
台灣生物誌 六足總綱

鱗翅目 夜蛾總科
夜蛾科 蕨夜蛾亞科

BIOTA TAIWANICA

Hexapoda: Lepidoptera, Noctuoidea,
Noctuidae (Eriopinae)

顏聖紘、吳士緯
YEN Shen-Horn, WU Shipher



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Preface

The project “Biota Taiwanica” was first launched in 2007 under the sponsorship of the National Science Council (NSC). The aim of the whole series is to present a contemporary account of Taiwan’s native fauna and flora for various purposes, such as scientific research, education, professional training, resource management and interest of the general public. Although our knowledge of the island’s Lepidoptera fauna remains far from complete, the immediate and potential value of the series is beyond doubt. This series is aimed to provide a synopsis of the native Lepidoptera species of Taiwan, and to serve as a concise manual for identification. This series also incorporates colour pictures of each taxon, dichotomous keys, diagnoses of all taxa, valid names and synonymys, followed by references, geographical distributions and general biology and citation of representative museum collections.

The arrangement of the whole series does not follow any taxonomic system of high category taxa because the backbone phylogeny of the Lepidoptera has been undergoing a dramatic change during the last 10 years. We therefore decided to take the taxa of which the monophyletic status is confirmed or less suspicious with higher priority. In the whole series, all the synonyms that have ever appeared in literature are included. Reference citation is generally limited to the original publication. Chinese names of all taxa are given in traditional Chinese characters. A selected number of museum collections examined by the author(s) are cited for each specific taxon to represent the distribution pattern of a taxon in different areas and elevations of Taiwan. We also include some specimens collected outside Taiwan to show that the Taiwanese material has been compared with other material or closely related species. The most importantly, examination of type specimen of each taxon is included when the type material is accessible. Because the chaotic and inconsistent anglicized spelling of locality names of Taiwan by various collectors of different nationalities, we follow the spelling appearing on the collection labels, but give annotations or corrections whenever necessary. The acronym for museum or private collection where specimens are deposited is cited. The order of geographical distribution in Taiwan is given from west to east and from north to south. The names of several areas follow current usage; for example, Sri Lanka for Ceylon, Sulawesi for Celebes, and Myanmar for Burma. Pictures of adult specimen, genitalia, larva, pupa, hostplant(s) and habitat are provided whenever available. The scale of the figures is not always indicated. Some figures contain a scale bar or indicate the scale within the legend.

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ERIOPIINAE (NOCTUOIDEA: NOCTUIDAE)

蕨夜蛾亞科 (夜蛾總科: 夜蛾科)

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Abstract

The Eriopinae species of Taiwan are revised. In total 17 species in 1 genus are recognized. Two species, namely *Callopietria nobilior* Eda, 2000 and *C. rivularis* Walker, [1858]1857, both added to the Eriopinae fauna of Taiwan after the publishing of the Lepidoptera of Taiwan (checklist) in 1992, are included. In the present study, 20 hostplant records are reported for the first time. The type specimens, adult habitus, genitalia, larval images as well as a key to the species occurring in Taiwan are provided.

Keywords: Lepidoptera, Ditryisia, Obtectomera, Macrolepidoptera, Noctuoidea

The subfamily Eriopinae Herrich-Schäffer, [1851] 1845

(蕨夜蛾亞科)

Eriopodides Herrich-Schäffer, [1851] 1845, *Systematische Bearbeitung der Schmetterlinge von Europa, zugleich als Text, Revision und Supplement zu Jakob Hübner's Sammlung Europäischer Schmetterlinge* **2**: 379.

Eriopinae Herrich-Schäffer, [1851] 1845: Poole, 1995, Cuculliinae, Stiriinae, Psaphidinae (part). *In*: Dominic R.B. *et al.* eds. Noctuoidea, Noctuidae (part.). *The Moths of America North of Mexico* **26**(1): 22.

Type genus: *Eriopus* Treitschke, 1825 (= *Callopietria* Hübner, [1821] 1816)

Systematic history of the Eriopinae

The systematic position of the subfamily Eriopinae has been debatable since it was established in the 1850s. It was previously either placed in Amphipyriinae Guenée, 1837, Hadeninae Guenée, 1837, or its own subfamily Eriopinae, but very few evidence justifying any of these placements has been provided. Due to the complicated taxonomic histories of all the triline groups of the Noctuidae sensu lato during the last decades, and

the varied intensities of the evidence used for inferring the phylogenetic relationships, no consensus about the systematic position of the Eriopinae has ever been reached by the major authors, such as Kitching (1984), Poole (1995), Speidel *et al.* (1996), Kitching & Rawlins (1999), Beck (1999-2000), Fibiger and Lafontaine (2005), Mitchell *et al.* (2005) and Lafontaine & Fibiger (2006). Although most of the “traditional” and species-rich triline subfamilies, e.g. Amphipyridae and Hadeninae are no longer regarded as monophyletic, their taxonomic boundaries, however remained unexplored and unassessed, and this has influenced various practical research fields that require information of a taxon that represents a natural evolutionary entity and biological characteristics.

Callopietria, the type and the most speciose genus of the Eriopinae, was originally confined to its type species (*Phalaena juvenina* Stoll, 1782) and placed in its own subfamily by Herrich-Schäffer (as Eriopodidae) in the mid-19th century. This genus was later expanded to include many more species from other continents and placed in a collective group Acronictinae (as Acronyctinae) with various unrelated noctuid genera by Hampson (1908). Mosher (1916) included *Callopietria* (as *Eriopus*) in the Hadeninae based on the presence of a series of stout straight spines at the caudal end of the pupal body. Kitching (1984) reviewed the concepts of Noctuidae subfamilies and suggested placing *Callopietria* in the Amphipyridae, which was considered by Kitching at least as paraphyletic. Including *Callopietria* in Amphipyridae was later adopted by most of the subsequent taxonomic works (e.g. Yamamoto, 1987; Holloway, 1989; Chang, 1991; Wang, 1996; Fu & Tzuoo, 2002). Kitching & Rawlins (1999) stated that the true Amphipyridae might only be restricted to the type genus, and thus suggested transferring a number of “ex-Amphipyridae” genera, including *Callopietria* back into Hadeninae based on the superficial similarity in male genitalia, presence of a SD1 tonosensillum at larval abdominal segment 9, and some plesiomorphic features of the pupa. Poole (1995), based on the North American Noctuidae fauna, suggested placing *Callopietria* and four other New World genera, viz. *Cropia* Walker, *Speocropia* Hampson, *Paratrachea* Hampson, *Heterochroma* Guenée in the Eriopinae. Fibiger & Lafontaine (2005) discussed the validity of Eriopinae and suggested adding few more African genera, e.g. *Megalonycta* Viette (treated as a junior synonym of *Craniophora* Snellen by Holloway, 1989), *Mageochaeta* Viette and *Tanocryx* Viette in the subfamily. Fibiger & Hacker (2007) further extended the taxonomic boundary of Eriopinae to accommodate the genus *Prometopus* Guenée without providing any statement.

The phylogenetic analysis by Mitchell and his collaborators (1997, 2000, 2006) using two nuclear DNA markers, *elongation factor-1 α* (EF-1 α) and *dopa decarboxylase* (DDC), leads to place the Eriopinae (represented only by *Callopietria*) within the triline noctuids as the sister group of the (Xyleninae + Hadeninae + Noctuinae) clade. However, this phylogenetic pattern does not immediately reveal the validity of Eriopinae because all the genera which are potentially related to *Callopietria* have never been sampled in any molecular phylogenetic work.

In the present work, we confine the use of “Eriopinae” to its type genus *Callopietria* and exclude all the other genera suggested by previous authors because the phylogenetic analysis by Wu (2007, unpublished thesis) failed to recover any phylogenetic pattern hypothesized by all the previous works involving this group.

Diagnosis

Head - Proboscis fully developed; palpi usually with 2nd fringed with long scales extending anteriorly, 3rd segment porrect or straight; frons round frontally; eye large; male antennae ciliated, in some species groups with contortion and various types of angular projection.

Thorax - Clothed with long scattered or smooth scales on three segments, pro- or mesothorax with paired long crests. Segments of legs fringed with long hair tufts, scales or androconial scales. Forewing with short or long scales arising from Cu1 humeral plate; termen somewhat produced and acute at vein M3, and crenulated with short or long scale-tuft at tornus; antemedial and postmedial line smooth or crenulated with various colour scaling at distal margin; orbicular usually lanceolated or ovate, reniform stigma with an internal oblique stripe, both with distinguishable margin; a spot slender, obliaue or ovate locating medially between reniform stigma and postmedial line, or laying on the distal margin of reniform stigma; submarginal stripes usually irregular and oblique between veins; marginal line straight or crescent, usually interrupted by veins. Hindwing fuscous or with one pair of yellow patch from basal to 1/2 part, apex somewhat produced and acute; M2 arising from discoidal cell near M3.

Abdomen – Ground coloration usually brown or brownish black with light coloured intersegmental stripes; crests or scale tufts present at 1st to 3rd or 4th segments with various colour combinations; male with coremata or specialized scale tufts arising latero-ventrally from 2nd sternite, but not as coremata arising from an eversible stalk as in most other trifine noctuid groups; male 8th sternite and its paired lateral rods fringed with short or long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous or sclerotized posteriorly in Old World species, but sclerotized with dense and gathered spines postero-medially in three New World taxa (e.g. *C. argentilinea* Walker, *cordata* (Ljung) and *mollissima* (Guenée))

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused or separated with apex of tegumen; gnathos absent; scaphium consisting of two slender sclerites laying parallelly; subscaphium having two bend-like sclerites arising laterally and extending ventrally, both sclerites fused at caudal end in some species; tegumen broadened medially and with filiform or bubble-like scale tufts arising postero-ventrally; sclerite situated lateroventrally with tegumen (= pleurite *sensu* Lafontaine & Fibiger, 2006) fused with tegumen; transtillae present as a fused connective twisted band-like structure between both sides of tegumen

with a medial enlarged anellus in various shapes; vinculum rather short, with saccus sac-like and truncate at end; valvae with sacculus broader and more sclerotized than membranous costal region, clasper and harpe complex absent (except for *C. albistriga* (Walker); sacculus wrinkled posteroventrally (Fig. 2F) or consisting of 3 subzones (Fig. 2C), subzone I hooked or beak-shaped, shape of subzone II variably, subzone III laying or separating with subzone II, and usually with ridged wrinkles upon it postero-dorsally; transtillae bifid medioventrally, mostly fused to valvae (separated in few Indo-Australian taxa); juxta fused with valvae and transtillae, respectively; aedeagus characterized by slender shape with asymmetrical sheath, elongate vesica and variable cornuti.

Female genitalia - Papillae anales sclerotized and truncate at end with sensory setae densely situated; A8 absent or present in form of a complete ring; apophysis posterioris and anterioris short and truncate at tip; ductus seminalis arising at base or end of corpus bursae, or apex appendix bursae; ductus bursae short and membranous, or with wrinkles; corpus bursae ovate or oblong, with variable internal sclerites in some Indo-Australian taxa (e.g. the *C. rivularis*, *maillardi*, *pulchrilinea*, *albolineola* species complex, respectively) and signa (only present in *C. microptera* and *C. tarsipilosa* Berio (Madagascar); appendix bursae indistinguishable or prominent.

Larva - Head of mature larva having dark spots scattered around cranium or symmetric dark longitudinal stripes running through cranium; body cylindrical with ground colour mainly in brown or green and dark fine strips running obliquely across all segments or with a pair of eye spots on 1st abdominal segment; a pale lateral line running throughout posterior part of abdomen but not extending to caudal proleg; only primary setae present, SV2 of A9 filiform, D and L clavate setae only occurring in lycophytes-feeding species and *C. clava*; ensiform setae appeared on tarsus of thoracic legs; SD1 seta on A9 hair-like.

Global distribution and diversity

According to the estimation of Holloway (1989), Poole (1989, 1995), Weintraub *et al.* (1995), Fibiger & Lafontaine (2005), Fibiger & Hacker (2007), Wu (2007, unpublished thesis) and the present study, the subfamily Eriopinae includes 8 genera and about 200 described species and 14 subspecies plus more than 100 undescribed species. The core member of the subfamily *Callopietria* ranges throughout all the major land masses except Antarctica, and the Sundaland region harbours the highest specific diversity. The genus *Prometopus* is confined to Sundaland. The four New World genera *Cropia*, *Speocropia*, *Paratrachea* and *Heterochroma* are restricted to the subtropical and tropical parts of the USA and Central America. The two afrotropical genera *Mageochaeta* and *Tanocryx* only occur in South Africa and Madagascar.

Species diversity in Taiwan:

Only one genus *Callopietria* with 19 species (including one newly recorded and one undescribed species) is distributed in Taiwan.

General biology

The association between *Calloplistria* and “ferns” is usually regarded a classic study case in term of adaptation and colonization of phytophagous insects on land plants (Weintraub *et al.*, 1995). This story, however, has been challenged since the polyphyly of “ferns” is confirmed (e.g. Pryer *et al.*, 2004; Nashiyama, 2007) and the taxonomic boundary of the Eriopinae has been extended for several times to cover several genera feeding on angiosperms. Wu’s study (2007, unpublished thesis) points out that the colonization of *Calloplistria* on Monilophyta and Lycopphyta is very likely to be correlated with the high species richness of the genus, but if this association can be immediately interpreted as a key innovation is yet to be investigated because the biology of the closely related taxa of *Calloplistria* remains unknown. The larva of *Prometopus flavicollis* in Japan is recorded as a confiner feeder (Yamamoto, 1987), while all the remaining Eriopinae genera have no host record up to date.

Genus *Calloplistria* Hübner, [1821] 1816 (散紋夜蛾屬)

Calloplistria Hübner, [1821]1816: 216 (Type-species: *Phalaena juvenina* Stoll, 1782)
(Subsequent designation by Grote, 1874: 17).

Lagopus Reichenbach Leipzig, 1817: 285 (Type-species: *Phalaena juvenina* Stoll, 1782)
(Preoccupied, a junior homonym of the genus *Lagopus* Brisson, 1760 (Aves)).

Eriopus Treitschke, 1825: 365 (Type-species: *Phalaena juvenina* Stoll, 1782)
(Replacement name for *Lagopus* R., 1817).

Calopistria Stephens, 1850: 286 (Incorrect subsequent spelling).

Agraga Walker, [1858] 1857: 1772 (Type-species: *Agraga fimbripes* Walker, [1858] 1857: 1773).

Diethusa Walker, [1859] 1858: 205 (Type-species: *Diethusa emiliusalis* Walker, [1859] 1858: 206).

Agabra Walker, 1862: 136 (Type-species: *Agabra trilineata* Walker, 1862: 136)

Agaba Pagenstecher, 1909: 425 (Incorrect subsequent spelling).

Data Walker, 1862: 191 (*Data thalophiloides* Walker, 1862: 192)

Obana Walker, 1862: 190 (Preoccupied, a junior homonym of the genus *Obana*, 1862 (Acontiinae, Noctuidae) (Type-species: *Obana pulchilinea* Walker, 1862: 190).

Cotanda Moore, 1881: 374 (Type-species: *Eriopus placodoides* Guenée: 296).

Methorasa Moore, 1881: 374 (Type species: *Noctua latreillei* Duponchel, 1827: 327, pl. 120, fig. 2).

Herrichia Grote, 1882: 64 (Preoccupied, a junior homonym of the genus *Herrichia* Staudinger, 1871 (Oecophoridae) (Type species: *Eriopus monetifera* Guenée, 1852: 295, pl. 14, fig. 4).

Euherrichia Grote, 1882: 122 (Replacement for *Herrichia* Grote, preoccupied) (Type species: *Eriopus monetifera* Guenée, 1852).

Dissolophus Butler, 1891: 71, 73 (Type-species: *Eriopus chloriza* Guenée, 1852: 188).

Gnamptocera Butler, 1891: 71, 73 (Type-species: *Calloplistria minuta* Butler, 1889: 70, pl. 130, fig. 4)

- Haplolophus* Butler, 1891: 71, 73 (Type-species: *Eriopus mollissima* Guenée, 1852: 188).
Hemipachycera Butler, 1891: 71, 75 (Type-species: *Callopietria rivularis* Walker, [1858] 1857: 867).
Hyperdasys Butler, 1891: 71, 74 (Type-species: *Eriopus exotica* Guenée, 1852: 188).
Rhopstrotrichia Butler, 1891: 71, 76 (Type-species: *Eriopus maillardi* Guenée, 1862: 39, pl. 22, fig. 8).
Metathorasa Smith, 1891: 56. (Incorrect subsequent spelling).
Platydasys Butler, 1892: 126 (Type-species: *Platydasys pryeri*: 1892: 126, pl. 6, fig. 6).
Hyperdasis Swinhoe, 1901: 129 (Incorrect subsequent spelling).
Lasiosceles Bethune-Baker, 1906: 205 (Type-species: *Lasiosceles pratti* Bethune-Baker, 1906: 205).
Miropalpa Berio, 1955: 123 (Type-species: *Callopietria pauliani* Berio, 1955: 123).

Diagnosis

In this volume we confine the use of the Eriopinae in *Callopietria*. This genus can be distinguished from the other potentially related genera in the following combination of characters: (1) segments of legs fringed with long hair tufts, scales or androconial scales; (2) forewing with distinct orbicular and reniform stigmas, termen somewhat produced and acute at vein M3, and crenulated with short or long scale-tuft at tornus; (3) male with coremata or specialized scale tufts arising latero-ventrally from sternite 2; (4) valvae without clasper and harpe complex (except for *C. albistriga* in Indo-Australia), sacculus consisting of subdivision; (5) corpus bursae sac-like with internal sclerites and without signa (only appeared in *C. microptera* (Borneo) and *C. tarsipilosa* (Madagascar)).

Global distribution and diversity

According to the estimation of Holloway (1989), Poole (1989, 1995), Weintraub *et al.* (1995), Fibiger & Lafontaine (2005), Fibiger & Hacker (2007), Wu (2007, unpublished thesis) and the present study, the genus *Callopietria* contains about 133 described species and 13 subspecies plus about 100 undescribed species. It ranges throughout all the major land masses except Antarctica, the Sundaland and African regions harbour higher specific diversity, and the Madagascar, Oceanic regions show high proportion of endemic species. Some species possess extremely wide distribution, *C. juventina* is distributed from Oriental region to South Europe, *C. maillardi* is noticed on its long distant island-to-island dispersal in the ranges of South Africa, Madagascar, South East Asia to Oceanic region, even southern part of North America. A number of closely related but endemic species of island are grouped as maillardi species complex. Other species groups also possess wide but discontinued distribution, for instance, three closely related North American taxa (*C. argenteolinea*, *cordata* and *mollissima*) with specialized silver spots on forewing share many similar structures with taxa of Japan, Korea, Oceanic region and Africa. The endemic species are mostly evolved in islands (e.g. Madagascar, Taiwan, Tahiti and Reunion) or mountain region (ex. Mt. Kinabalu of Borneo).

Species diversity in Taiwan

In total 19 species, including 3 endemic ones, are distributed in Taiwan. Most of the non-endemic species are also distributed in the surrounding areas. A new and a newly recorded species are not included in this volume and their information will be published in a separate scientific paper.

General biology

According to the records accumulated by Robinson *et al.* (2002) and Wu's study (2007, unpublished thesis), the majority of the hostplant records falls in leptosporangiate ferns (Monilophyta) plus few in *Selaginella* (Selaginellaceae, Lycophyta). Most species have the mature larvae possessing cryptic green to brown colouration with an exception that the mature larva of *Callopietria clava* (Nakamura, 1977; Minami, 1989) in Japan exhibits a pair of conspicuous eyespot on dorso-lateral side of the 1st abdominal segment. When threatened, most mature larvae would bend their abdominal segment A1 and A2 upwards except for *C. phaeogona*, of which the larva lifts up the head and thorax backwards. Adults can be easily attracted by light.

Remarks

Some of the 25 junior generic synonyms of *Callopietria* were considered to represent subgeneric groups by Hampson (1908), this sub-grouping system, however, was not completely proven by the study of Wu (2007, unpublished thesis). Holloway (1989) synonymized the genus *Data* with *Callopietria* based on similarity in male genitalia. According to Wu's study, the species previously assigned to *Data* are more closely related with a South American genus *Agyrosticta* Hübner in some analyses. In the present study we tentatively maintain the synonymous relationship between *Callopietria* and *Data* and do not introduce *Agyrosticta* into the discussion. In addition, Holloway (1989) lumped *Mosara* Walker as a junior synonym of *Callopietria*, and regarded the type species *apicalis* Walker as an early divergent clade of *Callopietria*. However, this genus was suggested to be transferred to Aediinae by Holloway (2005: 27) due to the superficial similarity between *apicalis* and Aediinae in male genitalia. Wu's analysis also supports this conclusion.

Key to the species of *Calloplistria* in Taiwan

1. Hindwing with one pair of yellow patch from basal to median part *Calloplistria thalpophiloides thalpophiloides*
Hindwing grey or fuscous without any yellow patch 2
2. Forewing mottled with pinkish brown scales and a dark transversal stripe throughout cells m2 and m3 starting from medial spot to submarginal stripes *Calloplistria clava*
Forewing without transversal stripe between cell m2-m3 3
3. Adult male antenna filiform 4
Adult male antenna contorted 5
4. Forewing orbicular, reniform stigmas and submarginal stripes obscure; postmedial line serrate and acutely angled inwards between *Calloplistria gutturalis*
Forewing orbicular and reniform stigma prominent surrounded by clear margins and with dark patch between them, postmedial line smoothly excurved from R stalk to Cu2 *Calloplistria deflexusa*
5. Adult male antenna contorted without angular projection 6
Adult male antenna contorted with angular projection 10
6. Adult male antenna contorted once at approximately 1/3 at base; forewing reniform stigma ovate; postmedial line excurved from R stalk to Cu2 7
Adult male antenna contorted twice at approximately 1/2 at base; forewing reniform stigma rhomboid; postmedial line nearly straight from R stalk to tornus 10
7. Forewing background colour orcheous; distal margin of antemedial and postmedial line pink or pinkish white 8
Forewing background colour black or glommy without any pinkish scaling 9
8. Forewing white medial spot slender interrupted by vein M3, locating medially between reniform stigma and postmedial line; postmedial line smooth *Calloplistria pulchrilinea*
Forewing white medial spot elliptic, laying on underside of reniform stigma; postmedial line crenulated *Calloplistria duplicans*
9. Forewing background colour black; postmedial line and subterminal stripes white *Calloplistria delicata*
Forewing background colour gloomy; postmedial line and subterminal stripes indistinguishable *Calloplistria nigrescens*
10. Forewing reniform stigma enlarged; subterminal strip in cell m1-m2 indistinguishable; vesica with few spinulets; corpus bursae with tight wrinkles at approximately 1/3 at base *Calloplistria repleta*
Forewing reniform stigma slender; subterminal strip of cell m1-m2 prominent; vesica with dense spinulation; corpus bursae with loose wrinkles at approximately 1/5 at base *Calloplistria nobilior*

11. Adult male antenna fingery with 4 pectinate bristles upon these flagemeres at approximately 1/3 at base; forewing antemedial line acutely angled at M + CuA1 stalk *Calloplistria maillardi maillardi*
 Adult male antenna cuneate or forked at approximately 1/3 at base; forewing antemedial line smoothly excurved 12
12. Adult male antenna cuneate upwards without 30 to 45 degrees of angle at approximately 1/3 at base 13
 Adult male antenna furcate leading antenna with 30 to 45 degrees of angle at approximately 1/3 at base 16
13. Forewing postmedial line incised in cell m1-m2 14
 Forewing postmedial line smooth in cell m1-m2 15
14. Forewing medial white spot elliptic and laying on underside of reniform stigma *Calloplistria juvenina*
 Forewing medial white spot ovate distinct from reniform stigma *Calloplistria rivularis*
15. Forewing antemedial line vertically angled between Cu2 and A1+2; medial white spot slender and oblique *Calloplistria aethiops*
 Forewing antemedial line smoothly excurved; medial white spot ovate *Calloplistria japonibia*
16. Forewing background colour and patch between orbicular and reniform stigmas brown; subterminal stripes continuous as white line; terminal region between vein M1 and M3 without triangle black spot *Calloplistria placodoides*
 Forewing background colour orcheous; patch between orbicular and reniform stigmas black; terminal region between vein M1 and M3 with triangle black spot *Calloplistria phaeogona*

***Calloplistria aethiops* Butler, 1878 (暮色散紋夜蛾)**

(Fig. 5C-D, 8D, 11E-F, 15C)

Calloplistria aethiops Butler, 1878: 200 (Type locality: Japan, Yokohama. Type in NHM).

Specimens examined

TAIWAN. Tainan County: 1♀, Kanshirei, 1-V-1906, A. E. Wileman leg. (NHM); 1♂, Kanshirei, 16-XI-1908, A. E. Wileman leg. (NHM); **Taitung County:** 1♂, Lanyu, Yeongshine Farm, 17-VII-1990, H. Y. Wang leg. (NMNS); 1♂4♀, same locality, 29-VIII-1990, H. Y. Wang leg. (NMNS); 1♂2♀, Lanyu, Lighthouse, 30-VIII-1990, H. Y. Wang leg. (NMNS); 3♀, same locality, 1-IX-1990, H. Y. Wang leg. (NMNS); 2♂, Lanyu, Yeongshine, 13-XI-1990, H. Y. Wang leg. (NMNS); 1♂, Lanyu, 19-VIII-2006, L. C. Shih leg. (NTUIM); **Hualien County:** 2♂♂, Chaofeng, 15-IX-1994, Y. B. Fan leg. (TFRI); 1♂, same locality, 3-XI-1994, Y. B. Fan leg. (TFRI); 2♂♂, same locality, 4-XI-1994, Y. B. Fan leg. (TFRI). **JAPAN. Yokohama:** holotype, 1♂, collecting date unknown, F. M. Jonas leg. (NHM). **INDIA. Nilgiris:** 1♂, Perak, I&II-1890, W. Doherty leg. (NHM); **Sikkim (= Sikkim):** 1♂, VIII-1909, F. Möller leg. (NHM).

Specimen examinations of closely related species

Calloplistria albistrigoides Poole, 1989

SRI LANKA. Haldamulla: syntype 1♂, X-1902, F. M. Mackwood leg.; **Pundaloya:** syntype, 1♀, IX-1898, E. E. Green leg. (NHM)

Calloplistria ferruginea Hampson, 1908

AUSTRALIA. Queensland: holotype, 1♀, Brisbane, Turnev, 1901, collector unknown (NHM); **PAPUA NEW GUINEA. Fergusson Island:** 1♂, X-1894, A. S. Meek leg. (NHM); 1♀, same locality, X-XI-1894, A. S. Meek leg. (NHM)

Calloplistria trilineata Walker, 1862

PAPUA NEW GUINEA. Delta Division: 1♂, Aird Hill, IX-1923, collector unknown; **THE PHILIPPINES.** 1♀, Los Banos, collecting date unknown, P. I. Baker leg. (NHM)

Diagnosis

Wingspan 23-25 mm in male (n = 9), 23-24 mm in female (n = 3).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted with a cuneate section at approximately 1/3 at base.

Thorax – Clothed with rufous or black long scales on three segments, paired crests on mesothorax brownish black. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Forewing ground colour fuscous, tinged with orcheous on veins; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line white vertically angled at vein Cu2 with pinkish brown scaling at distal margin; orbicular stigma ovate with white margin; reniform stigma with white margin and an internal oblique stripe; a brownish dark patch extending to costa present between two stigmas; white medial spot slender, oblique locating medially between reniform stigma and postmedial; postmedial line white with pink scaling distally, acutely inwards on R stalk, then smoothly bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, prominently arising from costal margin to vein M3; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus.

Pregenital abdomen – Ground coloration orcheous with light-coloured intersegmental stripes; crests fuscous present at 1st to 3rd segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite, posterior margin of 2nd sternite wrinkled; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped, incised antero-medially and with pair spinulose lumps laterally; female 7th sternite membranous without modification.

Male genitalia - Uncus extremely down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long lanceolate scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegumen; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus and transtillae laterally, respectively; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex, costal region short conoid; subzones I of sacculus hooked, subzone II conical, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered lingulate scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and a single speculate cornutus, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short and broadened with wrinkles; corpus bursae oblong and 2 times longer than 7th sternite, signum absent, appendix bursa ovate with wrinkled ductus seminalis arising from conjunction of ductus corpus; additional internal sclerites arising from conjunction of ductus bursae and appendix bursae.

Larva – Background colour of mature larva grass green; lateral line white; prothorax with a transversal stripe dorsally, each segment of mesothorax to A8 with one pair of slender oblique stripes, A9 with one pair of transversal stripes, all stripes purplish red.

Distinguishable from *C. japonibia* by having slender and oblique medial spot rather than ovate one; different with *C. placodoides* on genitalia by costal region of valvae conical rather than tubinate.

Global distribution

Korea, Japan, Taiwan, China, Hong Kong, N. India and Nepal.

Distribution in Taiwan

This species is distributed in the lowland primary forests of the main island of Taiwan and Orchid Island (= Lanyu).

General biology

The immature stage of this species was first described by Murase (1999) based the 4th instar larvae feeding on *Thelypteris acuminata* (Houtt.) Morton (Thelypteridaceae) collected in Honshu, Japan. The immature stages in Taiwan have not been reported.

Callopietria clava (Leech, 1900) (粗鱗散紋夜蛾)

(Fig. 5G-H, 8H, 13A-B, 16A, 18D)

Apamea clava Leech, 1900: 66 (Type locality: W. China, Omei-shan, female. Type in NHM)

Specimens examined

TAIWAN: Tainan County: 1♂, Kanshirei, 15-XI-1907, A. E. Wileman leg. (NHM); **Kaohsiung County:** 1♂, Shanping, 25-II-1988, Y. B. Fan leg. (TFRI); 1♂, same locality, 5-XI-1991, Y. B. Fan leg. (TFRI); **Ilan County:** 1♂, Fushan Botanical Garden, 13-III-1993, Y. B. Fan leg. (TFRI); 1♂, same locality, 28-IV-1995, J. J. Hsiao leg. (TFRI); 1♂, same locality, 29-VIII-1995, A. Warneke leg. (TFRI); 2♂♂, same locality, 30-VIII-1995, A. Warneke leg. (TFRI); 3♂♂, same collecting data, J. J. Hsiao leg. (TFRI); 1♂, same locality, 9-VIII-1997, Y. B. Fan leg. (TFRI); 1♂, same locality, 17-VI-2007, S. Wu leg. (NTUIM). **CHINA. Sichuan Province:** holotype, 1♀, Omei-shan, VI&VII-1890, ex. Leech Collection, collector unknown. (NHM) **JAPAN. Honshu:** 1♂1♀, Yoshino, 19-VIII-1900, A. E. Wileman leg. (NHM).

Specimen examinations of closely related species

Callopietria leucobasis (Hampson, 1908)

INDONESIA. Java: holotype, 1♂, Arjuno, 1896, W. Doherty leg. (NHM); **W. Celebes (= Sulawesi):** 1♂, Lindoe Paloe, IV-1937, J. P. A. Kalis leg. (NHM).

Callopietria manta (Swinhoe, 1902)

MALAYSIA. Perak: holotype, 1♂, Goping, collecting date unknown, Kunstler leg. (NHM); 1♂, Genting Tea Estate, 29-XII-1977, W. Pahang leg. (NHM); 1♂, Ulu Temburong, 24-IV-1981, M. G. Allen leg. (NHM).

Callopietria variegata (Swinhoe, 1895)

BHUTAN. 1♀, 14-VIII-1895, Dudgeon (NHM); **BRUNEI:** 1♂, Ulu Temburong, 14-X-1978, T. W. Harman leg. (NHM); 1♂, same locality, 29-IV-1981, M. G. Allen leg. (NHM). **INDIA. Meghalaya:** holotype, 1♂, Cherra Punji, collecting date and collector unknown (NHM). **INDONESIA. E. Java:** 1♀, VI-1934, J. P. A. Kalis leg. (NHM).

***Callopietria nephrosticta* Hampson, 1908**

LIBERIA. Nimba: 1♂, Grassfield, III-1968, A. Frobes leg.; **NIGERIA. Calabar:** 1♂, 1907, F. W. Sampson leg. (NHM).

Diagnosis

Wingspan 26-31 mm in male (n = 14), 29-31 mm in female (n = 2).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with short scales, 3rd segment straight extending to vertex of head; frons round frontally; eye large; antennae filiform.

Thorax - Clothed with scattered scales on three segments, pro- and mesothorax with paired long crests. Segments of legs fringed with long stilliform scale tufts. Forewing ground colour pattern dark pink and variegated, tinged with transversal brownish dark stripes on proximal part of antemedial and postmedial lines veins; short stilliform scales arising from Cu1 humeral plate; termen produced and acute at vein M1 and M3, and crenulated with short scale-tuft at tornus; antemedial line, orbicular and reniform stigmas irregular and indistinguishable with black margins; medial spot locating medially between reniform stigma and postmedial line; postmedial line serrate with black margin proximally; submarginal stripes oblique as Z-shaped between costal margin to vein M1; marginal line indistinguishable.

Abdomen – Ground coloration fuscous without light coloured intersegmental stripes; crests brown present at 1st to 4th segments with last parts stilliform; male with scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired short lateral rods fringed with long scales; anterior margin of 8th sternite arc-shaped and incised medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex gradually expanded and densely setose, base of uncus slightly projected bilaterally and separated with apex of tegumen dorsoanteriorly; gnathos absent; scaphium consisting of two slender sclerites laying parallelly; subscaphium having two bend-like sclerites arising laterally and extending ventrally, both sclerites fused at caudal end; tegumen broadened medially and with bubble-like scale tufts arising postero-ventrally; sclerite situated latero-ventrally with tegumen fused with tegumen, clavate process arising dorso-ventrally; transtillae short present as a fused connective twisted band-like structure between both sides of tegumen with a medial enlarged lingulate anellus; manica enclosing phallobase and covered with minute spinulose scobination distally; juxta fused with sacculus dorso-laterally; vinculum long, with saccus sac-like and tubinate at end and without a bifid apex extending downward; valvae with sacculus broader and more sclerotized than membranous costal region, clasper and harpe complex absent; sacculus wrinkled posteroventrally with long scale tufts arising postero-ventrally and reaching to uncus tip, bubble-like scales arising

from outside of costal reion; aedeagus with phallobase slender at anterior part and stout, asymmetrical sheath-shaped at posterior part, vesica long and wrinkled without cornutus.

Female genitalia - Papillae anales sclerotized and truncate at end with sensory setae densely situated; A8 present in form of a complete ring; apophysis posterioris and anterioris short and truncate at tip; ductus bursae short, membranous without wrinkles near antrum; corpus bursae 2 times longer than 7th sternite, ovate, without signum and additional internal sclerite; wrinkled ductus seminalis arising at end of corpus bursae; appendix bursae indistinguishable.

Larva - Head of mature larva green having redish purple spots scattered around cranium; body cylindrical with ground colour light yellow and dark redish purple longitudinal medial line crossing segments, mesothorax with a pair of big eyespots dorso-laterally; only primary setae present, , SV2 of A9 filiform, D and L clavate setae; tarsus of thoracic legs without ensiform setae appeared on; SD1 seta on A9 hair-like.

Distribution in Taiwan

The species is recorded from the N.E. and S. Taiwan.

Global distribution

Japan, W. China and Taiwan

General biology

The immature biology of this species was reported by Yamamoto (1987) and Minami (1989), who reared out the larvae from *Lemmaphyllum* sp. and *Lepisorus unchiyamae* (Makino) H. Ito (Polypodiaceae) from Japan, respectively. The record of immature stages and hostplant in Taiwan have not been reported.

Calloplistria deflexusa Chang, 1991 (彎線散紋夜蛾)

(Fig. 4A-B, 8C, 11C-D, 14F)

Calloplistria deflexusa Chang, 1991: 302, fig. 214. (Type locality: Taiwan: Ilan Co, Chihduan (= Mingchih), male. Type in NMNS)

Specimens examined

TAIWAN. Taipei County: 1♂, Sindian, Shikanshuei, 24-IX-2005, S. Wu leg. (TARI); 3♂♂, Sindian, Shikanshuei, 28. X. 2006, S. Wu leg. (NTUIM); **Nantou County:** paratypes, 2♀♀, Dongpu Hotspring, B. S. Chang leg. (NMNS); **Kaohsiung County:**

1♂, Duo-na, 10-XII-2005, S. Wu leg. (NTUIM); **Ilan County**: holotype, 1♂, Chihduan (= Mingchih), 23-IV-1983, B. S. Chang leg. (NMNS); 1♂, paratype, same locality, 14-V-1982, B. S. Chang leg. (NMNS); paratype, 1♂, same locality, 18-VIII-1982, B. S. Chang leg. (NMNS); 1♀, Fushan Botanical Garden, 21-VII-1993, Y. B. Fan leg. (NMNS); 1♂, same locality, 31-III-1995, Y. B. Fan leg. (NMNS); 1♀, same locality, 19-VIII-1997, Y. B. Fan leg. (TFRI); 1♂, same locality, 22-IV-2006, L. C. Shih leg.; 1♂, same locality, 31-VII-2006, S. Wu leg.; 2♂♂, same locality, 14-IX-2007, S. Wu leg. (NTUIM)

Specimen examinations of closely related species

Callopsitria nivetacta (Warren, 1912)

INDIA. Khasis : holotype, 1♂, VIII-1894, ex Nat. Collection, collector unknown (NHM).

Callopsitria strigilineata Hampson, 1894

INDIA. Sikkim: holotype, 1♂, 1889, O. Möller leg. (NHM); 2♂♂, 1889, O. Möller leg. (NHM).

Callopsitria venata Leech, 1900

CHINA. Hubei Province: holotype, 1♂, Chang Yang, V-1888, A. E. Pratt leg. (NHM).

Diagnosis

Wingspan 22-23 mm in male (n = 13), 21-22mm in female (n = 2).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment correct; frons round frontally; eye large; male antennae filiform.

Thorax – Clothed with orcheous or black long scales on three segments, paired crests on mesothorax brownish black. Male legs with all femurs fringed with long black scales on innerside; tibia and 1st tarsi covered with long scales on upperside; fore tibia fringed with androconial scales on lateral side; mid 2nd tarsi and two spurs of hind tibia fringed with erected long scales. Forewing ground colour brown, tinged with orcheous on veins; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line white and excurved; orbicular stigma ovate with white margin; reniform stigma with white margin and an internal oblique stripe; a black patch extending to costa present between two stigmas; medial spot white, elliptic and laying medially between reniform stigma and postmedial line; postmedial line white, acutely inwards on R stalk, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus; hindwing dark rufous with bright, waved marginal line.

Pregenital abdomen – Ground coloration brown with light-coloured intersegmental stripes; crests rufous and dark blue, present at 1st to 3rd segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 7th sternite sclerotized at approximately 1/4 part at end with posterior-lateral extension, 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially, pair lateral rods expanded and incised forwards; female 7th sternite sclerotized at approximately 1/4 part at end with posterior-lateral extension

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegumen; apex of anellus bifurcate downwards as foreceps; manica enclosing phallobase and covered with minute spinulose scobination distally and gathered small spines ventrally; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a slender bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzone I of sacculus hooked, subzone II tubinate oblong, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered long scale tufts at apex and hair tufts antero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and a single small, obtuse cornutus, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite completed and slender; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae narrow and membranous near antrum, broadened at posterior part; corpus bursae 2 times longer than 7th sternite, signum and internal sclerites absent, appendix bursa indistinguishable; wrinkled ductus seminalis arising from conjunction of ductus bursae and corpus bursae;

Global distribution

Endemic in Taiwan.

Distribution in Taiwan

Lowland primary forests of the main island of Taiwan.

General biology

Unknown.

Remarks

This species is extremely similar with *C. japonibia* in appearance, however, the shape of male antenna and genitalic structures of both sexes reveal its close relationship with the *C. strigilineata* complex.

Callopistria delicata Chang, 1991 (白斑散紋夜蛾)

(Fig. 6E-F, 8E, 12C-D, 15A, 18A)

Callopistria delicata Chang, 1991: 298, fig. 211 (Type locality: Taiwan, Miaoli Co. Type in NMNS)

Specimens examined

TAIWAN. Hsinchu County: 2♂♂, Kuanwu (= Guanwu), 14-V-1991, Y. B. Fan leg. (TFRI); **Miaoli County:** holotype, 1♂, Henlung, 1-X-1983, B. S. Chang leg. (NMNS); paratype, 1♀, same locality, 11-VII-1983, B. S. Chang leg. (NMNS); **Taichung County:** 1♂2♀, Baxianshan, 16-VIII-2006, L. C. Shih leg. (NTUIM); 1♂2♀, Sungho, 19-VIII-1991, Y. B. Fan leg. (TFRI); **Nantou County:** 2♂4♀, Heliouping, 22-VIII-1991, Y. B. Fan leg. (TFRI); paratype, 1♂, Hueishuen, 19-VII-1985, B. S. Chang leg. (NMNS); 1♀, Lianhuachih, 23-V-1990, Y. B. Fan leg. (TFRI); paratype, 1♂1♀, Lushan, 18-V-1985, B. S. Chang leg. (NMNS); 1♀, Meifeng, 1 to 8, VI-1980, D. R. Davis leg. (NMNH); 1♂, same locality, 13-VII-1990, Y. B. Fan leg. (TFRI); 1♂1♀, Renlue, 21-VIII-1991, Y. B. Fan leg. (TFRI); **Kaohsiung County:** 1♂1♀, Duo-na, 16-IX-2005, S. Wu leg. (NTUIM); 2♂1♀, same locality, 31. X. 2005, S. Wu leg. (NHM); 1♂1♀, Shanping, 20-VI-1990, Y. B. Fan leg. (TFRI); 1♂1♀, same locality, 5. XI. 1991, Y. B. Fan leg. (TFRI); 1♀, same locality, 11-XI-2006, S. Wu leg. (NTUIM); 1♂, Meishan, 29-VI to 2-VII-1980, D. R. Davis leg. (NMNH); **Hualien County:** 1♂1♀, Lushui, 13-VIII-1988, Y. B. Fan leg. (TFRI); **Ilan County:** paratype, 1♀, Chihduan (= Mingchih), 7-X-1983, B. S. Chang leg. (NMNS); 1♂, Fushan Botanical Garden, 13-III-1993, Y. B. Fan leg. (TFRI).

Specimen examinations of closely related species

Callopistria albolineola (Graeser, [1889] 1888)

JAPAN. Honshu: 1♂, Kumanotaira, 26-VI-1953, S. Sugi leg. (NHM); 1♂, Osaka, Izumi, 27-V-1976, M. Owada leg. (NSMT); 1♀, Ashiyasu, Yamanashi-ken, 28-VIII-1979, T. Ebato leg. (NSMT).

Callopistria yerburii Butler, 1884

ERITREA. Massowah: 1♀, XII-1886 to II-1887, D. W. Barker leg. (NHM); **YEMEN.**

Aden: holotype, 1♂, collecting date unknown, J. W. Yerbury leg. (NHM); 1♂, same locality, 11-IV-1885, J. W. Yerbury leg. (NHM); 1♀, same locality, 27-II-1895, J. W. Yerbury leg. (NHM).

Diagnosis

Wingspan 26-28 mm in male (n = 30), 26-29 mm in female (n = 6).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted at approximately 1/3 at base.

Thorax – Clothed with black and orcheous long scales on three segments, paired crests on mesothorax black. Male legs with mid-and hind-femurs fringed with long black scales on innerside; mid-tibia and 1st tarsi covered with long scales on innerside; mid 2nd tarsi and two spurs of hind tibia fringed with erected long scales. Forewing ground colour black; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line white excurved with white scaling at distal margin; orbicular stigma reniform with white margin; reniform stigma with white margin and an internal oblique stripe; medial spot white, ovate, laying on distal margin of reniform stigma; postmedial line white, acutely inwards on R stalk, then bent outwards to M3, inwards to Cu2, finally as oblique straight line to tornus; submarginal stripes white, oblique, arising from costal margin to tornus; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus. Hindwing dark grey.

Pregenital abdomen – Ground coloration orcheous with light-coloured intersegmental stripes; crests brown and black, present at 1st to 4th segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 7th sternite sclerotized at approximately 1/4 part at end with posterior-lateral extension, 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially, pair lateral rods expanded and incised forewards; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; apex of anellus bifurcate downwards as foreceps; manica enclosing phallobase with and covered with minute spinulose scobination on both lateral sides; juxta fused with sacculus laterally and connected with transtillae ventral-laterally;

vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a slender bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzone I of sacculus hooked, subzone II truncate, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered long scale tufts at apex and short hair tufts antero-ventrally. Aedeagus heavily sclerotized, phallobase protruded anteriorly and palmate with 2 lateral and 4 pairs of symmetrical stout spines arising posteriorly, vesica two lateral parts, left part membranous, right part heavily wrinkled with single laterally.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short, narrow and membranous near antrum, broadened at posterior part; corpus bursae membranous and 1.5 times longer than 7th sternite, signum absent, additional internal sclerite pyriform attaching on corpus bursae postero-ventrally, appendix bursae membranous but multi-rolled; wrinkled ductus seminalis arising from apex of corpus bursae.

Global distribution

Russian Far East, Korea, Japan, Taiwan, and China.

Distribution in Taiwan

Low to medium altitude primary broad-leaved forests.

General biology

The larva of this species was first reared out from *Selaginella tamariscina* (Beauv.) Spring, 1843 by Murase (2001). The immature stages of Taiwanese population have not been reported to date.

Remarks

Chang (1991) pointed out that *delicata* could be distinguishable from *albolineola* in the cruvation of forewing postmedial line and the shape of central white spot. However, having examined a long series of specimens from Taiwan and N.E. Asia (Japan, Korea, Russian Far East), we hardly found any character to easily distinguish these two species. In addition, two other species, namely *C. yerburii* (Middle East) and *C. nigrescens* (Taiwan), are also related to this complex based on the similiarity in genitalic structure. The larvae of *C. albolineola* were reported feeding on *Selaginella* (Selaginellaceae) in

Japan by Yamamoto (1987) and Murase (2001), and this suggests that *Selaginella* may also serve as the potential hostplant of the related species in Taiwan.

***Callopietria duplicans* Walker, [1858] 1857 (弧角散紋夜蛾)**

(Fig. 3E-F, 9C, 11A-B, 14G, 17B, 19E)

Callopietria duplicans Walker, [1858] 1857: 866 (Type locality: India, Hindostan. Type in BNMH).

Specimens examined

BURMA. Moolmein: holotype, 1♂, collecting date unknown, Clerk leg. (NHM)
TAIWAN. Taipei City: 1♂, Jingmei, Siiianjiyan, 11-VI-2006, S. Wu leg. (NTUIM); 1♂, Taipei Zoo, 10-V-2006, S. Wu leg. (NTUIM); **Miaoli County:** 1♂, Nanhu, 23-IV-1992, Y. B. Fan leg. (TFRI); 2♀♀, **Taichung County:** Sijiaolin, 24-VI-1992, Y. B. Fan leg. (TFRI); **Nantou County:** 1♂, Lienhuachih, 10-XII-1990, Y. B. Fan leg. (TFRI); 1♀, same locality, 19-IV-1991, Y. B. Fan leg.; (TFRI) 1♂, same locality, 25-VII-1991, Y. B. Fan leg. (TFRI); **Tainan County:** 1♀, Kanshirei, 18. IV. 1908, A. E. Wileman leg. (NHM); 1♂, same locality, 12-IV-1909, A. E. Wileman leg. (NHM); **Kaohsiung County:** 2♂♂, Duona, 31-X-2005, S. Wu leg. (NTUIM); 1♀, Shanping, 25. XI. 1986, Y. B. Fan leg. (TFRI); 1♂, **Pintung County:** Kenting, 27-II-1992, Y. B. Fan leg. (TFRI); **Taitung County:** 2♀, Lanyu, Yeongshine Farm, 29-VIII-1990, H. Y. Wang leg. (NMNS); 1♂, same locality, 30-VIII-1990, H. Y. Wang leg. (NMNS); 1♂2♀, Lanyu, Lighthouse, 1-IX-1990, H. Y. Wang leg.; (NMNS) 1♀, same locality, 14-XI-1990, H. Y. Wang leg. (NMNS); 1♀, same locality, 15-XI-1990, H. Y. Wang leg. (NMNS); 1♂, Lanyu, 19-VI-2006, L. C. Shih leg. (NSYSU); **Ilan County:** 1♂, Fushan Botanical Garden, 27-VII-1995, A. Warneke leg. (TFRI).

Specimen examinations of closely related species

***Callopietria exotica* Guenée, 1852**

INDONESIA. Java: holotype, 1♂, collecting date and collector unknown (NHM). **BRUNEI. Seria:** 1♂, 28-XII-1978, M.G. Allen leg. (NHM). **SINGAPORE.** 1♂, 1904, H. N. Ridley leg.; 1♀, 1903, H.N. Leg. (NHM).

***Callopietria coelisigna* Hampson, 1902**

SRI LANKA. Labugania: holotype, 1♀, XII-1898, ex C. M. Mackwood collection, collector unknown (NHM); **Maskeliya:** 1♂, XI-1907, collector unknown (NHM); **PAPUA NEW GUINEA. Oro Province:** 1♂, Kumusi, 7-VII, A. S. Meek leg. (NHM).

Diagnosis

Wingspan 26-27 mm in male (n = 7), 23-25 mm in female (n = 5).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted at approximately 1/3 at base.

Thorax – Clothed with rufous to dark scales on three segments, paired crests on mesothorax white or rufous. Legs of male fringed with long hair-tufts on mid and hind tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Forewing ground colour brown, tinged with orcheous on veins; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line excurved smoothly with pink scaling at distal margin; orbicular stigma elliptic with white margin; reniform stigma with white margin and an internal oblique stripe; a brownish dark patch extending to costa present between two stigmas; white medial spot elliptic, oblique laying on underside of reniform stigma; postmedial line crenulated, pinkish white with pink scaling distally, acutely inwards on R stalk, incised in cell m1, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein Cu1; marginal line white, prominent between costal and interrupted by veins.

Pregenital abdomen – Ground coloration orcheous with light-coloured intersegmental stripes; crests orcheous or black present at 1st to 3rd segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped with each lateral extension hooked inwards; female 7th sternite membranous without modification.

Male genitalia - Uncuswn-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegumen; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventrolaterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous and slender costal region, but without clasper and harpe complex; subzones I of sacculus beak-like, subzone II triangular, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short horn-like scale tufts at apex and hair tufts antero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica, an angled stout cornutus, and a patch of dense short spines, tubular extension of vesica bending posteriorly when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae narrow and membranous near antrum, broadened at posterior part; corpus bursae membranous, ovate and 2 times longer than 7th sternite, signum and additional internal sclerite absent, appendix bursa membranous arising postero-laterally; wrinkled ductus seminalis arising between ductus bursae and appendix bursae.

Larva – Background colour of mature larva variable (green in Japan, brown in Japan and Taiwan); head of mature larva rufous with two pairs of stripes from upper to lower margin, inner pair oblique laying along adfrontal suture, outer pair slender crossing region of stemmata; mesothorax to A6 with transversal spots surrounding white margins dorsally, mesothorax to A6 ones arcuate with A1 one darker than others, A7 and A8 ones as expanded dark triangular spots dorsally; lateral lines white laying along spiracles, 4 to 6 pairs of small spots with white margin arising upon lateral lines; early instars light green or azure without any patterns.

Global distribution

Korea, Japan, Taiwan, the Philippines, Myanmar, and N. India.

Distribution in Taiwan

Lowland primary forests of the main island of Taiwan, Orchidi Island (=Lanyu) and Gueishan Islet.

General biology

The hostplant of this species was first confirmed to be *Lygodium japonicum* (Thunb.) Sw., 1800 (Schizaeaceae) by Yamamoto (1965: 95-96, pl. 32: 98), but the larva was misidentified as that of *C. juvenina*. Murase (1999) again confirmed the hostplant in Japan. A pilot project aimed to assess host specificity of herbivorous insects in order to biocontrol *Lygodium microphyllum* (Cav.) R. Brown, 1810 by USDA (Goolsby *et al.*, 2003) showed at least three *Callopistria* species collected from Asia and Australia are *Lygodium* specialists.

Remarks

This species complex includes *C. duplicans*, *C. exotica* (Indo-Australia), *C. coelisigna* (Sri Lanka) and an undescribed species recently found in Vietnam. In most of the literature (e.g. Hampson, 1908; Holloway, 1989, Chang, 1991, Kononenko *et al.*, 1998),

C. duplicans and *C. exotica* are considered as two distinct species. However, having examined the type specimens of both species, we found that their wing patterns are in fact identical. We therefore doubt if these two names actually represent the same species, and this query is yet to be sorted when the genitalia of both types are dissected and compared. In addition, the *C. juvenina* shown in Wang & Lee (1998: 161) is a misidentification of *C. duplicans*.

***Calloplistria gutturalis* Hampson, 1896 (珠紋散紋夜蛾)**

(Fig. 3G-H, 9G, 10E-G, 14A, 17H, 20G)

Calloplistria gutturalis Hampson, 1896: 511 (Type locality: Sri Lanka. Type in NHM)

Specimens examined

TAIWAN. Kaohsiung City: 1♂, Takao (= Chaishan), 11-VIII-1904, A. E. Wileman leg. (NHM); 1♂, same locality, 20-VIII-1904, A. E. Wileman leg. (NHM); 1♂, Dahanshan, 25-III-2006, S. Wu leg. (NHM); 1♂, Duo-na, 25-IX-2005, S. Wu leg. (NTUIM); 1♂, same locality, 11-XII-2005, S. Wu leg. (NTUIM); 1♂, Shanping, 5-XI-1991, Y. B. Fan leg. (TFRI); 1♀, Tengzhi, 30-I-2006, L. C. Shih leg. (NSYSU); **Pingtung County:** 1♂, Kenting, 1-X-2005, L. C. Sihih leg. (NTUIM). **SRI LANKA. Hambantota:** holotype, 1♂, 1895, J. Pole leg. (NHM).

Diagnosis

Wingspan 22-24 mm in male (n = 6), 23-24 mm in female (n = 2).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with short scales, 3rd segment short and obtuse; frons round frontally; eye large; antennae filiform.

Thorax - Clothed with smooth pale, orange and black scales on three segments, mesothorax with paired short crests. Mid tibiae and 1st tarsi fringed with long stilliform scale tufts. Forewing ground colour pattern pale; termen produced and acute at vein M1 and M3, and crenulated with short scale-tuft at tornus; a pair of oblique bands arising from basal costal margin to 1/3 part of tornus with proximal side fuscous; antemedial line, orbicular and reniform stigmata indistinguishable; medial spot located medially between reniform stigma and postmedial line; postmedial line pinkish pale and serrate extremely between Cu2 and tornus as Z-shaped; submarginal and marginal lines indistinguishable. Hindwing fuscous.

Abdomen - Ground coloration pale without light coloured intersegmental stripes; crests brown present at 1st to 3rd segments with first one stilliform and expanded; male with scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired short lateral rods fringed with long scales; anterior margin of 8th sternite arc-shaped and incised medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex gradually expanded and densely setose, base of uncus slightly projected bilaterally and separated with apex of tegumen dorsoanteriorly; gnthaos absent; scaphium consisting of two slender sclerites laying parallelly; subsclaphium having two bend-like sclerites arising laterally and extending ventrally, both sclerites fused at caudal end; tegumen broadened medially and with lanceolate scale tufts arising postero-ventrally; sclerite situated latero-ventrally with tegumen fused with tegumen, clavate process arising dorso-ventrally; transtillae short present as a fused connective twisted band-like structure between both sides of tegumen with a medial lumped anellus; manica enclosing phallobase and covered with minute spinulose scobination distally; juxta fused with sacculus dorso-laterally; vinculum long, with saccus sac-like and tubinate at end and without a bifid apex extending downward; valvae with sacculus broader and more sclerotized than membranous and triangular costal region, clasper and harpe complex absent; subzones I and II of sacculus turbinate and attaching to each other, subzone III with tip papillate pointing antero-ventrally, and long scale tufts arising from innerside of tip, without wrinkles postero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a curved vesica and a short stout cornutus, tubular extension of vesica bending anteriorly when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales sclerotized and truncate at end with sensory setae densely situated; A8 absent; apophysis posterioris and anterioris short and truncate at tip; ductus bursae wrinkled and fuscate near corpus bursae; corpus bursae 1.5 times longer than 7th sternite, elliptic, without signum and additional internal sclerite; appendix bursae ovate arising from medial part of corpus bursae; wrinkled ductus seminalis arising at end of appendix bursae.

Larva – body cylindrical with ground colour green; a transverse black band present dorsally on each of segments from prothorax to A8, prothoracic one much slender, remaining ones broadened and oblong laying on posterior margin of each segment; lateral line black and connected through anterior margin of prothorax and posterior margin of A9.

Global distribution

Japan, Taiwan, Hong Kong, the Philippines, Malaysia (Sabah), and India.

Distribution in Taiwan

This species is only found in the lowland and the uplift coral reef coastal forests in southern Taiwan.

General biology

In the present study, *Adiantum caudatum* L., 1771 (Pteridaceae) is confirmed as the

hostplant of this species for the first time. Due to the habitat restriction of this fern, distribution of this moth species may be confined to the environment with limestone landscape.

Remarks

The earliest collection record of this species in Taiwan was made by A.E. Wileman from Takao (now Chaishan, Kaohsiung City) in 1904. However, this species has never been collected again from the same area since then.

***Callopietria japonibia* Inoue & Sugi, 1958 (東洋散紋夜蛾)**

(Fig. 8B, 12K-L, 15H, 17C, 20A)

Callopietria rivularis ab. *japonibia* Strand, 1916: 155 [Unavailable infrasubspecific name]
(Type locality: Japan. Type in NHM)

Callopietria rivularis japonibia Inoue & Sugi, 1958: 519 [made Strand's infrasubspecific name nomenclaturally available]

Callopietria japonibia: Sugi, 1982: 786.

Specimens examined

TAIWAN. Taipei City, 1♂, Nangang, Hushan, 4-V-2006, S. Wu leg. (NTUIM); 1♂, Jingmei, Sijaiyan, 11-VI-2006, S. Wu leg. (NTUIM); 1♂, Taipei Botanical Garden, 30-IV-2008, S. Wu leg. (NTUIM); **Nantou County**: 1♂, Lianhuachih, 25-VII-1991, Y. B. Fan leg. (TFRI); **Tainan County**: 1♀, Kanshirei, 22-VI-1906, A. E. Wileman leg. (NHM); 1♂, Kwanzuling, 26 to 28-VI-1980, D. R. Davis leg. (NMNH); **Kaohsiung County**: 1♂, Shanping, 16-IV-1992, Y. B. Fan leg. (TFRI); **Ilan County**: 1♂, Fushan Botanical Garden, 21-VII-1993, Y. B. Fan leg. (TFRI); **JAPAN. Honshu**: 1♂1♀, Nashimoto, Shizuoka-Ken, 10-VI-1961, T. Ebato leg. (NSMT);

Diagnosis

Wingspan 24-25 mm in male (n = 8), 24-25 mm in female (n = 2).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment correct; frons round frontally; eye large; male antennae contorted with a cuneate section at approximately 1/3 at base.

Thorax - Clothed with rufous or black long scales on three segments, paired crests on mesothorax brownish black. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Forewing ground colour fuscous, tinged with red on veins; long scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at

approximately 2/3 part at base; antemedial line excurved smoothly with pinkish brown scaling at distal margin; orbicular stigma ovate with white margin; reniform stigma with white margin and an internal oblique stripe; a black patch extending to costa present between two stigmata; white medial spot ovate laying between reniform stigma and postmedial line; postmedial line white with pink scaling distally, acutely inwards on R stalk, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus.

Pregenital abdomen – Ground coloration brown with light-coloured intersegmental stripes; crests brownish black present at 1st to 3rd segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzones I of sacculus beak-like, subzone II tubinate oblong, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and a single speculate cornutus, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite completed and broadened at medium; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae narrow and membranous near antrum, broadened at posterior part; corpus bursae 1.5 times longer than 7th sternite, signum absent, appendix bursa biconical with wrinkled ductus seminalis arising from conjunction of ductus corpus; additional internal sclerites arising from posterior part of ductus bursae and appendix bursae.

Larva – Background colour of mature larva light green; head of mature larva with two pairs of oblique stripe, inner pair light black and closing adfrontal sutures, outer pair dark black, laying on genae and crossing stemmata; lateral line brownish dark with white margin on upperside and connected with each other on frontal margin of prothorax and distal margin of A8; each thoracic segment with one dark transverse stripe, A1 with one pair of dark spot dorso-laterally; A2-A8 with one triangle spot respectively, among of stripes and spots with yellow margins except that of A1.

Global distribution

Korea, Japan, and Taiwan.

Distribution in Taiwan

This species is recorded from the western lowland of Taiwan.

General Biology

The first confirmed record of the hostplant, *Onychium japonicum* (Thunb.) Kunze, 1848 (Pteridaceae), was reported by Murase (1994) from Honshu, Japan. Here the following hostplant recorded are newly reported: *Hypolepis tenuifolia* (Forst.) Bernh., 1806, *Microlepia speluncae* (L.) Moore, 1858, *M. strigosa* (Thunb.) Presl, 1849 (Dennstaedtiaceae) and *Arachniodes pseudo-aristata* (Tagawa) Ohwi, 1962 (Dryopteridaceae).

Remarks

The name *japonibia* was first proposed as an aberrational form of *rivularis* by Strand (1916). Inoue & Sugi (1958) considered that this name could represent a valid taxon and therefore justified the subspecific status of *japonibia*. Later Sugi (1982) elevated *japonibia* to be a full species. A female “*japonibia*” was reported by Chang (1991: 299) from Taiwan, but examination of the voucher specimen deposited in NMNS reveals a misidentification of a female *C. rivularis*. In addition, the *C. japonibia* shown in Wang & Lee (1998: 160) is also a misidentified *C. rivularis*.

***Calloptistria juvenina* (Stoll, 1782) (散紋夜蛾)** (Fig. 9D, 10C-D, 14C)

Phalaena (Noctua) *juvenina* Stoll, 1782: 4: 245, pl. 400, fig. N. (Type locality: “Surinam”, in error for the Old World. Type depository unknown)

Noctua purpureofasciata Piller and Mitterpacher, 1783: 70 (Type locality: Slovenia. Type depository unknown)

Phalaena (Noctua) *lagopus* Esper, 1788: 46, pl. 125, fig. 7 (Type locality: Germany. Type depository unknown)

Noctua pteridis Fabricius, 1794: 90 (Type locality not stated. Type depository unknown)

Pyralis formosissimalis Hübner, 1796: 70 (Type locality: Europe. Type depository unknown)

Calopistria obscura Butler, 1878: 200 (Type locality: Japan, Yohohama. Type in NHM)

Eriopus aetnea Costa, 1840: 291, pl. fig. (Type locality: Sicily, Mt. Etna. Type depository unknown)

Specimens examined

TAIWAN. Taipei County: 2♂♂, Wulai, Hsinhsien, 8-XI-1990, Y. B. Fan leg. (TFRI); **Nantou County:** 1♀, Hoshe, 17-IV-1991, Y. B. Fan leg. (TFRI); 3♂1♀, Lianhuachih, 23-V-1990, Y. B. Fan leg. (TFRI). **CHINA. Sichuan Province:** 1♂, Omei-shan, VI & VII-1890, collector unknown (NHM); **JAPAN. Tokio (= Tokyo):** 1♂, 1880, C. Maries leg. (NHM); **GERMANY. Berlin:** 1♂1♀, collecting date unknown, ex Leech Collection, collector unknown (NHM).

Diagnosis

Wingspan 28-32 mm in male (n = 8), 28-30 mm in female (n = 3).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted and cuneate at approximately 1/3 at base.

Thorax – Clothed with orcheous or rufous scales on three segments, paired crests on mesothorax orcheous. Legs of male fringed with long hair-tufts on mid and hind tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Forewing ground colour dark orcheous, tinged with orcheous on veins; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line excurved smoothly with pink scaling at distal margin; orbicular stigma elliptic with white margin; reniform stigma with white margin and an internal oblique stripe; a brown patch extending to costa present between two stigmas; white medial spot elliptic, oblique laying on underside of reniform stigma; postmedial line pinkish white with pink scaling distally, acutely inwards on R stalk, incised in cell m1, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein Cu1; marginal line white, prominent between costal and vein M3, and interrupted by veins.

Pregenital abdomen – Ground coloration grey with intersegmental stripes orcheous; crests rufous or black present at 1st to 3rd segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods

fringed with long scales; posterior margin of 8th sternite ladder-shaped with each lateral extension bi-hooked inwards; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous and digital costal region, but without clasper and harpe complex; subzones I of sacculus obtuse triangular, subzone II curved conoid, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered subulate scale tufts at apex and hair tufts antero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica, a mid-expanded stout cornutus, and a patch of dense short spines, tubular extension of vesica bending anteriorly when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short and membranous near antrum, broadened at posterior part; corpus bursae ovate with posterior part wrinkled and anterior part membranous, 1.5 times longer than 7th sternite, signum absent, appendix bursa membranous from conjunction of ductus corpus with a curved additional internal sclerite ventro-laterally; wrinkled ductus seminalis arising between ductus bursae and appendix bursae.

Larva – Background colour of mature larva green (Europe, Japan) or brown (Japan); each segment from mesothorax from A8 having a transverse dorsal lunule patch margined with white line; lateral line white.

Distribution in Taiwan

Low to mid elevation primary and secondary broad-leaved forests of the main island.

Global distribution

Widely distributed across Eurasia from C. and S.E. Europe, Russia, N. Africa, Turkey, Korea, Japan, China to Taiwan.

General biology

This species is widely distributed in the Palaearctic and Oriental regions. In Europe, this species is sometimes regarded as rare migrant occasionally recorded in central and south-eastern countries as well as southern England (Kimber, 2009). The first record of larva and hostplant, *Pteridium aquilinum* (L.) Kuhn (Dennstaedtiaceae), was provided by Hübner's (1793–1842) illustration. In addition, a record of larva reported from Japan (Yamamoto, 1965: 95-96, pl. 32: 98) is proven to be a misidentification of *C. duplicans*. The immature stages and hostplant of this species in Taiwan have not been reported.

Remarks

The *C. juventina* shown in Wang & Lee (1998: 161) is a misidentified *C. duplicans*.

***Callopietria maillardi maillardi* (Guenée, 1862) (粉紅帶散紋夜蛾)**

(Fig. 9B, 10A-B, 14D, 17E, 19F-H)

Eriopus maillardi Guenée, A. 1862: 39 (Type locality: Reunion. Type depository unknown).

Callopietria meridionalis nauticorum Tams, 1935: 199 (Type locality: Samoa. Type in NHM).

Specimens examined

TAIWAN. Taipei County: 2♂♂, Wulai, Hsinsien, 8-XI-1990, Y. B. Fan leg. (TFRI); 1♂, Sindian, Shikanshuei, 18-VI-2006, S. Wu leg. (NTUIM); **Hsinchu County:** 1♂2♀, Kuanwu (= Guanwu), 14-V-1991, Y. B. Fan leg. (TFRI); **Taichung County:** 1♂, Sijiaolin, 23-II-1993, Y. B. Fan leg. (TFRI); **Nantou County:** 2♂♂, Heliouping, 22-VIII-1991, Y. B. Fan leg. (TFRI); 1♂, Hoshe, 17-IV-1991, Y. B. Fan leg. (TFRI); 1♂, Lienhuachih, 22-I-1990, Y. B. Fan leg. (TFRI); 1♂, same locality, 10-XII-1990, Y. B. Fan leg. (TFRI); 1♂, same locality, 3-III-1991, Y. B. Fan leg. (TFRI); 1♂, same locality, 25-VII-1991, Y. B. Fan leg. (TFRI); 5♂♂1♀, Meifeng, 18-VII-1990, Y. B. Fan leg. (TFRI); 1♀, Piluchi, 28-V-1987, Y. B. Fan leg. (TFRI); 1♂, Renlue, 21. VIII. 1991, Y. B. Fan leg. (TFRI); **Tainan County:** 1♀, Kanshirei, 28-VII-1906, A. E. Wileman leg. (NHM); **Kaohsiung County:** 1♂1♀, Liugui, 8-XI-1984, Y. Z. Zhang leg. (TFRI); 1♂, Dahanshan, 25-VIII-2006, S. Wu leg. (NTUIM); 1♂, same locality, 24-X-2006, S. Wu leg. (NTUIM); 1♂, Duo-na, 10-X-2005, S. Wu leg. (NTUIM); 2♂♂, Shanping, 8-XI-1984, Y. J. Chang leg. (TFRI); 1♂1♀, Tengzhi, 1-VII-2006, L. C. Shih leg. (NTUIM); 1♂, same locality, 25-XI-1986, Y. J. Chang leg. (TFRI); 1♂, same locality, 13-I-1988, Y. B. Fan leg. (TFRI); 1♂, same locality, 5-XI-1991, Y. B. Fan leg. (TFRI); 1♂, same locality, 16-IV-1992, Y. B. Fan leg. (TFRI); 1♂, same locality, 29-I-1992, Y. B. Fan leg. (TFRI); **Taitung County:** 1♂, Green Island, Around-Island Highway, 11-III-2008, C. M. Fu leg. (CMFC); 2♀, Lanyu, Yeongshine, 17-VII-1990, H. Y. Wang leg. (NMNS); 2♂, Lanyu, Yeongshine Farm, 30-

VIII-1990, H. Y. Wang leg. (NMNS); 1♂, Lanyu, Lighthouse, 1-IX-1990, H. Y. Wang leg. (NMNS); 1♂, Lanyu, Yeongshine Farm, 10-X-1990, H. Y. Wang leg. (NMNS); 1♂, Lanyu, Lighthouse, 14-XI-1990, H. Y. Wang leg. (NMNS); 1♀, Lanyu, 17-VIII-2006, L. C. Shih (NTUIM); 4♂♂, **Hualien County**: Lushui, 13-VIII-1988, Y. B. Fan leg. (TFRI); 1♂, same locality, 14-II-1989, Y. B. Fan leg. (TFRI); 1♀, **Ilan County**: Fushan Botanical Garden, 14-VI-1990, 1♂, same locality, 13-III-1993, Y. B. Fan leg. (TFRI); 1♂, same locality, 28-IV-1995, A. Warneke leg. (TFRI); 1♂, same locality, 29-V-1995, J. J. Hsiao leg. (TFRI); 1♂, same locality, 19-VIII-1997, Y. B. Fan leg. (TFRI); 1♀, same locality, 22-XI-2008, S. Wu leg. (NTUIM). **REUNION. La Montagne**: 1♂, 3-I-2000, G. Orhant leg. (ORHANT); **Cilaos**: 1♀, 9-I-2000, G. Orhant leg. (ORHANT).

Specimen examinations of closely related species

Callopietria alticola Orhant, 2002

TAHITI. Mt. Marau: 1♂, 7-II-2002, Pinna & Collard leg.; **Hitiaa**: 1♀, 7-III-2002, Collard & Pinna leg. (ORHANT).

Callopietria bernei Viette, 1985

REUNION. Takamaka: 1♂, II-1980, P. Berne leg.; 1♀, same collection data (NMHN).

Callopietria cariei (Joannis, 1915)

REUNION. 1♂, étang de Saint-Paul Cora Savannah prairie inondée, 12-II-1996, C. Guillermet leg. ; 1♀, same collection data (NMHN).

Callopietria dimorpha Holloway, 1979

NEW CALEDONIA. Kavatch: holotype, 1♂, 40m. Site 50, 18-VII-1971, J. D. Holloway leg. (NHM)

Callopietria floridensis Guenée, 1852

COLOMBIA. Minca: 1♂, collecting date unknown, H. H. Smith leg. (NHM) **USA**. Holotype, 1♂, collecting date unknown, Doubleday leg. (NHM)

Callopietria maillardi intermissa (Saalmüller, 1891)

MADAGASCAR. 1♂, Nord forêt d'Analamerana 50km S. E. Diego-Suarez alt. 80m, 3-II-1959, P. Viette leg. (NMHN); 1♀, Est route de Lakato km 15 Ankasoka 1100m, 17 to 21-X-1963, P. Viette leg. (NMHN).

Callopietria maillardi meridionalis Collenette, 1928

CHILI. Easter Island (= Rapa Island): holotype, 1♂, 17-IV-1925, C. L. Collenette leg. (NHM) (Figs. 6A-B); paratypes, 1♂1♀, same locality, 14-IV-1925, C. L. Collenette leg. (NHM) .

Callopietria maillardi pseudintermissa (Viette, 1965)

MADAGASCAR. 1♂, Centre Tananarive 1200m, 7 to 15-II-1964, P. Viette leg.; 1♀, Estenv. De Perinet alt 910m, 16-III-1955, P. Viette leg. (NMHN)

***Calloplitria matilei* Viette, 1979**

COMORES. 1♂, piste Capitaine Duboise entre Boboni et M'Lima Manda Djaddjou 800m, 13 to 15-IV-1980, P. Viette leg. (NMHN); 1♀, same collection data (NMHN).

***Callopsitria semicircularis* (Hampson, 1918)**

AUSTRALIA. Christmas Island: holotype, 1♀, 1909, C. W. Andrews leg. (NHM)

***Callopsitria steevei* Orhant, 2002**

TAHITI: 1♂, Mt. Aorai, 18-V-2002, S. Collard leg.; 1♀, same locality, 3-VII-2003, SC leg. (ORHANT)

***Calloplitria tytha* Wileman and West, 1929**

THE PHILIPPINES. Luzon: holotype, 1♀, Benquet, 17-IV-1912, A. E. Wileman leg. (NHM)

***Callopsitria rectilinea* (Saalmüller, 1891)**

MADAGASCAR. Ambinanindrano: 1♂, west of Mahonoro, 1-VII, G. K. Kestell-Cornish leg. (NHM); **Centre Tananarive,** 1♂, 7-15-II-1964, P. Viette leg.; 1♀, Nord, 10 to 18-XII-1968, P. Viette & P. Griveaud leg. (NMNH)

Diagnosis

Wingspan 32-33 mm in male (n = 45), 31-32 mm in female (n = 14), 26mm in one female of Lanyu.

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antenna fingery with 4 pectinate bristles upon these flagemeres at approximately 1/3 at base.

Thorax – Clothed with rufous or black long scales on three segments, paired crests on mesothorax brownish black. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi. Forewing ground colour fuscous, tinged with orcheous on veins; long scales arising from Cul humeral plate; termen produced and acute at vein M3; tornus with long scale-tuft at approximately 2/3 part at base; antemedial line white acutely angled at vein M3 then distinguishable as two parts, part from costal region to vein M3 closing to orbicular stigma, part from vein M3 to tornus with pink scaling arising from distal margin; orbicular stigma lanceolate with white margin; reniform stigma with white margin and an internal oblique stripe; a brownish dark patch extending to costa present between two stigmas; white medial spot slender, oblique locating medially between reniform stigma and postmedial; postmedial line white with pink

scaling distally, acutely inwards on R stalk, then as oblique straight line between R3+R4 stalk and vein M3, finally smoothly inwards from vein M3 to tornus; submarginal stripes white, oblique, prominently arising from costal margin to vein M3; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus.

Pregenital abdomen – Ground coloration pale with light-coloured intersegmental stripes; crests rufous or black present at 1st to 4th segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite, posterior margin of 2nd sternite wrinkled; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped, incised antero-medially and with pair spinulose lumps laterally; female 7th sternite membranous without modification.

Male genitalia - Uncus extremely down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen projected bilaterally at upper-lateral margin, membranous part broadened medially with long lanceolate scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus and transtillae laterally, respectively; vinculum short and protruded apical-laterally; sacculus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex, costal region speculate with apex hooked inwards, subzones I of sacculus hooked, subzone II truncate, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical, slender sheath with short vesica and gathered rows of spiculate cornuti, tubular extension of vesica bending anteriorly when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae long, membranous near antrum, broadened at posterior part; appendix bursa reniform arising from medial part of ductus bursae; corpus bursae tubinate and 2 times longer than 7th sternite, signum absent; wrinkled ductus seminalis arising from conjunction of ductus corpus and appendix bursae; additional internal sclerites arising from anterior part of appendix bursae and extending to the anterior part of ductus bursae.

Larva –Background colour of mature larva polymorphic (redish brown in Japan and Taiwan, grass green, dark green or black in Taiwan); a dark triangular spot with posterior incision present on each segment from mesothorax to A8, abdominal spots usually tinged with white, a ladder-shaped or triangular dark spot occurring medially on A9.

Distribution in Taiwan

Low to medium secondary and primary forests of Taiwan, Green Island and Orchid Island (=Lanyu).

Global distribution

Widely distributed in Japan, Taiwan, the Philippines, Indo-Australian, Pacific and African regions.

General biology

This species is polyphagous on several unrelated fern families (Viette, 1962; Pholboon, 1965; Robinson; McFarland, 1979; Tominaga, 2001). In Taiwan, the larvae of this species feed on the following plants: *Microlepis strigosa* (Thunb.) Presl, 1849 (Dennstaedtiaceae), *Brainea insignis* (Hook.) J. Sm., 1856 (Blechnaceae), *Nephrolepis auriculata* (L.) Trimen, 1887, *N. biserrata* (Sw.) Schott., 1834 (Lomariopsidaceae sensu Smith et al., 2006), *Thelypteris torresiana* (Gaud.) Alston, 1960, and *Cyclosorus parasiticus* (L.) Farw., 1931 (Thelypteridaceae). Except for the record on *M. strigosa* (Tominaga, 2001), all the others are newly reported for the first time.

Remarks

Holloway (1989) suggested synonymising *meridionalis*, *intermissa* as well as *nauticorum* with *maillardi*. This taxonomic treatment lumps all the taxa described from different areas of the Indo-Pacific region into one single species with an extremely wide distribution. Whether this reflects a widely distributed and variable species reaching to its current range by dispersal needs further investigation.

***Callopietria nigrescens* (Wileman, 1915) (黯翅散紋夜蛾)** (Fig. 6G-H, 8F, 12G-H, 15B, 17G)

Bryophila nigrescens Wileman, 1915: 161 (Type locality: Taiwan, [Chia-yi], Rantaizan, female. Type in NHM)

Specimens examined

TAIWAN. Hsinchu County: 3♀♀, Kuanwu (= Guanwu), 14-V-1991, Y. B. Fan leg. (TFRI); **Nantou County:** 1♂2♀, Heliouping, 22-VIII-1991. Y. B. Fan leg. (TFRI); 2♂1♀, Meifeng, 1-8-VI-1980, D. R. Davis leg. (NMNH); holotype, 1♀, Rantaizan, 15-II-1909, A. E. Wileman leg. (NHM); 1♀, Tayuling, 1 to 9-VI-1980, D. R. Davis leg. (NMNH); **Kaohsiung County:** 1♀, Shanping, 25-II-1988, Y. B. Fan leg. (TFRI); 1♂, Duo-na, 16. IX. 2005, S. Wu leg. (NHM); 1♀, same locality, 10-XII-2005, S. Wu leg.; 1♂, same locality, 12-X-2006, S. Wu leg. (NTUIM)

Diagnosis

Wingspan 29-31 mm in male (n = 6), 28-29 mm in female (n = 8).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment correct; frons round frontally; eye large; male antennae contorted at approximately 1/3 at base.

Thorax – Clothed with black and orcheous long scales on three segments, paired crests on mesothorax black. Male legs with mid-and hind-femurs fringed with long black scales on innerside; mid-tibia and 1st tarsi covered with long scales on innerside; mid 2nd tarsi and two spurs of hind tibia fringed with erected long scales. Forewing ground colour black; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line, orbicular stigma indistinguishable; reniform stigma with white margin and an internal oblique stripe; medial spot white, ovate, laying on distal margin of reniform stigma; postmedial line indistinguishable, but with glommy grey scaling at distal margin; submarginal stripes and marginal line indistinguishable. Hindwing orcheous.

Pregenital abdomen – Ground coloration orcheous with light-coloured intersegmental stripes; crests brown and black, present at 1st to 4th segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 7th sternite sclerotized at approximately 1/4 part at end with posterior-lateral extension, 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially, pair lateral rods expanded and incised forwards; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower

end of tegument; apex of anellus bifurcate downwards as foreceps; manica enclosing phallobase with and covered with minute spinulose scobination on both lateral sides; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a slender bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzone I of sacculus hooked, subzone II truncate, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered long scale tufts at apex and short hair tufts antero-ventrally. Aedeagus heavily sclerotized, phallobase protruded anteriorly and palmate with 2 lateral and 4 pairs of symmetrical stout spines arising posteriorly, vesica two lateral parts, left part membranous, right part heavily wrinkled with single laterally.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short, narrow and membranous near antrum, broadened at posterior part; corpus bursae membranous and 1.5 times longer than 7th sternite, signum absent, additional internal sclerite pyriform attaching on corpus bursae postero-ventrally, appendix bursae membranous but multi-rolled; wrinkled ductus seminalis arising from apex of corpus bursae.

Global distribution

Endemic in Taiwan.

Distribution in Taiwan

Medium elevation primary broad-leaved forests of the main island.

General Biology

Unknown.

Calloplistria nobilior Eda, 2000 (小紅暈散紋夜蛾)

(Fig. 6C-D, 9F, 12E-F, 15F, 20F)

Calloplistria nobilior Eda, 2000: 137 (Type locality: Japan, Okinawa. Type in NMST)

Specimens examined

TAIWAN. Taipei City: 1♂, Nanguan, Hushan, 4-V-2006, Shipher Wu leg. (NTUIM); Taipei County: 1♂, Hsiaokotou, 7-XI-1994, C. H. Mu leg. (TFRI); **Taoyuan County:** 1♀,

20-VIII-1990, Fuhshing lodge, B. S. Chang leg. (NMNS); 1♂, Paling (= Baling), 12-VI-1986, Y. J. Chang leg. (TFRI); **Nantou County:** 1♂1♀, Shanlinxi, 30-VII-2006, L. C. Shih leg.(NSYSU); **Kaohsiung County:** 1♀, Liugui, 20-XII-2000, D. Anstine leg.(TFRI); 1♀, Shanping, 25-XI-1986, Y. Q. Shen leg.(TFRI); 1♀, same locality, 5-XI-1991, Y. B. Fan leg. (TFRI); 1♂, Tengzhi, 1-VII-2006, L. C. Shih leg. (NTUIM); **Taitung County:** 1♂, Lanyu, 24-25-IV-1997, W. T. Yang leg. (NMNS); **Hualien County:** 1♂1♀, Lushui, 13-VIII-1988, Y. B. Fan leg. (TFRI); **Ilan County:** 1♂, Chiduan (= Mingchih), 23-IV-1983, B. S. Chang leg. (NMNS); 1♂, Fushan Botanical Garden, 11-VII-1991, Y. B. Fan leg. (TFRI); 1♀, same locality, 18-VI-1992, Y. B. Fan leg. (TFRI); 1♂, same locality, 15-IV-1993, Y. B. Fan leg. (TFRI); 1♂, same locality, 29-XII-1994, A. Warneke leg. (TFRI); 1♂, same locality, 31-III-1995, J. J. Hsiao leg. (TFRI); 1♂1♀, same locality, 29-V-1995, J. J. Hsiao leg. (TFRI); 1♀, same locality, 27-VI-1995, S. H. Yen leg. (TFRI); 1♀, same locality, 27-VII-1995, A. Warneke leg. (TFRI); 1♂, same locality, 27-VII-1995, J. J. Hsiao leg. (TFRI); 1♂, same locality, 27-VII-1995, Y. J. Chen leg. (TFRI); 2♂1♀, same locality, 30-VIII-1995, A. Warneke leg. (TFRI); 1♂, same locality, 26-IX-1995, A. Warneke leg. (TFRI); 1♂, same locality, 26-IX-1995, J. J. Hsiao leg. (TFRI); 2♂♂, same locality, 26-IX-1995, Y. B. Fan leg. (TFRI); 1♂, same locality, 22-XI-2008, S. Wu leg. (NTUIM). **JAPAN. Okinawa:** holotype, 1♂, 26-III-1996, M. Kimura leg. (NSMT)

Specimen examinations of closely related species

Callopietria postpallida (Prout, 1928)

INDONESIA. S.W. Sumatra: holotype, 1♂, Slopes of Mt. Korintji, VIII-IX-1921, C.F. Pratt & J. Pratt leg. (NHM)

Diagnosis

Wingspan 29-34 mm in male (n = 36), 28-32 mm in female (n = 24).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted twice at approximately 1/2 at base.

Thorax – Clothed with black or orcheous long scales on three segments, paired crests on mesothorax orcheous. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales orcheous arising from innerside of meso-tibia. Forewing ground colour rufous, tinged with orcheous on veins; long scales arising from Cu1 humeral plate reaching to antemedial line; termen produced and acute at vein R5 and M3; tornus with long scale-tuft at approximately 2/3 part at base; antemedial line light yellow angled at A1+2 with pinkish white scaling at distal margin; orbicular stigma elliptic with white margin; reniform stigma with slender white margin and an internal oblique stripe; a black patch mixed with various colours present between antemedial and postmedial lines; white medial spot indistinguishable; postmedial line light yellow with pinkish

white scaling on proximal and distal margins, acutely inwards on R stalk, then as nearly straight line between stalk R3+4 to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white and separated as lunate stripes. Hindwing fuscous.

Pregenital abdomen – Ground coloration fuscous with light-coloured intersegmental stripes; crests ochreous or black mixed with blue, present at 1st to 3rd segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bi-triangular apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, apex of costal region obtuse, without clasper and harpe complex; subzones I of sacculus beak-like, subzone II tubinate, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica, dense spines and slender angled spinulate cornuti, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short, narrow and membranous near antrum, broadened at posterior part; corpus bursae 2.5 times longer than 7th sternite, signum absent, appendix bursa biconical with wrinkled ductus seminalis arising from conjunction of ductus corpus; additional internal sclerites arising from posterior part of ductus bursae and appendix bursae.

Global distribution

Japan (Honshu, Shikoku, Hachijo Island, Mikura Island and Okinawa Islands) and Taiwan.

Distribution in Taiwan

Low and medium primary and secondary broad-leaved forests of the main island, and Orchid Island (=Lanyu).

General biology

The following hostplant records are reported for the first time in the present study: *Histiopteris incisa* (Thunb.) J. Sm., 1875, *Microlepidia krameri* Kuo, 1985, *M. obtusiloba* Hayata, 1901, *M. spelunca* (L.) Moore, 1858, and *M. strigosa* (Thunb.) Presl, 1849 (Dennstaedtiaceae).

Remarks

Eda (2000) considered that the presence of an oblique submarginal stripe in forewing cell m1 could be a diagnostic character of *nobilior*. However, our examination of a long series of specimens does not corroborate this idea because of the highly variable size and shape of the stripe in this species.

Callopietria phaeogona (Hampson, 1908) (暗角散紋夜蛾)

(Fig. 3A-D, 9A, 11G-H, 14B, 17A, 18F, 19C-D)

Eriopus phaeogona Hampson, 1908: 535, fig. 116 (Type locality: China, Sichuan, Omei-Shan, male. Type in NHM)

Specimens examined

TAIWAN. Taipei County: 1♂, Sindian, Shikanshuei, 18-VI-2006, S. Wu leg. (NTUIM); 1♂, same locality, 28-X-2006, S. Wu leg. (NTUIM); **Taichung County:** 1♀, Baxianshan, 16-VIII-2006, L. C. Shih leg. (NTUIM); 1♂, Sijiaolin, 14. VII. 1992, Y. B. Fan leg. (TFRI); 1♂, same locality, 10. VIII. 1992, Y. B. Fan leg. (TFRI); **Tainan County:** 1♂, Kanshirei, 7-V-1907, A. E. Wileman leg. (NHM). **Kaohsiung County:** 2♂2♀, Duo-na, 16-IX-2005, S. Wu leg. (NTUIM); 1♂, Tengzhi, 1-VII-2006, L. C. Shih leg. (NTUIM); **Taitung County:** 2♀♀, Taimali, 5-IX-2005, S. Wu leg. (NTUIM); **Hualien County:** 1♂, Chaofeng, 17-II-1994, Y. B. Fan leg. (TFRI); 1♀, Losao, 16-II-1989, Y. B. Fan leg. (TFRI); 1♀, same locality, 12-IV-1989, Y. B. Fan leg. (TFRI); 1♂, Lushui, 13-VIII-1988, Y. B. Fan leg. (TFRI); 1♂, Peipu, 4-XI-1994, Y. B. Fan leg. (TFRI); **Ilan County:** 1♂, Fushan Botanical Garden, 23-X-1990, Y. B. Fan leg. (TFRI); 1♀, same locality, 5-XI-1991, Y. B. Fan leg. (TFRI); 1♀, same locality, 27-IV-1995, W. C. Yeh leg. (TFRI); 1♂, same locality, 29-V-1995, A. Warneke leg. (TFRI); 1♂, same locality, 30-VIII-1995, A. Warneke leg. (TFRI); 2♂♂, same locality, 27-IX-1995, Y. B. Fan leg. (TFRI); 3♂3♀, same locality, 22-XI-2008, S. Wu leg. (NTUIM). **CHINA: Sichuan Province:** syntype, 1♂, Omei-shan,

VI&VII-1890, J. H. Leech leg.; syntype, 1♀, same locality, VI -1890, J. H. Leech leg. (NHM);

Specimen examinations of closely related species

Callopistria alfredi Holloway, 1989

MALAYSIA. Borneo: holotype, 1♂, Sarawak, collecting date unknown, A. R. Wallace leg.; paratype, 1♂, Sarawak, collecting date unknown, A. R. Wallace leg. (NHM).

Callopistria aluensis Butler, 1891

SOLOMON ISLANDS. Alu: holotype 1♂, III-1887, C. M. Woodford leg.; **Rendova:** 1♀, II-1904, A. S. Meek leg. (NHM). **PAPUA NEW GUINEA. Aroa:** 1♂, III-1903, A. S. Meek leg. (holotype of *Dissolophus ochraceus* Bethune-Baker, 1906); **Bougainville:** 1♂, IV-1904, A. S. Meek leg. (NHM).

Callopistria flavitincta Galsworthy, 1997

CHINA. Hong Kong: holotype, 1♂, Victoria peak, V-1993, A. C. Galsworthy leg. (NHM). 3♂♂, same locality, VI-1993, A. C. Galsworthy leg.; 1♂, same locality, VIII-1993, A. C. Galsworthy leg. (NHM); **VIETNAM:** 1♂, Lao Cai, 9-10-VIII-1998, A. Kun leg. (HNHM).

Callopistria quadrinotata Walker, [1863] 1864

MALAYSIA. Borneo: 1♂, Sarawak, 1907-1908, C. J. Brooks leg.; 1♂, Sarawak, VI-1892, A. Everett leg. (NHM).

Diagnosis

Wingspan 27-28 mm in male (n = 26), 26-27 mm in female (n = 15).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae furcate leading antennae with 30 to 45 degrees of angle at approximately 1/3 at base

Thorax – Clothed with orcheous or rufous long scales on three segments, paired crests on mesothorax orcheous. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Male femur fringed with long black scales on innerside; tibia, 1st tarsi covered with long scales on outside; fore tibia fringed with androconial scales on outer side; outside of 2nd mid-tarsi and two spurs of hind tibia fringed with erected long scales. Forewing ground colour brown, tinged with orcheous on veins; long scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line white and smoothly excurved with pinkish brown scaling at distal margin; orbicular stigma lanceolate with white margin; reniform stigma with

white margin and an internal oblique stripe; a brownish black patch extending to costa present between two stigmata; white medial spot indistinguishable lying on underside of reniform stigma; postmedial line pinkish brown, acutely inwards on R stalk, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white, interrupted by veins.

Pregenital abdomen – Ground coloration orange with light-coloured intersegmental stripes; crests orange or black present at 1st to 3rd segments, hair tufts arising from 4th pleural membranous area; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex slightly expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites lying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegumen; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventro-laterally; vinculum short and protruded apical-laterally; saccus dome-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; division of subzones I and II of sacculus indistinguishable, subzone I ovate, subzone II oblong, subzone III with tip papillate pointing antero-ventrally, and short scale tufts arising antero-dorsally, without wrinkles postero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and without cornutus, tubular extension of vesica bending anteriorly when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae narrow and membranous near antrum, broadened at posterior part; corpus bursae 2 times longer than 7th sternite, signum or additional internal sclerites absent, posterior part wrinkled and slender, anterior part membranous and round; proximal part of appendix bursa straight and slender, distal part slender but circled twice; ductus seminalis wrinkled arising from apex of appendix bursae.

Larva – Background colour of mature larva reddish brown, 4th instar larva light green; head of mature larva orange with two pairs of longitudinal stripe extending from upper to lower margin, inner pair brown, oblique and broadened, outer pair black across area

surrounded by 6 stemmata; prothorax with two sets of black circular spot; mesothorax to 9th abdominal segment with two pairs of symmetric, undulate white lines, outer pair of 4th instar larva broadened and staight; 1st to 6th abdominal segments with black spots on outside of outer longitudinal white lines.

Distinguishable from *C. deflexusa* by forewing white medial spot indistinguishable laying on underside of reniform stigma rather than prminent locating medially between reniform stigma and postmedial line, vesica without cornutus rather than single, short, obtuse cornutus.

Global distribution

Taiwan and W. China (Sichuan).

Distribution in Taiwan

Low elevation primary and secondary broad-leaved forests of the main island.

General biology

The species can be found in all seasons in Taiwan. The hostplant record (*Selaginella delicatula* (Desv.) Alston, 1932, Selaginellaceae, Lycophyta) is reported for the first time.

Remarks

This species, together with *C. aluensis* (Solomon Islands), *C. flavincta* (China and Vietnam), *C. quadrinotata* and *C. alfredi* (Borneo, Malaysia) share three apomorphic characters that may suggest their phylogenetic affinity: (1) male valval sacculus without clear subdivisions; (2) abdominal hair tufts arising laterally from the 4th segment; and (3) male antennal fork forming an angle between 30-45 degree with antenna (but not present in *aluensis*).

Calloplistria placodoides (Guenée, 1852) (紅棕散紋夜蛾)

(Fig. 5E-F, 8G, 11I-J, 15D, 18B, 20B-D)

Eriopus placodoides Guenée, 1852: 296 (Type locality: Indonesia, Java, male. Type in NHM)

Eriopus doleschalli Felder and Rogenhokr, 1874: pl. 110, fig. 14 (Type locality: Indonesia, Amboina. Type in NHM)

Specimens examined

TAIWAN. Taipei City: 1♂, Jingmei, Siiajiyan, 11-VI-2007, S. Wu leg. (NTUIM); **Taipei County:** 2♀♀, Hsiaokotou, 17-VI-1995, Y. J. Chen leg. (TFRI); 1♂, Sindian, Shikanshuei,

13-VIII-2005, S. Wu leg. (NTUIM); 1♂, same locality, 10-VI-2006, S. Wu leg. (NTUIM); **Nantou County:** 1♂, Lianhuachih, 3-III-1991, Y. B. Fan leg. (TFRI); **Ilan County:** 1♂, Fushan Botanical Garden, 28-IV-1995, W. C. Yeh leg. (TFRI); 1♂, same locality, 30-V-1995, A. Wraneke leg. (TFRI); 1♂, same locality, 27-VII-1995, Y. J. Chen leg. (TFRI); 1♂, same locality, 30-VIII-1995, J. J. Hsiao leg. (TFRI); 1♀, same collecting data, W. T. Jou leg. (TFRI); 1♀, same locality, 3-III-1991, Y. B. Fan leg. (TFRI); 1♂, same locality, 27-XI-1995, S. S. Lu leg. (TFRI); 1♂, same locality, 14-IX-2007, S. Wu leg. (NTUIM). **INDONESIA. Java:** holotype (of *placodoides*), 1♂, collecting date unknown, ex Horsfield Collection, collector unknown. (NHM)

Diagnosis

Wingspan 28-29mm in male (n = 10), 28-29mm in female (n = 4)

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment correct; frons round frontally; eye large; male antennae furcate leading antennae with 30 to 45 degrees of angle at approximately 1/3 at base.

Thorax – Clothed with brown smooth scales on three segments, paired crests on mesothorax brown. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi. Forewing ground colour redish brown, tinged with fuscous scaling laying on distal margins of antemedial, postmedial and submarginal lines; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line fuscous angled at A1+2; orbicular stigma oblong; reniform stigma with an internal oblique stripe; rufous medial spot slender and oblique locating medially between reniform stigma and postmedial line; postmedial line rufous angled at vein M3; submarginal line white, continuous between costal margin to Cul; marginal line white broken by veins.

Pregenital abdomen – Ground coloration fuscous without light-coloured intersegmental stripes; crests fuscous present at 1st to 3rd segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite, posterior margin of 2nd sternite wrinkled; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped, incised antero-medially and with pair spinulose lumps laterally; female 7th sternite membranous without modification.

Male genitalia - Uncus extremely down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long lanceolate scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus correct, derived from dorso-medial part of transtillae and

having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus and transtillae laterally, respectively; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex, costal region short conoid; subzones I of sacculus hooked, subzone II conical, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered lingulate scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and a single speculate cornutus, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short and broadened with wrinkles; corpus bursae oblong and 2 times longer than 7th sternite, signum absent, appendix bursa ovate with wrinkled ductus seminalis arising from conjunction of ductus corpus; additional internal sclerites arising from conjunction of ductus bursae and appendix bursae.

Larva – Background colour of mature larva grass green; lateral line white; prothorax with a transversal stripe dorsally, each segment of mesothorax to A8 with one pair of large oblique stripes, A9 with one transversal stripe, all stripes purplish red, purplish black or green.

Global distribution

Widely distributed from Korea, Japan, Taiwan, China, Hong Kong, Indonesia, Vietnam, to Nepal.

Distribution in Taiwan

Low elevation primary and secondary broad-leaved forests of the main island.

General biology

The larva was first reared from *Pteridium aquilinum* (L.) Kuhn (Dennstaedtiaceae) by Yamamoto (1965: 96-97, pl. 32: 99). Tominaga (2001) also reared out the larvae exhibiting two colour forms from *Microlepis strigosa* (Thunb.) Presl, 1849 (Dennstaedtiaceae) in Okinawa. Chang (1991: 300-301) recorded a mature larva on *Diplazium esculentum* (Retz.) Sw., 1803 (Woodsiaceae *sensu* Smith *et al.*, 2006), and we add two additional hostplant records from *Diplazium dilatatum* Blume, 1928 and an *D. petrii* Tard.-Blot, 1932

Calloplistria pulchrilinea (Walker, 1862)

(小網散紋夜蛾、麗紋散紋夜蛾)

(Fig. 9H, 11K-L, 14E, 17F, 19A-B)

Obana pulchrilinea Walker, 1862: 190 (Type locality: Borneo, Sarawak. Type in OXUM)

Eriopus reticulata Pagenstecher, 1884: 226, pl. 6, fig. 7 (Type locality: Indonesia, Amboina. Type in MWNH)

Eriopus reticulata var. *duda* Strand, 1921: 155 (Type locality: Franceville. Type in NHM)

Specimens examined

TAIWAN. Taipei County: 1♂, Sindian, Shikanshuei, 28-X-2006, S. Wu leg. (NTUIM); 1♂, Wulai, 3-XII-2005, S. Wu leg. (NTUIM); **Tainan County:** 1♂, Kanshirei, 26-VIII-1904, A. E. Wileman leg. (NHM); 1♀, same locality, 27-VII-1906, A. E. Wileman leg. (NHM); 1♂, same locality, 25-X-1908, A. E. Wileman leg. (NHM); **Kaohsiung County:** 1♂, Duo-na, 16-IX-2005, S. Wu leg. (NTUIM); 1♂, Tengzhi, 30-I-2006, L. C. Shih leg. (NSYSU); **Ilan County:** 1♂, Fushan Botanical Garden, 5-XI-1991, Y. B. Fan leg. (TFRI); 1♂, same locality, 30-XII-1994, A. Warneke leg. (TFRI); 1♀, same locality, 26-XI-1995, Y. B. Fan leg. (TFRI); 1♀, same locality, 27-XI-1999, A. Kun, L. Peregovits & L. Ronkay leg. (HNHM); 1♂1♀, same locality, 22-XI-2008, S. Wu leg. (NTUIM); **INDIA.** Sikkim, 1♀, 4-VIII-1890, G. C. Dudgeon leg. (NHM); 1♂, same locality, collecting date and collector unknown leg. (NHM). **INDONESIA. W. Celebes:** 1♂, Paloe, XI-1936, J. P. A. Kalis leg. (NHM). **MALAYSIA. Borneo:** 1♀, Sarawak, Gunong, Mulu National Park, 1977, J. D. Holloway et al. leg. (NHM); **NEPAL. Janakpur:** 1♂, Dolakha, Shera, 19-X-1979, M. Owada leg. (NSMT); **VIETNAM. Lao Cai:** 1♂, 4-6-XII-1997, A. Kun leg. (HNHM); 2♂♂, same locality, 8-VIII-1998, A. Kun leg. (HNHM); 1♂, same locality, 9-10-VIII-1998, A. Kun leg. (HNHM).

Specimen examinations of closely related species

Calloplistria chloriza (Guenée, 1852)

INDONESIA. Java: holotype, 1♂, collecting date unknown, ex Horsfield collection, collector unknown (NHM).

Calloplistria insularis Butler, 1882

PAPUA NEW GUINEA. Duke of York Island: holotype, 1♂, locality, collecting date and collector unknown (NHM). **THE PHILIPPINES. Luzon :** 1♂, Benguet, Pauai, 14-XI-1912, A. E. Wileman leg. (NHM)

Calloplistria montana Holloway, 1976

MALAYSIA: Borneo: holotype, 1♂, Mt. Kinabalu, 17-VII-1965, H. J. Banks *et al.* leg. (NHM); 2♂♂, Sarawak, Gunong, Mulu National Park, VIII-1977, J. D. Holloway *et al.* leg. (NHM).

Diagnosis

Wingspan 24-25mm in male (n = 13), 22-23 mm in female (n = 5)

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted at approximately 1/3 at base.

Thorax – Clothed with rufous or dark long scales on three segments, paired crests on mesothorax rufous. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales black, arising from meso-tibia. Male femur fringed with long black scales on innerside; tibia, 1st tarsi covered with long scales on outside; fore tibia fringed with androconial scales on outer side; outside of 2nd mid-tarsi and two spurs of hind tibia fringed with erected long scales. Forewing ground colour rufous in male, brownish-dark in female, sexual dimorphism, tinged with orcheous on veins; short scales arising from Cu1 humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line pinkish white and angled in cell cu2, with distal margin pink; orbicular stigma lanceolate with white margin; reniform stigma with white margin and an internal pink oblique stripe; a brownish black patch extending to costa present between two stigmas; white medial spot slender interrupted by vein M3 and locating medially between reniform stigma and postmedial line; postmedial line pinkish white with distal margin pink, acutely inwards on R stalk, oblique straight outwards to M3, then angled inwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white.

Pregenital abdomen – Ground coloration orcheous with light-coloured intersegmental stripes; crests orcheous or black present at 1st to 3rd segments; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped with each lateral extension hooked inwards; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex obtusely expanded and densely setose and long hairs ventrally, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part with lanceolate scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegumen; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination and gathered small spines ventrally; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-

ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzones I of sacculus papillate, subzone II triangular, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and hair tufts antero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and cornuti as dense spines latero-ventrally, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short conjuncting with lateral appendix bursae without clear separation, a dense additional internal sclerite prominently present in appendix bursae to ductus bursae; corpus bursae membranous about 1.5 times longer than 7th sternite, without signum; ductus seminalis wrinkled arising from conjunction of ductus bursae and corpus bursae. Hindwing dark ochreous.

Larva – Background colour of mature larva light green; head of mature larva with two pairs of longitudinal stripe from upper to lower margin, inner pair black and closing adfrontal sutures, outer pair dark black, crossing regions of stemmata; lateral line black, discontinues, irregular from prothorax to A8; anterior margin of prothorax with black ring, mesothorax to A8 with black spots dorsally, mesothoracic one short band-like, others as irregular triangle; 4th instar larva with similar patterns but dorsal irregular triangular spots without black filled.

Global distribution

Widely distributed from the Oriental to African regions: Japan, Taiwan, China (Tibet), India, Sri Lanka, Vietnam, Myanmar, Malaysia (Borneo), Singapore, Indonesia (Amboina), Nepal, and W. Africa (Gabon).

Distribution in Taiwan

Low elevation primary and secondary broad-leaved forests of the main island.

General biology

The larvae of this species were first reared out from *Selaginella uncinata* (Selaginellaceae, Lycophyta) (Hayashi, 2002), an ornamental species originated in China but already naturalized in many areas. In Taiwan, the same plant was ever observed being utilized by this species in Taipei Botanical Garden (Y.B. Fan, 2002, pers. comm.). Another rearing record in Taiwan was obtained from *S. delicatula* (Desv.) Alston, 1932.

Remarks

Identifications of this species were historically confusing in literature. When Hampson (1908) placed his “*pulchrilinea*” and “*reticulata*” in the sections II and IV of *Calloplistria* (as *Eriopus*), he did not realize that these two names actually represented the same species, and both of his species were mis-identified during the time. It was later proven that the *reticulata* sensu Hampson was in fact the true *pulchrilinea*, while the *pulchrilinea* sensu Hampson was later described as *alfredi* by Holloway (1989). In addition, the *C. pulchrilinea* genitalia shown by Chang (1990: p. 352, fig. 208) is a mislabeled picture of *Sphragifera biplagiata* (Walker, 1865).

Calloplistria repleta Walker, [1858] 1857 (紅暈散紋夜蛾)

(Fig. 6A-B, 9E, 12A-B, 15E, 18C & E, 20E)

Calloplistria repleta Walker, F. [1858] 1857: 865 (Type locality: N. India, Assam. Type in NHM)

Specimens examined

TAIWAN. Taipei County: 3♂♂, Sindian, Shikanshuei, 18-VI-2006, S. Wu leg. (NTUIM); **Nantou County:** 2♂♂, Beidongyanshan, 6-VI-2000, D. Anstine leg. (TFRI); **Kaohsiung County:** 1♂, Dahanshan, 24-X-2005, S. Wu leg. (NTUIM); 1♂, Duo-na, 16-IX-2005, S. Wu leg. (NTUIM); 1♂, same locality, 30-IV-2007, S. Wu leg. (NTUIM); 1♂, Tona (= Duona), 26-XI-1986, Y. J. Chang leg. (TFRI); **Ilan County:** 2♂♂, Fushan Botanical Garden, 29-V-1990, Y. B. Fan leg. (TFRI); 2♂♂, same locality, 3-X-1994, A. Warneke leg. (TFRI); 1♀, same locality, 30-III-1995, W. T. Jou leg. (TFRI); 1♂, same locality, 27-VI-1995, A. Warneke leg.; (TFRI) 1♂1♀, same locality, 29-VIII-1995, A. Warneke leg. (TFRI); 1♂1♀, same locality, 29-VIII-1995, Y. J. Chen leg. (TFRI); 1♂, same locality, 30-VIII-1995, A. Warneke leg. (TFRI); 1♂, same locality, 27-VII-1995, Y. J. Chen leg. (TFRI); 1♀, same locality, 27-X-1995, W. T. Jou leg. (TFRI); 1♀, same locality, 27-X-1995, S. H. Yen leg. (TFRI); 1♀, same locality, 28-X-1995, W. T. Jou leg. (TFRI). **INDIA. Locality unknown:** holotype, 1♀, collecting date and collector unknown (NHM).

Diagnosis

Wingspan 29-34 mm in male (n = 16), 28-33 mm in female (n = 7).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment correct; frons round frontally; eye large; male antennae contorted twice at approximately 1/2 at base.

Thorax – Clothed with black or orcheous long scales on three segments, paired crests on mesothorax orcheous. Legs of male fringed with long hair-tufts on three tibial segments

and 1st tarsi; androconial scales orcheous arising from innerside of meso-tibia. Forewing ground colour orcheous, tinged with orcheous on veins distally; long scales arising from Cu1 humeral plate reaching to antemedial line; termen produced and acute at vein R5 and M3; tornus with long scale-tuft at approximately 2/3 part at base; antemedial line creamy yellow angled at A1+2 with pinkish white scaling at distal margin; orbicular stigma elliptic with white margin; reniform stigma with slender white margin and an internal oblique stripe; a black patch mixed with various colours present between antemedial and postmedial lines; white medial spot indistinguishable; postmedial line creamy yellow with pinkish white scaling on proximal and distal margins, acutely inwards on R stalk, then as nearly straight line between stalk R3+4 to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white and separated as lunate stripes. Hindwing fuscous.

Pregenital abdomen – Ground coloration fuscous with light-coloured intersegmental stripes; crests orcheous or black mixed with blue, present at 1st to 3rd segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bi-triangular apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, apex of costal region obtuse, without clasper and harpe complex; subzones I of sacculus beak-like, subzone II tubinate, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and short hair tufts antero-ventrally; aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica covering dense spines on posterior patch and a stout angled spinulate cornutus arising at base, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite absent; apophysis posterioris extending anteriorly to

anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae short, narrow and membranous near antrum, broadened at posterior part; corpus bursae 2.5 times longer than 7th sternite, with wrinkles at approximately 1/3 at posterior part, signum and additional internal sclerites absent, appendix bursa conical with wrinkled ductus seminalis arising from conjunction of ductus corpus.

Larva – Background colour of mature larva grass green; head of mature larva with two pairs of longitudinal black stripes from upper to lower margin, inner pair black and closing adfrontal sutures, outer pair dark black, crossing regions of stemmata; lateral line redish brown with white margin on upperside and connected with each other on frontal margin of prothorax and distal margin of A8; prothorax to A8 with one dark transverse stripe except A1 and A7, prothoracic one slender and straight, remainder ones band-like and expanded medially with yellow margins.

Distribution in Taiwan

Low to medium secondary and primary forests

Global distribution

Russian Federation, Korea, Japan, Taiwan, Peninsula Malaysia, Indonesia (Sumatra, Borneo), India, Nepal, and Pakistan.

General Biology

Yamamoto (1965) first illustrated the larva collected from *Pteridium aquilinum*. Holloway (1989) stated that this species might be polyphagous on ferns. The newly confirmed hostplants from Taiwan are listed as follows: *Dennstaedtia smithii* (Hook.) Moore, 1861, *Hypolepis punctata* (Thunb.) Mett., 1868 (Dennstaedtiaceae), *Pseudocyclosorus esquirolii* (Christ) Ching (Thelypteridaceae), *Pteris wallichiana* Ag., 1839 (Pteridaceae).

***Calloplistria rivularis* Walker, [1858] 1857 (流紋散紋夜蛾)**

(Fig. 4C-H, 8A, 12I-J, 15G, 17D, 20H)

Calloplistria rivularis Walker, [1858] 1857: 867 (Type locality: N. India. Type in NHM).

Eriopus xanthopera Hampson, 1908: 545 (Type locality: India, Travancore. Type in NHM) (Figs. 4G-H).

Eriopus cyclopis Hampson, 1908: 547 (Type locality: Papua New Guinea, Trobriand Island. Type in NHM) (Figs. 4E-F).

Specimens examined

TAIWAN. Maioli County: 1♀, Henglong, 21-V-1983, B. S. Chang leg. (NMNS); **Tainan County:** 1♂, Kanshirei, 25-VII-1907, A. E. Wileman leg. (NHM); **Ilan County:** 1♀, Fushan Botanical Garden, 1-VI-2006, S. Wu leg. (NTUIM). **INDIA.** holotype (of *rivularis*), 1♀, collecting date unknown, L. James leg. (NHM); **Travancore:** holotype (of *xanthopera*), 1♂, collecting date unknown, R. S. Imray leg. (NHM). **Papua New Guinea. Trobriand Island:** holotype (of *cyclopis*), 1♂, 1895, A. S. Meek leg. (NHM). **THAILAND. Khao Chong:** 1♂, 12-IX-2007, S. Wu (NTUIM); 1♂3♀♀, 19-26-VI-2009, L. Y. Tsai leg. (NSYSU).

Diagnosis

Wingspan 26-29 mm in male (n = 2), 26-28 mm in female (n = 3).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with long scales extending anteriorly, 3rd segment porrect; frons round frontally; eye large; male antennae contorted with a cuneate section at approximately 1/3 at base.

Thorax – Clothed with orcheous or brownish dark long scales on three segments, paired crests on mesothorax orcheous or brown. Legs of male fringed with long hair-tufts on three tibial segments and 1st tarsi; androconial scales black, arising from mesotibia. Forewing ground colour brownish black, tinged with pink or orcheous on veins; long scales arising from Cul humeral plate; termen produced and acute at vein M3; tornus with short scale-tuft at approximately 2/3 part at base; antemedial line excurved smoothly with pinkish brown scaling at distal margin; orbicular stigma ovate with white margin; reniform stigma with white margin and an internal oblique stripe; a black patch extending to costa present between two stigmas; white medial spot ovate laying between reniform stigma and postmedial line; postmedial line white with pink scaling distally, acutely inwards on R stalk, incised in cell m1, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes white, oblique, arising from costal margin to vein M3; marginal line white, continuous between costal margin to vein M3, but interrupted between vein M3 and tornus.

Pregenital abdomen – Ground coloration brown with light-coloured intersegmental stripes; crests brownish black present at 1st to 3rd segments with various colour combinations; male with specialized scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired lateral rods fringed with long scales; posterior margin of 8th sternite ladder-shaped and incised antero-medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus slightly projected bilaterally and fused with apex of tegumen; scaphium

consisting of two slender sclerites laying almost parallelly; subscaphium having two bend-like sclerites attaching firmly with tuba analis; tegumen ridged at anterior margin, membranous part broadened medially with long filiform scale tufts arising postero-ventrally; tegumeno-ventral sclerites fused with tegumen; transtillae fused with lower end of tegument; anellus porrect, derived from dorso-medial part of transtillae and having a bifurcate apex curving downwards; manica enclosing phallobase and covered with minute spinulose scobination; juxta fused with sacculus laterally and connected with transtillae ventral-laterally; vinculum short and protruded apical-laterally; saccus dorm-shaped ventrally with a bifid apex at posterior-ventral extension; valvae with sacculus broader and more sclerotized than membranous costal region, but without clasper and harpe complex; subzones I of sacculus beak-like, subzone II tubinate oblong, subzone III with proximal part ridge-wrinkled postero-dorsally and with squamiform scales upon it, distal part papillate pointing latero-ventrally and with gathered short scale tufts at apex and hair tufts antero-ventrally. Aedeagus heavily sclerotized, composed of an asymmetrical sheath with a short vesica and a single speculate cornutus, tubular extension of vesica bending laterally when fully swollen, phallobase protruded anteriorly.

Female genitalia - Papillae anales slightly sclerotized at anterior margin and truncate from lateral view; 8th sternite completed and broadened at medium; apophysis posterioris extending anteriorly to anterior margin of 8th tergite; apophysis anterioris slender, extending anteriorly to medial part of 7th tergite; ductus bursae narrow and membranous near antrum, broadened at posterior part; corpus bursae 1.5 times longer than 7th sternite, signum absent, appendix bursa conical with wrinkled ductus seminalis arising from conjunction of ductus corpus; additional internal sclerites arising from posterior part of ductus bursae and appendix bursae.

Larva – Background colour of mature larva variable (azure in Thailand, yellowish green or green in Okinawa); head of mature larva greenish yellow with three black spots on frons and genae, a pair of oblique stipe laying along adfrontal suture; prothorax with two pairs of transverse stripes; mesothorax to A9 with two pairs of dark black spots on dorso-lateral and lateral sides, spot sizes and shapes variable.

Distinguishable from *C. japonibia* by forewing ground colour brownish dark tinged with orcheous on veins rather than fuscous tinged with red, by appendix bursae conical rather than biconical.

Global distribution:

E. Palaearctic, Oriental and Indo-Australian regions: Korea, Japan, Taiwan, China (including Hong Kong), Indonesia, Australia, Solomon Islands, India, and Nepal.

Distribution in Taiwan

Low elevation primary broad-leaved forests of the main island and Gueishan Islet.

General Biology

Tominaga (2001) first recorded the larva from *Microlepidia strigosa* (Thunb.) Presl, 1849 (Dennstaedtiaceae) in Okinawa. Recently we reared out the larvae collected on the *Pteris* sp. (Pteridaceae) from Khao Chong, Thailand (L.Y. Tsai, 2009, pers. comm.).

Remarks

Holloway (1989) synonymized both *C. xanthopera* Hampson, 1908 and *C. cyclopis* Hampson, 1908 with *rivularis* because of the “minor differences in facies but nearly identical genital structures”. He also stated that *xanthopera* and *cyclopis* “could be applied at a subspecific level to S. Indian with Sri Lanka populations and Australasian populations, respectively”. This species was firstly recorded in Taiwan by Kononenko *et al.* (1998: 263) without providing any specimen examination. Chang (1991: 299) reported the record of *C. japonibia* from Taiwan, but having examined the voucher specimen deposited in NMNS, the record is proven as a misidentification of a female *C. rivularis*. In addition, the *C. japonibia* shown in Wang & Lee (1998: 160) is also a misidentified *C. rivularis*.

Callopistria thalpophiloides thalpophiloides (Walker, 1862)

(後黃散紋夜蛾)

(Fig. 7C-H, 13C-D, 16B)

Data thalpophiloides Walker, 1862: 192 (Type locality: Borneo, Sarawak. Type in UM).

Thalpophila cuprea Moore, 1877: 604, pl. 59, fig. 10 (Type locality: Andaman Islands. Type in NHM)(Fig. 7E-F).

Thalpophila delineata [1884] 1884-1887: 25, pl. 146, fig. 5 (Type locality: Sri Lanka. Type in NHM)(Fig. 7C-D).

Specimens examined

TAIWAN. Kaohsiung County: 1♀, Shanping, 4. XI. 1988, Y. B. Fan leg. (TFRI)
BRUNEI. Bukit Retak: 1♂, 18-V-1979, M. G. Allen leg. (NHM). **SRI LANKA. Western Haputale:** 1♂, XI-1903, F. M. Mackwood leg. (NHM); **Madolsima,** 1♂, XI-1906, F. M. Mackwood leg. (NHM); holotype (of *Thalpophila delineata* Moore), 1♀, collecting unknown, ex Moore Collection, collector unknown. **INDIA. Andaman Islands:** holotype (of *Thalpophila cuprea* Moore), 1♀, collecting date unknown, ex Moore Collection, collector unknown (NHM). **MALAYSIA. Perak:** 1♀, Padang Rengas, collecting date and collector unknown (NHM).

Specimen examinations of closely related species

Callopistria thalpophiloides major (Warren, 1913)

PAPUA NEW GUINEA. Southern Highland Province: holotype, 1♂, Mts. Snow, nr. Oetakwa R., 10-XII-1910, A. S. Meek leg. (NHM)

***Callopietria aroa* (Bethune-Baker, 1906)**

PAPUA NEW GUINEA. Centrol Province: holotype, 1♂, Upp[er]. Aroa R[iver]., III-1903, A.S. Meek leg. (NHM)

***Callopietria callopietroides* (Moore, 1881)**

INDIA. Locality unknown: holotype, 1♀, collecting date unknown, ex Moore Collection, collector unknown; **Khasis:** 1♂, V-1894, ex Nat. Collection, collector unknown (NHM). **INDONESIA. Kalimantan:** 1♂, Samarinda, X-1938, M. E. Walsh leg. (NHM) **THE PHILIPPINES. Luzon:** holotype (of *Data rhabdochlaena*), 1♂, Benquet, 8-IV-1912, A. E. Wileman leg. (NHM); paratype (of *D. rhabdochlaena*), 1♂, same collection data as holotype (NHM); allotype (of *D. rhabdochlaena*), 1♀, same collection data as holotype (NHM).

***Callopietria cyanopera* (Hampson, 1911)**

NIGERIA. Ilesha: holotype, 1♀, 1911, L. E. H. Hanfrey leg. (NHM).

***Callopietria dissimilis* (Warren, 1911)**

AUSTRALIA. Queensland: holotype, 1♀, collecting date and collector unknown (NHM).

***Callopietria obliterated* (Warren, 1911)**

MALAYSIA. Sarawak: 1♂, Kuching, collecting date and collector unknown (NHM).

***Callopietria pratti* (Bethune-Baker, 1906)**

PAPUA NEW GUINEA. Ekeikei: syntype, 1♀, III-IV-1903, A. E. Pratt leg.; syntype, 1♀, Mt. Kebea, VII-1903, A. E. Pratt leg. (NHM).

***Callopietria rectisecta* (Warren, 1912)**

INDIA. Assam: syntype, 1♀, Cachar, collecting date and collector unknown (NHM).

Diagnosis

Wingspan 35-37 mm in male (n = 3), 33-35 mm in female (n = 3).

Head - Proboscis fully developed; 2nd labial palpal segment fringed with short scales, 3rd segment straight extending to vertex of head; frons round frontally; eye large; antennae filiform.

Thorax - Clothed with scattered brown scales on three segments, pro- and mesothorax with paired long crests. Segments of legs fringed with long scale tufts. Forewing ground colour pattern brownish dark; shortscales arising from Cu1 humeral plate; termen produced and acute at vein M1 and M3, and crenulated with short scale-tuft at tornus; antemedial line white curved; orbicular and reniform stigmas indistinguishable; white

medial spot separated by vein M3 as two parts locating medially between reniform stigma and postmedial line; postmedial line acutely inwards on R stalk, incised in cell m1, then bent outwards to Cu2, finally as straight to tornus; submarginal stripes yellow, oblique arising from vein M1 to A1+2, marginal line broken by veins as lunate stripe in each cell. Hindwing with one-half proximal part with yellow patch.

Abdomen – Ground coloration yellow without light coloured intersegmental stripes; crests brown present at 1st to 4th segments; male with scale tufts arising latero-ventrally from 2nd sternite; male 8th sternite and its paired short lateral rods fringed with long scales; anterior margin of 8th sternite arc-shaped and incised medially; female 7th sternite membranous without modification.

Male genitalia - Uncus down-curved with apex expanded and densely setose, base of uncus also expanded and slightly projected bilaterally and separated with apex of tegumen dorsoanteriorly; gnthos absent; scaphium consisting of two slender sclerites laying parallelly; subscaphium having two bend-like sclerites arising laterally and extending ventrally, both sclerites fused at caudal end; tegumen broadened medially and with long filiform scale tufts arising postero-ventrally; sclerite situated latero-ventrally with tegumen fused with tegumen, clavate process arising dorso-ventrally; transtillae short present as a fused connective twisted band-like structure between both sides of tegumen with a medial enlarged cordate anellus; manica enclosing phallobase and covered with minute spinulose scobination distally; juxta fused with sacculus dorso-laterally; vinculum long, with saccus sac-like and tubinate at end and without a bifid apex posterior-ventrally; valvae with sacculus broader and more sclerotized than membranous costal region, clasper and harpe complex absent; long spines arising from lateral margins of costal region, sacculus wrinkled posteroventrally with long scale tufts arising postero-laterally and reaching to one-half of valva; aedeagus with phallobase slender at anterior part and stout, asymmetrical sheath-shaped at posterior part, vesica curved anteriorly and covering with spinulose scobinations without cornutus and wrinkles.

Female genitalia - Papillae anales sclerotized and truncate at end with sensory setae densely situated; A8 present in form of a complete ring; apophysis posterioris and anterioris short and truncate at tip; ductus bursae long as 7th sternite, membranous without wrinkles near antrum; corpus bursae long as 7th sternite, ovate, without signum and additional internal sclerite; appendix bursae spatulate locating on lateral side of corpus bursae; wrinkled ductus seminalis arising at end of appendix bursae.

Global distribution

Widely distributed in the Indian subregion, Sri Lanka, Sundaland, the Philippines, S. China, Taiwan, and Sulawesi.

Distribution in Taiwan

Southern part of low elevation primary broad-leaved forests of the main island.

General Biology

Unknown.

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Appendix 1. Acronym of the depository

HNHM	The Hungarian Natural History Museum, Budapest, HUNGARY
MNHN	Muséum National d'Histoire Naturelle, Paris, FRANCE
MWHN	Museum Wiesbaden naturhistorische Landessammlung, Wiesbaden, GERMANY
NHM	The Natural History Museum, London, UNITED KINGDOM
NMNS	National Museum of Natural Sciences, Taichung, TAIWAN
NSMT	National Museum of Natural Science, Taichung, TAIWAN
NSYSU	National Sun Yat-Sen University, Kaohsiung, TAIWAN
NTUIM	National Taiwan University Insect Museum, Taipei, TAIWAN
ORHANT	Private collection of Georges Orhant, Wailly, FRANCE
OXUM	Oxford University Museum, Oxford, UNITED KINGDOM
SNG	Forschungsinstitut Senckenbergischen Naturforschenden Gesellschaft, Frankfurt am Main, Frankfurt, GERMANY
TFRI	Taiwan Forestry Research Institute, Taipei, TAIWAN

Legends of Figure Plates

- Fig. 1.** Schematic diagram showing the wing venation (A) and wing pattern elements (B) of the Eriopinae (based on *Calloplistria juvenina* (Stoll, 1782)) adopted in the present volume.
- Fig. 2.** Schematic diagram showing the structures and terminology of male genitalia adopted in the present volume. A-C. *Calloplistria juvenina* (Stoll, 1782); D-F. *C. clava* (Leech, 1900); A & D. Male genitalia without aedeagus; B & D. Aedeagus; C & F. Detailed structure of sacculus. Photo: Shipher Wu.
- Fig. 3.** Type specimens of the Eriopinae species. A-D. Syntypes of *Eriopus phaeogona* Hampson, 1908 (= *Calloplistria phaeogona*) (A-B: male; C-D: female); E-F. Holotype of *C. duplicans* Walker, 1862 (male); G-H. Holotype of *C. gutturalis* Hampson, 1896 (male). Photo: Shipher Wu. Courtesy of specimens: NHM. Scale bar = 1 cm.
- Fig. 4.** Type specimens of the Eriopinae species. A-B. Paratype of *Calloplistria deflexusa* Chang, 1991 (female); C-D. Holotype of *C. rivularis* Walker, [1858] 1857 (female); E-F. Holotype of *Eriopus cyclopis* Hampson, 1908 (= *C. rivularis*) (male); G-H. Holotype of *E. xathopera* Hampson, 1908 (= *C. rivularis*) (male). Photo: Shipher Wu. Courtesy of specimens: NMNS (A-B), NHM (C-H). Scale bar = 1 cm.
- Fig. 5.** Type specimens of the Eriopinae species. A-B. Holotype of *Calloplistria repleta* Walker, 1857 (female); C-D. Holotype of *C. nobilior* Eda, 2000 (male); E-F. Paratype of *C. delicata* Chang, 1991 (male); G-H. Holotype of *Bryophila nigriscens* Wileman, 1915 (= *C. nigriscens*) (female). Photo: Shipher Wu. Courtesy of specimens: NHM (A-B & E-H), NSMT (C-D). Scale bar = 1 cm.
- Fig. 6.** Type specimens the Eriopinae species. A-B. Holotype of *Calloplistria meridionalis* Collenette, 1929 (male); C-D. Holotype of *C. aethiops* Butler, 1878 (male); E-F. Holotype of *Eriopus placodoides* Guenée, 1852 (= *C. placodoides*) (male); G-H. Holotype of *Apamea clava* Leech, 1900 (= *C. clava*) (female). Photo: Shipher Wu. Courtesy of specimens: NHM. Scale bar = 1 cm.
- Fig. 7.** Specimens of *Calloplistria thalpophiloides* (Walker, 1862). A-B. Holotype of *Data thalpophiloides major* Warren, 1913 (= *C. t. major*) (male); C-D. Holotype of *Thaipophila delineata* Moore, 1844 (= *C. t. thalpophiloides*) (female); E-F. Holotype of *T. cuprea* Moore, 1877 (= *C. t. thalpophiloides*) (female); G. *C. t. thalpophiloides* (male, Borneo, Type locality); H. *C. t. thalpophiloides* (female, Taiwan). Photo: Shipher Wu. Courtesy of specimens: NHM (A-G), TFRI (H). Scale bar = 1 cm.
- Fig. 8.** Adults of the *Calloplistria* species. A. *C. rivularis* Walker, [1858] 1857; B. *C. japonibia* Sugi & Inoue, 1958; C. *C. deflexusa* Chang, 1991; D. *C. aethiops* Butler, 1878; E. *C. delicata* Chang, 1991; F. *C. nigrescens* (Wileman, 1915); G. *C. placodoides* (Guenée, 1852); H. *C. clava* (Leech, 1900). A & F. Female; B-E & G-H. Male. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A-E & G-H), NMNH (F). Scale bar = 1 cm.
- Fig. 9.** Adults of the *Calloplistria* species. A. *C. phaeogona* Hampson, 1908; B. *C.*

maillardi maillardi (Guenée, 1862); C. *C. duplicans* Walker, 1862; D. *C. juvenina* (Stoll, 1782); E. *C. repleta* Walker, 1857; F. *C. nobilior* Eda, 2000; G. *C. gutturalis* Hampson, 1896; H. *C. pulchilinea* (Walker, 1862); A-H. Male; A-G. Taiwan; H. Vietnam. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A-C & E-G), TFRI (D), HNHM (H). Scale bar = 1 cm.

Fig. 10. Male genitalia of the *Calloplistria* species. A-B. *C. maillardi maillardi* (Guenée, 1862); C-D. *C. juvenina* (Stoll, 1782); E-F. *C. gutturalis* Hampson, 1896; A, C & E. Genitalia without aedeagus; B, D, & F. Aedeagus. Photo: Shipher Wu. Courtesy of specimens: TFRI (A-D), NTUIM (E-F). Scale bar = 1 mm.

Fig. 11. Male genitalia of the *Calloplistria* species. A-B. *C. duplicans* Walker, 1862; C-D. *C. deflexusa* Chang, 1991; E-F. *C. aethiops* Butler, 1878; G-H. *C. phaeogona* Hampson, 1908; I-J. *C. placodoides* (Guenée, 1852); K-L. *C. pulchilinea* (Walker, 1862); A, C, E, G, I & K. Genitalia without aedeagus; B, D, F, H, J & L. Aedeagus. Photo: Shipher Wu. Courtesy of specimens: TFRI (A-B, E-F & I-J), NTUIM (C-D, G-H & K-L). Scale bar = 1 mm.

Fig. 12. Male genitalia of the *Calloplistria* species. A-B. *C. repleta* Walker, 1857; C-D. *C. delicata* Chang, 1991; E-F. *C. nobilior* Eda, 2000; G-H. *C. nigrescens* (Wileman, 1915); I-J. *C. rivularis* Walker, [1858] 1857; K-L. *C. japonibia* Sugi & Inoue, 1958; A, C, E, G, I & K. Genitalia without aedeagus; B, D, F, H, J & L. Aedeagus; A-H & K-L. Taiwan; I-J. Thailand. Photo: Shipher Wu. Scale bar = 1 mm.

Fig. 13. Male genitalia of the *Calloplistria* species. A-B. *C. clava* (Leech, 1900)(Taiwan); C-D. *C. thalpophiloides* (Walker, 1862)(Borneo, Malaysia); A & C. Genitalia without aedeagus; B & D. Aedeagus. Photo: Shipher Wu. Scale bar = 1 mm.

Fig. 14. Female genitalia of the *Calloplistria* species. A. *C. gutturalis* Hampson, 1896; B. *C. phaeogona* Hampson, 1908; C. *C. juvenina* (Stoll, 1782); D. *C. maillardi maillardi* (Guenée, 1862); E. *C. pulchilinea* (Walker, 1862); F. *C. deflexusa* Chang, 1991; G. *C. duplicans* Walker, 1862. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A, B, E & F), TFRI (C, D & G). Scale bar = 1 mm.

Fig. 15. Female genitalia of the *Calloplistria* species. A. *C. delicata* Chang, 1991; B. *C. nigrescens* (Wileman, 1915); C. *C. aethiops* Butler, 1878; D. *C. placodoides* (Guenée, 1852); E. *C. repleta* Walker, 1857; F. *C. nobilior* Eda, 2000; G. *C. rivularis* Walker, [1858] 1857; H. *C. japonibia* Sugi & Inoue, 1958; A, B & D-H. Taiwan; C. India. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A, G), NMNH (B), NHM (C), TFRI (D-F & H). Scale bar = 1 mm.

Fig. 16. Female genitalia of the *Calloplistria* species. A. *C. clava* (Leech, 1900); B. *C. thalpophiloides* (Walker, 1862). Photo: Shipher Wu. Courtesy of specimens: TFRI. Scale bar = 1 mm.

Fig. 17. Adults of the *Calloplistria* species. A. *C. phaeogona* Hampson, 1908 (Fushan Botanical Garden = FBG, Ilan, Taiwan) ; B. *C. duplicans* Walker, 1862; C. *C. japonibia* Sugi & Inoue, 1958 (Sianjiyen, Taipei, Taiwan); D. *C. rivularis* Walker [1858] 1857 (Khao Chong, Thailand); E. *C. maillardi maillardi* (Guenée, 1862) (Sindian, Taipei, Taiwan); F. *C. pulchilinea* (Walker, 1862)(FBG, Ilan, Taiwan); G. *C. nigrescens* (Wileman, 1915)(Duo-na, Kaohsiung, Taiwan); H. *C. gutturalis*

Hampson, 1896 (Kenting, Pingtung, Taiwan). Photo: Shipher Wu.

- Fig. 18.** Adults of the *Calloplistria* species. A. *C. delicata* Chang, 1991 (Duo-na, Kaohsiung, Taiwan); B. *C. placodoides* (Guenée, 1852)(Siiianjiyen, Taipei, Taiwan); C & E. *C. repleta* Walker, 1857 (FBG, Ilan, Taiwan); D. *C. clava* (Leech, 1900) (FBG, Ilan, Taiwan); F. *C. phaeogona* Hampson, 1908 (FBG, Ilan, Taiwan). Photo: Shipher Wu.
- Fig. 19.** Larvae of the *Calloplistria* species. A-B. *C. pulchrilinea* (Walker, 1862) (FBG, Ilan, Taiwan); C-D. *C. phaeogona* Hampson, 1908 (FBG, Ilan, Taiwan); E. *C. duplicans* Walker, 1862 (Muzha, Taipei, Taiwan); F-H. *C. maillardi maillard* (Guenée, 1862)(Songshan, Taipei; Duo-na, Kaohsiung; Jiaoshi, Ilan, Taiwan); A, C & E-H. Mature instar; B & D. 4th instar. Photo: Shipher Wu.
- Fig. 20.** Larvae of the *Calloplistria* species. A. *C. japonibia* Sugi & Inoue, 1958 (FBG, Ilan, Taiwan); B-D. *C. placodoides* (Guenée, 1852)(FBG, Ilan, Taiwan); E. *C. repleta* Walker, 1857 (Duo-na, Kaohsiung, Taiwan); F. *C. nobilior* Eda, 2000 (Songshan, Taipei, Taiwan); G. *C. gutturalis* Hampson, 1896 (Kenting, Pingtung, Taiwan); H. *C. rivularis* Walker, [1858] 1857 (Khao Chong, Thailand). Photo: Shipher Wu.

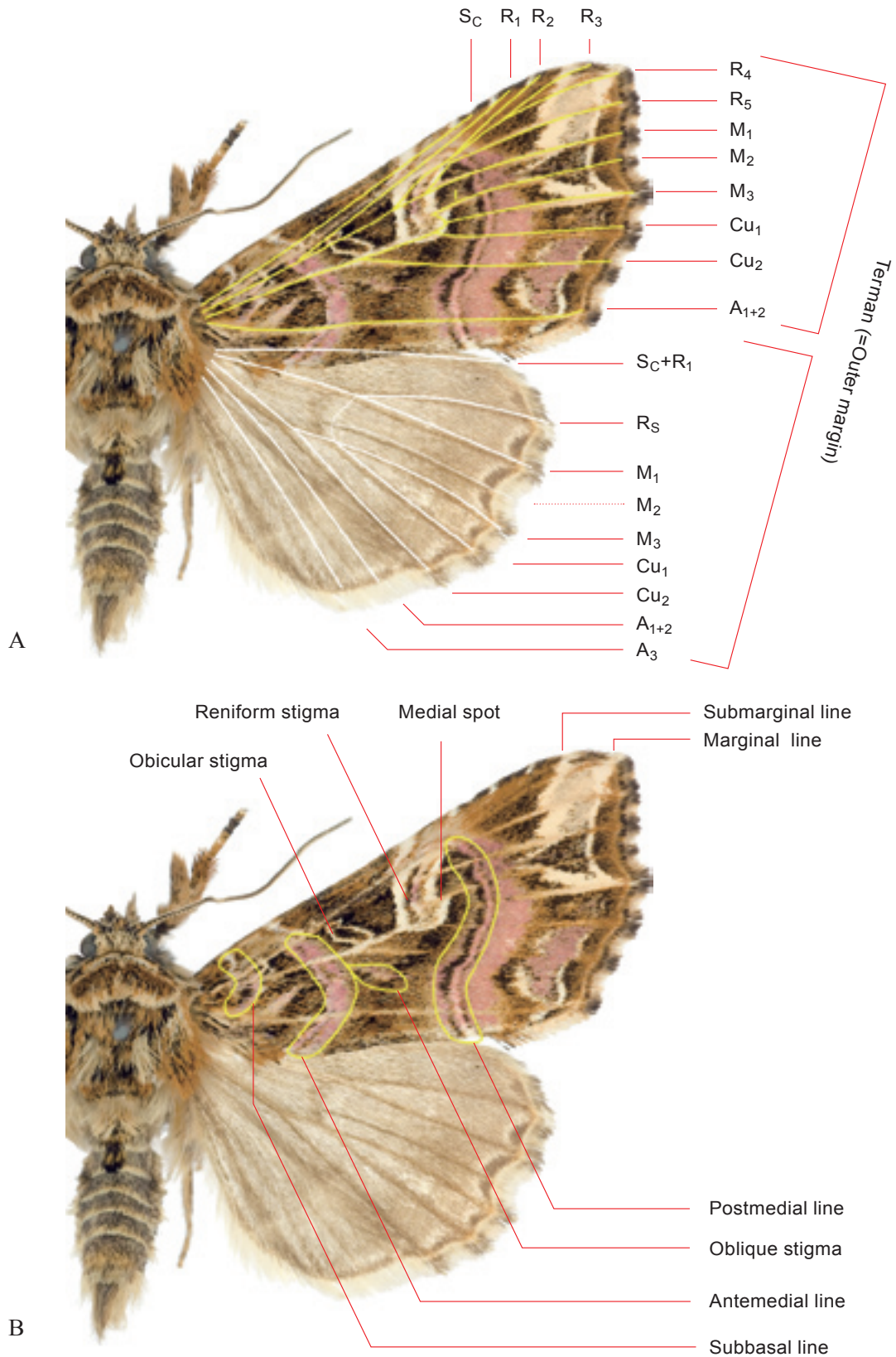


Fig. 1. Schematic diagram showing the wing venation (A) and wing pattern elements (B) of the Eriopinae (based on *Callopietria juvenina* (Stoll, 1782) adopted in the present volume.

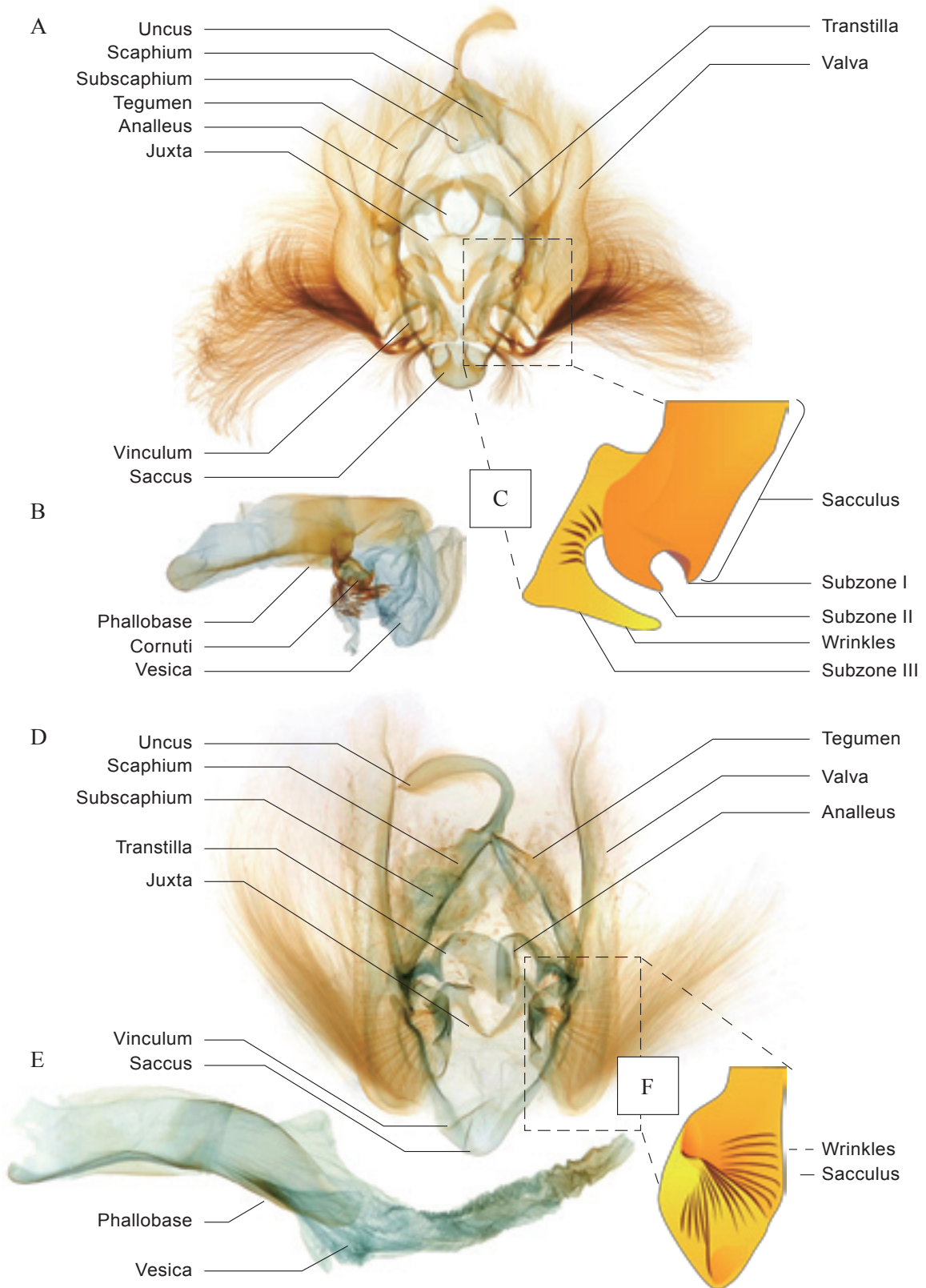


Fig. 2. Schematic diagram showing the structures and terminology of male genitalia adopted in the present volume. A-C. *Callopietria juvenina* (Stoll, 1782); D-F. *C. clava* (Leech, 1900); A & D. Male genitalia without aedeagus; B & D. Aedeagus; C & F. Detailed structure of sacculus. Photo: Shipher Wu.

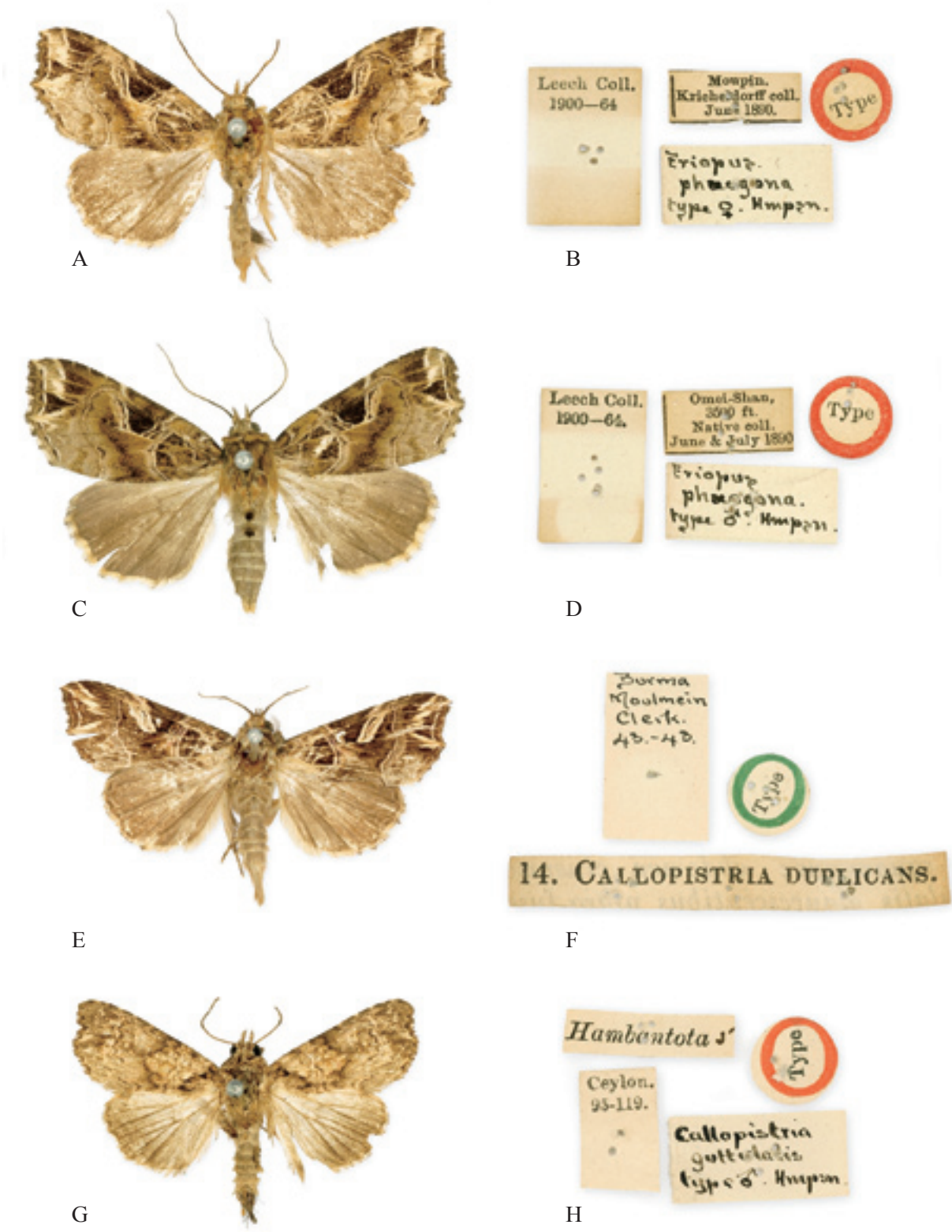


Fig. 3. Type specimens of the Eriopinae species. A-D. Syntypes of *Eriopus phaeogona* Hampson, 1908 (= *Callopietria phaeogona*) (A-B: male; C-D: female); E-F. Holotype of *C. duplicans* Walker, 1862 (male); G-H. Holotype of *C. gutturalis* Hampson, 1896 (male). Photo: Shipher Wu. Courtesy of specimens: NHM. Scale bar = 1 cm.

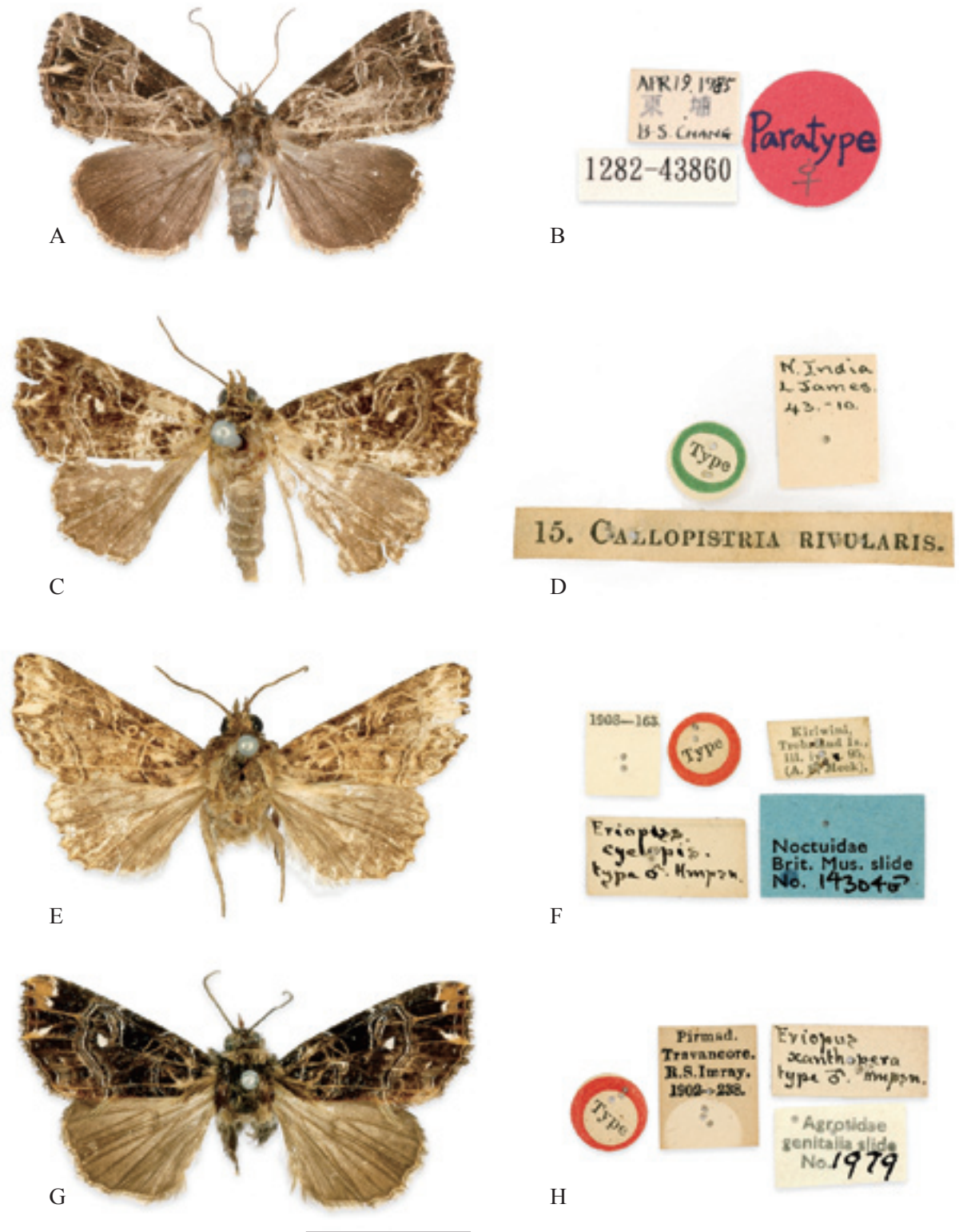


Fig. 4. Type specimens of the Eriopinae species. A-B. Paratype of *Callopietria deflexusa* Chang, 1991 (female); C-D. Holotype of *C. rivularis* Walker, [1858] 1857 (female); E-F. Holotype of *Eriopis cyclopiis* Hampson, 1908 (= *C. rivularis*) (male); G-H. Holotype of *E. xanthopera* Hampson, 1908 (= *C. rivularis*) (male). Photo: Shipher Wu. Courtesy of specimens: NMNS (A-B), NHM (C-H). Scale bar = 1 cm.



A



B



C



D



E



F



G



H

Fig. 5. Type specimens of the Eriopinae species. A-B. Holotype of *Callopietria repleta* Walker, 1857 (female); C-D. Holotype of *C. nobilior* Eda, 2000 (male); E-F. Paratype of *C. delicata* Chang, 1991 (male); G-H. Holotype of *Bryophila nigriscens* Wileman, 1915 (= *C. nigriscens*) (female). Photo: Shipher Wu. Courtesy of specimens: NHM (A-B & E-H), NSMT (C-D). Scale bar = 1 cm.



A



B



C



D



E



F



G



H

Fig. 6. Type specimens the Eriopinae species. A-B. Holotype of *Callopietria meridionalis* Collenette, 1928 (= *C. maillardi meridionalis*) (male); C-D. Holotype of *C. aethiops* Butler, 1878 (male); E-F. Holotype of *Eriopus placodoides* Guenée, 1852 (= *C. placodoides*) (male); G-H. Holotype of *Apamea clava* Leech, 1900 (= *C. clava*) (female). Photo: Shipher Wu. Courtesy of specimens: NHM. Scale bar = 1 cm.

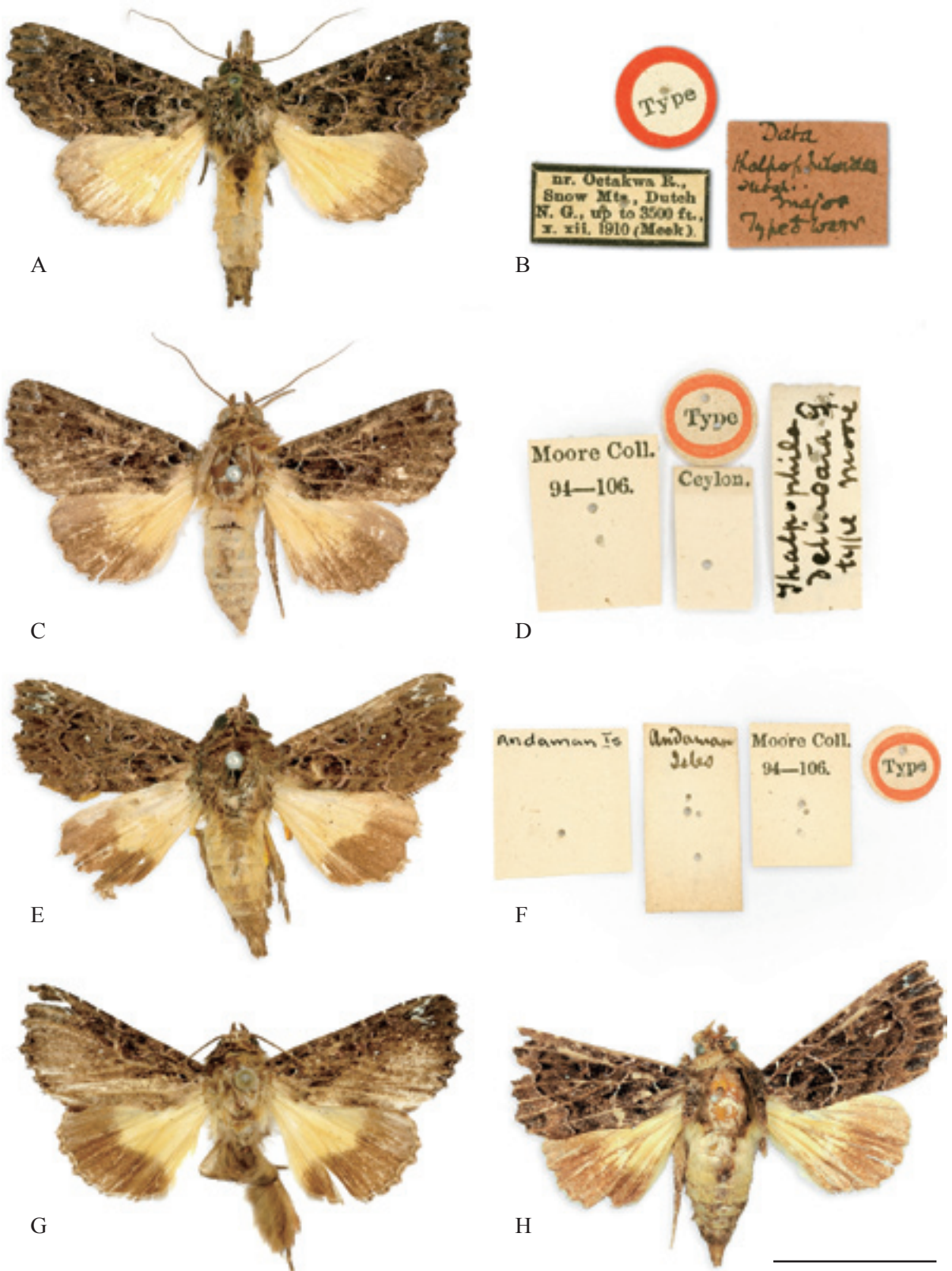


Fig. 7. Specimens of *Callopietria thalpopphiloides* (Walker, 1862). A-B. Holotype of *Data thalpopphiloides major* Warren, 1913 (= *C. t. major*) (male); C-D. Holotype of *Thaipopphila delineata* Moore, 1844 (= *C. t. thalpopphiloides*) (female); E-F. Holotype of *T. cuprea* Moore, 1877 (= *C. t. thalpopphiloides*) (female); G. *C. t. thalpopphiloides* (male, Borneo, Type locality); H. *C. t. thalpopphiloides* (female, Taiwan). Photo: Shipher Wu. Courtesy of specimens: NHM (A-G), TFRI (H). Scale bar = 1 cm.

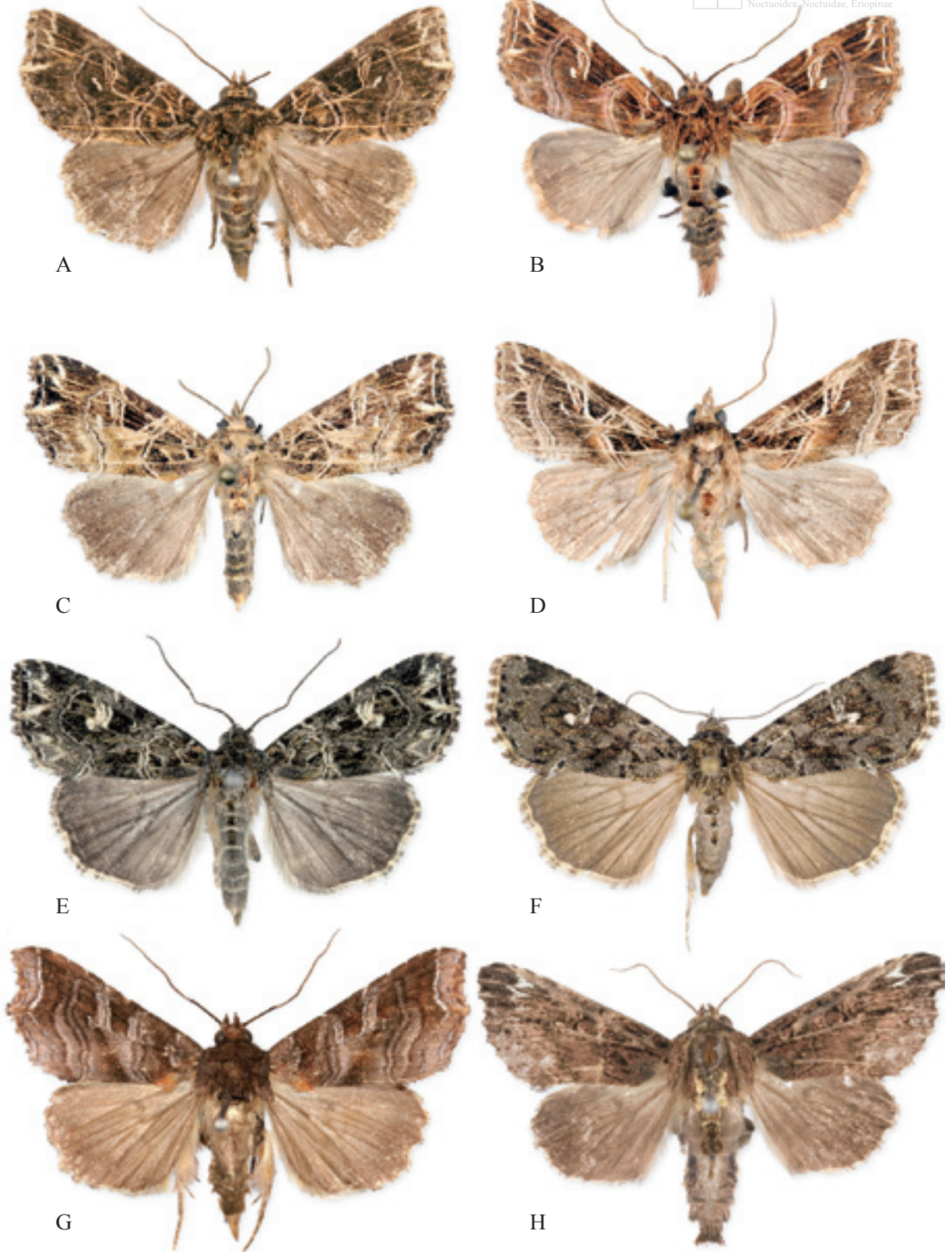


Fig. 8. Adults of the *Callopietria* species. A. *C. rivuaris* Walker, [1858] 1857; B. *C. japonibia* Sugi & Inoue, 1958; C. *C. deflexusa* Chang, 1991; D. *C. aethiops* Butler, 1878; E. *C. delicata* Chang, 1991; F. *C. nigrescens* (Wileman, 1915); G. *C. placodoides* (Guenée, 1852); H. *C. clava* (Leech, 1900). A & F. Female; B-E & G-H. Male. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A-E & G-H), NMNH (F). Scale bar = 1 cm.



Fig. 9. Adults of the *Callopostria* species. A. *C. phaeogona* Hampson, 1908; B. *C. maillardi maillardi* (Guenée, 1862); C. *C. duplicans* Walker, 1862; D. *C. juvenina* (Stoll, 1782); E. *C. repleta* Walker, 1857; F. *C. nobilior* Eda, 2000; G. *C. gutturalis* Hampson, 1896; H. *C. pulchilinea* (Walker, 1862); A-H. Male; A-G. Taiwan; H. Vietnam. Photo: Shipher Wu. Courtesy of specimens: NTUIM (A-C & E-G), TFRI (D), HHNM (H). Scale bar = 1 cm.

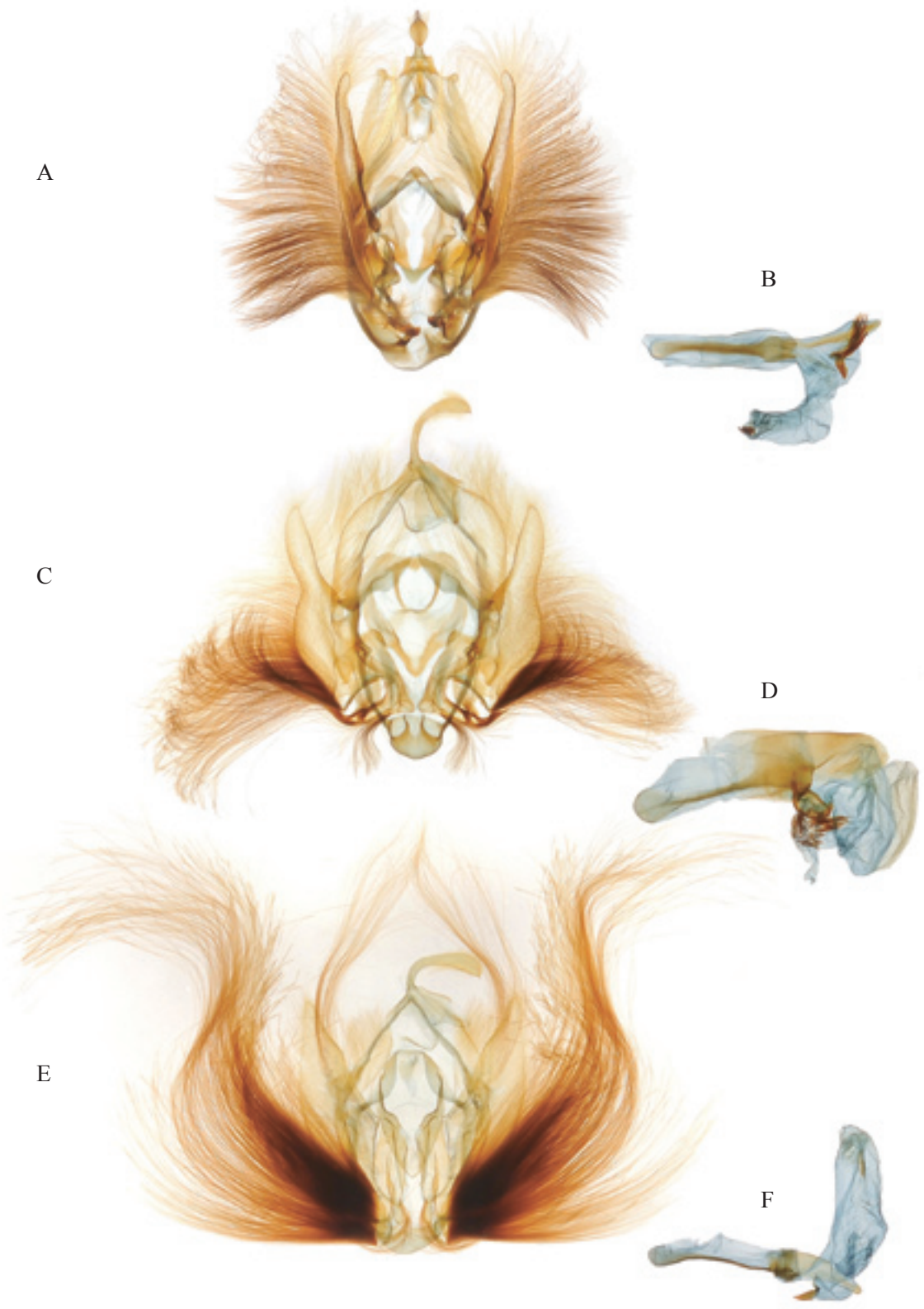


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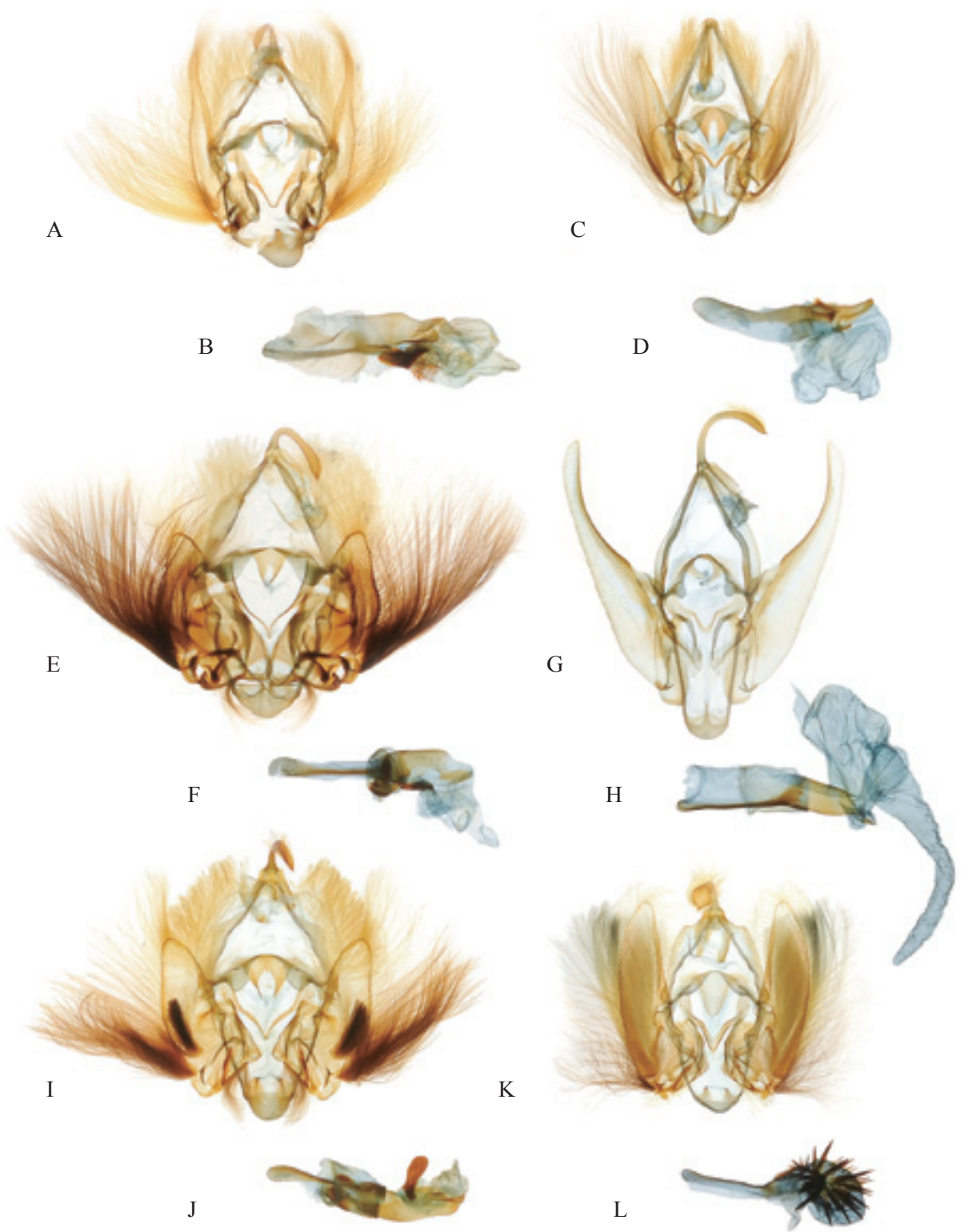


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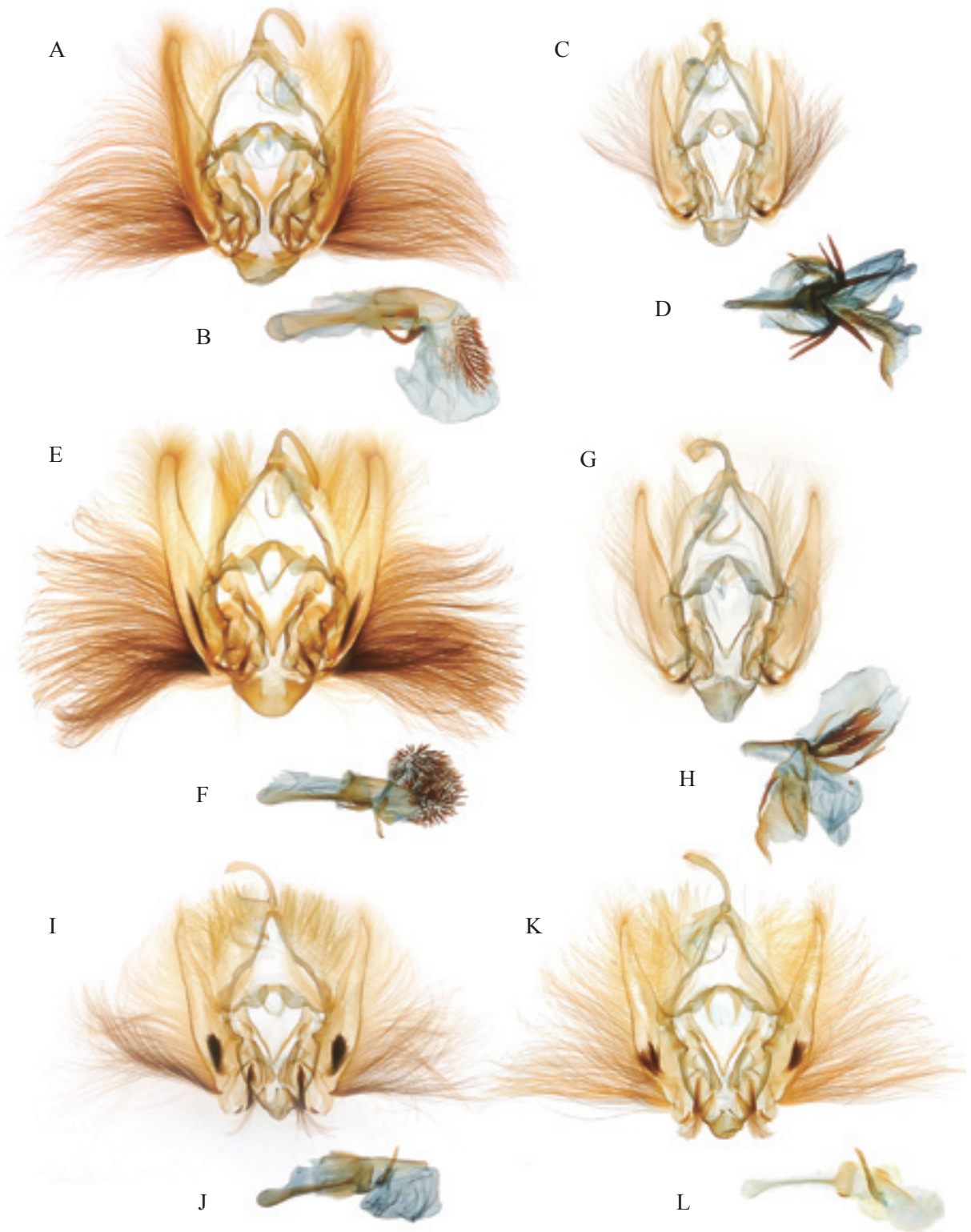


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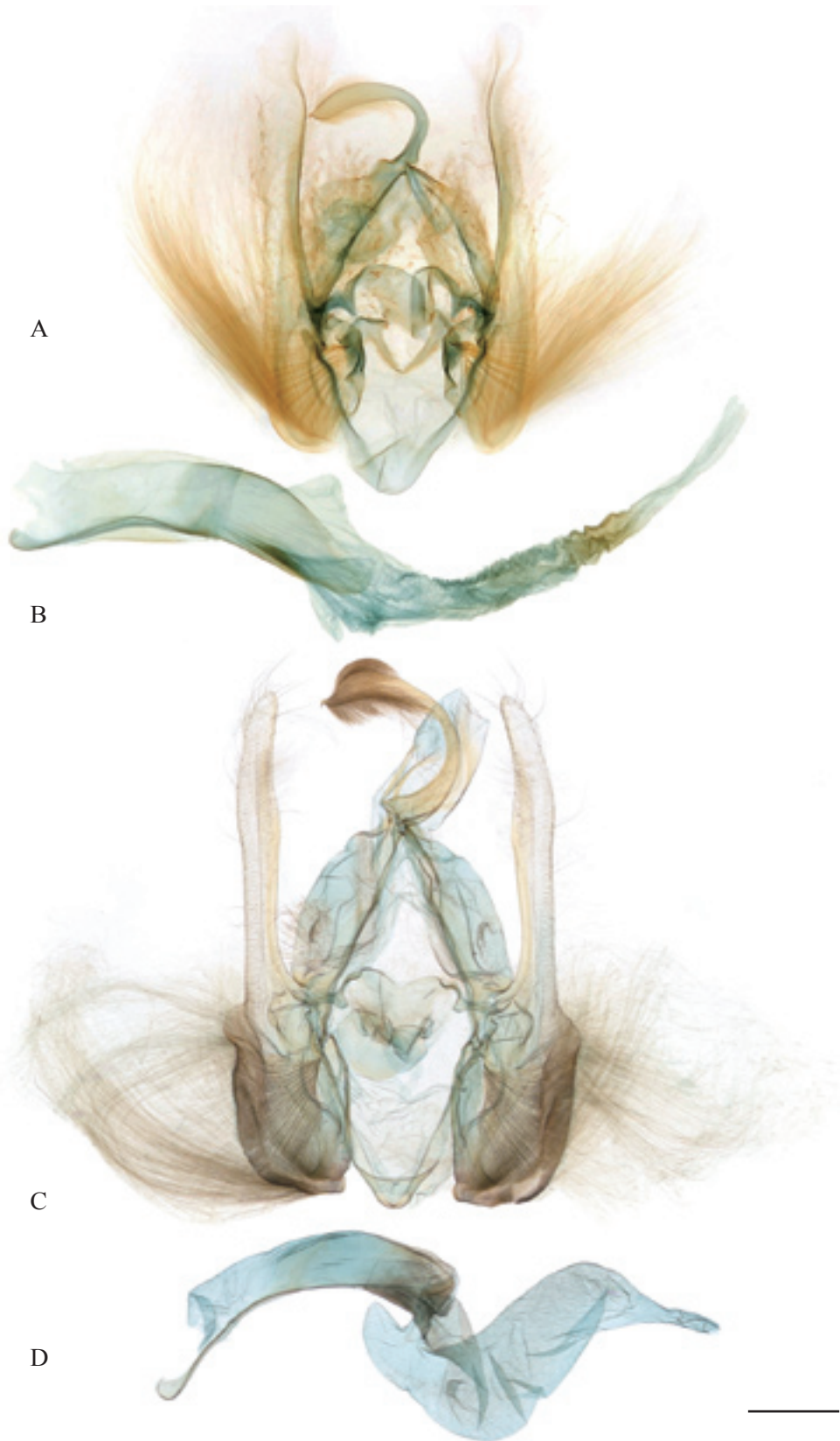


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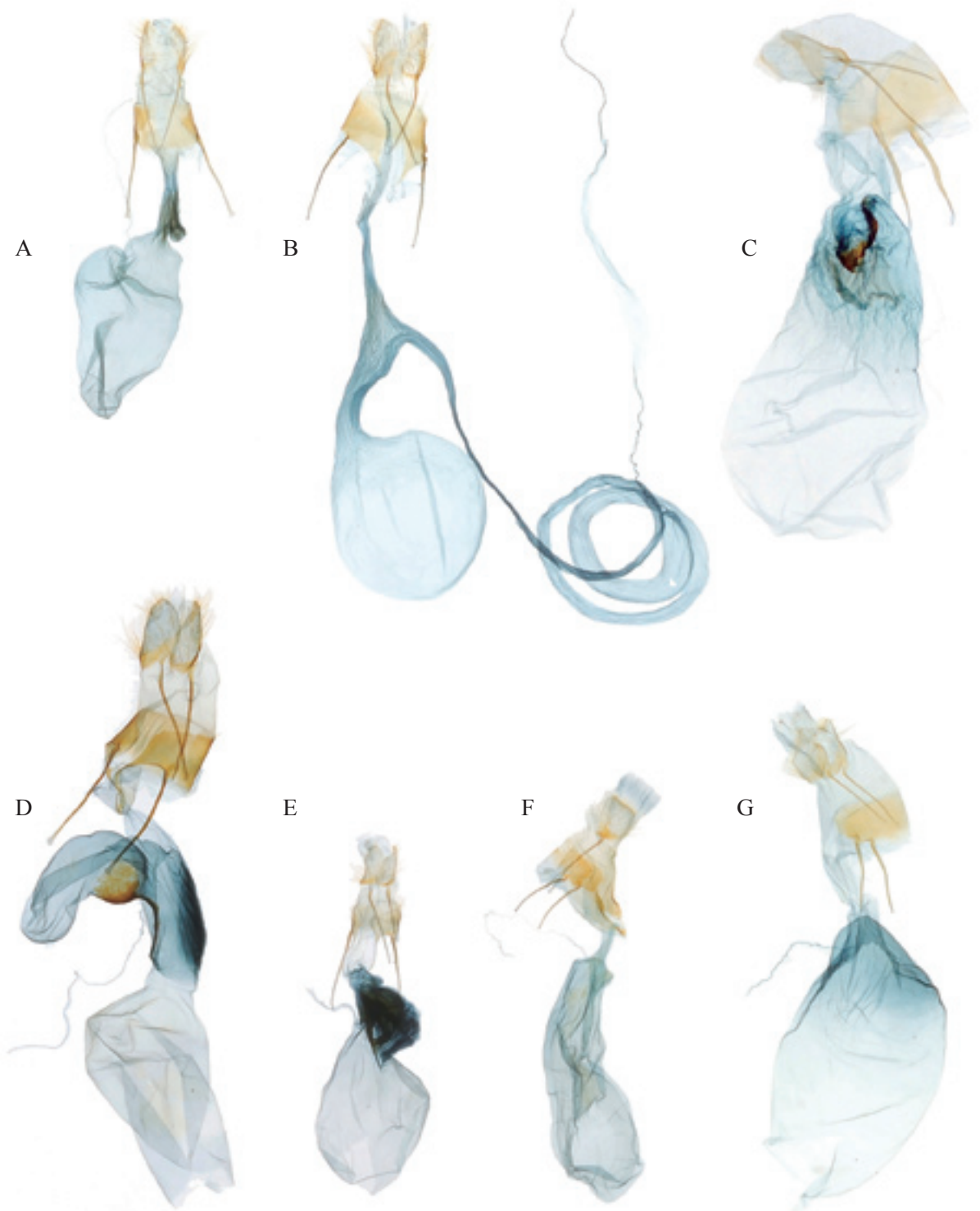


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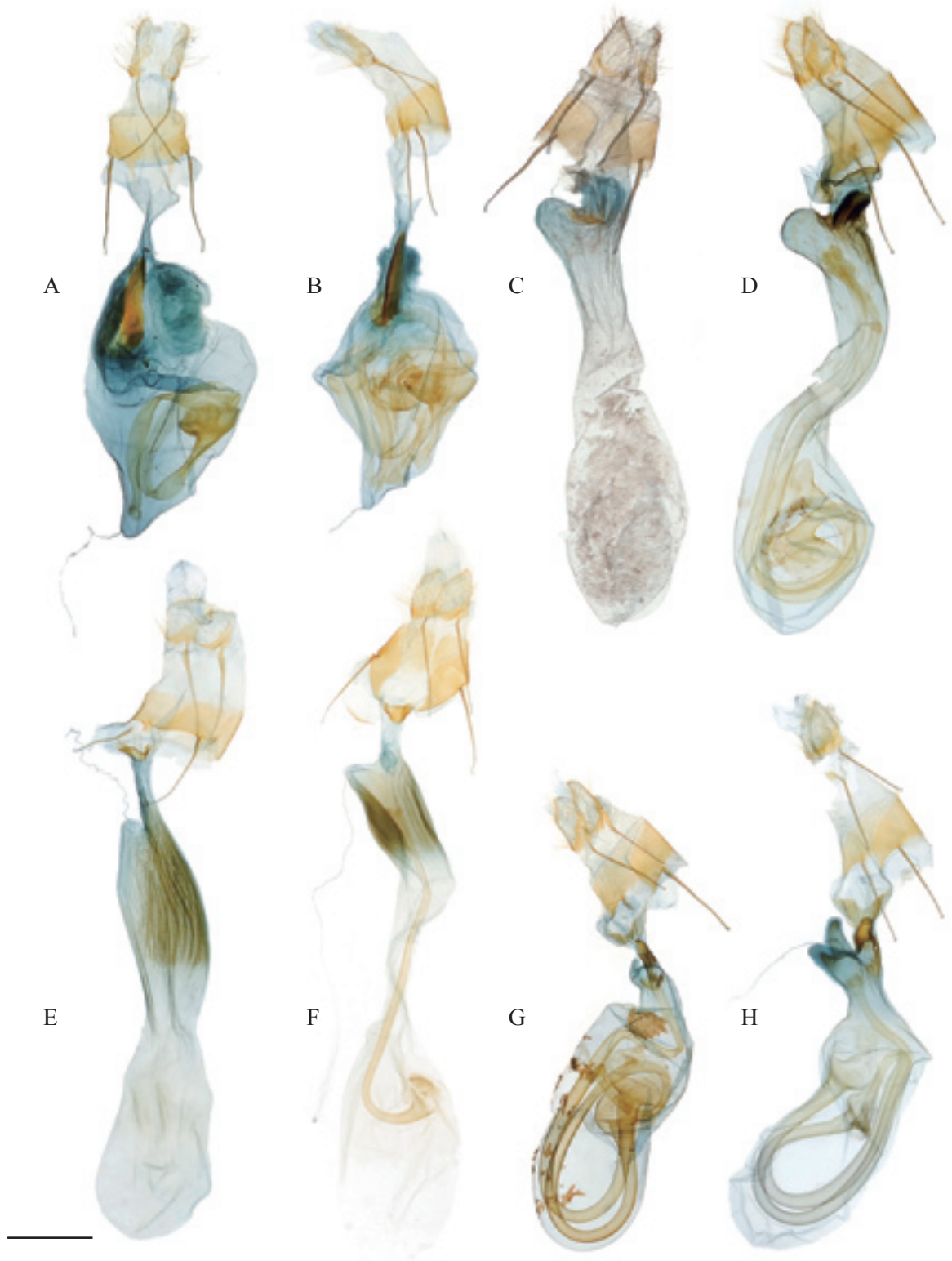


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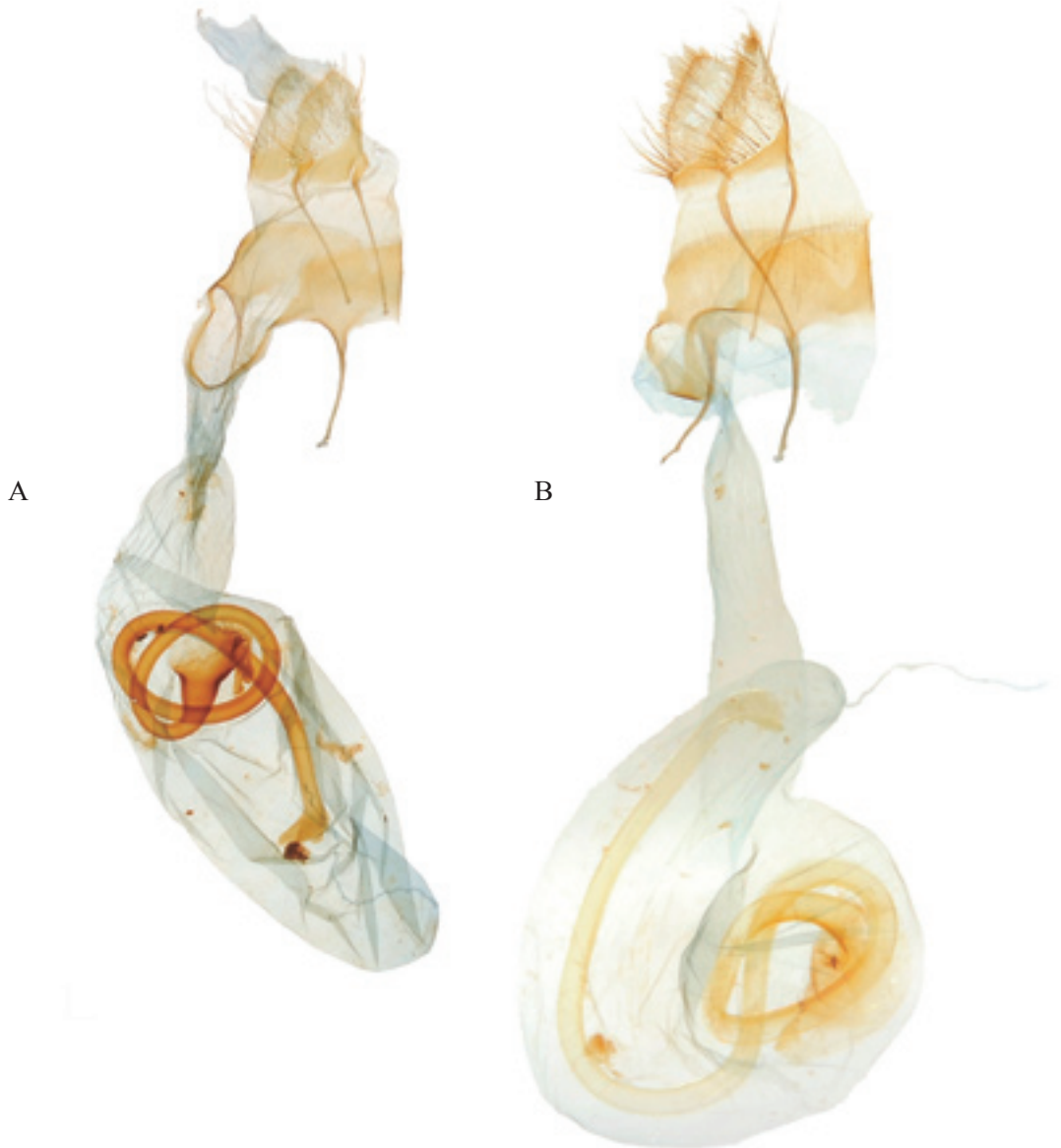


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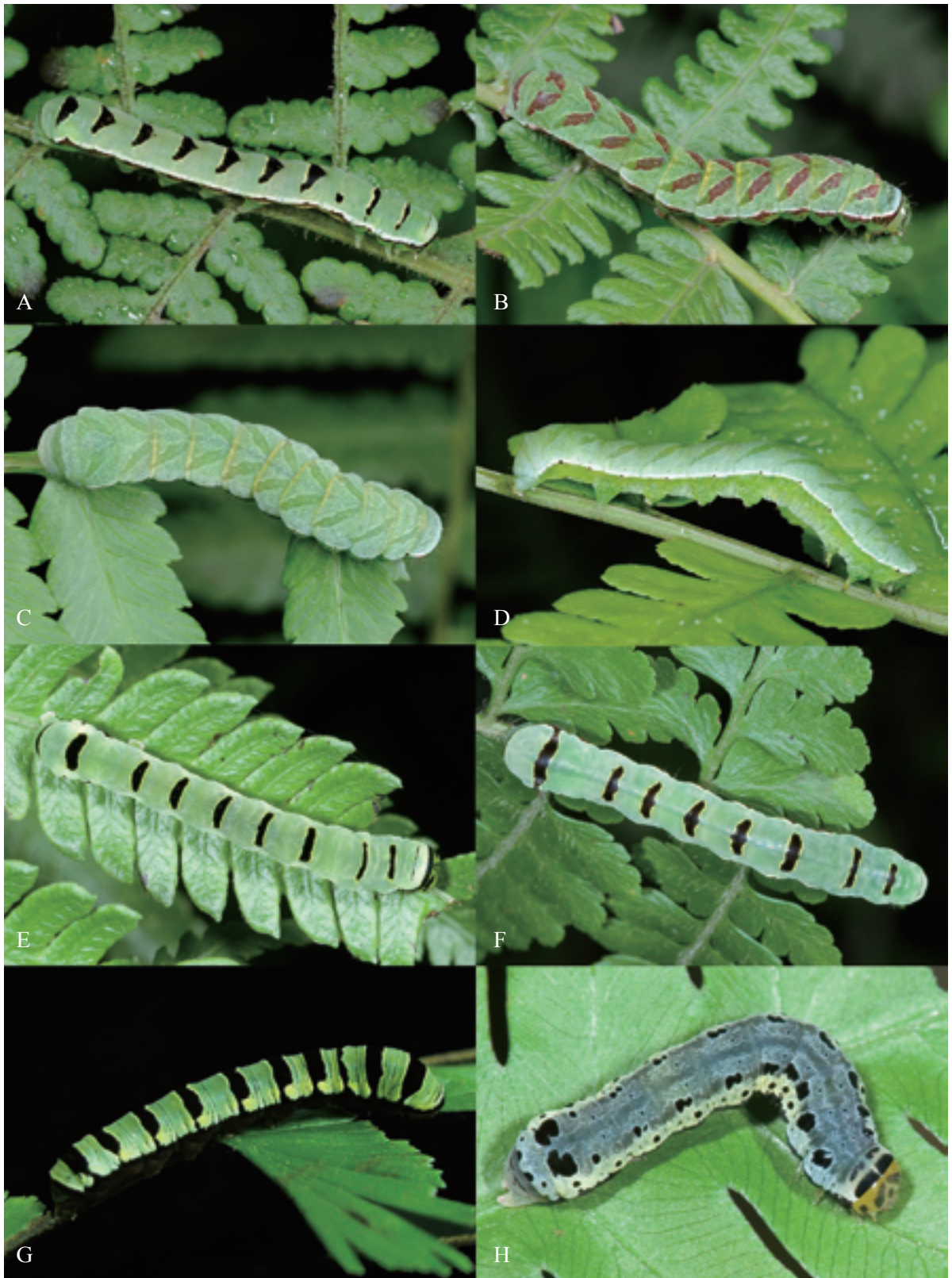


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