

9-26-2008

Hesperiidae of Rondônia, Brazil: *Porphyrogenes* Watson (Lepidoptera: Pyrginae: Eudamini), with descriptions of new species from Central and South America

George T. Austin

University of Florida, Gainesville, Florida

Olaf H. H. Mielke

Departamento de Zoologia, Universidade Federal do Paraná, Caixa Postal 19020, 81531-980, Curitiba, Paraná, Brazil Fellow CNPq

Austin, George T. and Mielke, Olaf H. H., "Hesperiidae of Rondônia, Brazil: *Porphyrogenes* Watson (Lepidoptera: Pyrginae: Eudamini), with descriptions of new species from Central and South America" (2008). *Insecta Mundi*. Paper 572.
<http://digitalcommons.unl.edu/insectamundi/572>

This Article is brought to you for free and open access by the Center for Systematic Entomology, Gainesville, Florida at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in *Insecta Mundi* by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

INSECTA MUNDI

A Journal of World Insect Systematics

0044

Hesperiidae of Rondônia, Brazil: *Porphyrogenes* Watson
(Lepidoptera: Pyrginae: Eudamini), with descriptions of new species
from Central and South America

George T. Austin

McGuire Center for Lepidoptera and Biodiversity
Florida Museum of Natural History, University of Florida
P.O. Box 112710, Gainesville, Florida 32611, USA

Olaf H. H. Mielke

Departamento de Zoologia, Universidade Federal do Paraná,
Caixa Postal 19020, 81531-980, Curitiba, Paraná, Brazil
Fellow CNPq.

Date of Issue: September 26, 2008

G. T. Austin and O. H. H. Mielke
Hesperiidae of Rondônia, Brazil: *Porphyrogenes* Watson (Lepidoptera: Pyrginae:
Eudamini), with descriptions of new species from Central and South America
Insecta Mundi 0044: 1-56

Published in 2008 by

Center for Systematic Entomology, Inc.
P. O. Box 141874
Gainesville, FL 32614-1874 U. S. A.
<http://www.centerforsystematicentomology.org/>

Insecta Mundi is a journal primarily devoted to insect systematics, but articles can be published on any non-marine arthropod taxon. Manuscripts considered for publication include, but are not limited to, systematic or taxonomic studies, revisions, nomenclatural changes, faunal studies, book reviews, phylogenetic analyses, biological or behavioral studies, etc. **Insecta Mundi** is widely distributed, and referenced or abstracted by several sources including the Zoological Record, CAB Abstracts, etc.

As of 2007, **Insecta Mundi** is published irregularly throughout the year, not as quarterly issues. As manuscripts are completed they are published and given an individual number. Manuscripts must be peer reviewed prior to submission, after which they are again reviewed by the editorial board to insure quality. One author of each submitted manuscript must be a current member of the Center for Systematic Entomology.

Managing editor: Paul E. Skelley, e-mail: insectamundi@gmail.com
Production editor: Michael C. Thomas, e-mail: insectamundi@gmail.com
Editorial board: J. H. Frank, M. J. Paulsen

Printed copies deposited in libraries of:

CSIRO, Canberra, ACT, Australia
Museu de Zoologia, São Paulo, Brazil
Agriculture and Agrifood Canada, Ottawa, Ontario, Canada
The Natural History Museum, London, England
Muzeum I Instytut Zoologii Pan, Warsaw, Poland
National Taiwan University, Taipei, Taiwan
California Academy of Sciences, San Francisco, CA, USA
Florida Department of Agriculture and Consumer Services, Gainesville, FL, USA
Field Museum of Natural History, Chicago, IL, USA
National Museum of Natural History, Smithsonian Institution, Washington, DC, USA

Electronic copies in PDF format:

Printed CD mailed to all members at end of year.
Florida Center for Library Automation: purl.fcla.edu/fcla/insectamundi
University of Nebraska-Lincoln, Digital Commons: <http://digitalcommons.unl.edu/insectamundi/>

Author instructions available on the *Insecta Mundi* page at:
<http://www.centerforsystematicentomology.org/insectamundi/>

Printed Copy	ISSN 0749-6737
On-Line	ISSN 1942-1354
CD-ROM	ISSN 1942-1362

Hesperiidae of Rondônia, Brazil: *Porphyrogenes* Watson (Lepidoptera: Pyrginae: Eudamini), with descriptions of new species from Central and South America

George T. Austin

McGuire Center for Lepidoptera and Biodiversity
Florida Museum of Natural History, University of Florida
P.O. Box 112710, Gainesville, Florida 32611, USA

Olaf H. H. Mielke

Departamento de Zoologia, Universidade Federal do Paraná,
Caixa Postal 19020, 81531-980, Curitiba, Paraná, Brazil
Fellow CNPq.

Abstract. The pyrgine genus *Porphyrogenes* Watson, 1893 (Hesperiidae) is discussed, especially as it occurs in central Rondônia, Brazil. Of eleven species of *Porphyrogenes* found in Rondônia, four (*P. specularis*, *P. convexus*, *P. sparus*, and *P. spadix*) are described as new species. Biological details of the genus are discussed. An additional five new species of *Porphyrogenes* (*P. spina*, *P. sporta*, *P. splendidus*, *P. simulator*, and *P. speciosus*) are described from elsewhere. *Porphyrogenes cervinus* (Plötz, 1883), new synonym of *Porphyrogenes ferruginea* (Plötz, 1883), reinstated status, is raised from a subspecies of *Porphyrogenes despecta* (Butler, 1870) to species-level. *Porphyrogenes omphale* (Butler, 1871), reinstated status, is not synonymous with *Porphyrogenes passalus* (Herrich-Schäffer, 1869) and becomes a species-level taxon for which no subspecies are recognized; *P. passalus* was described from a female with no known male. *Porphyrogenes sula* Williams and Bell, 1940, reinstated status, is raised from synonymy with *Porphyrogenes zohra* (Möschler, 1879) to species-level. *Porphyrogenes stresa* Evans, 1952, new status, is raised from a subspecies of *P. zohra* to species-level. *Porphyrogenes immaculata* (Skinner, 1920), new synonymy, was described from a male, which we believe is the male of *Porphyrogenes sororcula* (Mabille and Boulet, 1912). *Porphyrogenes suva* Evans, 1952, new synonymy, formerly considered a full species, was described from a male which we believe is the male of, and thus synonymous with, *Porphyrogenes probus* (Möschler, 1877). *Porphyrogenes virgatus* (Mabille, 1888) and *Porphyrogenes eudemus* (Mabille, 1888), considered synonyms of *P. zohra* and *Porphyrogenes vulpecula* (Plötz, 1882), respectively, without justification by Evans (1952), are removed from those synonymies and retained, along with *P. passalus*, as females without confirmed affinities. Lectotypes are here designated for *Phareas ferruginea* Plötz, 1883; *Augiades despecta* Butler, 1870; *Telegonus omphale* Butler, 1871; *Eudamus pausias* Hewitson, 1867; *Telegonus probus* Möschler, 1877; *Telemiades vulpecula* Plötz, 1882; *Eudamus passalus* Herrich-Schäffer, 1869; *Thymele virgatus* Mabille, 1888; and *Thymele eudemus* Mabille, 1888. A neotype is designated for *Phareas cervinus* Plötz, 1883, that being the lectotype of *Phareas ferruginea*. Types of all taxa in the genus are illustrated. Three named and five unnamed phenotypes of females, not reconciled with males, are identified and described. Twenty-six species are now recognized, making this one of the largest hesperiid genera in the neotropics.

Key Words. Bolivia, Brazil, Central America, Colombia, Costa Rica, Honduras, neotropical, Panama, phenology, skipper, South America, synonymy, taxonomy.

Introduction

This is another of several studies of Hesperiidae occurring in the vicinity of Cacaupônia in central Rondônia, Brazil, and continues the series dealing with Evans' (1952) "D" group (Austin and Steinhauser 1996, Austin and Mielke 2000, Austin 2008) with the genus *Porphyrogenes* Watson, 1893. The butterfly fauna of this area, the richest known with over 1800 species, has been studied since 1989 (Emmel and Austin 1990; Austin et al., in press). Methods and terminology are as used in previous papers in this series (e.g., Austin and Mielke 1997).

Porphyrogenes* Watson, 1893*Type species:** *Telegonus omphale* Butler, 1871

Porphyrogenes is a large genus of neotropical skippers (Hesperiidae: Pyrginae: Eudamini) in which Evans (1952) and subsequent authors (e.g., Mielke 2004, 2005) recognized fourteen species and an additional four subspecies occurring from Honduras and northeastern South America to Bolivia, Paraguay, and Argentina (Evans 1952, de Jong 1983, Murray 1996, Nuñez Bustos 2006, Anderson 2007). There are no records of *Porphyrogenes* for El Salvador (Steinhauser 1975), Guatemala (Austin et al. 1998), Mexico (Warren 2000), Uruguay (Biezanko and Ruffinelli 1967, Biezanko et al. 1974), or Chile (Peña and Ugarte 1996); we have also found no records for Belize. Most species are rarely encountered by traditional collecting techniques (but see Janzen and Hallwachs 2008); Evans (1952) studied only 88 specimens of the genus, of which only four species were represented by 10 or more specimens (6 by more than 5 specimens). Few species were recorded during surveys of biodiversity in Peru (one at Tambopata and two at Pakitza; Lamas 1994, Robbins et al. 1996) and Ecuador (one species; Murray 1996), and de Jong (1983) found only three specimens from Suriname. This apparent rarity is partly due to their late afternoon and crepuscular activity period (other taxa with such behavior were treated by Austin and Mielke 2000, Austin 2008). In Rondônia, males of *Porphyrogenes* were rarely encountered except in association with swarms of army ants or at paper lures (Austin et al. 1993). In addition, a few individuals have been observed at lights during the night. Despite the large size of the genus, little is known of its life history (Monte 1934, Moss 1949, Silva et al. 1968, Cock and Alston-Smith 1990, Janzen and Hallwachs 2008) or other aspects of its biology (Hoffmann 1931, Austin et al. 1993, DeVries et al. 2008).

Species of *Porphyrogenes* are distinguished by their size, wing shape, secondary sexual characters, genitalia, and color and markings. Evans (1952) characterized *Porphyrogenes* by short antennae, a long apiculus, lack of apical macules on the forewing, marked sexual dimorphism, and various species-specific secondary sexual characteristics of males. These latter are not universal, but include a costal fold on the forewing, a variously modified vein 2A on the forewing, especially prominent on the venter (often bare and swollen and/or sinuate), hair-like tufts on the dorsal hindwing (usually in the discal cell, cell Sc+R₁-Rs, and anteriorly and posteriorly from vein 2A; cell 2A-3A folds to enclose the latter), other tufts, and specular areas on the dorsal hindwing and the ventral forewing. Venation of the hindwing has additional species-specific characteristics, including the relative positions of the origins of veins Rs and CuA₂. This is here considered in relation to the end of the discal cell as it is defined by the origins of veins M₁ and M₃; note that this at times differs from the terminology in Evans (1952) where there apparently was no defined point of reference for the relative origins of veins Rs and CuA₂. Males of most species are brown and extensively overscaled with tawny to red-brown. Overscaling is heaviest basad, especially on the forewing. This overscaling is lost to varying degrees, particularly distad, on flight-worn individuals revealing the dark brown underlying ground color and results in these individuals appearing much darker towards the termen. The forewing is unmarked except on one species that has a yellow band on the forewing and another that has small pale macules. Evans (1952) reported *Porphyrogenes* as having 23-25 segments on the nudum. Specimens examined for this study had a range of 24-33 segments (mean = 27.7) and varied within single species by as many as five segments.

Females may be strikingly different from males, often being larger, browner or grayer, and with large transparent or translucent macules or a transverse band on the forewing. At present, it is impossible to confidently associate many females with their conspecific males. Evans (1952), nonetheless, identified females for all species except three. Some of Evans' associations are called into question below. Although some combinations are made here based upon wing shape, color and pattern, and/or venation, in some instances, correct matching of males and females will be determined with certainty only through rearing studies, from *in copula* pairs, or DNA analysis. No new species are herein named from females because most or all unmatched females will eventually be associated with an already named male.

Male genitalia of *Porphyrogenes* have a short and stout tegumen often with a pair of lateral caudally oriented processes, usually a single or double hair-like tuft at the juncture of the tegumen and uncus, a divided uncus usually with its arms widely spaced, a divided gnathos, and a moderately long saccus. The thin vertical connection between the horizontal portions of the tegumen and saccus, often incorrectly called the vinculum, represents the combined ventral arms from the tegumen and the dorsal arms from

the saccus (*sensu* Pierce 1909); this is generally stout and slightly curved on *Porphyrogenes*. The valva is elongate with the ampulla/costa region somewhat oval or triangular, the sacculus narrow, and the harpe is often elongate, narrow, and upturned caudad, the caudal end often spiculate or finely toothed or expanded. The aedeagus is stout and blunt, ranges from shorter to longer than the valva, and the vesica has spike-like cornuti, these often numerous. Female genitalia, available for only a few species during this study, have a broad sterigma with the lamella postvaginalis having a thin sclerotized band incised shallowly in a narrow U-shape centrally and a lamella antevaginalis of two weakly sclerotized lateral plates and, often, a rectangular central plate, and may be asymmetrical. The membranous ductus bursae is variable from very short and broad to longer and thinner and often has a sclerotized plate on one side near its caudal end. It may join the corpus bursae at its caudal end or more cephalad. The corpus bursae is short and globular or narrower and more elongate.

The following accounts address taxa of *Porphyrogenes* encountered at the study site in Rondônia, with comments on other material examined during the course of this investigation. The first section summarizes described taxa, the second describes taxa needing formal descriptions, and the third includes descriptions of unplaced females. Because nearly all species are poorly known and inadequately characterized, descriptions are given for all those examined closely during this study. Mielke (this study) examined and photographed type material of all taxa except that of *Phareas cervinus* Plötz, 1883, which is apparently lost (see below). Since species of *Porphyrogenes* are often superficially similar and a number of unnamed species exist, it is necessary to unequivocally define named taxa. Accordingly, historical types are identified and illustrated (Fig. 1-10, 13-24, 27-36, 39-48) and, where pertinent, lectotypes and a neotype are designated. Taxa described by Evans (1952) have an identifying label affixed to their types; these are the [holo]types of those taxa. Also illustrated are the primary types of the newly described species, supplementary specimens examined as part of this study including unplaced specimens, and venation and genitalia of many phenotypes. Synonymies are given only for those taxa with a change in status or synonymy; others are given by Mielke (2005). Time given is local time. Numbers (#) refer to dissection numbers (GTA – G. T. Austin, SRS – S. R. Steinhauser). Abbreviations for museums are as follows: ANSP (Academy of Natural Sciences, Philadelphia, PA), BM(NH) (Natural History Museum, London), CMNH (Carnegie Museum of Natural History, Pittsburgh, PA), MGCL (McGuire Center for Lepidoptera and Biodiversity, Gainesville, FL), MNHN (Muséum National d'Histoire Naturelle, Paris), MNHU (Museum für Naturkunde der Humboldt Universität, Berlin), and USNM (National Museum of Natural History, Washington, DC).

DESCRIBED TAXA

Porphyrogenes boliva Evans, 1952

(Fig. 1, 2, 51, 52, 115, 134)

Porphyrogenes boliva Evans, 1952. Type locality: Venezuela; male [holo]type (Fig. 1, 2) in BM(NH).

Description. Male (Fig. 1, 2, 51, 52) - mean forewing length = 23.7 mm (23.1-24.5 mm, n = 5; from Rondônia, Brazil); forewing with costal fold, apex slightly produced, slightly rounded, termen relatively straight, anal margin straight; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising mid-base and end of discal cell and basad of CuA₂ (Fig. 115); dorsum brown, unmarked; forewing overscaled with tawny-ochreous, heaviest basad, anal margin with very sparse tuft proximad; hindwing overscaled with tawny-ochreous posterior to vein Rs, vague indication of brown discal macules on some individuals; shining gray-brown speculum in anterior base of discal cell, proximal 1/4 of Sc+R₁-Rs, and proximal 1/2 of costal cell; short and sparse ochreous-tan recumbent tuft near base of Sc+R₁-Rs covering speculum in Sc+R₁-Rs, similar semierect ochreous-tan tuft arising from near base of discal cell covering speculum in discal cell (Fig. 115); conspicuous erect ochreous tuft along anterior edge of vein 2A, recumbent pale yellow-tan tuft from posterior edge of 2A; fringes on both wings dark brown.

Venter similar to dorsum; tawny color duller; forewing vein 2A unmodified, nearly straight (Fig. 115); recumbent tuft anterior to central 1/3 of this vein, tan basad, brown distad; shining gray-tan speculum in proximal 1/4 of CuA₂-2A and in proximal 1/3 of anal cell (continued to tornus as modified tan

grading to brown scales); hindwing with vague indication of dark discal macules; relatively conspicuous brown area at tornus; cell 2A-3A with shallow groove just caudad of 2A.

Dorsal head and thorax tawny-ochreous, palpi ochreous-tan, eyes red, antennae black, yellow on distal 2/3 of venter and beneath apiculus, nudum red-brown, 27 (n = 2), 28 (n = 1), or 29 (n = 2) segments, ventral thorax tawny-ochreous, pectus ochreous-tan, legs orange, dorsal abdomen dark brown, pale brown or gray at segments, overscaled with tawny-ochreous especially anteriorly, ventral abdomen paler tawny-ochreous to gray-brown.

Genitalia (Fig. 134) - tegumen broad and quadrate in lateral and dorsal views, short dorso-caudal oriented process from each side of caudal end, tuft double and very sparse; uncus decurved in lateral view, divided in V-shape in dorsal view, arms moderately spaced caudad, long and broad, ventral process of uncus triangular; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus narrow and long, oriented cephalad; valva with costa-ampulla broadly rounded, curving ventro-caudad to harpe, harpe moderately long, narrow, curving evenly upward to blunt and spiculate caudal end oriented nearly dorsad; aedeagus about length of valva, broad with blunt caudal end; cornuti as several (at least three) clusters of long and thin spikes.

Female - unknown.

Distribution and phenology. *Porphyrogenes boliva* was known from two males from Venezuela (Evans 1952). The records from Rondônia, extending this distribution far southward, are for June (1), August (1), October (2), and December (1).

Diagnosis and discussion. Evans (1952) based his description of *P. boliva* on two males from Venezuela. One of these (Fig. 1, 2) is the [holo]type. This species tends to be paler tawny on the dorsum than its congeners. Evans' (1952) drawing of the genitalia of *P. boliva* indicates a much longer harpe than on males from Rondônia, an error also noted for some of his other representations of the genitalia of *Porphyrogenes* (see *P. pausias* and *P. probus* below).

***Porphyrogenes ferruginea* (Plötz, 1883), reinstated status**

(Fig. 3, 4, 53, 54, 116, 135)

Phareas ferruginea Plötz, 1883. Type locality: Bahia [Brazil]; male type (herein designated the lectotype, Fig. 3, 4) in MNHU.

Phareas cervinus Plötz, 1883, **new synonymy**. Type locality: unknown, becomes Bahia [Brazil] with neotype designation; original type apparently lost, male neotype herein designated is the lectotype of *Phareas ferruginea* Plötz, 1883 in MNHU.

Porphyrogenes despecta cervinus (Plötz, 1883): Evans 1952.

Description. Male (Fig. 3, 4, 53, 54) - forewing length = 18.7 mm (Pará, Brazil), 19.3 mm (Amazonas, Brazil), 20.8 mm (Ecuador); forewing with costal fold, apex slightly rounded, termen convex as is basal 1/3 of anal margin; hindwing termen convex, tornus triangular without obvious lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA₂ (Fig. 116); dorsum brown; forewing overscaled with orange-brown, heaviest basad, anal margin with sparse tuft on convex portion, small yellow translucent macules present (up to two distal in cells M₃-CuA₁ and CuA₁-CuA₂ and up to three subapical macules, Evans 1952); hindwing overscaled with orange-brown posterior to vein Rs, brown discal macules may be prominent (very prominent on two of three specimens examined); shining gray speculum in anterior discal cell, proximal 1/3 of Sc+R₁-Rs, and proximal 1/4 of costal cell; very short pale tan recumbent tuft near base of Sc+R₁-Rs, similar semierect pale tan tuft arising from near base of discal cell covering small speculum in discal cell and, with anterior tuft, covering small portion of speculum in Sc+R₁-Rs (Fig. 116); conspicuous erect orange-brown tuft along anterior edge of vein 2A, recumbent tan tuft from posterior edge of 2A; fringes on both wings dark brown.

Venter similar to dorsum with macules repeated; color duller and browner; forewing vein 2A nearly straight, bare and moderately swollen in third 1/8 (from base), not conspicuously in groove (Fig. 116), shining gray speculum in proximal 1/3 of CuA₂-2A and in proximal 2/3 of anal cell (continued to tornus as

modified tan scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax orange-brown, palpi pale ochreous, eyes red, antennae black, yellow on venter and beneath apiculus, nudum red-brown, 25 (n = 1) segments, ventral thorax and pectus orange-brown, legs ochre, dorsal abdomen brown, overscaled with orange-brown, ventral abdomen brown.

Genitalia (Fig. 135) - tegumen broad in lateral view, moderately broad and oval in dorsal view, medium length, thin, and curved dorso-caudal oriented process from each side of caudal end, tuft single and sparse; uncus decurved in lateral view, divided in U-shape in dorsal view, arms moderately separated, more or less parallel, thin and long, ventral process of uncus narrowly triangular; gnathos shorter than uncus, not upcurved, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus very thin, moderately long, oriented cephalad; valva with costa-ampulla rounded, curving gradually ventro-caudad to harpe, harpe short, broad cephalad, narrowing to point caudad, curving slightly upward and inward, caudal end oriented dorso-caudad; aedeagus about length of valva, broad with blunt caudal end; cornuti as cluster of thin and slightly curved spikes.

Female - not examined, see below.

Distribution and phenology. *Porphyrogenes ferruginea* and its synonym *Phareas cervinus* have been reported from Guyana, French Guiana, and Brazil (Plötz 1883, Draudt 1922, Evans 1952). Three males were examined: BRAZIL: Pará; Fazenda Velho, near Belém (November, GTA #13769); BRAZIL: Amazonas; Hyatanahan [on label] (= Huitanaã), Rio Purus (March, GTA #4184); and ECUADOR: Sucumbíos, 75 km ESE of Coca La Selva (GTA #9934).

Diagnosis and discussion. A male with a single discal macule (Fig. 3, 4) in MNHU is here designated the lectotype of *Phareas ferruginea*. This specimen bears two labels: / *ferruginea* Pl. 5030 type / and / Typus /. This action is necessary to define the species as described (Plötz 1883), given that the synonymy has proven to be incorrect, and because an associated syntype may or may not be the same species. The lectotype of *P. ferruginea* closely matches the original description of *P. cervinus* as well as its subsequent descriptions and depictions (Evans 1952). They are considered synonymous and *P. ferruginea* becomes the senior synonym of *Phareas cervinus* based upon page priority.

Because the type of *Phareas cervinus* is presumably lost (e.g., Evans 1952, it was not located by Mielke at MNHU), a neotype is needed to define the taxon. To unequivocally stabilize the synonymy of *P. cervinus* with *P. ferruginea*, the lectotype of *Phareas ferruginea* (at MNHU) is here designated as the neotype of *Phareas cervinus*. That taxon is here removed from its current synonymy under *P. despecta* (Butler, 1870) (Evans 1952; Bridges 1988; Mielke 2004, 2005) based on differences in markings, genitalia, and potential sympatry with *P. despecta* in northern South America.

Porphyrogenes despecta overall is somewhat paler (yellowish) than *P. ferruginea* and lacks macules on the forewing. Male genitalia of *P. ferruginea* have a longer and more curvate uncus than do those of *P. despecta*, with the arms thinner and parallel (divergent on *P. despecta*), a gnathos that is not upcurved caudad, a shorter saccus, and a harpe that is not strongly curved upward. Note that in lateral view, the harpes of *P. despecta* and *P. ferruginea* are nearly identical. That of *P. despecta*, however, curves inward more than does that of *P. ferruginea* and they are quite different when flattened. Both taxa have been reported from Pará, Brazil and Guyana, indicating potential sympatry.

Godman (1907) synonymized *Phareas ferruginea* (as *Phareas cervinus*) with *P. pausias* based on the unpublished drawings of Plötz. Evans (1952) considered the female of *P. ferruginea* (as *P. cervinus*) to be similar to the male, but with larger discal macules and three apical macules.

***Porphyrogenes despecta* (Butler, 1870)**

(Fig. 5, 6, 55, 56, 117, 136)

Augiades despecta Butler, 1870. Type locality: Pará [Brazil]; female type (herein designated the lectotype, Fig. 5, 6) in BM(NH).

Description. Male (Fig. 55, 56) - forewing length = 18.0 mm, 19.2 mm (both from Pará, Brazil); forewing with costal fold, apex slightly rounded, termen convex, anal margin convex basad; hindwing termen convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of CuA₂ (Fig. 117); dorsum brown, unmarked; forewing overscaled with tawny,

heaviest basad, anal margin with dense tuft on convex portion; hindwing overscaled with tawny posterior to vein Rs; shining gray speculum in anterior discal cell (very small in basal area), proximal 1/2 of Sc+R₁-Rs, and proximal 1/4 of costal cell; short black recumbent tuft near base of Sc+R₁-Rs, longer semierect black basad and tawny distad tuft arising from near base of discal cell covering speculum in discal cell and, with anterior tuft, covering basal portion of speculum in Sc+R₁-Rs (Fig. 117); conspicuous erect tawny tuft along anterior edge of vein 2A, recumbent tawny tuft from posterior edge of 2A; fringes on both wings dark gray-brown.

Venter similar to dorsum; tawny color duller; forewing vein 2A straight, bare and broadly swollen in second 1/6 (from base), not conspicuously in groove (Fig. 117), shining gray speculum in proximal 1/3 of CuA₂-2A and in proximal 2/3 of anal cell (continued to tornus as modified tan scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of 2A.

Dorsal head and thorax tawny, palpi pale ochreous, eyes red, antennae black, yellow on venter and under apiculus, nudum red-brown, 25 (n = 1) or 26 (n = 1) segments, ventral thorax and pectus tawny, legs ochreous-brown, dorsal abdomen brown, overscaled with tawny, ventral abdomen brown.

Genitalia (Fig. 136) - tegumen broad in lateral view, broad and oval in dorsal view, medium length, thin, and curved dorso-caudal oriented process from each side of caudal end, tuft single and sparse; uncus decurved in lateral view, divided in U-shape in dorsal view, arms moderately separated, long and diverging, ventral process of uncus narrowly triangular; gnathos shorter than uncus, upcurved, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus strongly curved; saccus very long, thin, oriented dorso-cephalad; valva with costa-ampulla rounded, curving gradually ventro-caudad to harpe, harpe short, broad cephalad narrowing to point caudad, curving evenly upward and slightly inward caudad, caudal end oriented nearly dorsad; aedeagus about length of valva, broad with dorsal point at caudal end in lateral view; cornuti as cluster of thin and slightly curved spikes.

Female (measured and described from photographs including type, Fig. 5, 6) - forewing length = 18.6 mm, 19.4 mm (n = 2); forewing apex pointed, termen slightly convex, anal margin slightly convex; hindwing termen convex but less so than on male, tornus produced to short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA₂; dorsum brown, overscaled with tawny, heaviest basad; forewing with two whitish macules, one lunulate in CuA₁-CuA₂, under origin of vein CuA₁, smaller macule more distad in M₃-CuA₁ under origin of vein M₃; hindwing overscaled with tawny over most of wing except at apex, no indication of discal macules; fringes on both wings brownish.

Venter similar to dorsum but paler brown with less dense overscaling; forewing vein 2A very slightly curved, pale tan in anal cell; hindwing immaculate, cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head, thorax, and palpi tawny, ventral palpi tawny-gray, eyes appear brown, antennae dark appearing pale beneath apiculus; ventral thorax, pectus, and legs tawny, dorsal abdomen brown, ventral abdomen gray-brown.

Genitalia – not examined.

Distribution and phenology. *Porphyrogenes despecta* has been reported from Guyana; Pará, Brazil; and Peru (Butler 1870, Draudt 1922, Evans 1952, Robbins et al. 1996). Two males of *P. despecta* were examined from Pará, Brazil (Belém, July, GTA #7587; “Para”, GTA #4183).

Diagnosis and discussion. Evans (1952) indicated that three females of *P. despecta* from Pará were at the BM(NH) along with six associated males from the same location. One of those females (Fig. 5, 6) is here designated as the lectotype of *Augiades despecta*. It bears the following five labels: / Pará Amazonas / / Druce coll. / / Augiades despecta Butl. Type / / Godman-Salvin Coll. 1912-23. *Lignyostola despecta* Butl. /, and / Type H.T. H. 222 /. It is necessary to define the species with a lectotype because of confusion in its identity and the possibility that the three syntypes may not be conspecific.

This small species, described from a female, is similar to *P. ferruginea* from which it was distinguished above. Evans (1952) described the female of *P. despecta* as having two small macules on the forewing. Draudt (1922) illustrated (very poorly) an apparent female with large macules on the forewing under *Lignyostola despecta*. Another individual, having a single small macule on the forewing, illustrated in Draudt (1922) as *L. ferrugineus*, is a taxon thought to probably be near *P. despecta* by Godman (1907). This may be a female of *P. despecta* or a male of *P. ferruginea*. The removal of *Phareas ferruginea* from synonymy with *P. despecta* was discussed above.

***Porphyrogenes omphale* (Butler, 1871), reinstated status**

(Fig. 7, 8, 57-60, 119, 137, 154)

Telegonus omphale Butler, 1871. Type locality: Venezuela; male type (herein designated the lectotype, Fig. 7, 8) in BM(NH).

Porphyrogenes passalus omphale (Butler, 1871): Evans 1952, **incorrect synonymy** (see below).

Description. Male (Fig. 7, 8, 57, 58) - mean forewing length = 24.2 mm (23.5-25.6 mm, n = 10; from Rondônia, Brazil); forewing with costal fold, apex not produced, termen convex, anal margin broadly convex on basal half, semierect tuft on this convex portion; hindwing prominently convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and just basad of or opposite CuA_2 (Fig. 119); dorsum black; forewing overscaled basad with bright iridescent purple-blue, continuous yellow-orange translucent band from costa, through distal end of discal cell, base of M_3-CuA_1 , mid- CuA_1-CuA_2 , and terminating at or near termen distad in CuA_2-2A ; hindwing overscaled with blue basad, largely posterior of discal cell, more extensive than on forewing, extending to or nearly to termen at tornus; shining gray speculum in anterior discal cell (as small oval area), proximal 1/2 of $Sc+R_1-Rs$, and proximal 2/3 of costal cell; short pale tan recumbent tuft near base of $Sc+R_1-Rs$ anterior to origin of vein Rs, slightly larger semierect pale tan tuft arising from near base of discal cell, both covering the base of speculum in $Sc+R_1-Rs$ (Fig. 119); conspicuous erect blue tuft along anterior edge of vein 2A, recumbent pale brown tuft from posterior edge of 2A; fringes on both wings of ground color.

Venter similar to dorsum; all colors duller; forewing vein 2A curved (but not sinuate), bare and broadly swollen in second quarter (from base), this conspicuously in groove (Fig. 119), shining gray-brown speculum in posterior 1/2 of the proximal 1/2 of CuA_2-2A and proximal 1/2 of anal cell, the latter continued by modified pale brown scales extending nearly to tornus; hindwing with blue more extensive than on dorsum, no indication of discal macules; cell 2A-3A with deep groove just caudad of 2A.

Dorsal head and thorax blue, palpi gray, eyes dark (appearing black), antennae black, ochreous on venter of club, nudum gray, 28 (n = 2), 29 (n = 3), 30 (n = 3), or 31 (n = 1) segments, ventral thorax blue, pectus blue, legs dark brown proximad, paler distad, dorsal abdomen dark gray with some blue overscaling, ventral abdomen charcoal gray with some blue anteriorly.

Genitalia (Fig. 137) - tegumen narrow in lateral view, oval in dorsal view, short dorso-caudal oriented process from each side of caudal end, no tuft; uncus thin and moderately decurved in lateral view, deeply divided in U-shape in dorsal view, arms thin and fairly widely spaced, ventral process of uncus triangular; gnathos shorter than uncus, thin in lateral view, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus sinuate; saccus narrow, oriented cephalad; valva with costa-ampulla more or less quadrate, caudal end of ampulla with dense bristles, harpe short, narrow, curving evenly upward and slightly inward to blunt caudal end oriented nearly dorsad, caudal end with many bristles; aedeagus slightly longer than valva, broad with blunt caudal end, caudal 1/3 shagreened; cornuti as small cluster of long, thin, and straight spikes.

Female (Fig. 59, 60) - mean forewing length = 30.3 mm (29.2-32.1 mm, n = 3; from Costa Rica and Panama); forewing apex rounded, termen slightly convex, anal margin straight; hindwing convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and opposite CuA_2 ; dorsum black; forewing overscaled at very base with bright blue, continuous broad (2.0-4.0 mm) yellow-orange partially transparent (in discal cell, M_3-CuA_1 , proximal CuA_1-CuA_2) band from costa, through distal end of discal cell, base of M_3-CuA_1 , mid- CuA_1-CuA_2 , and terminating nearly at termen distad in CuA_2-2A ; hindwing overscaled with blue on basal 1/2 extending nearly to termen at tornus; erect tuft on vein 2A, bright blue proximad, brown distad; fringes on both wings brown.

Venter similar to dorsum; all colors duller; forewing vein 2A slightly curved; anal margin tan; hindwing cell 2A-3A with deep groove just caudad of 2A.

Dorsal head and thorax blue, palpi tan, eyes black, antennae black on dorsum, ochreous on venter, nudum red-brown, 30 (n = 2) or 32 (n = 1) segments, ventral thorax blue, pectus tan, legs brown, dorsal abdomen dark brown, ventral abdomen brown, slightly paler at segments caudad.

Genitalia (Fig. 154) - lamella postvaginalis broad, sclerotized largely in central portion of caudal edge, this having narrow and shallow U-shaped indentation centrally; lamella antevaginalis quadrate with

central pointed process and membranous plates laterad; ductus bursae short, broad and membranous with a sclerotized plate; corpus bursae small, globular.

Distribution and phenology. *Porphyrogenes omphale* is known from scattered records in Costa Rica, Panama, Suriname, Guyana, Venezuela, northern Brazil through the Amazonian basin to Rondônia, Peru, and Bolivia (Butler 1871, Draudt 1922, Williams and Bell 1934, Bell 1946, Evans 1952, de Jong 1983, this study) and perhaps elsewhere (Evans 1952, Murray 1996, Robbins et al. 1996). Females attributed to this species were studied from Costa Rica (December), Panama (May, September; GTA #8908), Venezuela, Bolivia (Rio Songo), and Brazil (Pará). The distribution of *P. omphale* has not been adequately delimited due to misidentifications of its female (see below). Records for central Rondônia, where it is the most commonly encountered *Porphyrogenes*, are for July (4 records), August (10), September (7), October (1), November (4), and December (1).

Diagnosis and discussion. This strikingly-colored black, blue, and orange species is known from southern Central America and northern South America, southward into Brazil and Bolivia (Draudt 1922, Bell 1946, Evans 1952, de Jong 1983, this study). Its color and pattern differs from other congeners that are largely reddish brown and lightly marked. *Porphyrogenes omphale* is also not crepuscular or nocturnal like other *Porphyrogenes*, being active largely during the afternoon (timed records for 1230 to 1600 hours). The phenotypic aspect of *P. omphale* suggests its membership in a mimicry complex potentially including certain diurnal moths (Notodontidae: Dioprinae, Arctiidae) and butterflies including riodinids such as female *Necyria manco* Saunders, 1859, *Ancyluris inca* (Saunders, 1850), female *A. miranda* (Hewitson, 1874), some female *Setabis* Westwood, 1851, *Esthemopsis pherephatte* (Godart, [1824]) and nymphalids (e.g., certain *Callicore* Hübner, [1819], perhaps some *Agrias* Doubleday, [1845]).

Evans (1952) identified the female of this species as a dark brown phenotype with “shining greenish blue” bases to the dorsal wings and a “macular white band” across the forewing. That phenotype had been described as *Eudamus passalus* Herrich-Schäffer, 1869. This synonymy, without apparent justification, seems to be incorrect since the apparent female of *P. omphale* is a black, blue, and orange phenotype (Fig. 59, 60) similar to the male as described above. Therefore, *Eudamus passalus* is removed from synonymy with *P. omphale* and the latter is returned to its original species-level status.

The male type, one of two specimens in the BM(NH) from Venezuela (Fig. 7, 8), is here designated as the lectotype. It has four labels: / Type H. T. /, / omphale type /, / Venezuela /, / Venezuela Dyson 47-9./ This unequivocally defines *Telegonus omphale* and will serve to facilitate discussion of its yet unresolved apparently geographic variation. Evans (1952) recognized two subspecies of *P. omphale* (as *P. passalus*), one putatively smaller with a broad orange band on the forewing occurring in northwestern South America (Venezuela, Colombia) and the other larger with a narrower band occurring elsewhere. The measurements given above are representative of a sample of males from Rondônia, Brazil, but others from elsewhere have forewing lengths ranging from 21.3 mm to 27.7 mm. Material examined in this study suggests no consistent pattern of geographical variation in size or width of the orange band on the forewing; the male genitalia remain constant throughout (also illustrated by Williams and Bell 1934, Evans 1952). Consequently, no subspecies are here recognized.

***Porphyrogenes pausias* (Hewitson, 1867)**

(Fig. 9-12, 61-64, 118, 138, 155)

Eudamus pausias Hewitson, 1867. Type locality: Amazonas [Brazil]; male type (herein designated the lectotype, Fig. 9, 10) in BM(NH).

Description. Male (Fig. 9, 10, 61, 62) - mean forewing length = 18.1 mm (17.3-19.0 mm, n = 6; from Rondônia, Brazil); forewing with costal fold, apex slightly produced, pointed, termen and anal margin convex; hindwing termen convex, tornus without lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA₂ (Fig. 118); dorsum brown, unmarked; forewing overscaled with dark orange-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with dark orange-brown posterior to vein Rs; shining gray-brown speculum in proximal 1/2 of Sc+R₁-Rs and proximal 1/2 of costal cell; small pale tan recumbent tuft near base of Sc+R₁-Rs, another small semierect pale tan tuft arising from near base of discal cell and curving forward, both covering very base of speculum in Sc+R₁-

Rs (Fig. 118); conspicuous erect dark orange-brown tuft along anterior edge of vein 2A, recumbent dark gray tuft from posterior edge of 2A; fringes on both wings dark brown.

Venter similar to dorsum, but duller; forewing vein 2A moderately sinuate, bare and slightly swollen in second 1/4 (from base), conspicuous groove anteriorly (Fig. 118), shining gray-brown speculum in proximal 1/4 of CuA_2 -2A (continued to just beyond end of bared portion of vein as modified dark gray scales, these scales continued into base of CuA_1 - CuA_2) and in proximal 1/4 of anal cell (continued to end of bared portion of vein by modified dark gray scales and then to tornus as modified brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of 2A.

Dorsal head and thorax dark orange-brown, palpi yellow-orange, eyes red, antennae black with some yellow distad on venter and yellow beneath apiculus, nudum gray, 25 (n = 3) segments, ventral thorax and pectus dark orange-brown, legs ochreous-brown, dorsal abdomen brown, gray at segments, dark orange-brown overscaling, ventral abdomen gray, gray-brown, or brown with scattered ochreous scales.

Genitalia (Fig. 138) - tegumen broad and short in lateral view, very broad and short in dorsal view, long, thin, and slightly curved dorso-caudal oriented process from each side of caudal end, tuft double and moderately dense; uncus thin and curved in lateral view, broadly divided in dorsal view, arms widely spaced, thin and of moderate length, ventral process of uncus long and very thin; gnathos shorter than uncus, terminal ends rounded in ventral view, abruptly upturned in lateral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus moderately broad, oriented ventro-cephalad; valva with costa-ampulla quadrangle, harpe long and thin, curving upward at almost 90° angle and slightly inward to blunt and spiculate caudal end oriented dorsad; aedeagus longer than valva, very broad with tapered caudal end; cornuti as cluster of curved and thin spikes.

Female (Fig. 11, 12, 63, 64) - forewing length = 18.7 mm (n = 1; from Rondônia); forewing apex slightly produced, pointed, termen convex, anal margin slightly concave; hindwing termen convex, not produced to obvious tornal lobe, vein Rs arising nearer to end of discal cell than to its base and opposite the origin of CuA_2 ; dorsum brown, forewing overscaled with tawny, heaviest basad, white transparent quadrate macules in M_3 - CuA_1 (distad of origin of M_3) and CuA_1 - CuA_2 (centered under origin of CuA_2); hindwing overscaled with tawny posterior to vein Rs; conspicuous erect tawny tuft along vein 2A; fringes on both wings dark brown.

Venter similar to dorsum, but duller; forewing vein 2A slightly sinuate, shining tan speculum in proximal 1/2 of CuA_2 -2A and in entire anal cell; hindwing with vague dark brown discal macules; cell 2A-3A with deep groove just caudad of 2A.

Dorsal head and thorax dark orange-brown, palpi pale yellow-orange, eyes black, antennae missing; ventral thorax and pectus ochreous, legs ochreous; dorsal abdomen brown, ventral abdomen ochre.

Genitalia (Fig. 155) - sterigma broad, lamella postvaginalis heavily sclerotized only as thin band on caudal edge, this sinuate with V-shaped central indentation; lamella antevaginalis not well developed, large lateral lobes; ductus bursae very short with sclerotized plate on one side, not readily separable from small globular corpus bursae.

Distribution and phenology. *Porphyrogenes pausias* is known from scattered records for Suriname, Guyana, and the Amazonian drainage of Peru and Brazil (Hewitson 1867, Draudt 1922, Evans 1952, de Jong 1983). The records for the vicinity of Cacaúlândia are for July (3 records), October (2), and November (1). An additional male was examined from Marabá, Pará, Brazil (January, GTA #7586). Only one female was encountered: BRAZIL: Rondônia; 62 km south of Ariquemes, Fazenda Rancho Grande, 4-16 November 1997, at MV and UV lights (GTA #8885).

Diagnosis and discussion. The male specimen (Fig. 9, 10) in the BM(NH) is here designated as the lectotype of *Eudamus pausias*. That specimen bears two labels: / Type H. T. H. 223 / and / Amazons Hewitson coll. 79-69. *Eudamus pausias*, 1. Amaz. /. This action serves to define the species within a genus of many superficially very similar species.

On *P. pausias*, the modified scales of the ventral forewing extend into the base of cell CuA_1 - CuA_2 , a character that has not been observed on other species of *Porphyrogenes*. The identification of this species caused some consternation. Evans (1952) mentioned a single tuft on the dorsal hindwing although there are clearly two small tufts that may appear as one with a cursory examination. The tuft in the discal cell angles forward to overlap the tuft in $Sc+R_1$ -Rs. Specimens from Rondônia, however, are comparable with photographs of the type in the BM(NH). The illustrated genitalia (Evans 1952) indicate a much longer

harpe than observed on specimens from Rondônia. The individual illustrated as *P. pausias* by Draudt (1922) does not show the tuft of the dorsal hindwing or the speculum on the ventral forewing.

The female from Rondônia is assigned here to *P. pausias* based upon its size, venation, and sympatry with unequivocal males. It is not *P. despecta* (see above), a species as yet not recorded in central Rondônia. Females associated with that species and with *P. spanda* have longer and more pointed forewings and different venation. A female associated with another small species, *P. sparta*, likewise has different venation.

***Porphyrogenes probus* (Möschler, 1877)**

(Fig. 13-16, 65-68, 120, 139, 157)

Telegonus probus Möschler, 1877. Type locality: Surinam [Suriname]; female type (herein designated the lectotype, Fig. 13, 14) in MNHU.

Porphyrogenes suva Evans, 1952, **new synonymy**. Type locality: Lake Merced [Junin], Peru; male [holo]type (Fig. 15, 16) in BM(NH).

Description. Male (Fig. 15, 16, 65, 66) - mean forewing length = 25.3 mm (24.1-26.3 mm, n = 10; from Rondônia, Brazil); forewing with costal fold, apex produced, pointed, termen relatively straight, anal margin straight; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 (Fig. 120); dorsum brown, unmarked; forewing overscaled with tawny-ochreous, heaviest basad, semierect tuft proximad on anal margin; hindwing overscaled with tawny-ochreous posterior to vein Rs, vague indication of brown discal macules on some individuals; shining gray speculum as relatively large area in anterior discal cell, proximal 1/2 of $Sc+R_1-Rs$, and proximal 2/3 of costal cell; long pale tan recumbent tuft near base of $Sc+R_1-Rs$, slightly larger semierect pale tan tuft arising from near base of discal cell angled anteriorly to cover speculum in discal cell and, with anterior tuft, covering entire speculum in $Sc+R_1-Rs$ (Fig. 120); conspicuous erect tawny-ochreous tuft along anterior edge of vein 2A, recumbent tawny-brown tuft from posterior edge of 2A; fringes on both wings very pale tawny.

Venter dark gray-brown; forewing slightly darker along outer margin, apex broadly and contrastingly paler gray, forewing vein 2A moderately sinuate, bare and moderately swollen in central 1/2, no well-defined groove (Fig. 120), shining gray-brown speculum in proximal 1/4 of CuA_2-2A (continued to end of bare portion of vein as modified dark gray scales) and in proximal 2/3 of anal cell (continued to tornus as modified pale brown scales); hindwing with vague indication of darker discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny-ochreous, eyes red, palpi ochreous-gray, antennae black on dorsum, yellow-orange on venter, nudum red-brown, 29 (n = 1), 30 (n = 1), or 31 (n = 2) segments, ventral thorax pale brown, pectus medium tan, legs brown proximad, orange distad, dorsal abdomen dark brown, gray at segments, overscaled with tawny-ochreous especially anteriorly, ventral abdomen charcoal gray or charcoal gray-brown, last segment pale ochreous.

Genitalia (Fig. 139) - tegumen narrow in lateral view, broad and more or less quadrate in dorsal view, long, thin and slightly curved dorso-caudal oriented process from each side of caudal end, tuft double and relatively dense; uncus slightly decurved in lateral view, broadly divided in dorsal view, arms very widely spaced and short, ventral process of uncus broad; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus weakly sinuate; saccus long and moderately broad, oriented dorso-cephalad; valva with costa-ampulla more or less rectangular, curving ventro-caudad to harpe, harpe long and broad, curving evenly upward and slightly inward to blunt caudal end oriented dorso-caudad, dorsal edge finely serrate; aedeagus about length of valva, broad with blunt caudal end; cornuti as cluster of thin and curved spikes.

Female (Fig. 13, 14, 67, 68) - mean forewing length = 27.9 mm (27.2-29.3 mm, n = 4; from Rondônia, Brazil); forewing apex produced, pointed, termen convex anteriorly, slightly concave posteriorly, anal margin slightly concave; hindwing termen convex, concave just anterior to prominent tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum dark brown; forewing overscaled with tawny-olive, heaviest basad, two large white transparent macules more or less quadrate,

in M_3 - CuA_1 below origin of M_3 , very large in CuA_1 - CuA_2 centered under origin of CuA_1 ; hindwing overscaled with tawny-olive posterior to vein Rs, vague indication of brown discal macules; conspicuous erect tawny-ochreous tuft on dorsum of vein 2A; fringes on both wings brown.

Venter brown; forewing overscaled with gray especially basad, margin narrowly of ground color, apex broadly and contrastingly pale tan, forewing vein 2A sinuate, modified tan scales in proximal 1/4 of CuA_2 -2A and in entire anal cell; hindwing heavily overscaled with gray, dark brown discal macules vague to prominent; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax tawny-olive, eyes red, palpi ochreous-gray, antennae narrowly black on dorsum, yellow-orange on venter, nudum red-brown, 30 (n = 1) or 31 (n = 2) segments, ventral thorax pale brown, pectus medium tan, legs gray-brown proximad, orange distad, dorsal abdomen dark brown, red-brown at segments, ventral abdomen charcoal gray or charcoal brown.

Genitalia (Fig. 157) - caudal edge of lamella postvaginalis with narrow and shallow U-shaped indentation centrally; lamella antevaginalis as rhomboidal central portion and broad plates laterad; ductus bursae moderately long, relatively broad and membranous with lateral sclerotized plate; corpus bursae elongate, not much broader than anterior ductus bursae.

Distribution and phenology. *Porphyrogenes probus* was known from Suriname, Peru, and Bolivia (Möschler 1877, Lindsey 1925 as *Physalea vulpecula*, Evans 1952, this study); Evans' (1952) report for Costa Rica may be another species. Records (see also Austin et al. 1993 where it was identified as *P. suva*) from Rondônia (Jaru, vicinity of Cacaupônia), for April (1 record), May (1), June (3), August (4), October (2), November (4), and December (1), extend this distribution eastward into western Brazil.

Diagnosis and discussion. Evans' (1952) illustration of the male genitalia (as *P. suva*) indicated a much longer harpe than on specimens from Rondônia. The species is readily identified by the broad gray apex on the ventral forewing (difficult to see on worn individuals) of both sexes. The female described above seems to be *Porphyrogenes probus* based on its size, venation, and presence of a well defined pale apex on the ventral forewing. This phenotype matches the figured type of *Telegonus probus*, a tawny female with two large white macules on the forewing. That specimen (Fig. 13, 14) in MNHU, originally identified as a male (Möschler 1877), an error repeated by Draudt (1922) and Evans (1952), is here designated as the lectotype of *Telegonus probus*. Its six labels are as follows: / Origin. /, / Surinam Bgdl. L. 75. /, / Type Verhdlg. zool. bot. Gesellschaft. Wien. XXVI, p. 327 /, / Coll. Möschl. /, / Probus Möschl. /, and / Probus Möschl. /. Another female of a different phenotype (Fig. 49, 50), considered the female of *T. probus* by Möschler (1877), is yet another species. Also different is the female of *T. probus* from Suriname illustrated in Draudt (1922) and examined by Evans (1952) at the BM(NH). The designation of a lectotype fixes the identity of *Telegonus probus* to the female considered a male by Möschler (1877) and subsequent authors.

The male, described as *P. suva*, is associated by its general resemblance in wing shape, color and pattern, venation of the hindwing, and especially the whitish tips on the ventral forewing. Its type (Fig. 15, 16), one of three males from the type locality in the BM(NH) (Evans 1952), is the [holo]type.

***Porphyrogenes vulpecula* (Plötz, 1882)**

(Fig. 17, 18, 69, 70, 158)

Telemiades vulpecula Plötz, 1882. Type locality: South America, type labeled Pará [Brazil]; male type (herein designated the lectotype, Fig. 17, 18) in MNHU.

Description. Male (measured and described from photographs of type, Fig. 17, 18) - forewing length = 23.3 mm; forewing with costal fold, apex pointed, not produced, termen and anal margin slightly convex; hindwing termen slightly convex, tornus produced to short lobe, costa somewhat produced proximad, vein Rs arising very near end of discal cell and well distad of CuA_2 ; dorsum brown, unmarked; forewing overscaled with olivaceous orange-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with olivaceous orange-brown, no indication of discal macules; shining gray specular basal areas cephalad; moderate length black tufts; erect olivaceous orange-brown tuft along anterior edge of vein 2A, recumbent gray tuft from posterior edge of 2A; fringes on both wings tan.

Venter colored as dorsum; forewing vein 2A strongly sinuate, bare and broadly swollen in central 1/2, within distinct groove surrounded on both sides by shining area (appearing superficially as a doubled

vein); shining gray speculum extending 3/4 distance distad in CuA_2 -2A, continued into anal cell (continued to tornus as modified brown scales); hindwing with vague indication of dark discal macules; cell 2A-3A with deep conspicuously tan groove just caudad of 2A.

Dorsal head and thorax olivaceous orange-brown, palpi same, eyes appear reddish, antennae black on dorsum, pale on venter and beneath apiculus, ventral thorax and pectus olivaceous orange-brown, legs orange-brown, dorsal abdomen olivaceous orange-brown, ventral abdomen brownish.

Genitalia - not examined. Evans' (1952) figure indicates a broad tegumen and a broad uncus with the arms short, parallel, and widely spaced. The valva bends dorsad in its caudal portion where the harpe narrows abruptly.

Female (Fig. 69, 70) - forewing length = 25.2 mm (n = 1; from Rio Purus, Brazil); forewing apex pointed, termen convex, anal margin slightly concave; hindwing termen convex, concave just anterior to short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum brown; forewing overscaled with ochreous-olive, heaviest basad, two large white translucent macules, that in M_3 - CuA_1 with proximal edge just proximad of origin of M_3 , broadest cephalad, larger in CuA_1 - CuA_2 centered under origin of CuA_1 , irregularly trapezoidal; hindwing overscaled with ochreous-olive posterior to vein M_1 , vague indication of brown discal macules; conspicuous erect ochreous-olive tuft on dorsum of vein 2A; fringes on both wings brown.

Venter brown, duller than on dorsum; forewing lightly overscaled with gray especially basad and along costa, forewing vein 2A slightly curved, modified pale gray-tan scales in entire anal cell; hindwing brown with grayish cast, vague darker brown discal macules from vein M_1 to vein 2A; cell 2A-3A with groove just caudad of vein 2A, margined broadly on both sides by grayish tan.

Dorsal head and thorax ochreous-olive, eyes appear dark, palpi ochreous-olive, antennae black, ochreous on venter distad (both clubs broken), ventral thorax and pectus ochreous-olive, legs brown proximad, ochreous-olive distad, dorsal abdomen brown, paler at segments, ventral abdomen grayish with broad, but indistinct, brown medial line.

Genitalia (Fig. 158) - caudal edge of lamella postvaginalis nearly straight centrally without an apparent central indentation; lamella antevaginalis as more or less triangular central portion but with caudal apex as triangular points divided by deep V-shaped cut; ductus bursae moderately long, relatively broad connecting with caudal end of globular corpus bursae.

Distribution and phenology. *Porphyrogenes vulpecula* has been reported to occur in South America, including Trinidad, Colombia, Venezuela, French Guiana, the Amazonian drainage of Brazil and Peru, and in Paraguay and Argentina (Plötz 1882, Godman 1907, Draudt 1922, Bell 1946, Hayward 1947, Moss 1949, Evans 1952, Cock and Alston-Smith 1990, Nuñez Bustos 2006). The more southern records may represent *P. sororcula* (see below). The female described above (in CMNH) is from BRAZIL: Amazonas; Hyatanahan (= Huitanaã), Rio Purus, Feb. 1922 (GTA #13796).

Diagnosis and discussion. Males of *Porphyrogenes vulpecula* and *P. sororcula* are readily distinguished from other *Porphyrogenes* by the doubled appearance of vein 2A on the ventral forewing (see below under the latter species). The illustration in Draudt (1922) appears to be of *P. vulpecula*, but does not show the tuft on the dorsal hindwing nor the speculum on the ventral forewing.

A male in MNHU (Fig. 17, 18) is here designated as the lectotype of *Telemiades vulpecula*. That specimen is labeled as follows: / Typus /, / 48761 /, and / Vulpecula N. Parà Sieber /. This action is necessary to establish the undoubted identity of *T. vulpecula*, a species that may be confused with the following.

Draudt (1922) stated that the female of *P. vulpecula* was similar to that of *P. probus* (referring to the female assigned to *P. probus* in its original description, see above under *P. probus*). Evans (1952) considered the female of *P. vulpecula* to be similar to that of *P. passalus*. That phenotype, *Thymele eudamus* Mabille, 1888, was synonymized with *P. vulpecula* without justification by Evans (1955), a synonymy which has persisted to the present (e.g., Mielke 2004, 2005). *Thymele eudemus* is here removed from synonymy with *P. vulpecula* because there are no data relating the two phenotypes. The female as described above is assigned to this species based upon its general size, conspicuously pale groove on the ventral hindwing, and its overall general and genital similarity to an apparently closely related species, *P. sororcula* (see following species).

Evans (1952) included *Bungalotis immaculata* as a subspecies of *P. vulpecula*. *Bungalotis immaculata* is the male of *Porphyrogenes sororcula*. The relationship of the latter with *P. vulpecula* is uncertain. Although there seem to be differences indicating they are separate species (see below under *P. sororcula*), *P. vulpecula* has not been sufficiently studied to resolve their statuses. They are here retained as species-level taxa based on differences in color and genitalia.

***Porphyrogenes sororcula* (Mabille and Boulet, 1912)**

(Fig. 19-22, 71-74, 121, 140, 156)

Physalea sororcula Mabille and Boulet, 1912. Type locality: French Guiana; female [holo]type (Fig. 19, 20) in MNHN.

Bungalotis immaculata Skinner, 1920, **new synonymy**. Type locality: Chanchmayo [Chanchamayo, Junin], Peru; male [holo]type (Fig. 21, 22) originally in ANSP (Gillham and Ehrlich 1954), transferred to CMNH.

Description. Male (Fig. 21, 22, 71, 72) - mean forewing length = 23.3 mm (22.6-23.9 mm, n = 10; from Rondônia, Brazil); forewing with costal fold, apex pointed, not produced, termen convex, anal margin straight; hindwing termen convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 (Fig. 121); dorsum brown, unmarked; forewing overscaled with tawny, heaviest basad, anal margin with very sparse tuft proximad; hindwing overscaled with tawny posterior to vein Rs, vague indication of brown discal macules on some individuals; shining gray speculum in anterior discal cell (as small oval area), proximal 1/4 of $Sc+R_1$ -Rs, and proximal 2/3 of costal cell; long gray-brown recumbent tuft near base of $Sc+R_1$ -Rs, slightly larger semierect pale tan tuft arising from base of discal cell, angled anteriorly, latter covering speculum in discal cell, both covering speculum at the base of $Sc+R_1$ -Rs (Fig. 121); conspicuous erect tawny tuft along anterior edge of vein 2A, recumbent tawny-brown tuft from posterior edge of 2A; fringes on both wings pale ochre.

Venter similar to dorsum; tawny color duller; forewing slightly darker along outer margin, forewing vein 2A strongly sinuate, bare and broadly swollen in central 1/2, this conspicuously in groove surrounded by highly modified tan scales on both sides of most of bare portion of 2A, appearing as doubled vein without magnification (Fig. 121); shining gray speculum at very base of CuA_2 -2A (continued to end of bared portion of vein as modified dark gray scales) and in proximal 3/4 of anal cell (continued to tornus as modified gray-brown scales); vague to relatively prominent indication of dark discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny, palpi ochreous, eyes red, antennae largely ochreous-yellow, narrowly black on dorsum, nudum ochre, 27 (n = 1), 28 (n = 1), 29 (n = 1), or 30 (n = 2) segments, ventral thorax and pectus tawny, legs orange, dorsal abdomen dark brown, pale gray at segments, overscaled with tawny, ventral abdomen dark gray or brown to ochreous-brown, often paler at segments.

Genitalia (Fig. 140) - tegumen broad in lateral view, broad and quadrate in dorsal view, long and thin dorso-caudal oriented process from each side of caudal end, tuft paired and dense; uncus slightly decurved in lateral view, broadly divided in dorsal view, arms very widely spaced and very short, ventral process of uncus thin; gnathos slightly shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus broad, oriented dorso-cephalad; valva with costa-ampulla broadly rounded, curving ventro-caudad to harpe, harpe long, narrow, curving evenly but slightly upward to blunt caudal end, entire dorsal ridge finely serrated; aedeagus much shorter than valva, broad with blunt caudal end; cornuti as two clusters of short, robust, and curved spikes.

Female (Fig. 19, 20, 73, 74) - forewing length = 25.8 mm (n = 1; from Amazonas, Brazil); forewing apex pointed, termen convex, anal margin slightly concave in 3rd 1/4 from base; hindwing termen convex, concave just anterior to short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum brown; forewing overscaled with tawny, heaviest basad, two large white translucent macules, that in M_3 - CuA_1 with proximal edge below origin of M_3 , broadest cephalad, constricted caudad, larger in CuA_1 - CuA_2 distad of origin of CuA_1 , nearly square but with distal edge convex; hindwing overscaled with tawny posterior to vein M_1 , vague indication of brown discal macules; conspicuous erect tawny tuft on dorsum of vein 2A; fringes on both wings brown.

Venter brown, duller than on dorsum; forewing lightly overscaled with gray especially basad, becoming tawny caudad extending to vein 2A, forewing vein 2A slightly sinuate, modified tan scales in proximal 1/8 of CuA_2 -2A and in entire anal cell; hindwing tawny-brown, vague dark brown discal macules from mid-cell $Rs-M_1$ to vein 2A; cell 2A-3A with groove just caudad of vein 2A, margined broadly on both sides by tan.

Dorsal head and thorax tawny, eyes red, palpi tan, antennae missing, ventral thorax tawny, pectus tan, legs brown proximad, yellow-orange distad, color of abdomen not noted.

Genitalia (Fig. 156) - caudal edge of lamella postvaginalis with narrow and shallow V-shaped indentation centrally; lamella antevaginalis broad cephalad curving caudad to pair of broadly triangular and closely spaced processes on caudal edge; ductus bursae membranous, relatively long and broad, joining oval corpus bursae on right side.

Distribution and phenology. *Porphyrogenes sororcula* and its synonym *P. immaculata* had been reported from French Guiana, Peru, and Bolivia (Mabille and Boulet 1912, Skinner 1920, Draudt 1922, Evans 1952, Lamas 2003). Second only to *P. omphale*, this is the most abundant *Porphyrogenes* in central Rondônia. It had been misidentified as *P. vulpecula* (Austin et al. 1993) and has been recorded in April (1 record), June (4), July (2), August (4), October (3), November (7), and December (1). The female examined is from: BRAZIL: Amazonas; Tefé (Ega), Rio Solimões, ex coll. Le Moult (SRS #4426, now at MGCL)

Diagnosis and discussion. This species was described from a female in MNHN, the [holo]type (Fig. 19, 20). Draudt (1922) said that the female of *P. sororcula* (one examined from French Guiana) resembled *P. vulpecula*. *Porphyrogenes sororcula* had not been associated satisfactorily with an accompanying male (e.g., Evans 1952). The taxon described as *Bungalotis immaculata* by Skinner (1920) appears to represent the male of *P. sororcula*, exhibiting nearly identical color and pattern (except for the macules on the forewing) and is here associated with the latter taxon.

The single male type of *Bungalotis immaculata* in CMNH is the [holo]type (Fig. 21, 22). Bell (1946) sunk the name *P. immaculata* as a synonym of *P. vulpecula*, which Evans (1952) treated it as a subspecies of *P. vulpecula* apparently based upon the doubled appearance of vein 2A on the ventral hindwing. This vein is indeed similar on the two taxa, but the male of *P. vulpecula* is browner (and duller) on the wings, body, palpi, and legs; has a prominently produced costa near the base of the hindwing proximad (evenly curved on *P. sororcula*); has a more sinuate vein 2A on the forewing; the speculum extends further distad on the ventral forewing of *P. vulpecula*, especially in the anal cell, and the relative positions of the origins of veins Rs and CuA_2 on the hindwing differ from those on *P. sororcula*. The harpe of *P. sororcula* tapers gradually and is not broadly expanded in the middle as shown by Evans (1952) for *P. vulpecula*. Evans (1952) stated that *P. sororcula* (as *P. immaculata*) was larger and brighter than *P. vulpecula*; the types of the two are nearly identical in size and *P. immaculata* is brighter red-brown. The identity of the male that Evans (1952) associated with *P. sororcula* is unknown (but see below). The described venation does not match that of the male phenotype associated here and the harpe of that male's genitalia (as illustrated by Evans 1952) is considerably shorter. Likewise, the apparent female of *P. vulpecula* is duller than that of *P. sororcula* and, although the genitalia of the two species are generally similar, they differ in detail.

***Porphyrogenes spanda* Evans, 1952**

(Fig. 23-26, 75-78, 122, 141, 159)

Porphyrogenes spanda Evans, 1952. Type locality: Pará [Brazil]; male [holo]type (Fig. 23, 24) in BM(NH).

Description. Male (Fig. 23, 24, 75, 76) - forewing length = 19.2 mm, 19.3 mm (from Rondônia, Brazil); forewing with costal fold, apex pointed, weakly produced, termen and anal margin slightly convex; hindwing termen convex, tornus produced to very short lobe; vein Rs arising nearer to end of discal cell than to its base and well distad of CuA_2 (Fig. 122); dorsum brown, overscaled with tawny-brown except at forewing apex and along hindwing costa anterior to vein Rs , unmarked, forewing anal margin with inconspicuous tuft on proximal 1/2; hindwing with shining gray speculum in anterior base of discal cell, proximal 1/4 of $Sc+R_1-Rs$, and proximal 3/4 of costal cell; short ochreous-tan recumbent tuft near

base of Sc+R₁-Rs, another short but semierect ochreous-tan tuft arising from near base of discal cell curving anteriorly, former covering speculum in discal cell, both covering base of speculum in Sc+R₁-Rs (Fig. 122); conspicuous erect tawny-brown tuft along anterior edge of vein 2A, recumbent pale ochreous-tan tuft from posterior edge of 2A; fringes on both wings dark gray mixed with some paler scales.

Venter nearly uniform medium tawny-brown; forewing vein 2A weakly curved (not sinuate), bare and moderately swollen in second 1/4 (from base), no obvious groove (Fig. 122), shining gray speculum in proximal 1/2 of CuA₂-2A and in proximal 3/4 of anal cell (continued to tornus as modified dark gray scales); hindwing with no indication of discal macules; tornus blackish; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny-brown, palpi ochreous-gray, eyes red, antennae black, yellow on venter distad, nudum red-brown, 24 (n = 2) segments, ventral thorax grayish, pectus medium tan, legs ochreous-brown, dorsal abdomen dark brown, gray at segments, overscaled with tawny-brown, ventral abdomen pale brown.

Genitalia (Fig. 141) - tegumen narrow in lateral view, short and broad in dorsal view, very long, thin, and slightly curving dorso-caudal oriented process from each side of caudal end, tuft single and dense; uncus long and strongly decurved in lateral view, narrowly divided in U-shape in dorsal view, arms closely spaced, thin and long, ventral process of uncus broad; gnathos shorter than uncus, thin, narrow lobes in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus narrow, oriented slightly ventrad; valva with costa-ampulla more or less trapezoidal, curving ventro-caudad to harpe, harpe moderately broad and long, curving somewhat upward and inward to slightly spiculate and blunt caudal end, this spatulate in caudal view; aedeagus shorter than valva, broad (especially in dorsal view) with two processes from caudal end; cornuti as two rows of relatively robust and slightly curved spikes.

Female (Fig. 25, 26, 77, 78) - forewing length = 19.7 mm, 21.1 mm (from Venezuela); forewing apex somewhat pointed, not produced termen convex anteriorly, slightly concave posteriorly, anal margin slightly concave; hindwing termen nearly straight produced to very short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of CuA₂; dorsum dark brown; forewing overscaled with tawny-olive barely paler than ground color, heaviest basad, two large pale yellow translucent macules more or less quadrate, that in M₃-CuA₁ distad of origin of M₃, that in CuA₁-CuA₂ larger with proximal edge under origin of CuA₁; hindwing overscaled with tawny-olive barely paler than ground color posterior to vein Rs, faint indication of brown discal macules; erect brownish olive tuft on dorsum of vein 2A; fringes on both wings gray-brown.

Venter brown; forewing overscaled with gray especially basad, forewing vein 2A weakly sinuate, modified tan scales in entire anal cell; hindwing overscaled with gray, dark brown discal macules vague; tornal area blackish; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax tawny-olive, some greenish scaling between eyes, eyes blackish, palpi gray, antennae black on dorsum, pale yellow on venter, nudum red-brown, 27 (n = 1) segments, ventral thorax rubbed, pectus gray with greenish scales, legs gray-brown proximad, orange distad, dorsal abdomen dark brown, ventral abdomen tannish gray with greenish scales cephalad.

Genitalia (Fig. 159) - caudal edge of lamella postvaginalis with narrow and shallow central U-shaped indentation centrally; lamella antevaginalis with quadrate central portion and broad, mostly membranous, lateral plates; ductus bursae broad, very short; corpus bursae elongate, relatively narrow.

Distribution and phenology. *Porphyrogenes spanda* has been reported from Guyana and the Amazon River drainage in Brazil from Pará and Santarem (Evans 1952); two females (at MGCL) were examined from Venezuela (Rio Acure, no date, GTA #13919; Rio Corrao, March, GTA #13797). The two records for central Rondônia (see also Austin et al. 1993) in November and December extend this distribution southward.

Diagnosis and discussion. This is a small species with a plain brown and tawny dorsum and a plain brown venter. The only other small *Porphyrogenes* known from central Rondônia, *P. pausias*, is redder and has more rounded wings. Evans (1952) identified the female of *P. spanda* (as described above) as being browner than the male with quadrate macules on the forewing that are not oblique. Two additional females examined from Venezuela are comparable with that female (Fig. 25, 26, 77, 78). Their identity needs to be verified.

Four males from Pará, Brazil are at the BM(NH) (Evans 1952). One of these (Fig. 23, 24) is the [holo]type of *Porphyrogenes spanda*.

***Porphyrogenes stresa* Evans, 1952, new status**

(Fig. 27, 28, 79, 80, 123, 142)

Porphyrogenes zohra stresa Evans, 1952. Type locality: Tarapote [*sic* = Tarapoto], Peru; male [holo]type (Fig. 27, 28) in BM(NH).

Description. Male (Fig. 27, 28, 79, 80) - mean forewing length = 24.5 mm (23.8-25.1 mm, n = 4; from Rondônia, Brazil); forewing with costal fold, apex pointed, not produced, termen and anal margin slightly convex; hindwing termen nearly straight, tornus produced to very short lobe, vein Rs arising mid-base and end of discal cell and opposite of CuA₂ (Fig. 123); dorsum brown, unmarked; forewing overscaled with dark orange-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with dark orange-brown posterior to vein Rs, no indication of discal macules; shining gray speculum in base of anterior discal cell, proximal 1/4 of Sc+R₁-Rs, and proximal 1/3 of costal cell; moderate length gray-tan recumbent tuft near base of Sc+R₁-Rs, semierect pale tan tuft arising from near base of discal cell covering speculum in discal cell and, with anterior tuft, covering base of speculum in Sc+R₁-Rs (Fig. 123); conspicuous erect dark orange-brown tuft along anterior edge of vein 2A, recumbent brown tuft from posterior edge of 2A; fringes on both wings dark brown as ground color.

Venter dark orange-brown; forewing vein 2A weakly sinuate, bare and weakly swollen in central 1/3, this indistinctly in groove (Fig. 123); shining gray-brown speculum in proximal 1/4 of CuA₂-2A (continued to end of bared portion of vein as modified gray-brown scales) and in proximal 1/2 of anal cell (continued to tornus as modified gray-brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax dark orange-brown, palpi ochreous-tan, eyes red, antennae black on dorsum, yellow on venter and beneath apiculus, nudum red-brown, 30 (n = 2) or 33 (n = 2) segments, ventral thorax dark orange-brown, pectus pale tan, legs orange-brown proximad, orange distad, dorsal abdomen dark brown, gray at segments, overscaled with dark orange-brown, ventral abdomen dark gray to gray-brown.

Genitalia (Fig. 142) - tegumen narrow in lateral view, broad and narrowing cephalad in dorsal view, long and thin dorso-caudal oriented process from each side of caudal end, tuft double and dense; uncus decurved in lateral view, broadly divided in dorsal view, arms widely spaced and short, ventral process of uncus as rounded lobe; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus broad, oriented dorso-cephalad; valva with costa-ampulla broadly triangular with narrow flap at apex, harpe long, very narrow, curving evenly upward to pointed (lateral view, blunt in caudal view) and dentate caudal end oriented nearly dorsad; aedeagus much shorter than valva, broad with blunt caudal end; cornuti as double row of long, thin, and slightly curved spikes.

Female - unknown.

Distribution and phenology. *Porphyrogenes stresa* has been reported from Peru and Bolivia (Evans 1952, Lamas 1994). The species (reported as *P. zohra zohra*, Austin et al. 1993) was recorded in central Rondônia during June (1 record), July (1), August (2) and November (1); this extends the known distribution eastward.

Diagnosis and discussion. *Porphyrogenes stresa* was described as a subspecies of *P. zohra* by Evans (1952). They are superficially similar, but the known distributions of the two taxa are broadly disparate. Differences in color, vein 2A on the forewing, and in the genitalia suggest they are different species (see *P. zohra* below). In the male genitalia, *P. stresa* has a narrower tegumen (especially cephalad) than does *P. zohra*, has an evenly curved harpe with the more or less quadrate caudal end dentate (less evenly curved on *P. zohra*, caudal end broader and club-shaped and more densely serrate), and the cornuti are less robust. Based on these differences, *P. stresa* is here raised to species-level. The female of *P. stresa* was considered by Evans (1952) to be similar to that of *P. zohra*, but paler purple-brown on the venter and having a broadly darker forewing apex. This requires confirmation since the female of *P. zohra* has not been satisfactorily identified (see below under *P. zohra*).

Evans (1952) examined two males of this species in the BM(NH) from the type locality; one of these (Fig. 27, 28) is the [holo]type of *Porphyrogenes zohra stresa*.

***Porphyrogenes zohra* (Möschler, 1879)**

(Fig. 29, 30, 81, 82, 124, 143)

Telegonus zohra Möschler, 1879. Type locality: Venezuela; male [holo]type (Fig. 29, 30) in MNHU.

Description. Male (Fig. 29, 30, 81, 82) - mean forewing length = 24.3 mm (24.2-24.6 mm, n = 3; from Honduras, Nicaragua, and Venezuela); forewing with costal fold, apex pointed, not produced, termen and anal margin slightly convex; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising mid-base and end of discal cell and basad of CuA_2 (Fig. 124); dorsum brown, unmarked; forewing overscaled with orange-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with orange-brown posterior to vein Rs, no indication of discal macules; shining gray speculum in base of anterior discal cell, proximal 1/4 of $Sc+R_1-Rs$, and proximal 1/3 of costal cell; moderate length tan recumbent tuft near base of $Sc+R_1-Rs$, semierect tan tuft arising from near base of discal cell covering speculum in discal cell and, with anterior tuft, covering base of speculum in $Sc+R_1-Rs$ (Fig. 124); conspicuous erect orange-brown tuft along anterior edge of vein 2A, recumbent gray-tan tuft from posterior edge of 2A; fringes on both wings brown.

Venter orange-brown; forewing vein 2A moderately sinuate, bare and moderately swollen in central 1/3, no distinct groove (Fig. 124); shining gray-brown speculum in proximal 1/4 of CuA_2-2A (continued to end of bared portion of vein as modified red-brown scales) and in proximal 1/2 of anal cell (continued to tornus as modified red-brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax orange-brown, palpi tawny, eyes red, antennae black on dorsum, yellow on venter and beneath apiculus, nudum red-brown, 27 (n = 1) or 29 (n = 1) segments, ventral thorax orange-brown, pectus tawny, legs orange-brown proximad, orange distad, dorsal abdomen brown, overscaled with orange-brown, ventral abdomen warm brown.

Genitalia (Fig. 143) - tegumen narrow in lateral view, broad and nearly quadrate in dorsal view, long and thin dorso-caudal oriented process from each side of caudal end, tuft double and dense; uncus short, slightly decurved in lateral view, divided in dorsal view, arms widely spaced and short, ventral process of uncus as rounded lobe; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus nearly straight; saccus narrow, long, oriented dorso-cephalad; valva with costa-ampulla triangular with narrow flap at apex, harpe very long, narrow becoming slightly broader caudad, curving upward rather abruptly to blunt (somewhat club-shaped in caudal view) and serrated caudal end oriented nearly dorsad; aedeagus much shorter than valva, broad with blunt and flaring caudal end; cornuti as double row of slightly curved, robust, and moderately long spikes.

Female - unknown.

Distribution and phenology. This species has been reported from Honduras and northern South America (Venezuela, Guyana, Suriname, French Guiana, northern Brazil [Pará]) (Möschler 1879, Draudt 1922, Williams and Bell 1940, Bell 1946, Evans 1952, de Jong 1983). Three males were examined during this study: HONDURAS: La Ceiba, 19 June 1981 (GTA #8903), NICARAGUA: Zelaya Dept., Bluefields, 9 Dec. 1975 (GTA #13918), and VENEZUELA: Barinas, Rio Caparo Res. Station, 32 km E El Canton, 3-5 Feb. 1978, seasonal forest at blacklight (J. M. Burns no. X-1673).

Diagnosis and discussion. *Porphyrogenes zohra* is most similar to *P. stresa*, but is overall more brightly colored, vein 2A is more sinuate and swollen, and there are differences in the genitalia as noted above under *P. stresa*. Draudt's (1922) depiction indicated a specimen with a small yellow macule on the forewing. The male type in MNHU (Fig. 29, 30) is the [holo]type of *Telegonus zohra*.

Evans (1952) and subsequent students (e.g., Mielke 2004, 2005) have, without justification, considered *Thymele virgatus* Mabille, 1888 as the female of and synonymous with *P. zohra*. *Thymele virgatus*, another taxon (see above under *P. omphale*) without a clearly associated male, is here removed from that synonymy since there is yet nothing to indicate its relationship with *P. zohra*.

***Porphyrogenes sula* (Williams and Bell), 1940, reinstated status**

(Fig. 31, 32)

Ocyba sula Williams and Bell, 1940. Type locality: San Pedro Sula, Honduras; male holotype (Fig. 31, 32), originally in ANSP, transferred to CMNH.

Description. Male (measured and described from photographs of holotype, Fig. 31, 32) - forewing length = 22.5 mm; forewing with costal fold, apex slightly produced, pointed, termen slightly convex with short lobe at tornus, and anal margin slightly convex; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising nearer end of discal cell than to its base and well distad of CuA_2 ; dorsum brown, unmarked; forewing overscaled with bright red-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with bright red-brown posterior to vein Rs, heaviest basad and caudad, no indication of discal macules; shining proximal gray specular area cephalad including proximal 1/2 of costal cell; short blackish tufts; conspicuous erect red-brown tuft along anterior edge of vein 2A, recumbent gray-tan tuft from posterior edge of 2A; fringes on both wings red-brown becoming brown cephalad on forewing.

Venter very dark brown, hindwing entirely overscaled with red-brown; forewing vein 2A moderately sinuate, bare and slightly swollen in 2nd 1/4 from base, no distinct groove; shining gray speculum in proximal 1/2 of CuA_2 -2A and in proximal 1/2 of anal cell (continued to tornus as modified brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep paler red-brown groove just caudad of vein 2A.

Dorsal head and thorax blackish with many greenish scales, palpi gray, eyes appear dark, antennae black on dorsum, whitish on venter at least on shaft, ventral thorax and pectus greenish, legs brown proximad, orange-brown distad, dorsal abdomen rubbed, ventral abdomen blackish with greenish scales.

Genitalia - not examined, illustrated with original description (Williams and Bell 1940, see below).

Female - unknown.

Distribution. This species is definitely known only from the holotype from Honduras (Williams and Bell 1940). A male reared from Costa Rica (see photographs of 'Porphyrogenes Burns02' in Janzen and Hallwachs 2008) may also be this species. A female specimen attributed to *Porphyrogenes zohra* at the BM(NH) from Honduras (Evans 1952) requires closer scrutiny to determine if it is that species or *P. sula*.

Diagnosis and discussion. *Ocyba sula* was apparently named from a single male and that specimen (Fig. 31, 32), formerly in ANSP and now in CMNH, is the holotype. Evans (1952), without justification and apparently based on a perceived similarity of male genitalia, synonymized *Ocyba sula* with *Porphyrogenes zohra zohra*. This synonymy has been carried through to the present (e.g., Mielke 2004, 2005). The differences between the taxa, however, are abundant. In the genitalia, *P. zohra* has a more elongate harpe that is not recurved, a longer saccus, a proportionally larger gnathos, and an aedeagus that is stouter cephalad. The wings of *P. zohra* also exhibit differences from *P. sula* in having tan tufts, an even straighter termen of the hindwing, a more extensive swollen area on vein 2A on the ventral forewing, the dorsal overscaling is more orange (less reddish), and the venter is paler. *Porphyrogenes sula* seems most similar to an unnamed species from Panama (see below).

***Porphyrogenes glavia* Evans, 1952**

(Fig. 33, 34)

Porphyrogenes glavia Evans, 1952. Type locality: Panama; male [holo]type (Fig. 33, 34), in BM(NH).

Description. Male (measured and described from photographs of the [holo]type, Fig. 33, 34) - forewing length = 19.6 mm; forewing with no apparent costal fold, apex rounded, termen convex, anal margin slightly convex; hindwing termen convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum brown (purplish gloss noted by Evans 1952 not evident in photograph), unmarked; no overscaling evident, no apparent tuft; hindwing with shining grayish brown speculum in proximal 1/3 of costal cell; no tufts evident; fringes on both wings pale brown.

Venter duller brown than dorsum with purplish wash; forewing veins CuA_1 , CuA_2 , and 2A strongly bowed, otherwise vein 2A appears unmodified; shining gray-brown speculum in proximal 1/4 of CuA_2 -2A

and apparently modified gray-brown scales in proximal 1/2 of anal cell; hindwing with no indication of discal macules; cell 2A-3A with groove proximad just caudad of vein 2A.

Dorsal head and thorax appearing dark brown, palpi brown with 3rd segment upcurved and extended far beyond 2nd segment (a character not on other *Porphyrogenes*), eyes red, antennae black on dorsum, whitish on venter and beneath apiculus; ventral thorax apparently brownish, legs missing; abdomen brownish.

Genitalia - not examined. Evans' (1952) figure indicated a broad valva cephalad with the spiculose caudal end of the harpe very narrow and directed dorsad.

Female - not examined.

Distribution. The type is from Panama and the associated female has no location indicated (Evans 1952); these are the only known specimens of this species.

Diagnosis and discussion. The female of *P. glavia* was described as being brown on the dorsum with a purple flush and a bright ochreous hindwing, yellow-brown on the venter, and without macules on the forewing (Evans 1952); this specimen was not examined for this study. This species was named from a pair of specimens; the male in the BM(NH) is the [holo]type (Fig. 33, 34). *Porphyrogenes glavia* cannot be confused with any other species of *Porphyrogenes*.

***Porphyrogenes sparta* Evans, 1952**

(Fig. 35-38)

Porphyrogenes sparta Evans, 1952. Type locality: Pará [Brazil]; male [holo]type (Fig. 35, 36) in BM(NH).

Description. Male (measured and described from photographs of [holo]type, Fig. 35, 36) - forewing length = 17.1 mm; with costal fold, apex pointed, not produced, termen and anal margin slightly convex; hindwing termen convex, tornus produced to short lobe, vein Rs arising nearer to end of discal cell than its base and just distad of CuA_2 ; dorsum brown, unmarked, anal margin with apparent sparse blackish tuft basad of middle; hindwing brown, vague indication of discal macules; specular area proximad at least along costa, dark brown tufts towards base (origins not determinable from photograph), brown tuft along anterior edge of vein 2A; fringes on both wings brownish.

Venter brown, duller than dorsum; forewing vein 2A nearly straight ("centrally bare" with "oval dull yellowish band" according to Evans 1952); shining grayish speculum in proximal 1/4 of CuA_2 -2A and in proximal portion of anal cell (continued to tornus as modified gray-brown scales); hindwing with vague indication of dark discal macules, tornus blackish; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax brown, palpi brown, eye color uncertain from photograph, antennae black on dorsum, pale on venter and beneath apiculus, ventral thorax and pectus brownish with apparent greenish tinge, legs brown, dorsal abdomen brown.

Genitalia - not examined. Evans' (1952) figure indicated an apparent long process from the tegumen-uncus, a long and narrow uncus hooked caudad, and a valva upturned caudad to a double pointed terminus.

Female (measured and described from photographs of specimen associated with the [holo]type, Fig. 37, 38) - forewing length = 17.9 mm; forewing apex pointed, not produced, termen slightly convex, anal margin nearly straight; hindwing termen nearly straight, slightly concave just anterior to short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum brown; forewing with two white macules, that in M_3 - CuA_1 notably distad of origin of M_3 , truncated caudad, that in CuA_1 - CuA_2 large and more-or-less quadrate, centered under origin of CuA_1 ; hindwing with no indication of discal macules; brown tuft on dorsum of vein 2A; fringes on both wings brown paler than ground color.

Venter brown, duller than dorsum; forewing vein 2A nearly straight, modified tan scales in proximal 1/4 of CuA_2 -2A and in anal cell; hindwing with no indication of discal macules, tornus blackish; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax brown, eyes dark, palpi brown, antennae black on dorsum, pale on venter, ventral thorax and pectus brown, legs brown, dorsal abdomen brown, ventral abdomen gray.

Genitalia - not examined.

Distribution. *Porphyrogenes sparta* is apparently known only from Pará, Brazil (Evans 1952).

Diagnosis and discussion. Evans (1952) indicated that the female of *P. sparta* was similar to that he described as *P. spanda*, but with oblique macules on the forewing. The female associated with the [holo]type of *P. sparta* has short forewings and is similar to *P. pausias*, but has a better-developed tornal lobe.

One of the two males from Pará (Fig. 35, 36) in the BM(NH) (Evans 1952) is the [holo]type of *Porphyrogenes sparta*.

***Porphyrogenes spoda* Evans, 1952**

(Fig. 39, 40)

Porphyrogenes spoda Evans, 1952. Type locality: Chiriqui [Panama]; male [holo]type (Fig. 39, 40) in BM(NH).

Description. Male (measured and described from photographs of [holo]type, Fig. 39, 40) - forewing length = 22.6 mm; with costal fold, apex pointed, not produced, termen slightly convex towards apex, then nearly straight to a short lobe at tornus, anal margin slightly convex; hindwing slightly convex, tornus produced to prominent lobe, vein Rs arising nearer end of discal cell than to its base and well distad of CuA_2 ; dorsum brown, unmarked; forewing overscaled with red-brown, heaviest basad; hindwing overscaled with red-brown, no indication of discal macules; shining gray specular area in basal area cephalad with red-brown recumbent tufts; conspicuous erect red-brown tuft along vein 2A; fringes on both wings tan.

Venter red-brown, forewing browner than on dorsum; forewing vein 2A moderately sinuate, bare and moderately swollen in central 1/3, no distinct groove; shining gray speculum in proximal 1/4 of CuA_2 -2A and in proximal 1/3 of anal cell (continued to tornus as modified grayish brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of 2A.

Dorsal head brownish, thorax rubbed, palpi gray-brown, eyes appear dark, antennae black on dorsum, whitish on venter and beneath apiculus, ventral thorax and pectus brownish, legs brownish proximad, orange-brown distad, dorsal abdomen rubbed, ventral abdomen rubbed.

Genitalia - not examined. Evans' (1952) figure indicates a broad tegumen angled abruptly ventrad to a short uncus with very widely spaced arms. The broad harpe curves gradually dorsad.

Female - unknown.

Distribution. Known only from the [holo]type taken in Panama (Evans 1952).

Diagnosis and discussion. The single male of *Porphyrogenes spoda* in the BM(NH) noted by Evans (1952) (Fig. 39, 40) is the [holo]type.

***Porphyrogenes stupa* Evans, 1952**

(Fig. 41, 42)

Porphyrogenes stupa Evans, 1952. Type locality: unknown; male [holo]type (Fig. 41, 42) in BM(NH).

Description. Male (measured and described from photographs of [holo]type, Fig. 41, 42) - forewing length = 24.0 mm; wings stubby; forewing with costal fold, apex pointed, not produced, termen and anal margin prominently convex; hindwing termen convex, tornus produced to a barely discernible lobe, vein Rs arising nearer end of discal cell than to its base and distad to CuA_2 ; dorsum very dark brown, blackish distad with purplish sheen, unmarked; hindwing colored as forewing, no indication of discal macules; specular area not obvious, tufts red-brown; erect brownish tuft along vein 2A; fringes on both wings contrastingly whitish.

Venter darker than dorsum, purplish sheen more prominent; forewing vein 2A moderately sinuate, bare and swollen in 2nd 1/4 from base, no distinct groove; shining gray-brown speculum in proximal 1/4 of CuA_2 -2A (continued towards tornus in anal cell by modified brown scales); hindwing with no discal macules; cell 2A-3A with contrastingly pale brown deep groove just caudad of vein 2A.

Dorsal head and thorax brownish (Evans 1952 reported dorsal head as orange), palpi orange on venter, eyes red, antennae black on dorsum, yellowish on venter and beneath apiculus, ventral thorax and pectus orange, legs orange, dorsal abdomen brownish, ventral abdomen grayish.

Genitalia - not examined. Evans' (1952) figure indicates that the valva bends dorsad just caudad of its middle and has a broadened and spiculose caudal end.

Female - unknown.

Distribution. This species is known only from the [holo]type of unknown provenance.

Diagnosis and discussion. *Porphyrogenes stupa* was described from a single male without data in the BM(NH) (Evans 1952), the [holo]type (Fig. 41, 42). Its combination of very dark color, pattern of venation, and the harpe bending and then expanding caudad are distinctive and should facilitate the identification of other specimens of the species.

NEW SPECIES

Porphyrogenes convexus Austin and Mielke, new species

(Fig. 85, 86, 125, 144)

Description. Male (Fig. 85, 86) - forewing length = 23.3 mm (holotype); forewing with costal fold, apex slightly produced, pointed, posterior termen slightly concave, anal margin convex; hindwing termen convex, apex produced, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 (Fig. 125); dorsum brown; forewing overscaled with tawny basad, especially along anal margin where sparse pale tan tuft occurs 1/3 distance from base to tornus; hindwing extensively overscaled with tawny posterior to vein Rs, nearly reaching margin at tornus; shining gray speculum in base of anterior discal cell, proximal 1/2 of $Sc+R_1$ -Rs, and entire costal cell; prominent dense, short and small pale tan basad and contrasting dark brown distad recumbent tuft near base of $Sc+R_1$ -Rs, similar, but larger and contrastingly more orange than ground color, semierect tuft arising from near base of discal cell covering speculum in discal cell and, with anterior tuft, covering basal 2/3 of speculum in $Sc+R_1$ -Rs (Fig. 125); conspicuous erect tawny tuft along anterior edge of vein 2A, recumbent tawny-tan tuft from posterior edge of 2A; fringes on both wings dark brown.

Venter dark brown, forewing vein 2A strongly sinuate, bare and moderately swollen in central 1/3, this conspicuously in groove (Fig. 125); shining gray speculum in proximal 1/2 of CuA_2 -2A and in proximal 2/3 of anal cell (continued to tornus as modified brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny, palpi gray, eyes reddish, antennae black, yellow distad on venter and beneath apiculus, nudum red-brown, 27 (n = 1) segments, ventral thorax gray-green with some tawny scales, pectus gray-brown, legs brown, dorsal abdomen brown overscaled with tawny, ventral abdomen dark gray, very pale gray at segments.

Genitalia (Fig. 144) - tegumen narrow in lateral view, broad and more or less oval in dorsal view, long and thin caudally oriented process from each side of caudal end, tuft single across entire breadth between processes of tegumen and relatively sparse especially centrally; uncus decurved, long, and thin in lateral view, very broad in dorsal view, divided with arms widely spaced, long and thin, ventral process of uncus long and thin; gnathos shorter than uncus with long caudal arm upcurved and spiculose caudad, terminal ends somewhat rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus broad, oriented dorso-cephalad; valva with costa broadly rounded, grading into ampulla that angles ventro-caudad to harpe; harpe long, proximal end narrow, curving dorsad to broader, more or less triangular caudal end, this densely dentate; aedeagus nearly as long as valva, broad, tapering cephalad, flaring caudad, ventral surface shagreened cephalad of caudal end; cornuti of about 12 short and straight spikes in two bundles.

Female - unknown.

Type. Holotype male with the following labels: white, printed - / BRASIL: Rondonia / 65 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 22 November 1992 / leg. G. T. Austin / at paper lures / 1400-1430 /; white, printed and handprinted - / Genitalia Vial / GTA - 2760 /; white, printed - / G.T. Austin colln. / MGCL Accession / # 2004-5 /; red, printed - / HOLOTYPE / *Porphyrogenes convexus* / Austin & Mielke /. Deposited at the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil.

Type locality. BRAZIL: Rondônia; 65 kilometers south of Ariquemes, Linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, elevation 180 m. This is approximately 5 km northeast of Cacaúlândia in typical lowland tropical rainforest.

Etymology. This species is named after its prominently convex hindwing.

Distribution and phenology. *Porphyrogenes convexus* is known only from the holotype taken in November.

Diagnosis and discussion. *Porphyrogenes convexus* is readily recognized by the extreme convexity of the hindwing similar to that of *P. omphale* and by the dark and contrasting anterior tuft on the dorsal hindwing. The genitalia of *P. convexus* are very different from any heretofore described species with the harpe having an expanded and dentate caudal end, but generally similar to those of an additional five species described below.

***Porphyrogenes splendidus* Austin and Mielke, new species**

(Fig. 87, 88, 126, 145)

Description. Male (Fig. 87, 88) - forewing length = 27.0 mm (holotype); forewing with costal fold, apex slightly produced, pointed, termen relatively straight, anal margin convex; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising mid-base and end of discal cell and well basad of CuA_2 (Fig. 126); dorsum brown, unmarked; forewing overscaled with tawny, heaviest basad, anal margin with very sparse tuft proximad; hindwing overscaled with tawny posterior to vein Rs; shining yellow-tan speculum at base in anterior discal cell, shining gray speculum in proximal 1/4 of $Sc+R_1-Rs$ and proximal 2/3 of costal cell; moderately long ochreous-tan recumbent tuft near base of $Sc+R_1-Rs$ covering speculum in that cell, slightly thicker semierect ochreous-tan tuft arising from near base of discal cell covering speculum in discal cell (Fig. 126); conspicuous erect tawny tuft along anterior edge of vein 2A, recumbent tan tuft from posterior edge of 2A; fringes on both wings slightly paler than ground color.

Venter similar to dorsum, duller and browner; forewing vein 2A strongly sinuate, but otherwise unmodified (Fig. 126); shining gray speculum in proximal 1/4 of CuA_2-2A (continued to beyond mid-wing as modified brown scales) and in proximal 1/2 of anal cell (continued to tornus as modified tan scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny, palpi gray-tan, eyes red, antennae black, yellow distad on venter and beneath apiculus, nudum red-brown, 30 ($n = 1$) segments, ventral thorax ochreous-gray, pectus ochreous-tan, legs yellow-orange, dorsal abdomen brown, gray at segments, overscaled with tawny, ventral abdomen charcoal brown.

Genitalia (Fig. 145) - tegumen broad in lateral view, broad and quadrate in dorsal view, long and thin dorso-caudal oriented process from each side of caudal end, tuft double and sparse; uncus strongly decurved in lateral view, divided in dorsal view, arms widely spaced, short and broad, ventral process of uncus thin; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus strongly curved; saccus narrow, long, oriented dorso-cephalad; valva with costa-ampulla broadly triangular, harpes asymmetrical, long, broad proximad, right harpe curving abruptly upward to broader and finely serrate caudal end, dorsal edge also serrate, left harpe evenly curved upward to pointed caudal end oriented dorso-caudad, dorsal edge grossly serrated; aedeagus slightly shorter than valva, broad with blunt caudal end; cornuti of about 14 slightly curved, moderately robust, and short spikes in two rows.

Female - unknown.

Type. Holotype male with the following labels: white, printed - / R. Yapacani, / E. Bolivia, / Alt. 600 m. / J. Steinbach. /; white, printed and handprinted - / Sept. / 1914 /; white, printed - / Carn. Mus. / Acc. 5570. /; white, printed and handprinted - / Genitalic Vial / GTA - 4182 /; red, printed - / HOLOTYPE / *Porphyrogenes splendidus* / Austin & Mielke /. Deposited at the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

Type locality. BOLIVIA: Rio Yapacani, 600m in elevation. Johnson et al. (1990) commented on the confusion concerning date and locality data on specimens attributed to Steinbach.

Etymology. The name refers to the large size and bright color of this species.

Distribution and phenology. The species is known only from the holotype.

Diagnosis and discussion. A bright tawny and completely unmarked species, *P. splendidus* is one of the largest of the known *Porphyrogenes*, comparable in size to *P. probus*. It appears unique in the genus by having asymmetrical valvae. It resembles the species to be described next (see discussion there).

***Porphyrogenes simulator* Austin and Mielke, new species**

(Fig. 89, 90, 127, 146)

Description. Male (Fig. 89, 90) - forewing length = 25.2 mm (holotype); forewing with costal fold, apex slightly produced, pointed, termen and anal margin nearly straight; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising nearer to end of discal cell than to its base and just basad of CuA_2 (Fig. 127); dorsum brown, unmarked; forewing overscaled with orange-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with orange-brown posterior to vein Rs; shining gray speculum in anterior discal cell (as relatively large area), proximal 1/3 of $Sc+R_1$ -Rs, and proximal 1/4 of costal cell; moderately long ochreous-tan recumbent tuft near base of $Sc+R_1$ -Rs covering speculum in that cell, slightly thicker semierect ochreous-tan tuft arising from near base of discal cell covering speculum in discal cell (Fig. 127); conspicuous erect orange-brown tuft along anterior edge of vein 2A, recumbent gray-brown tuft from posterior edge of 2A; fringes on both wings brown.

Venter similar to dorsum, duller and browner; forewing vein 2A strongly sinuate but otherwise unmodified (Fig. 127); shining gray-tan speculum in proximal 1/4 of CuA_2 -2A (continued to just beyond midwing as modified brown scales) and in proximal 1/2 of anal cell (continued to tornus as modified pale tan scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax orange-brown, palpi dark gray, eyes red, antennae black, yellow on venter distad, apiculus missing from both antennae, ventral thorax brown, pectus medium gray-tan, legs ochreous-brown, dorsal abdomen brown, gray at segments, overscaled with orange-brown, ventral abdomen charcoal brown.

Genitalia (Fig. 146) - tegumen broad and quadrate in lateral and dorsal views, long, thin and almost dorsally oriented process from each side of caudal end, tuft single and sparse; uncus decurved in lateral view, divided in dorsal view, arms widely spaced, short and broad, ventral process of uncus thin; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus broad, long, oriented dorso-cephalad; valva with costa-ampulla broadly rounded, curving ventro-caudad to harpe, harpe long, broad cephalad, curving irregularly upward and inward to blunt and dentate caudal end oriented nearly dorsad; aedeagus approximately length of valva, broad with blunt caudal end; cornuti as two rows of long, slightly curved, thin spikes.

Female - unknown.

Type. Holotype male with the following labels: white, printed - / Buenavista, / E. Bolivia, / Alt. 400 m. / J. Steinbach /; white, printed and handprinted - / Apr. / 1915 /; white, printed - / Carn. Mus. / Acc. 5570. /; white, printed and handprinted - / Genitalic Vial / GTA - 4181 /; red, printed - / HOLOTYPE / *Porphyrogenes simulator* / Austin & Mielke /. Deposited at the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

Type locality. BOLIVIA: Buenavista, 400m in elevation. As noted above, Johnson et al. (1990) commented on data associated with Steinbach's specimens.

Etymology. The name means "imitator" and refers to this species' similarity to several other species, especially the preceding.

Distribution and phenology. The species is known only from the holotype.

Diagnosis and discussion. *Porphyrogenes simulator* is another large and bright species. It is generally similar to *P. splendidus*, but is smaller, vein Rs arises just before CuA_2 (well before on *P. splendidus*), has a considerably less extensive specular area on the costa of the dorsal hindwing, and has darker palpi, a grayer pectus, and browner legs. The genitalia (Fig. 146) also differ in the orientation of the processes of the tegumen, the length of the saccus, and particularly in the structure of the valvae (compare with Fig. 145).

***Porphyrogenes spadix* Austin and Mielke, new species**

(Fig. 91, 92, 128, 147)

Description. Male (Fig. 91, 92) - mean forewing length = 24.2 mm (23.7-24.9 mm, n = 5; from Rondônia, Brazil); forewing with costal fold, apex pointed, slightly produced, termen and anal margin slightly convex; hindwing termen slightly convex except slightly concave before short tornal lobe, vein Rs arising mid-base and end of discal cell and basad of CuA_2 (Fig. 128); dorsum brown; forewing overscaled with deep red-brown, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with deep red-brown posterior to vein Rs to within 2 mm of margin; shining relatively dark gray speculum in anterior discal cell, proximal 1/3 of $Sc+R_1-Rs$, and proximal 2/3 of costal cell; medium gray recumbent tuft of moderate length near base of $Sc+R_1-Rs$, similar semierect tuft arising from near base of discal cell covering speculum in discal cell and, with anterior tuft, covering speculum in $Sc+R_1-Rs$ (Fig. 128); conspicuous, erect, deep red-brown tuft along anterior edge of vein 2A, recumbent dark gray tuft from posterior edge of 2A; fringes on both wings dark brown tipped with pale gray.

Venter nearly uniform purple-brown; forewing vein 2A weakly sinuate, but otherwise unmodified (Fig. 128); shining medium gray speculum in proximal 1/4 of CuA_2-2A (continued to 2/3 distance to termen as modified dark gray scales) and in proximal 1/3 of anal cell (continued to tornus as modified dark gray grading to brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax deep red-brown, palpi charcoal-gray, eyes red, antennae black, yellow on venter and beneath apiculus, nudum red brown, 30 (n = 2) segments, ventral thorax charcoal-gray with some green scales, pectus medium tan, legs orange-brown proximad, yellow-orange distad, dorsal abdomen dark brown, vaguely gray at segments, overscaled with deep red-brown, especially anteriorly, ventral abdomen dark gray-brown, last segment ochreous.

Genitalia (Fig. 147) - tegumen relatively narrow in lateral view, broad and quadrate in dorsal view, long and very thin dorso-caudal oriented process from each side of caudal end, tuft double and sparse; uncus short, narrow in lateral view with caudal end blunt, divided in dorsal view, arms widely separated, thin and moderately long, ventral process of uncus narrowly triangular; gnathos shorter than uncus, strongly upcurved distad in lateral view, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus evenly curved; saccus broad, oriented nearly directly cephalad; valva with costa/ampulla broadly triangular, harpe long, gradually turned upward and slightly inward, becoming broader caudad, caudal end oriented nearly dorsad with series of prominent teeth; aedeagus slightly longer than valva, more or less tubular, caudal end blunt with flaps oriented dorsad on both sides; cornuti of about 12 slightly curved, long, and robust spikes in two clusters.

Female - unknown.

Types. Holotype male with the following labels: white, printed - / BRASIL: Rondonia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 14 August 1993 / leg. G. T. Austin / (associated with *Eciton buchelli* - 1500-1530) /; white, printed and handprinted - / Genitalia Vial / GTA - 3894 /; white, printed - / G.T. Austin colln. / MGCL Accession / # 2004-5 /; red, printed - / HOLOTYPE / *Porphyrogenes spadix* / Austin & Mielke /. Deposited at the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. Paratypes (all males, deposited at MGCL) - same location as holotype, 14 June 1993 (GTA #3587), 16 June 1993 (GTA #3489), 11 Aug. 1997 (GTA #8875); 24 Oct. 1997 (GTA #9168), 4-16 Nov. 1997 (GTA #8878).

Type locality. BRAZIL: Rondônia; 62 kilometers south of Ariquemes, Linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, elevation 180 m. This is approximately 5 kilometers northeast of Cacaupônia in typical lowland tropical rainforest.

Etymology. The name means "chestnut-brown" referring to the deep red-brown dorsal color on this species.

Distribution and phenology. *Porphyrogenes spadix* is known only from the types taken in June, August, October, and November.

Diagnosis and discussion. *Porphyrogenes spadix* is immediately identified by its deep red-brown color in comparison with the more tawny dorsa of most *Porphyrogenes*. The configuration of the harpe is reminiscent of *P. convexus* with its broadened caudal end, but other structures of the genitalia are very different.

***Porphyrogenes sparus* Austin and Mielke, new species**

(Fig. 93, 94, 129, 148)

Description. Male (Fig. 93, 94) - mean forewing length = 22.8 mm (22.1-24.4 mm, n = 5; from Rondônia, Brazil); forewing with costal fold, apex somewhat rounded, slightly produced, termen nearly straight, anal margin slightly convex; hindwing termen slightly convex, tornus produced to short lobe, vein Rs arising nearer to end of discal cell than to its base and opposite CuA_2 (Fig. 129); dorsum brown; forewing overscaled with dark orange-brown basad and along anal margin, anal margin with dense tuft at convex portion; hindwing overscaled with dark orange-brown posterior to vein Rs except for narrowly brown outer margin; shining gray speculum in anterior discal cell (as small area), proximal 1/2 of $Sc+R_1$ -Rs, and proximal 1/3 of costal cell; short, tan on basal 1/4 and dark brown distad, recumbent tuft near base of $Sc+R_1$ -Rs, similar (but contrastingly redder than ground color) semierect tuft arising from near base of discal cell covering very base of speculum in discal cell and, with anterior tuft, covering the basal 1/2 of speculum in $Sc+R_1$ -Rs (Fig. 129); conspicuous erect dark orange-brown tuft along anterior edge of vein 2A, recumbent dark tan tuft from posterior edge of 2A; fringes on both wings gray-brown.

Venter brown; forewing vein 2A weakly sinuate, bare and moderately swollen in second 1/4 (from base), this conspicuously in groove (Fig. 129), shining gray speculum in proximal 1/2 of CuA_2 -2A and in proximal 2/3 of anal cell (continued to tornus as modified pale brown scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax dark orange-brown, palpi ochreous-gray, eyes red, antennae black, yellow on venter distad and beneath apiculus, nudum 26 (n = 1), 27 (n = 1), or 30 (n = 1) segments, ventral thorax gray-green, pectus dark orange-brown, legs yellow-orange, dorsal abdomen brown, overscaled with dark orange-brown especially anteriorly, ventral abdomen gray to gray-brown, often paler at segments.

Genitalia (Fig. 148) - tegumen narrow in lateral view, broad and oval in dorsal view, long, thin, and slightly curved dorso-caudal oriented process from each side of caudal end, tuft double and dense; uncus thin in lateral view, divided in dorsal view, arms widely spaced and robust, ventral process of uncus thin and pointed; gnathos thin in lateral view, proximal arm oriented ventrad, distal arm short, blunt, oriented caudad, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus angled in about middle; saccus broad, oriented cephalad; valva with costa broad, slightly convex grading into ampulla which angles ventro-caudad to harpe, harpe long, very thin, curved to spatulate (most prominent in caudal view) caudal end oriented nearly dorsad; aedeagus slightly longer than valva, broad, cephalic end narrower, caudal end blunt, shagreened cephalad of caudal end; cornuti of about two dozen straight, long, and thin spikes in several clusters.

Female - unknown.

Types. Holotype male with the following labels: white, printed - / BRASIL: Rondonia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 20 August 1993 / leg. G. T. Austin / associated with *Eciton / burchelli* - 1400-1430 /; white, printed and handprinted - / Genitalia Vial / GTA - 3928 /; white, printed - / G.T. Austin colln. / MGCL Accession / # 2004-5 /; red, printed - / HOLOTYPE / *Porphyrogenes sparus* / Austin & Mielke /. Deposited at the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. Paratypes (all males, deposited at MGCL, all BRAZIL: Rondônia) - same location as holotype, 13 Nov. 1992 (GTA #3061); 62 km S Ariquemes, Linha C-20, 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18, 22 Nov. 1992 (GTA #2806); Linha C-10, 5 km S of Cacaúlândia, 10 April 1997 (GTA #8874), 30 July 1995 (GTA #6586), 11 Sept. 1994 (GTA #5348).

Type locality. BRAZIL: Rondônia; 62 kilometers south of Ariquemes, Linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, elevation 180 m. This is approximately 5 kilometers northeast of Cacaúlândia in typical lowland tropical rainforest.

Etymology. The name means a "spear with a curved blade" and refers to the long and curved harpe of the male genitalia.

Distribution and phenology. This species is known only from the types taken in April, July to September, and November.

Diagnosis and discussion. Identification of *P. sparus* is stymied at couplets 6 and 7 in Evans' (1952) key with the origin of vein Rs opposite that of CuA_2 . Superficially, the species does not resemble any described species. The genitalia have the general form of the several species with a long and upcurved harpe, but differ in many details.

***Porphyrogenes specularis* Austin and Mielke, new species**

(Fig. 95, 96, 130, 149)

Description. Male (Fig. 95, 96) - forewing length = 22.3 mm (holotype); forewing with costal fold, apex produced, pointed, termen relatively straight, anal margin convex in middle; hindwing termen slightly convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and just basad of CuA_2 (Fig. 130); dorsum brown; forewing overscaled with tawny-ochreous, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with tawny-ochreous posterior to vein Rs, vague indication of brown discal macules; shining gray speculum in anterior discal cell, proximal 2/3 of $Sc+R_1-Rs$, and proximal 1/2 of costal cell; short dark brown and contrasting recumbent tuft near base of $Sc+R_1-Rs$, slightly larger semierect pale tan tuft arising from near base of discal cell covering most of speculum in discal cell and, with anterior tuft, covering basal 1/2 of speculum in $Sc+R_1-Rs$ (Fig. 130); conspicuous erect tawny-ochreous tuft along anterior edge of vein 2A, recumbent ochreous-tan tuft from posterior edge of 2A; fringes on both wings dark brown.

Venter similar to dorsum, duller and browner; forewing vein 2A weakly sinuate, bare and broadly swollen for nearly entire basal 1/2, this inconspicuously in groove (Fig. 130), shining gray speculum in proximal 1/3 of CuA_2-2A and in proximal 2/3 of anal cell (continued to tornus as modified tan scales); hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax tawny-ochreous, palpi pale ochreous, eyes red, antennae black, yellow on venter distad and beneath apiculus, nudum red-brown, 29 (n = 1) segments, ventral thorax and pectus tawny-ochreous, legs orange, dorsal abdomen brown, vaguely gray at segments, overscaled with tawny-ochreous anteriorly, ventral abdomen ochreous-gray, last segment red-brown.

Genitalia (Fig. 149) - tegumen narrow in lateral view, short and moderately broad in dorsal view, thin dorsad oriented process of moderate length from each side of caudal end, tuft single and dense; uncus slightly decurved and thin in lateral view, divided in V-shape in dorsal view, arms moderately spaced, long and broad, ventral process of uncus broadly triangular; gnathos shorter than uncus, caudal arm straight, terminal ends narrow and rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus sinuate; saccus medium in width and long, oriented dorso-cephalad; valva with costa-ampulla broadly rounded, curving gradually ventro-caudad to harpe, harpe long, narrowing caudad, mostly straight with slight upward curve at caudal end, entire dorsal ridge finely serrated; aedeagus shorter than valva, moderately broad with blunt caudal end; cornuti in two rows of slightly curved spikes, one series of thin and the other of 6 more robust spikes.

Female - unknown.

Type. Holotype male with the following labels: white, printed - / BRASIL: Rondonia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 14 June 1993 / leg. G. T. Austin / (at paper lures / 1500-1530) /; white, printed and handprinted - / Genitalic Vial / GTA - 3589 /; white, printed - / G.T. Austin colln. / MGCL Accession / # 2004-5 /; red, printed - / HOLOTYPE / *Porphyrogenes specularis* / Austin & Mielke /. Deposited at the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil.

Type locality. BRAZIL: Rondônia; 62 kilometers south of Ariquemes, Linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, elevation 180 m. This is approximately 5 km northeast of Cacaupônia in typical lowland tropical rainforest.

Etymology. The name means “like a mirror” and refers to the shining patches on the dorsal hindwing and ventral forewing. The former is more extensive than it is on most species in the genus.

Distribution and phenology. The species is known only from the holotype taken in June.

Diagnosis and discussion. *Porphyrogenes specularis* appears most similar to the male assigned by Evans (1952) to *P. sororcula* (see also above under that species). *Porphyrogenes sororcula* was named from a single female from French Guiana (Mabille and Boulet 1912) and Evans (1952) was unsure if he properly associated a male, also from French Guiana, at the BM(NH). *Porphyrogenes specularis* apparently differs from that male in several respects. The hindwing has the central portion of the anal margin convex (this reported as “nearly straight” for *P. “sororcula”* by Evans 1952) and no mention was made of a prominent speculum anteriorly on the dorsal hindwing. Additionally, Evans (1952) reported the tufts (erroneously as on the forewing) as being brown on *P. sororcula*; the anterior is brown on *P. specularis*, but the posterior is a much paler tan in color. The genitalia of the taxon from Rondônia also show several

differences from those illustrated for *P. sororcula* by Evans (1952; note again that his genitalic figures for *Porphyrogenes* are uniformly poor): the tegumen is shorter, the uncus is much narrower with its arms more closely spaced, and the valva is longer with the harpe more elongate and costa/ampulla broader. We believe that the male of *P. sororcula* is *Bungalotis immaculata* (see above).

Porphyrogenes specularis is readily recognized by the extensive speculum on the dorsal hindwing with the conspicuous dark brown tuft from its proximal end.

***Porphyrogenes spina* Austin and Mielke, new species**

(Fig. 97, 98, 131, 150)

Description. Male (Fig. 97, 98) - forewing length = 22.8 mm, 23.2 mm (both from Panama); forewing with costal fold, apex slightly produced, pointed, termen and anal margin nearly straight; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of CuA_2 (Fig. 131); dorsum brown, unmarked; forewing overscaled with ochreous-olive, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with ochreous-olive posterior to vein Rs; shining gray speculum in anterior discal cell (as small area), proximal 1/2 of $Sc+R_1$ -Rs, and entire costal cell; very short and small gray recumbent tuft near base of $Sc+R_1$ -Rs, similarly short but much thicker semierect gray tuft arising from near base of discal cell covering speculum in discal cell, curving anteriorly and, with anterior tuft, covering base of speculum in $Sc+R_1$ -Rs (Fig. 131); conspicuous erect ochreous-olive tuft along anterior edge of vein 2A, recumbent pale tan tuft from posterior edge of 2A; fringes on both wings gray-brown.

Venter brown; forewing vein 2A weakly sinuate, bare and moderately swollen in central 1/3 (Fig. 131); shining gray-tan speculum in proximal 1/2 of CuA_2 -2A (continued to about 3/4 distance to termen as modified brown scales) and in entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax ochreous-olive, palpi pale gray, eyes red, antennae black, yellow on venter distad and beneath apiculus, nudum red-brown, 30 (n = 1) or 31 (n = 1) segments, ventral thorax gray-brown, pectus brown with much green anteriorly, legs brown proximad, ochreous-brown distad, dorsal abdomen brown, overscaled with ochreous-olive, ventral abdomen warm brown, some greenish anteriorly.

Genitalia (Fig. 150) - tegumen narrow in lateral view, broad and nearly round in dorsal view, very long and relatively broad dorso-caudal oriented process from each side of caudal end, tuft double and dense; uncus nearly straight in lateral view, divided in dorsal view, arms very widely spaced, long and thin, ventral process of uncus very thin; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus curved; saccus very broad, short, oriented dorso-cephalad; valva with costa-ampulla more or less rhomboidal, harpe long, relatively broad cephalad, curving evenly upward to broader and finely (but densely) dentate caudal end oriented nearly dorsad, dentate projection proximad of caudal end dorsad; aedeagus shorter than valva, broad with flaring caudal end; cornuti as three rows each of multiple relatively short, slightly curved, and thin spikes.

Female - unknown.

Types. Holotype male with the following labels: white, printed and handprinted - / PANAMÁ: Canal Zone / Gamboa / x.18.78 / Gordon B. Small /; white, printed and handprinted - / Genitalic Vial / GTA - 8905 /; red, printed - / HOLOTYPE / *Porphyrogenes spina* / Austin & Mielke /. Deposited at the National Museum of Natural History, Washington, DC. Paratype male - PANAMÁ: Panamá Prov., Distrito de El Llano, Cordillera de San Blas, north of El Llano, ca. 330m, 10 May 1978 (GTA #8904, deposited at USNM).

Type locality. PANAMÁ: Canal Zone; Gamboa.

Etymology. The name means spine and refers to the spine-like serrations of the harpe.

Distribution and phenology. The species is known only from the types taken in Panama during May and October.

Diagnosis and discussion. *Porphyrogenes spina* is similar to a species to be described below and is distinguished in the discussion of that species. This species is also somewhat similar to *P. spoda*, but the genitalia are very different, the tufts are gray (red-brown on *P. spoda*), the swollen portion of vein 2A is shorter than on *P. spoda*, and *P. spina* is not as reddish brown.

***Porphyrogenes sporta* Austin and Mielke, new species**

(Fig. 99, 100, 132, 151)

Description. Male (Fig. 99, 100) - forewing length = 23.6 mm (holotype); forewing with costal fold, apex pointed, not produced, termen relatively straight, anal margin straight; hindwing termen nearly straight, tornus produced to short lobe, vein Rs arising very near distal end of discal cell and well distad of CuA_2 (Fig. 132); dorsum brown, unmarked; forewing overscaled with ochreous-olive, heaviest basad, anal margin with sparse tuft proximad; hindwing overscaled with ochreous-olive posterior to vein Rs, no indication of discal macules; shining gray speculum in base of anterior discal cell, proximal 1/2 of $Sc+R_1-Rs$, and proximal 2/3 of costal cell; short tan recumbent tuft near base of $Sc+R_1-Rs$, slightly larger semierect tan tuft arising from near base of discal cell covering speculum in discal cell, strongly angled anteriorly covering anterior tuft and partially covering the base of speculum in $Sc+R_1-Rs$ (Fig. 132); conspicuous erect ochreous-olive tuft along anterior edge of vein 2A, recumbent pale brown tuft from posterior edge of 2A; fringes on both wings brown.

Venter similar to dorsum; tawny color duller; forewing vein 2A moderately sinuate, bare and broadly swollen in central 1/3, conspicuously in groove (Fig. 132), shining gray speculum in proximal 3/4 of CuA_2-2A and in entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax ochreous-olive, palpi gray, eyes reddish, antennae black, yellow distad on venter and beneath apiculus, nudum red-brown, 27 (n = 1) segments, ventral thorax gray-brown, pectus pale gray-tan, legs ochreous-brown, dorsal abdomen brown, overscaled with ochreous-olive, ventral abdomen charcoal gray.

Genitalia (Fig. 151) - tegumen narrow in lateral view, broad and nearly round in dorsal view, thin and very long dorso-caudal oriented process from each side of caudal end, tuft double and dense; uncus slightly decurved in lateral view, divided in dorsal view, arms widely spaced, long and thin, ventral process of uncus narrowly triangular; gnathos shorter than uncus, terminal ends rounded in ventral view; combined ventral arms from tegumen and dorsal arms from saccus slightly curved; saccus short and broad, oriented cephalad; valva with costa-ampulla broadly rounded, broadest cephalad, harpe long, broad cephalad, curving evenly upward to broader, finely and densely dentate caudal end oriented dorso-caudad; aedeagus shorter than valva, broad with blunt and slightly flaring caudal end; cornuti as two rows of medium length, slightly curved, and robust spikes.

Female - unknown.

Type. Holotype male with the following labels: white, handwritten - / Cacagualito / 1500 ft. May /; white, handwritten - partially unreadable with descriptive notes in comparison with "*Bungalotis*" *vulpecula*; white, printed - / Holland / Collection /; white, printed and handprinted - / Genitalic Vial / GTA - 4180 /; red, printed - / HOLOTYPE / *Porphyrogenes sporta* / Austin & Mielke /. Deposited at the Carnegie Museum of Natural History, Pittsburgh, Pennsylvania.

Type locality. COLOMBIA: Department of Magdalena; Cacagualito.

Etymology. The name means "basket" and refers to the somewhat basket-like shape of the terminal end of the harpe.

Distribution and phenology. The species is known only from the holotype taken in May.

Diagnosis and discussion. *Porphyrogenes sporta* is similar to *P. spina*, but differs in having a less extensive speculum on the dorsal hindwing, tan rather than gray tufts, a more sinuate and broadly swollen vein 2A in a conspicuous groove on the forewing, and a gray-tan rather than brown and green pectus. The male genitalia are also similar with both having long processes from the tegumen (being longer on *P. sporta*). The uncus on *P. sporta* is more curvate, the distal arm of the gnathos is shorter, the harpe is curved less sharply and has a more evenly rounded caudal end (without the projection occurring on *P. spina*), the aedeagus is less flaring at the caudal end, and the spikes of the cornuti are more robust.

With the description of this and the previous species, there are now six species (also including *P. convexus*, *P. simulator*, *P. splendidus*, and *P. spadix*) of *Porphyrogenes* that have a uniformly dark brown venter and an elongate and upcurved harpe to the male genitalia that broadens caudad and terminates in a conspicuously toothed caudal end. This genital configuration is not present on other species of the genus, except perhaps for the smaller *P. sparta* (see figure in Evans 1952).

***Porphyrogenes speciosus* Austin and Mielke, new species**

(Fig. 101, 102, 133, 153)

Description. Male (Fig. 101, 102) - forewing length = 29.6 mm (holotype); forewing with costal fold, apex slightly produced, slightly pointed, termen convex apically, then nearly straight, anal margin broadly convex in middle; hindwing termen broadly convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 (Fig. 133); dorsum brown, unmarked; forewing overscaled with orange-brown, heaviest basad in CuA_2 and anal cell, anal margin with orange-brown tuft proximad; hindwing overscaled with orange-brown on basal half posterior to vein Rs; shining gray speculum in anterior discal cell, proximal 1/4 of $Sc+R_1-Rs$, and proximal 1/2 of costal cell; moderately long pale yellow-tan recumbent tuft near base of $Sc+R_1-Rs$ covering speculum in that cell, semierect pale yellow-tan tuft arising from near base of discal cell covering speculum in discal cell (Fig. 133); conspicuous erect pale yellow-tan tuft along anterior edge of vein 2A, recumbent orange-brown tuft from posterior edge of 2A; fringes on both wings brown.

Venter brown, hindwing with slight purplish tinge especially in CuA_2-2A ; forewing vein 2A curved, not swollen, surrounded (broadest on cephalic edge) 1/3 distance from base by oval area of modified hair-like scales (appearing as a band without magnification, Fig. 133); shining gray-tan speculum in proximal 1/3 of posterior 2/3 of CuA_2-2A and in nearly entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head gray-brown with a few greenish scales, palpi gray, eyes red, antennae black, yellow on venter most extensive distad on shaft, nudum dark red-brown, 28 (n = 1) segments, dorsal thorax orange-brown, ventral thorax mixed brown and blue-green, pectus brown with a few greenish scales cephalad, legs brown, dorsal abdomen dark brown, ventral greased but appearing dark gray.

Genitalia (Fig. 153) - tegumen narrow in lateral view, broad in dorsal view, long, thin and dorso-caudal oriented process from each side of caudal end, tuft double and sparse; uncus decurved in lateral view, broadly divided in dorsal view, arms widely spaced, long and parallel, ventral process of uncus more or less triangular; gnathos shorter than uncus, terminal ends lobate inwardly in ventral view; combined ventral arms from tegumen and dorsal arms from saccus slightly curved; saccus broad, oriented dorso-cephalad; valva with costa-ampulla broadly quadrate, harpe long, narrow, bent abruptly dorsad at about its middle, broadened slightly beyond bend, then narrowing to weakly spiculate caudal end; aedeagus about length of valva, broad with blunt caudal end; cornuti as short and nearly straight spikes.

Female - unknown.

Type. Holotype male with the following labels: white, handprinted - / Buen Amigo / 27 Apr 95 / MAU - II Hr. /; white, handprinted - / 297 ? /; white, printed and handprinted - / Genitalic Vial / GTA - 13985 /; red, printed - / HOLOTYPE / *Porphyrogenes speciosus* / Austin & Mielke /. Deposited for now in the Haber collection.

Type locality. COSTA RICA: Puntarenas; San Luis Monteverde, Buen Amigo.

Etymology. The name means “handsome or imposing” and refers to this species’ large size and bright color.

Distribution and phenology. The species is known only from the holotype.

Diagnosis and discussion. *Porphyrogenes speciosus* is one of the larger species of the genus. The valva, especially the long and upcurved harpe, of *P. speciosus* is similar to this structure of *P. stresa*, *P. zohra*, and *P. sparus*, but the costa-ampulla is broader and more quadrate than on any of those species. In addition, the uncus of *P. speciosus* is longer than on those species. The valva of *P. sula* as illustrated by Williams and Bell (1940) is somewhat quadrate as on *P. speciosus* and the harpe appears similarly expanded near its bend. *Porphyrogenes sula*, however, is smaller, has different venation and wing shape, and has blackish tufts anteriorly on the dorsal hindwing;

***Porphyrogenes* undescribed species**

(Fig. 83, 84, 152)

An extensive series of a species of *Porphyrogenes* (to be subsequently named and described) from northwestern Costa Rica was reared from early stages (Janzen and Hallwachs 2008). Males of this species have a dark brown dorsum with extensive tawny-orange overscaling basad, tawny tufts of the hindwing,

and a virtually unmarked dark brown venter (Fig. 83, 84). Females are gray-brown with a single large white trapezoidal macule in CuA_1 - CuA_2 on the forewing. The species is recognized by its prominently whitish fringes, a character not observed on other *Porphyrogenes* with the exception of the very darkly colored *P. stupa*. Genitalia (Fig. 152) of an apparent male of this species are similar to those of *P. zohra* (specimen from COSTA RICA: Ciudad Colon, September, GTA #13917).

UNASSOCIATED FEMALES

Some females of apparent *Porphyrogenes* are so different from any known male that it is not presently possible to associate them. Combinations that have been made range from blatantly incorrect with females misidentified as males and associated with a female of another phenotype (Möschler 1877), to those where there was no stated justification for their putative placement, and to those that were correct. These females are here treated separately in the following accounts. Three of these have received names; one or more of which may necessitate nomenclatural changes once their males become known. Five others may or may not be of described species. The latter are described, but not named. Only when *in copula* pairs are encountered or when both sexes are reared from the same female will it be possible to make unequivocal associations. Comparisons of DNA extracted from freshly collected individuals should also serve to associate conspecific sexes.

Porphyrogenes passalus (Herrich-Schäffer, 1869)

(Fig. 43, 44)

Eudamus passalus Herrich-Schäffer, 1869. Type locality: unknown; female type (herein designated the lectotype, Fig. 43, 44) in MNHU.

Description. Female (described from photographs of the type and one from Rio Songo, Bolivia, Fig. 43, 44) - forewing length = 29.0 mm (from Bolivia), forewing apex rounded, not produced, termen convex, anal margin straight; hindwing termen convex, slightly concave just anterior to very short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum blackish brown; forewing overscaled with dull blue-green basad, white band (prominently divided by blackish veins) from costa (where a single quadrate macule) through discal cell (this macule offset somewhat proximad from remainder of band), base of M_3 - CuA_1 , mid- CuA_1 - CuA_2 , and terminating in a tapering macule almost at termen in CuA_2 -2A; hindwing overscaled with dull blue-green, no indication of discal macules; erect brownish tuft on dorsum of vein 2A; fringes on both wings brown.

Venter similar to dorsum but duller, overscaling less extensive, forewing vein 2A prominently sinuate, modified tan scales in proximal 1/4 of CuA_2 -2A and in entire anal cell; hindwing with no discal macules; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax dull blue-green, eyes apparently dark, palpi gray-brown, antennae missing, ventral thorax and pectus brownish with dull blue-green scales, legs and abdomen not examined (missing on type).

Genitalia - not examined.

Distribution and phenology. The distribution of *P. passalus* cannot be fully elaborated until all known specimens are re-examined, as some reported records are actually *P. omphale*. Females identified as *P. passalus* are known from Colombia, Bolivia (Rio Songo), and Brazil (Amazonas).

Diagnosis and discussion. *Porphyrogenes passalus* was described from a female from an unknown locale (Herrich-Schäffer 1869). The very worn specimen at MNHU here designated as the lectotype (Fig. 43, 44), lacks an abdomen. It bears five labels as follows: / Origin. /, / Coll. H.-Sch. /, / passalus HS /, / Thym. Passalus HS. /, and / Passalus H.S. /. The existence of three similar taxa, yet to be associated with a conspecific male, justifies the need for the undoubted identity of *Eudamus passalus* through a designated lectotype.

The association of *P. passalus* with the phenotype of *P. omphale* (as its female) by Evans (1952) and the continued use of this synonymy (Mielke 2005) were not justified and have proven incorrect with the identification of the actual female of *P. omphale* (see above). Material assigned to *P. passalus* is distinguished from similar phenotypes by the irregular appearance of the white band on the forewing where the

macule in the discal cell is offset somewhat basad from the other macules of the series and it is prominently divided by dark veins. In addition, the costal macule is not divided and the wings are prominently convex with a short tornal lobe on the hindwing.

***Porphyrogenes virgatus* (Mabille, 1888)**

(Fig. 45, 46)

Thymele virgatus Mabille, 1888. Type locality: Pebas, Brazil (*sic* = Peru), female type (herein designated the lectotype, Fig. 45, 46) in MNHU.

Description. Female - (described from photographs of the type, Fig. 45, 46) – forewing apex produced and acute, termen convex anteriorly, slightly concave posteriorly, anal margin prominently concave; hindwing termen convex, concave just anterior to short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA_2 ; dorsum brown; forewing crossed diagonally by narrow white band from costa (where divided into two macules), through discal cell, base of M_3-CuA_1 , mid CuA_1-CuA_2 , and terminating near termen distad in mid- CuA_2-2A ; hindwing overscaled with grayish posteriorly, no indication of discal macules; fringes on both wings brown, paler than ground color.

Venter brown; white band as on dorsum, forewing vein 2A bowed following contour of anal margin, entire anal cell tan; hindwing unmarked, heavily overscaled with grayish posterior to vein 2A; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax brown; palpi gray-brown, antennae broken; ventral thorax and pectus gray-brown, legs gray-brown with orange tinge; dorsal and ventral abdomen gray-brown.

Genitalia - not examined.

Distribution. The distribution of this taxon, like that of *P. passalus*, cannot be fully elaborated from the literature since records often did not indicate the sex of the *P. zohra* (the previously supposed male) reported. Known records are for Honduras, Guyana, and Peru (Mabille 1888, Evans 1952).

Diagnosis and discussion. *Thymele virgatus* is another taxon described from a female without a clearly associated male. Evans (1952) and subsequent students (e.g., Mielke 2004, 2005) have, without justification, considered it as the female of and synonymous with *Porphyrogenes zohra*. *Porphyrogenes virgatus* is here removed from that synonymy until its affinities are clarified. The type in MNHU (Fig. 45, 46) is here designated as the lectotype of *Thymele virgatus*, fixing its identity for the same justification as noted above for *Eudamus passalus*. This specimen has five labels: / Origin. /, / Pebas Hhl. /, / *Thymele virgatus* Mab. /, / *Virgatus* Mab. /, and / *Virgatus* Mab. /. *Porphyrogenes virgatus* differs from similar females by the narrower white band on its forewing.

***Porphyrogenes eudemus* (Mabille, 1888)**

(Fig. 47, 48, 103, 104, 160)

Thymele eudemus Mabille, 1888. Type locality: Chiriqui [Panama]; female type (herein designated the lectotype, Fig. 47, 48) in MNHU.

Description. Female (Fig. 47, 48, 103, 104) - mean forewing length = 25.7 mm (25.3-26.0 mm, n = 4; from Panama and Peru); forewing apex slightly rounded and produced, termen slightly convex, anal margin straight; hindwing convex except somewhat concave before short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of origin of CuA_2 ; dorsum dark brown; forewing overscaled basad with dull blue-green, continuous (divided thinly by dark veins) narrow white band from costa (where divided into two thin elongate macules), through distal end of discal cell, base of M_3-CuA_1 , mid- CuA_1-CuA_2 , and terminating nearly at termen distad in CuA_2-2A ; hindwing overscaled with dull blue-green basad, largely posterior of discal cell, more extensive than on forewing, extending to or nearly to termen at tornus; inconspicuous erect brown (with green proximad) tuft along vein 2A; fringes on both wings gray to gray-brown.

Venter similar to dorsum; duller, overscaling less extensive on hindwing; apex of forewing conspicuously tan, forewing vein 2A sinuate, shining tan speculum in posterior 1/2 of the proximal 1/4 of CuA_2-2A

and entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax brown mixed with blue-green, palpi gray, eyes blackish, antennae black, ochreous on venter distad and beneath club, nudum red-brown, 27 (n = 2) or 28 (n = 2) segments, ventral thorax as dorsum, pectus grayish mixed with blue-green, legs ochreous-brown, dorsal abdomen brown, ventral abdomen gray-brown to brown.

Genitalia (Fig. 160) - lamella postvaginalis sclerotized, more or less quadrate, caudal edge with narrow and shallow U-shaped indentation centrally; lamella antevaginalis as rectangular sclerotized plate with central process pointed caudad and largely sclerotized plates laterad; ductus bursae short, relatively broad and membranous, joining corpus bursae on dorsal surface cephalad of its caudal end; corpus bursae bulbous, relatively small.

Distribution. Like both *P. passalus* and *P. virgatus*, the known distribution of *P. eudemus* cannot be delimited from the literature. Probable records are for Panama, Colombia, and Brazil (Pará) (Mabille 1888, Evans 1952), and potentially Bolivia (Evans 1952, based on the reported female of *P. immaculata*; see above under *P. sororcula* for the correct identification of the female of *P. immaculata*). Females identified during this study as *P. eudemus* are known from Panama (May, July, December) and Peru.

Diagnosis and discussion. *Porphyrogenes eudemus* is here removed from the synonymy of *P. vulpecula* pending further knowledge on its relationship to males of described taxa of *Porphyrogenes*. The specimen of *Thymele eudemus* in MNHU (Fig. 47, 48) is here designated the lectotype. It bears five labels as follows: / Origin. /, / Chiriqui /, / Th. Eudemus Mab. /, / Eudemus Mab. /, and / Eudemus Mab. /. The need for this designation is for the same reason lectotypes were designated for the preceding two taxa.

The three foregoing taxa have a similar brownish phenotype with a white diagonal band of macules across the forewing. The only other female of *Porphyrogenes* known to have a diagonal band is *P. omphale* on which the band is orange (but see following two entries). Most known females of the genus are tawny or gray and have one or two (often large) macules on the forewing. On some (e.g., *P. omphale*, *P. probus*, *P. vulpecula*, *P. sororcula*, and several of the smaller species), their color and pattern are sufficiently similar to that of males that they may be matched with some degree of confidence. Since the genitalia of two of the banded phenotypes (*P. passalus*, *P. virgatus*) have yet to be examined, nothing can be offered with respect to their interrelationships.

***Porphyrogenes* unassociated unnamed female #1**

(Fig. 105, 106, 163)

Description. Female (Fig. 105, 106) - forewing length = 28.6 mm (n = 1; from Ecuador); forewing apex slightly rounded, not produced, termen convex, anal margin straight; hindwing slightly convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of origin of CuA₂; dorsum dark brown with slight purplish sheen; forewing overscaled basad with dull blue-green, continuous very narrow white band from costa (where divided into two thin elongate macules), through distal end of discal cell, base of M₃-CuA₁, mid-CuA₁-CuA₂, and terminating nearly at termen distad in CuA₂-2A; hindwing overscaled with blue-green basad, largely posterior of discal cell, more extensive than on forewing, extending to 2/3 distance to termen at tornus; inconspicuous erect brown (with blue-green proximad) tuft along vein 2A; fringes on both wings brown.

Venter similar to dorsum; duller; forewing vein 2A weakly sinuate, shining gray speculum in proximal 1/4 of CuA₂-2A and entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax brown, overscaled heavily with blue-green, palpi gray with bluish tint, eyes dull reddish, antennae black, yellow-orange on venter of club, nudum red-brown, 33 (n = 1) segments, ventral thorax dark gray with some bluish scales, pectus blue-gray, legs dull ochreous, dorsal abdomen dark brown, ventral abdomen dark gray-brown.

Genitalia (Fig. 163) - lamella postvaginalis sclerotized, caudal edge slightly angulate towards narrow and shallow U-shaped indentation centrally; lamella antevaginalis with two sclerotized lobes converging, broadening, angling caudad centrally; ductus bursae long, relatively broad, and entirely membranous, joining corpus bursae at its caudal end; corpus bursae bulbous.

Distribution and phenology. A single female (GTA #13986) of this phenotype was examined from Ecuador (Yasuni National Park, Yasuni Field Station, 767') taken on 8 May 2003 and currently in the collection of A. D. Warren.

Diagnosis and discussion. This phenotype, with its dark color and diagonal white band on the forewing, is generally similar to the three preceding species. The termen of the forewing is not as strongly convex as that of *P. passalus*, but not nearly straight as on *P. virgatus* and *P. eudemus*. The apex of the forewing is not highly angular as on *P. virgatus*. Vein 2A on the forewing is slightly sinuate and not as strongly as on *P. passalus* or strongly bowed as on *P. virgatus*. The white band is much narrower than on *P. passalus* and *P. eudemus*, but not quite as narrow as on *P. virgatus*. The tornal lobe on the hindwing is barely perceptible in contrast with the more prominent lobe on *P. virgatus* and *P. eudemus*. The genitalia of this female differ notably from that of the female considered here to be *P. eudemus*.

Porphyrogenes unassociated unnamed female #2

(Fig. 113, 114, 165)

Description. Female (Fig. 113, 114) - forewing length = 24.8 mm, 25.1 mm (from Pará and Rondônia, Brazil); forewing apex pointed, produced, termen slightly convex, anal margin straight; hindwing convex, tornus produced to very short lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of origin of CuA_2 ; dorsum brown, darkest apically distad of broad pale yellow transverse band originating as elongate opaque macules in costal cell and $Sc-R_1$, then translucent through discal cell about 2/3 distance from base of wing, base of M_3-CuA_1 , mid- CuA_1-CuA_2 , and terminating near termen as triangular macule in CuA_2-2A ; forewing overscaled with greenish at very base and along middle of anal margin; hindwing unmarked, overscaled with greenish basad in discal cell and posteriorly; inconspicuous erect pale brown tuft along vein 2A; fringes on both wings brown.

Venter similar to dorsum; duller, not as contrastingly dark apically; forewing vein 2A sinuate, shining tan speculum in entire anal cell; hindwing with no indication of discal macules; cell 2A-3A with deep groove just caudad of vein 2A.

Dorsal head and thorax gray-brown sparsely mixed with greenish, palpi pale gray-brown, eyes reddish, antennae brown, black on club dorsad (including apiculus), yellow on club ventrad, nudum reddish-brown, 31 (n = 2) segments, ventral thorax gray-brown, pectus greenish, legs ochreous, dorsal abdomen gray-brown, ventral abdomen gray.

Genitalia (Fig. 165) - sterigma more asymmetrical than observed in other *Porphyrogenes*; sclerotized caudal portion of lamella postvaginalis with two lobes divided by V-shaped central indentation; lamella antevaginalis with somewhat triangular, asymmetrical, sclerotized central lobe, apex extending to blunt caudal projection; ductus bursae relatively long, broadened cephalad, membranous except for sclerotized lateral plate, joining caudal end of broadly elongate corpus bursae.

Distribution and phenology. This phenotype is known from two specimens: BRAZIL: Pará; Obidos (no date, GTA #14003) and BRAZIL: Rondônia; Vilhena (4 November 1986, GTA #13993) housed at Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil.

Diagnosis and discussion. This unique phenotype of one of the smaller species of *Porphyrogenes* combines the brown dorsal coloration of many females of *Porphyrogenes* with the banded forewing of others. The pale yellow of this diagonal band contrasts with the pure white bands of the four phenotypes of females described immediately above, but is not as intensely yellow as on females of *P. omphale*.

Porphyrogenes unassociated unnamed female #3

(Fig. 107, 108, 161)

Description. Female (Fig. 107, 108) - forewing length = 24.5 mm, 25.4 mm (both from Panama); forewing apex produced, curved, termen convex anteriorly, concave in CuA_2-2A , anal margin straight; hindwing termen convex except concave just before prominent tornal lobe, vein Rs arising just basad of end of discal cell and well distad of CuA_2 ; dorsum brown; forewing with purple sheen along costa and in postmedial area distad of macules, overscaled with pale brown basad, white translucent macules, one small and triangular in M_3-CuA_1 , distad of origin of M_3 , other large and more or less quadrate with distal edge convex in CuA_1-CuA_2 centered under origin of CuA_1 ; hindwing overscaled with pale brown posterior

to vein Rs, very vague indication of brown discal macules; conspicuous erect pale brown tuft on dorsum of vein 2A; fringes on both wings pale brown.

Venter brown; forewing overscaled with gray along costa and in discal cell and with pale gray-brown distad of macules and extending to margin, this color sharply defined and contrasting at apex, vein 2A sinuate, entire anal cell of modified pale tan scales; hindwing overscaled with gray and with vague indication of darker discal macules; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax medium gray-brown with green reflections, eyes red, palpi ochreous-gray, antennae black on dorsum, yellow-orange on venter, nudum red-brown, 30 (n = 1) or 31 (n = 1) segments, ventral thorax gray-brown with faint green reflections, pectus ochreous, legs brown proximad, ochreous-orange distad, dorsal and ventral abdomen gray-brown.

Genitalia (Fig. 161) - lamella postvaginalis sclerotized, produced centrally on caudal edge where divided by shallow U-shaped indentation; lamella antevaginalis as rectangular central sclerotized plate with largely membranous plates laterad; ductus bursae elongate and relatively narrow with sclerotized plate cephalad; corpus bursae as elongate sac.

Distribution and phenology. Two individuals of this phenotype (both at USNM) were examined: PANAMA: Panama Canal area; Cerro Galena, ex pupa, 12 Mar. 1983 (GTA #8907); PANAMA: Canal Zone; Gatun, 2 May 1970 (GTA #13920).

Diagnosis and discussion. This is the first of three similar female phenotypes, all known from southern Central America; their males are not even a matter of conjecture at present (see discussion under the third species below).

Porphyrogenes unassociated unnamed female #4

(Fig. 49, 50, 109, 110, 162)

Description. Female (Fig. 49, 50, 109, 110) - forewing length = 28.6 mm (n = 1; from Panama); forewing apex slightly produced, pointed, termen convex especially apically, anal margin slightly concave; hindwing termen convex except concave just before short tornal lobe, vein Rs arising nearer to end of discal cell than to its base and well distad of CuA_2 ; dorsum dark brown with violet sheen; forewing overscaled with olive-brown basad, white translucent macules, one small and more or less bar-shaped in M_3-CuA_1 just distad of origin of M_3 , other very large and parallelogram-shaped in CuA_1-CuA_2 , centered under origin of CuA_1 ; hindwing overscaled with olive-brown posterior to vein Rs, vague indication of brown discal macules anteriorly; conspicuous erect olive-brown tuft on dorsum of vein 2A; fringes on both wings pale brown.

Venter dark brown; forewing overscaled with gray basad, forewing vein 2A slightly curved, entire anal cell with modified pale tan scales; hindwing overscaled with gray, vague indication of darker discal macules; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head and thorax pale brown with green reflections, eyes red, palpi ochreous-gray, antennae black on dorsum, yellow on venter distad, nudum red-brown 31 (n = 1) segments, ventral thorax pale brown with green reflections, pectus ochreous-orange, legs brown proximad, yellow-orange distad, dorsal abdomen gray-brown, ventral abdomen warm brown.

Genitalia (Fig. 162) - lamella postvaginalis sclerotized caudad, caudal edge curved with narrow and shallow U-shaped indentation centrally; lamella antevaginalis as rectangular sclerotized plate and membranous plates laterad; ductus bursae elongate, narrow and membranous with elongate sclerotized plate cephalad; corpus bursae as elongate sac.

Distribution and phenology. One individual was examined: PANAMA: Panama Prov.; Distrito de El Llano, Cordillera de San Blas, N of El Llano, 330m, 29 May 1978 (GTA #8906, housed at USNM).

Diagnosis and discussion. This species is similar to the previous, but is larger and with a larger macule in M_3-CuA_1 . The genitalia also are of similar morphology, but differ in their details, especially in the form of the lamella postvaginalis. This may well be of the same species that Möschler (1877) considered the female of *P. probus* (see under that species above and Fig. 49, 50) and appears to be the phenotype illustrated by Draudt (1922) as the female of *P. probus*.

Porphyrogenes unassociated unnamed female #5

(Fig. 111, 112, 164)

Description. Female (Fig. 111, 112) - forewing length = 28.0 mm (n = 1; from Costa Rica); forewing apex produced, pointed, termen convex especially apically, anal margin slightly concave; hindwing termen convex except concave just before prominent tornal lobe, vein Rs arising nearer to end of discal cell than to its base and distad of CuA₂; dorsum brown with bluish sheen; forewing overscaled with gray-brown basad, white translucent macules, one small and triangular in M₃-CuA₁, base on vein CuA₁, more than half distance from its origin to termen, other very large and more or less parallelogram-shaped in CuA₁-CuA₂, centered under origin of CuA₁; hindwing unmarked, overscaled with gray-brown posterior to vein Rs, no indication of discal macules; conspicuous erect gray-brown tuft on dorsum of vein 2A; fringes on both wings pale gray-brown.

Venter dull brown; forewing overscaled with gray basad, forewing vein 2A slightly curved, entire anal cell with modified pale tan scales; hindwing overscaled with gray, no indication of discal macules; cell 2A-3A with groove just caudad of vein 2A.

Dorsal head (including palpi) and thorax pale brown, eyes appear brown, antennae black on dorsum, yellowish on venter especially distad, nudum red-brown 31 (n = 1) segments, ventral palpi tan, ventral thorax and pectus pale brown, legs pale brown proximad, dull ochreous distad, dorsal and ventral abdomen gray-brown.

Genitalia (Fig. 164) - lamella postvaginalis sclerotized caudad, caudal edge curved with narrow and shallow U-shaped indentation centrally, this is followed cephalad by pair of oval sclerotized areas; lamella antevaginalis as rectangular sclerotized central plate and membranous plates laterad; ductus bursae elongate, moderately broad, and membranous with elongate sclerotized plate cephalad, joining globular corpus bursae cephalad of its caudal end.

Distribution and phenology. One individual was examined: COSTA RICA: Ciudad Colon, Finca Hamadryas, 900 m, 9°54'N, 84°17.5'W, 20 April 1998 (GTA #13921, housed at Mississippi State University).

Diagnosis and discussion. This is similar to the previous two phenotypes and perhaps intermediate in size. It is the fourth female of *Porphyrogenes* known from southern Central America (including the undescribed species noted above) with gray-brown wings and at least one large white macule on the forewing. The three described here have a second and smaller white macule on the forewing that is absent on all twelve females of the unnamed species illustrated by Janzen and Hallwachs (2008). That species also differs by its prominently white fringes. Including these three, there are now five (also including *P. virgatus* and *P. eudemus*) unplaced female phenotypes of *Porphyrogenes* known from Central America. Males known from Central America without associated females include *P. zohra*, *P. sula*, *P. spoda*, and *P. spina*. Undoubtedly, females for at least some of these are among the pool of females detailed above.

Key to the males of *Porphyrogenes*

The following is a provisional key to males of all known species of *Porphyrogenes* (females are insufficiently known to include). Species encountered in central Rondônia are marked with an asterisk (*).

- 1. Dorsum with bright blue bases to wings, forewing with yellow-orange band ***P. omphale* (Butler)***
- Dorsum without blue but blackish to tawny, forewing not banded. **2**
- 2(1). Large (forewing length > 20 mm) **3**
- Small (forewing length ≤ 20 mm) **21**
- 3(2). Dorsum black with purple flush; head, palpi, pectus, and legs orange ***P. stupa* Evans**
- Without above combination of characters **4**
- 4(3). Fringes of wings prominently white, Costa Rica **undescribed species**
- Fringes of wings not prominently white **5**

5(5).	Vein 2A on ventral forewing not swollen, usually not bare	6
—	Vein 2A on ventral forewing bare and swollen	10
6(5).	Harpe narrow caudad	7
—	Harpe broad caudad	8
7(6).	Ventral forewing with tuft above vein 2A, vein 2A not bare	<i>P. boliva</i> Evans*
—	Ventral forewing without tuft above vein 2A, vein 2A with short bare portion	<i>P. speciosus</i> Austin and Mielke
8(6).	Dorsum deep red-brown	<i>P. spadix</i> Austin and Mielke*
—	Dorsum paler orange-brown	9
9(8).	Large in size (forewing length = 27 mm), palpi gray-tan, legs yellow-orange, origin of vein Rs well basad of origin of vein CuA ₂	<i>P. splendidus</i> Austin and Mielke
—	Smaller (forewing length = 25.2 mm), palpi dark gray, legs ochreous-brown, origin of vein Rs just basad of origin of vein CuA ₂	<i>P. simulator</i> Austin and Mielke
10(5).	Ventral forewing with vein 2A appearing doubled	11
—	Ventral forewing with vein 2A not appearing doubled	12
11(10).	Wings tawny	<i>P. sororcula</i> (Mabille and Boulet)*
—	Wings browner	<i>P. vulpecula</i> (Plötz)
12(10).	Termen of hindwing broadly convex	<i>P. convexus</i> Austin and Mielke*
—	Termen of hindwing less broadly convex, often nearly straight	13
13(12).	Origin of hindwing vein Rs opposite or basad of origin of vein CuA ₂	14
—	Origin of hindwing vein Rs distad of origin of vein CuA ₂	17
14(13).	Arms of uncus closely spaced, harpe broad and directed caudad	<i>P. specularis</i> Austin and Mielke*
—	Arms of uncus widely spaced, harpe thin and curved dorsad	15
15(14).	Anterior tufts on dorsal hindwing dark brown or red-brown	<i>P. sparus</i> Austin and Mielke*
—	Anterior tufts on dorsal hindwing tan	16
16(15).	Dorsum orange-brown, palpi tawny, pectus tawny, Central America and northern South America.	<i>P. zohra</i> (Möschler)
—	Dorsum dark orange-brown, palpi ochreous, pectus tan, western Brazil, Peru, and Bolivia	<i>P. stresa</i> Evans*
17(13).	Harpe upcurved with caudal end expanded	18
—	Harpe not broadly expanded caudad	19
18(17).	Anterior tuft on dorsal hindwing tan	<i>P. sporta</i> Austin and Mielke
—	Anterior tuft on dorsal hindwing gray	<i>P. spina</i> Austin and Mielke
19(17).	Ventral forewing with conspicuous gray apex	<i>P. probus</i> (Möschler)*
—	Ventral forewing without conspicuous gray apex	20
20(19).	Harpe sharply upturned and relatively thin	<i>P. sula</i> (Williams and Bell)
—	Harpe nearly straight and broad	<i>P. spoda</i> Evans

21(2). Vein 2A on ventral forewing not bare	<i>P. glavia</i> Evans	
— Vein 2A on ventral forewing bare		22
22(21). Pale macules on forewing	<i>P. ferruginea</i> (Plötz)	
— No pale macules on forewing		23
23(22). Harpe triangular, somewhat upturned to sharply pointed caudal end	<i>P. despecta</i> (Butler)	
— Harpe not triangular, caudal end not sharply pointed		24
24(23). Harpe upturned to broad caudal end	<i>P. sparta</i> Evans	
— Harpe upturned to narrow caudal end		25
25(24). Dorsum pale tawny-brown, ventral hindwing with tornus blackish, anterior tufts on dorsal hindwing tan	<i>P. spanda</i> Evans*	
— Dorsum dark orange-brown, ventral hindwing tornus not blackish, anterior tufts on dorsal hindwing ochreous-tan	<i>P. pausias</i> (Hewitson)*	

Discussion

Draudt (1922) included the species then recognized within six genera with only the type species, *P. omphale*, in *Porphyrogenes*. Evans (1952) combined these into *Porphyrogenes*, but commented (p. 137) that “*Porphyrogenes* does not seem to be a satisfactory genus.” For now, at least, there seems to be no basis for splitting the genus (*sensu* Evans 1952) despite the superficially different appearance of some members (e.g., *P. omphale* and the several female phenotypes). This study indicates that various combinations of secondary sexual characters, genitalia, and wing phenotypes of both sexes unite all included species into a relatively compact group. If, however, *P. omphale* is shown to be distinct from the other species now included in *Porphyrogenes*, then *Physalea* Mabilie, 1903 (type species: *Telemiades vulpecula* Plötz, 1882) is available.

There are now twenty-six known species of *Porphyrogenes* represented by males, ranking the genus among the largest of HesperIIDae in the neotropics. Of these, females have been associated with eleven (Evans 1952; this study) leaving fifteen species for which females cannot be associated with any credence. Conversely, females of eight phenotypes have been identified here that currently cannot be associated with males. Males may be known for all or most, but conjecture on the identity of those females is speculative.

Males of twenty species of *Porphyrogenes* were closely examined in this study, including nine newly described herein and one yet undescribed. The remaining six species were examined from photographs of their types. Females of twelve phenotypes were also examined, six of which are associated with males. Females of five additional species (three associated with males) were examined from photographs. This investigation, the most intensive yet undertaken on *Porphyrogenes*, allowed a revision of concepts that have persisted for more than fifty years including species limits, synonymies, and richness of the genus.

The eleven species of *Porphyrogenes* encountered in Rondônia, Brazil makes this site the richest known for the genus, exceeding that previously known for individual country-sized regions. Whether that perceived richness is a result of improved sampling of the genus (Austin et al. 1993) or reality remains to be determined. The apparent flight season of *Porphyrogenes* in Rondônia is from June to November including the middle of the dry season and the early wet season when over 90% of the records occur. As noted, *Porphyrogenes* fly principally late in the day (see also DeVries et al. 2008). *Porphyrogenes omphale* apparently flies earlier than other species of the genus; the six timed records are between 1230 and 1600 hours. It is interesting that this species lacks the red eyes seen on other *Porphyrogenes*, an apparent characteristic of crepuscular species, although one male of *P. omphale* was taken at light during the night. For the remaining 10 species known from central Rondônia, 46 timed records are between 1400 and 1800 hours, 87% of these between 1500 and 1730 hours. An additional two males and three females were taken at lights during the night.

Porphyrogenes is so poorly known that its fauna of even local and well-studied sites is likely incompletely documented. At the site in Rondônia, females have been taken for just two of the eleven species

encountered, adding further to the futility of reconciliation the sexes from local sympatries. Dramatic sexual dimorphism and the extreme rarity of females in collections makes it virtually impossible to yet match males and females with certainty for several taxa. The number of new species encountered during this study along with the uncertainty of matching males with females stresses the need for more extensive investigation of *Porphyrogenes*. Given its perceived rarity and the number of new taxa discovered within the relatively small sample examined in this study (both in numbers and in geographical breadth) it is highly probable that additional undescribed species await discovery. Hopefully, this investigation will facilitate the study of the genus to further enhance the knowledge of its distribution and taxonomy.

Acknowledgments

We thank V. Becker for his help in facilitating and making studies of butterflies by the senior author in Rondônia possible. S. R. Steinhauser freely shared his extensive knowledge of neotropical hesperiids. Assistance in the field was provided by G. Bongioio, J. P. Brock, J. Eger, O. Gomes, J. D. Turner, A. D. Warren, and F. and A. West. Encouragement and support for investigations of Rondonian butterflies from T. C. Emmel continues. The Schmitz family at Fazenda Rancho Grande provided comfortable accommodations. Specimens were kindly loaned by J. Rawlins (CMNH), J. Burns (USNM), R. L. Brown (Mississippi State University), R. Anderson, H. Greeney, W. Haber, D. L. Lindsley, and A. D. Warren. Wolfram Mey (MNHU) is thanked for permission to study the types of American skippers. Discussions with A. D. Warren contributed to our ideas of synonymies presented herein. Warren and M. M. Casagrande carefully reviewed the manuscript and offered helpful suggestions for its improvement. Debbie Matthews Lott photographed specimens, scanned line drawings, and assembled the resulting figures. The Conselho Nacional de Desenvolvimento Científico e Tecnológico kindly issued the authorization permits from the Ministério da Ciência e Tecnologia for studies in Rondônia in collaboration with EMBRAPA/CPAC and the Universidade Federal do Paraná. This paper is contribution number 1732 of the Departamento de Zoologia, Universidade do Federal do Paraná.

Literature Cited

- Anderson, R. A. 2007.** A list of HesperIIDae collected in Nicaragua, 1973-1976. *Bulletin of the Allyn Museum* 147: 1-19.
- Austin, G. T. 2008.** HesperIIDae of Rondônia, Brazil: taxonomic comments on "night" skippers (Pyrginae), with descriptions of new genera and species. *Insecta Mundi* 29: 1-36.
- Austin, G. T., J. P. Brock, and O. H. H. Mielke. 1993.** Ants, birds, and skippers. *Tropical Lepidoptera* 4 (supplement 2): 1-11.
- Austin, G. T., T. C. Emmel, and O. H. H. Mielke. [in press].** The tropical rainforest butterfly fauna of Rondônia, Brazil: species composition and richness. *Memoirs of the McGuire Center for Lepidoptera and Biodiversity* 1.
- Austin, G. T., C. Mendez, and A. E. Launer. 1998.** A preliminary checklist of Guatemala butterflies: HesperIIDae (Lepidoptera: Hesperioidea). *Tropical Lepidoptera* 9 (supplement 2): 8-18.
- Austin, G. T., and O. H. H. Mielke. 1997.** HesperIIDae of Rondônia, Brazil: *Aguna* (Pyrginae), with a partial revision and descriptions of new taxa from Mexico, Panama, and Brazil. *Revista Brasileira de Zoologia* 14: 889-965.
- Austin, G. T., and O. H. H. Mielke. 2000.** HesperIIDae of Rondônia, Brazil: *Cephise Evans* (Pyrginae), with descriptions of new species from Mexico and Brazil. *Revista Brasileira de Zoologia* 17: 757-788.
- Austin, G. T., and S. R. Steinhauser. 1996.** HesperIIDae of central Rondônia Brazil: *Celaenorhynchus Hübner* (Pyrginae), with descriptions of three new species and taxonomic comments. *Insecta Mundi* 10: 25-44.
- Bell, E. L. 1946.** A catalogue of the Hesperioidea of Venezuela. *Boletín de Entomología Venezolana* 5: 65-203.
- Biezanko, C. M., and A. Ruffinelli. 1967.** Fauna de Lepidoptera del Uruguay. VI. HesperIIDae. *Boletín. Facultad de Agronomía, Universidad de la República (Montevideo)* 96: 1-27.
- Biezanko, C. M., A. Ruffinelli, and F. Achaval. 1974.** Lepidoptera del Uruguay. Notas complementarias. V. *Revista de Biología del Uruguay* 1: 179-189.

- Bridges, C. A. 1988.** Catalogue of HesperIIDae (Lepidoptera: Rhopalocera). Published by author; Urbana, IL. 443 p.
- Butler, A. G. 1870.** Descriptions of some new diurnal Lepidoptera, chiefly HesperIIDae. Transactions of the Entomological Society of London 1840: 485-520.
- Butler, A. G. 1871.** Descriptions of some new species of Lepidoptera, chiefly from the collection of Mr. Wilson Saunders. Annals and Magazine of Natural History (4)8(46): 282-291.
- Cock, M. J., and S. Alston-Smith. 1990.** The skipper butterflies (HesperIIDae) of Trinidad. Part 6: Pyrginae, genera group D. Living World 1989/1990: 25-35.
- de Jong, R. 1983.** Annotated list of the HesperIIDae (Lepidoptera) of Surinam, with descriptions of new taxa. Tijdschrift voor Entomologie 126: 233-268.
- DeVries, P. J., G. T. Austin, and N. M. Martin. 2008.** Diel activity and reproductive isolation in a diverse assemblage of Neotropical skippers (Lepidoptera: HesperIIDae). Biological Journal of the Linnean Society 94: 723-736.
- Draudt, M. W. K. 1922.** Grypocera, breittköpfige Tagfalter, p. 833-1011. *In*: A. Seitz. Die Gross-Schmetterlinge der Erde, vol. 5. Die amerikanischen Tagfalter. A. Kernen; Stuttgart. 1139 p.
- Emmel, T. C., and G. T. Austin. 1990.** The tropical rainforest butterfly fauna of Rondonia, Brazil: species diversity and conservation. Tropical Lepidoptera 1: 1-12.
- Evans, W. H. 1952.** A catalogue of the American HesperIIDae in the British Museum. Part II (groups B, C, D), Pyrginae. Section I. British Museum (Natural History); London. 178 p.
- Gillham, N. W., and P. R. Ehrlich. 1954.** The butterfly types of Henry Skinner and co-authors in the Academy of Natural Sciences of Philadelphia (Lepidoptera: Papilionoidea and Hesperioidea). Transactions of the American Entomological Society 80: 91-117.
- Godman, F. D. 1907.** Notes on the American species of HesperIIDae described by Plötz. Annals and Magazine of Natural History (7)20(116): 132-155.
- Hayward, K. J. 1947.** Catalogus HesperIIDarum Rei Publicae Colombianae. Acta zoologica Lilloana 4: 201-392.
- Herrich-Schäffer, G. A. W. 1869.** Prodrömus systematis lepidopterorum, Versuch einer systematischen Anordnung der Schmetterlinge. Correspondenz Blatt des zoologisch-mineralogischen Vereines in Regensburg 23: 163-172.
- Hewitson, W. C. 1867.** Descriptions of one hundred new species of HesperIIDae. J. Van Voorst; London. 1. 25 p.
- Hoffmann, F. 1931.** Beiträge zur Naturgeschichte brasilianischer Schmetterlinge. III. Zeitschrift für wissenschaftliche Insektenbiologie 26(4/6): 109-124.
- Janzen, D. H., and W. Hallwachs. 2008.** Dynamic database for an inventory of the macrocaterpillar fauna, and its food plants and parasitoids of Area de Conservación Guanacaste (ACG), northwestern Costa Rica. <http://janzen.sas.upenn.edu> (accessed February 2008).
- Johnson, K., R. C. Eisele, and B. MacPherson. 1990.** The "hairstreak butterflies" (Lycaenidae, Theclinae) of northwestern Argentina. II. *Strymon*, *sensu stricto*. Bulletin of the Allyn Museum 130: 1-77.
- Lamas, G. 1994.** List of butterflies from Tambopata (Explorer's Inn Reserve), p. 162-177. *In*: R. B. Foster, J. L. Carr, and A. B. Forsyth (eds.). The Tambopata-Candamo Reserved Zone of Southeastern Perú: a Biological Assessment. Rapid Assessment Program, RAP Working Papers 6. Conservation International; Washington, D.C. 184 p.
- Lamas, G. 2003.** Las Mariposas de Machu Picchu. Museo de Historia Natural, Universidad Nacional Mayor de San Marcos; Lima, Peru. 221 p.
- Lindsey, A. W. 1925.** The Cornell University entomological expedition to South America of 1919-1920. Scientific results. No. II. Hesperioidea. Denison University Bulletin 21: 71-113.
- Mabille, P. 1888.** Descriptions de Lépidoptères (Hespérides) nouveaux. Le Naturaliste (2)2(33): 169-171
- Mabille, P., and E. Boulet. 1912.** Essai de révision de la famille des hespérides. Annales des Sciences Naturelles (Zoologie) 16: 1-159.
- Mielke, O. H. H. 2004.** Hesperioidea, p. 25-86. *In*: G. Lamas (ed.), Atlas of Neotropical Lepidoptera, vol. 5A, Checklist: Part 4A. Hesperioidea-Papilionoidea. Scientific Publishers; Gainesville, FL. 439 p.

- Mielke, O. H. H. 2005.** Catalogue of the American Hesperioidea: HesperIIDae (Lepidoptera). Vol. 2. Pyrginae 1: Eudamini. Sociedade Brasileira Zoologia; Curitiba, Paraná, Brazil. p. 129-410.
- Monte, O. 1934.** Relação dos lepidópteros que vivem em plantas conhecidas. *O Campo* 5(1): 68-72.
- Möschler, H. B. 1877.** Beiträge zur Schmetterlings-Fauna von Surinam. *Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien* 26: 293-352.
- Möschler, H. B. 1879.** Neue exotische HesperIIDae. *Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien* 28: 203-230.
- Moss, A. M. 1949.** Biological notes on some <<HesperIIDae>> of Para and the Amazon. *Acta Zoologica Lilloana* 7: 27-80.
- Murray, D. L. 1996.** A survey of the butterfly fauna of Jatun Sacha, Ecuador (Lepidoptera: Hesperioidea and Papilionoidea). *Journal of Research on the Lepidoptera* 35: 42-60.
- Núñez Bustos, E. O. 2006.** Inventory of Rhopaloceran lepidopterans (diurnal butterflies) of Yacutinga Wildlife Refuge (General Belgrano Department, Misiones Province, Argentina). *Fund. Vida Silvestre Argentina*. http://www.yacutinga.com/html/vz/i_ing/estacion_biological/ (accessed January 2007)
- Peña G., L. E., and A. J. Ugarte P. 1996.** Las Mariposas de Chile. Editorial Universitaria; Santiago. 359 p.
- Pierce, F. N. 1909.** The genitalia of the group Noctuidae of the Lepidoptera of the British Islands. Duncan; Liverpool. 88 p.
- Plötz, C. 1882.** HesperIIDen-Gattungen und deren Arten. *Berliner entomologische Zeitschrift* 26: 71-82.
- Plötz, C. 1883.** Die HesperIIDen-Gattung *Phareas* Westw. und ihre Arten. *Stettiner entomologische Zeitung* 44: 451-456.
- Robbins, R. K., G. Lamas, O. H. H. Mielke, D. J. Harvey, and M. M. Casagrande. 1996.** Taxonomic composition and ecological structure of the species-rich butterfly community at Pakitza, Parque Nacional del Manu, Perú, p. 217-252. *In*: D. E. Wilson and A. Sandoval (eds.), *Manu, The Biodiversity of Southeastern Peru*. Smithsonian Institution; Washington, D.C. 679 p.
- Silva, A. G. A., C. R. Gonçalves, D. M. Galvão, A. J. L. Gonçalves, J. Gomes, M. S. Silva, and L. Simoni. 1968.** Quarto catálogo dos insetos que vivem nas plantas do Brasil seus parasitos e predadores. Edição ampliada do "3º catálogo dos insetos que vivem nas plantas do Brasil" de autorio do Prof. A. M. da Costa Lima. Parte II. Insetos, hospedeiros e inimigos naturais. Índice de insetos e índice de plantas. Ministério da Agricultura; Rio de Janeiro. 1:xxvii + 622 p., 2:viii + 265 p.
- Skinner, H. 1920.** Descriptions of new species of HesperIIDae [*sic*] (Lepidoptera). *Entomological News* 31: 132-135.
- Steinhauser, S. R. 1975.** An annotated list of the HesperIIDae of El Salvador. *Bulletin of the Allyn Museum* 29: 1-34.
- Warren, A. D. 2000.** Hesperioidea (Lepidoptera), p. 535-580. *In*: J. E. Llorente Bousquets, E. González Soriano and N. Papavero (eds.). *Biodiversidad, taxonomía y biogeografía de artrópodos de México: Hacia una síntesis de su conocimiento*. Vol. II. Instituto. Biología, UNAM and CONABIO; Mexico City. 676 p.
- Watson, E. Y. 1893.** A proposed classification of the HesperIIDae, with a revision of the genera. *Proceedings of the Zoological Society of London* 1893: 3-132.
- Williams, R. C., Jr., and E. L. Bell. 1934.** Studies in the American Hesperioidea. Paper III. (Lepidoptera). On the synonymy of some species. *Transactions of the American Entomological Society* 60: 121-132.
- Williams, R. C., Jr., and E. L. Bell. 1940.** New Neotropical HesperIIDae and notes on others (Lepidoptera). *Transactions of the American Entomological Society* 66: 121-140.

Received May 5, 2008; accepted August 11, 2008.



Figure 1-18. Types and associated specimens of *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **1)** *Porphyrogenes boliva* Evans, 1952, [holo]type male, ds. **2)** same, vs. **3)** *Phareas ferruginea* Plötz, 1883, lectotype male, ds. **4)** same, vs. **5)** *Augiades despecta* Butler, 1870, lectotype female, ds. **6)** same, vs. **7)** *Telegonus omphale* Butler, 1871, lectotype male, ds. **8)** same, vs. **9)** *Eudamus pausias* Hewitson, 1867, lectotype male, ds. **10)** same, vs. **11)** *Porphyrogenes pausias*, female associated with lectotype, ds. **12)** same, vs. **13)** *Telegonus probus* Möschler, 1877, lectotype female, ds. **14)** same, vs. **15)** *Porphyrogenes suva* Evans, 1952, [holo]type male, ds. **16)** same, vs. **17)** *Telemiades vulpecula* Plötz, 1882, lectotype male, ds. **18)** same, vs.



Figure 19-36. Types and associated specimens of *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **19)** *Physalea sororcula* Mabille & Boulet, 1912, [holo]type female, ds. **20)** same, vs. **21)** *Bungalotis immaculata* Skinner, 1920, [holo]type male, ds. **22)** same, vs. **23)** *Porphyrogenes spanda* Evans, 1952 [holo]type male, ds. **24)** same, vs. **25)** *Porphyrogenes spanda*, 1952, female associated with [holo]type, ds. **26)** same, vs. **27)** *Porphyrogenes zohra stresa* Evans, 1952, [holo]type male, ds. **28)** same, vs. **29)** *Telegonus zohra* Möschler, 1879, [holo]type male, ds. **30)** same, vs. **31)** *Ocyba sula* Williams & Bell, 1940, holotype male, ds. **32)** same, vs. **33)** *Porphyrogenes glavia* Evans, 1952, [holo]type male, ds. **34)** same, vs. **35)** *Porphyrogenes sparta* Evans, 1952 [holo]type male, ds. **36)** same, vs.

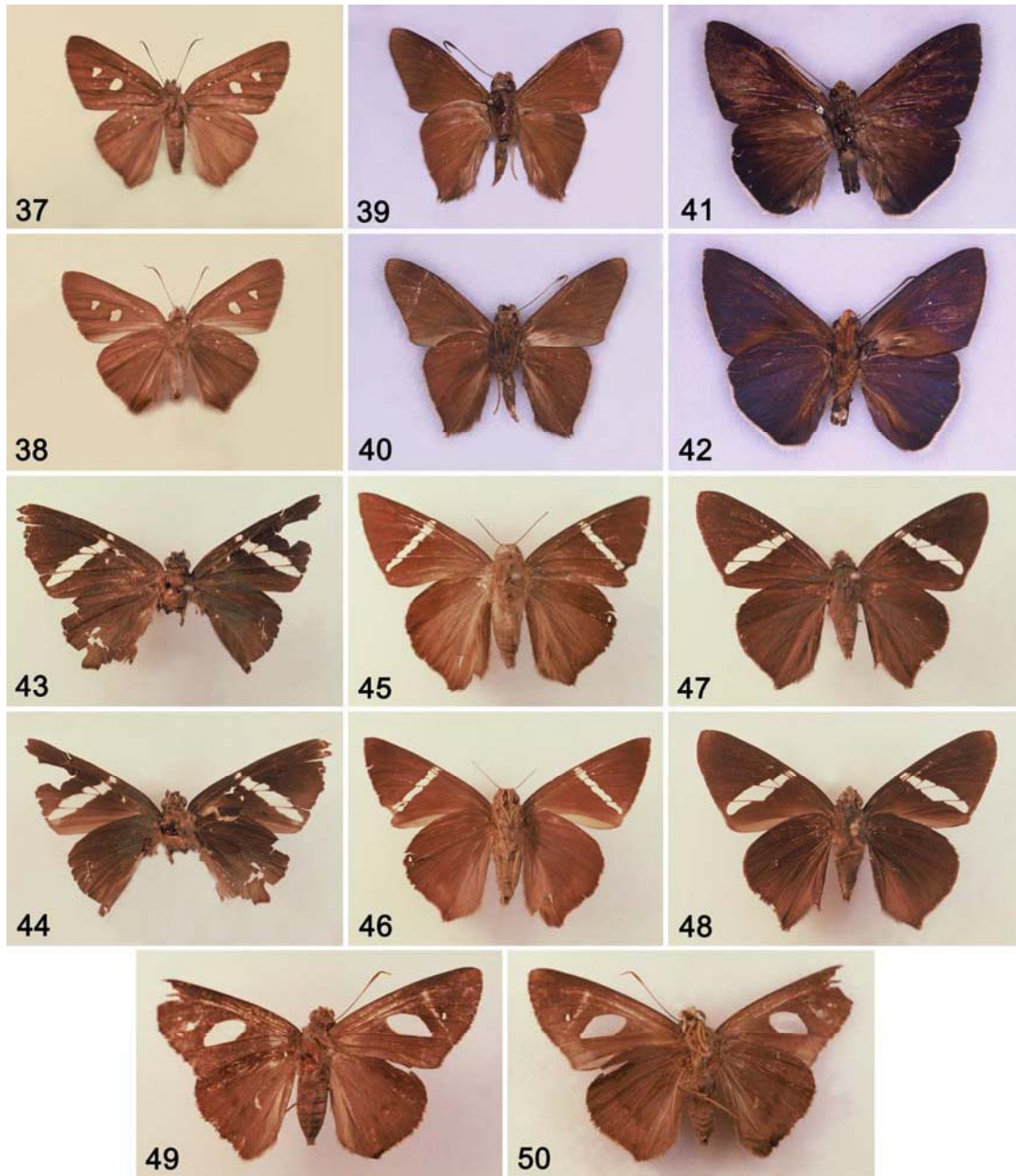


Figure 37-50. Types and associated specimens of *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **37)** *Porphyrogenes sparta*, female associated with [holo]type male, ds. **38)** same, vs. **39)** *Porphyrogenes spoda* Evans, 1952, [holo]type male, ds. **40)** same, vs. **41)** *Porphyrogenes stupa* Evans, 1952, [holo]type male, ds. **42)** same, vs. **43)** *Eudamus passalus* Herrich-Schäffer, 1869, lectotype female, ds. **44)** same, vs. **45)** *Thymele virgatus* Mabille, 1888, lectotype female, ds. **46)** same, vs. **47)** *Thymele eudemus* Mabille, 1888, lectotype female, ds. **48)** same, vs. **49)** *Porphyrogenes* sp., female considered to be female of *Telegonus probus* in its original description (see text), ds. **50)** same, vs.

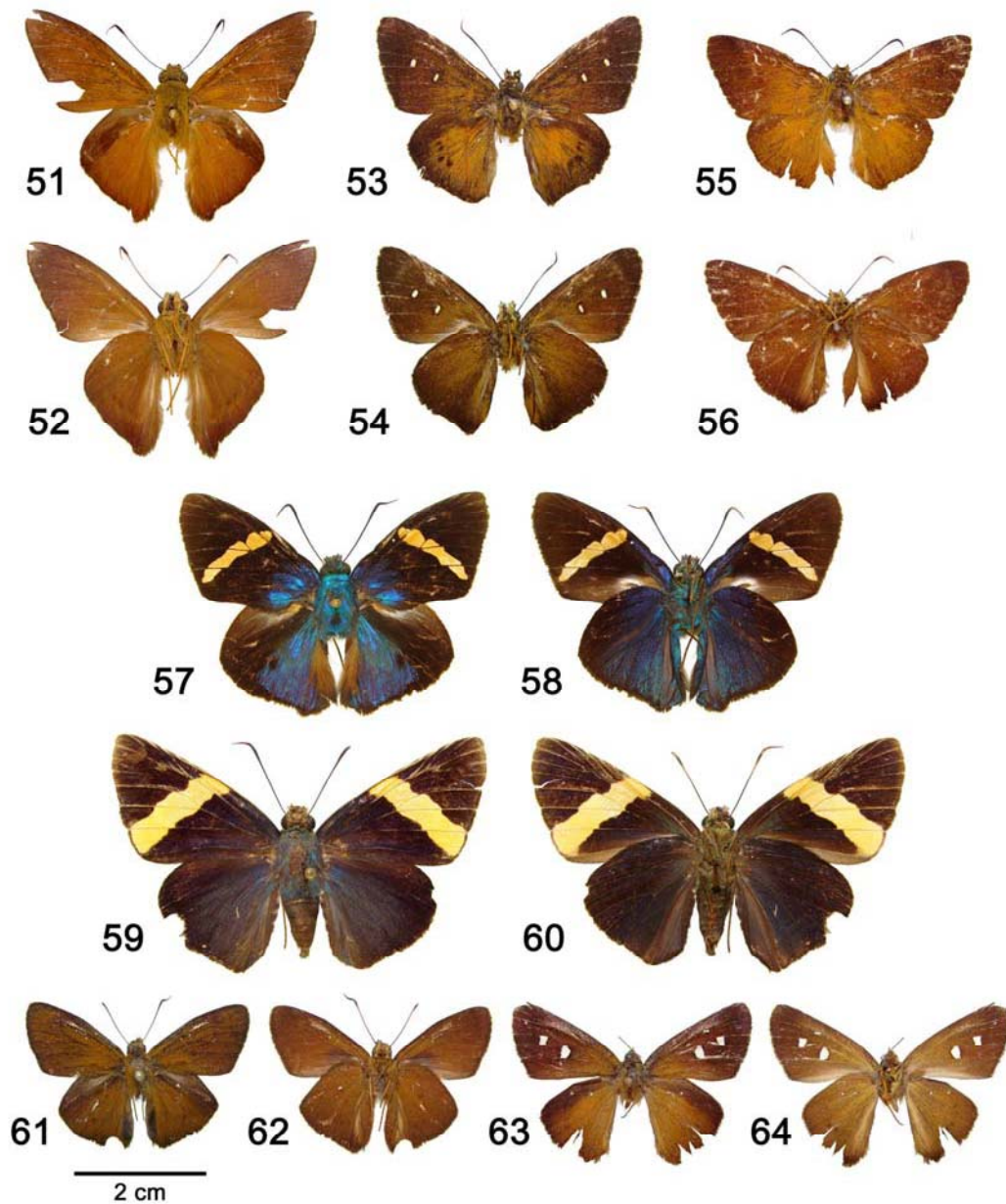


Figure 51-64. *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **51)** *P. boliva*, male, BRAZIL: Rondônia; Fazenda Rancho Grande, 17 August 1993, ds. **52)** same, vs. **53)** *P. ferruginea*, male, ECUADOR: La Selva, ds. **54)** same, vs. **55)** *P. despecta*, male, [BRAZIL], Pará, no date, ds. **56)** same, vs. **57)** *P. omphale*, male, BRAZIL: Rondônia; Fazenda Rancho Grande, 18 November 1992, ds. **58)** same, vs. **59)** *P. omphale*, female, PANAMA: Panamá Prov.; Distrito de El Llano, Cordillera de San Blas, north of El Llano, ca. 330m, 9 May 1978, ds. **60)** same, vs. **61)** *P. pausias*, male, BRAZIL: Rondônia; linha C-10, 5 km S of Cacaúlândia, 13 November 1994, ds. **62)** same, vs. **63)** *P. pausias*, female, BRAZIL: Rondônia; Fazenda Rancho Grande, 16 April 1997, ds. **64)** same, vs.

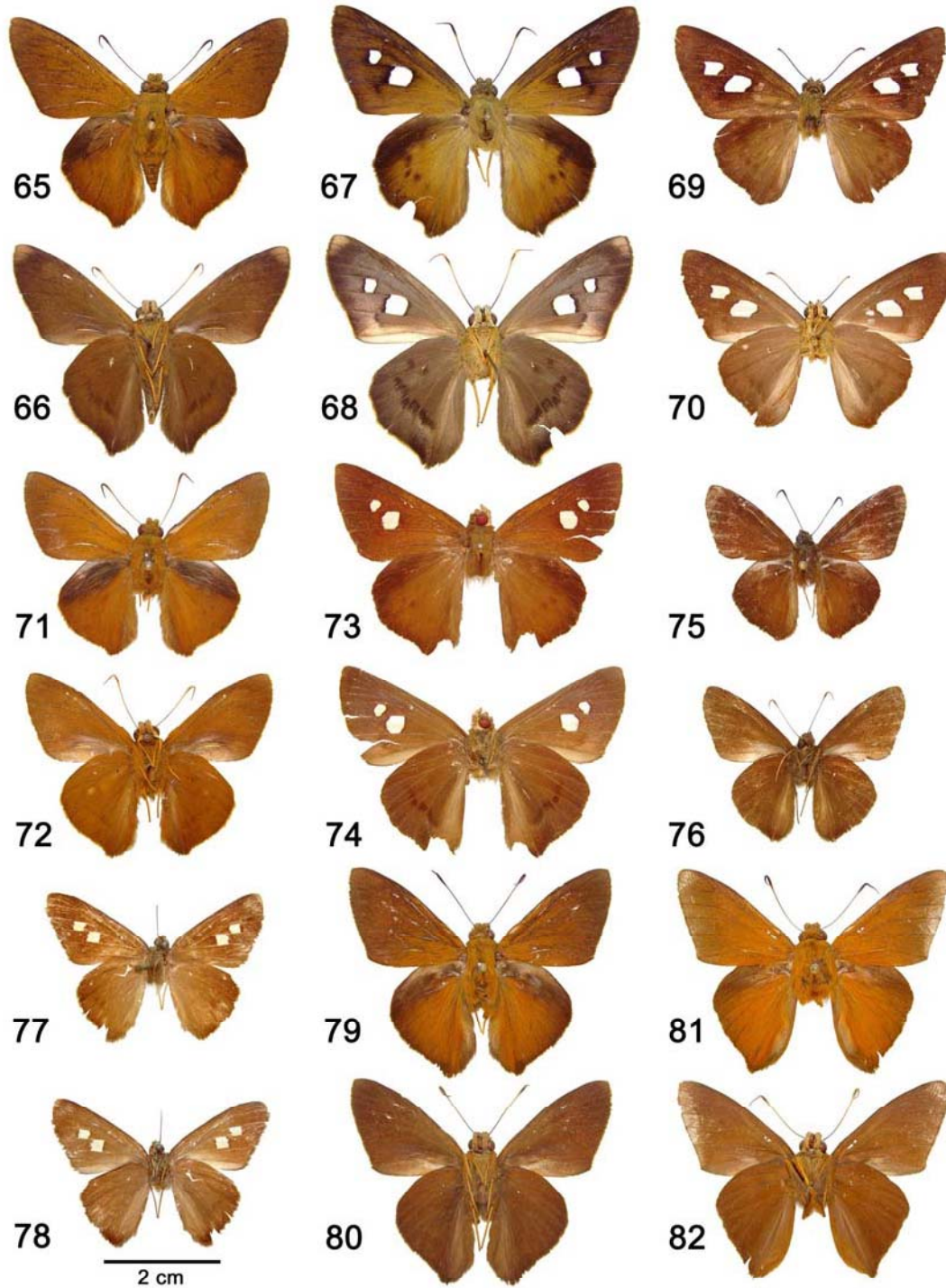


Figure 65-82. *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **65)** *P. probus*, male, BRAZIL: Rondônia; Fazenda Rancho Grande, 12 August 1993, ds. **66)** same, vs. **67)** *P. probus*, female, BRAZIL: Rondônia; Fazenda Rancho Grande, ex larva, emerged 25 November 1991, ds. **68)** same, vs. **69)** *P. vulpecula*, female, BRAZIL: Rio Purus, Hyatanahan (=Husteneã), no date, ds. **70)** same, vs. **71)** *P. sororcula*, BRAZIL: Rondônia; Fazenda Rancho Grande, 17 July 1994, ds. **72)** same, vs. **73)** *P. sororcula*, female, BRAZIL: Amazonas, Tefé (Ega), Rio Solimões, no date, ds. **74)** same, vs. **75)** *P. spanda*, male, BRAZIL: Rondônia; Fazenda Rancho Grande, 22 November 1992, ds. **76)** same, vs. **77)** *P. spanda*, female, VENEZUELA: Delta Amacuro (Terr.), Rio Acure, no date, ds. **78)** same, vs. **79)** *P. stresa*, male, BRAZIL: Rondônia; Fazenda Rancho Grande, 21 July 1994, ds. **80)** same, vs. **81)** *P. zohra*, male, VENEZUELA: Barinas, Rio Caparo Res. Sta, 32 km east of El Caton, 3-5 February 1978, ds. **82)** same, vs.

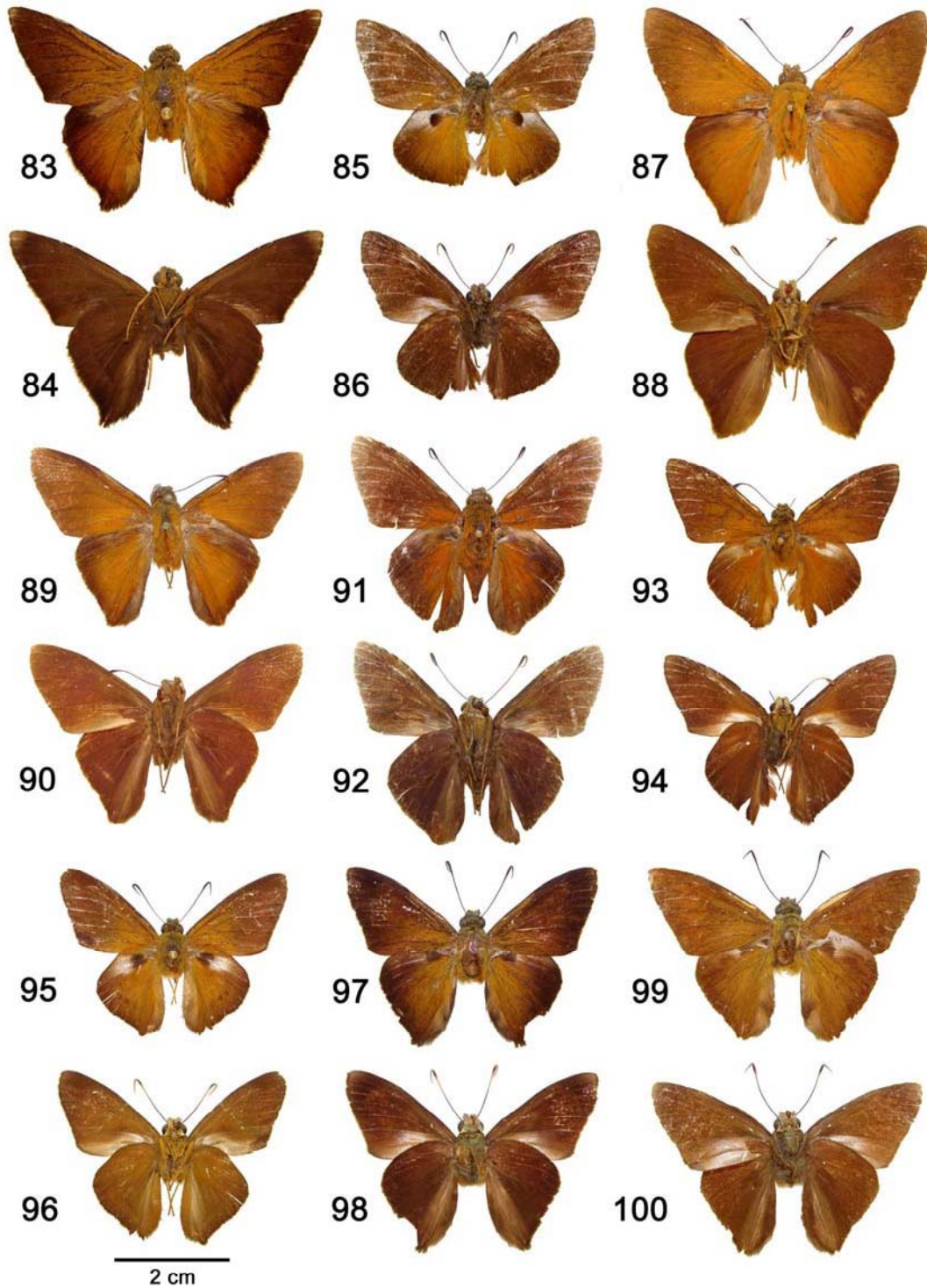


Figure 83-100. *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **83)** undescribed species, male, COSTA RICA: Ciudad Colon, Finca Hamadryas, 15 September 1998, ds. **84)** same, vs. **85)** *P. convexus*, holotype male, data in text; **86)** same, vs. **87)** *P. splendidus*, holotype male, data in text, ds. **88)** same, vs. **89)** *P. simulator*, holotype male, data in text, ds. **90)** same, vs. **91)** *P. spadix*, holotype male, data in text, ds. **92)** same, vs. **93)** *P. sparus*, holotype male, data in text, ds. **94)** same, vs. **95)** *P. specularis*, holotype male, data in text, ds. **96)** same, vs. **97)** *P. spina*, holotype male, data in text, ds. **98)** same, vs. **99)** *P. sporta*, holotype male, data in text, ds. **100)** same, vs.

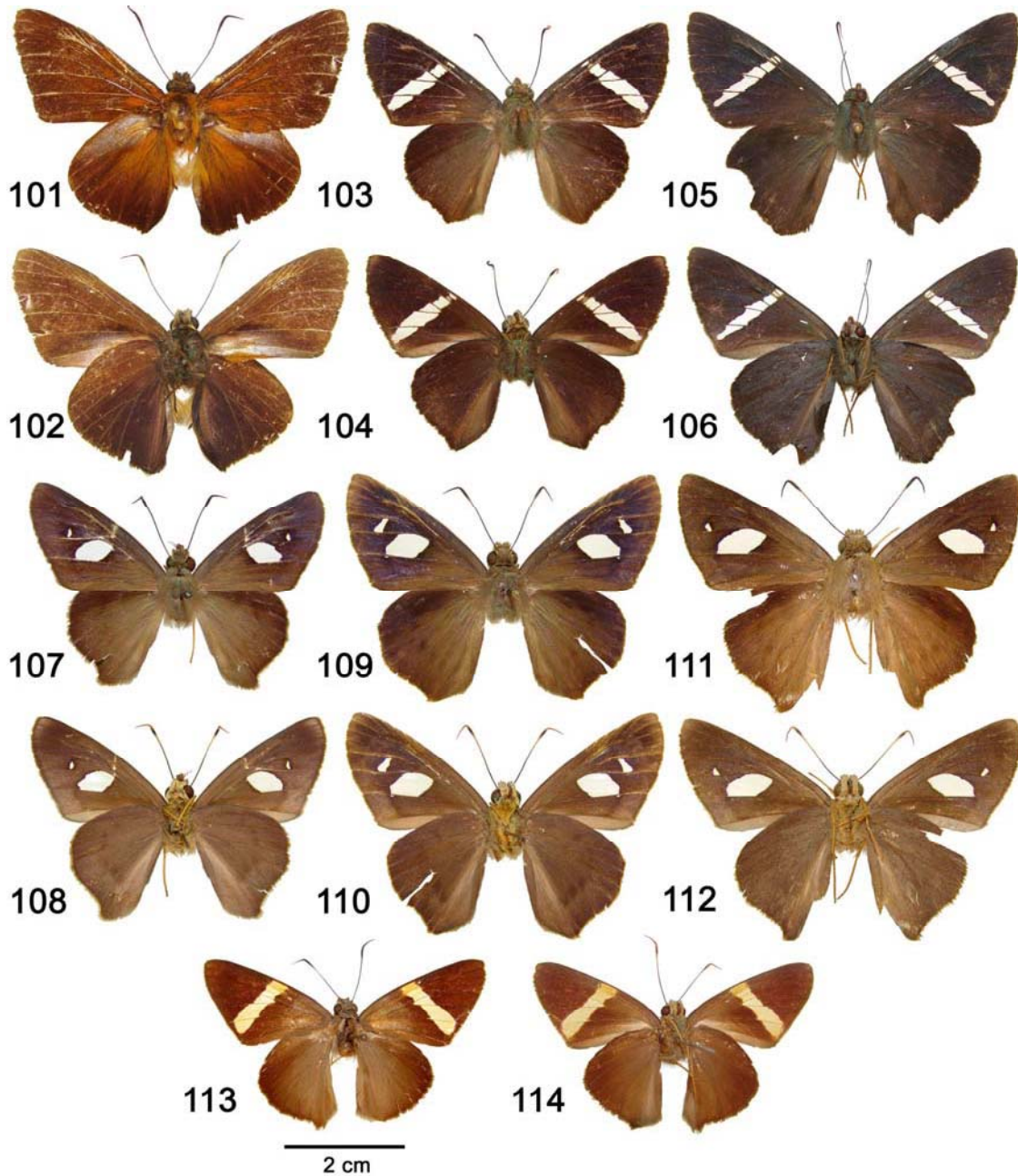


Figure 101-114. *Porphyrogenes* (ds = dorsal surface, vs = ventral surface). **101)** *P. speciosa*, holotype male, data in text, ds. **102)** same, vs. **103)** *P. eudemus*, female, PANAMA: Canal Zone; Cocoli, 10 July 1963, ds. **104)** same, vs. **105)** *Porphyrogenes* unassociated unnamed female #1, ECUADOR, Yasuni National Park, Yasuni Field Station, 767', 8 May 2003, ds. **106)** same, vs. **107)** *Porphyrogenes* unassociated unnamed female #3, PANAMA: Canal Zone, Gatun, 2 May 1970, ds. **108)** same, vs. **109)** *Porphyrogenes* unassociated unnamed female #4, PANAMA: Panamá Prov.; Distrito de El Llano, Cordillera de San Blas, north of El Llano, ca. 330m, 29 May 1978, ds. **110)** same, vs. **111)** *Porphyrogenes* unassociated unnamed female #5, COSTA RICA: Ciudad Colon, Finca Hamadryas, 20 April 1998, ds. **112)** same, vs. **113)** *Porphyrogenes* unassociated unnamed female #2, BRAZIL: Pará, no date, ds. **114)** same, vs.

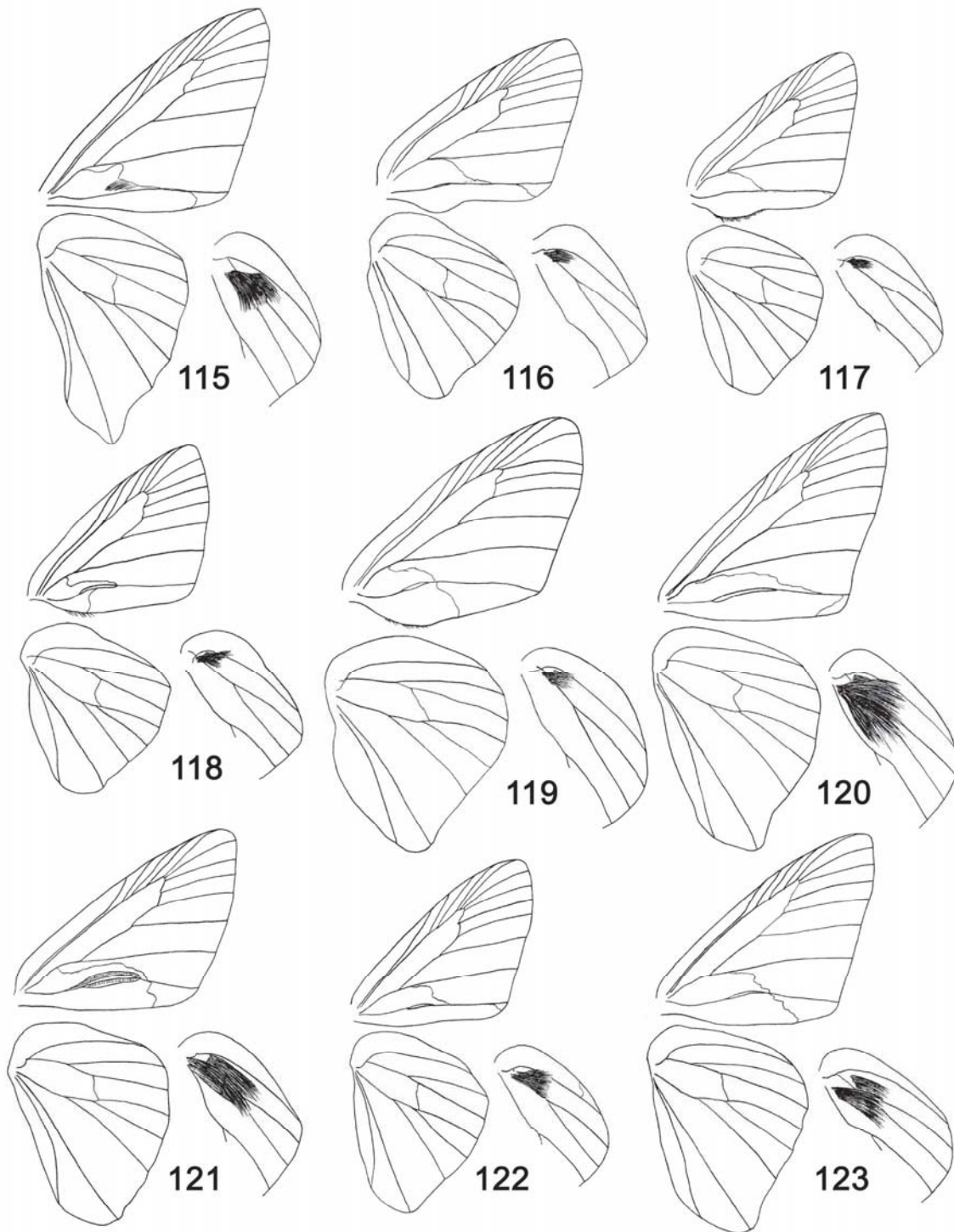


Figure 115-123. Venation and some secondary sexual characters of male *Porphyrogenes*. Shown is ventral surface including modification of vein 2A and extent of speculum on ventral forewing (irregular line in CuA_2-2A and anal cell) and origins of veins on hindwing. Insert is of anterior portion of dorsal hindwing showing hair-like tufts. **115** *P. boliva*, BRAZIL: Rondônia (GTA #1616); **116** *P. ferruginea*, BRAZIL: Amazonas (GTA #4184); **117** *P. despecta*, BRAZIL: Pará (GTA #7587); **118** *P. pausias*, BRAZIL: Rondônia (GTA #4212); **119** *P. omphale*, BRAZIL: Rondônia (no number); **120** *P. probus* (GTA #6700); **121** *P. sororcula*, BRAZIL: Rondônia (GTA #8879); **122** *P. spanda*, BRAZIL: Rondônia (GTA #3225); **123** *P. stresa*, BRAZIL: Rondônia (GTA #3927).

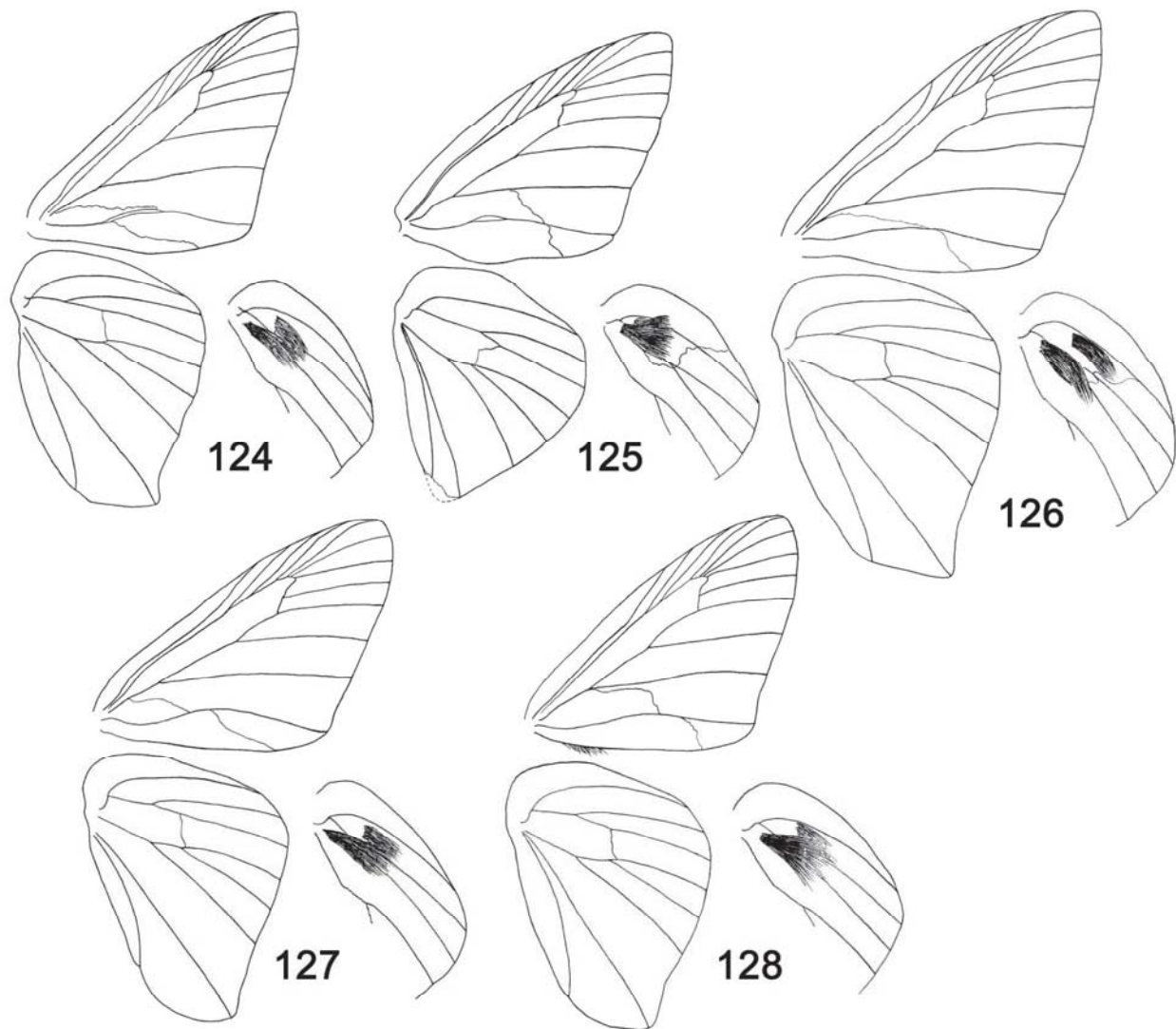


Figure 124-128. Venation and some secondary sexual characters of male *Porphyrogenes*. Shown is ventral surface including modification of vein 2A and extent of speculum on ventral forewing (irregular line in CuA_2-2A and anal cell) and origins of veins on hindwing. Insert is of anterior portion of dorsal hindwing showing hair-like tufts. **124)** *P. zohra*, HONDURAS (GTA #8903); **125)** *P. convexus*, holotype, BRAZIL: Rondônia (GTA #2760); **126)** *P. splendidus*, holotype, BOLIVIA (GTA #4182); **127)** *P. simulator*, holotype, BOLIVIA (GTA #4181); **128)** *P. spadix*, holotype, BRAZIL: Rondônia (GTA #3894).

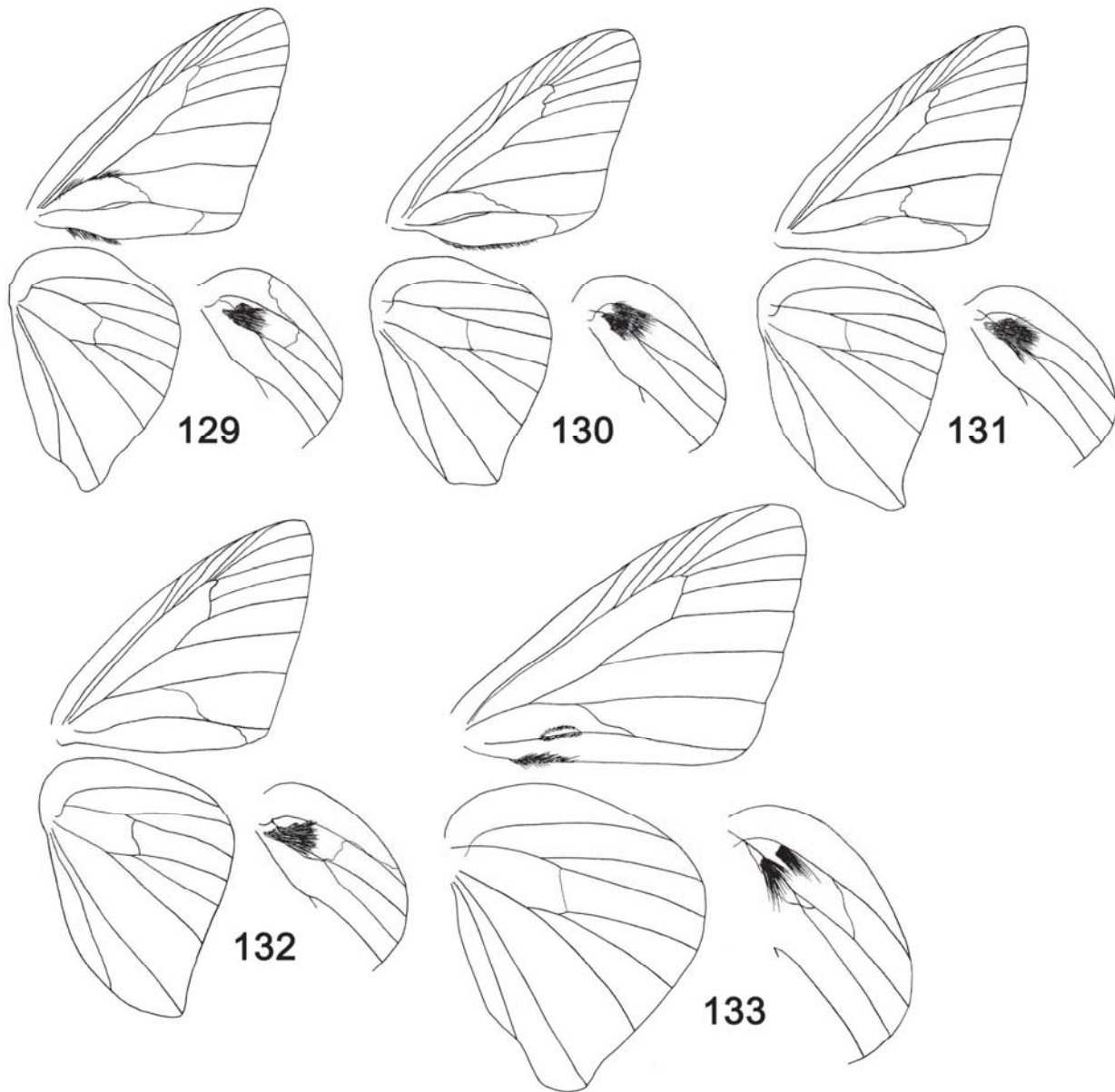


Figure 129-133. Venation and some secondary sexual characters of male *Porphyrogenes*. Shown is ventral surface including modification of vein 2A and extent of speculum on ventral forewing (irregular line in CuA_2-2A and anal cell) and origins of veins on hindwing. Insert is of anterior portion of dorsal hindwing showing hair-like tufts. **129)** *P. sparus*, paratype, BRAZIL: Rondônia (GTA #2806); **130)** *P. specularis*, holotype, BRAZIL: Rondônia (GTA #3589); **131)** *P. spina*, holotype, PANAMA (GTA #8905); **132)** *P. sporta*, holotype, COLOMBIA (GTA #4180); **133)** *P. speciosa*, holotype, COSTA RICA (GTA #13985).

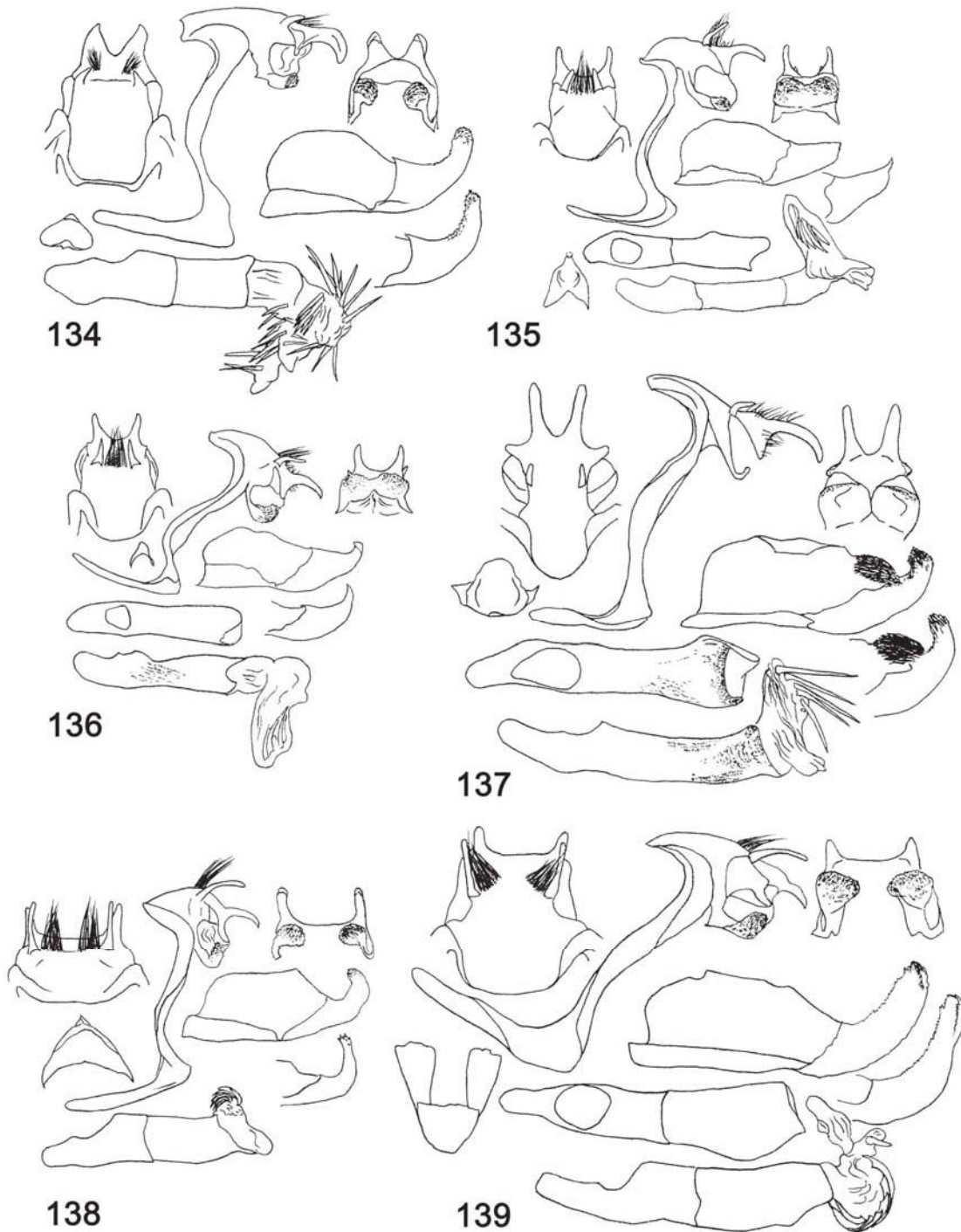


Figure 134-139. Male genitalia of *Porphyrogenes*; shown are lateral view of uncus, gnathos, tegumen, and saccus; dorsal view of uncus and tegumen; ventral view of uncus and gnathos; juxta; lateral view (with extended vesica) and often dorsal view of aedeagus; internal lateral view of right valva (inset shows the flattened harpe). **134)** *P. boliva*, BRAZIL: Rondônia (GTA #3499); **135)** *P. ferruginea*, BRAZIL: Amazonas (GTA #4184); **136)** *P. despecta*, BRAZIL: Pará (GTA #7587); **137)** *P. omphale*, BRAZIL: Rondônia (GTA #3229); **138)** *P. pausias*, BRAZIL: Rondônia (GTA #4212); **139)** *P. probus*, BRAZIL: Rondônia (GTA #6700).

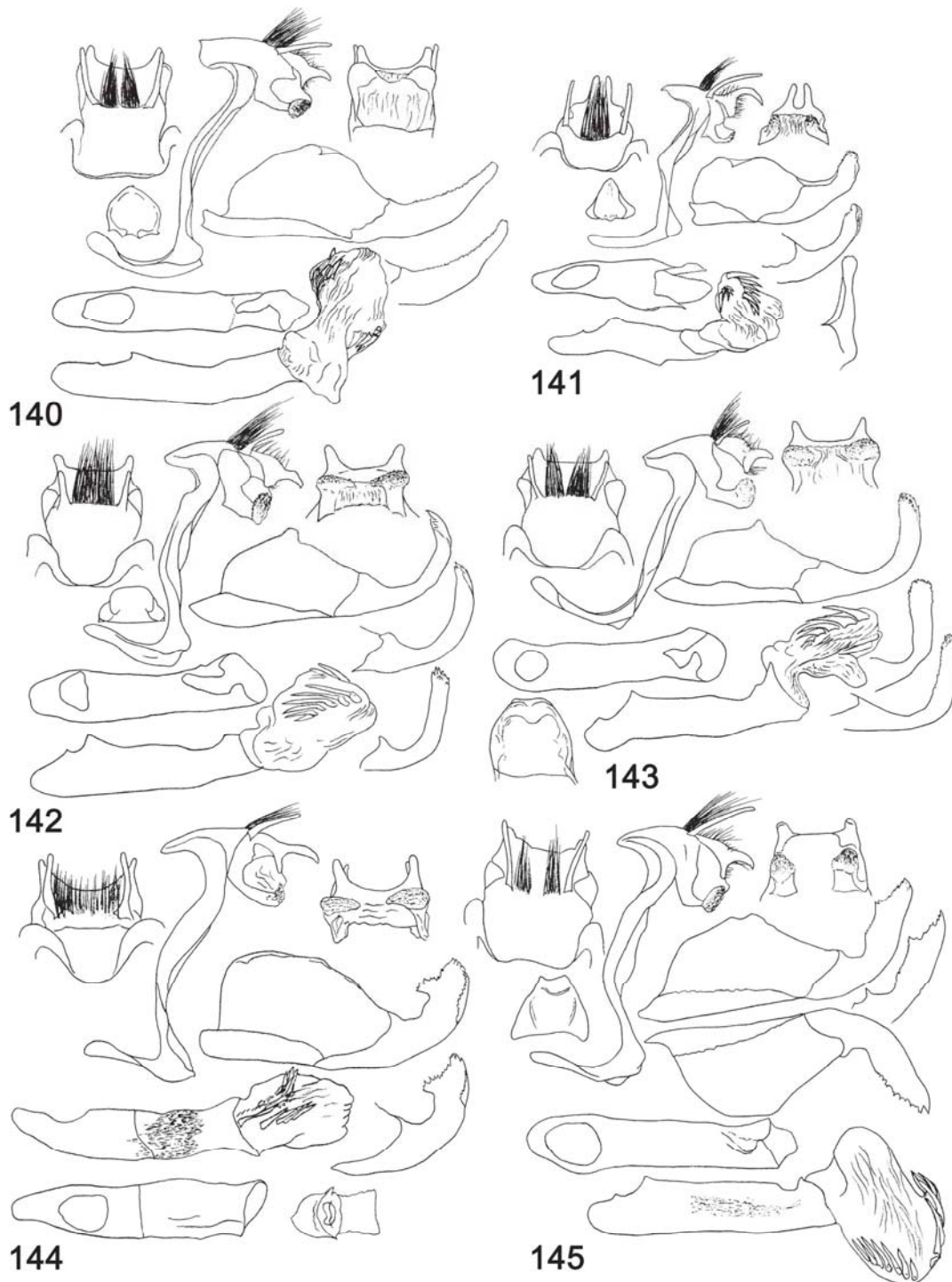


Figure 140-145. Male genitalia of *Porphyrogenes*; shown are lateral view of uncus, gnathos, tegumen, and saccus; dorsal view of uncus and tegumen; ventral view of uncus and gnathos; juxta; lateral view (with extended vesica) and often dorsal view of aedeagus; internal lateral view of right valva (inset shows the flattened harpe). **140)** *P. sororcula*, BRAZIL: Rondônia (GTA #3493); **141)** *P. spanda* (also including posterior view of harpe), BRAZIL: Rondônia (GTA #3225); **142)** *P. stresa* (also including posterior view of harpe), BRAZIL: Rondônia (GTA #3927); **143)** *P. zohra* (also including posterior view of harpe), HONDURAS (GTA #8903); **144)** *P. convexus*, holotype, BRAZIL: Rondônia (GTA #2760); **145)** *P. splendidus* (also including interior view of left valva), holotype, BOLIVIA (GTA #4182).

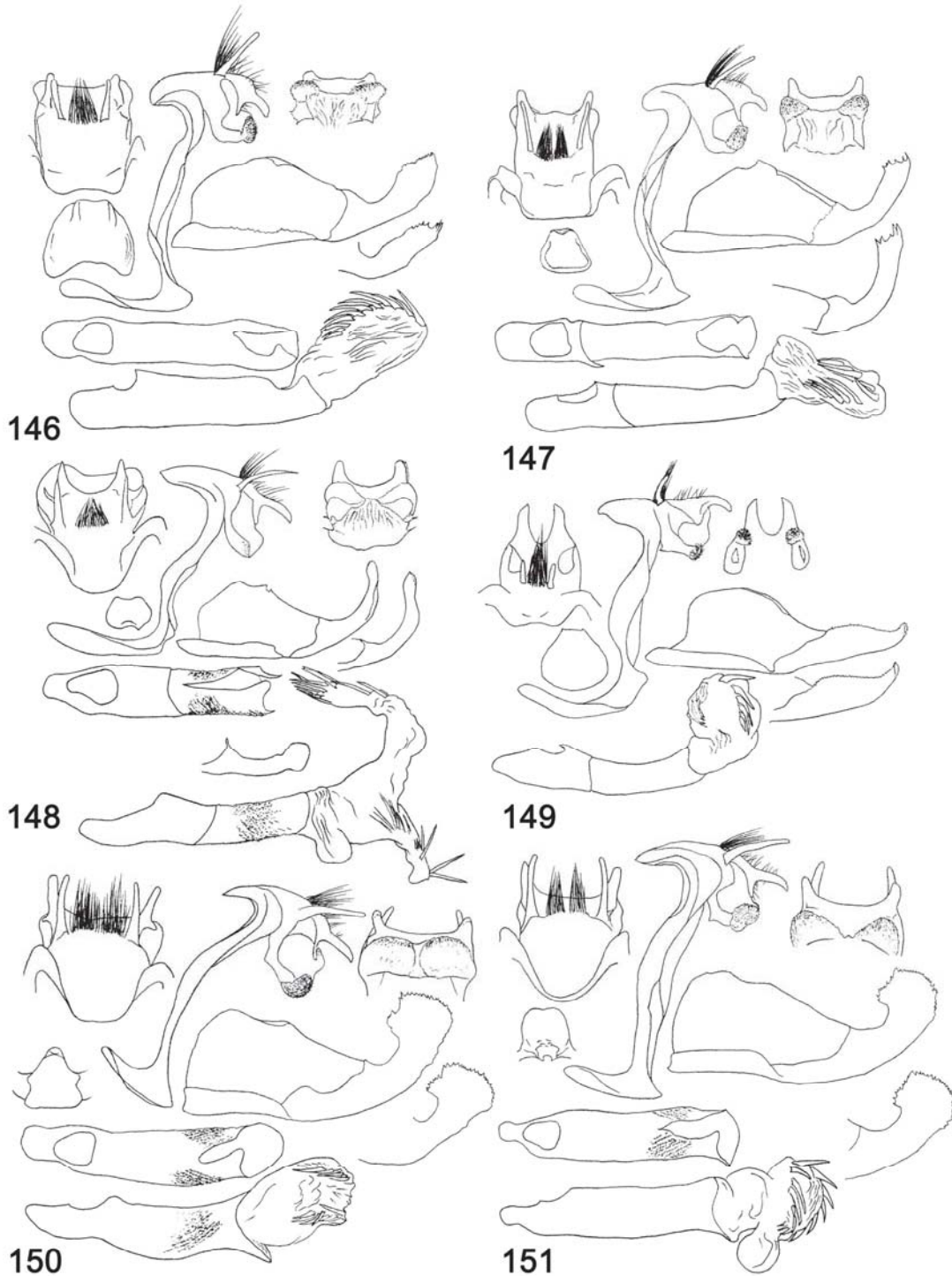


Figure 146-151. Male genitalia of *Porphyrogenes*; shown are lateral view of uncus, gnathos, tegumen, and saccus; dorsal view of uncus and tegumen; ventral view of uncus and gnathos; juxta; lateral view (with extended vesica) and often dorsal view of aedeagus; internal lateral view of right valva (inset shows the flattened harpe). **146)** *P. simulator*, holotype, BOLIVIA (GTA #4181); **147)** *P. spadix*, holotype, BRAZIL: Rondônia (GTA #3894); **148)** *P. sparus* (also including anterior view of harpe), holotype, BRAZIL: Rondônia (GTA #3928); **149)** *P. specularis*, holotype, BRAZIL: Rondônia (GTA #3589); **150)** *P. spina*, holotype, PANAMA (GTA #8905); **151)** *P. sporta*, holotype, COLOMBIA (GTA #4180).

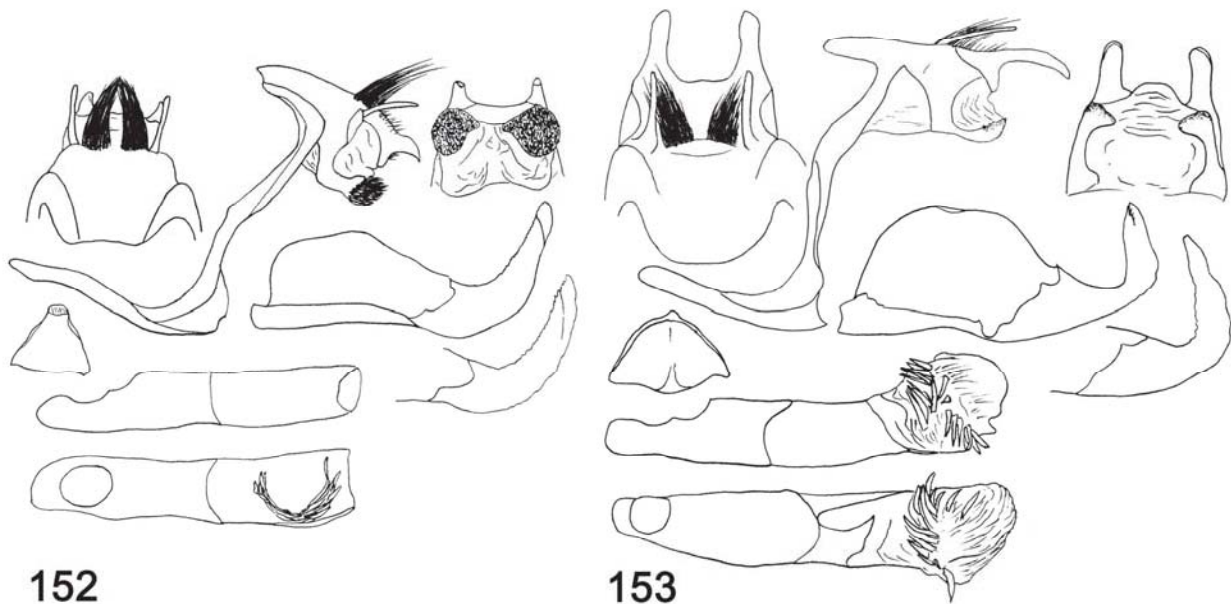


Figure 152-153. Male genitalia of *Porphyrogenes*; shown are lateral view of uncus, gnathos, tegumen, and saccus; dorsal view of uncus and tegumen; ventral view of uncus and gnathos; juxta; lateral view (with extended vesica) and often dorsal view of aedeagus; internal lateral view of right valva (inset shows the flattened harpe). **152** *Porphyrogenes* undescribed species, COSTA RICA (GTA #13917); **153** *P. speciosus*, holotype, COSTA RICA (GTA #13985).

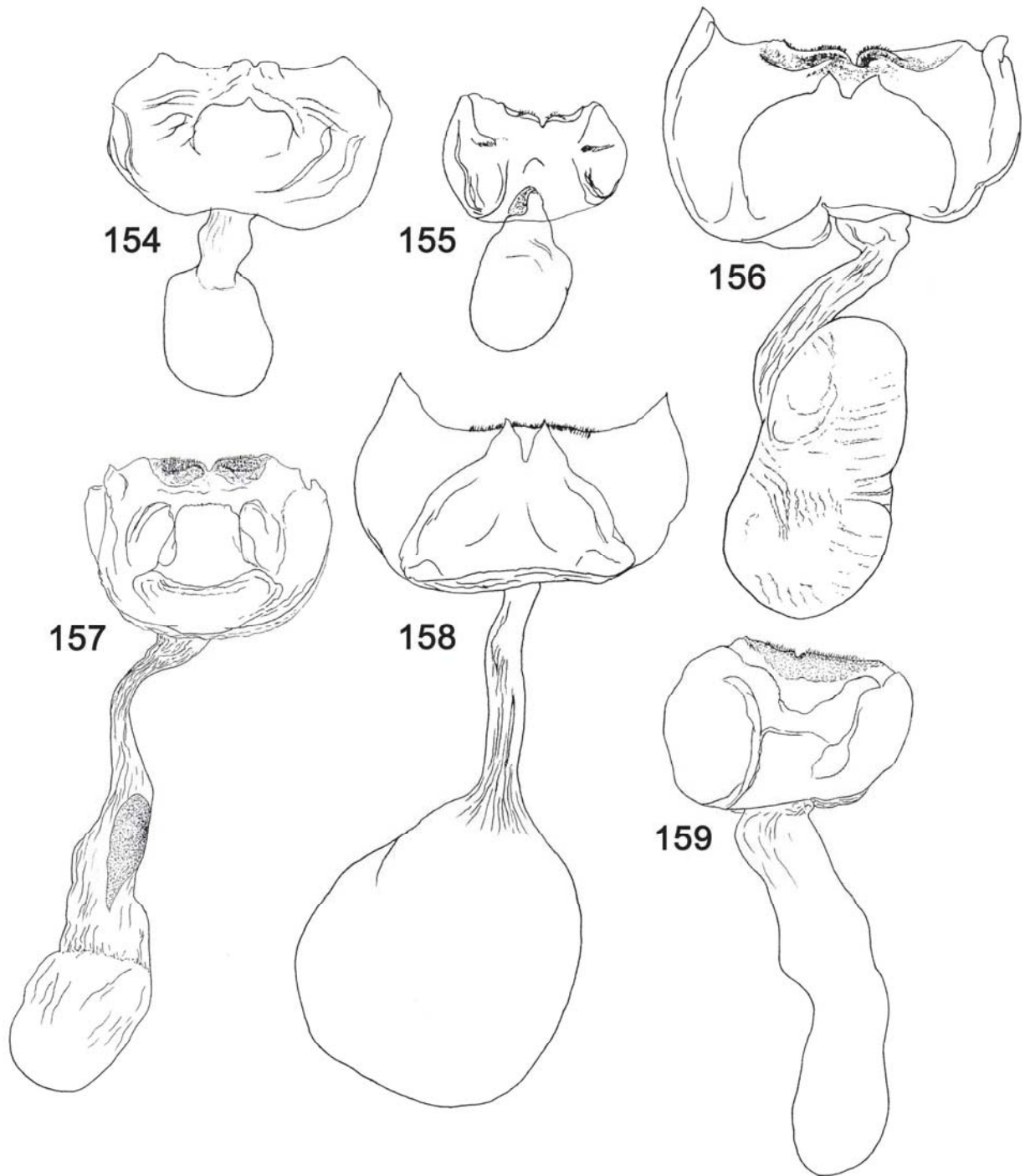


Figure 154-159. Female genitalia of *Porphyrogenes* (ventral view). **154)** *P. omphale*, PANAMA (GTA #8908); **155)** *P. pausias*, BRAZIL: Rondônia (GTA #8885); **156)** *P. sororcula*, BRAZIL: Amazonas (GTA #4426); **157)** *P. probus*, BRAZIL: Rondônia (GTA #4425); **158)** *P. vulpecula*, BRAZIL: Amazonas (GTA #13796); **159)** *P. spanda*, VENEZUELA (GTA #13797).

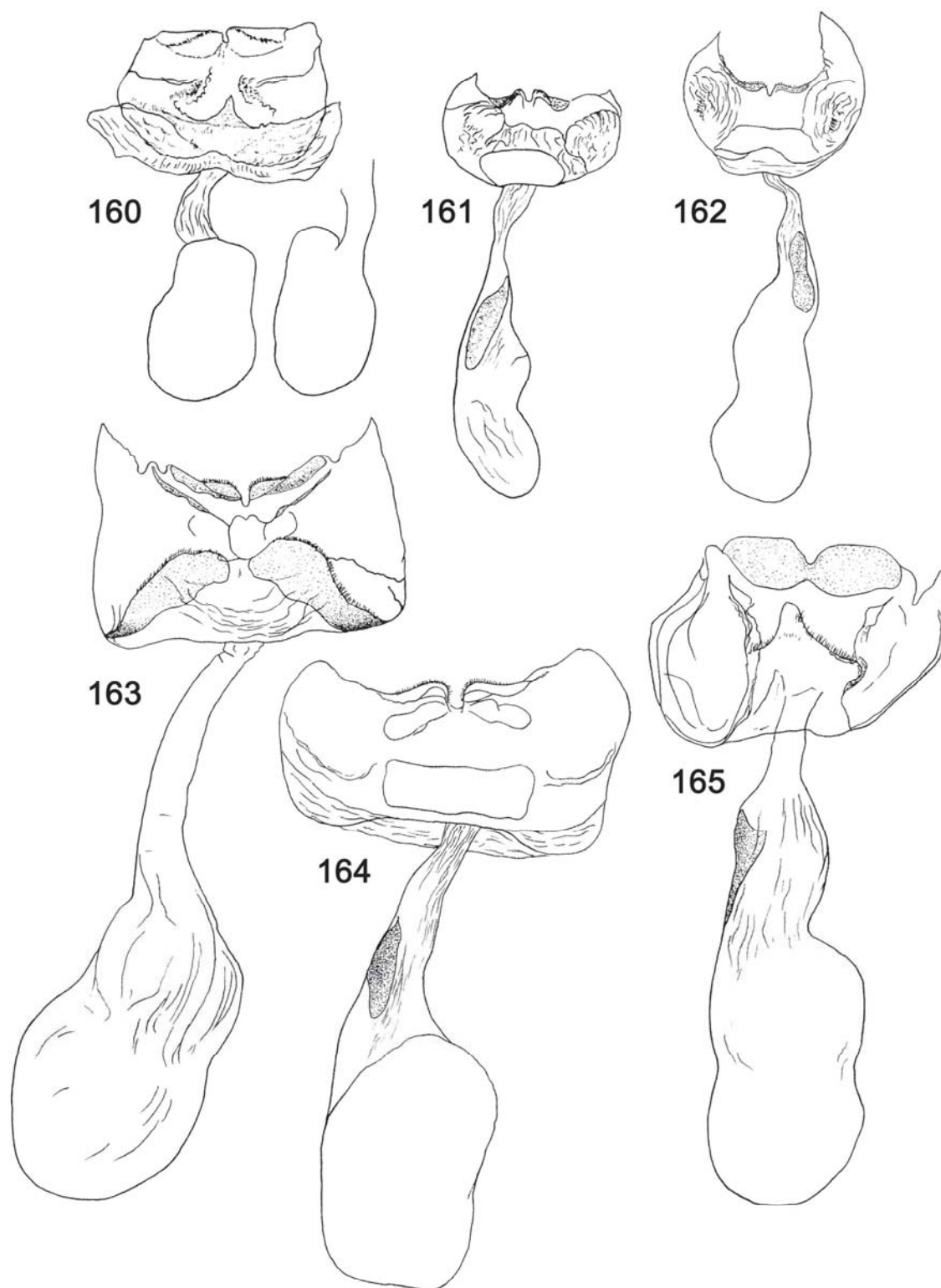


Figure 160-165. Female genitalia of *Porphyrogenes* (ventral view). **160)** *P. eudemus*, PANAMA (GTA #8902); **161)** *Porphyrogenes* unassociated female #3, PANAMA (GTA #8907); **162)** *Porphyrogenes* unassociated female #4, PANAMA (GTA #8906); **163)** *Porphyrogenes* unassociated female #1, ECUADOR (GTA #13986); **164)** *Porphyrogenes* unassociated female #5, COSTA RICA (GTA #13921); **165)** *Porphyrogenes* unassociated female #2, BRAZIL: Rondônia (GTA #13993).