915), stat. n., comb. n.).

**Lampides aleuas sarmice** Fruhstorfer, 1915


Fruhstorfer mentions only a single ♀ in his description and states it to be in the Courvoisier collection.

**Lampides suidas** Fruhstorfer, 1915


Fig. 1: 1–23 ♂.

Fig. 2: 1–23 ♂.

Type locality Timor and states it to be in the Courvoisier collection.
Holotype ♀ by monotypy: “Kapsu NMeklenbg. 1912 KruK. [h] [red] /TYPUS [p] [pink] /HOLOTYPE ♀ sar-nice Fruh. CASSIDY III. 13 [h]”.

Currently treated as a subspecies of Jamides allectus (Grose-Smith, 1894: 576), following Parsons (1998: 451).

Lampides aleuas sarsina FRUHSTORFER, 1915
(Figs. 27–29 ♂ [NHMB], 30–32 ♀ [BMNH].)
FRUHSTORFER described a pair of specimens from Aru.


Currently treated as a subspecies of Jamides aleuas (C. & R. Felder, 1865[268]), following Tite (1960: 330).

A ♀ in BMNH with data: “Type AT [p] [red]/ Aru [h] FRUHSTORFER [p]/ FRUHSTORFER Coll. B.M. 1933-131 [p]/ aleuas sarsina Fruh [h] [in FRUHSTORFER’s hand]” is considered a paralectotype.

Lampides alsietus sabatus FRUHSTORFER, 1915
Lampides alsietus sabatus: FRUHSTORFER (1915a: 16). North Sulawesi?
(Figs. 33–35 ♂ [ZSM].)

There is a ♀ specimen marked as type in ZSM (Munich): “alsietus sabatus FRUHST. [h] [in FRUHSTORFER’s hand]/ Abgebildet [= figured] H. FRUHSTORFER [p]/ Nord Celebes, H. FRUHSTORFER.[p]/Type [p] [red]”. The “Abgebildet” probably refers to the image on Plate 151 in SEITZ (1927) (see inset on Fig. 35). FRUHSTORFER makes no mention of multiple specimens in his description, so this Munich specimen is considered to be the holotype by monotypy. Regarding the type locality of sabatus, FRUHSTORFER writes (in translation): “Patria: Of the skier thinnesfickes in or twom and Cileg. India, Sik karen, who was not able to supply data of its origin with certainty.”

The discussion section below expands on the revisionary taxonomic implications of the discovery of the types of espada and sabatus.

Genus Caleta HIROWATARI, 1992
= Castalius (caleta species-group): FRUHSTORFER (1922: 890).
Caleta: HIROWATARI (1992: 40)

FRUHSTORFER (1922: 890) grouped together a number of taxa of genus Castalius Hübner, [1819] (type species Papilio rosimus Fabricius, 1775[2]: 523), by selection of SCUDDER 1875: 135), principally from Sulawesi and the Philippines, and called them in the headline “Caleta-Artengruppe” (or “Caleta Species-Group”). He failed, however, to list any descriptive characters that would distinguish it from other species included in Castalius at that time. This action was insufficient to constitute the description of a new genus.

Corbet & Pendlebury (1934, 1956) continued to use Castalius for the generic name of the Malayan species of Castalius, as did Lewis (1974) for Castalius [sensu lato].

Hemming (1967) listed “Caleta” as a genus-group taxon and provided both a bibliographic reference to FRUHSTORFER’s earlier work and made the designation of Lycaena caleta Hewitson, [1876] as the type-species of #Caleta. These actions would have satisfied the requirements of Articles 13.1.2 and 13.3 of the ICZN (1999), had FRUHSTORFER’s description been adequate, but it was not. Thus #Caleta cannot correctly be attributed to Hemming.

Several authors since Hemming, notably, Eliot (1973, 1978), D’Arrera (1986) and HIROWATARI (1992, 1993), have enlarged the biogeographical concept of the genus #Caleta but have erroneously attributed #Caleta to FRUHSTORFER (1922), without realising that FRUHSTORFER’s actions had not been sufficient to establish genus-group status for his “Caleta species group”.

Of these authors, however, only HIROWATARI (1992: 40) described very well the distinctive characteristics of those species which he listed as belonging to Caleta, rather than to Castalius [sensu stricto]. He also confirmed the type species of Caleta as Lycaena caleta by monotypy. This action of HIROWATARI is thus the first adequately to fulfill the requirements of the ICZN (1999) for the proper fixation of the genus Caleta, which should henceforth take his name.

Toxopeus (1929: 228) listed two species of Castalius under a new genus name #Pycnophallium, and Hemming (1964) designated Polyommatus roxus Godart, [1814], as the type species of #Pycnophallium. However, Hemming also made clear that #Pycnophallium had never actually been published with a description, and so was invalid, and he also synonymised it with Castalius.

Castalius elna forma #elina FRUHSTORFER, 1918
Castalius elna forma #elina FRUHSTORFER (1918: 37); infra-subspecific. India, Sikkim.
(Figs. 45–47 ♂.)

FRUHSTORFER described elina from an indeterminate number of specimens and included locations of “Sikkim, Bhutan, Assam and Birma”. One of these original specimens (no type material, as being an infrasubspecific for ma) is deposited in NHMB and has the following labels: “Sikkim 1913 Ween [h] [pink] /TYPUS” [p] [pink] [in fact this is no type at all].

Nominate Caleta elna (Hewitson, [1876]): pl. 35, fig. 8, from Java. The taxon #elina is currently treated as an infrasubspecific denotation for the dry-season form of Caleta elna nolitae (FRUHSTORFER, 1918: [37]).

Genus Arhopala BOISDUVAL, 1832
Arhopala ganesa formosana KATO, 1930
(Figs. 48–50 ♂.)
Lectotype ♂ here designated: “Tainan [sic] Formosa 1911 H.S. [h] /pink /TYPUS [p] /pink /LECTOTYPE formsana Kato Cassidy iii. 2013 [h]”, described by Kato and listed by Evans (1957: 128) as a subspecies of A. ganesa, although he also states “none in BM” and so had probably not seen a specimen and certainly not this type. Following external examination, it is better regarded as a synonym of Arhopaloida japonica (Murray, 1874): 169, syn. n.

**Genus Flos Doherty, 1889**

Amblypodia kuehni Röber, 1887

Amblypodia kühni: Röber (1887: 200, pl. 9, figs 5 ♂, 8 ♀). (Figs. 51-53 ♂.)

“This Bangkei H. Kühn 1885 [p] /Original [p] /mauve /Bangkei 1908 Rt [h] /red”, Evans (1957: 131) lists this taxon as Flos kühni [sic] and notes that the type of kuehni is held in the BMNH, while D’Abrera (1986: 584) lists Flos kühni [sic] and illustrates a ♂ with a red “type” label alongside. This specimen appears to have been collected by H. Kühn in Bangkei in 1885 and acquired by Courvoisier from Ribbe in 1908. Whilst previously considered a syntype of the ♂ in BMNH, it currently has no taxonomic status. In accordance with the ICZN (1999: Article 32.5.2.1.), the correct spelling of this taxon is Flos kuehni.

**Genus Poritia Moore, [1866]**

Poritia pleurata courvoisieri Fruhstorfer, 1917

Poritia pleurata courvoisieri: Fruhstorfer (1917: 40). (Figs. 54-56 ♂.)


Currently treated as Poritia phama courvoisieri following Corbet (1940: 343). Corbet’s taxon pha in California is considered a synonym of courvoisieri, syn. n.

**Genus Miletus Hübner, [1819]**

Gerydus courvoisieri Fruhstorfer, 1915

Gerydus courvoisieri: Fruhstorfer (1915b: 268 ♂). Java. (Figs. 57-59 ♂.)


Currently treated as a synonym of Miletus boisduvali boisduvali (Moore, 1858: [19, pl. 1a, fig. 1]), of which the Javanese ♂ holotype is held in BMNH, following Eliot (1961: 166).

**Discussion**

The positions of espada and sabatus within Jamides have not been stable. Fruhstorfer described espada under kondulana, which has itself been considered as a subspecies of alecto following Riley & Corbet (1938: 154). Fruhstorfer described sabatus, of uncertain location, under alsietus which is from Bazilan (= Basilan). This position for sabatus was retained in the 1990s by authors dealing with the Philippine Islands (Takanami 1990, Treadaway 1995).

Also in 1990, Takanami described a new subspecies, J. alsietus camarines, from Marinduque and several more Philippine locations. More recently authors (Takanami & Seki 1997, Treadaway & Schröder 2012) have given camarines species status on its own and placed sabatus as a subspecies of J. espada.

The discovery and examination of the type of espada has confirmed its synonymy with alecto, making the combination of sabatus with espada inappropriate. Comparison of the images of the type of sabatus (Munich) with paratypes of camarines (London) suggests that their conspecificity is highly probable. Therefore I propose the following arrangement:

**Jamides alecto espada Fruhstorfer, 1915, stat. n.**

**Jamides sabatus Fruhstorfer, 1915, stat. n.**

= camarines Takanami, 1990, syn. n. (Figs. 36-38 [paratype in BMNH].)

This new status of espada also raises further problems relating to the Jamides fauna of Sulawesi, Maluku and the Philippines: the status of “Jamides rothschildi” auct. and its putative subspecies aritai Hayashi, [1977a]: 151] and mindanensis Hayashi, 1977b[: 167].

Jamides ♀rothschildi is a nomen nudum and is invalid. It was first attributed to “Toxopeus (M.S.)” by D’Abrera (1971) and perpetuated in Edition 2 (D’Abrera 1977: 354). Although it was accompanied by an illustration of two butterflies from Seram, Maluku Province, Indonesia, it contained no written description. D’Abrera suggested that “It is likely that Toxopeus never actually published this name”, and indeed no such publication has been discovered. Subsequently, Hayashi ([1977a], 1977b) published his descriptions of two subordinate taxa, but this action still did not properly describe or fix a type specimen for ♀rothschildi, which remains an invalid name.

Takanami (1990: 71) wrongly attributed ♀rothschildi to Hayashi, but helpfully included drawings of the ♂ genitalia of the taxon mindanensis and has subsequently confirmed (pers. comm.) that those of aritai are of the same form. More recently, dissections by the author of ♀ from North Sulawesi and Buru have confirmed the conspecificity of those specimens with aritai and mindanensis.

As aritai is the earliest published available name for the species, with ♂ genitalia of the form shown in Figs. 62-63,
Figs. 45–47: Castalius elna forma ‡elina♂; Up, Un, labels. — Figs. 48–50: Arhopala ganesa formosana [= Arhopala japonica]♂; Up, Un, labels. — Figs. 51–53: Flos kuehni♂; Up, Un, labels. — Figs. 54–56: Poritia phama courvoisieri♀; Up, Un, labels. — Figs. 57–59: Miletus boisduvali boisduvali [= courvoisieri]♂; Up, Un, labels. — Scale bar = 1 cm, valid for all specimens = approximately natural size for all specimens (not valid for labels). — Figs. 60–63: genitalia (A = armature, V = valva, P = phallus [or aedeagus]). Fig 60: Jamides alecto espada. — Fig 61: Jamides pura spitamenes. — Fig 62: Jamides aritai, Sulawesi. Fig 63: Jamides aritai, Buru. — Scales see in pictures.
with type locality Palawan and a range that includes Sulawesi, Seram and Buru, I propose the following arrangement:

*Jamides aritai* HAYASHI, [1977a] **stat. n.**

Range: Sulawesi, Maluku, Philippines.

(Figs. 39–40 Mindanao, Figs. 41–42 Sulawesi, Figs. 43–44 Palawan.)

= *rothschildi* auctorum, *nomen nudum*

= *mindanensis* HAYASHI, 1977b; synonymised by TAKANAMI & SEKI (1997).

More detailed examination of longer series of insects from this wide variety of locations might lead to the proposal of further subspecific names subordinate to *aritai*, but none is proposed here.

**Notes on methods used**

All genitalic preparations were initiated by maceration in 0.1N KOH before the parts were separated in 70% iso-propanol. After study, elements of the genitalia were dried in absolute iso-propanol and then stored in glycerol in nested polypropylene vials. Microphotography was undertaken in glycerol, to inhibit movement, using an Aigo GE-5 digital microscope. Multiple images were combined using Helicon Focus 5.3.7 X64 software from Helicon Soft Ltd to provide enhanced depth of field. Photographs of adult specimens were taken using a Nikon D80 digital SLR camera, usually with multiple flash illumination. Images were post-processed, including colour balancing for different lighting conditions, using Photoshop Elements 6.0 from Adobe. Image backgrounds have been flattened in Photoshop to remove distracting shadow and reflection effects from mounting materials. All images are scaled to show adult specimens represented at life size.

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**Acknowledgements**

Dr. Daniel Burckhardt of the Natural History Museum, Basel, Switzerland, for access to the Courvoisier collection containing all the listed specimens. Blanca Huertas of the Natural History Museum, London, for permission to examine and photograph type specimens illustrated here. Dr. Axel HAUSMANN from Lepidoptera Section, ZSM Munich, with regard to the type specimens held there of *sabatus* and *espada* and the provision of images of the type of *sabatus*. Dr. Stefan Schröder for liaison with ZSM Munich on my behalf. Dr. Yusuke TAKANAMI for advice and for providing images of a number of Philippine specimens. John TENNENT for advice on the resolution of the status of *rothschildi*. Dr. Toshiya HIROWATARI, Kyushu University, Fukuoka, and Dr. Wolfgang A. Nässig, Research Institute Senckenberg, Frankfurt am Main, for comments on the manuscript. Val McAteer, the Librarian of the Royal Entomological Society, London, for assistance in the search for some obscure publications.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: Nachrichten des Entomologischen Vereins Apollo

Jahr/Year: 2013

Band/Volume: 34

Autor(en)/Author(s): Cassidy Alan

Artikel/Article: On some type specimens of Lycaenidae from South East Asia (Lepidoptera) 137-144