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Hesperiidae of central Rondonia, Brazil: *Celaenorrhinus* Hiibner (Lepidoptera: Pyrginae), with descriptions of three new species and taxonomic comments

George T. Austin
Nevada State Museum and Historical Society

Stephen R. Steinhauser
Allyn Museum of Entomology, Sarasota, Florida

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George T. Austin
Nevada State Museum and Historical Society
700 Twin Lakes Drive, Las Vegas, Nevada 89107

and

Stephen R. Steinhauser
Allyn Museum of Entomology
3621 Bay Shore Road, Sarasota, Florida 34234

Abstract: Eight species of *Celaenorrhinus* (Hesperiidae: Pyrginae) occur near Cacaulândia in central Rondônia, Brazil. Three of these represent unnamed species and are described as new: *Celaenorrhinus orneates* Austin, *Celaenorrhinus par* Steinhauser & Austin, and *Celaenorrhinus autochton* Steinhauser & Austin. The male of *C. savia* is described for the first time. Both sexes of all 8 species (except female *C. orneates*) and their genitalia are illustrated. Males of *C. savia* and *C. orneates* are similar to *C. jao* in lacking tibial tufts, modified thoracic scales, and abdominal pouches; *C. autochton* lacks tibial tufts and modified thoracic scales. This adds to the diversity of secondary sexual characters among New World *Celaenorrhinus*. The following taxa, treated by Evans (1952) as subspecies, are raised to specific rank: *C. shema disjunctus* Bell, 1940; *C. similis stola* Evans, 1952; *C. similis approximatus* Williams & Bell, 1940; and *C. similis bifurcus* Bell, 1934.

Introduction

Celaenorrhinus Hübner, [1819] (Hesperiidae: Pyrginae) is a diverse genus with a rarely encountered pantropical distribution. Evans (1952) listed 14 Neotropical species with an additional 12 subspecies within the genus. Its limits were redefined by de Jong (1982), who synonymized the genera *Orneates* Godman & Salvin, 1894 (which he misspelled *Orneatus*) of the American Tropics and *Charmion* de Nicéville, 1894 of Asia with *Celaenorrhinus*, thus adding 2 additional Neotropical species. He also correctly placed a third Neotropical species, *Plesioneura jao* Mabille, 1889, in *Celaenorrhinus* instead of in *Autochton* Hübner, [1823], where it had been placed by Evans (1952). Mielke (1991) proposed a new name, *Celaenorrhinus shema mercedensis*, to replace *Celaenorrhinus shema songoensis* Evans, 1952 (*nec* Draudt, 1922), a misidentification, and synonymized *Celaenorrhinus saroma timor* Evans, 1952 with *Celaenorrhinus songoensis* Draudt, 1922. At this point, the genus contained 17 Neotropical species with an additional 12 subspecies. We will add 3 new species, described below, and raise four subspecies to full species rank resulting in a total of 24 species and 8 subspecies of Neotropical *Celaenorrhinus*.

Eight species of *Celaenorrhinus* were encountered during studies of butterfly diversity near Cacaulândia in central Rondônia, Brazil (for description of this area see Emmel and Austin, 1990; Austin *et al.*, 1993). Three of these are new and are named and described below; the genitalia of all, plus some allied species, are illustrated. Forewing length is measured from wing base to apex of specimens from the Rondônia locality unless noted. Structures of the genitalia are generally as outlined by Steinhauser (1981), modified and corrected (Steinhauser 1986), and with some additional usages incorporated and discussed in the text below.

Celaenorrhinus aegiochus (Hewitson)
(Figs. 41, 51)

Eudamus aegiochus Hewitson, 1876
Orneates aegiochus (Hewitson, 1876): Godman and Salvin, 1894; Evans, 1952
Celaenorrhinus aegiochus (Hewitson, 1876): de Jong, 1982

C. aegiochus is not known from the Cacaulândia area; because of its striking blue coloration, it needs no further description here. We illustrate the male genitalia to show some details lacking in the Godman and Salvin (1879-1901) figure and the

female genitalia for comparison with other *Celaenorrhinus* taxa.

Celaenorrhinus savia (Evans)
(Figs. 1, 2, 6, 7, 39, 50)

Orneates savia Evans, 1952
Celaenorrhinus savia (Evans, 1952): de Jong, 1982

Description. Male: forewing length = 22.8 mm (21.3-23.9, N = 3); forewing apex not produced, termen nearly straight, slightly convex towards costa, no costal fold; hindwing very slightly angulate at vein CuA_1, tornus slightly produced; dorsum dark brown, dull blue-green at extreme base of forewing, more extensive into discal cell on hindwing; forewing with white hyaline macules as follows: center of discal cell, nearly square, excavate distad, nearly straight proximad; CuA_1-CuA_2, largest (about 1.5x width of discal cell macule), parallelogram; upper portion of CuA_2-2A, elongate, more or less triangular, distal edge in line with distal edge of macule in CuA_1-CuA_2, these and short dashes in Sc-R_1 and costal cell form continuous (divided by dark veins) but irregular central band; base of M_3-CuA_1, triangular, contiguous with distal edge of discal cell macule; aligned subapical in R_3-R_4, R_4-R_5, and R_5-M_1, first smallest, last 2 slightly larger; fringe brown. Hindwing with costa gray-brown basad; very faint black postmedian and submedian bands; fringe white anteriorly, brown posteriorly.

Venter dark brown, blue-green on forewing at base of costa; forewing macules repeated from dorsum; wing base pale tan, anal margin narrowly gray-brown; pale tan distad to macule in CuA_2-2A; hindwing with base lightly overscaled with pale tan, this with slight blue-green tinge as on dorsum; anal margin moderately overscaled with pale tan; discal cell with pale tan line at distal end; submargin with series of narrow pale tan chevrons, distinct caudad, nearly obsolete cephalad.

Head intense blue-green; palpi pale yellow beneath and on outer surface, dorsal and inner surfaces black with pale yellow behind 3rd segment at tip; pale yellow around eyes; antennae black, narrow white at segments on interior surface, club with white on lower surface proximad, apiculus pale tan beneath, nudum gray, 19 (N = 1) or 20 (N = 2) segments; dorsal thorax blue-green cephalad becoming grayer caudad and laterad, sides gray-green, pectus pale yellow, legs brown to yellow-brown with many paler brown and yellowish hair-like scales, mid tibiae with single pair of spurs, hind tibiae with 2 pairs, no tibial tuft or modified thoracic scales; abdomen dark brown above, pale yellow with narrow central brown line beneath, no scent pouches.

Genitalia: tegumen relatively long with small lateral ventro-caudal lobes; uncus arms short, widely spaced, and slightly divergent; gnathos arms spiculose, parallel, outer margins expanded cephalad in ventral view; vinculum slightly angled and with sharply pointed caudal process ventrad; saccus long and broad; costa and ampulla of valva relatively straight; ampulla with long and curved dorsal-caudal process; harpe triangular, terminating as thin and sharply pointed caudal projection extending considerably caudad of ampulla process; ampulla process in dorsal view straight, strongly hooked caudad, and in same plane as harpe; juxta very well developed with large triangular ventro-caudal processes; penis tubular, slightly expanded caudad, terminally bifurcate, phallobase short, slightly curved dorsad; no cornutus.

Female: forewing length = 24.2, 24.8 mm; very similar to male; dorsum paler brown; subapical macules broader; venter paler brown with more extensive overscaling on hindwing; antennal nudum red-brown, 21 (N = 1) or 22 (N = 1) segments.

Genitalia: lamella postvaginalis quadrate, caudal margin slightly concave, ostium bursae well defined laterad by distinct longitudinal ridges; lamella antevaginalis with broad, tongue-like central lobe covering much of ostium bursae, lateral lobes membraneous, with lateral striations; antrum poorly defined; ductus bursae with caudal portion short, stout; cephalad region expanded leading to large, broadly oval corpus bursae, no signa.

Distribution and phenology. This species is now known from Peru (Evans 1952) and central Rondônia, Brazil. It is a very rare forest species near Cacaulândia with records for July and September to November. The species perches beneath leaves and is attracted to white paper lures.

Discussion. The male of *C. savia* and the genitalia of both sexes have not previously been described. The male is nearly identical in color and pattern to the female seen by Evans (1952) but is slightly darker brown, the wings are less broad with the forewing apex less rounded, and the macules on the forewing are smaller. Evans (1952) stated that the palpi and thorax below were whitish; these range from whitish to pale yellow on our material.

Evans (1952) described *C. savia* based upon a single female from Peru (Rio Cachiyaca, Iquitos). Males of this species lack tibial tufts, enlarged thoracic scales, and abdominal pouches, characters which are nearly universal in the genus (de Jong, 1982). Otherwise, however, *C. savia* resembles several New World taxa of the genus in wing shape, pattern, and genitalia. Although de Jong (1982) did not specifically include *C. savia* when synonymizing *Orneates* with *Celaenorrhinus*, it clearly does belong in *Celaenorrhinus*.

Celaenorrhinus orneates Austin, new species
(Figs. 3, 8, 40)

Description. Male: forewing length = 22.6 mm (holotype); forewing apex not produced, termen nearly straight, slightly convex towards costa, no costal fold; hindwing slightly angulate at vein CuA_1, tornus produced into short lobe; dorsum dark brown; forewing with white hyaline macules as follows: center of discal cell, nearly square, constricted in middle distad and slightly so proximad; CuA_1-CuA_2, largest (about twice as wide as discal cell macule), rectangular; upper portion of CuA_2-2A, small, more or less quadrate, distal edge approximately in line with distal edge of macule in CuA_1-CuA_2, these and short dashes in Sc-R_1 and costal cell form continuous (divided by dark veins) but irregular central band; base of M_3-CuA_1, circular, at anterio-distal corner of macule in CuA_1-CuA_2, well separated from discal cell macule; subapical in R_3-R_4, R_4-R_5, and R_5-M_1, first 2 of equal size, last slightly larger and offset distad from line of first 2; submarginal in M_1-M_2 and M_2-M_3, small, distad of macule in R_5-M_1; fringe brown. Hindwing with slight green tinge basad; costa gray; faint black postmedian and submedian bands, former with indistinct and ill-defined paler brown macules distad; fringe white, vaguely checkered with ground color at vein tips which does not extend full width of fringe.

Venter dark brown, less glossy than dorsum; forewing with macules repeated from dorsum; wing base and anal margin pale tan, former with slight green tinge; pale tan extending along outer margin anteriorly nearly to vein CuA_2 distad to macule in CuA_2-2A; hindwing with base heavily overscaled with pale tan, this with slight green tinge; anal margin pale tan; marginal pale tan at apex between Sc+R_1 and M_1, decreasing in width posteriad; discal cell with pale tan line at distal end; submargin with series of pale tan macules, these largest and most distinct posteriad.

Head blue-green with pale gray between antennae; palpi pale yellow beneath and on outer surface, dorsal and inner surfaces dark gray; pale yellow beneath and behind eyes; antennae black, indistinct narrow white lines at segments on interior surface, club with white on lower surface proximad, nudum gray, 20 segments (N = 1); dorsal thorax gray-green anteriad becoming grayer posteriad, ventral thorax pale yellow, sides grayish, legs brown with many paler brown and yellowish hair-like scales, no tibial tuft or modified thoracic scales; abdomen black above, pale yellow with medium-width central brown line beneath, no pouch.

Genitalia: tegumen relatively long with broad, long, and caudally pointed ventro-caudal lobes; uncus stout, arms short, not widely spaced; gnathos spiculose caudad, arms parallel, outer margins expanded cephalad in ventral view; vinculum relatively straight; saccus long, straight, and thin; costa slightly convex; ampulla with prominent hump before caudal process which is curved mesad at caudal end; harpe thin, pointed, slightly exceeding ampulla process in lateral view, bent mesad in dorsal view and outside of ampulla process; juxta well developed, of moderate length with triangular caudal projections on each side, these spinose on ventral margin; penis tubular, broadest in middle, flared slightly at caudal end rather than bifurcate, phallobase curved dorsad, no cornutus.

Female: unknown.

Types. Holotype male with the following labels: white, printed: BRASIL: Rondonia / 65 km S Ariquemes / linea C-20, 10 km E / B-65, 3 km E Fazenda / Rancho Grande, lot 18 / 15 November 1992 / leg. G. T. Austin / at paper lures; white, printed and handprinted: Genitalia Vial / GTA - 3408; white, printed and handprinted: Genit. Vial / SRS-4487 / File No.; red, printed: HOLOTYPE / *Celaenorrhinus orneates* Austin.

Deposition of types. The holotype will be deposited at the Departmento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil.

Type locality. Brazil: Rondônia; 65 kilometers south of Ariquemes, linea C-20, 10 kilometers (by road) east of route B-65, 3 kilometers east of Fazenda Rancho Grande, 180 meters. This is approximately 8 kilometers northeast of Cacaulândia in typical lowland tropical rainforest.

Etymology. The name is after the Godman and Salvin (1894) genus proposed for a species now included in *Celaenorrhinus*.

Distribution and phenology. This species is known only from the single type taken in mid November.

Diagnosis and discussion. *Celaenorrhinus orneates* is similar to the sympatric *C. savia*. That species has a narrower macule in CuA_1-CuA_2 (about the same width as the discal cell macule), the macule in M_3-CuA_1 is closer to the discal cell macule, the macule in CuA_2-2A is more elongate distad towards the outer margin, the anterior subapical macule is the smallest and is followed by 2 larger macules, there are no submarginal macules in M_1-M_2 and M_2-M_3, the fringe of the hindwing is white only anteriorly, the anal margin of the ventral forewing is less prominently pale and the pale scaling distad of the macule in CuA_1-2A is narrower and less obvious, the ventral hindwing has no apical tan scaling and the submarginal macules are faint.

The male genitalia of these 2 species are basically similar but exhibit distinct differences. The tegumen and uncus of *C. savia* are slightly longer, the uncus arms are farther apart, the caudal lobes of the tegumen are much smaller and rounded, the saccus is broader, the ampulla is not humped, the caudal process of the ampulla is angled upward diverging from the harpe and its incurved caudal end is thin and short (see dorsal view), the harpe is much longer than on *C. orneates* as is the juxta, and the aedeagus is terminally bifurcate.

Celaenorrhinus astrigera (Butler)

(Figs. 27, 28, 35, 36, 42, 52)

Tagiades astrigera Butler, 1877
Celaenorrhinus astrigera (Butler, 1877): Evans, 1952

Description. Male: forewing length = 21.2, 21.4 mm; forewing with no costal fold, apex not produced, termen evenly convex; hindwing termen evenly convex; dorsum very dark brown, nearly black; forewing with numerous small white hyaline macules as follows: discal cell, anterior and posterior of equal size; costal cell, slightly proximad of discal cell macule; CuA_1-CuA_2, far distad of discal cell macules; M_3-CuA_1, in a line parallel to termen with macule in CuA_1-CuA_2; anterior macule in CuA_2-2A, slightly distad of macule in CuA_1-CuA_2; similar macule posterior in same cell, slightly proximad of anterior macule; another macule subbasally in anterior portion of same cell; 3 subapical macules, third offset considerably distad from line of first 2; submarginal macules in M_1-M_2 and M_2-M_3. Hindwing with small, rather indistinct, yellowish white, opaque macules, most prominent at distal end of discal cell and submarginally in cells Rs-M_1 to CuA_2-2A; fringes of both wings slightly paler than ground color.

Ventral surface nearly identical to dorsum; hindwing paler brown posteriorly; forewing with submarginal yellowish white macules, most prominent in CuA_2-2A; hindwing discal macules more prominent than on dorsum.

Head black above, whitish around eyes, palpi mostly dark brown, pale yellow on sides proximad, antennae black, whitish at base of club and on apiculus beneath, nudum red-brown, 14 (N = 1) or 15 (N = 1) segments; thorax dark gray above, on sides beneath wings, and pectus, legs brown with ochreous and gray hair-like scales, tibiae smooth, mid tibia with single pair and hind tibia with 2 pairs of spurs, hind tibia with long tan hair tuft held by modified thoracic scales; abdomen dark brown above, mixed whitish and gray-brown with narrow whitish bands at segments beneath, scent pouches present.

Genitalia: tegumen with long and narrow (in ventral view) caudal lobes, these parallel to slightly divergent uncus arms; dorso-caudal extension of the vinculum flared laterad, appearing as a second pair of lobes in ventral view; valva with long and thin caudal process of ampulla, this in the same plane as harpe in dorsal view, caudal end slightly bent mesad; harpe longer that the ampulla process, terminating as sharp point and with dorsal flap not extending to tip; juxta relatively well developed but lacking pointed caudal projections; penis tubular, shorter than valva, phallobase short; no cornutus.

Female: forewing length = 21.1 mm (19.8-21.7, N = 7); virtually identical to male; antennal nudum red-brown, 14 (N = 1) or 15 segments (N = 1).

Genitalia: lamella postvaginalis broad, very short with narrow central lobe produced caudad, small central caudal notch, and thin lateral arms; lamella antevaginalis also thin with small, membranous, and striated lateral lobes; antrum short, well sclerotized; ductus bursae long, without well defined central constriction, slightly expanded near cervical area to form what Stitz (1901) probably meant by "cervix bursae", clearly separate from corpus bursae; ductus seminalis connected to ductus bursae slightly cephalad of antrum; corpus bursae ovoid with very narrow, spiculose, longitudinal band-like signum.

Distribution and phenology. Evans (1952) saw material from Guyana and the Amazon basin.

This is a rare forest species in central Rondônia with records in February to April, August, and November.

Discussion. *Celaenorrhinus astrigera* is a very dark brown, nearly black, species with numerous small white hyaline macules on the forewing and yellowish white non-hyaline macules on the hindwing. The genitalia of *C. astrigera*, although of the general overall form for *Celaenorrhinus*, exhibit some unique characters. These include the long and thin lobes of the tegumen and the flared portion of the vinculum on males (this also seen on *C. aegiochus*, Fig. 41) and the very thin lamellae on females.

Celaenorrhinus shema ochra Evans
(Figs. 11, 12, 15, 17, 18, 21, 43, 53)

Celaenorrhinus shema ochra Evans, 1952

Description. Male: forewing length = 19.7 mm (18.1-21.1, N = 10); forewing with no costal fold, apex not produced, termen evenly convex; hindwing quadrate, termen angled at vein CuA_1, more or less straight to either side; dorsum dark brown; forewing with numerous white hyaline macules as follows: discal cell, posterior portion usually broader than anterior portion, distal edge excavate, proximal edge straight to concave; costal cell, variable shape and size, over proximal edge or proximad of discal cell macule; CuA_1-CuA_2, broad, posterior edge longer than anterior edge, distal edge irregular, proximal edge slightly concave to convex, well separated distad from discal cell macule; M_3-CuA_1, small, irregular, often triangular-shaped, distal edge aligned with distal edge of macule in CuA_1-CuA_2; small to minute anterior macule in CuA_2-2A, slightly proximad of posterio-distal corner of macule in CuA_1-CuA_2; larger macule posterior in same cell, proximad of anterior macule; 3 small subapical macules, usually first 2 smaller than last which is offset distad; 2 smaller submarginal macules in M_1-M_2 and M_2-M_3. Hindwing with small, rather indistinct, pale yellow, opaque macules; most prominent at distal end of discal cell and in submargin; fringes of both wings gray-brown.

Ventral forewing paler brown than dorsum; macules repeated, additional double yellow macule in submargin of CuA_2-2A, often traces of submarginal macules anteriorly; hindwing brown anterior of discal cell and Rs where base variably overscaled with yellowish; prominent yellow-orange macule at base of Sc+R_1-Rs, variable yellow macules in center of same cell and Rs-M_1; wing mostly uniform yellow-orange posteriorly, narrow brown line along termen, occasionally vague brown marginal macules.

Head brown above with slight greenish tinge, pale yellow around eyes, palpi brown above with scattered pale yellow scales, pale yellow beneath, antennae black, narrowly white at segments medially, broadly whitish at base of club beneath and under apiculus, nudum gray to red-brown, 15 (N = 6) or 16 (N = 5) segments; thorax gray-brown with slight greenish tinge above, grayish on sides beneath wings, pectus pale ochreous, legs ochreous, tibiae smooth, mid tibia with single pair and hind tibia with 2 pairs of spurs, hind tibia with long pale tan hair tuft held by modified thoracic scales; abdomen brown above, pale ochreous and occasionally with vague, narrow central line cephalad beneath, scent pouches present.

Genitalia: tegumen short with broad lateral lobes caudad, lobes overlapping cephalad end of long, widely spaced, and slightly divergent uncus arms; gnathos arms narrow, parallel, closely spaced, and spiculose caudad; vinculum angular; saccus long and thin; valva noticably constricted at caudal end of sacculus; costa straight; ampulla with a relatively short, narrow, and pointed dorso-caudal process; harpe roughly triangular-shaped, caudal end of harpe and process of the ampulla aligned and slightly hooked terminally in dorsal view; juxta with moderately long lobes caudad; penis longer than the valva, tubular, and tapered caudad, phallobase short; no cornutus.

Female: forewing length = 19.6 mm (18.7-20.6, N = 4); similar to male; paler brown on forewing base and most of hindwing; hindwing pale yellow macules more numerous; fringe pale gray-brown at forewing tornus and on hindwing where vaguely checkered; antennal nudum red-brown, 15 (N = 2) or 16 (N = 1) segments.

Genitalia: lamella postvaginalis broad; caudal end with very narrow central notch; lamella antevaginalis not clearly defined, apparently a narrow rhomboidal plate fused laterally with lamella postvaginalis; antrum sclerotization gradually diminished cephalad rather than being sharply defined, but ductus bursae continues somewhat swollen (a membranous portion of the antrum?) cephalad of the sclerotization, and is constricted just caudad of the ductus seminalis connection to ductus bursae; ductus bursae long and narrow, clearly separate from subspherical corpus bursae which

bears a long, narrow, spiculose, longitudinal ventral signum.

Distribution and phenology. This taxon is known from the Amazon Basin (Evans 1952). It is not uncommon near Cacaulândia, flies in the forest interior, and has been recorded in March and June through November. It is associated with army ants and is attracted to white paper lures.

Discussion. This is a brown taxon with hyaline white macules on the forewing and opaque pale yellow macules on the hindwing. The forewing macules in the discal cell and in CuA_1-CuA_2 are considerably larger than the others. The posterior 3/4 of the ventral hindwing is pale yellow-orange. We could detect no significant genitalic differences between *C. s. ochra* and specimens in the Allyn Museum of *Celaenorrhinus shema shema* Hewitson, 1877 from French Guiana in either sex, and therefore leave *C. s. ochra* as a subspecies of *C. shema*. *C. s. ochra* is considerably larger than *C. s. shema* whose male forewing length is 17.3 mm (16.5-18.0, N = 3), female forewing length = 17.0 mm (16.0-18.0, N = 3) on specimens from Guyana and French Guiana. The ventral hindwing of *C. s. ochra* is broadly pale yellow-orange rather than the ochreous-spotted brown of *C. s. shema*, but these are intraspecific differences.

Differences in genitalia as well as superficial characters suggest that at least some of Evans' (1952) other subspecies of *C. shema* may be valid species. We have examined some of the critical material and offer the following observations.

Celaenorrhinus shema vox Evans
(Figs. 13, 14, 19, 20, 44, 54)

Celaenorrhinus shema vox Evans, 1952

Three specimens at the American Museum of Natural History, labeled as *Celaenorrhinus shema*, were examined. Two males (BOLIVIA: Santa Cruz; PERU: Yumbatos, X-28) are virtually identical to each other and their genitalia (AMNH slides G907 and G908, respectively) are essentially identical to those we have seen of *C. s. ochra* from Brazil and of *C. s. shema* from French Guiana, as well as to the *C. shema* male from French Guiana illustrated by Williams and Bell (1934). The female, from PERU: Balsapuerto, Feb., is nearly identical superficially to the males and the genitalia are very similar to those of *C. s. ochra* and *C. s. shema*, but with a narrower lamella postvaginalis, which may very well be individual variation. These 3 specimens are slightly larger (male forewing = 19.5, 19.7 mm; female forewing = 19.2 mm) than *C. s. ochra* and considerably larger than *C. s. shema*, but in wing shapes and dorsal maculation are much like both. The major superficial differences between the 3 taxa are on the ventral hindwing: solid yellow-orange on *C. s. ochra*, brown with ochreous macules on *C. s. shema*, and heavily overscaled pale ochreous on *C. s. vox*. We have determined these 3 AMNH specimens to be *C. s. vox*. One male from our Rondônia study area has the ventral hindwing intermediate between that of typical *C. s. ochra* and *C. s. vox* (Fig. 15).

Celaenorrhinus disjunctus Bell, revised status
(Figs. 16, 22, 45)

Celaenorrhinus disjunctus Bell, 1940
Celaenorrhinus shema disjunctus Bell, 1940: Evans, 1952

Evans (1952) considered *C. disjunctus* as a subspecies of *C. shema*. We examined a male of this taxon housed at the American Museum of Natural History (labeled as from PERU: Huan., Tingo Maria, 2200', V-23-1947). It is larger (forewing = 21.6 mm) than either *C. s. shema*, *C. s. ochra*, or *C. s. vox*, the forewing is broader, and the hindwing is more quadrate. The maculation is as described by Bell (1940) except the forewing discal cell macule is narrow and divided and there is no minute macule in cell CuA_2-2A below the origin of vein CuA_2. The genitalia (on slide G2029) matches those illustrated for the taxon by both Bell (1940) and Evans (1952). These differ from those of *C. s. shema*, *C. s. ochra*, and *C. s. vox* by the narrower and more sharply pointed harpe, longer caudal process of the ampulla, shorter and more curved penis, longer and more curved arms of the uncus, narrow and less prominent processes of the tegumen, and much shorter saccus. These differences plus potential sympatry with *C. s. vox* in Peru strongly suggest that this is not a *C. shema* subspecies and we therefore raise the taxon to specific status.

It should be noted also that the holotype of *C. s. mercedensis* illustrated by Mielke (1991) exhibits similarities to *C. disjunctus* in wing shape. It may not be a subspecies of *C. shema* but possibly of *C. disjunctus*. The genitalia should be closely examined in this regard; Mielke (1991) did not illustrate the genitalia, mearly stating that it "coincides" with *C. s. shema*.

Celaenorrhinus par **Steinhauser & Austin, new species**
(Figs. 29, 30, 37, 38, 48, 57)

Description. Male: forewing length = 18.4 mm (16.6-19.8, N = 3); forewing with no costal fold, apex not produced, termen evenly convex; hindwing quadrate, termen produced at vein CuA_1, slightly concave to either side; dorsum dark gray-brown; forewing with numerous white hyaline macules as follows: discal cell, posterior portion broader than anterior portion, distal edge usually "v"-shaped, proximal edge more or less straight; costal cell, rectangular, proximal edge in line with proximal edge of discal cell macule; CuA_1-CuA_2, broad, posterior edge longer than anterior edge, distal edge irregular, proximal edge slightly concave, anterio-proximal corner adjacent to middle of posterior edge of discal cell macule; M_3-CuA_1, small, irregular, triangular-shaped, situated at anterio-distal corner of macule in CuA_1-CuA_2, separated from discal cell macule; small anterior macule in CuA_2-2A, slightly proximad to posterio-distal corner of macule in CuA_1-CuA_2; similar macule posterior in same cell, slightly proximal of anterior macule; minute macule subbasally in anterior portion of same cell; 3 subapical macules, about size of distal macules in CuA_2-2A, central macule very slightly offset basad. Hindwing with small, rather indistinct, opaque macules; most prominent at distal end of discal cell; fringes of both wings white, checked with dark brown at vein tips.

Ventral surface nearly identical to dorsum; sparsely overscaled with pale ochreous; forewing anal margin gray, indistinct submarginal line of ochreous scales most prominent in CuA_2-2A; hindwing relatively heavily overscaled with pale ochreous; macules more prominent, usually a complete submarginal row.

Head brown above, whitish beneath antennae, white beneath and behind eyes, palpi brown above, white beneath, antennae black, narrowly white at segments medially, broadly white at base of club beneath, nudum red-brown, 13 segments (N = 1), 15 segments (N = 6); thorax gray-brown above and on sides beneath wings, pectus very pale gray-brown, legs pale gray-brown, tibiae smooth, mid tibia with single pair and hind tibia with 2 pairs of relatively long spurs, hind tibia with long tan hair tuft held by modified thoracic scales; abdomen brown above, whitish with medium-width brown median line beneath, scent pouches present.

Genitalia: tegumen short, broad, caudal end with very broad lateral lobes; uncus divided with narrow, very widely separated, sharply divergent arms; gnathos divided, arms approximate, parallel, caudal end very narrow; vinculum relatively short and shallowly S-shaped; saccus long; valva with long costa; ampulla with narrow sharply pointed process extending dorso-caudad, not reaching caudad beyond distal end of harpe; harpe roughly triangular-shaped, sharply pointed, triangular-shaped process extending mesad from at or near dorsal margin, terminating as sharp point slightly cephalad of mid-caudal margin of harpe; sacculus relatively broad; juxta not well developed, slightly lobate caudad; penis longer than valva, thinly tubular, caudal end pointed, vesica opening dextral, phallobase short; cornutus weakly sclerotized, narrow, thorn-like structure.

Female: forewing length = 19.2 mm (18.9-19.7, N = 3); virtually identical to male; wings slightly broader and rounder; antennal nudum, red-brown, 15 (N = 3), 16 (N = 2), or 17 (N = 2) segments.

Genitalia: lamella postvaginalis long and broad, caudal end slightly concave medially; ostium bursae narrow, about 1/4 width of lamella postvaginalis; lamella antevaginalis broad, thin, largely membranous, extended caudad as thin arms lateral to lamella postvaginalis; antrum sclerotized, extending cephalad nearly to constriction of long, slender ductus bursae; corpus bursae a globular sac, no signa.

Types. Holotype male with the following labels: white, printed: BRASIL: Rondonia / 62 km S Ariquemes / off B-65, vicinity / Fazenda Rancho Grande / 20 April 1992 / leg. G. T. Austin; red, printed: HOLOTYPE / *Celaenorrhinus par* / Steinhauser & Austin. Paratypes: (all BRAZIL: Rondônia, *leg.* G. T. Austin unless noted): same location as holotype, 22 July 1994 (1 male); 2 Nov. 1989 (1 male); 17 Sept. 1992, *leg.* R. & A. Albright (1 female); 11 Aug. 1993 (1 female); 16 Aug. 1993 (1 male); linea C-2.5 off B-65, 12.5 km S Cacaulandia, 21 Mar. 1991 (1 male); linea C-20 off B-65 at Rio Pardo, 20 Mar. 1991 (1 female); B-65, 13 km S of BR 364, Cacaulandia, 1 Nov. 1990, *leg.* J. Brock (1 female); linea C-10, 5 km S Cacaulandia, 6 Mar. 1994, *leg.* O. Gomes (1 female); 19 Mar. 1994. *leg.* O. Gomes (1 female); 16 Apr. 1994, *leg.* O. Gomes (1 female); 1 May 1994, *leg.* O. Gomes (1 female); 11 June 1994, *leg.* O. Gomes (1 male); 26 June 1994, *leg.* O. Gomes (1 female); 29 June 1994, *leg.* O. Gomes (1 female); 22 July 1994, *leg.* O. Gomes (1 male); 24 July 1994, *leg.* O. Gomes (1 male); 31 July

1994, *leg.* O. Gomes (1 male); 1 Sept. 1993, *leg.* O. Gomes (1 male); 5 Sept. 1993, *leg.* O. Gomes (1 male); 11 Sept. 1993, *leg.* O. Gomes (1 male); 16 Oct. 1994, *leg.* O. Gomes (1 male); 19 Dec. 1993, *leg.* O. Gomes (1 female).

Deposition of types. The holotype and a female paratype will be deposited at the Departmento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. The remaining paratypes will be distributed to other collections.

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

Etymology. The word "par" is Latin for equal or a match and refers to this species similarity to taxa of *C. shema* and *C. disjunctus*.

Distribution and phenology. The species is known from the types taken in the forest interior from March through December and 2 males and a female from nearby BRAZIL: Rondônia; Jaru, taken in August.

Diagnosis and discussion. *Celaenorrhinus par* is nearly identical in its pattern to *Celaenorrhinus shema mercedensis* Mielke, 1991, a name introduced to replace the misidentified *Celaenorrhinus shema songoensis* Evans, 1952 (*nec* Draudt). This misidentification was discovered by Mielke and Schroeder (in prep.), who synonymize *Celaenorhinus songoensis* Draudt, 1922 with *Celaenorrhinus saroma timor* Evans, 1952 (reported by Mielke 1991:504). As noted above, Mielke (1991) did not illustrate the male genitalia of *C. s. mercedensis*. *Celaenorrhinus par* differs superficially from Mielke's (1991) illustration of *C. s. mercedensis* by its straighter forewing termen, less prominent checkering of the fringes of both wings, larger subapical forewing macules in a straighter line, and the forewing costal macule being nearly conjoined with the discal cell macule. *C. par* is smaller than *C. s. mercedensis*; Mielke (1991) did not give a forewing measurement, but Evans (1952) listed 22 mm for *C. s. songoensis* Evans (*nec* Draudt), the name now replaced by *C. s. mercedensis*. The male genitalia of *C. par*, and particularly the valva, however, are very different from *C. shema*, which lacks the distinctive horizontal, pointed process from the dorsal margin of the harpe.

The valvae of certain taxa of the *Celaenorrhinus similis* Hayward, 1933 group of species (note that the taxa treated by Evans [1952] as subspecies of *C. similis* are valid species as discussed below) have a similar process of the valva, differing from that of *C. par* by being either long and thin or very short, but not broadly triangular.

Status of *Celaenorrhinus similis* subspecies, sensu Evans, 1952

Evans (1952) treated 4 taxa as subspecies of *Celaenorrhinus similis* Hayward, 1933. We examined both sexes of these 4 and found significant genitalic differences in both males, as described and illustrated by Evans (1952), and females. The published genitalic differences of the males alone are sufficient to warrant the status changes shown below.

Celaenorrhinus stola Evans, new status
Celaenorrhinus similis stola Evans, 1952

Celaenorrhinus approximatus Williams & Bell, revised status
Celaenorrhinus approximatus Williams & Bell, 1940
Celaenorrhinus similis approximatus Williams & Bell, 1940: Evans, 1952

Celaenorrhinus bifurcus Bell, revised status
Celaenorrhinus bifurcus Bell, 1934
Celaenorrhinus similis bifurcus Bell, 1934: Evans, 1952

The distributions of these taxa have not been studied in detail. Those given by Evans (1952): Mexico to Nicaragua for *C. stola*, Costa Rica to Panama for *C. approximatus*, Costa Rica to northern South America for *C. bifurcus*, and southern South America for *C. similis*, largely indicated allopatry but both *C. bifurcus* and *C. approximatus* were reported from Costa Rica. We also have seen material of both from that country; this indicates that *C. bifurcus* occurs on the Pacific slope from lower elevations (mostly near sea level) while *C. approximatus* is montane (also on the Pacific slope), occurring above 1350 m in elevation.

Celaenorrhinus jao (Mabille)

(Figs. 23, 24, 31, 32, 46, 55)

Plesioneura jao Mabille, 1889
Cecropterus electrus Mabille, 1891
Autochton electrus (Mabille, 1891): Evans, 1952
Autochton jao (Mabille, 1889): Evans, 1953
Celaenorrhinus jao (Mabille, 1889): de Jong, 1982

Description. Male: forewing length = 18.8 mm (17.8-19.3, N = 10); forewing with no costal fold, apex slightly produced, termen evenly convex; hindwing slightly angled at vein CuA_1, convex anterior and slightly concave posterior to this; dorsum dark brown; forewing with continuous white band extending from mid costa almost to tornus in CuA_2-2A where narrowed near outer margin, band hyaline except anterior to discal cell and at tornus, nonhyaline areas white or with slight creamy tinge, band broadest at midwing; one to 3 subapical, white, hyaline macules, central one offset slightly basad when all present; fringe gray. Hindwing unmarked, costa narrowly pale gray; fringe white anterior to vein M_3 or CuA_1, then gray.

Ventral forewing as dorsum except anal margin pale gray-brown; hindwing dark brown overscaled with ochreous especially at wing base and broadly along anal margin; white of fringe not or barely extending onto wing proper anteriorly; vague or absent discal pale macules, most prominent and persistent at distal end of discal cell, but may be absent.

Head blue-green above, pale yellow in front of eyes, beneath antennae, and beneath and behind eyes, palpi black above, pale yellow-orange beneath, antennae black, vaguely white at segments medially, broadly white at base of club and on apiculus beneath, nudum red-brown, 16 (N = 2) to 17 (N = 3) segments; thorax gray-brown above with blue-green scales especially cephalad, pale gray-green on sides beneath wings, pectus pale yellowish, legs brown with many pale gray-brown scales, tibiae smooth, mid tibia with single pair of spurs, hind tibiae with 2 pairs, no tibial hair tuft or modified metepimeral scales; abdomen brown above, white with narrow to medium-width brown median line on venter, scent pouches absent.

Genitalia: tegumen relatively long with medium-sized rounded lobes caudad; uncus arms of moderate length, very widely spaced, slightly divergent; gnathos arms widely spaced, thin, and spiculose; vinculum shallowly S-shaped; saccus moderately long, broad; costa-ampulla margin strongly angulate, ampulla with thin dorso-caudal process; harpe triangular, terminating in dorsally curved thin arm, both ampulla process and harpe curved sharply mesad at their caudal ends where divergent; juxta a simple band; penis tubular, longer than valva, and slightly flared caudad, dorsal vesica opening, phallobase of medium length; cornutus with pair of parallel thorn-like structures.

Female: forewing length = 18.3 mm (17.8-18.9, N = 4); virtually identical to male, antennal nudum red-brown, 15 (N = 1) or 17 (N = 4) segments.

Genitalia: lamella postvaginalis nearly square; lamella antevaginalis extending caudad as single central tongue-like lobe covering the ostium bursae, this central lobe paralleled by heavily spinose lateral processes; antrum poorly defined, weakly sclerotized; ductus seminalis connected to ductus bursae slightly cephalad of antrum; ductus bursae long with vague internal sclerotization just cephalad of ductus seminalis connection (this sclerotization may be analogous to the "bacilli" of Higgins, 1941), constricted just caudad of midpoint, clearly separate from subspherical corpus bursae; no signa.

Distribution and phenology. Evans (1952) reported material from Ecuador, Peru, and the upper Amazon. This forest species is not uncommon in central Rondônia with records for March, April, June, August, October, and November. It is seen at flowers and males are associated with army ants, are attracted to paper lures, and occasionally occur on hilltops.

Discussion. Evans (1952, 1953) considered this brown species with white hyaline forewing bands to be an *Autochton*, first as *Autochton electrus* (Mabille) and later realizing that *Plesioneura jao* Mabille was a senior synonym. De Jong (1982) correctly associated it with *Celaenorrhinus*.

This species was found flying with a superficially nearly identical species to be described next.

Celaenorrhinus autochton Steinhauser & Austin, new species

(Figs. 25, 26, 33, 34, 47, 56)

Description. Male: forewing length = 18.6 mm (17.0-19.5, N = 10); forewing with no costal fold, apex slightly produced, termen evenly convex; hindwing slightly angled at vein CuA_1, convex anterior and slightly concave posterior to this; dorsum dark brown; forewing with continuous white band extending from mid costa almost to tornus in CuA_2-2A where narrowed nearly to point before expanded distad and approaching outer margin, band hyaline except anterior to discal cell and at tornus, nonhyaline areas with slight yellow tinge, band broadest at midwing; 3 subapical, white, hyaline macules, central one offset slightly basad; fringe gray. Hindwing unmarked, costa narrowly pale gray; fringe white anterior to vein M_3 or CuA_1, then gray.

Ventral forewing as dorsum except anal margin pale gray; hindwing dark brown overscaled with ochreous especially at wing base and along anal margin; white of fringe extending slightly (0.5 mm) onto wing proper anteriorly; vague discal pale macules, most prominent and persistent as double spot in cell CuA_2-2A, but may be absent.

Head blue-green above, pale yellow in front of eyes, beneath antennae, and beneath and behind eyes, palpi black above, pale yellow-orange beneath, antennae black, narrowly white at segments medially, broadly white at base of club beneath, nudum red-brown, 17 segments (N = 5); thorax gray-brown above with blue-green scales especially cephalad, pale gray-brown on sides beneath wings, pectus pale yellow-orange, legs brown with many pale gray-brown scales, tibiae smooth, mid tibia with single pair of spurs, hind tibiae with 2 pairs, no tibial hair tuft or modified metepimeral scales; abdomen brown above, white with narrow to medium-width median line on venter, scent pouches present.

Genitalia: tegumen broad and relatively long with small lateral lobes caudad; uncus divided, arms short, widely separated, slightly divergent caudad; gnathos long, divided, arms longer than uncus arms, closely spaced, slightly divergent caudad, caudal end far cephalad of divided portion of uncus; vinculum narrow, S-shaped; saccus long, narrow; valva with long costa; ampulla with long, narrow, curved process dorsad, extending caudad of caudal end of harpe; harpe more or less triangular-shaped, dorsal margin projected caudad to sharp point, harpe mesad of ampulla process in dorsal view and more or less parallel to it; sacculus narrow, short; juxta a simple band; penis slightly shorter than valva, straight, caudal end blunt, phallobase short; cornutus with 2 somewhat sclerotized spikes.

Female: forewing length = 18.6 mm (17.4-19.8, N = 3); virtually identical to male; antennal nudum red-brown, 16 (N = 1) to 17 (N = 4) segments.

Genitalia: lamella postvaginalis broad, thin, slightly produced, caudal end narrowly concave centrally; ostium bursae nearly as broad as caudal end of lamella postvaginalis; lamella antevaginalis broad, broadly bilobed centrally extending laterad as nearly transparent lobes overlapping lateral margins of lamella postvaginalis; antrum weakly sclerotized, not clearly defined; ductus bursae long and rather broad, not clearly separate from corpus bursae; ductus seminalis connected mid ventrally to ductus bursae approximately at cephalad end of antrum, cephalad of which the ductus bursae contains a pair of longitudinal sclerotized ribs (bacilli?), one on each side, extending cephalad to the point where the ductus bursae is constricted near its midpoint; corpus bursae a rather large sac, somewhat produced dorsad; no signa.

Types. Holotype male with the following labels: white, printed: BRASIL: Rondonia / 62 km S Ariquemes / linea C-20, 7 km E / B-65, Fazenda / Rancho Grande / 21 April 1992 / leg. G. T. Austin; white, printed and handprinted: Genitalic Vial / GTA - 2157; red, printed: HOLOTYPE / *Celaenorrhinus autochton* / Steinhauser & Austin. Paratypes (all BRAZIL: Rondônia; *leg.* G. T. Austin except as noted): same location as holotype, 15 Mar. 1991 (1 male); 23 Mar. 1989 (1 male); 13 Aug. 1993, at paper lures, 1030-1100 (1 female); 13 Aug. 1993, at paper lures, 1130-1200 (1 male); 16 Aug. 1993, associated with *Eciton burchelli*, 0830-0900 (1 female); 16 Aug. 1993, associated with *Eciton burchelli*, 0930-1000 (1 male); 16 Aug. 1993, associated with *Eciton burchelli*, 1030-1100 (1 male); 16 Aug. 1993, associated with *Eciton burchelli*, 1200-1230 (1 male); 16 Oct. 1993, on ridgetop, 1300-1400 (1 female); 27 Oct. 1989 (1 female); 9 Nov. 1992, associated with *Eciton burchelli*, 0900-0930 (1 male); 20 Nov. 1991 (1 male); 4 Dec. 1991 (1 female); Nov.-Dec. 1991, *leg.* S. Kohler (1 male); 3 km E Fazenda Rancho Grande, lot 18, 15 Aug. 1993, at paper lures, 1000-1030 (2 males); 15 Aug. 1993, at paper lures, 1630-1700 (1 female); 15 Nov. 1992, at paper lures, 0830-0900 (1 male); 18 Nov. 1992, associated with *Eciton burchelli*, 0830-0900 (1 male); 22 Nov. 1992, *leg.* G. Bongiolo, at paper lures, 0900-0930 (1 male); 22 Nov. 1992, *leg.* G. Bongiolo, at paper lures, 1330-1400 (1 male); linea C-20 at Rio Pardo, 17 Nov. 1991, at paper lures, 1000-1030 (1 male); linea C-2.5, off B-65, 12.5 km S Cacaulandia, 16 Mar. 1991 (2 males, 2 females); B-80, between lineas C-10 and C-15, 1 Dec. 1991, at paper lures (1 male); linea C-10, 5 km S Cacaulandia, 13 Feb. 1994, *leg.* O. Gomes (1 male); 10 May 1994, *leg.* O. Gomes (1 male); 5 June 1994, *leg.* O. Gomes (1 male); 12 June 1994, *leg.* O. Gomes (1 female); 17 July 1994, *leg.* O. Gomes (1 male); 1 Aug. 1993, *leg.* O. Gomes (1 female); 11 Sept. 1994, *leg.* O. Gomes (1 male); 28 Nov. 1993, *leg.* O. Gomes (1 female).

Deposition of types. The holotype and a female paratype will be deposited at the Departmento de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. The remaining paratypes will be distributed to other collections.

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

Etymology. This species is named because of its superficial similarity to several species of *Autochton* Hübner (Hesperiidae: Pyrginae).

Distribution and phenology. The species is known only from the types taken from February to December. It flies in the forest interior and has been seen associated with army ants and at white paper lures. One female was taken on a ridgetop.

Diagnosis and discussion. The color and pattern of *C. autochton* are very similar to those of *C. jao* with which it flies at the type locality. The latter species differs by having a slightly less produced forewing, often only one or 2 minute subapical macules (occasionally 3 of same size as on *C. autochton*), a narrower white band with the non-hyaline regions white (or nearly so), the caudal end of the band is often non-hyaline to vein CuA_2 and not conspicuously expanded distad, and the white adjacent to the fringe on the ventral hindwing is more restricted or absent. These superficial characters are most easily seen after determination based on the genitalia which are abundantly different.

The male genitalia of *C. jao* have more widely separated uncus and gnathos arms than *C. autochton*, the vinculum is not prominently S-shaped, the ampulla of the valva has a much shorter, narrow process that does not extend beyond the caudal end of the harpe and has a dorso-caudal orientation, the harpe is narrow and curved dorso-caudad, and the penis is about as long as the valva with the terminus of the cornutus as a pair of thorn-like processes.

The female genitalia of *C. jao* have a have a nearly square lamella postvaginalis contrasting with the caudally produced and centrally concave lamella of *C. autochton*. The lamella antevaginalis of *C. jao* is much narrower than that of *C. autochton* and bordered laterally by narrow, heavily spinose processes. The corpus bursae of *C. jao* is smaller and more nearly spherical than of *C. autochton*, and is more clearly distinct from the very slender ductus bursae which is somewhat expanded on *C. autochton*.

Specimens in collections under the name *C. jao* need to be carefully examined to document the full distribution of *C. autochton*.

Celaenorrhinus syllius (C. & R. Felder)

(Figs. 4, 5, 9, 10, 49, 58)

Ancistrocampta syllius C. & R. Felder, 1862
Celaenorrhinus syllius (C. & R. Felder, 1862): Evans, 1952

Description. Male: forewing length = 20.3, 21.2 mm; forewing with no costal fold, apex not produced, termen evenly convex; hindwing evenly convex or vaguely angled at vein CuA_1; dorsum very dark brown; forewing with broad yellow-orange band extending from mid costa (filling distal end of discal cell) to termen in CuA_2-2A, distal margin angled behind discal cell where band broadest, proximal margin nearly straight, band hyaline from anterior edge of discal cell to vein CuA_2, otherwise opaque; fringe as adjoining wing color. Hindwing unmarked, costa narrowly pale gray-brown; fringe brown.

Venter as dorsum except forewing anal margin pale gray-brown.

Head brown above, yellow-orange around eyes, palpi yellow-orange, black at tip, antennae black, narrowly white at segments, nudum dark gray, 15 (N = 1) or 18 (N = 1) segments ; thorax brown above and on sides beneath wings, pectus yellow-orange, legs brown with many pale brown scales, tibiae smooth, mid tibia with single pair of spurs, hind tibiae with 2 pairs, hind tibia with pale tan hair tuft, modified metepimeral scales of same color; abdomen brown above, ochreous with broad brown bands on venter, scent pouches present.

Genitalia: tegumen short with small caudal lobes; uncus arms short, widely spaced, and curved inward; gnathos arms relatively broad, slightly convergent caudad, and heavily spiculose; vinculum centrally angled; saccus long and thin; valva rectangular cephalad; ampulla with thin and hooked caudal process; harpe relatively thin with triangular tip, exceeding length of ampulla process, strongly curved mesad in dorsal view lateral of ampulla process; juxta simple band with short caudal lobes ventrad; penis tubular and somewhat flaring caudad; cornutus complex, major structure is spiral band terminating in spade-shaped flap with nearly perpendicular spike, also weakly sclerotized and somewhat spade-shaped smaller structure.

Female: forewing length = 20.7 mm (N = 1); virtually identical to male; antennal nudum red brown, 16 segments (N = 1).

Genitalia: lamella postvaginalis long and broad, caudal end narrowly concave medially; lamel-

la antevaginalis broad with caudal end straight, nearly covering ostium bursae; 2 largely membranous lateral lobes with vague sclerotization; antrum very broad, well sclerotized; ductus bursae immediately cephalad of antrum narrow, then expanded in a cup-like, wrinkled, and vaguely sclerotized process at ductus seminalis connection, cephalad of which it tapers to a slightly constricted, relatively narrow ductus, rather clearly separate from ovoid corpus bursae; no signa.

Distribution and phenology. Evans (1952) indicated a rather broad distribution for this species from the Guianas and Ecuador, south to Peru and central Brazil. In central Rondônia, it is very rare in the forest interior, has been recorded in April, August, and December, perches beneath leaves, and is attracted to white paper lures.

Discussion. This is one of 2 New World *Celaenorrhinus* with broad yellow-orange bands on the forewing. There are no small pale macules on the hindwing as on many other species of the genus nor subapical macules. The secondary sexual characters of the male and the genitalia leave no doubt as to its affinity.

A male *C. syllius* examined from Ecuador (Rio Napo, Limoncocha) is similar but the forewing band is much narrower and does not quite reach the costa or termen. The genitalia are virtually identical with those from Rondônia.

Discussion

Neotropical *Celaenorrhinus* taxa have several distinct wing pattern phenotypes even on a local basis as illustrated by the fauna in Rondônia. This diversity is united by erect palpi, no costal fold, a long forewing discal cell, and various secondary sexual characters (Evans 1952) plus certain structures of the male genitalia (lateral caudal lobes on the tegumen, a divided uncus, a divided and terminally thin gnathos, and a long and thin caudal process of the ampulla). Other characters vary widely especially those of the penis. This may be short and stout or long and thin. The cornutus ranges from absent to ornate. It should be noted that these male genitalic characters, although common also in Africa and Asian species, are not universal.

We have examined the female genitalia of 15 species of Neotropical *Celaenorrhinus*, but only one African species and none from the Asiatic fauna. Unless otherwise noted, the characteristics outlined below apply only to Neotropical species.

In the genitalia of female Lepidoptera, the antrum, a term coined by Higgins (1941:179) was defined by him as follows: "The ostium [bursae] leads into a short and wide chitinous canal which I term the *antrum*, with which are articulated a pair of divergent horny rods, which enter the bursa and appear to support it within the body cavity. I refer to these rods as the *bacilli*." Tuxen (1956), in the glossary defines Higgins' antrum as: "The most caudal part of ductus bursae when more heavily sclerotized and differentiated from remainder of ductus."

In some *Celaenorrhinus* species, such as *C. astrigera*, the antrum is short, rather heavily sclerotized at, and immediately cephalad of, the ostium bursae and rather sharply defined at its cephalad end. Others have the antrum very long and well sclerotized over its entire length as in *C. aegiochus*, *C. bifurcus*, *Celaenorrhinus elegius* (Stoll, [1781]), and *C. par*. In those species with clearly defined, well sclerotized antra, long or short, the ductus seminalis attaches to the ductus bursae very shortly cephalad of the antrum or at its cephalad end, and the ductus bursae is often somewhat constricted at this point. In other species, such as *C. jao* and *C. autochton*, the antrum is weakly sclerotized and poorly defined, the ductus seminalis attaches to the ductus bursae just cephalad of the antrum, but there is more or less vague internal sclerotization in the ductus bursae cephalad of this connection. In *C. autochton*, this sclerotization takes the form of 2 long lateral ribs, apparently analogous to the bacilli of Higgins (1941). In these taxa, the constriction of the ductus bursae is well cephalad of the ductus seminalis. Others, such as *C. shema*, have antra intermediate between the fully sclerotized form of *C. eligius*, etc. and the very weakly sclerotized form of *C. jao* and *C. autochton*; here the antrum is well sclerotized caudally, but the sclerotization fades cephalad so that at the point of constriction (and juncture of ducti semenalis and bursae) the "antrum" is completely membranous.

In most of the species examined, the ductus bursae is quite long, slender, and clearly differentiated from the corpus bursae, which is usually rather small and subspherical, but may be somewhat elongate and ovoid. In 1 species, *C. savia*, the ductus bursae is quite broad and more or less gradually expands cephalad to form the corpus bursae; others vary between these extremes. The corpus bursae commonly bears a single, longitudinal, narrow spiculose signum ventrally, which is absent on some species. The corpus is frequently

somewhat produced dorsad at its juncture with the ductus bursae, which connects to the ventral side of the corpus at its distal end.

The configuration of the sterigma varies greatly between species while retaining an overall similarity of relatively simple, symmetrical lamellae, ostium bursae, and antrum.

De Jong (1982) reviewed the secondary sexual characters of *Celaenorrhinus*. He noted that most species of the genus have hair tufts on the hind tibiae which are held by enlarged scales on the third epimeron plus an abdominal scent organ consisting of a pair of pouches on the second abdominal sternite. One Old World species lacks tufts, modified scales, and pouches and all continental African species lack pouches. Among New World species, only *C. jao* was reported not to have any of the 3 characters (de Jong 1982). In 1894, Godman and Salvin (1879-1901) erected the genus *Orneates* for *Eudamus aegiochus* Hewitson, 1876. Superficially, this is a distinctive black and blue species with white, hyaline forewing band and subapical macules. Evans (1952) described a different looking species, *Orneates savia*, based on a single specimen, describing the ventral hindwing as "very like *Celaenorrhinus*." He said of the genus: "seems to be a connecting link between *Porphyrogenes* and *Celaenorrhinus*" (we do not see this link). His description indicated broad similarities between *Orneates* and *Celaenorrhinus* (no costal fold, hind tibiae with hair tuft and associated thoracic "pouch", antennae 1/2 length of costa) and distinguished them solely by hindwing shape (tornus produced on *Orneates* [but no more than on certain *Celaenorrhinus*]) and apiculus ("rather more arcuate" on *Orneates* [a function of mounting?]). He also chacterized *Orneates* as having 18 segments on the nudum. This is true for *C. aegiochus* but *C. savia* has 19-22 segments and *C. orneates* has 20. The nudum varies from 13 to 18 segments on the other species of *Celaenorrhinus* from Rondônia examined here. The presence of a tibial tuft and other secondary characters was the basis for considering *Orneates* as a junior synonym of *Celaenorrhinus* by de Jong (1982). Despite the striking differences in color and pattern of *C. aegiochus* from other New World *Celaenorrhinus*, we agree with this action. The male genitalia (Fig. 41) have the *Celaenorrhinus* aspect (divided uncus, form of the gnathos, caudal lobes on the tegumen, overall shape of the valva including ampulla process and elongate harpe) as do the female genitalia (Fig. 51).

Further comment on *Orneates*, however, is warranted. We do not see why Evans (1952) associated *C. savia* with *C. aegiochus*. That species, and the superficially similar *C. orneates*, are of a much different phenotype than *C. aegiochus* and lack the usual male secondary sexual characters. Evans (1952) did not see a male of *C. savia* (where would he have placed it if he had?) and obviously neither did de Jong (1982). The male genitalia of *C. savia* and *C. orneates* are undoubtedly of the *Celaenorrhinus* type and, although distinct from each other in many ways, are similar (and quite different from *C. aegiochus*) in their broad gnathos, long caudal process of the ampulla, well developed juxta, distinctly upcurved phallobase, and no cornutus. The female genitalia of *C. aegiochus* and *C. savia* are also very different in the form of the lamellae and presence of a signum on *C. aegiochus*.

The *Celaenorrhinus* of Rondônia have an interesting diversity of secondary sexual character states of males. Both *C. savia* and *C. orneates* lack all 3 secondary sexual characters of most species of the genus as does *C. jao*. *Celaenorrhinus autochton* is unique with the absence of tibial tufts and associated modified scales on the thorax but with an abdominal scent organ. The remaining 4 species from Rondônia have all 3 characters. We examined males of other New World *Celaenorrhinus* readily available to us: *C. aegiochus*, *C. disjunctus*, *C. stola*, *C. approximatus*, *C. bifurcus*, *Celaenorrhinus fritzgartneri* (Bailey, 1880), *Celaenorrhinus stallingsi* Freeman, 1946, *C. eligius*, *Celaenorrhinus monartus* (Plötz, 1884), and *Celaenorrhinus suthina* (Hewitson, 1877). All examined (18 of 24 now recognized species), except the 4 noted above, possessed tibial tufts, enlarged thoracic scales, and abdominal pouches. The absence of these characters appears to be secondary losses, occurring in apparently disparate taxa, *C. jao* otherwise being quite different from *C. savia* and *C. orneates* but very similar to *C. autochton* in wing characters.

The intrageneric variation in wing pattern, secondary sexual characters, and genitalia suggests that relationships of New World taxa need to be sought among various Old World groups and not solely among New World taxa. An interesting cladistic study awaits some future student of the genus.

Key to males of *Celaenorrhinus* of central Rondônia, Brazil

1. Dorsum relatively uniform dark brown with continuous hyaline band from forewing costa to outer margin near tornus 2
— Dorsum less uniform, hyaline macules on forewing more or less separate, hindwing often with numerous small opaque macules 4

2. Forewing band yellow-orange ..... *C. syllius*
— Forewing band white 3

3. Process of ampulla longer than harpe .. *C. autochton*
— Process of ampulla of equal length to or shorter than harpe ..... *C. jao*

4. Large (forewing > 22 mm), hind tibia without tuft... 5
— Smaller (forewing < 21.5 mm), hind tibia with tuft 6

5. Submarginal macules not present in M_1-M_2 and M_2-M_3 ..... *C. savia*
— Submarginal macules present in M_1-M_2 and M_2-M_3 ..... *C. orneates*

6. Dorsum nearly black, forewing without large central macules, small white macules numerous .... *C. astrigera*
— Dorsum paler brown, forewing with large central macules, small white macules fewer 7

7. Ventral hindwing yellow-orange ..... *C. s. ochra*
— Ventral hindwing without yellow-orange ..... *C. par*

Key to females of *Celaenorrhinus* of central Rondônia, Brazil

1. Dorsum relatively uniform dark brown with continuous hyalineband from forewing costa to outer margin near tornus 2
— Dorsum less uniform, hyaline macules on forewing more or less separate, hindwing often with numerous small opaque macules 4

2. Forewing band yellow-orange ..... *C. syllius*
— Forewing band white 3

3. Lamallae short and broad, lamella antevaginalis with broad central lobe, lateral lobes not spinose... ..... *C. autochton*
— Lamellae long and narrow, lamella antevaginalis with narrow central lobe, lateral lobes spinose ..... *C. jao*

4. Large (forewing > 23 mm)[1] ..... *C. savia*
— Smaller (forewing < 22 mm) 5

5. Dorsum nearly black, forewing without large central macules, small white macules numerous .... *C. astrigera*
— Dorsum paler brown, forewing with large central macules, small white macules fewer 6

6. Ventral hindwing yellow-orange ..... *C. s. ochra*
— Ventral hindwing without yellow-orange ..... *C. par*

[1] females of *C. orneates* will probably key out here and be distinguished from *C. savia* as are males

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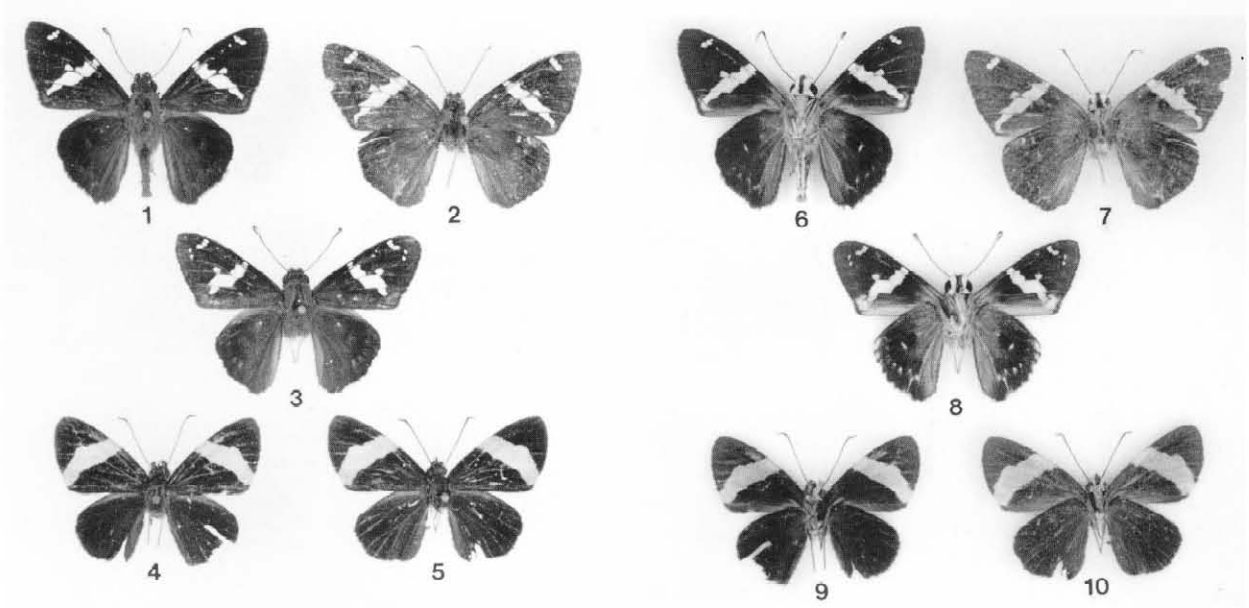
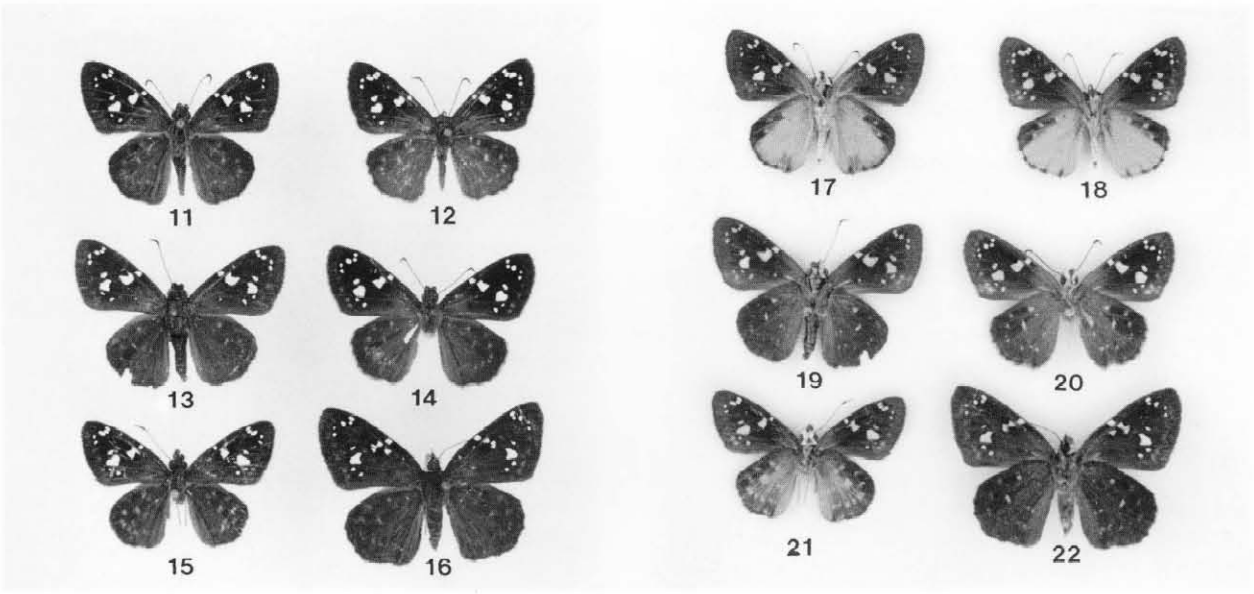
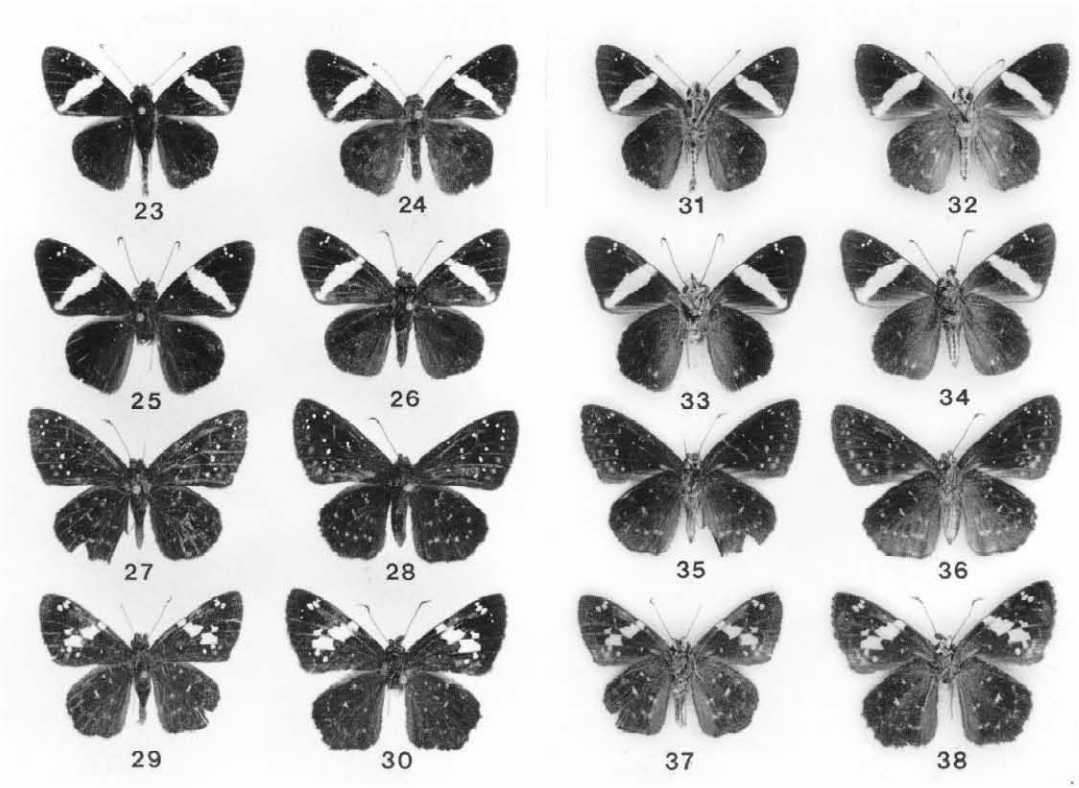


Figs. 1-5. *Celaenorrhinus* species, dorsal surface (all from BRAZIL: Rondônia; vicinity of Cacaulândia). Fig. 1. *C. savia*, male, 22 Nov. 1992. Fig. 2. *C. savia*, female, 29 Nov. 1990. Fig. 3. *C. orneates*, holotype male. Fig. 4. *C. syllius*, male, 17 Apr. 1992. Fig. 5. *C. syllius*, female, 13 Aug. 1993. **Figs. 6-10**. *Celaenorrhinus* species, ventral surface. Same specimens as Figs. 1-5.



Figs. 11-16. *Celaenorrhinus* species, dorsal surface. Fig. 11. *C. shema ochra*, male, BRAZIL: Rondônia; vicinity of Cacaulândia, 19 June 1993. Fig. 12. *C. shema ochra*, female, BRAZIL: Rondônia; vicinity of Cacaulândia, 31 Oct. 1989. Fig. 13. *C. shema vox*, male, PERU: Yombatos, X 28. Fig. 14. *C. shema vox*, female, PERU: Balsapuerto, Feb. Fig. 15. *C. shema ochra*, male, BRAZIL: Rondônia; vicinity of Cacaulândia, 19 June 1993 (ventral hindwing lightly scaled with yellow-orange, intermediate towards *C. s. vox*). Fig. 16. *C. disjunctus*, male, PERU: Huan., Tingo Maria, v-23-47. **Figs. 17-22.** *Celaenorrhinus* species, ventral surface. Same specimens as Figs. 11-16.



Figs. 23-30. *Celaenorrhinus* species, dorsal surface (all from BRAZIL: Rondônia; vicinity of Cacaulândia). Fig. 23. *C. jao*, male, 14 June 1993. Fig. 24. *C. jao*, female, 13 Aug. 1993. Fig. 25. *C. autochton*, holotype male. Fig. 26. *C. autochton*, paratype female, 16 Mar. 1991. Fig. 27. *C. astrigera*, male, 5 Mar. 1994. Fig. 28. *C. astrigera*, female, 26 Apr. 1994. Fig. 29. *C. par*, holotype male. Fig. 30. *C. par*, paratype female, 16 Apr. 1994. **Figs. 31-38.** *Celaenorrhinus* species, ventral surface. Same specimens as Figs. 23-30.

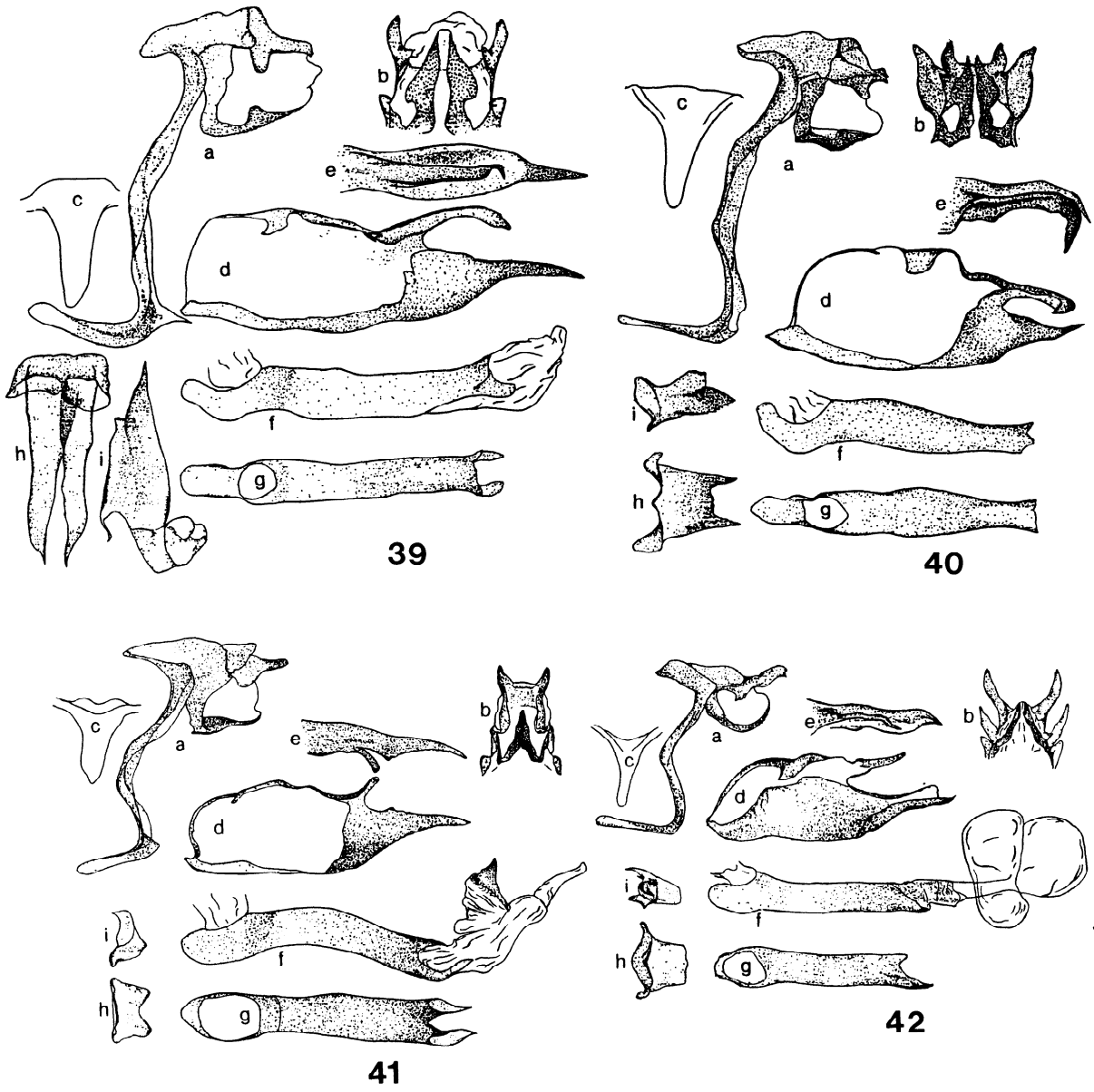
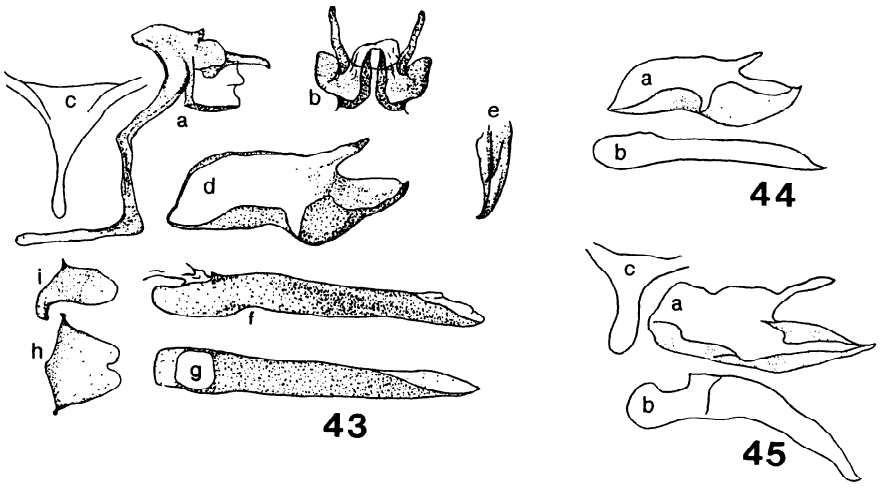
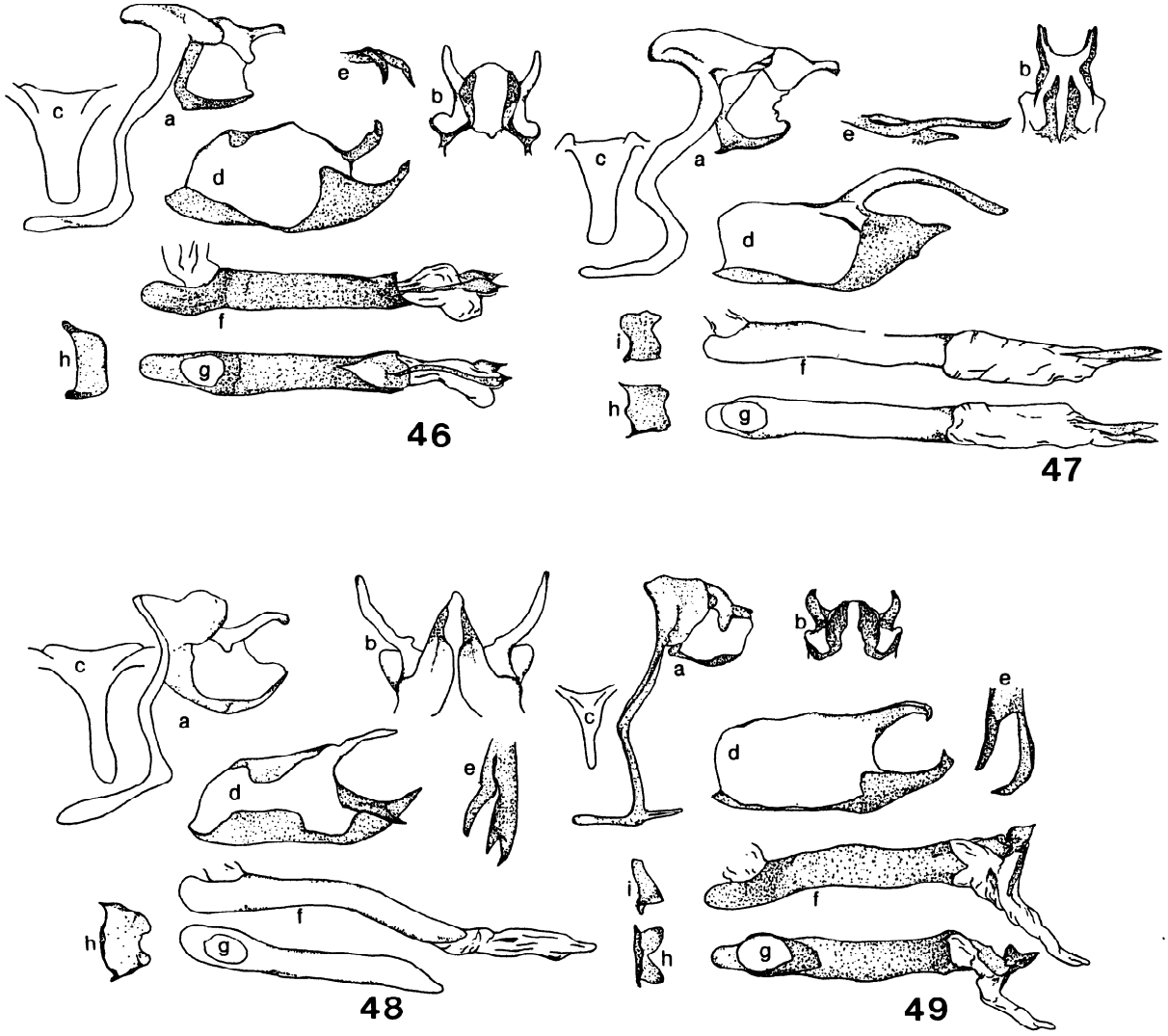


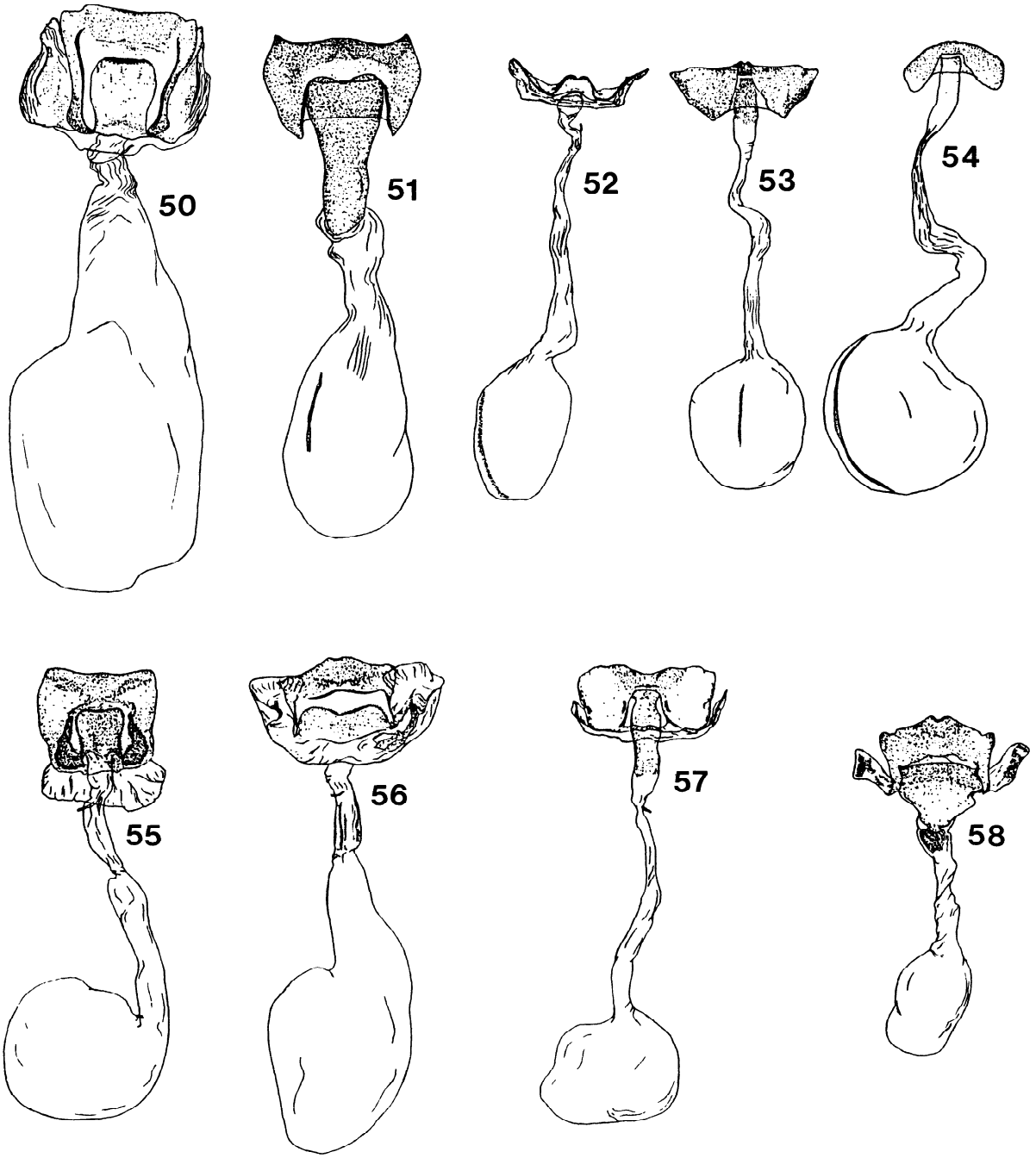
Fig. 39-42. Male genitalia of *Celaenorrhinus* species. Fig. 39. *C. savia*, BRAZIL: Rondônia; vicinity of Cacaulândia (GTA #4321): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view. Fig. 40. *C. orneates*, holotype male (GTA #3408): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view. Fig. 41. *C. aegiochus*, COSTA RICA: Cartago; Turrialba (GTA #4409): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view. Fig. 42. *C. astrigera*, BRAZIL: Rondônia; vicinity of Cacaulândia (GTA #4393): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view.



Figs. 43-45. *C. shema ochra*, BRAZIL: Rondônia; vicinity of Cacaulândia (GTA #4370): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view. Fig. 44. *C. shema vox*, BOLOVIA: Santa Cruz (AMNH#G907): (a) right valva - interior lateral view; (b) penis - lateral view (the manner of the slide preparation does not permit illustration in more detail). Fig. 45. *C. disjunctus*, PERU: Huan.; Tingo Maria (AMNH#2029): (a) right valva - interior lateral view; (b) penis - lateral view; (c) saccus - ventral view; (the manner of the slide preparation does not permit illustration in more detail).



Figs. 46-49. Male genitalia of *Celaenorrhinus* species. Fig. 46. *C. jao*, BRAZIL: Rondônia; vicinity of Cacaulândia (GTA #2757): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view. Fig. 47. *C. autochton*, holotype male: (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view. Fig. 48. *C. par*, holotype male: (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view. Fig. 49. *C. syllius*, BRAZIL: Rondônia; vicinity of Cacaulândia (GTA #2134): (a) tegumen, uncus, gnathos, vinculum, and saccus - lateral view; (b) uncus, gnathos, and adjacent tegumen - ventral view; (c) saccus - ventral view; (d) right valva - interior lateral view; (e) caudal end of valva including valva and caudal process of ampulla - dorsal view; (f) penis - lateral view; (g) penis - dorsal view; (h) juxta - ventral view; (i) juxta, lateral view.



Figs. 50-58. Female genitalia of *Celaenorrhinus* (all from BRAZIL: Rondônia; Cacaulândia, unless noted), ventral view. Fig. 50. *C. savia* (SRS #4436). Fig. 51. *C. aegiochus*, COSTA RICA: Cartago; Turrialba (GTA #4410). Fig. 52. *C. asterigera* (SRS #4443). Fig. 53. *C. shema ochra* (GTA #4369). Fig. 54. *C. shema vox*, PERU: Balsapuerto (GTA #4485). Fig. 55. *C. jao* (GTA #3284). Fig. 56. *C. autochton* (GTA #3287). Fig. 57. *C. par* (GTA #4032). Fig. 58. *C. syllius* (GTA #4371).