

HESPERIIDAE OF RONDÔNIA, BRAZIL: *AGUNA WILLIAMS* (PYRGINAE), WITH A PARTIAL REVISION AND DESCRIPTIONS OF NEW SPECIES FROM PANAMA, ECUADOR, AND BRAZIL ¹

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ABSTRACT. Fifteen species of *Aguna* Williams, 1927 (Hesperiidae: Pyrginae) are known from near Cacaulândia in central Rondônia, Brazil; nine represent undescribed species. These nine, plus four additional new species discovered among material from other areas, are named and described: *Aguna latifascia*, *Aguna coeloides*, *Aguna nicolayi*, *Aguna latimacula*, *Aguna penicillata*, *Aguna spicata*, *Aguna longicauda*, *Aguna panama*, *Aguna spatulata*, *Aguna similis*, *Aguna mesodentata*, *Aguna squamalba*, *Aguna parva*. The species of *Aguna* are placed into ten species groups based upon the characters of the male and female genitalia. These groups are described and their included species are discussed. *Aguna williamsi* Hayward, 1935, **new synonymy** is considered synonymous with *Eudamus glaphyrus* Mabilles, 1888, **revised status**. *Goniurus hypozeonius* Plötz, 1880, new status is considered a subspecies of *Eudamus aurunce* Hewitson, 1867. **Neotypes** are designated for *Goniurus cholus* Plötz, 1880, *Papilio coelus* Stoll, [1781], *Goniurus gideon* Plötz, 1880, and *Goniurus hypozeonius* Plötz, 1880. **Lectotypes** are designated for *Eudamus asander* Hewitson, 1867, *Eudamus panthius* Herrich-Schäffer, 1869, *Eudamus scheba* Plötz, 1882, *Eudamus megacles* Mabilles, 1888, *Eudamus leucogramma* Mabilles, 1888, *Hesperia metophis* Latreille, [1824], *Eudamus aurunce* Hewitson, 1867, and *Eudamus glaphyrus* Mabilles, 1888. Preliminary identification keys are provided.

KEY WORDS. Lepidoptera, Hesperiidae, *Aguna*, Neotropical

Aguna Williams, 1927 (Hesperiidae, Pyrginae) is widely distributed in the Neotropics with representatives occurring from southern Texas to Argentina. Most species are relatively large, the wings are brown, the hindwing has a prominent lobe or tail, the dorsal wing bases are often dull green, and the ventral hindwing often has a distinct white band from near the costa towards the tornus. The members of this genus have a very long forewing discal cell (72-77% of costal length), also found on the other pyrgine genera *Proteides* Hübner, 1819; *Epargyreus* Hübner, 1819; *Polygonus* Hübner, 1825; and *Chioides* Lindsey, 1921. *Aguna* may be distinguished from those genera by the configuration of the forewing subapical

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hyaline macules: those in R2-R3 and R3-R4 connivent and placed forward of the cell end, that in R4-R5 usually well separated distad, and that in R5-M1 always well distad of the others. A similar configuration of the subapical macules may be found in other pyrgine genera such as *Typhedanus* Butler, 1870, but these generally have a shorter forewing discal cell and a hair tuft on the dorsal hindwing. The hindwing of *Aguna* has a lobe or tail and males have a forewing costal fold. Antennae have a nudum of 22-24 segments; there are no apparent interspecific differences. The legs are unspined; the mid tibiae have one pair of spurs and the hind tibiae have two pairs. The male genitalia have a long and thin tegumen and a much shorter and narrowly divided uncus. The trough-like gnathos is undivided, distally more or less spiculose, and does not extend caudad to the end of the uncus. The valva is broad with projections, spicules, and/or teeth on the ampulla and/or harpe. The aedeagus is variable (but relatively constant within groups of species), often spiculose or ornamented with bristles at the caudal end and/or the lower lip is longer than the upper lip and sometimes spike-like. In other *Aguna* taxa, the lips are vertical and again ornamented and asymmetrical. The cornutus is well developed.

Females of *Aguna* tend to be larger than males with broader wings and somewhat larger macules. Those of tailed species generally have longer tails than do the males. Female genitalia include a well-sclerotized and rather broad lamella postvaginalis which is variously notched centrally on the caudal margin. The lamella antevaginalis is variable, usually lobed centrally on the caudal margin, and with broad, largely membranous and transparent lateral lobes overlapping the anterior portion of the lamella postvaginalis. The ductus bursae of most species is broad and relatively short. The ductus bursae has been seen to contain a prominent neck of the spermatophore in several species (most females of the "coelus" group, some *A. hypozonius*, *A. claxon*, *A. metophis*). The spermatophore is bulbous cephalad at the juncture of the ductus bursae and corpus bursae and extends the full length of the ductus bursae and often protrudes from the ostium bursae (e.g., see figures 66, 67, 71). The corpus bursae is small and somewhat oval. The sinus conjunctionis is developed as a pair of crinkled sacs.

EVANS (1952) reviewed the genus *Aguna*, illustrated their male genitalia, and recognized thirteen species. MIELKE (1971) updated the distributions of the various species and described an additional taxon from Venezuela. The taxon *Goniurus platowii* Plötz, 1880 was described from an unknown location. GODMAN (1907) suggested that it was "probably a var. of *Eudamus esmeraldus*, Butl." where it was retained by EVANS (1952). STEINHAUSER (1981) suggested that *G. platowii* was an *Aguna* where it was placed by BRIDGES (1988). The figure of this species in SEITZ (1924) does not resemble any *Aguna* (or other hesperiid) examined. Its type is not at The Museum für Naturkunde, Berlin, Germany, and similar recent material needs to be located and examined before this phenotype may be unequivocally placed.

Several *Aguna* species are virtually impossible to determine superficially much less match to original descriptions. Types may be lost, misidentified, or mislabeled and type localities are often vague. Some species concepts have been misapplied or referred to more than one species. Taxonomic problems and unnamed

phenotypes became apparent while attempting to identify a collection of *Aguna* from western Brazil; the existence of a number of undescribed taxa has been known by the junior author for some time. Herein, a discussion is included on the diversity of this genus in the vicinity of Cacaulândia, Rondônia, Brazil, where males of nearly all species of *Aguna* present are readily attracted to bird droppings at army ant swarms and to paper lures (table I, see also AUSTIN *et al.* 1993). This region is typical lowland tropical rainforest (EMMEL & AUSTIN 1990, see also AUSTIN & JOHNSON 1995). Additionally, the genus is reviewed including an arrangement into ten species groups and the descriptions of thirteen new species. Emphasis is placed on those species which have a green or blue dorsal color and a broad white central band on the ventral hindwing.

Table I. Abundance and associations of *Aguna* in the vicinity of Cacaulândia, Rondônia, Brazil.

Species	General (>1,000.0 h)		Lures (212.5 h)		Ants (193.5 h)	
	Male	Female	Male	Female	Male	Female
<i>A. asander</i>	15	3	42	0	75	1
<i>A. megacles</i>	0	1	0	0	0	0
<i>A. albistria</i>	9	2	0	0	0	0
<i>A. metophis</i>	7	1	8	0	42	0
<i>A. aurunce</i>	2	1	12	0	17	0
<i>A. coelus</i>	7	4	14	0	23	0
<i>A. coeloides</i>	1	0	4	0	3	0
<i>A. squamalba</i>	75	9	13	1	76	0
<i>A. penicillata</i>	0	1	5	0	5	0
<i>A. spicata</i>	3	1	18	2	12	0
<i>A. longicauda</i>	0	0	1	0	0	0
<i>A. spatulata</i>	1	0	5	0	10	0
<i>A. similis</i>	0	0	1	0	6	0
<i>A. mesodentata</i>	0	0	4	0	2	0
<i>A. parva</i>	17	1	4	0	3	0
TOTAL (number)	132	24	131	3	274	1
(per 10 h)	1.3	0.2	6.2	0.1	14.2	0.1

A number of *Aguna* species are relatively rare in collections and details of their distributions are unknown. Their occurrence at army ant swarms and their attraction to lures should facilitate future investigations; additional species may well yet exist. Females of some species are tentatively associated with males and these are not included in type series, but their locality is noted in the listings of specific records. Mated pairs need to be carefully documented. Once hostplants are determined, reared series will provide definite associations of males and females.

Forewing length is from base to apex. Terminology for the structures of the genitalia follow STEINHAUSER (1986) except aedeagus is used here instead of penis. Numbers of genitalia dissections are indicated for each sex of each species. Since this study was primarily to elucidate the Rondônia fauna, an exhaustive search was not made of museum collections. Specific records refer only to material examined

during the course of investigations for this paper. Specimens examined are deposited at various museums: Allyn Museum of Entomology, Sarasota, Florida (AME); American Museum of Natural History, New York (AMNH); Carnegie Museum, Pittsburgh (CM); Los Angeles County Museum (LACM); Museu de Historia Natural, Lima, Peru (MHNL); Museum für Naturkunde, Berlin, Germany (ZMHB); The Natural History Museum, London (BMNH); Nevada State Museum (NSM); Universidade Federal do Paraná, Curitiba (UFPC); and National Museum of Natural History, Washington, D.C. (USNM).

Keys to the species groups and species of *Aguna*

The following key for males will allow identification of all known species of *Aguna*. The key for females is preliminary and tentative based on those known and the premises discussed above and in the group introductions and species accounts below. Confident associations of females were made for *A. asander*, *A. megacles*, *A. albistria*, *A. claxon*, *A. clina*, *A. latifascia*, *A. metophis*, *A. camagura*, *A. venezuelae*, *A. auranee*, *A. glaphyrus*, *A. ganna*, *A. panama*, *A. similis*, *A. squamalba*, and *A. parva*.

Preliminary key to males of *Aguna*

1. Species predominantly brown on dorsum 2
 - Species with considerable blue or green on dorsum 4
2. Tail lobe-like, sacculus with flap extended caudad “*asander*” group *asander*
 - Tail long, sacculus without flap 3
3. No white band on ventral hindwing, harpe prominently toothed “*megacles*” group *megacles*
 - White band on ventral hindwing, harpe not prominently toothed “*albistria*” group *albistria*
4. Process of harpe prominently extended cephalad “*claxon*” group 5
 - Process of harpe not prominently extended cephalad 7
5. Dorsum brighter green, process of harpe pointed cephalad *claxon*
 - Dorsum dull blue-green, process of harpe broadly rounded cephalad 6
6. Ventral hindwing white band of moderate width, relatively regular, process of harpe very broad *clina*
 - Ventral hindwing white band very broad, very irregular, process of harpe narrower *latifascia*
7. Ventral hindwing without well-defined white band “*metophis*” group 8
 - Ventral hindwing with well-defined white band 9
8. Uncus relatively short, harpe massive, aedeagus without bristle cluster, wings broad, tails relatively short (5-6 mm) *camagura*
 - Uncus relatively long, harpe diminutive, aedeagus with bristle cluster, wings narrow, tails long (8-12 mm) *metophis*

9. Genitalia with well developed lobe on ampulla directed dorsad, dorsal ridge of harpe with well developed tooth row, aedeagus with upper lip broad, lower lip thin (like sperm whale in profile) and longer than upper lip “*coelus*” group 10
- Genitalia without above combination of characters 16
10. Aedeagus with caudal end of upper lip skewed to the right 11
- Aedeagus with caudal end of upper lip more or less symmetrical or skewed to left 12
11. Lower lip of aedeagus narrow, costa of valva relatively narrow, ventral hindwing band of relatively equal width throughout *coelus*
- Lower lip of aedeagus broad, costa of valva broad, ventral hindwing band very broad centrally *venezuelae*
12. Tails long (6.5 mm) 13
- Tails short (up to 6 mm) 14
13. Forewing macules narrow, lower lip of aedeagus broad *nicolayi*
- Forewing macules broad, lower lip of aedeagus narrow *latimacula*
14. Aedeagus small, lower lip narrow *coeloides*
- Aedeagus robust, lower lip broad 15
15. Larger size (> 22 mm), tail very short, ventral hindwing discal band broad, lower lip of aedeagus barely longer than upper lip *aurunce*
- Smaller (<22mm), tail longer, ventral hindwing discal band narrow, lower lip of aedeagus considerably longer than upper lip *cirrus*
16. Genitalia with lower lip of aedeagus much longer than upper lip, heavily sclerotized, spike-like “*glaphyrus*” group 17
- Genitalia without spike-like lower lip on aedeagus 20
17. Dorsal wing bases bright blue *glaphyrus*
- Dorsal wing bases green to blue-green 18
18. Upper lip of aedeagus with bristles on left side *longicauda*
- Upper lip of aedeagus with bristles on right side 19
19. Dorsal process of harpe extending dorsad of ampulla *penicillata*
- Dorsal process of harpe not extending dorsad of ampulla *spicata*
20. Genitalia with lobe of ampulla projected caudad above dorsal ridge of harpe “*ganna*” group 21
- Genitalia without lobe of ampulla directed caudad above dorsal ridge of harpe 25
21. Caudal end of aedeagus with clusters of robust bristles on both left or left dorsal and right sides 22
- Caudal end of aedeagus with few, fine, and hair-like bristles on left side, unlike cluster of robust bristles on right side 24

22. Ampulla process short, not necked, spiculose *similis*
 – Ampulla process long, necked, dentate 23
23. Ampulla process with caudal orientation, tails relatively short (2-2.5 mm)
 *spatulata*
 – Ampulla process with more dorso-caudal orientation, tails long (7-7.5 mm)
 *panama*
24. Ampulla process with teeth directed interiorly, venter of aedeagus without
 bristles *mesodentata*
 – Ampulla process with teeth directed dorsad and caudad, venter of aedeagus with
 bristles *ganna*
25. Large (forewing > 17 mm), dorsal wing bases greenish with numerous white
 scales, tails short, (3-4 mm) aedeagus with short bristles across caudal end
 of right lip “*squamalba*” group *squamalba*
 – Small (forewing < 17 mm), dorsal wing bases bluish without white scales, tails
 long (6-7 mm), aedeagus with dense bristle cluster on caudal end of right lip
 “*parva*” group *parva*

Tentative preliminary key to the females of *Aguna*

1. Species predominantly brown on dorsum 2
 – Species with considerable blue or green on dorsum (some female *A. claxon* from
 the Yucatan Peninsula, Mexico, are brown) 4
2. Tail lobe-like *asander*
 – Tail long 3
3. No white band on ventral hindwing *megacles*
 – White band on ventral hindwing *albistria*
4. Dorsum bright green (some females from the Yucatan Peninsula, Mexico, are
 brown) *claxon*
 – Dorsum duller 5
5. Ventral hindwing without well-defined white band 6
 – Ventral hindwing with well-defined white band 7
6. Wings broad, tail short (5-6 mm), lamella postvaginalis with caudal margin
 shallowly indented *camagura*
 – Wings narrow, tail long (8-12 mm), lamella postvaginalis with caudal margin
 undulate *metophis*
7. Ventral hindwing with central portion of white band abruptly broader than
 remainder of band, forewing with macules very broad, lamella postvaginalis
 without distinct central notch on caudal margin 8
 – Ventral hindwing without above combination of characters 9

- 8. Lamella postvaginalis very slightly concave on caudal edge; white band on ventral hindwing of moderate width, relatively regular; Colombia, Trinidad *clina*
- Lamella postvaginalis more deeply convex on caudal edge; white band on ventral hindwing very broad, very irregular; Ecuador, Peru, western Brazil *latifascia*
- 9. Caudal end of lamella postvaginalis with narrow U-shaped notch, if notch absent (some *A. aurunce*), then tails very short (1) “*coelus*” group 10
- Caudal end of lamella postvaginalis with broad U- or V-shaped notch 16
- 10. Tails very short, lobe-like *aurunce*
- Tails longer 11
- 11. Tails very long (> 7 mm) 12
- Tails shorter (< 6 mm) 14
- 12. Ventral hindwing band prominently broader medially *venezuelae*
- Ventral hindwing band about equal width throughout 13
- 13. Forewing macules narrow, pale *nicolayi*
- Forewing macules broad, yellow *latimacula*
- 14. Dorsal color blue-green *cirrus*
- Dorsal color greener 15
- 15. Ventral hindwing band broader (2-2.5 mm) *coelus*
- Ventral hindwing band narrower (1.5-2 mm) *coeloides*
- 16. Lateral lobes of lamella antevaginalis with well-defined sclerotized pads “*glaphyrus*” group 17
- Lateral lobes of lamella antevaginalis without well-defined sclerotized pads . . 20
- 17. Dorsal wing bases bright blue *glaphyrus*
- Dorsal wing bases green to blue-green 18
- 18. Macules nearly white, lamella postvaginalis broad, dorsal lobe of papillae anales much longer than ventral lobe *spicata*
- Macules pale yellow, lamella postvaginalis relatively narrow, dorsal lobe of papillae anales about same length as ventral lobe 19
- 19. Forewing macules very broad, lateral lobes of lamella antevaginalis with sclerotized portion rounded *longicauda*
- Forewing macules narrower, lateral lobes of lamella antevaginalis with sclerotized portion triangular *penicillata*
- 20. Caudal end of lamella antevaginalis not divided centrally *squamalba*
- Caudal end of lamella antevaginalis divided centrally 21
- 21. Caudal end of lamella antevaginalis with central lobes widely separated *parva*

- Caudal end of lamella antevaginalis with central lobes approximate “*ganna*” group 22
- 22. Lamella antevaginalis with large central lobes on caudal edge, these laterally angled cephalad 23
- Lamella antevaginalis with small central lobes on caudal edge, these laterally angled caudad 24
- 23. Lamella postvaginalis with caudal edge square, central notch narrow and shallow, tails long (7.5-8 mm) *ganna*
- Lamella postvaginalis with caudal edge as rounded lobes, central notch broader and deeper, tails short (7 mm) *spatulata*
- 24. Central notch of lamella postvaginalis relatively shallow and narrow, central lobes of lamella antevaginalis more deeply divided, Central America and northern South America *panama*
- Central notch of lamella postvaginalis relatively deep and broad, central lobes of lamella antevaginalis deeply or shallowly divided, Brazil and Peru 25
- 25. Central lobes of lamella antevaginalis very shallowly divided *similis*
- Central lobes of lamella antevaginalis deeply divided *mesodentata*

(1) “*coelus*” group females, except *A. aurunce*, are very difficult to separate especially the shorter-tailed species *A. cirrus*, *A. coelus*, and *A. coeloides*. Characters are not concrete but in combination give specific aspects; these include overall color, sizes and orientations of macules, width and configuration of the ventral hindwing band, and subtle differences in the genitalia. Comparative material at hand is a necessity; larger samples may provide better characters.

“ASANDER” GROUP

This group includes a single brown species, *Aguna asander* (Hewitson), with the “lower median veinlet” on the forewing closer to vein CuA1 than to M3 and a lobed hindwing tornus. The genitalia of both sexes are distinctive.

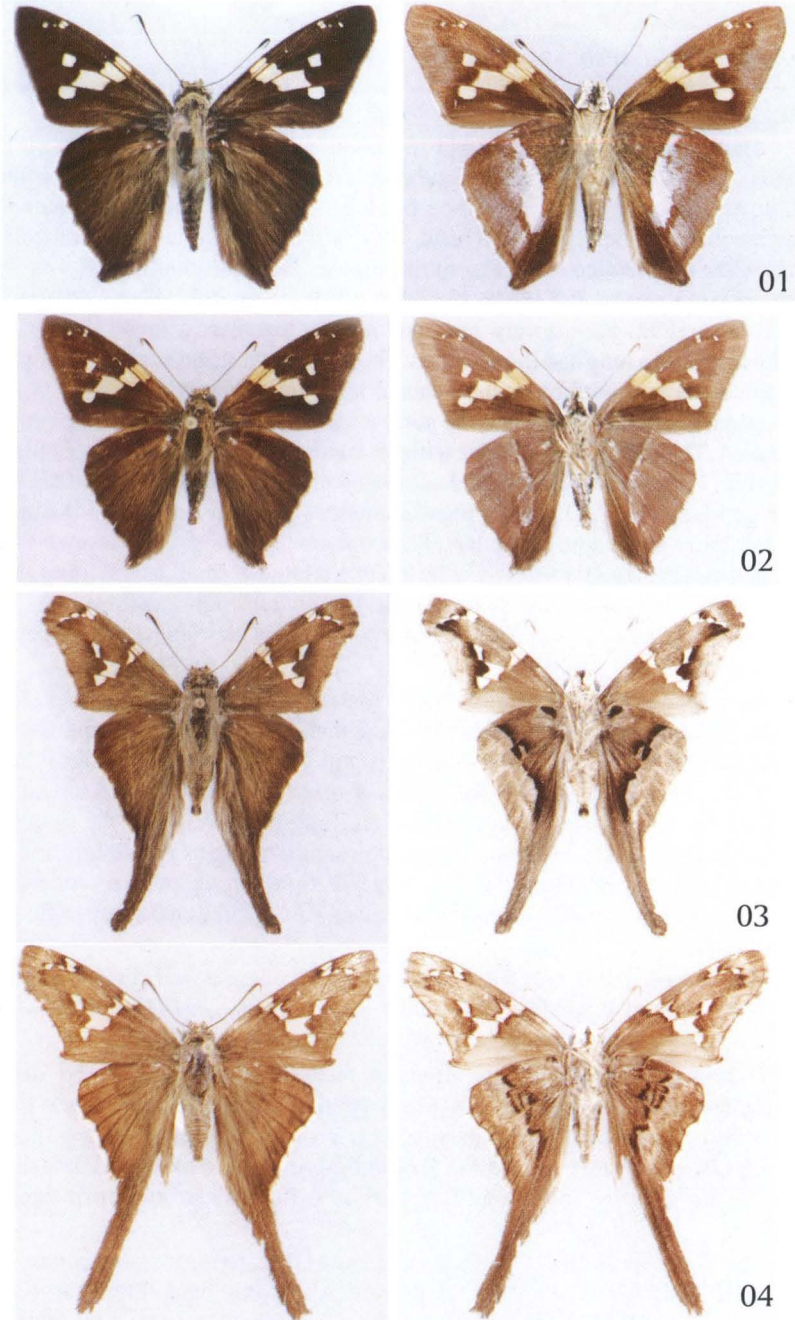
Aguna asander asander (Hewitson, 1867)

Figs 1, 2, 32, 58

Eudamus asander Hewitson, 1867. Type locality: Ega, Amazonas. Type: **LECTOTYPE** female (designated here) at BMNH [EVANS (1952) stated that this was the holotype, but the original description gave no mention of the number of specimens so this specimen was a syntype], with the following labels: / Type H.T. / Ega Hewitson Coll. 79-69 *Eudamus asander*. 5./, and the following labels to be added: / LECTOTYPE / Lectotype *Eudamus asander* Hewitson 1867 Austin & Mielke det. 1996/.

Eudamus panthius Herrich-Schäffer, 1869. Type locality: Tropical America, a few to S. USA. Type: **LECTOTYPE** male (designated here) at ZMHB, with the following labels: / Origin / asander var. / Coll H-Sch. / panthias [sic]/, and the following labels to be added: / LECTOTYPE / Lectotype *Eudamus panthius* Herrich-Schäffer, 1869 Austin & Mielke det. 1996/.

Eudamus scheba Plötz, 1882. Type locality: South America. Type: **LECTOTYPE** male (designated here) at ZMHB, with the following labels: / Scheba Plötz i. l. / Scheba Plötz, taf. 117 / 10: 10 / Coll. Weymer / Scheba Pl. i. l., Amer. / Typus/, and with the following labels to be added: / LECTOTYPE / Lectotype *Eudamus scheba* Plötz, 1882. Austin & Mielke det. 1996/.



Figs 1-4. (1) *Aguna asander asander*, male, wet season form, Brazil: São Bento do Sul, Rio Vermelho, 16 Feb. 1974, dorsal and ventral surfaces; (2) *Aguna asander asander*, male, dry season form, Bolivia: Caranavi, Aug. 1989, dorsal and ventral surfaces; (3) *Aguna megacles megacles*, male, Brazil: Santa Catarina, Joinville, 7 Sept. 1977, dorsal and ventral surfaces; (4) *Aguna megacles malia*, female, Venezuela, Valencia, dorsal and ventral surfaces.

Epargyreus euthymides Mabille, 1903. **nom. nud.** (ICZN, Art. 12a)

Epargyreus asander var. *euthymides* Mabille & Boulet, 1912. Name given for PLÖTZ'S (unpublished) fig. 107 [perhaps fig. 117, the same as *E. scheba*].

Aguna asander is brown with the usual yellow hyaline macules on the forewings; these macules are somewhat broader than on the other species of *Aguna*. The hindwing has a short and broad lobe-like tail at the tornus. The ventral hindwing is brown with a diffuse white discal band. This band is variably developed and often there is white overscaling extending to the termen. The male genitalia (N = 6; also illustrated by GODMAN & SALVIN 1887-1901; WILLIAMS 1927; HAYWARD 1933, 1948; EVANS 1952) have a very long and narrow tegumen, a much shorter and curved uncus, and a long and thin gnathos. The valva is short and stout. The ampulla has a spiculose and weakly toothed caudal lobe, the harpe is very short with a dorso-caudal denticulate lobe, and the narrow sacculus has a spiculose flap projecting caudad. The aedeagus is tubular with the caudal end spiculose and opening on the left side. The cornutus is short and composed of a tightly bunched set of bristles. Female genitalia (N = 2) have the papillae anales slightly concave with the upper and lower lobes about equal. The lamella postvaginalis is broadly V-shaped at the caudal end and the lamella antevaginalis has two relatively small lateral lobes, each with striations cephalad, and a prominent sclerotized knob caudo-mesad. The antrum is broad, but poorly defined, the ductus bursae is very short, and the corpus bursae is elongate.

Some geographical variation exists. Material from Rondônia tends to have a broader white band on the ventral hindwing than that from Mexico and Central America, the forewing macules overlap less completely, the hindwing fringe is more prominently checkered, and the basal scaling on the dorsum is more olive. The ampulla of the male valva is more vertical on Rondônia specimens, the spiculose lobe of the harpe is more pronounced, and the sacculus is relatively straight and not constricted cephalad of the caudal flap. Material from throughout the range of *A. asander* has not been critically examined to determine if additional subspecific taxa are warranted.

Wet season individuals from Rondônia usually have a well developed white band on the ventral hindwing. This white is heavily overscaled with brown or obsolete on dry season individuals (April to September).

Distribution and phenology. *Aguna asander asander* is widespread, occurring from southern Texas and Arizona to Argentina (EVANS 1952; MIELKE 1971; SCOTT 1986). The nominotypical subspecies is a common forest inhabiting species in the vicinity of Cacaulândia. Males feed at bird droppings, are found associated with army ant swarms, and are attracted to lures. Records are for April through December.

Specific records. BOLIVIA: Caranavi (Aug.; UFPC), BRAZIL: *Amazonas*; Ega (no date; BMNH); *Rondônia*; vic. Cacaulândia (Apr., May, June, July, Aug., Sept., Oct., Nov., Dec.; NSM, UFPC), COSTA RICA: *Alajuela Prov.*; vic. Atenas (Apr., Dec.; NSM), Aguas Zarcas (Sept.; NSM), La Virgen del Socorro (Apr.; NSM), *Guanacaste Prov.*; Rio Piedras (Sept.; NSM), Parque Sta. Rosa (June; AME), *Puntarenas Prov.*; Monteverde (July, AME), San José Prov.; Villa Colon (Mar.,



05



06



07



08

Figs 5-8. (5) *Aguna albistria albistria*, male, Brazil: Rondônia, Cacaulândia, 8-19 Sept. 1994, dorsal and ventral surfaces; (6) *Aguna albistria leucogramma*, female, Brazil: Roraima, Alto Alegre, 26 Nov.-2 Dec. 1987, dorsal and ventral surfaces; (7) *Aguna metophis*, male, Brazil: Rondônia, Cacaulândia, 8-19 Nov. 1994, dorsal and ventral surfaces; (8) *Aguna camagura*, male, Brazil: Rondônia, Vilhena, Nov. 1969, dorsal and ventral surfaces.

Sept.; NSM), GUATEMALA: *Petén*; Parque Nacional Tikal (Jan., Dec.; NSM), MEXICO: *Jalisco*; Puerto Vallarta (Apr.; LACM), *Sinaloa*; Rt. 40, km 1200 (Aug.; NSM), rt. 40, 20 mi. E of rt. 15 (Oct.; NSM). Additional records were given by BIEZANKO & MIELKE (1973) for Rio Grande do Sul, Brazil. STEINHAUSER (1975) for El Salvador, DE JONG (1983) for Surinam, BAILOWITZ & BROCK (1991) for southern Arizona and Sonora, Mexico, and VARGAS *et al.* (1996) for Jalisco, Mexico; the species is also known from Colima, Mexico (fide A. Warren).

Aguna asander haitensis (Mabille & Boulet, 1912)

Epargyreus haitensis Mabille & Boulet, 1912. Type locality: Haiti. Type: holotype male [recte female] at BMNH (Evans 1952), with the following labels: / Type / Haiti / *haitensis* [sic] Mb. ined. haiti/.

Aguna asander jasper Evans, 1952. Type locality: Jamaica. Type: [holo]type male at BMNH, with the following labels: / Type *jasper* Evans / Jam[ai]ca / J. J. Joicey Coll / B.M. 1925-451/.

The *A. asander* occurring in the West Indies is distinguished from mainland populations by its somewhat smaller size, ventral purple gloss, and the absence of white submarginal scaling on the venter. EVANS (1952) distinguished *A. a. jasper* from Jamaica by the forewing macules being white instead of pale yellow. MIELKE (1971) treated this as synonymous with *A. a. haitensis*; it was retained as distinct by BROWN & HEINEMAN (1972) and SMITH *et al.* (1994).

Distribution and phenology. MIELKE (1971) and SMITH *et al.* (1994) listed the distribution of this subspecies as Haiti, Jamaica, Dominican Republic, Cuba, Ilha de Pinos, Martinica, and St. Thomas.

Specific records. HAITI: no location (no date; BMNH), JAMAICA: no location (no date; BMNH), Morant Point (July; AME), Kingston (Jan.; UFPC).

"MEGACLES" GROUP

The single included species, *Aguna megacles* (Mabille), is similar to *A. asander* in its brown color and position of the "lower median veinlet" on the forewing, but has a long hindwing tail. The structure of the male genitalia of the two species are so different that each appears to belong to its own species group.

Aguna megacles megacles (Mabille, 1888)

Figs 3, 33, 59

Eudamus megacles Mabille, 1888 [incorrect original spelling]. Type locality: no data given; collection Staudinger, restricted here to Santa Catarina, Brazil based on data associated with lectotype. Type: LECTOTYPE female (designated here) at ZMHB, with the following labels: / St. Catarina Wernk. / Origin. / *G. megacles* Mab. / *Megacles* Mab. / *Megacles* Mab./, and the following labels to be added / LECTOTYPE / Lectotype *Eudamus megacles* Mabille, 1888, Austin & Mielke det. 1996/.

Eudamus megacles; Mabille, 1891 [corrected spelling]; Mabille, 1903; Mabille & Boulet, 1912.

Chioides fusciliva Hayward, 1933. Type locality: San Carlos, Concordia, Entre Rios, Argentina. Type: holotype male type at Facultad de Ciencias Naturales y Museo, Universidad Nacional de la Plata, Argentina with the following labels: / Argentina Prov Entre Rios, Bryer / Typus / *Chioides fusciliva* Hayw. holotipo / 2514/.

This species is brown with prominently produced and squared-off forewing apices and a very long tail. The forewing macules are very pale yellow and relatively



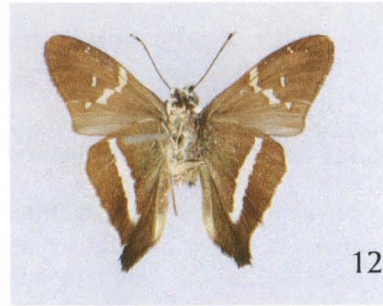
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Figs 9-12. (9) *Aguna claxon*, male, Costa Rica, Alajuela, Tigra, Bajo Rodriguez, 23 Jan. 1994, dorsal and ventral surfaces; (10) *Aguna clina*, holotype male, dorsal and ventral surfaces; (11) *Aguna latifascia*, holotype male, dorsal and ventral surfaces; (12) *Aguna coelus*, male, Brazil: Rondônia, Fazenda Rancho Grande, 10 Nov. 1991, dorsal and ventral surfaces.

small. The ventral hindwing is pale brown distad and darker brown proximad, these areas divided by a broad pale violet-brown band outlined proximally with black. The male genitalia [N = 1; also illustrated by HAYWARD (1933, 1948) as *A. fuscoliva* and by EVANS (1952)] have a stout uncus, a bulbous gnathos (ventral view), a distinct harpe with a pair of broadly separated dorsal projections, and an aedeagus with a very broad lower lip. The female genitalia (N = 2) have a relatively narrow lamella postvaginalis without a distinct central notch on the caudal edge, a lobate lamella antevaginalis, a distinct antrum, a relatively narrow ductus bursae, and an elongate corpus bursae.

Note that the original spelling of the name of this species was incorrectly "megaeles"; this was corrected to "megacles" in all subsequent papers by Mabilille (MABILLE & VUILLOT 1891, MABILLE 1903, MABILLE & BOULLET 1912, see also comments by BIEZANKO & MIELKE 1973).

Distribution and phenology. This subspecies is known from most of Brazil (except the northwest), Bolivia, Paraguay, and Argentina (EVANS 1952; MIELKE 1971).

Specific records. ARGENTINA: *Tucuman* (Apr.; UFPC), Misiones, Puerto Iguazu (Oct.; UFPC), BOLIVIA: *Santa Cruz*; Buenavista (Feb.; AMNH), BRAZIL: *Bahia*; Juazeiro (July; UFPC), *Espírito Santo*; Linhares (Dec.; UFPC), *Goiás*; Goiás Velho (Jan.; UFPC), Ilha do Bananal (June, Sept.; UFPC), *Maranhão*; Imperatriz (July, Dec.; UFPC), *Mato Grosso*; Diamantino (Jan.; UFPC), Caceres (Apr., Nov.; UFPC), Bodoquena (Oct.; UFPC), *Minas Gerais*; Três Lagoas (Apr.; UFPC), Poços de Caldas (Mar.; UFPC), *Conceição d'Aparecida* (Jan., Feb.; UFPC), *Paraíba*; Areia (Mar.; UFPC), *Paraná*; União da Vitória (Mar.; UFPC), Marechal Cândido Rondon (Feb.; UFPC), Cianorte (Sept.; UFPC), Guaira (Oct.; UFPC), *Piauí*; Teresina (Feb.; UFPC), *Rio de Janeiro*; Imbarie (Feb., Mar., Apr.; UFPC), Petrópolis (Feb.; UFPC), *Rio Grande do Sul*; (no date; AMNH), *Rondônia*; vic. Cacaúlândia, Fazenda Rancho Grande (Nov.; NSM), *Santa Catarina*; no location (no date; ZMHB), Joinville (Jan., Feb., Mar., Apr., Sept., Dec.; UFPC), *São Paulo*; Teodoro Sampaio (Oct.; UFPC), Pereira Barreto (Apr.; UFPC), Rio Claro (Apr.; UFPC), Urubupungá (Jan.; UFPC).

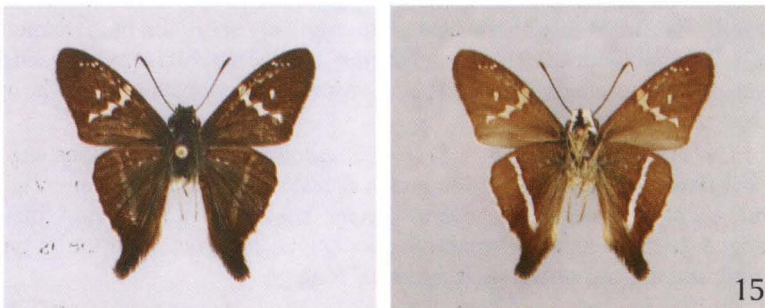
Aguna megacles malia Evans, 1952

Fig. 4

Aguna megaeles malia Evans, 1952. Type locality: Valencia, Venezuela. Type: [holo]type male at BMNH, with the following labels: / Type *malia* Evans / Valencia, Venezuela. / Rothschild Bequest B.M. 1939-1./.

This subspecies, known only from Venezuela (EVANS 1952; MIELKE 1971), differs from *A. m. megacles* by its well defined violet gloss on the ventral hindwing, well-marked dark margin, and a prominently variegated basal area, but with the costal macule less distinct. The specific name has been emended to its obviously correct spelling (see comments above).

Specific records. VENEZUELA: *Trujillo*, Monay (Aug.; UFPC), Valencia (no date; BMNH).



Figs 13-16. (13) *Aguna coelus*, neotype male, dorsal and ventral surfaces; (14) *Aguna cirrus*, male, Brazil, Santa Catarina, Joinville, 30 Sept. 1966, dorsal and ventral surfaces; (15) *Aguna coeloides*, holotype male, dorsal and ventral surfaces; (16) *Aguna nicolayi*, holotype male, dorsal and ventral surfaces.

"ALBISTRIA" GROUP

The single, long-tailed, brown species in the group, *Aguna albistria* (Plötz), differs from the preceding brown species by the "lower median veinlet" on the forewing being closer to vein M3 than to CuA1 (EVANS 1952) and the narrow, well-defined, white band on the ventral hindwing. The genitalia, similar in some aspects to those of the "*coelus*" group, indicate that the species is in a group by itself.

Aguna albistria albistria (Plötz, 1880)

Figs 5, 34, 60

Goniurus albistria Plötz, 1880. Type locality: Rio [de Janeiro]. Type: [holotype] female at ZMHB, with the following labels: / 5121 / Type / *albistria* Pl. type / *leucodesma* N. Pará Sieber!.

Goniurus cholus Plötz, 1880. Type locality: South America. Type: not located, not at ZMHB, **NEOTYPE** here designated, the same as the holotype of *G. albistria* Plötz, 1880, and the following labels to be added / NEOTYPE / Neotype *Goniurus cholus* Plötz, 1880 Austin and Mielke det. 1996/.

Goniurus leucodesma Godman, 1907. nom. nud. (ICZN, Art. 11e).

Aguna albistria is dark brown with relatively small pale yellow macules on the forewing and a very long tail. The ventral hindwing has a narrow white discal band. The male genitalia (N = 2; also illustrated by WILLIAMS 1926; EVANS 1952) have a short and hooked uncus and narrow gnathos. The ampulla of the valva has a distal lobe; its caudal face is spiculose. The relatively short and blunt harpe has a simple triangular tooth adjacent to and shorter than the ampulla lobe. The aedeagus is like that of the "*coelus*" group (see below) with the lower lip longer than the upper; both lips have bristles caudad.

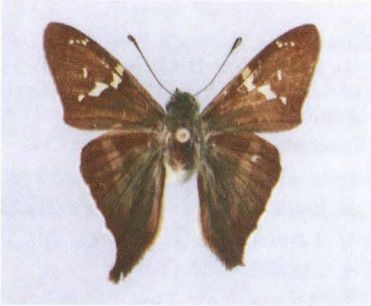
The female genitalia (N = 1) have a narrowly lobed lamella postvaginalis with a U-shaped central indentation on the caudal edge. The lamella antevaginalis is reminiscent of those of the "*coelus*" group, but thinner with central lobes not sclerotized at their edges. The antrum is distinct, the ductus bursae is narrow cephalad, and the corpus bursae is relatively long.

Distribution and phenology. This subspecies is known from central Brazil, Bolivia, and Paraguay (EVANS 1952; MIELKE 1971) and occurs in central Rondônia. It is uncommon in the Cacauplandia region and found visiting flowers in open, disturbed areas. Males have also been encountered at light gaps on ridge tops after midday. Records are for February to April and October to December.

Specific records. BRAZIL: *Distrito Federal*; Brasília (Jan., Feb., Mar., May, July, Aug., Sept., Oct.; UFPC), Planaltina (Apr., Dec.; UFPC), *Espírito Santo*; Baixo Guandu (Nov.; UFPC), *Goiás*; Chapada dos Veadeiros (no date: UFPC), Goiás Velho (Jan., June, Oct., Dec.; UFPC), Ilha do Bananal (Jan.; UFPC), Piracanjuba (Dec.; UFPC), *Maranhão*; Imperatriz (Jan., Aug., Dec.; UFPC), *Mato Grosso*; Barra do Garça (Feb.; UFPC), Cáceres (Nov.; UFPC), Chapada dos Guimarães (Jan.; UFPC), Diamantino (Jan., Feb., Mar., Aug., Nov.; UFPC), *Minas Gerais*; Água Clara (Dec.; UFPC), Corinto (Mar., Apr., June, July, Sept., Oct., Nov.; UFPC), Curvelo (Apr.; UFPC), Paracatu (June; UFPC), Poços de Caldas (Mar.; UFPC), Três Lagoas (Nov.; UFPC), *Pará*; Juruty (Mar., June; UFPC), Óbidos (Jan., June, July,



17



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19



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Figs 17-20. (17) *Aguna venezuelae*, male, Venezuela: Aragua, Maracay, Rancho Grande, 7 Apr. 1972, dorsal and ventral surfaces; (18) *Aguna latimacula*, holotype male, dorsal and ventral surfaces; (19) *Aguna aurunce aurunce*, male, Brazil: Rondônia, Cacaúlândia, 8-19 Nov. 1994, dorsal and ventral surfaces; (20) *Aguna aurunce hypozonius*, male, Panama: Canal Zone, Kobbe, 28 Apr. 1968, dorsal and ventral surfaces.

Aug.; UFPC), Rio Arapiuns (Sept., Oct.; UFPC), *Rio de Janeiro*; Imbariê (Jan., Apr., Dec.; UFPC), Petrópolis (Jan.; UFPC), Rio de Janeiro (Mar., July, Dec.; UFPC), Saracuruna (Jan.; UFPC), *Rondônia*; vic. Cacaupônia (Feb., Mar., Apr., Oct., Nov., Dec.; NSM, UFPC), Pimenta Bueno (Mar.-June; UFPC), *São Paulo*; Batatais (Dec.; UFPC), Brotas (Apr, May; UFPC), Mogi Guaçu (Aug.; UFPC), Rio Claro (Jan., Nov.; UFPC).

Aguna albistria leucogramma (Mabille, 1888)

Fig 6

Eudamus leucogramma Mabille, 1888. Type locality: Porto Cabello, Venezuela. Type: **LECTOTYPE** male (designated here) at ZMHB, with the following labels: / Sant. H. / *E. leucogramma* Mab. / Origin. / *Leucogramma* Mab./ and the following labels to be added: / LECTOTYPE / Lectotype *Eudamus leucogramma* Mabille, 1888 Austin & Mielke det. 1996/.

Thymele guatemalaina Ehrmann, 1907. Type locality: Guatemala. Type: holotype male at CM.

This name was applied to the populations with a broad central band on the ventral hindwing known from Mexico, Guatemala, Colombia, Venezuela, and, possibly, Surinam (EVANS 1952; MIELKE 1971) and Brazil (Roraima); this latter was mentioned as *A. a. albistria* by MIELKE & CASAGRANDE (1992).

Specific records. BRAZIL: *Roraima*; Alto Alegre (Nov., Dec.; UFPC). DE LA MAZA & DE LA MAZA (1985) found the species in Chiapas, Mexico.

“METOPHIS” GROUP

Two greenish species, *Aguna metophis* (Latreille) and *Aguna camagura* (Williams), which have relatively long tails and a poorly defined pale band on the ventral hindwing, are associated here.

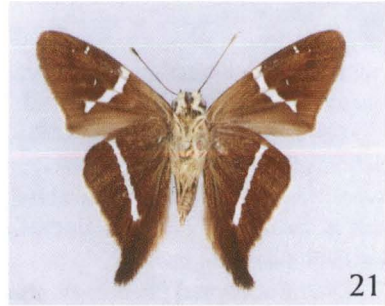
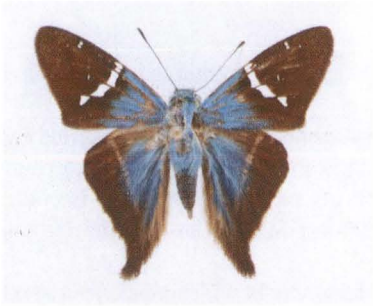
Aguna metophis (Latreille, [1824])

Figs 7, 35, 61

Hesperia metophis Latreille, [1824]. Type locality: Brazil. Type: **LECTOTYPE** female (designated here) at BMNH, with the following labels: / Type H.T. [incorrect holotype designation] / *metophis* provenant de la Collection Latreille / *Eudamus metophis*, Bdv. (Spec. Gal. pl. 13, fig. 5) / Ex Musaeo Dris BOISDUVAL / R. Oberthür Coll. Brit. Mus. 1931-136/, with the following labels to be added: / LECTOTYPE / Lectotype *Hesperia metophis* Latreille, [1824] Austin & Mielke det. 1996/.

Aguna metophis is brown with dull bluish-green bases to the dorsal wings. The forewing has whitish hyaline macules placed as typical for the genus; the hindwing has a long tail. The ventral hindwing is dark brown with a narrow discal white band. This is relatively sharply defined proximad but grades into the ground color distad. There is no notable seasonal variation. Individuals from Mexico appear to be larger, with more quadrate wings, and a more diffuse central band on the ventral hindwing.

The male genitalia (N = 7; also illustrated by WILLIAMS 1926; EVANS 1952) have a long uncus and fairly broad gnathos. The ampulla of the valva is slightly lobed at its caudal end, but otherwise unadorned. The bluntly pointed harpe is short and with a simple triangular tooth at the cephalad end of the dorsal ridge. The



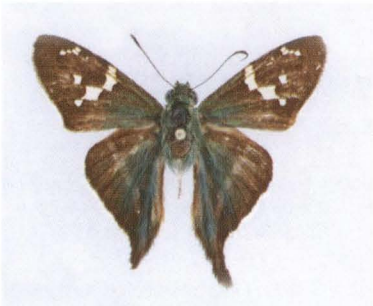
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Figs 21-24. (21) *Aguna glaphyrus*, male, Brazil: Santa Catarina, Joinville, 27 Mar. 1970, dorsal and ventral surfaces; (22) *Aguna penicillata*, holotype male, dorsal and ventral surfaces; (23) *Aguna spicata*, holotype male, dorsal and ventral surfaces; (24) *Aguna longicauda*, holotype male, dorsal and ventral surfaces.

aedeagus is much longer than the valva. The right lip is longer than the left and has a large tuft of bristles at its caudal end.

The lamella postvaginalis of the female genitalia (N = 3) has a broad central notch on the caudal margin and "winged" lateral corners. The lamella antevaginalis has no defined central lobes; the lateral lobes are partially sclerotized laterad. The antrum is weakly defined, the ductus bursae is relatively broad, and the corpus bursae is bluntly oblong.

Distribution and phenology. *Aguna metophis* is widespread from southern Texas to southern Brazil (EVANS 1952; MIELKE 1971; MCGUIRE & RICKARD 1976; SCOTT 1986). This forest species is common in the Cacaulândia area where its habits are like those of *A. asander*. Records are for April and June through December.

Specific records. BRAZIL: *Bahia*; Jitauna (Mar.; UFPC); *Goiás*; Goiás Velho (Feb., Aug.; UFPC), *Maranhão*; Imperatriz (July; UFPC), *Mato Grosso*; Cáceres (Nov.; UFPC), Diamantino (Jan., July, Sept.; UFPC), *Minas Gerais*; Cambuquira (May; UFPC), Corinto (June, Aug., Sept.; UFPC), Paracatu (Sept.; UFPC), *Pará*; Itaituba (July; UFPC), *Paraná*; Antonina (Apr.; UFPC), Fenix [(Apr., Oct.; (UFPC)), *Rio de Janeiro*; Guapimirim (Feb.; UFPC), Imbariê (Jan., Apr., May, Sept., Nov.; UFPC), Rio de Janeiro (Apr., May, June, Aug., Sept., Nov., Dec.; UFPC), *Rondônia*; vic. Cacaulândia (Apr., June, July, Aug., Sept., Oct., Nov., Dec.; NSM, UFPC), Candeias do Jamari (July; UFPC), Riozinho (July; UFPC), *Roraima*; Alto Alegre (June; UFPC), *Santa Catarina*; Blumenau (June, UFPC), Brusque (Apr.; UFPC), Corupá (Apr.; UFPC), São Bento do Sul (Mar.; UFPC), *São Paulo*; Rio Claro (Jan.; UFPC), COSTA RICA: *Alajuela Prov.*; vic. Atenas (Dec.; NSM), MEXICO: *Oaxaca*; Candelaria Loxicha (July, Aug.; UFPC), *Quintana Roo*; Nuevo X-Can (July, Aug., UFPC), *San Luis Potosi*; vic. Tamazunchale (Aug.; LACM), Aguismón (July; LACM), *Tamaulipas*; Gomez Farias (Oct., Dec.; NSM), *Yucatan*; Pisté (Aug., Sept., Oct.; UFPC), PANAMA: *Canal Zone* (June, Nov.; UFPC). Additional distributional records were given by HOFFMANN (1941) for Veracruz, Mexico, STEINHAUSER (1975) for El Salvador, DE LA MAZA & DE LA MAZA (1985) for Chiapas, Mexico, LAMAS *et al.* (1991) for Peru, MEERMAN & BOOMSMA (1993) for Belize, and VARGAS *et al.* (1996) for Jalisco, Mexico; the species is also known from Colima, Mexico (fide A. Warren).

Aguna camagura (Williams, 1926)

Figs 8, 36, 62

Eudamus camagura Williams, 1926. Type locality: Chapada, Matto [sic] Grosso, Brazil. Type: holotype male originally at the Academy of Natural Sciences, Philadelphia, now at CM, has the following labels: / Type *Eudamus camagura* Williams 1927 / Chapada / nov. / Genitalic Slide No. 183 / I.C.M. 599/.

Aguna camagura, the type species of *Aguna*, is superficially similar to *A. metophis*. The wings of this species are broad (notably broader than those of *A. metophis*) and the hindwing has a much shorter tail than does *A. metophis*. The dorsum is brown with vague dull green at the wing bases. The forewing macules are pale yellow, those at the costa, in the discal cell, and in cells CuA1-CuA2 and



Figs 25-28. (25) *Aguna ganna*, male, Venezuela, Yaracuy area, 2 June 1985, dorsal and ventral surfaces; (26) *Aguna panama*, holotype male, dorsal and ventral surfaces; (27) *Aguna spatulata*, holotype male, dorsal and ventral surfaces; (28) *Aguna similis*, holotype male, dorsal and ventral surfaces.

CuA2-2A are more or less aligned and the macule in M3-CuA1 is offset distad by about its width from the macule in CuA1-CuA2. The venter is brown. The hindwing has a broad white central band, this distinctly defined proximad and grades into the ground color distad.

The male genitalia [N = 1; also illustrated by WILLIAMS (1926), EVANS (1952)] have a short uncus. The valvae are broad with a triangular harpe. The aedeagus is stout, spinose caudad on both the dorsal and ventral lips, and without a caudal cluster of bristles. The female genitalia (N = 2) have a narrow lamella postvaginalis that is barely notched on its caudal margin, the lamella antevaginalis is largely membranous, the antrum is sclerotized and distinct, the ductus bursae is long and slender, and the corpus bursae is narrowly oblong.

Aguna camagura is included in the "metophis" group based upon its superficial similarity in pattern to *A. metophis*; the genitalia are quite different from any other *Aguna*.

Distribution and phenology. *Aguna camagura* is known from central Brazil in Rondônia, Mato Grosso, Goiás, Maranhão, and Minas Gerais (EVANS 1952; MIELKE 1971).

Specific records. BRAZIL: *Goiás*; Serra Dourada (no date; AME), *Goiás* Velho (Jan., Feb., July, Sept., Dec.; UFPC), *Maranhão*; Imperatriz (July, Aug., Dec.; UFPC), *Mato Grosso*; Diamantino (Jan., Feb., Apr., May, June; UFPC), Barra do Bugres (May; UFPC), Buriti (Feb., June, Dec.; UFPC), Barra do Garça (July; UFPC), Cuiabá (Oct.; UFPC), Chapada dos Viadeiros (no date; CM), *Rondônia*; Pimento Bueno, Vilhena (Nov.; UFPC).

"CLAXON" GROUP

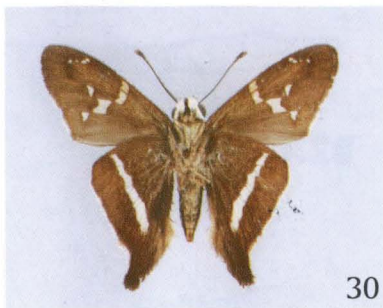
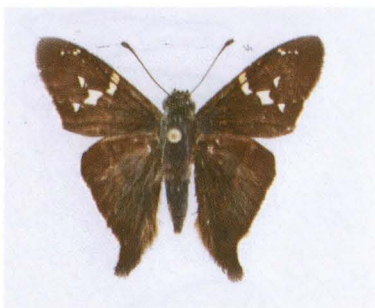
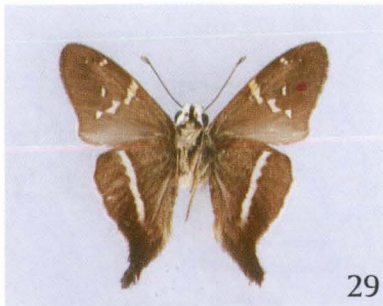
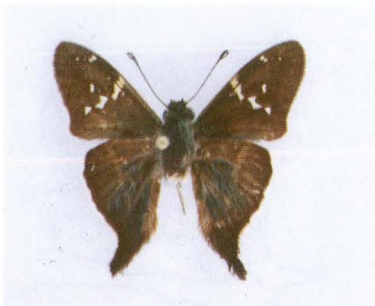
Three greenish species with a well-defined discal band on the ventral hindwing and a lobed hindwing tornus are included here, *Aguna claxon* Evans, *Aguna clina* Evans, and a new species described below. These have similar genitalia and appear to be of the same species group. The uncus is relatively short and the gnathos is long and thin. The valvae differ from other *Aguna* by having the smooth and rounded process of the ampulla directed caudad, the toothed dorsal ridge of the harpe produced cephalad and overlapping the interior surface of the ampulla, and a narrow dorsal projection from the sacculus. The aedeagus has bristles on the right side and a long and thin left lip with bristles or spines.

Aguna claxon Evans, 1952

Figs 9, 37, 63

Aguna claxon Evans, 1952. Type locality: Atoyac, Vera Cruz, Mexico. Type: [holo]type male at BMNH, with the following labels: / Type *claxon* Ev. / Atoyac, Vera Cruz, May, M.M.S. / B.C.A. Rep. Rhop. *Goniurus coelus*, Cram. / Godman-Salvin Coll 1912.-23./.

Aguna claxon is brown with bright green bases to the dorsal wings of both sexes; this green extends nearly to the termen on the hindwing. The yellow macules on the forewing are broad. The hindwing has a very short lobe-like tail and a broad, distinctly defined, white band on its ventral surface. The male genitalia [N = 3; also

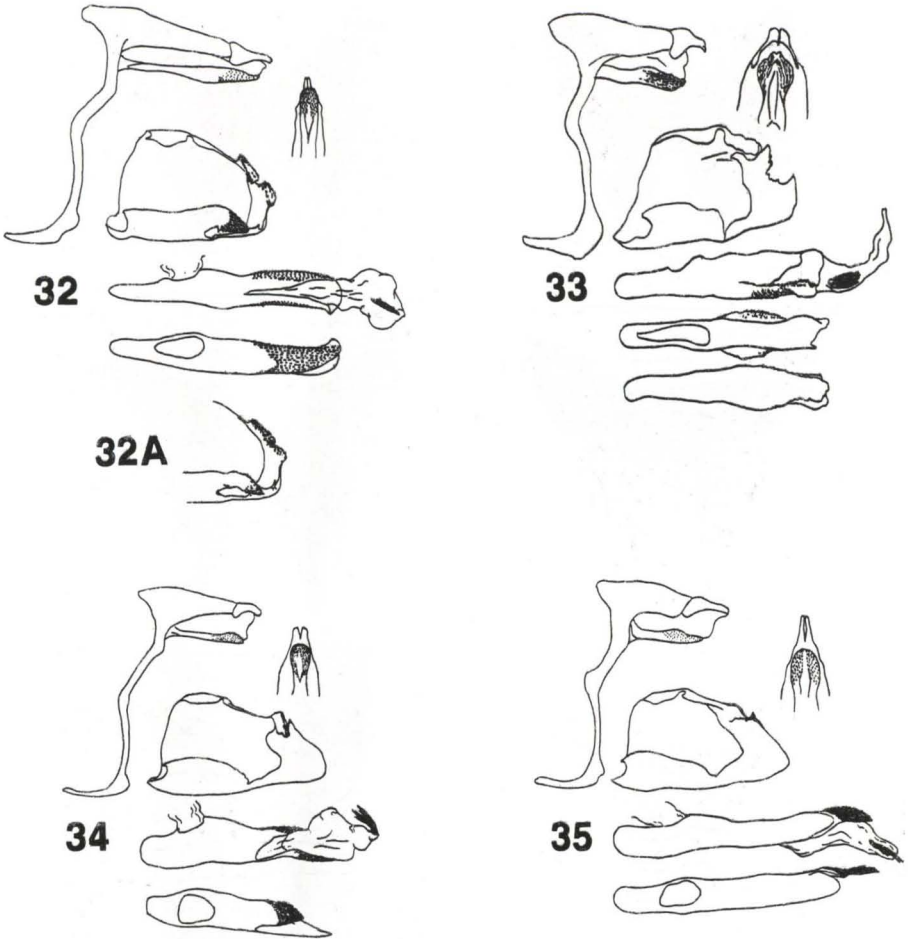


Figs 29-31. (29) *Aguna mesodentata*, holotype male, dorsal and ventral surfaces; (30) *Aguna squamalba*, holotype male, dorsal and ventral surfaces; (31) *Aguna parva*, holotype male, dorsal and ventral surfaces.

illustrated as *A. coelus* by GODMAN & SALVIN (1893) and WILLIAMS (1927) and by EVANS (1952)] has the cephalad extension of the upper ridge of the harpe narrow. The aedeagus has a long cluster of bristles on the right lip, a spinose dorsal ridge to the left lip, and a short pointed dorsal lip.

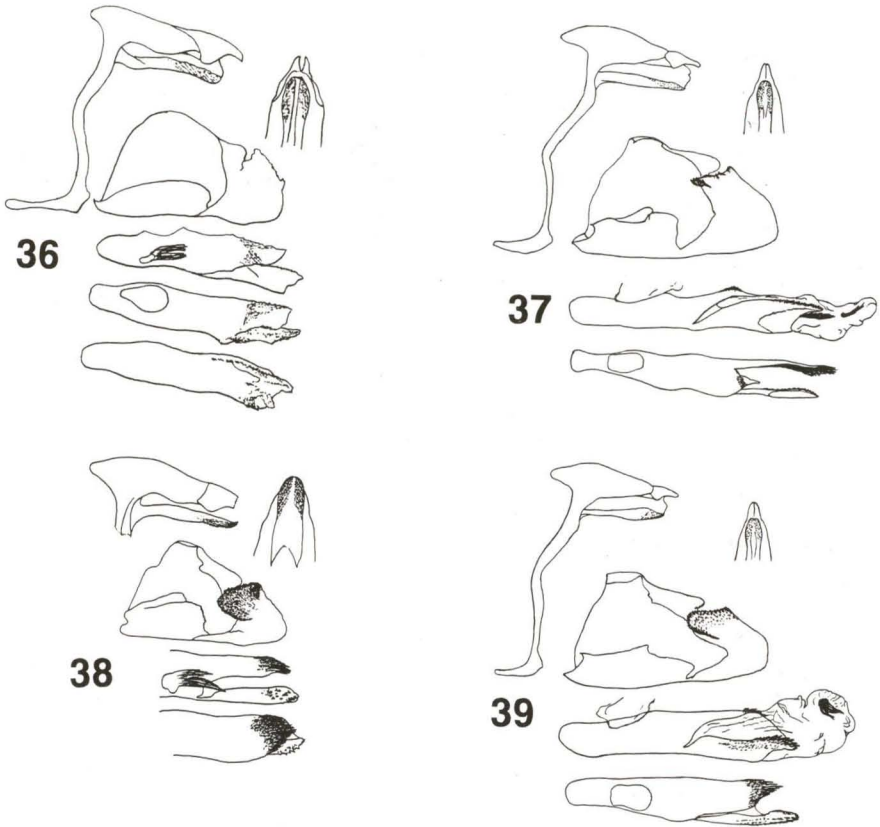
The female genitalia (N = 2) have a narrowly lobate lamella postvaginalis with a broad V-shaped central indentation on the caudal margin. The lamella antevaginalis has relatively narrow and largely unsclerotized lateral lobes; the sclerotized central lobes are fused into a narrow band cephalad of the ostium. The antrum is poorly defined, the ductus bursae is broad, and the corpus bursae is oblong.

EVANS (1952) described *A. claxon* in part as having the macules in M3-CuA1 and CuA1-CuA2 "more or less overlapping." Neither DE JONG (1983) nor this study



Figs 32-35. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (32) *Aguna asander asander*, Brazil: Rondônia (GTA #3213), (32a) distal end of valva showing variation, Costa Rica: Alajuela Province (GTA #4362); (33) *Aguna megacles megacles*, Brazil: Santa Catarina (GTA #7178); (34) *Aguna albistria albistria*, Brazil: Rondônia (GTA #804); (35) *Aguna metophis*, Brazil: Rondônia (GTA #4203).

encountered specimens on which these macules overlapped. Evans may have been referring to the macules in CuA1-CuA2 and CuA2-2A which are commonly contiguous or partially overlapping. Males from the Yucatan Peninsula are often duller than those from elsewhere and some females are brown without a trace of green. This may be a result of fading or relaxing techniques and requires verification with freshly collected material.



Figs 36-39. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (36) *Aguna camagura*, Brazil: Mato Grosso (GTA #7179); (37) *Aguna claxon*, Guatemala: Petén (GTA #3170); (38) *Aguna clina*, Colombia, Bogotá, holotype; (39) *Aguna latifascia*, Ecuador: Limoncocha, holotype (GTA #3156).

Aguna claxon had long been unrecognized as distinct and lingered in synonymy with *A. coelus*. GODMAN & SALVIN (1893) apparently initiated this with their illustration of the male genitalia. This was perpetuated by WILLIAMS (1927) who also included *A. aurunce* as a synonym of *A. coelus* (= *A. claxon*) and resurrected *Goniurus gideon* Plötz, 1880, for that phenotype. EVANS (1952) correctly recognized that the *A. coelus* of GODMAN & SALVIN (1893), GODMAN (1901), and WILLIAMS (1927) was a distinct and undescribed species and that *A. aurunce* was the senior synonym of *A. gideon*. The specimen illustrated by DE LA MAZA (1987) as *A. coelus* from southern Veracruz is an *A. claxon*.

Distribution and phenology. *Aguna claxon* occurs from southern United States (southern Texas) to Colombia, Venezuela, and Surinam (EVANS 1952; TILDEN 1971; MIELKE 1971; DE JONG 1983); the specimens listed by EVANS (1952) for Brazil and LAMAS *et al.* (1991) for Peru may be of another species. The recent

records for Cuba (SMITH & HERNÁNDEZ 1992; HERNÁNDEZ *et al.* 1994) were considered to be vagrants from Yucatán (ALAYO & HERNÁNDEZ 1987).

Specific records. COSTA RICA: *Alajuela Prov.*; Bajo Rodrigues (Jan.; UFPC), *Puntarenas Prov.*; vic. Tarcoles (Sept.; NSM), GUATEMALA: *Petén*; Parque Nacional Tikal (Feb., Apr., Dec.; NSM), MEXICO: *Quintana Roo*; Nuevo X-Can (June, July, Aug., Oct.; AME, UFPC) but not recorded by DE LA MAZA & GUTIÉRREZ (1992), *Tamaulipas*; Gomez Farias (Dec.; NSM), *Veracruz*; El Tajin (Oct.; LACM), Atoyac (May; BMNH), *Yucatan*; Piste (Aug., Sept., Oct.; UFPC). DE JONG (1983) added Surinam: Brownsberg.

Aguna clina Evans, 1952

Figs 10, 38, 64

Aguna clina Evans, 1952. Type locality: Bogotá [Colombia]. Type: [holo]type male at BMNH, with the following labels: / Type *clina* Evans / Bogota, coll. 1898 / Rothschild Bequest B.M. 1939-1./.

Aguna clina (forewing length of holotype = 24.5 mm) is brown on the dorsum with dull green wing bases like many other *Aguna*. There is a very short tail on the hindwing. The yellow forewing macules are broad, but less so than on *A. claxon*. The ventral hindwing is distinctive with a broad white band that is somewhat expanded in its middle and is irregular on its distal margin. Superficially, *A. clina* resembles several of the "*coelus*" group species including *A. venezuelae*, but has smaller forewing macules and shorter tails; *A. latimacula*, but has shorter tails and a more irregular band on the ventral hindwing; and *A. aurunce*, but has broader macules and the ventral hindwing band is broader and more irregular. *A. clina* is readily distinguished from all of the foregoing by its "*claxon*" group genitalia. The male genitalia (N = 1, of the holotype which is incomplete) has the cephalad lobe of the harpe very broadly rounded. The aedeagus has the left lip evenly narrow throughout with distinct tooth-like serrations caudad. The right lip curves over dorsad with distinct bristles at its caudal end similar to those seen in the "*coelus*" group. The *A. clina* genitalia illustrated by EVANS (1952) appear to be those of the following species.

A female from Trinidad (forewing length = 24.5 mm, N = 1), apparently of this species, is similar to the holotype male, but has somewhat broader forewing macules and white band on the ventral hindwing (this expanded somewhat centrally, but not very irregular as on the following species). The genitalia of the female (N = 1) have a narrow lamella postvaginalis with the caudal edge only very shallowly excavate centrally. The lamella antevaginalis has unsclerotized lateral lobes and narrow and sclerotized central lobes. The antrum is relatively well-defined and leads to a broad ductus bursae.

EVANS (1952) wrote of the ventral hindwing white band being "very variable." This material should be reexamined as more than one species is involved (see below).

Distribution and phenology. The species was reported from Brazil (Pará), Colombia, Peru, and Venezuela (EVANS 1952; MIELKE 1971); some of these undoubtedly refer to the following species.

Specific records. COLOMBIA: Bogotá (no date; BMNH), TRINIDAD: Hololo (Jan.; AME). In addition, the male from Venezuela seen by EVANS (1952) may also be of this species.

Aguna latifascia Austin & Mielke, **sp.n.**

Figs 11, 39, 65

Description. Male – forewing length = 22-23 mm (N = 3, holotype = 23 mm); head green with a few scattered whitish scales, whitish line beneath antennae, yellow-white in front of eyes, whiter beneath and behind, palpi yellow-white with many interspersed black scales, antennae black above, ochreous beneath club, shaft with white segmental lines proximal on inner surface and often with pale ochreous distad before club. Dorsal thorax green, venter pale ochreous becoming green laterad beneath wings, legs brown with pale brown and ochreous scales.

Dorsal wings dark brown; forewing produced, moderately rounded towards apex; base with long dark green scales most extensive posteriorly extending nearly to termen along anal margin and to discal macular row between veins M1 and CuA2 and in discal cell; hyaline macules pale yellow; macule in CuA2-2A triangular, contiguous with or slightly separated from macule in CuA1-CuA2, this broad with distal and proximal edges slightly excavate, overlapping 1/3 way across similar macule in discal cell, anterior edge broader than posterior edge, overlaps double costal macules, narrower than discal cell macule, more or less centered over discal cell macule; macule in M3-CuA1 narrow, vertical bar-shaped, often slightly excavate distad, separate distad from macule in CuA1-CuA2 by more than double its width about in line with macule in CuA2-2A and subapical macules; two small aligned subapical macules in R1-R2 and R2-R3, latter small to minute, no macule in R3-R4, another small to minute macule offset far distad in R5-M1; fringe pale gray-brown posteriorly, of ground color anteriorly.

Hindwing with termen convex; extensive dark green scaling nearly to termen posterior to vein Rs; tail short (2.5 mm), broad (2.5 mm); fringe pale brown, dark brown on tail.

Ventral forewing paler brown than dorsum with very few scattered ochreous scales especially along costa; posterior margin pale gray-brown; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, sparsely overscaled with pale ochreous scales; long olive-green scales basad especially in discal cell; anal margin with long pale ochreous scales distad; white central band from Sc+R1 to 2A mostly very broad, very irregular, broadest in M1-M2 (5 mm), narrowest anteriorly in Sc+R1 (0.5-1 mm), slightly hooked at posterior end, white.

Genitalia (N = 2). Tegumen short, uncus short, very slightly curved; gnathos in lateral view narrow, narrow in ventral view saccus very short, straight; valva with costa/ampulla broad, ampulla with short and smooth caudally directed lobe at about height of dorsal edge of harpe, harpe broad, caudal end blunt, cephalad projection moderately broad, spiculate, sacculus somewhat concave on dorsal edge with

pointed dorso-caudal oriented projection at caudal end; aedeagus longer than valva, with relatively narrow left lip narrowing caudad and with distinct row of bristles on dorsal edge, right lip curved over dorsad, caudal end with rows of bristles similar to those on "*coelus*" group species.

Female. Forewing length = 22-25 mm (N = 2); similar to male, macules somewhat broader.

Genitalia (N = 1). Lamella postvaginalis narrow, caudal edge somewhat excavate centrally; lamella antevaginalis with unsclerotized lateral lobes and thin and sclerotized central lobes; antrum not well-defined; ductus bursae broad; corpus bursae elongate, oval.

Types. Holotype male with the following labels: white, handprinted – 10 July 1983, Limoncocha, Rio Napo, Ecuador, *leg.* Jim. P. Brock; white, printed and handprinted – Genitalic Vial, GTA-3156; red, printed – HOLOTYPE / *Aguna latifascia* / Austin & Mielke. Paratypes: 1 male – BRAZIL: Acre; Vila, Taumaturgo, 11 May 1995, *leg.* K. Brown; 1 female – BRAZIL: Acre; Taumaturgo, Caminho ao Centro Restauração, 27 Nov. 1995, *leg.* K. Brown; 1 male – PERU: Madre de Dios, Pakitza, Parque Nacional del Manu, 5 Oct. 1991, *leg.* O. Mielke; 1 female, same location, 14 Oct. 1991, *leg.* G. Lamas.

Deposition of types. The holotype and a male and female paratype will be deposited in the collection at UFPC; the remaining paratypes will be deposited at MHNL.

Type locality. ECUADOR: Limoncocha, Rio Napo.

Etymology. The name reflects the broad white band on the ventral hindwing.

Distribution and phenology. This species presently known from Ecuador, Peru, and western Brazil with records in May, July, October, and November.

Specific records. BRAZIL: Acre; Taumaturgo (May, Nov.; UFPC), ECUADOR: *Limoncocha*; Rio Napo (July; UFPC), PERU: *Madre de Dios*; Pakitza, Parque Nacional del Manu (Oct.; MHNL). Some material seen by EVANS (1952) and included in *A. clina* is also probably of this species (see below).

Diagnosis and discussion. *A. latifascia* is most similar to *A. clina* and is distinguished from that species by the very broad and irregular white band on the ventral hindwing and by the genitalia. EVANS (1952) mentioned the variability of the white band in his series of *A. clina* ranging from "regular, as in *claxon*" to "produced centrally to as much as 7 mm" on a male from Iquitos. This latter and probably other records he included under *A. clina* apparently represent *A. latifascia*. *A. clina* seems to be principally a species of northern South America and *A. latifascia* is known from west-central South America. Too little material has been examined to establish if these species are anywhere sympatric, but both apparently occur in Peru. The male genitalia, possibly also those illustrated by EVANS (1952) as *A. clina*, are similar overall to those of *A. clina*, but have a relatively shorter tegumen, the gnathos is narrower, the lobe of the ampulla is more dorsad, the cephalad lobe of the harpe is narrower, and the left lip of the aedeagus is more attenuated caudad with extensive bristles. The female genitalia of *A. latifascia* have a somewhat more excavate caudal edge to the lamella postvaginalis.

“COELUS” GROUP

The “*coelus*” group is created to include green species of *Aguna* with very short (2 mm) to moderately long tails (7.5 mm) and a well-defined white stripe on the ventral hindwing. The male genitalia have a distinct and broad lobe on the ampulla directed dorsad, a distinctly dentate cephalad portion of the dorsal harpe, and the lower lip of the aedeagus slightly longer than the upper lip. The cornutus is robust with long bristles. The uncus is relatively long. The gnathos in ventral view is spatulate; the caudal end is spiculose laterad and usually nearly transparent centrally giving the impression of being divided. The female genitalia typically have a deep and narrow U-shaped notch on the caudal end of the lamella postvaginalis and the lateral lobes of the lamella antevaginalis are membraneous. The central lobes of the lamella antevaginalis are well separated and conspicuously sclerotized on their cephalo-lateral margins.

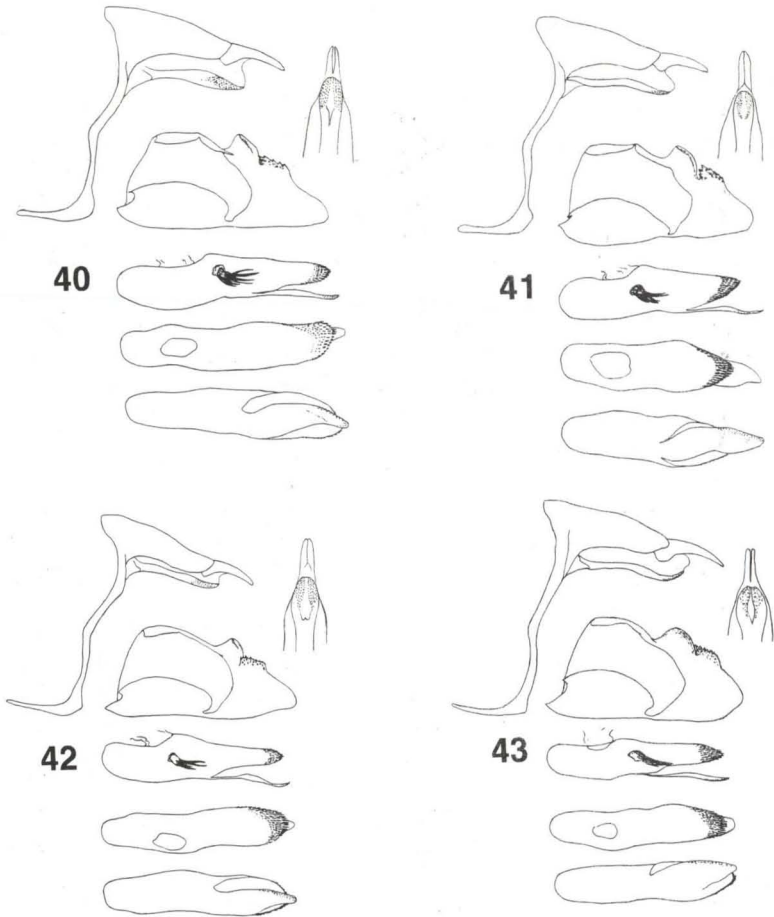
Included here are *Aguna coelus* (Stoll), *Aguna cirrus* Evans, *Aguna venezuelae* Mielke, *Aguna aurunce* (Hewitson), and three species to be described below. Throughout its history, *A. coelus* has been variously misidentified; an attempt is made below to resolve the taxonomic nightmare created by this confusion. The “*coelus*” group species are mostly very similar to one another. Distinguishing characteristics appear to be nearly limited to subtle, yet consistent, differences in the genitalia of both sexes. Tendencies of superficial characters are of little use for the identification of most species and are seen only after segregation based upon the characters of the genitalia. While females of the “*coelus*” group are readily separated from those of other groups, most are very similar in their superficial and genitalic characters, and it has not been possible to unequivocally associate females with their males; the treatments of females of certain species are thus necessarily tentative and based upon wing shape, intensity and distribution of green color, and shapes, placements, and orientations of forewing macules. These must be viewed with caution until in copula pairs or reared material add proof to the speculations. For this reason, females are not always included in type series; an asterisk (*) will be used to identify distribution records based only on females.

Aguna coelus (Stoll, [1781])

Figs 12, 13, 40, 66

Papilio coelus Stoll, [1781]. Type locality: Suriname. Type: apparently lost, **NEOTYPE** male (designated here) at AME, with the following labels: / FR. GUIANA Maroni River 1903 ex colln LeMoult / A. C. Allyn Acc. 1968-1 / Genitalia Vial / GTA - 1758/, and the following labels to be added: / NEOTYPE / Neotype *Papilio coelus* Stoll [1781] det. Austin & Mielke 1996/.

Description. Male – forewing length = 20.6 mm (18.6-21.9, N = 10, sample from Rondônia, Brazil); head green with a few scattered whitish scales, whitish line beneath antennae, yellow-white in front of eyes, whiter beneath and behind, palpi yellow-white with many interspersed black scales, antennae black above, ochreous to pale brown beneath club, shaft with white segmental lines proximad on inner surface and often with whitish distad before club. Dorsal thorax green, venter pale ochreous becoming green laterad beneath wings, legs brown with pale brown and



Figs 40-43 Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (40) *Aguna coelus*. Brazil: Rondônia (GTA #1650); (41) *Aguna cirrus*, Brazil: Santa Catarina (GTA #3315); (42) *Aguna coeloides*, Brazil: Rondônia, paratype (GTA #2838); (43) *Aguna nicolayi*, Brazil: Mato Grosso, holotype (GTA #2957).

ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments, overscaled with scattered long hair-like white scales, venter brown with narrow to moderate-width ochreous transverse bands.

Dorsal wings dark brown; forewing produced, moderately rounded; base with long dark green scales most extensive posteriorly extending to termen or nearly so along anal margin and beyond discal macular row between veins M1 and CuA2; hyaline macules pale yellow; macule in CuA2-2A triangular, detached distad by less than its width from (rarely contiguous to) macule in CuA1-CuA2, this hourglass or I-shaped, contiguous with or overlapping half way across similarly-sized, hour-

glass-shaped macule in discal cell, anterior edge broader than posterior edge, overlaps double conjoined costal macules, narrower than discal cell macule, distal edges in line with distal edge of or centered over discal cell macule; macule in M3-CuA1 narrow, vertical bar-shaped, often slightly excavate distad, separate distad from macule in CuA1-CuA2 by more than double its width but slightly proximal to macule in CuA2-2A and subapical macules; two small aligned subapical macules in R1-R2 and R2-R3, minute or usually absent macule in R3-R4 offset distad, another small macule still further offset distad in R5-M1; fringe pale gray-brown posteriorly, of ground color anteriorly.

Hindwing with termen convex; extensive dark green scaling nearly to termen posterior to vein Rs; tail short (3-4 mm), broad (3-3.5 mm); fringe pale brown, dark brown on tail.

Ventral forewing paler brown than dorsum with scattered ochreous scales especially along costa and distad; posterior margin pale gray; macules repeated from dorsum; a few greenish scales at very base of wing.

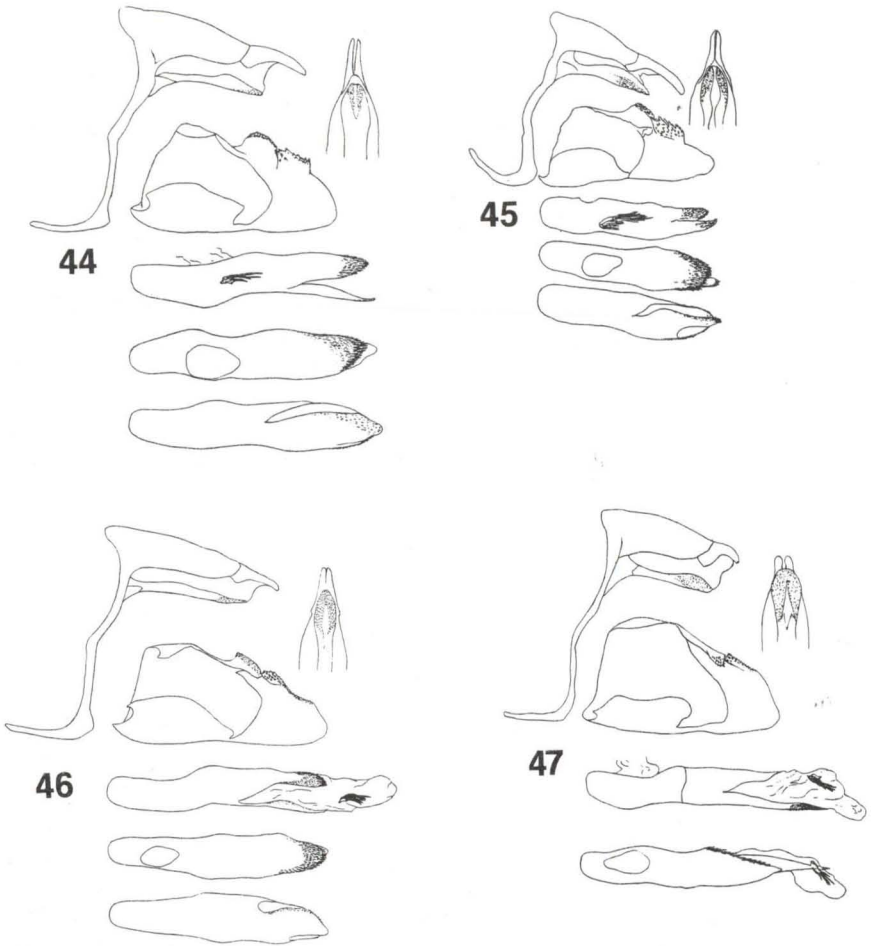
Ventral hindwing brown, extensively overscaled with pale ochreous scales; long olive-green scales basad especially in discal cell, often extending distad nearly to white central band; anal margin with long pale ochreous-brown scales distad; white central band from Sc+R1 to 2A of moderate width (1-2 mm), straight to slightly concave distad, edges relatively regular, slightly narrower anteriorly, may be somewhat hooked at posterior end, may have slight ochreous tinge especially posteriorly.

Genitalia (N = 65). Tegumen rather broad in lateral view, uncus long, slightly curved; gnathos in lateral view curved, usually broadest in about middle, caudal end thin and pointed; saccus long, straight; valva with dorsal edge of ampulla produced into broad spiculose lobe, extended dorsad much above height of harpe, dorso-proximal end of harpe strongly toothed, caudal end of harpe usually long and narrowly rounded, sacculus moderately convex; aedeagus longer than valva, upper lip with caudal end asymmetrical, skewed to right, spiculose with short bristles along margin, heaviest on right side, lower lip narrow, slightly exceeding length of upper lip.

Female – forewing length = 23.4 mm (23.1-23.7, N = 4; sample from Rondônia, Brazil); similar to male; wings somewhat broader; macules larger; hindwing tail longer (4.5 mm); ventral wings with much less pale overscaling; ventral hindwing without extensive green overscaling; ventral hindwing white band broader (2-2.5 mm).

Genitalia (N = 28). Papillae anales broad, caudal end somewhat concave, upper lobe produced; lamella postvaginalis long and broad, deep U-shaped caudal indentation; lamella antevaginalis distinctly bilobate centrally extending laterad and caudad as two rather large membraneous lobes overlapping cephalad end of lamella postvaginalis; antrum poorly developed, often indistinct, relatively square; ductus bursae relatively short and broad, nearly always seen with prominent spermatophore; corpus bursae stout, elongate.

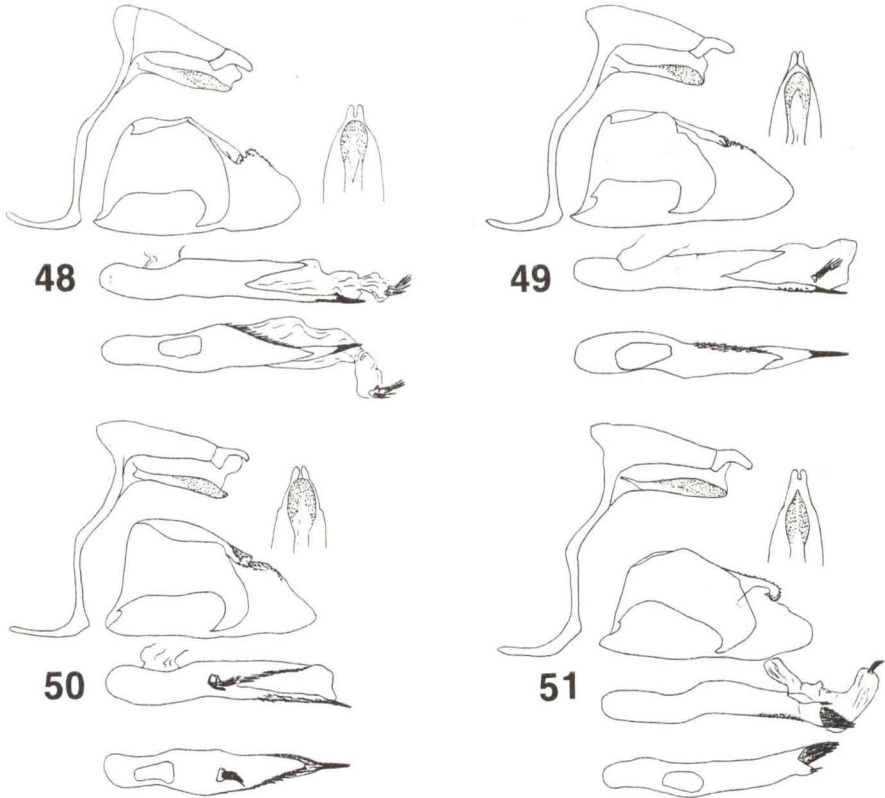
Distribution and phenology. *Aguna coelus* is known from Peru and central Brazil to northeastern South America and southern Central America. Records are



Figs 44-47. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (44) *Aguna venezuelae*, Venezuela: Aragua (GTA #2969); (45) *Aguna latimacula*, Brazil: Minas Gerais, holotype (OM #39.397); (46) *Aguna aurunce aurunce*, Brazil: Rondônia (GTA #3171); (47) *Aguna glaphyrus*, Brazil: Santa Catarina (GTA #2951).

concentrated during the last six months of the year. This species is one of the common *Aguna* at the central Rondônia site where it occurs in forests, is frequently found at army ant swarms, and is attracted to lures.

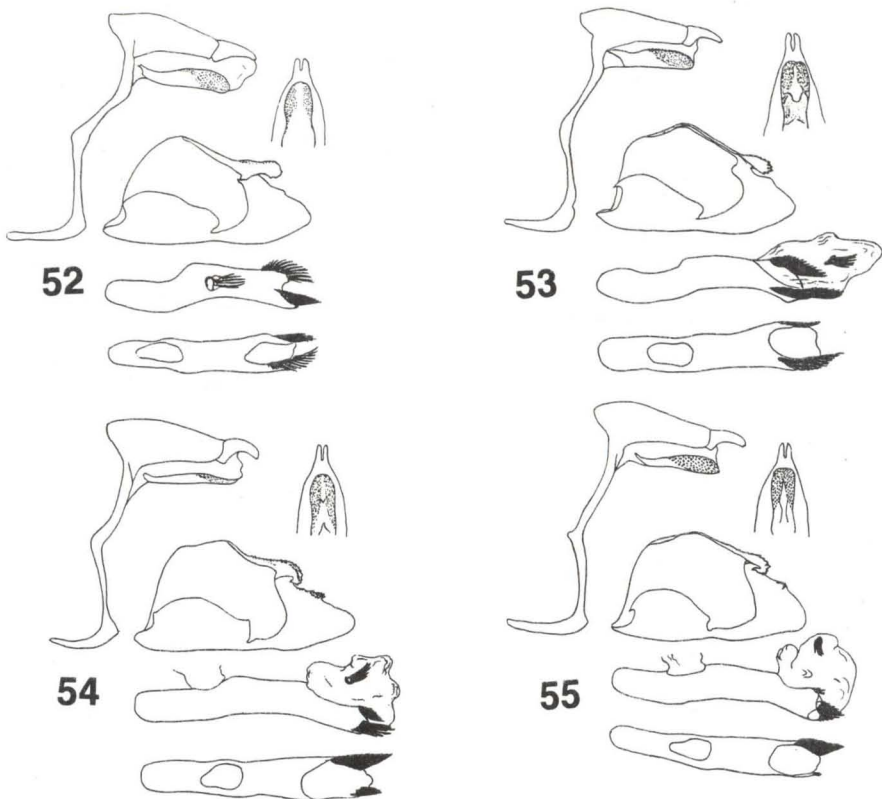
Specific records. BRAZIL: Rio Maranhão (no date; BMNH)*, Goiás: Serra Dourada (no date; AME)*, Pará; no location (no date; AMNH, BMNH)*, Itaituba, R. Tapajoz (no date; AME)*, Rondônia; vicinity of Cacaulândia (Apr., June, July, Aug., Sept., Oct., Nov., Dec.; NSM, UFPC), COLOMBIA: Putumayo River (Dec.; AMNH)*, COSTA RICA: Heredia Prov.; Chilamate, Finca Bejuco (Sept.; NSM)*,



Figs 48-51. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (48) *Aguna penicillata*, Brazil: Rondônia, holotype (GTA #1641); (49) *Aguna spicata*, Brazil: Rondônia, paratype (GTA #2839); (50) *Aguna longicauda*, Brazil: Rondônia, holotype (GTA #1672); (51) *Aguna ganna*, Venezuela: Yaracuy (GTA #2958).

FRENCH GUIANA: no location (no date; AMNH)*, Maroni River (no date; AME), St. Laurent (no date; AMNH), GUYANA (British Guiana): no location (no date; AMNH)*, PANAMA: Darien; Cana, 1100 m (July; USNM), PERU: Yumbatos (Oct., Nov.; AMNH), 30 km SW Pto. Maldonado (Oct.; USNM)*, TRINIDAD: Macqueripe Bay (Apr.; AMNH), COUNTRY UNKNOWN: no location (Aug.; USNM), South America (no date; CM). Distributions given by previous authors need to be verified through dissection.

Discussion. *Aguna coelus* is a problem species. Although the type locality was thought not to be designated (e.g. WILLIAMS 1927; EVANS 1952); this was mentioned as Surinam in the description of the first species in STOLL'S (1781) plate 343. Identifiable type specimens do not exist and the species is not readily recognizable from STOLL'S (1781) description and figure which could represent nearly any of the short-tailed green species of *Aguna*. SEITZ'S (1907-1924) figure of the ventral



Figs 52-55. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (52) *Aguna panama*, Panama: Canal Zone, holotype (GTA #2959); (53) *Aguna spatulata*, Brazil: Rondônia, holotype (GTA #1651); (54) *Aguna similis*, Brazil: Rondônia, holotype (GTA #1638); (55) *Aguna mesodentata*, Brazil: Rondônia, paratype (GTA #2836).

surface may represent this species, but his dorsal surface figure of *A. coelus* seems to be *A. aurunce*. Figured genitalia (GODMAN & SALVIN 1893; WILLIAMS 1927) are of *A. claxon* as pointed out by EVANS (1952). The figured *A. coelus* in DE LA MAZA (1987) is also *A. claxon*. The brief description of *A. coelus* by EVANS (1952) and his figure of the genitalia are inadequate to identify the species. The genitalia of six males dissected and identified as *A. coelus* by EVANS were examined; two of these match the concept of the species adopted here.

STOLL'S (1781) figure indicates a specimen with more or less aligned forewing central macules; those in CuA1-CuA2 and the discal cell are of about equal width. The macule in M3-CuA1 is narrow and directed towards the distal subapical macules. The white band on the ventral hindwing is of intermediate width, this about the same throughout. The rounded wings and the length of the tail suggest a female. None of these characters are at odds with the phenotype which is identified as *A.*

coelus here. The ventral abdomen, however, has both broad pale bands and a dark central line. The ventral abdomen of “*coelus*” group species has broad banding on the ventral abdomen and only occasionally traces of a dark central line. A dark central line is more usual on taxa of the other groups which follow below. Despite this, nothing is lost by considering the concept of one of the most widespread of several similar species and known to occur in an area from which the type came as identical with STOLL’S (1781) *Papilio coelus*. Thus, to provide stability, a specimen of this phenotype from northeastern South America was designated as the **NEO-TYPE** of *Papilio coelus* Stoll, [1781] as noted above.

Aguna coelus is distinguished by its relatively intense green color, rather produced forewings, and a short (3-4 mm), broad (3-3.5 mm) tail. The male genitalia have a well produced dorsal lobe on the ampulla, a strongly toothed dorsal ridge on the harpe, a long caudal end to the harpe, and an aedeagus with the lower lip slightly longer than the asymmetrical dorsal lip. The greenish scaling at the base of the ventral hindwing is more extensive than on many other similar species. This green is more prominent on faded than on fresh specimens. Its presence, however, is not unique to *A. coelus* contrary to the indication by EVANS (1952); many *Aguna* species have green at the extreme base of both the ventral forewing and hindwing.

The female phenotype described above with a relatively broad white band on the ventral hindwing is associated with this species based on size and overall pattern. It is also the most common female phenotype of the “*coelus*” group at the Rondônia site.

Aguna cirrus Evans, 1952

Figs 14, 41, 67

Aguna cirrus Evans, 1952. Type locality: Alto da Serra, São Paulo [Brazil]. Type: [holo]type male at BMNH, with the following labels: / Type *cirrus* Ev. / Alto de Serra, S. Paulo, Sept. 1925 (R. Spitz) / Rothschild Bequest B.M. 1939-1./

Description. Male – forewing length = 20.3 mm (N = 1, from Santa Catarina, Brazil); head blue-green with a few scattered whitish scales, whitish line beneath antennae, yellow-white in front of eyes, whiter beneath and behind, palpi white with many interspersed black scales, antennae black above, grayish beneath club, shaft with white segmental lines proximad on inner surface and with slight whitish distad before club. Dorsal thorax blue-green, venter pale ochreous with green especially laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments, venter brown with moderate-width ochreous transverse bands and indication of broad central line.

Dorsal wings dark brown; forewing slightly produced, moderately rounded; base with long dark blue-green scales most extensive posteriorly extending nearly to termen along anal margin and beyond discal macular row between veins M1 and CuA2; hyaline macules pale yellow; macule in CuA2-2A triangular, detached distad by more than its width from macule in CuA1-CuA2, this narrow, hourglass-shaped, separated distad by less than its width from similarly-sized, hourglass-shaped macule in discal cell, anterior edge broader than posterior edge, overlaps separated

costal macules, narrower than discal cell macule, distal edges in line with distal edge of discal cell macule; macule in M3-CuA1 narrow, vertical bar-shaped, separate distad from macule in CuA1-CuA2 by about three times its width but slightly proximal to macule in CuA2-2A and subapical macules; two small aligned subapical macules in R1-R2 and R2-R3, no macule in R3-R4, another small macule offset far distad in R5-M1; fringe pale brown posteriorly, of ground color anteriorly.

Hindwing with termen nearly straight; extensive dark blue-green scaling nearly to termen posterior to vein Rs; tail short (3.5 mm), narrow (2.5 mm); fringe pale brown, dark brown on tail.

Ventral forewing paler brown than dorsum with no scattered ochreous scales; posterior margin pale gray; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, very sparsely overscaled with pale ochreous scales; vague long olive-green scales basad especially in discal cell, not extending distad to white band; anal margin with long ochreous-brown scales distad, scarcely paler than ground color; central band from Sc+R1 to 2A very narrow (< 1 mm), narrowing slightly posteriorly, not hooked at posterior end, straight, edges regular, white.

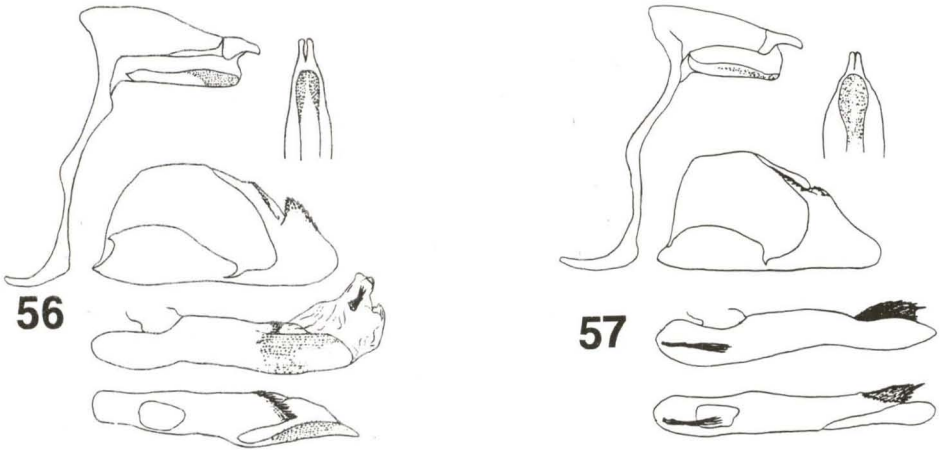
Genitalia (N = 1). Tegumen rather broad in lateral view, uncus long, slightly curved; gnathos in lateral view slightly curved, of about equal depth throughout; saccus long, straight; valva with dorsal edge of ampulla produced into broad, lightly spiculose lobe, extended dorsad much above height of harpe, dorso-proximal end of harpe strongly toothed, caudal end of harpe relatively short, triangular, sacculus moderately convex; aedeagus robust, slightly longer than valva, upper lip with caudal end asymmetrical, skewed somewhat to left, spiculose with short bristles along margin, heaviest on left side, lower lip very broad, conspicuously exceeding length of upper lip.

Female - forewing length = 23.7 mm (N = 1; from Santa Catarina, Brazil); similar to male; wings somewhat broader; macules larger, less separated, minute point in R3-R4 midway between macules in R2-R3 and R5-M1; hindwing tail longer (5 mm); ventral hindwing white band broader (1.5 mm), of about equal width throughout.

Genitalia (N = 1). Papillae anales broad, caudal end somewhat concave, upper lobe produced; lamella postvaginalis broad, deep U-shaped caudal indentation; lamella antevaginalis distinctly bilobate centrally extending laterad and caudad as two rather large membranous lobes overlapping cephalad end of lamella postvaginalis; antrum poorly developed and indistinct; ductus bursae relatively short and broad; corpus bursae not seen.

Distribution and phenology. This species is confined to southern Brazil.

Specific records. BRAZIL: *Minas Gerais*; Marliéria, *Paraná*; Paranaguá, Antonina, *Rio de Janeiro*; Rio de Janeiro (Aug.; Sept.; UFPC), Petropolis (Sept.; UFPC), Muriqui (Aug.; UFPC), Itatiaia, *Santa Catarina*; Aguas Mornas (=Theresopolis), Joinville, 10-200m (Dec.; NSM; Jan.; Febr.; Aug.; Sept.; Dec.; UFPC), *São Paulo*; Alto da Serra (Sept.; BHM). EVANS (1952) and MIELKE (1972) gave several additional records: BRAZIL: *São Paulo*; Santos, Itanhaem, Salesópolis.



Figs 56-57. Male genitalia of *Aguna* including lateral view of tegumen, gnathos, uncus, and associated structures; ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral, dorsal, and often ventral views of aedeagus. (56) *Aguna squamalba*, Brazil: Rondônia, paratype (GTA #1884); (57) *Aguna parva*, Brazil: Rondônia, paratype (GTA #2948).

Discussion. *Aguna cirrus* is similar to *A. coelus*, but the wings are shorter, the dorsal color is bluer, the forewing macules of the male are narrower and further apart [EVANS (1952) noted that the posterior portion of the discal cell macule and anterior portion of the macule in CuA1-CuA2 were absent on males], and the ventral hindwing has no extensive green scaling and a very narrow white band. The male genitalia (also illustrated by EVANS 1952) are also similar, but the harpe is somewhat shorter than on most *A. coelus* and the aedeagus is much larger and with the upper lip skewed more to the left. The female is also similar to *A. coelus*, but the dorsal color is more blue, the tails are narrower, and the ventral hindwing band is narrower and not expanded at its middle. Female genitalia of *A. coelus* and *A. cirrus* are virtually identical.

Aguna coeloides Austin & Mielke, sp.n.

Figs 15, 42, 68

Description. Male – forewing length = 19.3 mm (18.6-20.3 mm, N = 7; types); similar to *A. coelus*; differs as follows: forewings shorter, less produced, moderately rounded; basal scaling duller blue-green, sparser; macule in CuA1-CuA2 more erect, contiguous with discal cell macule.

Hindwing with termen convex; tail of moderate length (4-5 mm), narrow (2.5 mm).

Ventral hindwing white band narrow (0.5-1.5 mm), straight, more or less of even width throughout, not hooked at caudal end.

Genitalia (N = 28). Similar to *A. coelus*; uncus and gnathos slightly shorter, tip of gnathos straight (occasionally curved dorsad); costa narrower, less produced dorsad and nearly horizontal; lobe of ampulla narrower, less spiculose; caudal end

of harpe shorter; dorsal tooth row of harpe shorter, teeth smaller; aedeagus shorter and stouter, caudal end of upper lip more or less symmetrical, lower lip narrow.

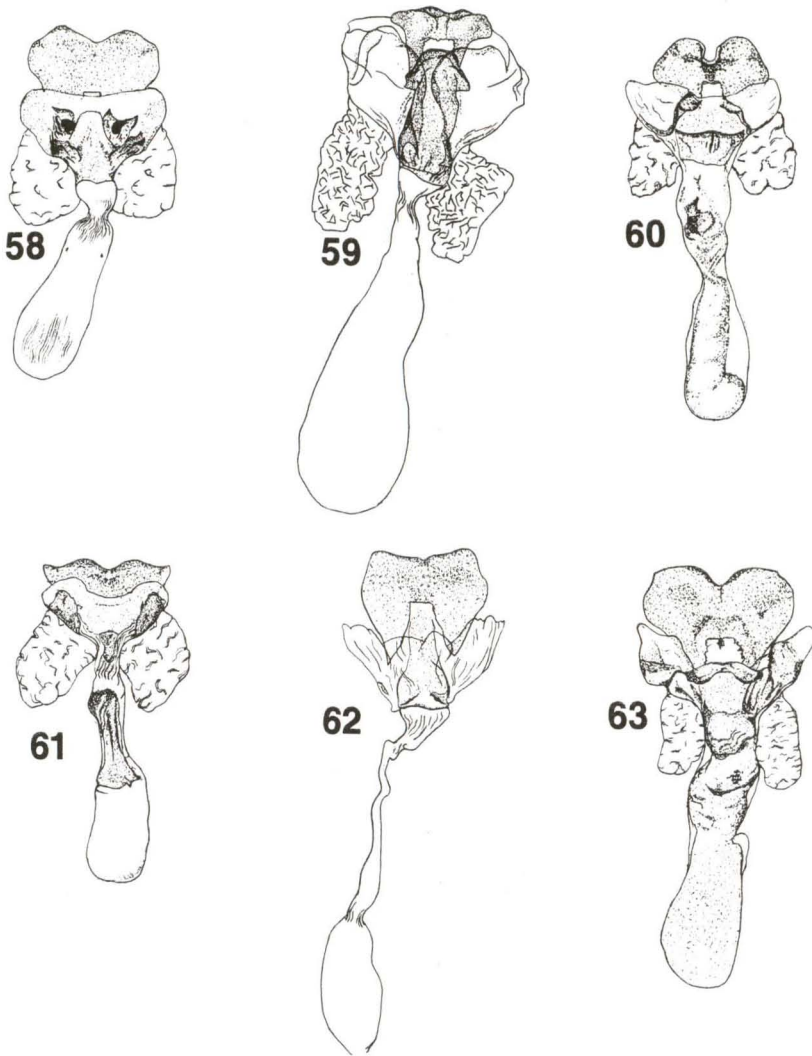
Female. Forewing length = 22.1 (21.4-22.7, N = 5; from various locations); similar to male; tail of similar length (4-5 mm); ventral hindwing band broader (1.5-2 mm), usually narrowing anteriorly.

Genitalia (N = 9). Very similar to those of *A. coelus*, lamella postvaginalis often with relatively prominent tooth laterad; lamella antevaginalis narrower centrally.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 11 November 1992 / leg. G.T. Austin / associated with *Eciton burchelli* – 1200-1230; white, printed and handprinted – Genetalic Vial / GTA – 2932; red, printed – HOLOTYPE / *Aguna coeloides* / Austin & Mielke. Paratypes (females not included in type series): 1 male – BRAZIL: Rondônia; 65 km S Ariquemes, linha C-20, 10 km E B-65, 3 km E Fazenda, Rancho Grande, lot 18, 18 Nov. 1992, leg. G.T. Austin (associated with *Eciton burchelli*, 1400-1430); 1 male – 18 Nov. 1992, leg. G.T. Austin (associated with *Eciton burchelli*, 1430-1500); 1 male – same location as holotype, 16 Aug. 1993, leg. G.T. Austin, (associated with *Eciton burchelli*, 0930-1000), 1 male – 10 Dec. 1989, leg. T. Schmitz; 1 male – 21 Nov. 1992, leg. G.T. Austin (at paper lures, 1030-1100); 1 male – 21 Nov. 1992, leg. G.T. Austin (at paper lures, 1130-1200); 1 male – 10 Nov. 1994, leg. G.T. Austin (at paper lures, 0830-0900); 1 male – 12 Nov. 1994, leg. G.T. Austin (at paper lures, 0830-0900); 1 male – 12 Nov. 1994, leg. G.T. Austin (at paper lures, 1300-1330); 1 male – 13 Nov. 1994, leg. G.T. Austin (associated with *Eciton burchelli*, 1100-1130); 1 male -17 Nov. 1994, leg. G.T. Austin (at paper lures, 1230-1300); 1 male – BRAZIL: Rondônia; linha C-20 at Rio Pardo, 17 Nov. 1992, leg. G.T. Austin (at paper lures, 1100-1130); 1 male – BRAZIL: Rondônia; linha C-10, 5 km S of Cacaupândia, 28 Aug. 1994, leg. O. Gomes; 1 male – 4 Nov. 1994, leg. O. Gomes; 1 male – BRAZIL: no location, 26 June 1919, leg. ?; 1 male – Rio Tapajos, no date, leg. ?; 1 male – Pará; no further data; 3 males – Óbidos, no date, leg. ?; 1 male – COSTA RICA: Heredia Prov.; Finca La Selva, 19-26 June 1975, leg. D. R. Perry; 2 males – FRENCH GUIANA: St. Laurent, no date, leg. ?; 1 male – St. Laurent du Maroni, no date, leg. ?; 1 male – Maroni River, 1903, leg. ?; 1 male – GUYANA (British Guiana): Bartica, Dec. 1912, leg. ?; 1 male – MEXICO: Vera Cruz; Tierra Blanca, Aug. 1940, leg. T. Escalante (without abdomen), 1 male – PANAMA: Veraguas Isla Coiba, Represa, 25 Feb. 1981, leg. G. B. Small; 1 male – Canal Zone; Barro Colorado Island, 15 Mar. 1923, leg. ?; 1 male – TRINIDAD: Siparia, 20 Nov. 1920, leg. W. J. Kaye; 1 male – Macuexioe Bay, 24 Aug. 1933, leg. ?.

Deposition of types. The holotype will be deposited in the collection at UFPC, Curitiba, Brazil; the paratypes will be deposited at AMNH, AME, CM, NSM, UFPC, and USNM.

Type locality. BRAZIL: Rondônia; 62 kilometers south of Ariquemes, linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grandé, approximately 5 km northeast of Cacaupândia in typical lowland tropical rainforest, 180 meters.



Figs 58-63. Female genitalia of *Aguna*, ventral view. (58) *Aguna asander asander*, Brazil: Rondônia (GTA #4352); (59) *Aguna megacles megacles*, Brazil: Rio Grande do Sul (GTA #4486); (60) *Aguna albistria albistria*, Brazil: Rondônia (GTA #4354); (61) *Aguna metophis*, Brazil: Rondônia (GTA #4353); (62) *Aguna camagura*, Brazil: Goiás (GTA #4408); (63) *Aguna claxon*, Costa Rica: Puntarenas Province (GTA #4349).

Etymology. The name reflects this species' similarity to *A. coelus*.

Distribution and phenology. This species has a distribution similar to that of *A. coelus* but appears to extend further south in Brazil and further north to northern Central America and southern Mexico. Records are scattered throughout the year. It is a rare forest species at the Rondônia site where most specimens were taken at army ant swarms or at lures.

Specific records. BRAZIL: no location (May, June; AMNH), Amazonas, Manicapurú (Mar.; CM)*, Teffe (Ega, no date; AME)*, Rio Solomões (no date; AMNH)*, Pará; no location (no date; AMNH, BMNH), Itaituba, Rio Tapajoz (no date; AMNH, BMNH)*, Cuiabá-Santarém Hwy, km 1270 (July; USNM)*, Óbidos (no date; AMNH), Rondônia; vic. Cacaulândia, Fazenda Rancho Grande (Aug., Nov., Dec.; NSM, UFPC), COSTA RICA: Heredia Prov.; Finca La Selva (June; LACM), Limon Prov.; Guapiles (May; USNM)*, Sixola River (Mar.; USNM)*, FRENCH GUIANA: St. Laurent (no date; AMNH), St. Laurent du Maroni (no date; AMNH), Maroni River (no date; AME), GUATEMALA: Cayuca (Mar.; BMNH, USNM)*, GUYANA (British Guiana): Bartica (Dec.; AMNH), MEXICO: Vera Cruz; Tierra Blanca (Aug.; male without abdomen; AMNH), PANAMA: Veraguas Isla Coiba, Represa (Feb.; USNM), Canal Zone; Barro Colorado Island (Mar.; AMNH), TRINIDAD: Siparia (Nov.; AME), Macuexioe Bay (Aug.; AMNH), VENEZUELA: TF Amazonas, Orinoco/Ugueto (Oct.; AME)*.

Diagnosis and discussion. *Aguna coeloides* is distinguished from *A. coelus* by its stubbier appearing forewings, a generally narrower white central band on the ventral hindwing, and less robust male genitalia with the upper lip of the aedeagus symmetrical, not skewed to the right as on *A. coelus*. It differs from *A. venezuelae* similarly. It is also similar to *A. cirrus* differing by its more contiguous forewing macules (on males), greener coloration, and very short aedeagus with a symmetrical upper lip and narrow lower lip.

Among six males dissected and identified as *A. coelus* by Evans, at least two are *A. coeloides* and two others appear to be (aedeagus missing or broken). Females are nearly identical to those of *A. coelus*; they were associated here based upon wing shape, pattern, and the somewhat narrower white band on the ventral hindwing.

Aguna nicolayi Austin & Mielke, sp.n.

Figs 16, 43, 69

Description. Male – forewing length = 19.3 mm (holotype); similar to *A. coelus*; differs as follows: forewing relatively shorter, broader; basal green duller; macules paler (nearly white); macule in CuA2-2A larger; discal cell macule narrower, anterior and posterior edges about equal; macule in R3-R4 closest to that in R2-R3; macule in M3-CuA1 broader than on most *A. coelus*.

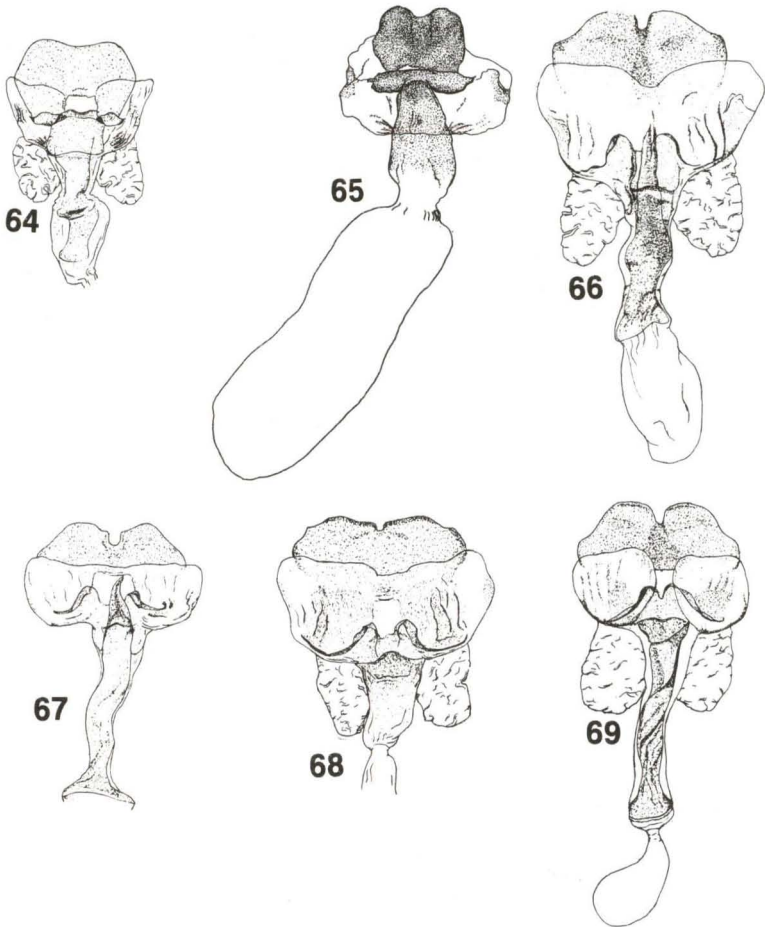
Hindwing with termen nearly straight; tail long (6.5 mm), broad (3 mm).

Ventral hindwing with basal green scaling inconspicuous but extending nearly to band; central band of moderate width (2 mm), nearly straight, regular, white.

Genitalia (N = 1). Similar to *A. coelus*; gnathos thin in lateral view, distinctly curved; lobe of ampulla broader; caudal end of harpe short and broad; aedeagus short and stout, upper lip more or less symmetrical, lower lip broad.

Female. Forewing length = 21.4 (N = 1, from Goiás, Brazil); similar to male; tail longer (7.5 mm); white band on ventral hindwing broader (2.5 mm).

Genitalia (N = 1). Similar to other “*coelus*” group species.



Figs 64-69. Female genitalia of *Aguna*, ventral view. (64) *Aguna clina*, Trinidad (GTA #4406); (65) *Aguna latifascia*, Brazil, Acre, paratype; (66) *Aguna coelus*, Brazil: Rondônia (GTA #1772); (67) *Aguna cirrus*, Brazil: Santa Catarina (GTA #3316); (68) *Aguna coeloides*, French Guiana (GTA #3030); (69) *Aguna nicolayi*, Brazil: Goiás (GTA #1851).

Type. Holotype male with the following labels: white, printed and handprinted – 90 km E. Cuiabá / São Vicente / MT Brazil 600 m / 22 May '69 / S. S. Nicolay; white, printed and handprinted – Genitalia Vial / GTA – 2957; red, printed – HOLOTYPE / *Aguna nicolayi* / Austin and Mielke. The female is not included in the type series.

Deposition of type. The holotype is deposited at USNM.

Type locality. BRAZIL: Mato Grosso; 90 kilometers east of Cuiabá, São Vicente, 600 m.

Etymology. We take great pleasure in naming this species after our friend S. S. (Stan) Nicolay who has added much to our knowledge of Neotropical butterflies, especially skippers and hairstreaks, and who collected the type of this species.

Distribution and phenology. This species is known only from central Brazil.

Specific records. BRAZIL: *Goiás*; Serra Dourado (no date; AME)*, *Mato Grosso*; 90 km E Cuiaba, Sao Vicente, 600 m (May; USNM).

Diagnosis and discussion. *Aguna nicolayi* is at once distinguished from the three preceding species by its longer tails. The aedeagus is stout with a symmetrical upper lip like that of *A. coeloides*, but the lower lip is broad as on *A. venezuelae*. A female is tentatively associated based on its longer tails than other "coelus" group females. Its genitalia are nearly identical to those of *A. venezuelae* and *A. coeloides*; detailed comparisons await further material. Females of *A. venezuelae* have shorter tails and the forewing macules are very broad and deep yellow. Females of *A. coelus*, *A. cirrus*, and *A. coeloides* have much shorter tails.

Aguna venezuelae Mielke, 1971

Figs 17, 44, 70

Aguna venezuelae Mielke, 1971. Type locality: [Rancho Grande], Maracay, Aragua, Venezuela. Type: holotype female at UFPC, with the following labels: / Holotipo // I-1966 Maracay, Venezuela, 900m / *Aguna venezuelae* Mielke, 196, O. Mielke det. 1968 / 9805/.

Description. Male – forewing length = 20.0, 21.2, 21.7 (sample from Venezuela); similar to *A. coelus*; differs as follows: forewing less produced, basal green color less intense; dorsal forewing macules broader, deeper yellow-orange color; discal cell macule noticeably narrow posteriorly; costal macules nearly as broad as discal cell macule; macule in R3-R4 absent.

Hindwing with termen nearly straight to slightly concave; tail moderately long (5-6 mm), broad (2.5-3 mm).

Ventral hindwing dark brown, pale overscaling sparse; basal green scaling inconspicuous, but extending distad nearly to band; central band broad medially (2.5-3 mm), narrowing cephalad and caudad, regular, relatively distinct hook at caudal end, white.

Genitalia (N = 3). Similar to *A. coelus*; costa extending far dorsad at cephalic end; lobe of ampulla broad and rounded; dorsal ridge of harpe with tooth row more distinctly set off from untoothed portion, caudal end of harpe short, blunt; aedeagus with lower lip broad.

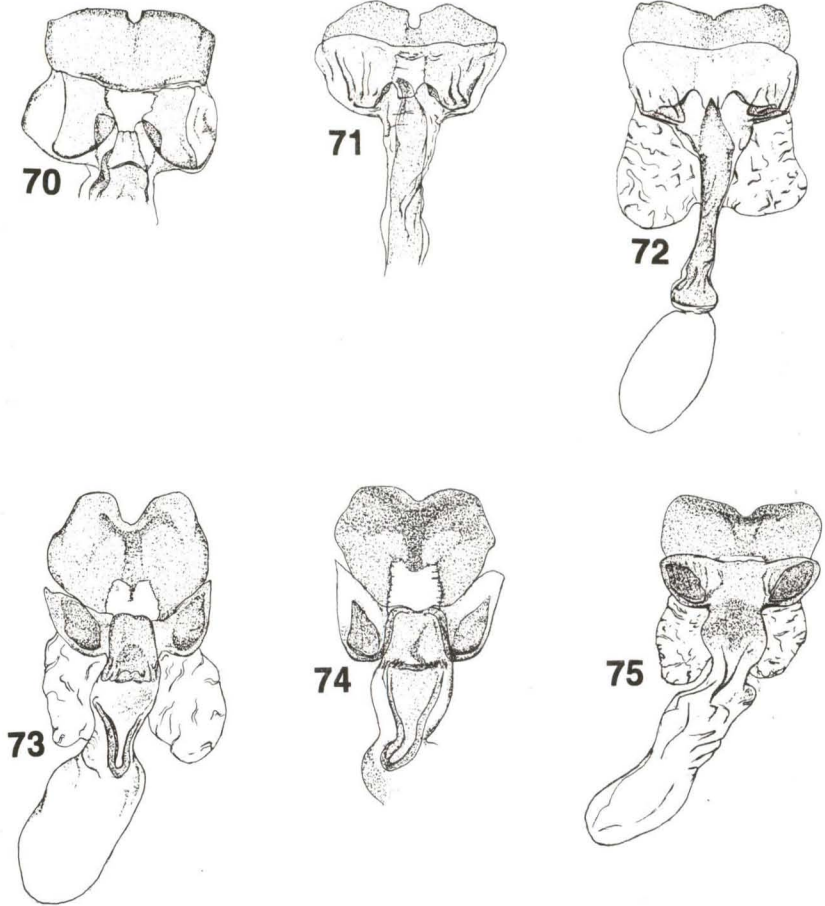
Female. Forewing length = 22.0 mm (N = 1, specimen from Venezuela); similar to male with broad, deeply-colored macules; tails longer (7 mm); ventral hindwing pale gray-brown with similarly-shaped and broad (3 mm) white band.

Genitalia (N = 1). Nearly identical to those of *A. coelus*.

Distribution and phenology. This species is known from the type locality in Venezuela. Specimens have been taken in January, May, and June.

Specific records. VENEZUELA: Aragua, Maracay (Rancho Grande) (Jan., May, June, July, Sept.; AME, NSM, UFPC, USNM).

Discussion. The male and male genitalia of *A. venezuelae* have not previously been illustrated. The species is similar to *A. coelus* but, as noted above, has a different wing shape, longer tails, and deeper colored and larger macules. The



Figs 70-75. Female genitalia of *Aguna*, ventral view. (70) *Aguna venezuelae*, Venezuela: Aráguá (GTA #1845); (71) *Aguna latimacula*, Brazil: Minas Gerais, paratype (GTA #3031); (72) *Aguna aurunce aurunce*, Brazil: Rondônia (GTA #4361); (73) *Aguna glaphyrus*, Brazil: Santa Catarina (GTA #2963); (74) *Aguna penicillata*, Brazil: Rondônia (GTA #1776); (75) *Aguna spicata*, Brazil: Rondônia (GTA #2850).

most distinctive character is the white band on the ventral hindwing. This is very broad in its middle on both sexes and tapers significantly at each end. This band on *A. coelus* is of nearly equal width throughout. The valva of *A. venezuelae* is broader than that of *A. coelus*, especially in the costal region. The lobe of the ampulla is more robust and the tooth row is abruptly set off from the remainder of the dorsal ridge of the harpe. The harpe is short and broad at its caudal end, different from the long and narrow caudal end of the harpe on most *A. coelus*. The lower lip of the aedeagus on *A. venezuelae* is much broader than on *A. coelus*.

MIELKE (1971) described *A. venezuelae* from a single female (with an illustration of the genitalia) from Maracay, Venezuela. This was thought to be close

to *A. ganna* based on the length of the hindwing tail and was compared only with *A. ganna* and *A. cirrus*. The genitalia of both sexes, however, indicates that *A. venezuelae* is of the "coelus" group.

Aguna latimacula Austin & Mielke, **sp.n.**

Figs 18, 45, 71

Description. Male – forewing length = 20.9 mm (N = 2); similar to *A. venezuelae*; differs as follows: all macules on forewing pale yellow as on other species, the four apical macules always present; ground color paler as on *A. coelus* (dark brown on *A. venezuelae*); white central band on ventral hindwing only slightly enlarged in middle at 2 mm, narrowing anteriorly to about 1.3 mm and posteriorly to 1 mm.

Genitalia (N = 1). Similar to *A. venezuelae*; less robust aedeagus with narrower lower lip.

Female. Forewing length = 22.7 mm, 23.1 mm; similar to *A. venezuelae*; differs as follows: subapical macules larger, all four always present; hindwing with longer tail (7.5 mm); ventral hindwing with broad band (2.5-3 mm) sometimes attenuated towards costa, narrowing gradually to a point caudad, hooked or not.

Genitalia (N = 2). Identical with those of *A. venezuelae* and *A. nicolayi*.

Types. Holotype male with the following labels: white, handwritten – 25-XI-1988 / Cordisburgo, / M[inas] G[erais] / O[laf] – E[duardo] Mielke leg /; white, printed and handwritten – gen. prep. / Mielke, 1995; red, printed – HOLOTYPE / *Aguna latimacula* / Austin & Mielke. Paratypes: 1 male, 2 females – same data as holotype, 1 female – 19 Jan. 1978, Fazenda São João, Diamantino, Mato Grosso, Mielke & Furtado leg., 2 females – Sete Lagoas., Minas Gerais, Brazil, 8 May 1908, Haseman leg..

Deposition of types. The holotype and four paratypes are at UFPC; two paratypes are at CM.

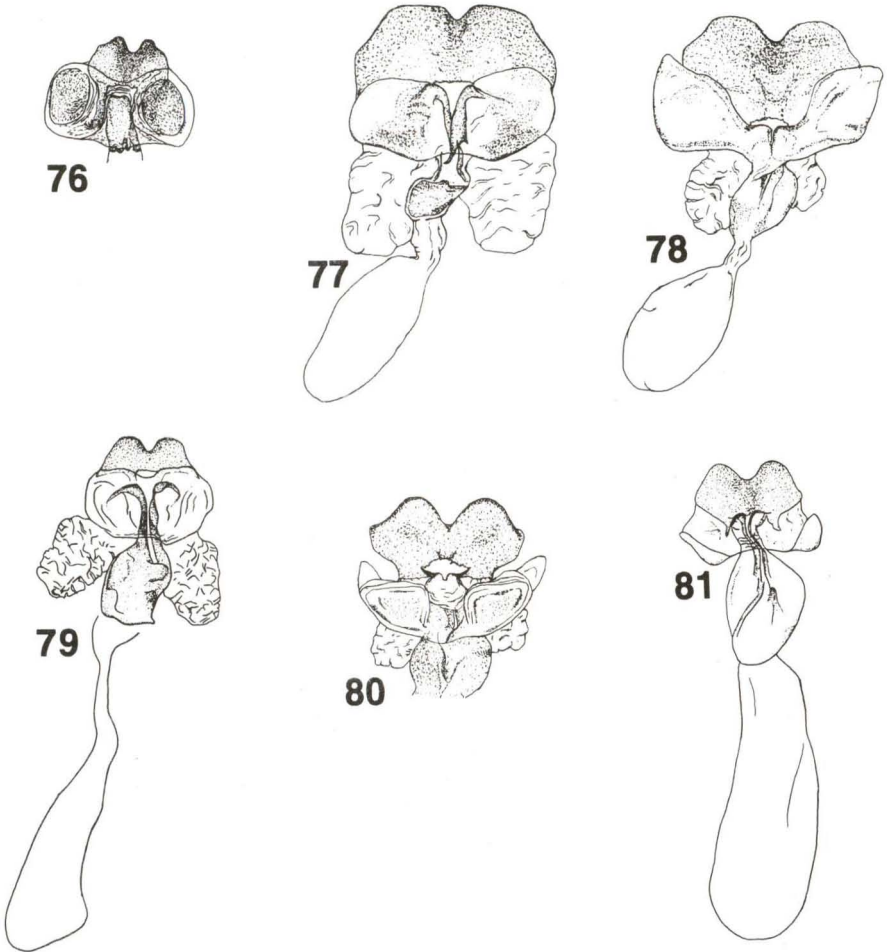
Type locality. BRAZIL: Minas Gerais; Cordisburgo.

Etymology. The name means "broad spot" and refers to the macules on the forewing.

Distribution and phenology. *Aguna latimacula* is known from Mato Grosso and the type locality in central Minas Gerais, Brazil, and has been seen in January, May, and November. Four of the types were taken in a small forest in the cerrado.

Specific records. BRAZIL: *Mato Grosso*; Diamantino (Jan.; UFPC), *Minas Gerais*; Cordisburgo (Nov.; UFPC), Sete Lagoas (May; CM).

Diagnosis and discussion. This taxon has characters of both *A. venezuelae* (broad yellow macules including those at the costal margin) and *A. nicolayi* (very long tails, similar white band on the ventral hindwing). This species is distinguished from *A. venezuelae* as outlined above in the description. Besides the broad macules, *A. latimacula* differs from *A. nicolayi* by its narrow tails and thinner macule in cell M3-CuA1. It differs from other "coelus" group species by the long tails and broad macules.



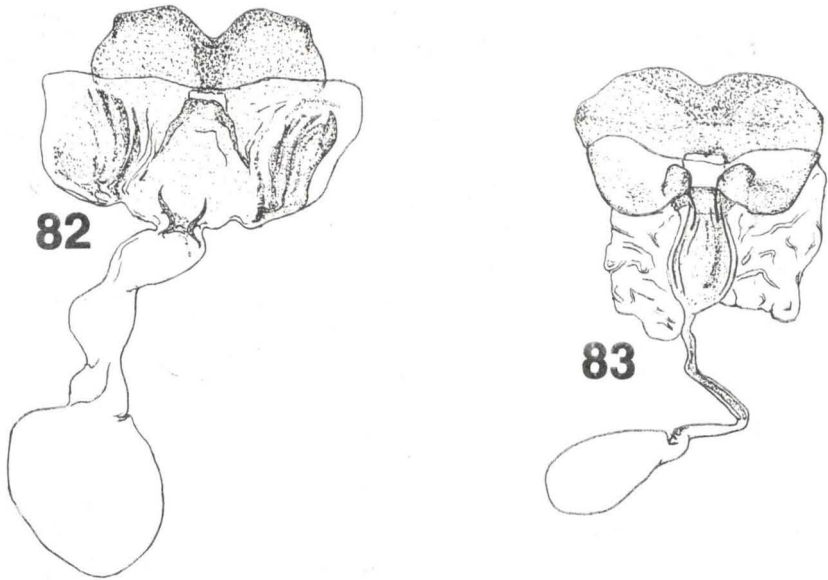
Figs 76-81. Female genitalia of *Aguna*, ventral view. (76) *Aguna longicauda*, Brazil: Rondônia (GTA #6554); (77) *Aguna ganna*, Panama: Canal Zone (GTA #2971); (78) *Aguna panama*, Panama: Canal Zone (GTA #1852); (79) *Aguna spatulata*, Brazil: Rondônia (GTA #6401); (80) *Aguna similis*, Brazil: Rondônia (GTA #3941); (81) *Aguna mesodentata*, Peru: Madre de Dios (GTA #7180).

Aguna aurunce aurunce (Hewitson, 1867)

Figs 19, 46, 72

Eudamus aurunce Hewitson, 1867. Type locality: Amazons [Brazil]. Type: **LECTOTYPE** female (designated here) at BMNH (EVANS 1952; photograph examined), with the following labels: / Type / H.T. Type [incorrectly designated] / Amazons. Hewitson Coll. 79-69. *Eudamus coelus*. 3/, and the following labels to be added / **LECTOTYPE** / Lectotype *Eudamus aurunce* Hewitson, 1867 Austin & Mielke det. 1996/.

Goniurus gideon Plötz, 1880. Type locality: unknown. Type: apparently lost (not at ZMHB), neotype female (designated here) at BMNH, as the lectotype of *E. aurunce*, and the following labels to be added: / **NEOTYPE** / Neotype *Goniurus gideon* Plötz, 1880 Austin & Mielke det. 1996/.



Figs 82-83. Female genitalia of *Aguna*, ventral view. (82) *Aguna squamalba*, Brazil: Rondônia (GTA #1775); (83) *Aguna parva*, Brazil: Rondônia (GTA #2949).

Description. Male – forewing length = 23.7 mm (22.8-24.6, N = 10, sample from Rondônia, Brazil); head blue-green, very pale yellow line beneath antennae, very pale yellow in front of eyes, whiter beneath and behind, palpi very pale yellow with interspersed black scales, antennae black above, checkered ochreous and black beneath club, shaft with white segmental lines proximad on inner surface and pale yellow checkered distad before club. Dorsal thorax blue-green, venter ochreous becoming green laterad beneath wings, legs brown with ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with a very few scattered long hair-like white scales, venter brown with narrow to moderate-width yellow transverse bands.

Dorsal wings dark brown; forewing prominently produced, slightly rounded at apex; base with long dark olive-green scales most extensive posteriorly extending to termen or nearly so along anal margin and beyond discal spot row between veins M1 and CuA2 where sparse; hyaline macules pale yellow; macule in CuA2-2A small, triangular, detached distad by less than its width or more from macule in CuA1-CuA2, this narrow, more or less I-shaped, contiguous with or separated distad from hourglass-shaped macule in discal cell, anterior edge broader than posterior edge, overlaps double conjoined or separate costal macules, narrower than or as wide as discal cell macule, distal edges in line with distal edge of or centered over discal cell macule; macule in M3-CuA1 narrow to very narrow, vertical bar-shaped, usually slightly excavate distad, separated distad from macule in CuA1-CuA2 by several times its width, proximal to macule in CuA2-2A and subapical macules; two small to minute aligned subapical macules in R1-R2 and R2-R3 (former usually somewhat larger than latter), minute or usually absent macule in R3-R4 offset distad,

another small macule still further offset distad in R5-M1; fringe pale gray-brown posteriorly, of ground color anteriorly.

Hindwing with termen convex; extensive dark olive-green scaling nearly to termen posterior to vein Rs; tail very short lobe (1.5-2 mm), relatively broad (2-3 mm); fringe pale gray-brown, dark brown on tail.

Ventral forewing paler brown than dorsum with scattered ochreous scales especially basad along costa and in discal cell; posterior margin pale gray-brown; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, overscaled with pale ochreous scales, mostly basad of discal band; olive-green scales basad especially in discal cell; anal margin with pale ochreous scales distad; central band from Sc+R1 to 2A of narrow to moderate width (0.5-1.5 mm), straight, edges relatively regular, slightly narrower anteriorly, may be somewhat hooked at posterior end, white or with slight ochreous tinge, especially posteriorly.

Genitalia (N = 12). Tegumen relatively long and narrow in lateral view, uncus moderately long, slightly curved; gnathos in lateral view narrow, slightly curved, of about equal width throughout, caudal end thin and pointed; saccus long, slightly curved; valva with dorsal edge of ampulla produced into lightly spiculose lobe, extended dorsad somewhat above height of harpe, dorsal ridge of harpe serrate, caudal end of harpe beyond serrate portion relatively short and rounded, sacculus moderately convex; aedeagus slightly longer than valva, upper lip with caudal end asymmetrical, skewed to left, spiculose with short bristles along margin, heaviest on left side, lower lip broad, slightly exceeding length of upper lip.

Female. Forewing length = 25.3 mm (24.8-25.7, N = 3; sample from Rondônia, Brazil); similar to male; wings slightly broader; macules larger; hindwing tail longer (2.5 mm); ventral hindwing white band broader (> 2 mm).

Genitalia (N = 4). Papillae anales broad, caudal end nearly straight, upper lobe slightly produced; lamella postvaginalis broad, caudal end with very narrow and shallow central indentation (this may be barely perceptible); lamella antevaginalis distinctly bilobate centrally extending laterad and caudad as two rather large membranous lobes overlapping cephalad end of lamella postvaginalis; antrum poorly developed, indistinct; ductus bursae relatively long, narrower than on other "*coelus*" group species, not sclerotized; corpus bursae small, oval.

Distribution and phenology. *Aguna a. aurunce* is known from the Amazon drainage of Venezuela southward into Peru and Brazil. This is a common forest species near Cacaulândia where it may be associated with army ant swarms and attracted to lures. Records are from January, June, August, and October through December. Dry season individuals appear identical to those from the wet season.

Specific records. BRAZIL: Amazons (no date; BMNH), *Goiás*; Goiás Velho (Feb.; UFPC), *Pará*; Óbidos (Apr.; USNM); *Rondônia*; vicinity of Cacaulândia (Jan., June, Aug., Oct., Nov., Dec.; NSM), *Roraima*; Alto Alegre (Feb., Nov.-Dec.; UFPC), VENEZUELA: T. F. Amazonas (Sept.; AME). EVANS (1952) and MIELKE (1971, 1973) gave the following additional localities: BRAZIL: *Amapá*; Serra do Navio, *Amazonas*; Teffe, Manicoré do Rio Madeira, *Pará*; Itaituba, Belém, PERU: Tarapotó and DE JONG (1983) added SURINAM: Brokopondo, Carolina Kreek.

Discussion. EVANS' (1952) key associated *A. aurunce* with *A. claxon* and *A. clina* based upon its short, lobe-like, tails. The male genitalia of *A. aurunce* with their long uncus, prominent lobe on the ampulla, toothed dorsal ridge to the harpe, and form of the aedeagus indicates that it is closer to *A. coelus* and other species associated above. Aside from the short tails, *A. aurunce* differs from all "coelus" group taxa by the longer tooth row on the harpe and by the gnathos which is spiculose across its entire caudal end on the ventral surface. The female genitalia are of the typical "coelus" group phenotype; the near absence of a central notch on the caudal edge of the lamella postvaginalis is distinctive.

WILLIAMS (1927) illustrated the male genitalia as *A. gideon* considering *A. aurunce* as a synonym of *A. coelus* (= *A. claxon*). EVANS (1952), having the type of *A. aurunce* before him, was able to untangle the synonymies and illustrated the genitalia. Since the type of *Goniurus gideon* cannot be located, its **neotype** was designated here as the female **lectotype** of *Eudamus aurunce* at BMNH.

Aguna aurunce hypozonius (Plötz, 1880) **stat.n.**

Fig 20

Goniurus hypozonius Plötz, 1880; **stat.n.**. Type locality: Laguayra [Venezuela]. Type: apparently lost (see below), **NEOTYPE** female (designated here) at ZMHB, with the following labels: / *Hypozonius* Hoppfr. 403 best. v. Plötz / 403 / w / Coll. Weymer / Venezuela. 78 Danne/, and the following labels to be added: / **NEOTYPE** / Neotype *Goniurus hypozonius* Plötz, 1880 Austin & Mielke det. 1996/.

The name *Goniurus hypozonius* creates more taxonomic problems than *A. coelus*. The absence of a verifiable type leaves the true identity of *A. hypozonius* unclear since its description could apply to any one of several very similar species. GODMAN (1907) identified Plötz's unpublished figure of *G. hypozonius* as *Goniurus coelus*. The name has subsequently been incorrectly associated with an unnamed phenotype known only from Brazil and Paraguay (e.g. EVANS 1952; MIELKE 1971). A putative male type of *Goniurus hypozonius* is at the ZMHB, with the following labels: red, printed – Typus; white, printed – 5122; blue-green, handprinted – *Hypozonius* / N / Pará Sieber; white, printed – Zool. Mus. / Berlin. The handprinted label looks to be of Plötz' style (HORN & KAHLE 1935-1937). This specimen, however, cannot be the type of *G. hypozonius* or PLÖTZ (1880) would have not designated its origin as Laguayra and the specimen is an *A. coeloides*. It is considered a pseudotype, and it will be labeled accordingly.

A female identified as *G. hypozonius* by Plötz at the ZMHB, was here designated the **neotype** of *Goniurus hypozonius* Plötz. This common phenotype in parts of Venezuela is nearly identical to *A. a. aurunce* but distinguishable by the larger forewing macules. Male genitalia are very similar to those of *A. a. aurunce* except the lobe of the ampulla is rounded compared to the angular, nearly triangular, ampulla lobe of *A. a. aurunce*. Female genitalia of the two subspecies appear to be identical.

Distribution and phenology. This subspecies occurs from extreme northern South America to southern Mexico.

Specific records. GUATEMALA: *Petén*; Parque Nacional Tikal (Feb., Nov., Dec.; NSM), GUYANA: Mazaruni-Potaro, Lower Mazaruni, 100m (Dec.; USNM), TRINIDAD: no location (no date; USNM), VENEZUELA: no location (no date; ZMHB), carretera de Choroni, *Aráguá* (Oct.; UFPC), Cuicas Trujillo (Aug.; UFPC). Records given by EVANS (1952) and MIELKE (1971) that also probably pertain to this subspecies are for Colombia, French Guiana, Nicaragua, Panama. DE JONG (1983) also listed specimens from Surinam as did STEINHAUSER (1975) for El Salvador and FREEMAN (1976) reported the species for Tabasco, Mexico.

“GLAPHYRUS” GROUP

Aguna of the “*glaphyrus*” group have blue to blue-green dorsal wing bases and green scaling, when present, on the ventral hindwing restricted to the extreme base of the wing. The tail varies in length from short to moderately long. The male genitalia have no lobe on the ampulla and a slightly lobed dorsal ridge on the harpe. The sclerotized lower lip of the aedeagus is much longer than the upper lip and spike-like and the cornutus is robust with long bristles. The uncus is short. The gnathos in ventral view is relatively broad and spatulate with the caudal end entirely spiculate. The female genitalia have a broad V-shaped notch on the caudal end of the lamella postvaginalis and distinct sclerotized pads on the lateral lobes of the lamella antevaginalis. The very broad ductus bursae has a long, sclerotized V-shaped or U-shaped internal structure. Four species of this group have been seen; three are described as new below.

Aguna glaphyrus (Mabille, 1888) **stat. rev.**

Figs 21, 47, 73

Eudamus glaphyrus Mabille, 1888; revised status. Type locality: Blumenau, [Santa Catarina] Brésil. Type: **LECTOTYPE** female with only the two left wings (designated here) at ZMHB, with the following labels: / Origin. / *E. glaphyrus* Mab. / *Glaphyrus* Mab. / Blumenau Fedurch. [?]/, and the following labels to be added: / **LECTOTYPE** / Lectotype *Eudamus glaphyrus* Mabille, 1888 det. Austin & Mielke 1996/.

Aguna williamsi Hayward, 1935; **new synonymy**. Type locality: Puerto Bemberg, Misiones, Argentina. Type: holotype female collected by Hayward in the Breyer collection, Facultad de Ciencias Naturales y Museo, Universidad Nacional de la Plata, Argentina, with the following labels: / Typus / 1934 Misiones / *Goniurus* sp. H. 81 / No. 65 K. J. Hayward det. / *Aguna* (?) *williamsi* Hayward Holotipo / 2513/.

Description. Male – forewing length = 21.0, 21.6 mm (sample from southern Brazil); head blue, yellow-white in front of eyes, whiter beneath and behind, palpi yellow-white, antennae black, pale yellowish beneath club and shaft distad. Dorsal thorax blue, venter ochreous, legs brown with ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments, venter brown with broad ochreous transverse bands, brown expanded at middle giving impression of dark midline on some individuals.

Dorsal wings very dark brown; forewing broadly rounded; base with intense blue scales extending about 1/2 distance to termen along anal margin and nearly to discal spot row anteriorly; hyaline macules white; macule in CuA2-2A triangular, detached distad by its width or less from macule in CuA1-CuA2, this somewhat

hourglass-shaped, slightly concave on distal and proximal margins, usually fully overlapping discal cell macule of similar shape but slightly narrower, anterior edge broader than posterior edge, overlaps double conjoined costal macules, more or less centered over and narrower than discal cell macule; macule in M3-CuA1 usually absent, rarely a thin line, well separated from macule in CuA1-CuA2; well proximal to macule in CuA2-2A and subapical macules; two small aligned subapical macules in R1-R2 and R2-R3, no macule in R3-R4, another minute macule offset distad in R5-M1, this often absent; fringe pale brown.

Hindwing with termen slightly convex; proximal blue scaling posterior to vein Rs, extending about 1/2 wing width; tail of moderate length (4.5 mm), broad (3 mm); fringe pale brown, dark brown on tail.

Ventral forewing paler brown than dorsum with ochreous scales at very base of costa and discal cell; posterior margin pale gray; macules repeated from dorsum.

Ventral hindwing brown, sparsely overscaled with pale ochreous scales basad; central band from Sc+R1 to 2A narrow (1 mm), of equal width throughout, very slightly concave distad, edges relatively regular, slightly narrower anteriorly, not hooked at posterior end, white.

Genitalia (N = 1). Tegumen of moderate width in lateral view, uncus short, somewhat hooked; gnathos in lateral view narrow, slightly curved; saccus long, slightly curved; valva with costa broad, ampulla relatively straight, spiculose on inner side caudad; proximal end of harpe produced slightly into a small spiculose lobe, this of same height as caudal end of ampulla, caudal end of harpe bluntly rounded, sacculus broad, produced caudad; aedeagus longer than valva, upper lip broad, row of bristles on right margin, lower lip much longer than upper, tip heavily sclerotized, spike-like.

Female. Forewing length = 22.8 mm (21.7-23.2, N = 6; sample from southern Brazil); similar to male; wings broader; tail longer (5.5-6 mm); band on ventral hindwing similarly narrow (0.5-1 mm).

Genitalia (N = 1). Papillae anales moderately concave, ventral lobe broad, dorsal lobe narrow, longer than ventral lobe; lamella postvaginalis with caudal margin lobate, broad V-shaped central indentation; lamella antevaginalis with central lobes narrow, very shallowly divided, lateral lobes with broad tear drop-shaped sclerotized pads; antrum broad, fused with lamella antevaginalis, cephalad end with distinct folds; ductus bursae very broad with narrow sclerotized U-shaped structure; corpus bursae stout, elongate.

Distribution and phenology. This species occurs in northeastern Argentina and southern Brazil north to at least southern Minas Gerais and has been recorded throughout the year.

Specific records. ARGENTINA: *Misiones*; Dos de Mayo (Aug.; UFPC), BRAZIL: *Minas Gerais*; Belo Horizonte (May; UFPC), Cambuquira (Mar., Nov.; UFPC), Carangola (Sept.; UFPC), Poços de Caldas (Apr.; UFPC), Carmo do Rio Claro (Feb.; UFPC); Viçosa (Feb.; UFPC), *Paraná*; Alexandra (Apr.; UFPC), Castro (no date; BMNH), Foz de Iguaçu (Feb., Dec.; UFPC), *Rio de Janeiro*; Petrópolis (Aug.; UFPC), *Rio Grande do Sul*; Tucunduva (Feb.; UFPC), *São Paulo*;

no location (no date; BMNH); *Santa Catarina*; São Bento do Sul (Jan., Feb., Mar.; AME, UFPC), Seara (Nova Teutônia) (Mar., June, Dec.; CM, UFPC), Joinville (Jan., Mar., Apr., Aug., Dec.; UFPC), Campo Alegre (Mar.; UFPC), Blumenau (no date; ZMHB), PARAGUAY: Itaquiri (Jan.; UFPC). EVANS (1952) and MIELKE (1971) gave the following records. ARGENTINA; *Misiones*; Puerto Bamberg, El Dorado, BRAZIL: *Amazonas*; Rio Negro [worn specimen questioned by MIELKE (1971); perhaps Rio Negro in Paran ], *Minas Gerais*; Passa Quatro, *Rio de Janeiro*; Parque Nacional de Itatiaia, *S o Paulo*; *Paran *; Guarapuava. BIEZANKO & MIELKE (1973) and MIELKE (1980) added BRAZIL: *Rio Grande do Sul*; Santa Rosa, Machado. EVANS' (1952) record for Panama is in error; MIELKE (1971) suggested that this was a mistranscription of Paran  in Brazil.

Discussion. *Aguna glaphyrus* is immediately recognized by the bright blue of the dorsal wing bases and white macules. No other known *Aguna* is so marked. Although EVANS (1952) associated this species with his "coelus" group species, the male and female genitalia are very similar to those of the three species which follow. Male genitalia were previously illustrated (as *A. williamsi*) by EVANS (1952).

MABILLE'S (1888) *Eudamus glaphyrus* has long resided in the synonymy of *A. albistria*. Although WILLIAMS (1926) noted decided differences between the two taxa, EVANS (1952) retained the association. This synonymy is obviously incorrect and the name actually is the senior synonym of HAYWARD'S (1935) *Aguna williamsi*. Although the original description (MABILLE 1888) indicated the wing bases as brilliant metallic green ("vert m tallique brillant"), the associated figure matches only that of *Aguna glaphyrus* and its synonym; the wing bases of the lectotype are blue.

Aguna penicillata Austin & Mielke sp.n.

Figs 22, 48, 74

Description. Male – forewing length = 19.5 mm (18.8-20.2, N = 4; types); head green, vague whitish line beneath antennae, yellow-white in front of eyes, whiter beneath and behind, palpi yellow-white with interspersed black scales, green tinge anteriorly, antennae black above, ochreous to pale brown beneath club, shaft with white segmental lines proximad on inner surface and often with whitish distad before club. Dorsal thorax green, venter ochreous becoming green laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with scattered long hair-like white scales, venter pale yellow with narrow to moderate-width brown central line.

Dorsal wings dark brown; forewing slightly produced, broadly rounded; base with long green scales most extensive posteriorly extending nearly to termen along anal margin and to discal macules anteriorly; hyaline macules very pale yellow; macule in CuA2-2A bar-shaped, slightly curved, contiguous with to slightly separated distad from macule in CuA1-CuA2, this largest, relatively broad, very slightly concave both distad and proximad, usually partly overlapping relatively large macule in discal cell, this somewhat hourglass-shaped, anterior edge broader than posterior edge, overlaps double conjoined costal macules, narrower than discal cell

macule, distal edges in line with distal edge of discal cell macule; macule in M3-CuA1 more or less quadrate (may be bar-shaped), separate distad from macule in CuA1-CuA2 by about its width but slightly proximal to macule in CuA2-2A and subapical macules; two aligned subapical macules in R1-R2 and R2-R3, absent to minute macule in R3-R4 offset distad 1/2 distance to somewhat larger macule still further offset distad in R5-M1; fringe about of ground color.

Hindwing with termen straight; extensive green scaling to within 1 mm of termen posterior to vein Rs; tail short (3-3.5 mm), broad (2.5-3 mm); fringe whitish with slight ochreous tinge, dark brown on tail.

Ventral forewing paler brown than dorsum with a few scattered ochreous scales basad, especially in discal cell; posterior margin pale gray, this extending slightly into cell CuA2-2A; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, extensively overscaled with pale ochreous scales especially basad; long green scales basad especially in discal cell; anal margin with long pale ochreous-brown scales distad, prominent; central band from Sc+R1 to 2A of narrow width (1.5 mm), broadest caudad where weakly hooked, slightly concave distad, edges slightly irregular where constricted or expanded at veins, white.

Genitalia (N = 14). Tegumen narrow in lateral view, uncus short, slightly curved; gnathos in lateral view narrow, relatively straight, broadest about 1/3 distance from caudal end; saccus long, slightly curved; valva with anterior end of costa broad, ampulla relatively straight and smooth; proximal end of harpe produced dorsad into toothed, blunt lobe, this sometimes slightly extended dorsad above caudal end of ampulla, caudal end of harpe blunt and rather short, sacculus roughly rectangular; aedeagus longer than valva, caudal end not spiculose, upper lip broad and blunt, row of bristles on right margin, lower lip much longer than upper, spike-like with sharply pointed tip and small spines.

Female. Forewing length = 20.7 mm (20.3-21.2, N = 3; from type locality); similar to male with broader wings and macules; tails 5-6 mm; band on ventral hindwing broader (2.0 mm).

Genitalia (N = 3). Papillae anales slightly concave, dorsal and ventral lobes about equal; lamella postvaginalis with caudal end rather straight, shallow V-shaped central indentation; lamella antevaginalis broadly lobate centrally, shallowly concave at midpoint, lateral lobes with small triangular sclerotized pads; antrum appears fused with lamella antevaginalis, cephalad end a lightly sclerotized band; ductus bursae very broad with broad sclerotized U-shaped structure; corpus bursae not seen.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 3 December 1991 / leg. G.T. Austin / (associated with *Eciton burchelli*); white, printed and handprinted – Genitalic Vial / GTA – 1641; red, printed – HOLOTYPE / *Aguna penicillata* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted; females are not included in the type series): 1 male – same data as holotype; 1 male – 14 June 1993 (at paper lures, 1130-1200); 1 male – 13 Aug. 1993 (at paper lures, 1300-1330); 1 male – 15 Aug. 1993 (at paper

lures, 1230-1300); 1 male – 17 Aug. 1993 (associated with *Eciton burchelli*, 1300-1330); 1 male – 13 Nov. 1994 (associated with *Eciton burchelli*, 1230-1300); 1 male – 18 Nov. 1994 (at paper lures, 0900-0930); 1 male -18 Nov. 1994 (at paper lures, 1000-1030); 1 male – 18 Nov. 1994 (at paper lures, 1500-1530); 2 males – 5 Dec. 1991 (associated with *Eciton burchelli*); 1 male – 21 Nov. 1992 (at paper lures, 0900-0930); 1 male – 22 Nov. 1992 (at paper lures, 1400-1430).

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, UFPC, and USNM.

Type locality. BRAZIL: *Rondônia*; 62 kilometers south of Ariquemes, approximately 5 km northeast of Cacaupândia, linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, 180 meters in typical lowland tropical rainforest.

Etymology. The name means “little tail” and refers to the spike-like lower lip of the aedeagus.

Distribution and phenology. *Aguna penicillata* is known only from the vicinity of the type locality in central Rondônia, Brazil from June to December. This rare forest species occurs at army ant swarms and is attracted to paper lures.

Specific records. BRAZIL: *Rondônia*; vic. Cacaupândia, Fazenda Rancho Grande (June, July, Aug., Nov., Dec.; UFPC, NSM).

Diagnosis and discussion. *Aguna penicillata* is another of several previously undescribed and superficially very similar species which must be dissected for determination. *Aguna penicillata* is distinguished by the aedeagus with a long ventral spike and bristles on the right side of the upper lip and the dorsal process of the harpe which extends dorsad of the ampulla. *Aguna coelus* and *A. coeloides* do not have the long ventral spike on the aedeagus, have a prominent dorsal lobe on the ampulla, and have a strongly toothed dorsal ridge of the harpe. *Aguna glaphyrus*, with similar genitalia, is blue on the dorsal surface. Three females are tentatively associated with this species based on the shapes and distributions of the forewing macules.

Aguna spicata Austin & Mielke **sp.n.**

Figs 23, 49, 75

Description. Male – forewing length = 19.6 mm (19.0-20.0, N = 8); very similar to *A. penicillata*, differs as follows: slightly bluer dorsal basal scaling; macules nearly white; macule in CuA2-2A triangular, contiguous with or slightly separated distad from macule in CuA1-CuA2, this somewhat more concave on both sides, macule in discal cell more quadrate with anterior edge equal to or only slightly broader than posterior edge; distal margins of costal macules often extending distad beyond distal margin of discal cell macule; macule in M3-CuA1 separated by more than its width from macule in CuA1-CuA2, more or less in line with macule in CuA2-2A and subapical macules; subapical macule in R3-R4 closer to and often slightly overlapping that in R2-R3.

Hindwing with termen straight to slightly convex; tail short to moderate length (3-6 mm, narrow (2-2.5 mm); fringe pale gray, dark brown on tail.

Ventral hindwing distal area on anal margin paler, less prominent; central band straighter, narrow (1 mm), of relatively equal-width throughout, not hooked at distal end.

Genitalia (N = 42). Similar to *A. penicillata* with long spike-like lower lip to aedeagus, spines larger; valva not as broad or angulate cephalad; dorsal lobe of harpe about equal in height to ampulla.

Female. Forewing length = 21.0, 21.3 mm (from type locality); similar to male with slightly broader wings and macules; tails long (7 mm), narrow (2.5 mm); white band on ventral hindwing broader (1.5 mm).

Genitalia (N = 3). Papillae anales like *A. glaphyrus*, moderately concave, ventral lobe broad, dorsal lobe narrow, longer than ventral lobe; lamella postvaginalis similar to *A. penicillata*, thinner, lamella antevaginalis with central portion not lobate, caudal edge curved, lateral lobes with more or less rounded sclerotized pads; antrum as on *A. penicillata*; ductus bursae broad with narrow sclerotized V-shaped structure; corpus bursae elongate.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 30 November 1991 / leg. G.T. Austin / (associated with / *Labidus praeator*); white, printed and handprinted – Genitalic Vial / GTA – 1628; red, printed – HOLOTYPE / *Aguna spicata* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted; the females are not included in the type series): 1 male – 17 Apr. 1992 (associated with *Eciton burchelli*, 1000-1030); 1 male – 9 June 1993 (at paper lures, 1030-1100); 1 male – 12 June 1993 (associated with *Eciton burchelli*, 1530-1600); 1 male – 12 June 1993 (associated with *Eciton burchelli*, 1600-1630); 1 male – 14 June 1993 (at paper lures, 1100-1130); 1 male, 14 June 1993 (at paper lures, 1400-1430); 1 male -14 June 1993 (at paper lures, 1500-1530); 1 male – 17 June 1993 (at paper lures, 1030-1100); 1 male – 17 June 1993 (at paper lures, 1100-1130); 1 male, 17 June 1993 (at paper lures, 1430-1500); 1 male – 16 July 1994; 1 male – 22 July 1994; 1 male – 16 Aug. 1993 (associated with *Eciton burchelli*, 1030-1100); 1 male – 16 Aug. 1993 (associated with *Eciton burchelli*, 1430-1500); 1 male – 17 Aug. 1993 (associated with *Eciton burchelli*, 0930-1000); 1 male – 17 Aug. 1993 (associated with *Eciton burchelli*, 1100-1130); 1 male – 17 Aug. 1993 (associated with *Eciton burchelli*, 1630-1700); 1 male – 23 September 1992; 1 male – 7 Oct. 1993 (at paper lures, 0830-0900); 1 male – 10 Oct. 1993 (at paper lures, 0930-1000); 1 male – 30 Nov. 1991; 1 male – 9 Nov. 1992 (associated with *Eciton burchelli*, 1000-1030); 1 male – 13 Nov. 1994 (associated with *Eciton burchelli*, 0900-0930); 1 male – 14 Nov. 1992 (associated with *Eciton burchelli*, 1230-1300); 1 male – 18 Nov. 1994 (at paper lures, 0900-0930); 1 male – 18 Nov. 1994 (at paper lures, 1230-1300); 1 male – 19 Nov. 1992 (at paper lures, 1200-1230); 1 male -same location but 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18 – 15 June 1993 (at paper lures, 1000-1030); 1 male – 15 June 1993 (at paper lures, 1330-1400); 1 male – 15 June 1993 (at paper lures, 1430-1500); 1 male – 17 July 1994 (at paper lures); 1 male – 15 Aug. 1993 (at paper lures, 1200-1230); 1 male – 25 September 1992; 1 male – 18 Nov. 1992 (associated with *Eciton burchelli*, 1000-1030); 1 male – lot 18, 22 Nov. 1992 (at paper lures,

1230-1300); 1 male – lot 18, 22 Nov. 1992 (at paper lures, 1330-1400); 1 male – lot 18, 22 Nov. 1992, *leg.* G. Bongiorno (at paper lures, 1300-1330); 1 male – lot 18, 22 Nov. 1992, *leg.* G. Bongiorno (at paper lures, 1400-1430); 1 male – BRAZIL: Rondônia; linha 10, 5 km S of Cacaulândia, 1 May 1995, *leg.* O. Gomes; 1 male – BRAZIL: Minas Gerais; Paracatu, BR 040, km 490, 13 May 1969, *leg.* S.S. Nicolay.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, UFPC, and USNM.

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

Etymology. This species is also named after the long, spike-like, lower process of the aedeagus.

Distribution and phenology. *Aguna spicata* is known from western and central Brazil. Records are for April to November. This common forest interior species is usually encountered at army ant swarms and paper lures in central Rondônia.

Specific records. BRAZIL: Minas Gerais; Paracatu, BR 040, km 490 (May; USNM), Paracatu (May, June; UFPC), Rondônia; vic. Cacaulândia, Fazenda Rancho Grande (Apr., May, June, July, Aug., Sept., Oct., Nov.; UFPC, NSM).

Diagnosis and discussion. *Aguna spicata* is distinguished from *A. penicillata* as indicated in the description above and from the other foregoing species as is *A. penicillata*. As for the preceding species, the female is associated on the basis of the shapes and orientations of the forewing macules. The genitalia differ from the female assigned to *A. penicillata* by the thin lamella postvaginalis, lack of distinct central lobes of the lamella antevaginalis, and the narrow V-shaped structure of the ductus bursae.

Aguna longicauda Austin & Mielke sp.n.

Figs 24, 50, 76

Description. Male – forewing length = 19.6 mm (holotype); very similar to *A. penicillata*; differs as follows: venter of abdomen brown with narrow to moderate-width ochreous transverse bands; macule in CuA2-2A triangular, slightly overlapping macule in CuA1-CuA2; subapical macules in R3-R4 overlapping those in both R2-R3 and R5-M1.

Hindwing with termen straight; tail long (7 mm), broad (3 mm).

Ventral hindwing with pale distal area on anal margin very faint; central band narrow (1 mm), constricted cephalad, not expanded caudad, slightly concave distad at posterior end, edges somewhat irregular, not hooked at posterior end, white with slight ochreous tinge posteriorly.

Genitalia (N = 1). Similar to *A. penicillata* with long spike-like lower lip to aedeagus; gnathos slightly broader; valva not as broad or angulate cephalad; ampulla spiculate, dorsal lobe of harpe about equal in height to ampulla; upper lip of aedeagus with bristles on left margin.

Female. Forewing length = 23.2 mm (N = 1, from Rondônia); similar to male with somewhat broader wings and macules; tails missing, ventral hindwing white band broader (2 mm).

Genitalia (N = 1). Papillae anales with lobes about equal in length; lamella postvaginalis narrow and deeply excavate on caudal edge; pads of lamella antevaginalis rounded; antrum relatively narrow; ductus bursae and corpus bursae not seen.

Type. Holotype male with the following labels: white, printed – BRASIL: Rondônia / ca 70 km S / Ariquemes / B-80 between / linhas 10 & 15 / 1 December 1991 / leg. G.T. Austin / (paper lures); white, printed and handprinted – Genitalic Vial / GTA – 1672; red, printed – HOLOTYPE / *Aguna longicauda* / Austin & Mielke. The female is not included in the type series.

Deposition of type. The holotype and the female are deposited in the collection at UFPC.

Type locality. BRAZIL: *Rondônia*; about 70 kilometers south of Ariquemes, road B-80 between linhas 10 and 15, 200 meters. This is approximately 15 km east of Cacaupândia in typical lowland tropical rainforest.

Etymology. The name meaning “long-tailed” refers both to the long lower lip of the aedeagus and to the hindwing tails which are longer than on other dorsally green species of this group.

Distribution and phenology. This species is known only from the holotype taken in early December at paper lures in the forest and a probable female from the same area.

Specific records. BRAZIL: *Rondônia*; vic. Cacaupândia (Dec.; UFPC).

Diagnosis and discussion. *Aguna longicauda* is the last of four species with a well sclerotized, thin, lower process on the aedeagus which extends far distad of the caudal end of the upper lip. *Aguna longicauda* is immediately distinguished from the other species of this group by the bristles on the left side of the upper lip of the aedeagus; these bristles are on the right side on *A. glaphyrus*, *A. penicillata*, and *A. spicata*. It also differs in minor structural characters of the valva and superficial characters, especially the longer tail on the hindwing. The female is tentatively assigned here based on the much broader forewing macules than on either of the preceding two species and its different genitalia.

“GANNA” GROUP

“*Ganna*” group *Aguna* species have blue-green dorsal wing bases and green scaling on the ventral hindwing confined to the extreme base. Tails vary in length from short to very long. The male genitalia have a lobe on the ampulla which is directed caudad, the dorsal ridge of the harpe may be toothed or not, the caudal end of the aedeagus has two sets of bristles, and the cornutus is palmate. The uncus is short. The gnathos in ventral view varies from narrow and pointed to broad and spatulate with the caudal end spiculate either laterad or entirely. The female genitalia have a broad, V-shaped notch on the caudal end of the lamella postvaginalis and the lobes of the lamella antevaginalis are not sclerotized. Five species, of which four are described as new below, are assigned to this group.

Aguna ganna (Möschler, 1879)

Figs 25, 51, 77

Thymeles ganna Möschler, 1879. Type locality: Venezuela. Type: holotype female [recte male] at ZMHB, with the following labels: / Type Vhdlg. zool. bot. Ges. 1878. p. 204 / Origin. / Columb. Puerto Cabello Stk. 77 / *Ganna* Möschl. / *Ganna* Möschl. / Coll. Möschler/.

Description. Male – forewing length = 17.6 (17.1-17.9, N = 5; sample from Panama); head blue-green with a few scattered whitish scales, whitish line beneath antennae, yellow-white in front of eyes, whiter beneath and behind, palpi yellow-white with many interspersed black scales, slight green tinge anteriorly, antennae black above, ochreous to pale brown beneath club, shaft with white segmental lines proximad on inner surface and often with whitish distad before club. Dorsal thorax blue-green, venter ochreous becoming blue-green laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with scattered long hair-like white scales, venter brown with moderate-width ochreous transverse bands.

Dorsal wings dark brown; forewing slightly produced, moderately rounded; base with long blue-green scales most extensive posteriorly extending nearly to termen along anal margin, very sparsely green-scaled anteriorly to discal macules and beyond; hyaline macules very pale yellow; macule in CuA2-2A triangular, contiguous with or slightly overlapping macule in CuA1-CuA2, this usually largest, narrow, hourglass-shaped, concave both distad and proximad, slightly separated by its width from macule in discal cell, this also hourglass-shaped, anterior edge slightly broader than posterior edge, overlaps double conjoined costal macules, narrower than or nearly equal to discal cell macule, distal edges in line with distal edge of discal cell macule; macule in M3-CuA1 narrow, vertical bar-shaped, separate distad from macule in CuA1-CuA2 by its width or more, but proximal to macule in CuA2-2A, long axis usually aligned with anterior subapical macules; two aligned subapical macules in R1-R2 and R2-R3, smaller macule in R3-R4 offset distad, slightly overlapping macule in R2-R3, another somewhat larger, narrow, quadrate macule still further offset distad in R5-M1; fringe pale gray.

Hindwing with termen straight to slightly convex; blue-green scaling densest proximad, extending to within 1 mm of termen posterior to vein Rs; tail long (7-7.5 mm), narrow (2 mm); fringe whitish, dark brown on tail.

Ventral forewing paler brown than dorsum with a few scattered ochreous scales; posterior margin pale gray; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, extensively overscaled with pale ochreous scales; long gray-green scales basad especially at base of discal cell; anal margin with long pale ochreous-brown scales distad, not prominent; central band from Sc+R1 to 2A of very narrow width (0.5-1 mm), edges regular, slightly concave distad, weakly hooked at posterior end, white.

Genitalia (N = 3). Tegumen narrow in lateral view, uncus of moderate length, slightly curved; gnathos in lateral view narrow; saccus long, slightly curved; valva with dorsal edge of ampulla produced caudad into short, somewhat rounded,

toothed, process, overlapping proximal end of harpe but not clearly separate from it, dorsal edge of harpe with small hump at about mid point, caudal end of harpe blunt and short, sacculus broadly convex; aedeagus longer than valva, smooth, distal end with cluster of robust bristles on right side, those on left side few and hair-like, ventral surface with short bristles caudad of middle.

Female. Forewing length = 19.4 mm (19.1-20.2, N = 5; sample from Panama); similar to male; wings broader; macules larger; hindwing tail longer (7.5-8 mm); band on ventral hindwing broader (1-1.5 mm).

Genitalia (N = 2). Papillae anales slightly concave, dorsal lobe longer than ventral; lamella postvaginalis broad, caudal end rounded to nearly square, central notch shallow V-shaped; lamella antevaginalis with two large central lobes, deeply divided, distal edges curved cephalad, lateral lobes membranous; antrum poorly defined; ductus bursae narrow, short; corpus bursae elongate.

Distribution and phenology. *Aguna ganna* occurs from southern Central America to northern South America with records scattered throughout the year.

Specific records. COLOMBIA: Santa Marta (no date; BMNH), Magdalena; Bonda, 250' (June, July; CM), Don Amo, 2000' (July), COSTA RICA: Puntarenas Prov.; Ruta 34, 1.1 km N Tarcoles (Sept.; NSM), PANAMA: Canal Zone; Farfan (Feb.; AME, USNM), VENEZUELA: Yaracuy area (June; USNM), Caracas (Dec.; USNM), Puerto Cabello (no date; BMNH). Many records attributed in the literature (e.g. EVANS 1952; MIELKE 1971; DE JONG 1983) to *A. ganna* probably refer to one or more of the following species.

Discussion. A long-tailed species, *A. ganna* is distinguished by its relatively small size, whitish macules, and an aedeagus which has bristles on the ventral surface. This latter character has not been seen on any other *Aguna*. The type of *Thymele ganna* was examined and corresponds (at least partially) with EVANS' (1952) identification of this species in northern South America. A male each from Venezuela and from Colombia dissected by him are identical to the above described phenotype.

WILLIAMS (1926) illustrated an entirely different species (described in the following species group) as *A. ganna*. A single male of the "ganna" group with bristles on the venter of the aedeagus, but with yellowish macules having a somewhat different orientation than the white macules on *A. ganna* was seen from Peru (Loreto; Pebas, Nov.; UFPC). This may represent a different species, but awaits additional comparative material. This represents a considerable distributional disjunction from known populations of *A. ganna*.

Aguna panama Austin & Mielke sp.n.

Figs 26, 52, 78

Description. Male – forewing length = 20.6 mm (holotype), 19.0 mm (paratype); similar to *A. ganna*; differs as follows: forewing longer, more produced; macules yellower; macule in CuA2-2A usually overlapping that in CuA1-CuA2, this contiguous with or separated by less than its width from macule in discal cell.

Hindwing with termen nearly straight; tail long (7-7.5 mm), narrow (2.5 mm).

Ventral hindwing with central band narrow (1.0 mm), straight to slightly concave distad, irregular, inconspicuous hook at posterior end.

Genitalia (N = 4). Similar to *A. ganna*; process of ampulla much longer and curved somewhat dorsad, clearly separated from harpe; aedeagus with large cluster of semi-erect bristles on caudal end of left dorsal side as well as bristle cluster on right side.

Female. Forewing length = 20.9 mm (19.7-21.5, N = 7; paratypes); similar to male with somewhat broader wings and macules; tail very long (8.5-9.5 mm); band on ventral hindwing broader (1.5-2 mm).

Genitalia (N = 4). Papillae anales straight, dorsal lobe produced caudad; lamella postvaginalis narrower than on *A. ganna*, caudal end bilobate with broad V-shaped central indentation; lamella antevaginalis with relatively narrow central lobes, not as deeply divided as on *A. ganna*, distal edges angled slightly caudad, lateral lobes membranous; antrum poorly defined; ductus bursae broader than on *A. ganna*; corpus bursae bulbous.

Types. Holotype male with the following labels: white, printed and handprinted – Farfan, / Panama C.Z. / 17 Feb. '63 / S.S. NICOLAY; white, printed and handprinted – *Aguna / ganna* / Möschler / DET. BY S.S. NICOLAY; white, printed and handprinted – Genitalia Vial / GTA – 2959; red, printed – HOLOTYPE / *Aguna panama* / Austin & Mielke. Paratypes: 1 male, 1 female – HONDURAS: no additional data; 1 male – San Pedro Sula, no date; 1 male – PANAMA: Cerro Campana, 1000', 2 Aug. 1967, leg. G. B. Small; 2 females – same location as holotype, 24 Feb. 1970, leg. Jae; 1 female – same location as holotype, 15 Feb. 1963, leg. S.S. Nicolay; 1 female – same location as holotype, 26 Jan. 1963, leg. ?; 1 female – same location as holotype, 22 Aug. 1977, leg. S. S. Nicolay; 1 female – PANAMA: Canal Zone; Rodman, 11 Jan. 1973, leg. ?; 1 female – PANAMA: Canal Zone; Cocoli, 22 June 1963, leg. G. B. Small; 1 female – PANAMA: Canal Zone; Barro Colorado, 15 Mar. 1936, leg. W. J. Gertsch; 1 female – PANAMA: Colon; Pina, 200 m, 5 Feb. 1973, leg. H. L. King; 1 male – COSTA RICA: San Mateo, Dec., leg. W. Schaus; 1 male – PANAMA: Taboga Island, 1 Feb. 1921, leg. A. Busck; 1 female – VENEZUELA: Aragua; Maracay, Rancho Grande, 26 June 1946, leg. Flemming; 1 male – E of Caracas, 1200m, 4 Apr. 1970, leg. Glassberg.

Deposition of types. The holotype is at USNM. The paratypes are there and at AME and AMNH.

Type locality. PANAMA: Canal Zone; Farfan.

Etymology. The species is named after the country of its type locality and the bulk of its known distribution.

Distribution and phenology. *Aguna panama* is known from southern Central America and Venezuela. Records are scattered throughout the year.

Specific records. COSTA RICA: San Mateo (Dec.; USNM), HONDURAS: no location (no date; UFPC), San Pedro Sula (no date; UFPC), PANAMA: Cerro Campana (Aug.; USNM), Canal Zone; Farfan (Jan., Feb., Aug.; AME, USNM),

Barro Colorado (Mar.; AMNH), Rodman (Jan.; USNM), Cocoli (June; USNM), *Colon*; Pina (Feb.; AME); Taboga Island (Feb.; USNM), VENEZUELA: *Aragua*; Maracay, Rancho Grande (June; AMNH); E of Caracas (Apr.; UFPC).

Diagnosis and discussion. Specimens of *A. panama* have invariably been included in series of *A. ganna*. It is distinguished from that species by its larger size, longer and more produced wings, yellow (vs. nearly white) macules in a stepped line, all lying at the same angle (discal cell macule is more erect on *A. ganna*), and the irregular white band on the ventral hindwing (this with relatively smooth edges on *A. ganna*). The ampulla process has a more dorso-caudal orientation than any other similar species and very short teeth. The bristle cluster on the right side of the aedeagus is shorter than on either of the two following species and that on the left side is more erect reminding one of a cock's comb.

Aguna spatulata Austin & Mielke sp.n.

Figs 27, 53, 79

Description. Male – forewing length = 19.5 mm (18.4-20.9, N = 9); head blue-green with a few scattered whitish scales, whitish line beneath antennae, yellow-white in front of and beneath eyes, whiter behind, palpi yellow-white with many interspersed black scales, slight green tinge anteriorly, antennae black above, ochreous to pale brown beneath club, shaft with white segmental lines proximad on inner surface and often with whitish distad before club. Dorsal thorax blue-green, venter ochreous becoming blue-green laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with scattered long hair-like white scales, venter brown with moderate-width ochreous transverse bands.

Dorsal wings dark brown; forewing slightly produced, moderately rounded; base with long blue-green scales most extensive posteriorly extending nearly to termen along anal margin, very sparsely scaled similarly to discal macules and beyond; hyaline macules pale yellow; macule in CuA2-2A triangular, contiguous with or slightly overlapping macule in CuA1-CuA2, this usually largest, narrow, hourglass-shaped, concave both distad and proximad, slightly separated from to slightly overlapping similarly-sized macule in discal cell, this also hourglass-shaped, anterior edge slightly broader than posterior edge, overlaps double conjoined costal macules, narrower than discal cell macule, distal edges in line with distal edge of discal cell macule; macule in M3-CuA1 narrow, vertical bar-shaped, separate distad from macule in CuA1-CuA2 by its width or more but proximal to macule in CuA2-2A, long axis usually aligned with anterior subapical macules; two aligned subapical macules in R1-R2 and R2-R3, absent to smaller macule in R3-R4 offset distad, closest to macule in R2-R3, another somewhat larger, narrow, bar-shaped macule still further offset distad in R5-M1; fringe pale gray.

Hindwing with termen straight to slightly convex; blue-green scaling densest proximad, extending to within 1 mm of termen posterior to vein Rs; tail of moderate length (4-5 mm), narrow (2-2.5 mm); fringe pale gray-brown, dark brown on tail.

Ventral forewing paler brown than dorsum with a few scattered ochreous scales; posterior margin pale gray; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, extensively overscaled with pale ochreous scales; long gray-green scales basad especially at base of discal cell; anal margin with long pale ochreous-brown scales distad, not prominent; central band from Sc+R1 to 2A of narrow width (1 mm), slightly narrower cephalad, straight, edges regular, weakly hooked at posterior end, white with ochreous tinge.

Genitalia (N = 30). Tegumen narrow in lateral view, uncus of moderate length, slightly curved; gnathos in lateral view broad, "banana"-shaped, caudal end blunt; saccus long, slightly curved; valva with dorsal edge of ampulla produced into narrow, somewhat rounded, toothed, caudad directed process, this dorsad of proximal end of harpe and clearly separated from it, dorsal edge of harpe with small hump at about mid point, caudal end of harpe blunt and short, sacculus broadly convex; aedeagus longer than valva, smooth, distal end with two clusters of robust bristles.

Female. Forewing length = 19.2 mm (N = 1, from type locality); similar to male; forewing macules of similar width; tail longer (7 mm); white band on ventral hindwing broader (2 mm).

Genitalia (N = 2). Similar to those of *A. ganna* but with lamella postvaginalis narrower.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 30 November 1991 / leg. G.T. Austin / (associated with / *Labidus praedator*); white, printed and handprinted – Genetalic Vial / GTA – 1651; red, printed – HOLOTYPE / *Aguna spatulata* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted; the females are not included in the type series): 1 male – 12 June 1993 (associated with *Eciton burchelli*, 1200-1230); 1 male – 14 June 1993 (at paper lures, 1130-1200); 1 male – 18 July 1994 (at paper lures); 3 males – 9 Nov. 1992 (associated with *Eciton burchelli*, 0930-1000); 1 male – 9 Nov. 1992 (associated with *Eciton burchelli*, 1000-1030); 1 male – 10 Nov. 1992; 1 male – 12 Nov. 1992 (associated with *Eciton burchelli*, 0900-0930); 1 male – 13 Nov. 1994 (associated with *Eciton burchelli*, 0830-0900); 1 male – 13 Nov. 1994 (associated with *Eciton burchelli*, 0900-0930); 1 male – 14 Nov. 1992 (associated with *Eciton burchelli*, 0900-0930); 1 male – 17 Nov. 1994 (at paper lures, 0830-0900); 1 male – 18 Nov. 1994 (at paper lures, 0900-0930); 1 male – 18 Nov. 1994 (at paper lures, 1000-1030); 1 male -18 Nov. 1994 (at paper lures, 1200-1230); 1 male – 20 Nov. 1992 (associated with *Eciton burchelli*, 0900-0930), 1 male – 20 Nov. 1992 (associated with *Eciton burchelli*, 1230-1300), 2 males – 21 Nov. 1992 (at paper lures, 1000-1030), 1 male, 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18, 22 Nov. 1992, leg. G. Bongioiolo (at paper lures, 0930-1000); 1 male – linha C-20 at Rio Pardo, 17 Nov. 1992 (at paper lures, 1100-1130); 1 male – 17 Nov. 1992 (at paper lures, 1130-1200); 1 male – BRAZIL: Rondônia; linha 10, 5 km S of Cacaulândia, 23 July 1995, leg. O. Gomes; 1 male – 18 Sept. 1994, leg. O. Gomes; 1 male – ARGENTINA: Tucuman, no date, leg. ?; 1 male – BRAZIL: Acre; Cruzeiro do Sul, 18-31 Mar. 1971, leg. Ebert; 1 male – Goiás; Goiás Velho, Dec.

1976, *leg.* D. Gifford; 1 male – Maranhão; Imperatriz, 20 July 1974, *leg.* Exc. Depto. Zool.; 1 male – 6 July 1974, *leg.* Exc. Depto. Zool.; 1 male – 18 July 1974, *leg.* Exc. Depto. Zool.; 1 male – 8 Aug. 1974, *leg.* Exc. Depto. Zool.; 1 female – 22 Dec. 1972, *leg.* Exc. Depto. Zool.; 1 female – 25 Aug. 1974, *leg.* Exc. Depto. Zool.; 1 male – 9 July 1974, *leg.* Exc. Depto. Zool.; 1 male – 9 Sept. 1974, *leg.* Exc. Depto. Zool.; 1 male – Mato Grosso; Barra do Bugres, 13 Nov. 1974, *leg.* Furtado; 1 male – Diamantino, Fazenda São João, Alto Rio Arinos, 1 Nov. 1975, *leg.* E. Furtado; 1 male – Pará; Óbidos, Jan. 1969, *leg.* ?; 1 male – June 1966, *leg.* Kesselring; 1 male – Piauí; Teresina, Buenos Aires, 9 Jan. 1963, *leg.* D Zajciw; 1 male – PERU: Junin; La Merced, no date, *leg.* ?; 1 male – Rio Pacura, Lower Ucayali, no date, *leg.* ?; 1 male – Madre de Dios; 0.2 km W Puerto Maldonado, 250m, Aug., *leg.* ?; 1 male – Pakitza, Parque Manu, 5 Oct. 1990, *leg.* G. Lamas; 1 male – 12 Oct. 1991, *leg.* G. Lamas; 1 female – 14 Oct. 1991, *leg.* O. Mielke; 1 male – Ucayali; Rio Calleria, 20 km from Ucayali, Oct., *leg.* ?.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, UFPC, and USNM.

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

Etymology. The name refers to the spatulate caudal projection of the ampulla of the valva.

Distribution and phenology. *Aguna spatulata* is known from north-central Argentina, west-central Brazil, and Peru. In Rondônia, it was taken in June, July, September, and November; elsewhere records are scattered throughout the year. This is another uncommon forest species in Rondônia where it associates with army ant swarms and is attracted to paper lures.

Specific records. ARGENTINA: Tucuman (no date; BMNH), BRAZIL: Acre; Cruzeiro do Sul (Mar.; UFPC), Goiás; Goiás Velho (Dec.; UFPC), Maranhão; Imperatriz (July, Aug., Dec.; UFPC), Mato Grosso; Barra do Bugres (Nov.; UFPC), Diamantino, Fazenda São João, Alto Rio Arinos (Nov.; UFPC), Pará; Óbidos (Jan., June; UFPC), Piauí; Teresina, Buenos Aires (Jan.; UFPC), Rondônia; vic. Cacaulândia, Fazenda Rancho Grande (June, July, Sept., Nov.; UFPC, NSM), PERU: Junin; La Merced (no date; BMNH), Rio Pacura, Lower Ucayali (no date; BMNH), Madre de Dios; 0.2 km W Puerto Maldonado, 250m (Aug.; USNM), Pakitza, Parque Manu (Oct.; UFPC), Ucayali; Rio Calleria, 20 km from Ucayali (Oct.; USNM).

Diagnosis and discussion. *Aguna spatulata* is superficially nearly identical to the preceding species of the “*coelus*”, “*ganna*”, and “*glaphyrus*” groups, especially *A. ganna*, where it was included by EVANS (1952, BMNH records above), and *A. panama*. The longer tails on those two species are diagnostic. The male genitalia exhibit characters of both *A. ganna* and *A. panama*. The aedeagus has clusters of bristles on both sides like those on *A. panama*, but the row on the right side is longer and those on the left side are more recumbent (not somewhat erect as on *A. panama*). The process of the ampulla has a nearly directly caudal orientation as on *A. ganna*, but the aedeagus of that species has fine bristles on the left side and bristles on the

venter. The female is associated based on placement and orientation of the forewing macules and its genitalia resembling those of *A. ganna* and not other sympatric species of the “*ganna*” group.

Aguna similis Austin & Mielke **sp.n.**

Figs 28, 54, 80

Description. Male – forewing length = 19.7 mm (19.0-20.2, N = 4); very similar to *A. spatulata*; differs as follows: dorsal green scaling somewhat denser; central macules of forewing generally more aligned with macule in CuA1-CuA2 and angled instead of erect; triangular macule in CuA2-2A slightly overlapping macule in CuA1-CuA2, this broader and overlapping macule in discal cell; macule in M3-CuA1 with orientation of long axis basad of subapical macules; subapical macule in R3-R4 contiguous with or slightly overlapping that in R2-R3, macule in R5-M1 quadrate.

Hindwing with tail relatively short (4 mm), narrow (2.5 mm); fringe paler whitish, dark brown on tail.

Ventral hindwing central band straight, narrow (1-1.5 mm), of relatively equal width throughout, irregular, slightly hooked at posterior end, white with slight ochreous tinge.

Genitalia (N = 10). Similar to *A. spatulata*; uncus of moderate length, rather strongly curved, claw-like; gnathos in lateral view narrower, rather straight on ventral edge, slightly curved on dorsal edge, broadest in about middle; valva with dorsal edge of ampulla produced into short, caudad directed lobe, spiculate at terminal end, harpe with short, lightly toothed process at mid point of dorsal edge, caudal end of harpe moderately long, narrowly rounded, sacculus broadly convex; aedeagus about length of valva, smooth, distal end with two clusters of robust bristles as on *A. spatulata*.

Female. Forewing length = 20.3 mm (N = 1, from type locality); similar to male; macules larger; hindwing tail longer (8 mm); band on ventral hindwing broader (2 mm).

Genitalia (N = 1). Papillae anales slightly concave, dorsal lobe longer than ventral; lamella postvaginalis narrow, caudal end lobate, central notch deep V-shaped; lamella antevaginalis with two small central lobes, shallowly divided, distal edges curved caudad, lateral lobes membranous; antrum poorly defined; ductus bursae broad caudad, cephalad end and corpus bursae not seen.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 20 November 1991 / leg. G.T. Austin / (associated with / *Eciton burchelli*); white, printed and handprinted – Genitalic Vial / GTA – 1638; red, printed – HOLOTYPE / *Aguna similis* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted; the female is not included in the type series): 1 male – 14 Aug. 1993 (associated with *Eciton burchelli*, 1030-1100); 1 male – 9 Nov. 1992 (associated with *Eciton burchelli*, 1000-1030); 1 male – 12 Nov. 1992

(associated with *Eciton burchelli*, 0930-1000); 1 male – 12 Nov. 1994 (at paper lures, 0930-1000); 1 male – 14 Nov. 1992 (associated with *Eciton burchelli*, 0900-0930); 1 male – 14 Nov. 1992 (associated with *Eciton burchelli*, 0930-1000); 1 male – 21 Nov. 1992 (at paper lures, 0930-1000); 1 male – BRAZIL: Rondônia; linha 10, 5 km S of Cacaulândia, 28 Aug. 1994, leg. O. Gomes; 1 male – PERU: 30 km SW Pto. Maldonado, 300 m, 5 May 1984, leg. S. S. Nicolay.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, and USNM.

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

Etymology. The name reflects the superficial similarity of this species to several other *Aguna* of the “*coelus*” and “*ganna*” groups.

Distribution and phenology. *Aguna similis* is known only from western Brazil and eastern Peru. In Rondônia, this rare forest species is found associated with army ant swarms and is attracted to paper lures.

Specific records. BRAZIL: Rondônia; vic. Cacaulândia, Fazenda Rancho Grande (Aug., Nov.; NSM, UFPC), PERU: *Madre de Dios*; 30 km SW Pto. Maldonado, 300 m (May; USNM).

Diagnosis and discussion. *Aguna similis* is most similar to *A. spatulata* to which it was compared above; the shape of the structures of the male genitalia serve as distinguishing characters. This species differs from “*coelus*”, “*glaphyrus*”, and other “*ganna*” group species as does *A. spatulata*.

The single female examined (from the type locality) has genitalia similar to *A. panama*. It was associated with *A. similis* because of its overall similarity to the males of that species in wing shape, color, and distribution of macules. The female of *A. spatulata* has broader forewing macules and different genitalia.

Aguna mesodentata Austin & Mielke sp.n.

Figs 29, 55, 81

Description. Male – forewing length = 19.5 mm (18.5-20.5, N = 4); virtually identical to *A. spatulata*; differs as follows: macule in CuA1-CuA2 normally separated distad from discal cell macule by nearly its width.

Hindwing with termen slightly convex; tail moderately long (5-5.5 mm), narrow (2.5 mm); ventral hindwing with straight, narrow (1-1.5 mm), of relatively even width, slightly irregular, white band.

Genitalia (N = 8). Similar to *A. spatulata*; uncus shorter; gnathos somewhat thinner; caudad directed process of ampulla shorter, not clearly separated from harpe, teeth directed interiorly; aedeagus with similar clump of caudal bristles on the right side, those on left side few and hair-like.

Female. Forewing length = 21.6 mm (N = 1); similar to male; forewing macules broader; tails longer (7 mm); ventral hindwing band 1.5 mm.

Genitalia (N = 1). Similar to *A. similis* with deep and broad V-shaped notch on caudal edge of lamella postvaginalis; lamella antevaginalis more deeply divided.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 19 November 1992 / leg. G.T. Austin / at paper lures / 0930-1000; white, printed and handprinted – Genetalic Vial / GTA – 2664; red, printed – HOLOTYPE / *Aguna mesodentata* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted; the female is not included in the type series): 1 male – 16 Nov. 1992 (associated with *Eciton burchelli*, 1300-1330); 1 male – 21 Nov. 1992 (at paper lures, 0830-0900); 1 male – 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18, 15 Nov. 1992 (at paper lures); 1 male – 18 Nov. 1992 (associated with *Eciton burchelli*, 0930-1000); 1 male – lot 18, 22 Nov. 1992, leg. G. Bongioiolo (at paper lures, 0930-1000); 1 male – BRAZIL: Rondônia; linha 10, 5 km S of Cacaulândia, 4 Nov. 1994, leg. O. Gomes; 1 male – BRAZIL: Mato Grosso; Barra dos Bugres, 21 May 1974, leg. E. Furtado; 1 male – Rondônia; Ariquemes, 10-20 July 1989, leg. C.G. Mielke; 1 male – PERU: Loreto; Explorama Lodge, 50 mi. downstream Amazon River from Iquitos, 25 Mar. 1981, leg. J. Y. Miller; 2 males, 1 female – *Madre de Dios*; Pakitza, Parque Manu, 27 Sept.-17 Oct. 1991, leg. Lamas, Casagrande & Robbins.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, and USNM.

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

Etymology. The species is named after the interiorly oriented teeth on the ampulla.

Distribution and phenology. *Aguna mesodentata* is known from western Brazil and northern Peru. This is a rare forest species which was taken at army ant swarms and paper lures.

Specific records. BRAZIL: Mato Grosso; Barra dos Bugres (May; UFPC), Rondônia; vic. Cacaulândia, Fazenda Rancho Grande (Nov.; NSM, UFPC), Ariquemes (July, UFPC), PERU: Loreto; Explorama Lodge (Mar.; AME), *Madre de Dios*; Pakitza, Parque Manu (Sept., Oct.; UFPC).

Diagnosis and discussion. *Aguna mesodentata* is superficially similar to most of the preceding species. The overall structure of the genitalia are like those of other “*ganna*” group taxa. The aedeagus is like that of *A. ganna* with the hair-like bristles on the left side of the caudal end. That species, however, has longer tails and bristles on the venter of the aedeagus. No other species has the teeth of the ampulla lobe clearly directed interiorly.

In addition, we have examined a few specimens of “*ganna*” group *Aguna* from scattered localities which are somewhat different in the details of the orientations of the forewing macules and genitalia. Too little material is available to determine if this represents geographical variation or if additional species are involved.

"SQUAMALBA" GROUP

The monotypic "*squamalba*" group of *Aguna* has blue-green dorsal wing bases with numerous interspersed whitish scales and the green scaling on the ventral hindwing is confined to the very base of the wing. The male genitalia have a short saccus, a prominent, dentate lobe on the dorsal harpe, and the right side of the aedeagus is much shorter than the left. The cornutus is similar to that of the "*coelus*" group. The uncus is short and the gnathos in ventral view has nearly straight and parallel sides and the caudal end is spiculose laterad. The female genitalia have a broad V-shaped indentation on the caudal margin of the lamella postvaginalis and the central portion of the lamella antevaginalis is not bilobate.

Aguna squamalba Austin & Mielke sp.n.

Figs 30, 56, 82

Aguna ganna; Williams, 1926

Aguna hypozeonius; Evans, 1952; Mielke, 1971

Description. Male – forewing length = 20.5 mm (18.6-21.6, N = 10); head blue-green with scattered whitish scales; whitish line beneath antennae, yellow-white in front of and beneath eyes, white behind eyes, palpi yellow-white with interspersed black scales, antennae black above, ochreous to pale brown beneath club; shaft with white segmental lines proximad on inner surface and often with whitish distad before club. Dorsal thorax blue-green with many scattered whitish scales, venter ochreous becoming more olive laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with scattered long hair-like white scales, venter brown with narrow to moderate-width ochreous transverse bands.

Dorsal wings dark brown; forewing produced, apex narrowly rounded; base with long blue-green scales most extensive posteriorly extending about 1/2 distance to termen; many scattered whitish scales extending to discal macular row, sparsely scaled similarly to termen; hyaline macules pale yellow; macule in CuA2-2A roughly triangular, detached distad by its width or less (rarely contiguous) to macule in CuA1-CuA2, this largest, quadrate, concave both distad and proximad, overlapping half way across relatively large macule in discal cell, distal edge often deeply concave, proximal edge less so, anterior edge broader than posterior edge, overlaps double conjoined costal macules, narrower than discal cell macule, distal edges in line with distal edge of discal cell macule; macule in M3-CuA1 vertical bar-shaped, separate distad from macule in CuA1-CuA2 by about its width but proximal to macule in CuA2-2A and subapical macules; two aligned subapical macules in R1-R2 and R2-R3, smaller macule in R3-R4 offset distad, another somewhat larger macule still further offset distad in R5-M1; fringe pale brown.

Hindwing with termen relatively straight; extensive blue-green scaling to within 1 mm of termen posterior to vein Rs with extensive whitish scales especially distad; tail short (3-4 mm), broad (3-3.5 mm); fringe whitish anteriorly, whitish to pale brown posteriorly, dark brown on tail.

Ventral forewing paler brown than dorsum with scattered ochreous scales especially basad; posterior margin pale gray, this mixed with brown anterior to vein CuA2; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, extensively overscaled with pale ochreous scales; long gray-green scales basad especially in discal cell; anal margin with long pale ochreous-brown scales distad; central band from Sc+R 1 to 2A of narrow to moderate width (1-2 mm), slightly concave distad, edges irregular, often slightly constricted or expanded at veins but of relatively equal width throughout but occasionally narrowing considerably anteriorly (to < 1 mm), vaguely hooked at posterior end, white with ochreous tinge especially posteriorly.

Genitalia (N = 48). Tegumen narrow in lateral view, uncus short, slightly curved; gnathos in lateral view straight and bar-like, caudal end blunt; saccus short, curved or not; valva with dorsal edge of ampulla more or less straight, lightly spiculose, descending caudad, proximal end of harpe produced dorsad into broad, serrated tooth-like process, this extended dorsad much above caudal end of ampulla, caudal end of harpe blunt and rather short, sacculus roughly triangular; aedeagus relatively short, blunt, left lip broad, caudal end convex and spiculose, right lip very short, concave and with bristles along caudal edge.

Female. Forewing length = 22.8 mm (22.2-23.7, N = 6); similar to male; wings somewhat broader; forewing macules average larger; less green scaling on bases of wings; white band on ventral hindwing broader (2-2.5 mm), broadest in middle; tails longer (4.5-6 mm) and narrower (2.5-3 mm).

Genitalia (N = 6). Papillae anales slightly concave, dorsal lobe slightly longer than ventral lobe; lamella postvaginalis with caudal edge variable from nearly square to lobate, always with relatively deep and broad V-shaped central indentation; lamella antevaginalis not divided into lobes centrally, caudal edge curved, lateral lobes large, membranous; antrum not clearly defined but with prominent sclerotized lateral striae; ductus bursae relatively short, not expanded; corpus bursae short, oval.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 16 November 1991 / leg. G.T. Austin; red, printed – HOLOTYPE / *Aguna squamalba* / Austin & Mielke. Paratypes (same location and collector as holotype unless noted): 1 female – 17-20 Mar. 1989, leg. O. Mielke; 1 male – 19-20 Mar. 1989, leg. O. Mielke; 3 males – 15 Apr. 1992; 1 male – 17 Apr. 1992; 1 male – 23 Apr. 1991; 1 male – 23 Apr. 1992; 1 female – 24 Apr. 1992; 1 male – 10 May 1992, leg. G. Bongioiolo; 1 male – 31 May 1992, leg. G. Bongioiolo; 3 males – 13 June 1993; 2 males – 17 June 1993; 1 male – 18 June 1993; 1 male – 19 June 1993; 1 male – 27 June 1992, leg. G. Bongioiolo; 1 male – 28 June 1992, leg. G. Bongioiolo; 1 male – 13 July 1994; 1 male – 27-28 July 1991, leg. C. Mielke & Miers; 1 male – 1 Aug. 1989, leg. Schmitz family; 1 male – 14 Aug. 1993; 1 male – 25 Sept. 1992; 2 males – 24 Oct. 1992, leg. G. Bongioiolo; 1 male – 27 Oct. 1989; 2 males – 30 Oct. 1989; 1 male – 1 Nov. 1992, leg. G. Bongioiolo; 1 male – 5 Nov. 1991, leg. J. Brock; 3 males – 7 Nov. 1991; 1 male – 8 Nov. 1991; 25 males, 2 females – 8-19 Nov. 1994, leg. O. Mielke; 1 male – 9 Nov. 1991; 1 male – 9 Nov. 1991, leg. J. Brock; 5 males

– 9 Nov. 1992; 6 males – 10 Nov. 1991; 2 males – 10 Nov. 1992; 18 males – 10 Nov. 1994; 1 male – 11 Nov. 1991; 8 males – 11 Nov. 1992; 1 male – 12 Nov. 1991; 1 male – 12 Nov. 1991, *leg.* J. Brock; 2 males – 12 Nov. 1992; 25 males – 12 Nov. 1994; 2 males – 13 Nov. 1991; 40 males – 13 Nov. 1994; 6 males, 2 females – 14 Nov. 1991; 1 male – 14 Nov. 1991, *leg.* O. Mielke; 3 males – 14 Nov. 1992; 19 males – 14 Nov. 1994; 1 male, 16 Nov. 1991; 1 male – 16 Nov. 1992; 2 males – 16 Nov. 1994; 5 males – 17 Nov. 1994; 2 males – 18 Nov. 1991, *leg.* O. Mielke; 12 males – 18 Nov. 1994; 3 males, 2 females – 19 Nov. 1991, *leg.* O. Mielke; 4 males – 19 Nov. 1992; 6 males – 20 Nov. 1991; 1 male, 1 female – 20 Nov. 1991, *leg.* O. Mielke; 5 males – 20 Nov. 1992; 1 male – 21 Nov. 1991, *leg.* O. Mielke; 3 males, 1 female – 22 Nov. 1991; 4 males – 22 Nov. 1991, *leg.* O. Mielke; 2 males – 26 Nov. 1991; 1 male, 1 female – 27 Nov. 1991; 1 male, 1 female – 30 Nov. 1991; 1 male – 3 Dec. 1991; 1 male – 4 Dec. 1991; 3 males – 5 Dec. 1991; 1 male – 13 Dec. 1990; 1 female – BRAZIL: *Bahia*; Itamaraju, 20 July 1977, *leg.* Mielke, Moure & Elias; 1 male – *Distrito Federal*; Brasília, 22 Feb. 1966, *leg.* Mielke; 1 male, no date, *leg.* Gifford; 1 male – *Goiás*; Goiânia Woods along river, 29 Apr. 1973, *leg.* C.J. Callaghan; 1 male – Serra Dourada, no date, *leg.* C.J. Callaghan; 1 male – Goianésia, 2 July 1969, *leg.* Ebert; 1 female – 2-7 Sept. 1969, *leg.* Ebert; 2 males – Goiás Velho, 5 Feb. 1980, *leg.* Gifford; 1 male – 6 Feb. 1980, *leg.* Gifford; 1 male – 5 Mar. 1977, *leg.* Gifford; 1 male – 5 Apr. 1979, *leg.* Gifford; 1 male – 8 Dec. 1980, *leg.* Gifford; 1 male – *Maranhão*; Imperatriz, 3 Aug. 1974, *leg.* Exc. Dept. Zool.; 2 females – *Mato Grosso*; Vale dos Sonhos, Barra do Garça, 25 Apr. 1978, *leg.* Gifford; 1 male – Buriti, Chapada dos Guimarães, 17 Feb. 1967, *leg.* ?; 1 male – *Minas Gerais*; km 231, Belo Horizonte-Brasília highway, Paracatu, 17-18 Apr., *leg.* C.J. Callaghan; 1 male – BR 040, km 490, Paracatu, 13 May 1969, *leg.* S. S. Nicolay; 1 male – Conceição d'Aparecida, 28 Jan. 1960, *leg.* Mielke; 1 female – 7 Feb. 1960, *leg.* Mielke; 1 male – Marliéria, Parque Estadual do Rio Doce, 9 Sept. 1972, *leg.* Ebert; 2 males – 8-9 Mar. 1984, *leg.* Ebert; 1 female – *Pará*; Itaituba, 24 Dec. 1973, *leg.* ?; 1 female – Porto Trombetas, 12 Jan. 1980, *leg.* Gifford; 1 female, – *Paraná*; Antonina, Tagaçaba, 17 Apr. 1971, *leg.* Mielke; 2 males – Antonina, Cacatu, 9 Apr. 1982, *leg.* Mielke; 1 male – 20 Apr. 1987, *leg.* Mielke; 1 male – *Rio de Janeiro*; Magé, km 20, Rio-Petrópolis Hwy, 2 May 1971, *leg.* C.J. Callaghan; 1 male – nr. Surui, 5 June 1971, *leg.* C.J. Callaghan; 1 female – Rio de Janeiro, Dona Castorina, 31 Sept. 1935, *leg.* Gagarin; 1 female – Rio de Janeiro, Estrada das Canoas, 18 Mar. 1951, *leg.* Ebert; 1 female – Rio de Janeiro, Jacarepaguá, Covanca, 8 Apr. 1962, *leg.* Mielke; 1 male, 1 female – 28 Apr. 1963, *leg.* Mielke; 1 female – 14 Apr. 1941, *leg.* d'Almeida; 1 male – 12 Apr. 1962, *leg.* d'Almeida; 1 male – Teresópolis, Barreira, 28-29 Apr. 1957, *leg.* Pearson; 1 male – Imbariê, 10 June 1956, *leg.* ?; 1 female – 11 Feb. 1964, *leg.* ?; 1 male – 11-14 Feb. 1968, *leg.* ?; 1 male – 3 Aug. 1969, *leg.* ?; 1 female – 7 Aug. 1968, *leg.* ?; 1 female, 10 Feb. 1971, *leg.* ?; 1 female – 15 Sept. 1971, *leg.* ?; 2 males – *Rondônia*; Riozinho, 7 July 1972, *leg.* Brown & Mielke; 1 male – Ouro Preto d'Oeste, 1-7 May 1987, *leg.* Elias; 2 males – Vilhena, 15 Oct. 1986, *leg.* Elias; 2 males – *Santa Catarina*; Hansa Humboldt, no date, *leg.* ?; 1 male – Hansa Humboldt, June, *leg.* ?; 1 male – Corupá (ex Hansa Humboldt), 9 Apr. 1977, *leg.* Mielke; 1 male – Joinville, 25 Apr. 1971, *leg.* Miers; 1 female – 20 Apr. 1972, *leg.* Miers; 1 female – 9 May 1973, *leg.* Miers; 1 male – 21 Nov.

1980, *leg.* Mielke; 1 male – 8 Sept. 1977, *leg.* Mielke; 1 male – 9 Dec. 1979, *leg.* Mielke & Miers; 1 female – Brusque, 24 Mar. 1973, *leg.* C. Becker; 1 female – São Bento do Sul, 850m, 16 Apr. 1971, *leg.* Weiss; 1 male – São Bento do Sul, Rio Vermelho, 10 Mar. 1973, *leg.* Rank; 1 female – 3 June 1973, *leg.* Rank; 1 female – 7 Apr. 1974, *leg.* Rank; 1 female – 7 Apr. 1981, *leg.* Rank; 1 female – 1 Feb. 1984, *leg.* Rank; 2 females – São Bento do Sul, Rio Natal, 500m, 7 Mar. 1987, *leg.* Mielke; 1 female – 850m, 6 May 1990, *leg.* Mielke; 1 male – *São Paulo*; Campinas, no date, *leg.* ?; 6 males – PARAGUAY: *General Dias*, Itaquiri, 15 Oct. 1980, *leg.* Mielke & Miers.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed to AMNH, AME, CM, NSM, UFPC, and USNM.

Type locality. BRAZIL: *Rondônia*; 62 kilometers south of Ariquemes, approximately 5 km northeast of Cacaulândia, linha C-20, 7 kilometers (by road) east of route B-65, Fazenda Rancho Grande, 180 meters in typical lowland tropical rainforest.

Etymology. The name refers to the white scales scattered among the green on the dorsal surface.

Distribution and phenology. This species appears to be relatively common in the southern half of Brazil and into adjacent Paraguay. It is the most abundant *Aguna* in central Rondônia; the species, recorded in all months, flies within the forest and is commonly associated with army ant swarms and is also attracted to lures and to bait traps.

Specific records. BRAZIL: *Bahia*; Itamaraju (July; UFPC), *Distrito Federal*; Brasília (Feb.; UFPC), *Goiás*; Goiânia Woods along river (Apr.; AME), Serra Dourada (no date; AME), Goianésia (July, Sept.; UFPC), Goiás Velho (Feb., Mar., Apr., Dec.; UFPC), *Maranhão*; Imperatriz (Aug.; UFPC), *Mato Grosso*; Vale dos Sonhos, Barra do Garça (Apr.; UFPC), Buriti, Chapada dos Guimarães (Feb.; UFPC), *Minas Gerais*; km 231, Belo Horizonte-Brasília highway, Paracatu (Apr.; USNM), BR 040, km 490, Paracatu (May; USNM), Conceição d'Aparecida (Jan., Feb.; UFPC), Marliéria, Parque Estadual do Rio Doce, (Mar., Sept.; UFPC), *Pará*; Itaituba (Dec.; UFPC), Porto Trombetas (Jan.; UFPC), *Paraná*; Antonina, Tagaçaba (Apr.; UFPC), Antonina, Cacatu (Apr.; UFPC), *Rio de Janeiro*; Magé, km 20, Rio-Petrópolis Hwy (May; AME), nr. Surui (June; AME), Rio de Janeiro, Dona Castorina (Sept.; UFPC), Rio de Janeiro, Estrada das Canoas (Mar.; UFPC), Rio de Janeiro, Jacarepaguá, Covanca (Apr.; UFPC), Teresópolis, Barreira (Apr.; UFPC), Imbariê (Feb., June, Aug., Sept.; UFPC), *Rondônia*; vicinity of Cacaulândia (Jan., Feb., Mar., Apr., May, June, July, Aug., Sept., Oct., Nov., Dec.; NSM, UFPC), Riozinho (July; UFPC), Ouro Preto d'Oeste (May; UFPC), Vilhena (Oct.; UFPC), *Santa Catarina*; Corupá (ex Hansa Humboldt) (Apr., June; AMNH, UFPC), Joinville (Apr., May, Sept., Nov., Dec.; UFPC), Brusque (Mar., UFPC), São Bento do Sul (Apr.; UFPC), São Bento do Sul, Rio Vermelho (Feb., Mar., Apr., June; UFPC), São Bento do Sul, Rio Natal (Mar., May; UFPC), *São Paulo*; Campinas (no date; BMNH), PARAGUAY: *General Dias*; Itaquiri (Oct.; UFPC). EVANS (1952) and MIELKE (1971) gave the following additional records (as *A. hypozonius*): BRAZIL: *Goiás*, *Rio de Janeiro*; Parque Nacional do Itatiaia. WILLIAMS (1926) illustrated this species (as *A. ganna*) from Chapada, *Mato Grosso*, Brazil.

Diagnosis and discussion. *Aguna squamalba* is widespread and common in southern Brazil. It is perhaps the easiest of the tailed, green species of the genus to determine superficially. The macules of the forewing, particularly that in CuA1-CuA2, are often larger than those on similar congeners and, especially, the green scales of the dorsal wing bases are interspersed with numerous white scales. These are easily seen with magnification, impart a gray-green aspect, are absent on all other similar species, and allow females to be correctly associated without dissection.

The species has been universally misidentified. WILLIAMS (1926) identified *A. squamalba* as *A. ganna*; his figures of the wings and genitalia illustrate *A. squamalba* well. EVANS (1952) considered this species to be *A. hypozonius*; his description indicated a phenotype with large forewing macules and an irregular ventral hindwing band that curved outward at its lower end. The width of this band was stated to be very narrow and there was no green suffusion noted at the base of the ventral hindwing. The large forewing macules and irregular hindwing band plus EVANS' (1952) illustration of the male genitalia delimit *A. squamalba*. Note that this figure of the male genitalia requires some imagination to be matched to WILLIAMS' (1926) figure and the genitalia illustrated herein. The genitalia of two males dissected and identified by EVANS as *A. hypozonius* were examined; these exactly match material assigned to *A. squamalba*. BROWN & MIELKE (1967) and MIELKE (1971) also identified *A. squamalba* as *A. hypozonius*. As discussed above, the original concept of *A. hypozonius* represents a subspecies of *A. aurunce*.

Aguna squamalba exhibits seasonal variation in Rondônia. Wet season individuals (September-December) are small and dark as described above. Dry season specimens (May-August) are larger (male forewing = 22.5 [22.0-23.5, N = 4]), have somewhat longer tails (4-5 mm), and are paler brown on both wing surfaces, almost a yellow-brown on the venter. The central band on the ventral hindwing also has a stronger ochreous color than on wet season individuals. Similarly, material from elsewhere in Brazil (Corupá, June; Mato Grosso, May) have this aspect. There is no corresponding variation in the genitalia.

“PARVA” GROUP

The single species assigned to the “parva” group is of small size and the dorsal wing bases are somewhat greenish blue. The tails are long. The male genitalia have a short valva similar in form to that of the “glaphyrus” group with a smooth dorsal ridge to the ampulla and a toothed dorsal ridge on the harpe. The aedeagus has a smooth left lip and a shorter right lip with caudal bristles. The cornutus is long and very slender. The uncus is of intermediate length. The gnathos in ventral view is narrowly spatulate with an entirely spiculate caudal end. The female genitalia have a narrow lamella postvaginalis with a broad and shallow notch on the caudal end. The lateral lobes of the lamella antevaginalis are membraneous and the ductus bursae is long and thin.

Aguna parva Austin & Mielke sp.n.

Figs 31, 57, 83

Description. Male – forewing length = 15.5 mm (14.0-16.9 mm, N = 10, types); head somewhat iridescent greenish blue (dull green in sidelight), vague whitish line beneath antennae, yellow-white in front of eyes, white beneath and behind eyes, palpi yellow-white posteriorly, white with slightly green tinge and interspersed black scales anteriorly, antennae black, some ochreous to pale brown scales beneath club, shaft with white segmental lines proximad on inner surface. Dorsal thorax greenish blue, venter pale ochreous with green tinge becoming greenish blue laterad beneath wings, legs brown with pale brown and ochreous scales. Abdomen dark brown above, slightly paler and grayer at segments with long hair-like greenish blue scales anteriorly, venter pale ochreous with moderate-width central brown line.

Dorsal wings dark brown; forewing slightly produced, moderately rounded; base with long greenish blue scales most extensive posteriorly extending two-thirds distance to termen along anal margin and to discal macules anteriorly; hyaline macules nearly white; macule in CuA2-2A triangular, overlapping slightly macule in CuA1-CuA2, this largest, straight basad, concave distad with posterior edge produced distad, narrowly separated from relatively large macule in discal cell, this broad, somewhat hourglass-shaped, anterior edge slightly broader than posterior edge, overlaps double conjoined costal macules, slightly narrower than discal cell macule, these centered over discal cell macule; macule in M3-CuA1 more or less quadrate, slightly overlapping macule in CuA1-CuA2, slightly proximal to macule in CuA2-2A and more so to subapical macules; three aligned subapical macules in R1-R2, R2-R3, and R3-R4, the latter smaller, another somewhat larger macule offset distad in R5-M1, this contiguous with or slightly overlapping macule in R3-R4; fringe about of ground color anteriorly, whitish towards tornus.

Hindwing with termen straight to slightly convex; rather sparse greenish blue scaling to within 1-2 mm of termen posterior to vein Rs; tail long (6-7 mm), narrow (1.5 mm); fringe whitish, dark brown on tail.

Ventral forewing paler brown than dorsum with a few scattered ochreous scales basad, especially in discal cell; posterior margin pale gray, this grading to brown anteriorly; macules repeated from dorsum; a few greenish scales at very base of wing.

Ventral hindwing brown, extensively overscaled with pale ochreous scales especially basad; long dull olive-green scales basad especially in discal cell; central band from Sc+R1 to 2A very narrow (0.5-1 mm), more or less straight, edges slightly irregular, slightly constricted or expanded at veins but of relatively equal width throughout, not hooked at posterior end, white.

Genitalia (N = 6). Tegumen narrow in lateral view, uncus short, relatively straight; gnathos in lateral view straight, narrow, terminal end pointed; saccus long, slightly curved; valva broad, short, ampulla smooth dorsad, serrate on inner edge, anterior end of dorsal edge of harpe produced dorsad into short, lightly dentate lobe,

this about equal in height to caudal end of ampulla, caudal end of harpe broadly pointed, sacculus narrow, slightly convex; aedeagus longer than valva, left lip smooth, narrowly rounded, right lip shorter, truncate, caudal end with large cluster of bristles; cornutus long, slender.

Female. Forewing length = 15.2 mm (14.1-15.7, N = 4; paratype plus others from Brazil); very similar to male; tail long (7 mm), ventral hindwing with similar band (1 mm).

Genitalia (N = 3). Papillae anales nearly square; lamella postvaginalis with caudal margin rounded, very shallow central indentation; lamella antevaginalis with central lobes broadly separated, lateral lobes membranous; antrum well-developed, caudal margin convex, posterior portion bulbous with sclerotized lateral striae; ductus bursae long, narrow, and tube like; corpus bursae relatively small, oval.

Types. Holotype male with the following labels: white, printed – BRASIL: Rondônia / 62 km S Ariquemes / linha C-20, 7 km E / B-65, Fazenda / Rancho Grande / 20 November 1992 / leg. G.T. Austin / associated with *Eciton burchelli* – 0900-0930; red, printed – HOLOTYPE / *Aguna parva* / Austin & Mielke. Paratypes (all BRAZIL: Rondônia; leg. G.T. Austin unless noted): 2 males – same location as holotype, 11 June 1993 (associated with *Eciton burchelli*, 1600-1630); 1 male – 18-20 Mar. 1987, leg. O. Mielke; 1 male – 20 Aug. 1993 (associated with *Eciton burchelli*, 1400-1430); 1 male – 13 Oct. 1993, leg. J. D. Turner (hilltop); 8 males – 16 Oct. 1993 (at light gap on ridgetop, 1300-1400); 1 male – 23 Oct. 1992, leg. J. P. Brock; 1 male – 9 Nov. 1990, leg. J. P. Brock; 1 male – 9 Nov. 1990; 1 male – 6 Nov. 1991, leg. J.P. Brock (light gap on hilltop); 1 male – 10 Nov. 1994 (at paper lures, 0900-0930); 1 male – 12 Nov. 1994, leg. O. Mielke; 1 male – 12 Nov. 1995, leg. D. & J. Lindsley; 1 male – 13 Nov. 1994 (associated with *Eciton burchelli*, 0900-0930); 1 male – 21 Nov. 1992 (at paper lures, 0930-1000); 1 male – 21 Sept. 1992, leg. J. D. Turner; 1 male – Nov.-Dec. 1991, leg. S. Kohler; 1 female – 26 Apr. 1991; 1 male – ca. 70 km S Ariquemes, B-80, between linhas C-10 & 15, 22 Apr. 1992; 2 males – 8 Nov. 1991; 1 female – 65 km S Ariquemes, linha C-20, 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18, 16 Aug. 1993, leg. J.D. Turner; 3 males – 25 Sept. 1992; 2 males – 15 Nov. 1992 (at paper lures); 1 male – 22 Nov. 1992, leg. G. Bongioiolo (at paper lures, 1430-1500); 1 male, 1 female – BRAZIL: Goiás; Serra Dourada, no date, leg. C.J. Callaghan; 1 female – Goiás Velho, 25 Feb. 1979, leg. Gifford; 1 female – Ilha do Bananal, 23 June 1979, leg. Gifford; 2 males – Maranhão; Fazenda Sta. Luzia, Terasse, 2-3 Aug. 1974, leg. Mielke – *Mato Grosso*; Barra dos Bugres, 21 May 1974, leg. Furtado; 1 female, 24 May 1974, leg. ?; 1 male – confluence of Rios Araguaia and Tapirape, 5 Jan. 1970, leg. C. Callaghan.

Deposition of types. The holotype is deposited in the collection at UFPC; the paratypes will be distributed AMNH, AME, CM, NSM, UFPC, and USNM.

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

Etymology. This is the smallest known *Aguna*; the name means small.

Distribution and phenology. *Aguna parva* is known from central and western Brazil. Records of this species are scattered throughout the year. In central Rondônia, males of this species are often encountered perching during mid afternoon at heights of 2-4 m in small light gaps in the forest; the species has also been taken at light gaps on ridgetops, at army ant swarms, and at paper lures.

Specific records. BRAZIL: *Goiás*; Serra Dourada (no date; AME), Goiás Velho (Feb.; UFPC), Ilha do Bananal (June.; UFPC), *Maranhão*; Fazenda Sta. Luzia, Terasse, (Aug.; UFPC), *Mato Grosso*; Barra dos Bugres (May; UFPC), confluence of Rios Araguaia and Tapirape (Jan.; AME), *Rondônia*; vic. Cacaupônia, Fazenda Rancho Grande (Mar., Apr., June, Aug., Sept., Oct., Nov.; NSM, UFPC).

Diagnosis and discussion. *Aguna parva*, a long-tailed species, is smaller than other known *Aguna*. Its dorsal color is also bluer than any species except *A. glaphyrus*. The form of the genitalia (aedeagus of the male, long ductus bursae of the female) sets *A. parva* apart from other species in the genus in a group by itself.

DISCUSSION

The studies of the Hesperiidae in central Rondônia, Brazil, indicates that at least 15 species of *Aguna* were present, exceeding the number of species recognized in the latest reviews of the genus (EVANS 1952; MIELKE 1971). This region apparently represents the center of diversity for the genus. Over half of the taxa present were unrecognized species with green on the dorsal surface, tails on the hindwings, and well-defined white bands on the ventral hindwing belonging to five species groups. These groups were previously represented by but six described species; the present study indicates no fewer than eighteen exist. Nearly all the species of the "coelus", "glaphyrus", and "ganna" groups are so similar superficially that it is impossible, even after viewing large numbers, to place species into groups, much less species, based on superficial characters. The genitalia of nearly all need to be dissected for proper identification. Since many species may occur sympatrically, all previous distributional records must be treated as suspect until specimens are dissected.

EVANS' (1952) based identification of the green and blue species of *Aguna* upon the extent of the development of the hindwing tornal region into a tail. He did note at the end of his treatment of the genus that "...differences lie in the aedeagus and the clasp..." As shown above, the length of the hindwing tail is a variable character within groups. Both long and short-tailed species occur in each of the "coelus", "glaphyrus", and "ganna" groups. This feature is also difficult to evaluate on worn specimens. The considerable material examined here, which nearly triples the number of known species of these green and blue species, demonstrates that five species groups are identifiable based upon characters of the genitalia of both males and females.

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REFERENCES

- ALAYO, P.D. & L.E. HERNÁNDEZ. 1987. **Atlas de las mariposas diurnas de Cuba (Lepidoptera: Rhopalocera)**. La Habana, Editorial Científico-Técnica, 149p.
- AUSTIN, G.T.; J.P. BROCK & O.H.H. MIELKE. 1993. Ants, birds, and skippers. **Trop. Lepid.** 4 (suppl. 2): 1-11.
- AUSTIN, G.T. & K. JOHNSON. 1995. Theclinae of Rondônia, Brazil: *Arcas*, with descriptions of three new species (Lepidoptera: Lycaenidae). **Trop. Lepid.** 6: 31-39.
- BAILOWITZ, R.A. & J.P. BROCK. 1991. **Butterflies of southeastern Arizona**. Tucson, Sonora Arthropod Studies, 342p.
- BIEZANKO, C.M. & O.H.H. MIELKE. 1973. Contribuição ao estudo faunístico dos Hesperiidae Americanos. IV Espécies do Rio Grande do Sul, Brasil, com notas taxonômicas e descrições de espécies novas (Lepidoptera). **Acta Biol. Paranaense**, Curitiba, 2: 51-102.
- BRIDGES, C.A. 1988. **Catalogue of Hesperiidae (Lepidoptera: Rhopalocera)**. Urbana, Illinois, published by the author.
- BROWN, F.M. & B. HEINEMAN. 1972. **Jamaica and its butterflies**. London, E.W. Classey, 478p.
- BROWN JR., K.S. & O.H.H. MIELKE. 1967. Lepidoptera of the Central Brazil Plateau. I. Preliminary list of Rhopalocera (continued): Lycaenidae, Pieridae, Papilionidae, Hesperiidae. **Jour. Lepid. Soc.** 21: 145-168.
- DE JONG, R. 1983. Annotated list of the Hesperiidae (Lepidoptera) of Surinam, with descriptions of new taxa. **Tijds. v. Ent.** 126: 233-268.
- DE LA MAZA E., R.G. & D. GUTIÉRREZ. 1992. Ropaloceros de Quintana Roo, su distribución, origen y evolución. **Rev. Soc. Mex. Lepid.** 15: 3-43.
- DE LA MAZA J., A. & R.G. DE LA MAZA E. 1985. La fauna de mariposas de Boca del Chajul, Chiapas, Mexico (Rhopalocera). Parte I. **Rev. Soc. Mex. Lepid.** 9: 23-44.
- DE LA MAZA R., R. 1987. **Mariposas Mexicanas**. México, D.F., Fondo de Cultura Económica, 302p.
- EHRMANN, G.A. 1907. New tropical American Hesperiidae. **Canad. Ent.** 39:

317-323.

- EMMEL, T.C. & G.T. AUSTIN. 1990. The tropical rain forest butterfly fauna of Rondônia, Brazil: species diversity and conservation. **Trop. Lepid.** **1**: 1-12.
- EVANS, W.H. 1952. **A catalogue of the American Hesperiidae in the British Museum (Natural History) Part II: Pyrginae – section 1.** London, British Museum (Natural History), 246p.
- FREEMAN, H.A. 1976. New Hesperiidae records for Mexico. **Jour. Lepid. Soc.** **30**: 62-67.
- GODMAN, F.C. 1907. Notes on the American species of Hesperiidae described by Plötz. **Ann. & Mag. Nat. Hist.** **20**: 132-155.
- GODMAN, F.C. & O. SALVIN. 1887-1901. **Biologia Centrali-Americana. Zoology: Insecta. Lepidoptera-Rhopalocera.** London, Taylor and Francis, vol. 2, 782p., vol. 3, 112pls.
- HAYWARD, K.J. 1933. Lepidópteros argentinos. Familia Hesperidae. **Revta Soc. Ent. Argent.** **5**: 149-188.
- . 1935. Hesperiidae (Lep.) Argentinos. Notas y adiciones con descripción de una nueva especie. **Revta Soc. Ent. Argent.** **7**: 131-137.
- HAYWARD, K.J. 1948. Insecta, Lepidoptera (Rhopalocera), familia Hesperidarum, subfamiliae Pyrrhopyginarum et Pyrginarum. In: H.R. DESCOLE (Ed.). **Genera et species animalium argentinorum.** Buenos Aires, Guillermo Kraft, 389p.
- HERNÁNDEZ, L.R.; D.S. SMITH; N. DAVIES & A. ARECES-MALLEA. 1994. The butterflies and vegetational zones of Ghanahacabibes National Park, Cuba. **Bull. Allyn Mus.** **139**: 1-19.
- HERRICH-SCHÄFFER, G.A.W. 1869. Prodrömus Systematis Lepidopterorum. Versuch einer systematischen Anordnung der Schmetterlinge. **Corr.-bl. zool.-min. Ver. Regensburg** **23**: 184-204.
- HEWITSON, W.C. 1867. **Descriptions of one hundred new species of Hesperiidae.** London, John Van Voorst, 25p.
- HOFFMANN, C.C. 1941. Catálogo sistemático y zoogeográfico de los lepidópteros mexicanos. Segunda parte. Hesperioidea. **Ann. Inst. Biol., UNAM** **12**: 237-294.
- HORN, W. & P.H.I. KAHLE. 1935-1937. Über entomologische Sammlungen. I. Kapitel: Sammlungen welche ihren Eigentümer gewechselt haben (nebst Angaben über Ausbeuten von Expeditionen, Privat-Sammlern und Händlern). **Ent. Beih. Berl.-Dahlem** **2**: 1-160, **3**: 161-296, **4**: 297-388.
- LAMAS, G.R.; K. ROBBINS & D.J. HARVEY. 1991. A preliminary survey of the butterfly fauna of Pakitza, Parque Nacional del Manu, Peru, with an estimate of its species richness. **Publ. Mus. Hist. Nat. UNMSM** **40**: 1-19.
- LATREILLE, P.A. [1824]. In: P.A. LATREILLE & J.B. GODART. **Encyclopédie Méthodique. Histoire naturelle des insectes.** Veuve Agasse, Paris, **9**: 711-793, **9** (2): 329-828.
- MABILLE, P. 1888. Diagnoses de Lépidoptères (Hespérides) nouveaux. **Le Naturaliste** **10**: 98-99.
- . 1891. Description d'Hespérides nouvelles. **Ann. Soc. Ent. Belg.** **35**: LIX-LXXXVIII, CVI-CXXI, CLXVIII-CLXXXVII.

- . 1903-1904. Lepidoptera Rhopalocera. Family Hesperidae [sic]. In: P. WYTSMAN. **Genera Insectorum** 17: 1-210.
- MABILLE, P. & E. BOULLET. 1912. Essai de révision de la famille des Hespérides. **An. Sc. nat., Zool.**, Paris (9) 16: 7-159.
- MABILLE, P. & VUILLOT. 1891. **Novitates Lepidopterologicae** 3-6, p. 17-48.
- MCGUIRE, W. W. & M.A. RICKARD. 1976. New Hesperiid records for Texas and the United States. **Jour. Lepid. Soc.** 30: 5-11.
- MEERMAN, J.C. & T. BOOMSMA. 1993. Checklist of the butterflies of the Shipstern Nature Reserve. **Occ. Pap. Belize Nat. Hist. Soc.** 2: 37-46.
- MIELKE, O.H.H. 1971. Contribuição ao estudo faunístico dos Hesperiidae Americanos – II. distribuição geográfica das espécies de *Aguna* Williams, 1927, com descrição de uma espécie nova e um novo sinônimo. **Arq. Mus. Nac.**, Rio de Janeiro, 54: 203-208.
- . 1973. Contribuição ao estudo faunístico dos Hesperiidae Americanos. III. Espécies coletadas em duas excursões ao Pará e Amapá, Brasil (Lepidoptera). **Acta Biol. Paranaense**, Curitiba, 2: 17-40.
- . 1980. Contribuição ao estudo faunístico dos Hesperiidae Americanos. V. Nota suplementar as espécies de Pyrrhopyginae e Pyrginae do Rio Grande do Sul, Brasil (Lepidoptera). **Acta Biol. Paranaense**, Curitiba, 8/9: 7-17.
- MIELKE, O.H.H. & M.M. CASAGRANDE. 1992. Lepidoptera: Papilionoidea e Hesperioidea coletados na Ilha de Maracá, alto Alegre, Roraima, parte de projeto Maracá, com uma lista complementar de Hesperiidae de Roraima. **Acta. Amaz.** 21 (1991): 175-210.
- MÖSCHLER, H. B. 1879. Neue exotische Hesperiidae. **Verh. zool.-bot. Ges.**, Wien, 28: 203-230.
- PLÖTZ, C. 1880. Die Hesperiiinen-Gattung *Goniurus* Hübn. und ihre Arten. **Bull. Soc. Imp. Nat. Moscou** 55 (2): 1-22.
- . 1882. Die Hesperiiinen-Gattung *Eudamus* und ihre Arten. **Stett. ent. Zeit.** 42: 500-504, 43: 87-101.
- SCOTT, J.A. 1986. **The butterflies of North America, a natural history and field guide**. Stanford Univ. Press, Stanford, California, 583p.
- SEITZ, A. 1907-1924. **Die Gross-Schmett. der Erde. Vol. 5. Die amerikanischen Tagfalter.**, Stuttgart, Alfred Kernen, 1139p.
- SMITH, D.S. & L.R. HERNÁNDEZ. 1992. New subspecies of *Pseudochrysops bornoi* (Lycaenidae) and *Saliana esperi* (Hesperiidae) from Cuba, with a new island record and observations on other butterflies. **Caribbean Jour. Sci.** 28: 139-148.
- SMITH, D.S.; L.D. MILLER & J.Y. MILLER. 1994. **The butterflies of the West Indies and south Florida**. Oxford, Oxford Univ. Press, 264 pp.
- STEINHAUSER, S.R. 1975. An annotated list of the Hesperiidae of El Salvador. **Bull. Allyn Mus.** 29: 1-34.
- . 1981. A revision of the *proteus* group of the genus *Urbanus* Hubner. Lepidoptera: Hesperiidae. **Bull. Allyn Mus.** 62: 1-41.
- . 1986. A review of the skippers of the *narcosius* group of species of the genus *Astrartes* Hubner (sensu Evans, 1952) and erection of a new genus.

Lepidoptera: Hesperiidae. **Bull. Allyn Museum** 104: 1-43.

STOLL, C. 1781. In: P. CRAMER. **De Uitlandsche Kapellen, voorkomende in de drie Waereld-Deelen Asia, Africa en America, by een verzameld en beschreven. 4.** Amsterdam, Baalde and Utrecht, Wild, 252p.

TILDEN, J.W. 1971. *Aguna claxon* (Hesperiidae) new to the United States. **Jour. Lepid. Soc.** 25: 293.

VARGAS F., I.; A. LUIS-MARTINEZ; J. LLORRENTE-BOUSQUETS & A. WARREN. 1996. Butterflies of the state of Jalisco, Mexico. **Jour. Lep. Soc.** 50: 97-138.

WILLIAMS JR., R.C. 1926. Studies in the Neotropical Hesperiidae. Paper I. **Trans. Amer. Ent. Soc.** 52: 61-88.

———. 1927. Studies in the Neotropical Hesperioidea. Paper II. **Trans. Amer. Ent. Soc.** 53: 261-292.

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