

HESPERIIDAE OF RONDÔNIA, BRAZIL: *ENTHEUS* HÜBNER, WITH DESCRIPTIONS OF NEW SPECIES (LEPIDOPTERA: HESPERIIDAE: PYRGINAE)

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ABSTRACT.— Six species of *Entheus* were found in central Rondônia, Brazil. Four are described as new species: *Entheus eunyas* n. sp. of the *E. eumelus* group, *Entheus aureanota* n. sp. of the *E. priassus* group, and *Entheus aureolus* n. sp. and *Entheus bombus* n. sp. of the *E. gentius* group. A neotype is designated for *Papilio gentius* (Cramer, [1777]). *Entheus ninyas* is returned to a species level taxon. The status of *Entheus telemus* is elaborated.

KEY WORDS: Amazon, Apidae, Bolivia, Colombia, Ecuador, *Entheus aureanota* n. sp., *Entheus bombus* n. sp., *Entheus aureolus* n. sp., *Entheus eunyas* n. sp., Formicidae, Hymenoptera, Neotropical, Peru, South America, Surinam, Venezuela.

The Neotropical genus *Entheus* Hübner, [1819], creates taxonomic headaches from several directions. The striking sexual dimorphism and sympatry of several species makes association of the sexes a challenge (Steinhaus, 1989). Compounding the problem are superficial similarities between species, few obvious characters of the genitalia, and unrecognized taxa (Evans, 1952; Steinhaus, 1989). Further, some of Evans' (1952) subspecific level taxa (and synonyms) may be valid species in themselves. Sorting out this chaos requires extensive collections and detailed studies of the various phenotypes to identify distributions, sympatrics, and variation and to correctly associate sexes and taxa.

The male genitalia of most *Entheus* are very similar. The tegumen has a pair of processes from the caudal end, the uncus is divided, the upturned gnathos is spiculate on its lateral surfaces caudad and joined ventrad on the caudal half by a lightly sclerotized membrane, a process from the inner surface of the costa of the valva extends caudad, the caudal end of the harpe is dentate and curved inward, the penis has a long and slender phallobase and a stout aedeagus with the caudal end sharply pointed and opening dorsad, and the cornuti consist of several prominent spikes. Godman and Salvin's (1879) figure omitted the costal process of the valva and Evans (1952) showed this structure as a caudal extension of the vinculum (Steinhaus, 1989).

The female genitalia of *Entheus* have a narrow central portion of the lamella postvaginalis usually with a central notch on the caudal margin. This is fused with a cephalad narrowing trough which ends at the caudal end of a distinct, sclerotized, and cup-

shaped antrum. Laterally, the lamella postvaginalis is a pair of broad plates which are variously produced and dentate on their caudal edge and spinose along their medial edge and mid venter. The plates are covered by a membraneous flap which is distinctly striated medially (appearing like a feather). The lateral plates were interpreted as the lamella antevaginalis by Steinhaus (1989) but these structures are clearly dorsad and caudad of the ostium. The lamella antevaginalis is not distinguishable and is apparently fused with the antrum. The ductus bursae is bulbous and constricted at the cervix. The corpus bursae has a short and narrow neck and an expanded sac cephalad.

In central Rondônia, Brazil, *Entheus* is represented by six species: one of the *Entheus eumelus* (Cramer) group, three of the *Entheus priassus* (Linnaeus) group, and two of the *Entheus gentius* (Cramer) group. Four of these represent undescribed species. These species and certain synonymies are discussed, their genitalia are illustrated, and four new species are described. Forewing length is from base to apex of specimens from Rondônia, unless noted. Terminology for structures of the genitalia follows Steinhaus (1986); the penis is characterized by the anterior phallobase and posterior aedeagus. Capitalized color names are after Smithe (1975, 1981).

Entheus eumelus Species-Group

A number of misconceptions are present in the literature concerning *Entheus* taxa characterized by Evans (1952) as having broadly orange males with no tibial tuft, continuous hyaline discal and [sub]apical bands, and a macule between these bands in M_3 - CuA_1 . The names involved are discussed below and a new species is described from Rondônia.

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Fig. 1. *Entheus* males, dorsal surface. Top row: left - *E. eunyas*, holotype; center - *E. telemus*, BRAZIL: Rondônia; 62 km S Ariquemes, Fazenda Rancho Grande, 12 Jun 1993; right - *E. priassus pralina*, BRAZIL: Rondônia; Linha 10, 5 km S Cacaupândia, 4 May 1995. Middle row: left - *E. aureanota*, holotype; right - *E. priassus pralina*, BRAZIL: Esp. Santo; Conceição da Barra, 4 Sep 1969. Bottom row: left - *E. gentius*, neotype; center - *E. bombus*, holotype; right - *E. aureolus*, holotype.
 Fig. 2. *Entheus* males, ventral surface. Same specimens as in Fig. 1.

Entheus eumelus* (Cramer)Papilio eumelus* Cramer, [1777]*Entheus eumelus*; Evans, 1952*Entheus mina* Williams & Bell, 1931 (part.; male only, female is of *E. gentius*)

The female of *E. eumelus* is similar to the male, and, in fact, Cramer's (1777) figure is of a female. Williams and Bell (1931) proposed *Entheus mina* for a putative pair from Dutch Guiana (Surinam). The male was said to have "a broad costal fold"; the holotype was examined by Mielke and has no costal fold (no *Entheus* has a costal fold) as subsequently noted for a male from Surinam (de Jong, 1983). This name is synonymous with *E. eumelus*. The genitalia figure by Williams and Bell (1931) for *E. mina* is a poor representation. The female of Williams and Bell's (1931) "pair" of *E. mina* was considered *Entheus gentius* by Evans (1952); this may be correct (see below under that species). Evans' (1952) records were for French and British Guiana. Mielke's records are for Venezuela (Bolívar: Santa Elena) and Brazil (Pará: Óbidos, Aug). The "type" of *Papilio eumelus* is from Surinam as is the holotype of *Entheus mina*.

Entheus ninyas* H. H. Druce, rev. stat.Entheus ninyas* H. H. Druce, 1912*Entheus eumelus ninyas*; Evans, 1952 (part)***Entheus eunyas* Austin, Mielke & Steinhauser, n. sp.**

(Fig. 1-5, 12)

Entheus ninyas H. H. Druce, 1912*Entheus eumelus ninyas*; Moss, 1949 (biology, hostplant); Evans, 1952 (part)

Description.— MALE: forewing length = 17.2mm (16.7-18.0, n = 4); forewing apex pointed, not produced, termen evenly curved; hindwing slightly angled at vein M_3 ; dorsal forewing with bright orange (Spectrum Orange to Chrome Orange) triangular-shaped patch basad from basal 1/3 of anterior edge of discal cell to 3/4 distance to tornus on anal margin; remainder of forewing dark brown with pale yellow hyaline macules as follows: continuous discal band from vein Sc through discal cell to just posterior of CuA_2 where narrow and triangular-shaped; parallelogram-shaped macule in M_3-CuA_1 , about 1/2 distance from discal band to termen; continuous (but divided by dark veins), curved series of 6 subapical-submarginal macules from R_2-R_3 to M_2-M_3 , 4 subapical macules elongate, submarginal macules nearly square, terminating about 1/2 distance between macule in M_3-CuA_1 and termen; costa overscaled with orange basad; vague pale orange costal macule anterior to discal cell macule; often orange scaling posterior to end of discal band. Hindwing bright orange; costal margin very pale brown along basal 1/2, darker brown distad and caudad to vein Rs; outer margin narrowly dark brown; fringes dark brown on both wings.

Ventral surface nearly identical to dorsum; orange paler; forewing narrowly pale gray-brown along anal margin distad of orange; hindwing costal margin dark brown on distal 1/2 only; outer margin more broadly brown.

Head black with white macules above, very pale yellow beneath and behind eyes; palpi black, broadly very pale yellow beneath; antennae black, nudum with 22 segments (n = 4); thorax orange above with narrow black line just behind collar, black mixed with very pale yellow beneath wings, forecoxae very pale yellow; legs dark brown proximad with long very pale yellow scales, pale yellow distad, mid tibia with one pair of spurs, outer slightly shorter than inner, hind tibia with two pairs of spurs, inner longer than outer, no tibial hair tuft, hind tarsus not modified; abdomen black above with many long orange scales, pale yellow beneath.

Genitalia: tegumen short with broad lobate caudal processes which cover most of dorsal uncus cephalad; uncus relatively short, arms slightly

divergent; gnathos typical for genus; valva quadrate cephalad; costa with short and blunt process; caudal end of harpe narrow, sharply bent inward; penis short, stout, caudal end not prominently curved dorsad; 8 spike-like cornuti (n = 2); a male from Maués, Amazonas also has 8 cornuti (3 are larger and 5 are of medium size).

FEMALE: forewing length = 17.1-17.2mm (n = 2); apex more rounded and produced than on male; dorsum dark brown; forewing with white, hyaline macules as on male; base of discal cell with broad orange streak extending two-thirds distance to discal cell macule; vague orange scaling at mid costa anterior to discal cell macule; hindwing with large, more or less rectangular white or pale yellowish patch extending from vein Rs to anal margin where broadest, this more than half the width of the wing leaving the extreme base, costal margin, and outer margin (4mm in width) brown.

Ventral forewing similar to dorsum; pale orange macules anterior to and nearly the width of discal cell macule; anal margin whitish to proximal edge of macule in CuA_2-2A ; base of discal cell pale orange; hindwing with white patch more extensive anteriorly, extending nearly to the base and more distad towards apex.

Head black with white macules above, white beneath and behind eyes; palpi white ventrally, black on dorsal and inner surface; antennae black, narrowly whitish distad beneath, nudum with 18 (n = 1) or 23 (n = 1) segments; thorax black above with a few white scales in collar, scattered pale orange and pale gray scales laterad, white beneath; legs pale brown, outer surface white, mid and hind tibiae with spurs as on male but shorter; abdomen black above, nearly entirely overscaled with white except caudad, white beneath.

Genitalia: central lamella postvaginalis broad on straight caudal edge, narrowing rapidly and fused with trough leading to caudal end of distinct antrum; laterally lamella postvaginalis with broad but short plates, not overlapping or extending caudad of caudal end of central portion of lamella postvaginalis, caudal end broad with several short, robust teeth of about equal size, covered cephalad with membranous flap, this with feather-like striations; ductus bursae broad before narrowing to corpus bursae.

Types.— *Holotype* ♂ with the following labels: white, printed - BRASIL: Rondonia / 62 km S Ariquemes / linea C-20, 7 km E / B-65, Fazenda / Rancho Grande / 16 June 1993 / leg. G. T. Austin / (at paper lures / 1200-1230); white, printed and handprinted - Genitalia Vial / GTA - 3708; red, printed - HOLOTYPE / *Entheus eunyas* / Austin, Mielke & Steinhauser.

Paratypes (all BRAZIL: Rondônia, leg. G. T. Austin unless noted): same location as holotype, 22 Oct 1992, leg. J. P. Brock, associated with *Eciton burchelli* (Hymenoptera: Formicidae), 0825-0855h (1 ♂); 15 Nov 1992 (1 ♀); linea C-20, 10 km E B-65, 3 km E Fazenda Rancho Grande, lot 18, 15 Jun 1993, at paper lures, 1100-1130h (1 ♂); 15 Jun 1993, at paper lures, 1230-1300h (1 ♂); linea C-10, 5 km S Cacaulândia, 30 Jul 1995 (1 ♂), leg. O. Gomes (1 ♂); 1 Oct 1993, leg. O. Gomes (1 ♀); 13 Sep 1994, leg. O. Gomes (1 ♂); 14 Nov 1995, leg. O. Gomes (1 ♂).

Deposition of types.— The holotype and a female paratype will be deposited at the Dept. de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil; remaining paratypes will be deposited at the Allyn Museum of Entomology and other collections.

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

Etymology.— The name was derived by the combination of parts of the names of the two previously described species of the *Entheus eumelus* group.

Distribution and phenology.— Evans (1952) gave records (under *E. eumelus ninyas*) for Colombia (this may be yet another spe-

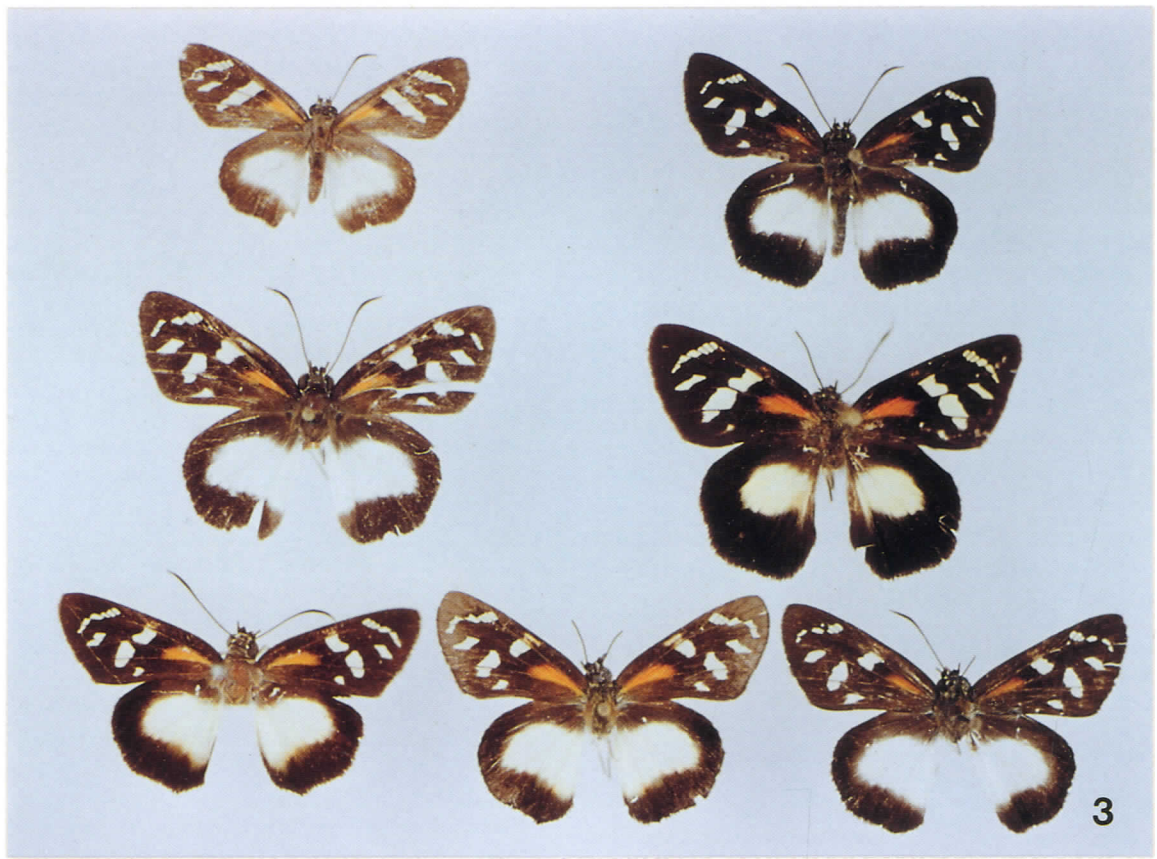


Fig. 3. *Entheus* females, dorsal surface. Top row: left - *E. eunyas*, paratype, BRAZIL: Rondônia; linea C-10, 5 km S Cacaúlândia, 1 Oct 1993; right - *E. telemus*, BRAZIL: Rondônia; 62 km S Ariquemes, Fazenda Rancho Grande, 18 Apr 1992. Middle row: left - *E. aureanota*, paratype, BRAZIL: Rondônia; 62 km S Ariquemes, Fazenda Rancho Grande, 14 Nov. 1991; right - *E. priassus pralina*, BRAZIL: Esp. Santo; Conceição da Barra, 26 Sep 1968. Bottom row: left - *E. gentius*, SURINAM: Goliath Kreek, 24 Feb 1969; center - *E. bombus*, paratype BRAZIL: Rondônia; 62 km S Ariquemes, Fazenda Rancho Grande, 19 Apr 1991; right - *E. aureolus* paratype, BRAZIL: Rondônia; 65 km S Ariquemes; 3 km E Fazenda Rancho Grande, lot 18, 15 Nov 1992.

Fig. 4. *Entheus* females, ventral surface. Same specimens as in Fig. 3.

cies) and central Brazil (these from Pará, Mato Grosso, Goiás); Evans' Bolivia record is of *E. ninyas*. Mielke has records for Brazil (Amazonas: Maués, Tefé, Januareté; Rondônia: near Ariquemes) with collection dates of March and December. This is a rare forest species in Rondônia and was recorded in March, June, July, and September through November.

Diagnosis and discussion.— The male genitalia of *E. eumelus*, *E. ninyas*, and *E. eunyas* are the most distinctive of the several *Entheus* species, especially with the absence of a long process from the costa. The figure of the valva of *E. ninyas* by Evans (1952) is somewhat misleading as the harpe was flattened giving it a different aspect than it has in situ. *Entheus ninyas* and *E. eunyas* are considered different species from *E. eumelus* due to their marked sexual dimorphism (not seen in *E. eumelus*) and their different genitalia. The uncus of both *E. ninyas* and *E. eunyas* is broader in dorsal view than that of *E. eumelus*. The caudal end of the harpe seen laterally is larger on *E. ninyas* but not on *E. eunyas*. *E. eunyas* has 8 cornuti of differing size while *E. ninyas* from Bolivia has six cornuti, all of the same size, and an *E. eumelus* from Óbidos has 9 cornuti (2 large and 7 of medium size). Superficially, *E. ninyas* has the dorsal surface with darker orange than *E. eunyas* with semihyaline bands on the forewing and the female has a narrow (2mm) brown margin on the hindwing. *Entheus ninyas* was described from Bolivia; Mielke has additional records for Bolivia (Buenavista) and Peru (Madre de Dios: Pakitza, Pq. Nacional del Manu, Oct).

Entheus priassus Species-Group

Evans (1952) characterized his concept of *E. priassus* as having black males with yellow forewing macules (some hyaline or partially so) with the macule in cell M_3 - CuA_1 not separated from the the macules of the continuous discal band. Females were determined by their gray base to the ventral forewing discal cell, the shape and placement of the macule in forewing cell M_3 - CuA_1 , absence of a mid costal macule, and the genitalia having short spines on the lateral plates of the lamella postvaginalis.

The types for most of the several names proposed for this group are lost; the status of most of these taxa will be difficult, at best, to determine. Three subspecies of *E. priassus* were recognized by Evans (1952) and distinguished by superficial characters of each sex and the male genitalia: *E. p. priassus*, *Entheus priassus telemus* Mabilite, 1898, and *Entheus priassus pralina* Evans, 1952. His illustrations of the male genitalia (valva only except for *E. p. priassus*) are marginally recognizable. The valvae of his *E. p. priassus* and *E. p. pralina* are similar to each other and different from that of *E. p. telemus*. Evans (1952) also noted that the processes at the back of the uncus (= processes of the tegumen) were shorter on *E. p. telemus*. Williams and Bell (1931) illustrated the male genitalia of *E. priassus* and (1934) of *E. p. telemus*.

The male genitalia of the taxa associated with *E. priassus* by Evans (1952) appear as two groups. One group, including *E. p. telemus* and an undescribed species from Peru and Ecuador, has short processes of the tegumen and a thin uncus in lateral view. The other, including *E. p. priassus*, *E. p. pralina*, and two undescribed species (one each from Rondônia and Peru), have longer processes of the tegumen and a broad uncus in lateral

view. These taxa are in need of a thorough reexamination to determine their status. Only the three Rondônia species are dealt with in depth here and mention is made of the others when applicable.

Entheus telemus Mabilite

(Fig. 1-4, 6, 13)

Entheus telemus Mabilite, 1898; Emmel & Austin, 1990:7

Entheus priassus telemus; Evans, 1952

Description.— MALE: forewing length = 17.6mm (16.0-18.1, n = 10); forewing apex pointed, not produced, termen evenly curved; hindwing subquadrate, slightly angled at vein M_3 ; dorsum very dark brown, nearly black; forewing with broad, bright orange (Spectrum Orange to Chrome Orange, sometimes more yellowish where hyaline) discal band from vein Sc through distal half of discal cell nearly to outer margin in CuA_2 -2A, extending to but not below vein 2A, proximal edge not perpendicular to anal margin in cell CuA_2 -2A; band opaque; large, triangular-shaped, orange, macule in M_3 - CuA_1 , often hyaline distad, this extending from base of cell where joined with discal band nearly to outer margin on vein CuA_1 , angled away from margin anteriorly; series of four elongate, conjoined, orange, partially hyaline, subapical macules from R_2 - R_3 to R_5 - M_1 , conjoined with discal band anteriorly; these continuous with two similar, conjoined, submarginal macules in cells M_1 - M_2 and M_2 - M_3 which are contiguous with or slightly overlapping anterior distal corner of macule in M_3 - CuA_1 , orange macules enclosing relatively small triangular brown area; hindwing unmarked; fringes dark brown on both wings.

Ventral surface nearly identical to dorsum; forewing narrowly pale gray-brown along anal margin; orange of discal band often extends proximad in anterior portion of discal cell.

Head black with orange macules above, pale yellow-orange beneath eyes; palpi black, broadly orange beneath; antennae black, narrowly yellow distad beneath, nudum of 19 (n = 3), 20 (n = 6), or 21 (n = 4) segments; thorax black above with a few orange scales in collar, black beneath with some yellow-orange scales in forecoxae; legs dark brown, first two pairs with yellow-orange at sides proximad, hind legs with red-brown on posterior half of outer face of tibia, mid tibia with one pair of spurs, outer much shorter than inner, hind tibia short, with one pair of spurs, inner nearly 3x length of outer, long brown tibial hair tuft fitting into groove on back of flattened and elongate first tarsal segment; abdomen black above, black with pale yellow-orange to orange caudad beneath.

Genitalia: tegumen relatively long with narrow, proximate, sharply pointed pair of caudal processes, their caudal end far short of the caudal end of uncus; uncus relatively long, caudally thin in lateral view, arms slightly divergent in ventral view; gnathos typical for genus, nearly as broad as caudal end of uncus in ventral view; costa of valva with very long caudally directed and terminally hooked process extending as far as cephalad end of harpe; caudal end of harpe relatively broad, finely dentate, curved inward and twisted at ventro-caudal corner; penis bulbous cephalad, narrowing caudad where sharply upturned with long and pointed lower lip; five long spike-like cornuti and 8 (n = 1), 9 (n = 2), or 10 (n = 1) shorter cornuti.

FEMALE: forewing length = 18.7mm (18.1-19.4, n = 9); apex more rounded and produced than on male; dorsum dark brown; forewing with white, hyaline macules as follows: discal cell, rhomboidal, anterior edge longer than posterior, proximal and distal edges excavate; M_3 - CuA_1 , parallelogram, near termen; CuA_1 - CuA_2 , rhomboidal, posterior edge longer than anterior, midway between macules in discal cell and M_3 - CuA_1 ; anterior CuA_2 -2A, quadrate to rhomboidal, anterior edge often longer than posterior, smaller than macule in CuA_1 - CuA_2 , outer edges of two in line; posterior CuA_2 -2A, triangular, offset proximad from macule in anterior portion of same cell; four subapical, more or less elongate, posteriormost offset slightly distad; two submarginal in cells M_1 - M_2

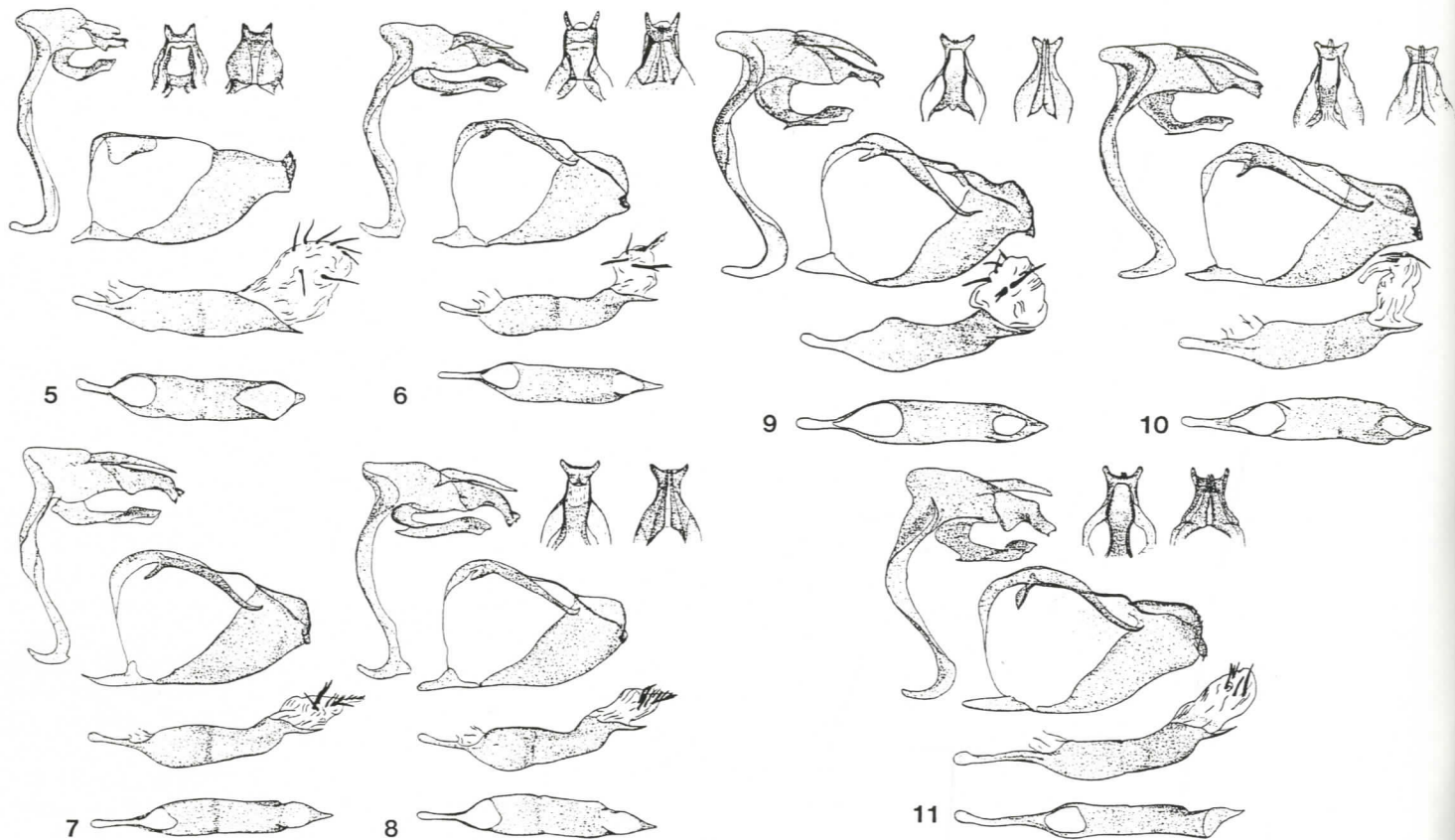


Fig. 5-11. Male genitalia of *Entheus*, lateral view of tegumen, gnathos, uncus, and associated structures; dorsal and ventral views of uncus, gnathos, and anterior tegumen; interior view of right valva; left lateral view of penis; and dorsal and ventral views of penis (latter without vesica and cornutus). (5) *E. eunyas*, paratype, BRAZIL: Rondônia; 3 km E Fazenda Rancho Grande, lot 18, 15 Jun 1993 (GTA #3707); (6) *E. telemus*, BRAZIL: Rondônia; Fazenda Rancho Grande, 16 Apr 1992 (GTA #2388); (7) *E. priassus pralina*, BRAZIL: Esp. Santo; Conceição da Barra, 4 Sep 1969 (GTA #2387), dorsal and ventral views of uncus, etc. not shown; (8) *E. aureanota*, paratype, Fazenda Rancho Grande, 13 Nov 1991 (GTA #2386); (9) *E. gentius*, neotype (GTA #5766); (10) *E. bombus*, holotype (GTA #2512); (11) *E. aureolus*, paratype, 3 km E Fazenda Rancho Grande, lot 18, 22 Sep 1992 (GTA #2513).

and M_2 - M_3 , quadrate, often square, offset distad from and usually not contiguous with subapical macules, subapical-submarginal macular series crossed by dark veins; no or vague white streak in costal cell anterior to discal cell macule; base of discal cell with bright orange streak extending 2/3 to 3/4 distance to discal cell macule; hindwing with relatively narrow, more or less rectangular creamy white patch extending from vein R_s to anal margin, this about half the width of wing leaving extreme base, costal margin, and outer margin broadly brown.

Ventral forewing similar to dorsum; white macules anterior to and narrower than discal cell macule in Sc - R_1 and R_1 - R_2 ; anal margin white to distal edge of posterior macule in CuA_2 - $2A$; base of discal cell whitish; hindwing with white patch more extensive, extending to the base and nearly to costal margin.

Head black with white macules above, white line beneath antennae, white beneath and behind eyes; palpi very pale yellow, black on dorsal and inner surfaces; antennae black, narrowly very pale yellow beneath distad and under club, nudum of 19 ($n = 1$), 20 ($n = 1$), or 21 ($n = 3$) segments; thorax black above with a few white scales in collar, scattered white and ochreous scales otherwise, white beneath; legs pale brown, outer surface white, mid and hind tibiae with spurs as on male but shorter; abdomen black above, sparsely overscaled with white, white beneath.

Genitalia: central portion of lamella postvaginalis narrow, about as long as broad, caudal margin with prominent central indentation, fused with trough which narrows cephalad, leading to ostium bursae at caudal end of distinct antrum; lateral lamella postvaginalis of broad plates not

or slightly overlapping central lamella postvaginalis and extending caudad to about its caudal edge, caudal end narrow with distinct inner tooth and several very small teeth distad, broadening gradually cephalad with several small teeth on inner edge caudad, covered with membranous flap cephalad, this with some feather-like striations; ductus bursae bulbous, narrowing before elongate corpus bursae.

Distribution and phenology.— Evans (1952) gave the distribution of *E. telemus* as Ecuador, Peru, and Brazil. This may require modification since we have seen phenotypes which superficially resemble *E. telemus* but have different genitalia. In central Rondônia, this species is relatively common in the forest with records for all months.

Discussion.— We treat *E. telemus* as a full species, separate from *E. priassus* as in the original description and in Emmel and Austin (1990). Among other characters, it differs from *E. p. priassus* and *E. p. pralina* by the conjoined apical and discal bands on the male forewing, the extensive white (extending to the anal margin) on the female hindwing, and the male genitalia. Our recent finding of *E. p. pralina* near Cacaúlândia further strengthens the specific status of *E. telemus*.

Entheus priassus pralina Evans

(Fig. 1-4, 7, 14)

Entheus priassus pralina Evans, 1952

Description.— MALE: forewing length = 18.0mm ($n = 1$); forewing apex produced, termen evenly curved; hindwing subquadrate, slightly angled at vein M_3 ; dorsum nearly black; forewing with narrow, bright orange (Chrome Orange) discal band from vein Sc through distal half of discal

cell nearly to outer margin in CuA_2-2A , extending to but not below vein 2A, proximal edge not perpendicular to anal margin in cell CuA_2-2A , band opaque; large, triangular-shaped, much paler orange, hyaline macule in M_3-CuA_1 , this extending from base of cell where joined with discal band to 2/3 distance to outer margin on vein CuA_1 , angled away from margin anteriorly; series of four elongate, conjoined, pale orange, hyaline, subapical macules from R_2-R_3 to R_5-M_1 , separate from discal band anteriorly; these continuous and conjoined with two similar submarginal macules in cells M_1-M_2 and M_2-M_3 which terminate about 1/2 distance from distal corner of macule in M_3-CuA_1 and outer margin; subapical-submarginal macules crossed by narrowly bright orange veins; hindwing unmarked; fringes dark brown on both wings.

Ventral surface nearly identical to dorsum; forewing narrowly pale gray-brown along anal margin.

Head black with pale yellow-orange macules above, pale yellow-orange beneath and behind eyes; palpi black, broadly pale yellow-orange beneath; antennae black, narrowly yellow distad beneath, nudum of 19 segments; thorax black above with a few orange scales in collar, black beneath with numerous yellow-orange scales in forecoxae; legs dark brown, first two pairs with yellow-orange on sides, hind legs with yellow-orange on posterior 1/3 of outer face of tibia, mid tibia with one pair of spurs, outer somewhat shorter than inner, hind tibia short, with one pair of spurs, inner about 2X length of outer, long brown tibial hair tuft fitting into groove on back of flattened and elongate first tarsal segment; abdomen black with vague ochreous caudad beneath.

Genitalia: tegumen long with narrow, proximate, sharply pointed pair of caudal processes, their caudal end nearly reaching caudal end of uncus; uncus relatively long, moderately broad and curved ventrad at middle in lateral view, arms widely divergent in ventral view; gnathos typical for genus, moderately broad in lateral view, narrower than caudal end of uncus in ventral view; costa of valva with very long caudally directed and terminally hooked process extending as far as cephalad end of harpe; caudal end of harpe relatively narrow, finely dentate, curved inward and twisted at ventro-caudal corner; penis somewhat bulbous cephalad, narrowing somewhat caudad where sharply upturned with long and pointed lower lip; 12 spike-like cornuti (4-5 large, based on 4 specimens from various locales).

FEMALE: unknown at Rondônia study site (see discussion below).

Distribution and phenology.— Evans (1952) reported the distribution of this taxon as Brazil (Espírito Santo, Rio, San Salvador, Amazonas). One male from central Rondônia was taken on 4 May 1995.

Discussion.— A single male which we identify as this taxon is known from the Cacaupândia area of central Rondônia. Its superficial characters are very similar to specimens from elsewhere but it is smaller (a male from Espírito Santo, Brazil with FW length = 19.9mm) and the genitalia are virtually identical. No females have been seen from Rondônia. These should be similar to female *E. telemus* but (based on material from Espírito Santo) have the subapical/submarginal and median series of macules on the forewing continuous, more extensive orange in the forewing discal cell, and a smaller white area on the dorsal hindwing, this not reaching the anal margin.

***Entheus aureanota* Austin, Mielke & Steinhauser, n. sp.**

(Fig. 1-4, 8, 15)

Description.— MALE: forewing length = 19.8mm (17.3-21.2, n = 10); forewing apex pointed, not produced, termen evenly curved; hindwing quadrate, angled at vein M_3 ; dorsum very dark brown, nearly black; forewing with broad, bright orange (Spectrum Orange, distinctly paler where hyaline) discal band from vein Sc through distal half of discal cell to outer margin in CuA_2-2A , not extending below vein 2A, proximal

edge nearly perpendicular to anal margin in cell CuA_2-2A ; band mostly opaque, hyaline at distal end of discal cell and anteriorly in cell CuA_1-CuA_2 where adjoined to large, triangular-shaped, orange, hyaline macule in M_3-CuA_1 , this extending from base of cell nearly to outer margin on vein CuA_1 , angled away from margin anteriorly; series of four elongate, conjoined, orange, hyaline, subapical macules from R_2-R_3 to R_5-M_1 , nearly touching (but clearly separate from) or touching (5 of 15 specimens) discal band anteriorly; these followed by two, conjoined, roughly quadrate, otherwise similar, offset slightly distad (but continuous with subapical macules), submarginal macules in cells M_1-M_2 and M_2-M_3 , latter smaller than former and placed 1/2 distance between anterior distal corner of macule in M_3-CuA_1 and termen; hindwing unmarked; fringes dark brown on both wings.

Ventral surface nearly identical to dorsum; forewing narrowly pale gray-brown along anal margin.

Head black with pale yellow-orange macules above, pale yellow-orange beneath eyes; palpi black, broadly pale yellow-orange beneath; antennae black, narrowly yellow distad beneath, nudum of 20 (n = 5), 21 (n = 5), or 22 (n = 3) segments; thorax black above with a few yellow-orange scales in collar, black beneath with pale yellow-orange forecoxae; legs dark brown, first two pairs with yellow-orange at sides proximad, hind legs with red-brown on posterior half of outer face of tibia, mid tibia with one pair of spurs, inner slightly longer than outer, hind tibia short, with one pair of spurs, inner longer than outer, long tibial hair tuft ochreous proximad, brown distad, fitting into groove on back of flattened and elongate first tarsal segment; abdomen black above, black with pale yellow-orange caudad beneath.

Genitalia: very similar to most other species of the genus (e.g., Steinhauser, 1989); tegumen relatively long with narrow, proximate, sharply pointed pair of caudal processes, their caudal end extending nearly to caudal end of uncus; uncus relatively long, caudally broad in lateral view, arms broadly divergent in ventral view; gnathos typical for genus, narrower than caudal end of uncus in ventral view; costa of valva with very long caudally directed and terminally hooked process extending as far as cephalad end of harpe; caudal end of harpe relatively narrow, curved mesad and twisted at ventro-caudal corner; penis bulbous cephalad, narrowing caudad where sharply upturned with long and pointed lower lip; 13-15 spike-like cornuti, 4 or 5 are much larger than others.

FEMALE: forewing length = 20.5mm (20.1-21.1, n = 7); apex more rounded and produced than on male; dorsum dark brown; forewing with white, hyaline macules as follows: discal cell, rhomboidal, anterior edge longer than posterior, distal and proximal edges excavate; M_3-CuA_1 , parallelogram, near termen; CuA_1-CuA_2 , rhomboidal, posterior edge longer than anterior, midway between macules in discal cell and M_3-CuA_1 ; anterior CuA_2-2A , roughly rhomboidal, anterior edge longer than posterior, much smaller than macule in CuA_1-CuA_2 , outer edges of two in line; posterior CuA_2-2A , triangular, offset proximad from macule in anterior portion of same cell; four subapical, elongate, posteriormost offset slightly distad; two submarginal in cells M_1-M_2 and M_2-M_3 , square, offset distad from but contiguous with (or slightly separated from) subapical macules, subapical-submarginal macular series crossed by dark veins; vague to prominent white streak in costal cell anterior to discal cell macule; base of discal cell with bright orange streak extending 2/3 or more distance to discal cell macule; hindwing with large, more or less rectangular white patch extending from vein Rs to anal margin, this more than half the width of the wing leaving the extreme base, costal margin, and outer margin brown.

Ventral forewing similar to dorsum; white macules anterior to and nearly the width of discal cell macule in $Sc-R_1$ and R_1-R_2 ; anal margin white to distal edge of posterior macule in CuA_2-2A ; base of discal cell whitish; hindwing with white patch extending to the base.

Head black with white macules above, white line beneath antennae,

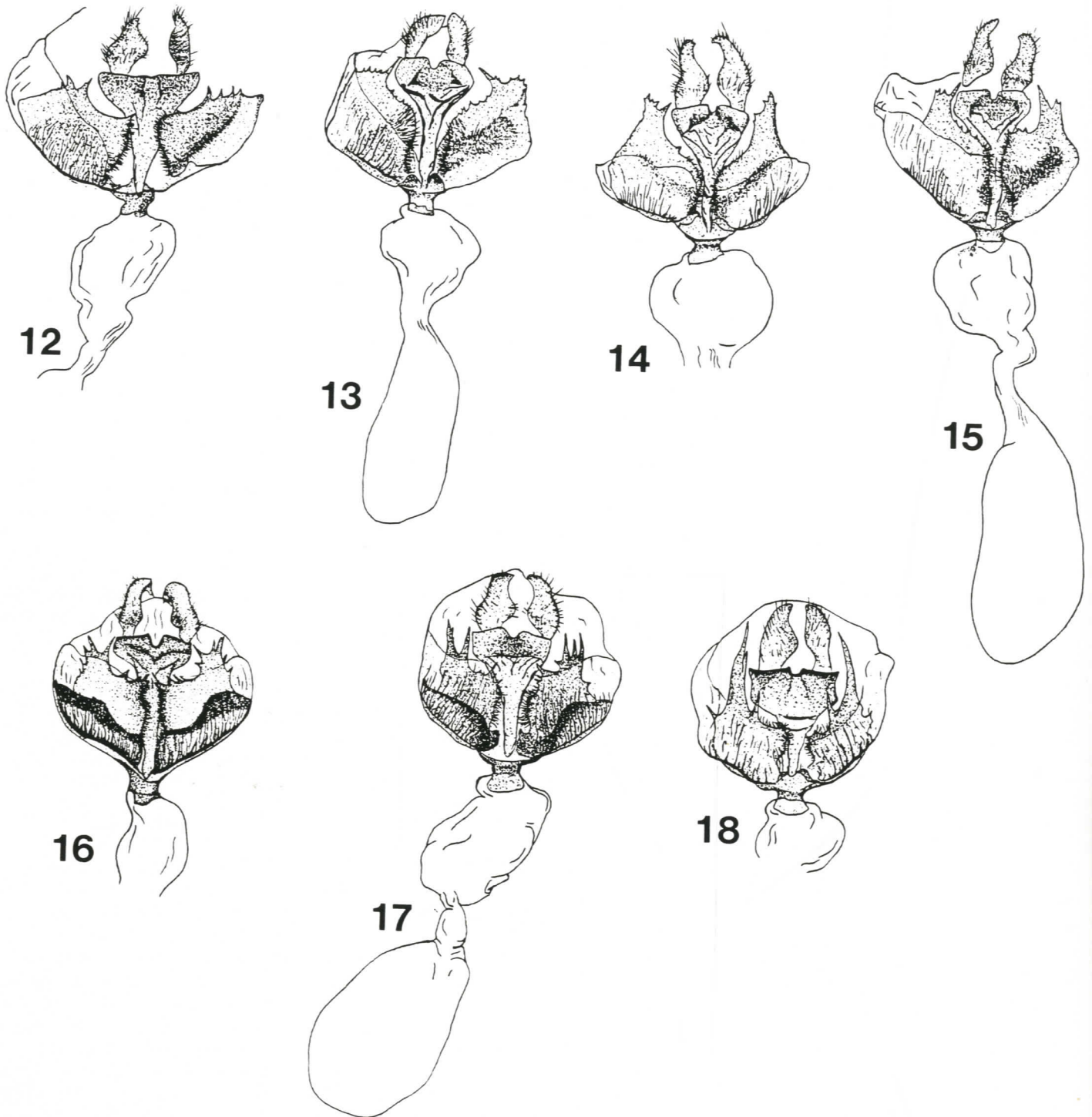


Fig. 12-18. Female genitalia of *Entheus*, ventral view. (12) *E. eunyas*, paratype, Fazenda Rancho Grande, 15 Nov 1992 (GTA #4398); (13) *E. telemus*, BRAZIL: Rondônia; B-65, 1 km N Cacaúlândia, 20 Oct 1989 (GTA #2445); (14) *E. priassus pralina*, BRAZIL: Esp. Santo; Conceição da Barra, 26 Sep 1968 (GTA #2390); (15) *E. aureanota*, paratype, BRAZIL: Rondônia; "Big Rock" trail, 3 km E Fazenda Rancho Grande, 29 Oct 1990 (GTA #3351); (16) *E. gentius*, SURINAM: Goliath Kreek, 24 Feb 1969 (GTA #5767); (17) *E. bombus*, paratype, Fazenda Rancho Grande, 19 Apr 1991 (GTA #3346); (18) *E. aureolus*, paratype, Fazenda Rancho Grande, 25 Sep 1992 (GTA #3353).

white beneath and behind eyes; palpi white, black on dorsal and inner surface; antennae black, narrowly whitish distad beneath becoming very pale yellow beneath club, nudum of 20 ($n = 1$), 21 ($n = 3$), or 22 ($n = 1$) segments; thorax black above with a few white scales in collar, scattered white and ochreous scales otherwise, white beneath; legs pale

brown, outer surface white, mid and hind tibiae with spurs as on male but shorter; abdomen black above, nearly entirely overscaled with white, white beneath.

Genitalia: central lamella postvaginalis somewhat broader than long, caudal edge relatively straight with slight to prominent central indenta-

tion, fused with trough which narrows cephalad, leading to ostium bursae at caudal end of distinct antrum; lateral lamella postvaginalis of broad plates not or slightly overlapping central lamella postvaginalis and not extending much caudad of it, caudal end narrow, inner tooth usually twice (or more) as long as outer two or three teeth, clearly separate from them, medial edge often with distinct teeth, cephalad portion abruptly broader than caudad, covered with membranous flap, this feather-like due to parallel striations; ductus bursae bulbous, this narrowing somewhat before elongate corpus bursae.

Types.— *Holotype* ♂ with the following labels: white, printed BRASIL: Rondonia / 62 km S Ariquemes / off B-65, vicinity / Fazenda Rancho / Grande, 180m / 2 November 1989 / leg. G.T. Austin; red, printed - HOLOTYPE / *Entheus aureanota* / Austin, Mielke & Steinhauser.

Paratypes (all BRAZIL: Rondônia, leg. G. T. Austin unless noted): same location as holotype, 21 Jul 1994 (1 ♂); 4 Aug 1991, leg. G. Bongioiolo (1 ♀); 21 Nov 1991, leg. O. Mielke (1 ♀); 14 Nov 1991, leg. O. Mielke (1 ♀); 8-19 Nov 1994, leg. O. Mielke (1 ♂); 22 Mar 1989 (1 ♂); 9 May 1995 (1 ♂); 21 Jul 1994 (1 ♂); 26 Oct 1989 (1 ♂); 29 Oct 1990 (1 ♀); 3 Nov 1989 (1 ♀); 13 Nov 1991 (1 ♂); 14 Nov 1991 (1 ♀); 20 Nov 1991, leg. G. Bongioiolo (1 ♂); 21 Nov 1991, leg. J. P. Brock (1 ♂); Nov-Dec 1991, leg. S. Kohler (2 ♂); 3 Oct 1992, leg. G. Bongioiolo (1 ♂); 14 Jun 1993, at paper lures, 1030-1100h (1 ♂); 12 Jun 1993, assoc. with *Eciton burchelli* (Hymenoptera: Formicidae), 1230-1300h (1 ♂); 21 Apr 1992 (1 ♀); 14 Nov 1992 (1 ♀); 3 km E Fazenda Rancho Grande, lot 18, 18 Jul 1994 (1 ♂); 21 Sep 1992 (1 ♂); 15 Nov 1992 (1 ♀); "Big Rock" trail, 3 km E Fazenda Rancho Grande on linea C-20, 29 Oct 1990 (1 ♂, 1 ♀); linea 10 at Rio Pardo, off B-65, 5 km S Cacaulândia, 30 Jan 1994, leg. O. Gomes (1 ♂); 19 Jun 1993, at paper lures 1000-1030h (1 ♂); 26 Feb 1995, leg. O. Gomes (1 ♀); 14 May 1995, leg. O. Gomes (1 ♂); 14 Jul 1993, leg. O. Gomes (1 ♂); 17 Jul 1993, leg. O. Gomes (2 ♂); 23 Jul 1994, leg. O. Gomes (1 ♂); 13 Aug 1994, leg. O. Gomes (1 ♂); 8 Nov 1994, leg. O. Gomes (2 ♂); 13 Nov 1994, leg. O. Gomes (1 ♂); 12 Dec 1993, leg. O. Gomes (1 ♂); Ariquemes, 10-20 Jul 1989, leg. C. Mielke (1 ♀); 12 Jun 1986, leg. Miers (1 ♀); Ouro Preto d'Oeste, 20-30 Sep 1987, leg. C. Elias (3 ♂); 8-14 Oct 1987, leg. C. Elias (1 ♀); 16-23 Oct 1987, leg. C. Elias (1 ♀); 12-19 Mar 1988, leg. C. Elias (1 ♂).

Deposition of types.— The holotype and a female paratype will be deposited at the Dept. de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. The remaining paratypes will be deposited in the collections of the Universidade Federal do Paraná, O. Mielke, Allyn Museum of Entomology, and Nevada State Museum.

Type locality.— BRAZIL: Rondônia; 62 km south of Ariquemes, linea C-20, 7 km (by road) east of route B-65, Fazenda Rancho Grande at an elevation of 180m. This is approximately 5 km northeast of Cacaulândia in typical lowland tropical rainforest. As typical for the genus, these butterflies inhabit the dark areas of the forest interior and perch beneath leaves.

Etymology.— The name means "gold mark" and refers to the markings on the forewing.

Distribution and phenology.— The species is known only from the types taken in all months.

Diagnosis and discussion.— Males of this species will key to *E. priassus pralina* in Evans (1952); these differ in consistent characters. The ground color of *E. p. pralina* (Fig. 1-2) is similar to that of *E. aureanota*. The discal band on *E. p. pralina* is narrower and more regular, especially on its proximal edge which is oblique to the anal margin at its posterior end and is further from the termen distad; it does not have anterior hyaline regions. The macule in M_3 - CuA_2 on *E. aureanota* is angled more sharply towards its anterior edge. The subapical macules on *E. p. pralina*

form a smooth series with the submarginal macules which are not offset distad. Females of *E. p. pralina* (Fig. 3-4) have a much smaller whitish area on the hindwing (this not reaching the anal margin), larger macules on the forewing (the posterior macule in CuA_2 -2A, however, is much smaller than on *E. aureanota*) with the discal cell macule normally overlapping that in CuA_1 - CuA_2 , and normally a broader and more intensely orange streak at the base of the forewing discal cell.

Males of *E. aureanota* are also similar to *E. telemus*. The latter is as dark as *E. p. pralina* and also normally has a broad discal band on specimens from Rondônia; at other locations (Manaus, São Gabriel, Belém, Maués, Januareté, "Guiana"), the discal band is narrower. The subapical and submarginal macules are conjoined with the discal band and macule in M_3 - CuA_1 , respectively, leaving a small, completely enclosed triangle of dark ground color between. The orange discal markings of *E. telemus* are usually not hyaline. *Entheus telemus* is smaller than *E. aureanota* and has less pointed forewing apices. Both *E. p. pralina* and *E. telemus* have longer inner spurs on the hind tibiae. *Entheus aureanota* and *E. telemus* fly together at the type locality of the former. The females of *E. aureanota* are very similar to those of *E. telemus* (to which they will key in Evans, 1952) and are identified by their larger size, somewhat more pointed apex of the forewing, broader forewing macules, at least a vague white macule at the mid costa, and the more extensive white on the hindwing.

The genitalia of both sexes of *E. aureanota* differ from those of *E. p. pralina* (Fig. 7, 14). The male valva of *E. aureanota* is broader than on *E. p. pralina*, the anterior edge is broadly convex (this angles cephalad towards the ventral edge on *E. p. pralina*), and the twisted portion of the harpe is broader and more rounded. In lateral view, the uncus is thinner and more curved ventrad on *E. aureanota*. The four males of *E. p. pralina* examined have 12 spike-like cornuti (4-5 large, the remainder decreasing progressively in size). On the female of *E. p. pralina*, the trough leading to the ostium bursae is diamond-shaped caudad and sharply defined (not gradually blending into trough as on *E. aureanota*). The caudal ends of the lateral plates of the lamella postvaginalis are more truncate and longer (extending cephalad beyond the central lamella postvaginalis) and have four posterior teeth on each plate, the inner is not as long as on *E. aureanota* and less clearly separate. The lateral plates of the lamella postvaginalis are more gradually truncate and broaden more cephalad than on *E. aureanota* and lack distinct medial teeth.

The valva of *E. telemus* is shorter than on *E. aureanota*, the caudal portion of the tegumen is shorter, the uncus is straighter and much thinner in lateral view, and the arms of the uncus are nearly parallel in dorsal view. The female genitalia of *P. telemus* are similar to those of *E. aureanota* but the lamella postvaginalis plates are more ornately endowed with spines on their broader caudal ends.

The relationships of *E. telemus* and *E. aureanota* with *E. priassus* and *E. p. pralina* are unknown. It is impossible to say at this stage of our knowledge if any are subspecies of *E. priassus* or are conspecific in any other combination. Obviously, at least three species are involved with the sympatry encountered in Rondônia. For this reason, we describe *E. aureanota* as a species and leave it to a future reviser to decide its final place of rest.

Entheus gentius Species-Group

Evans (1952) distinguished the male of *E. gentius* by its broad and largely opaque yellow markings and a presence of a rhomboidal macule in cell M_3 - CuA_1 . Females were characterized by a yellow to orange base to the ventral forewing discal cell, discontinuous discal and apical bands, the usual absence of a mid costal macule, a usually large lower macule in cell CuA_2 -2A, and long spines on the lateral plates of the lamella postvaginalis.

Evans (1952) noted that males were "very variable in respect of size, tone of orange coloring and width border H" and "the form of the clasp very variable." He also stated that the uncus was asymmetrical (his figure does not indicate this; no *Entheus* we have seen has an asymmetric uncus). De Jong (1983) noted variation among females in the placement of forewing macules and configuration of the genitalia. It is unknown if they were looking at more than one species. Among our material from Rondônia, there are two distinct species and we questioned which, if either, represented *Papilio gentius* Cramer described from Surinam. Since a type does not exist for this taxon, it was necessary to first determine its identity. Material from Surinam was requested from R. de Jong at the Nationaal Natuurhistorisch Museum in Leiden. He sent four specimens, a male of which appears to represent Cramer's (1777) concept. This (plus specimens examined by Mielke) is described and discussed before treatment of the Rondônia species.

Entheus gentius (Cramer)

(Fig. 1-4, 9, 16)

Papilio gentius Cramer, [1777]*Entheus gentius*; Moss, 1949 (hostplant); Williams and Bell, 1931 (misident. see below); Evans, 1952 (part?)*Entheus mina* Williams and Bell, 1931 (part, female only); Evans, 1952

Description.— MALE: forewing length = 18.5mm (neotype); forewing apex pointed, not produced, termen and costa slightly convex; hindwing subquadrate, slightly angled at vein M_3 ; dorsum marked with black and opaque bright yellow-orange (Orange Yellow); forewing with yellow-orange basal third; broad yellow-orange discal band from vein Sc through distal end of discal cell approaching outer margin in CuA_2 -2A, edges nearly parallel, distal edge somewhat irregular anteriorly, portion in discal cell hyaline (this latter appears to be a unique character for *E. gentius*); yellow-orange parallelogram-shaped hyaline macule in M_3 - CuA_1 , equidistant between termen and discal band; slightly curved series of four elongate, conjoined, yellow-orange subapical hyaline macules from vein R_2 to M_1 , clearly separate from discal band anteriorly; these continuous with similar hyaline submarginal macules in cells M_1 - M_2 and M_2 - M_3 , latter smaller than former and placed halfway between anterior distal corner of macule in M_3 - CuA_1 and termen, entire series of macules decreasing in size posteriad; hindwing yellow-orange with very broad (nearly 1/3 wing width) black outer margin; between 1A and anal margin and partially distad between 2A and 3A more narrowly black, grayer proximad; fringes black on both wings.

Ventral surface nearly identical to dorsum; yellow; black margin of hindwing much broader at tornus and along anal margin to wing base.

Head yellow-orange, white to pale yellow beneath and behind eyes; palpi black above and on inner surface, otherwise pale yellow; antennae missing on neotype, black with club and adjacent shaft pale yellow on other specimens, nudum of 24 ($n = 4$) or 25 ($n = 1$) segments; thorax and abdomen bright yellow-orange above, thorax yellow-orange beneath including forecoxae; legs yellow-orange, mid tibia missing on neotype (yellow on other specimens), hind tibiae with one pair of spurs, inner more than 2X length of outer and hair tuft fitting into groove on back of

flattened and elongate first tarsal segment, this with outer portion orange with black tip (1/3 its length) and very long, extending to distal end of first tarsal segment, inner portion pale brown and of the same length; abdomen yellow-orange beneath.

Genitalia: similar to *E. telemus* as described above; uncus thin in lateral view and nearly straight; gnathos narrow in ventral view; valva broad cephalad, costal process traces broadly rounded arc from origin, harpes relatively narrow; penis robust; 7 cornuti, one of which is very long.

FEMALE: forewing length = 19.6mm ($n = 1$); apex more produced than on male; dorsum dark brown; forewing with white, hyaline macules as follows: discal cell, rectangular, distal edge concave; M_3 - CuA_1 , parallelogram, nearer termen than to discal cell macule; CuA_1 - CuA_2 , rhomboidal, posterior edge longer than anterior, nearly contiguous with discal cell macule, far from macule in M_3 - CuA_1 ; anterior CuA_2 -2A, more or less square, anterior edge slightly longer than posterior, somewhat smaller than macule in CuA_1 - CuA_2 , edges of two in line; posterior CuA_2 -2A, nearly opaque, more or less quadrate, smaller than and offset proximad from macule in anterior portion of same cell; four subapical, elongate, posteriormost slightly longer than others; two submarginal in cells M_1 - M_2 and M_2 - M_3 , square, offset slightly distad from but contiguous with subapical macules forming nearly continuous series, subapical-submarginal macular series crossed by dark veins; short (or none on another specimen), pale orange, mid costal macules anterior to discal cell macule; base of discal cell with moderately broad yellow-orange streak extending 2/3 distance to discal cell macule; hindwing with large white patch extending from vein Rs to anal margin where broadest, this more than half the width of the wing leaving the extreme base, costal margin, and outer margin brown, brown outer margin vaguely edged proximad by pale yellow-orange.

Ventral forewing similar to dorsum; white macules anterior to and same width as discal cell macule; anal margin whitish to under distal edge of posterior macule in CuA_2 -2A; base of discal cell pale yellow-orange extending to costa; hindwing with white patch more extensive, extending to base and nearly to costal margin.

Head black with white macules above, white line beneath antennae, white beneath and behind eyes; palpi white, black on dorsal and inner surfaces; antennae black proximad, whitish beneath distad and beneath club, nudum of 26 segments ($n = 1$); thorax brown above with a few white scales in collar and scattered yellow scales, white beneath; legs pale brown, outer surface white, tibial spurs shorter than on male; abdomen white, slight yellow tinge on sides.

Genitalia: central lamella postvaginalis more or less rectangular, broader than long with prominent central indentation on caudal edge, fused cephalad with long trough leading to ostium bursae at caudal end of distinct antrum; lateral lamella postvaginalis with very broad plates nearly touching centrally, not overlapping caudal end of central lamella postvaginalis, caudal end with numerous teeth, these moderately long and extending to or beyond caudal end of central lamella postvaginalis laterad and shorter centrally, covered cephalad by membranous flap with prominent striations; ductus bursae bulbous; corpus bursae not seen.

Type.— As mentioned the type of this species is lost. A male (without antennae) at the Nationaal Natuurhistorisch Museum, Leiden, is here designated as the neotype of *Papilio gentius* Cramer, [1777]. It is labeled as follows: white, handprinted (difficult to decipher) - E. H. Jonkers / bosgebied / Rama aan / Sur. rivier / Suriname / 18-3-1974; white, printed and handprinted - Genitalia Vial / GTA-5766; red, printed - NEOTYPE / *Papilio gentius* / Cramer, [1777] / designated by / Austin, Mielke & Steinhauser / 1995. The associated female (described above) is also from Surinam (Goliath Kreek, February).

Distribution and phenology.— Evans (1952) indicated a broad distribution for *E. gentius* in the northern two-thirds of South America. Further evaluation of the variation mentioned by Evans

(1952) and de Jong (1983) and the now known existence of at least two additional species in this group will require refinement of this. At present, *E. gentius* is known from Surinam (the type locality) and Mielke has seen additional material from northern portions of Brazil (Amazonas: Vila Nova, Manaus; Pará: Óbidos) and Colombia (Amazonas: Leticia). These have collection dates from April to September.

Discussion.— Of the two broadly yellow species of *Entheus* seen from Surinam (*E. gentius* and the second new species described below), the present phenotype matches most closely the somewhat stylized representation of *Papilio gentius* in Cramer (1777). This figure (Plate CLXX, Fig. C) shows a more yellow (rather than yellow-orange) insect with a very broad black margin on the hindwing and an entirely yellow head and body (see also discussions under following two species). Williams and Bell (1931) and Evans (1952) illustrated male genitalia determined as *E. gentius*. The latter are too schematic to determine species. The Williams and Bell (1931) figure is somewhat better and appears not to be of *E. gentius* based upon the short processes of the tegumen and the thin penis (see below). The female described above from Surinam has genitalia different from both other known species of the *E. gentius* group and thus is associated with *E. gentius* by default. The female illustrated by Williams and Bell (1931) as *E. mina* is virtually identical superficially with the female assigned to *E. gentius* here and Evans (1952) was correct in synonymizing that specimen with *E. gentius*. A second female seen from Surinam is of similar size (19.5mm) and is marked similarly but with the macules in CuA_1-CuA_2 and anterior CuA_2-2A offset distad by their width from the discal cell macule. This also appears to be *E. gentius* but the genitalia could not be examined since the abdomen was missing.

***Entheus bombus* Austin, Mielke & Steinhauser, n. sp.**

(Fig. 1-4, 10, 17)

Description.— MALE: forewing length = 18.0mm (17.2-18.9, n = 5); forewing apex pointed, not produced, costa relatively straight, termen evenly curved; hindwing quadrate, angled at vein M_3 ; dorsum marked with black and opaque bright yellow with slight orange cast (near Orange Yellow); forewing with yellow basal third; broad yellow discal band from vein Sc through distal end of discal cell approaching outer margin in upper half of CuA_2-2A , edges nearly parallel, distal edge somewhat irregular anteriorly; yellow parallelogram-shaped macule in M_3-CuA_1 , midway between discal band and termen; curved series of four elongate, conjoined, yellow subapical hyaline macules from R_2-R_3 to R_5-M_1 , clearly separate from discal band anteriorly; these continuous with similar, but opaque, submarginal macules in cells M_1-M_2 and M_2-M_3 , latter smaller than former and placed halfway between anterior distal corner of macule in M_3-CuA_1 and termen; hindwing yellow with broad (nearly 1/4 wing width) black outer margin and narrower black anal margin from half way between 2A and 3A to anal margin; extreme base of wing with black smudge on some specimens, this extending narrowly about 1/4 distance to apex along costa; fringes black on both wings.

Ventral surface nearly identical to dorsum; forewing narrowly paler yellow along anal margin proximad; hindwing with no basal black; anal margin normally with considerable yellow mixed with black at 3A and especially marginad or entirely black.

Head bright yellow with scattered black scales, white beneath eyes; palpi with protruding segment black, otherwise pale yellow distad grading to white proximad, upper and inner surfaces black; antennae black above, yellow beneath, nudum of 25 (n = 2) or 26 (n = 2)

segments; thorax bright yellow above, collar yellow, yellow beneath with pale yellow forecoxae; legs yellow, mid tibia with one pair of spurs, outer shorter than inner, hind tibia with one pair of similar short spurs and hair tuft fitting into groove on back of flattened and elongate first tarsal segment, this with inner portion pale yellow, extending about 7/8 length of first tarsal segment, outer portion yellow-orange and relatively long, extending distad 1/2 to 2/3 length of first tarsal segment; abdomen yellow above, pale yellow beneath.

Genitalia: similar to *E. gentius*; differ as follows: caudal processes of tegumen slightly more robust; uncus more robust, broader and more angular in lateral view, arms shorter in ventral view; gnathos with sides parallel in ventral view; costa of valva with inner arm angled more abruptly ventrad and straighter (this broadly curved on *E. gentius*), thinner caudad; caudal end of harpe broader; penis somewhat more robust; 5 (n = 2), 6 (n = 2) or 8 (n = 1) spike-like cornuti, 2-3 of these larger than others.

FEMALE: forewing length = 20.2mm (paratype); apex more rounded and produced than on male; dorsum dark brown; forewing with white, hyaline macules as follows: discal cell, nearly square, anterior edge very slightly longer than posterior; M_3-CuA_1 , parallelogram, near termen; CuA_1-CuA_2 , rhomboidal, posterior edge much longer than anterior, midway between macules in discal cell and M_3-CuA_1 ; anterior CuA_2-2A , roughly square, anterior edge slightly longer than posterior, somewhat smaller than macule in CuA_1-CuA_2 , outer edges of two in line; posterior CuA_2-2A , parallelogram, smaller than and offset proximad from macule in anterior portion of same cell; four subapical, elongate, posteriormost offset slightly distad; two submarginal macules in cells M_1-M_2 and M_2-M_3 , square, offset distad from but contiguous with subapical macules, subapical-submarginal macular series crossed by dark veins (not continuous as on *E. gentius*); short streak in $Sc-R_1$ and longer streak in costal cell anterior to discal cell macule pale orange; base of discal cell with broad bright orange streak extending 3/4 distance to discal cell macule; hindwing with large whitish (may be slight yellow tinge) patch extending from vein Rs to anal margin where broadest, this more than half the width of the wing leaving the extreme base, costal margin, and outer margin brown.

Ventral forewing similar to dorsum; white macules anterior to and nearly the width of discal cell macule; anal margin white to under distal edge of posterior macule in CuA_2-2A where pale orange; base of discal cell whitish anteriorly, pale orange posteriorly; hindwing with white patch extending to the base and nearly to costal margin, distal edge pale orange towards anal margin.

Head black with white macules above, white line beneath antennae, white beneath and behind eyes; palpi white, black on dorsal and inner surfaces; antennae black proximad (distal portions missing); thorax gray-green above with a few white scales in collar, white beneath; legs pale brown, outer surface white, tibial spurs as on male; abdomen black above with much white overscaling, white laterally and beneath.

Genitalia: caudal edge of central lamella postvaginalis slightly curved with relatively broad "v"-shaped central indentation, fused cephalad with long trough which narrows cephalad leading to ostium bursae at caudal end of distinct antrum; lateral lamella postvaginalis with broad plates slightly overlapping central lamella postvaginalis, caudal end with teeth of moderate and about equal length (two on right, three on left), these barely extending caudad of central lamella postvaginalis, medial edge with several prominent teeth, flap over anterior portion with well developed feather-like striations; ductus bursae bulbous, this narrowing somewhat before bulbous corpus bursae.

Types.— *Holotype* ♂ 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 / 23 September 1992 / leg. G. T. Austin; white, printed and handprinted - Genitalia Vial / GTA - 2512; white, printed and handprinted - Genitalia Vial / SRS - 4373 / File No.;

red, printed - HOLOTYPE / *Entheus bombus* / Austin, Mielke & Steinhauser.

Paratypes: same location and collector as holotype, 18 Jul 1994 (1 ♂); 24 Sep 1992 (1 ♂); BRAZIL: Rondônia; 62 km S of Ariquemes, line C-20, 7 km E B-65, Fazenda Rancho Grande, 19 Apr 1991, *leg.* G. T. Austin (1 ♀); 22 Jul 1994, *leg.* G. T. Austin (1 ♂); 16 Aug 1993, *leg.* G. T. Austin, associated with *Eciton burchelli* (Hymenoptera: Formicidae), 1100-1130h (1 ♂); 20 Aug 1993, associated with *Eciton burchelli*, 1130-1200h (1 ♂); 10 Oct 1993, *leg.* G. T. Austin, at paper lures (1 ♂); 26 Jul 1992, *leg.* G. Bongioiolo (1 ♂).

Deposition of types.— The holotype and female paratype will be deposited at the Dept. de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. The remaining paratypes will be deposited at the Allyn Museum of Entomology and other collections.

Type locality.— BRAZIL: Rondônia; 65 km south of Ariquemes, line C-20, 10 km (by road) east of route B-65, 3 km east of Fazenda Rancho Grande, lot 18 at an elevation of 180m. This is approximately 8 km northeast of Cacaúlândia in typical lowland tropical rainforest. As typical for the genus, these butterflies inhabit the dark areas of the forest interior and perch beneath leaves.

Etymology.— The colors of this butterfly remind one of bumblebees; *Bombus* (Hymenoptera: Apidae) is a genus of those insects.

Distribution and phenology.— The species is known from the types taken in April and July through October. Additional material includes a male (FW = 14.5mm) from Ypiranga, R. Purus, Amazonas, Brazil, ex coll. E. Le Moult, and a male (FW = 18.5mm) from km 1666 on the Cuiabá-Santarém highway, Pará, Brazil, taken 28 Jul 1978, by C. Callaghan (both at the Allyn Museum). Mielke has seen additional material from Brazil (Amazonas: Vila Nova; Feb, May; Rondônia: Linha 105, km 4, 50 km N Ariquemes, Jul), Peru (Madre de Dios: 100 km W Puerto Maldonado; Pakitza, Parque Manu; Sep, Oct), and Venezuela (Bolívar: Cuchime, Alto Caura; Apr).

Diagnosis and discussion.— *E. bombus* is very similar to *E. gentius*. Males of *E. bombus* have a straighter costa and are pure yellow (without the slight orange tinge of *E. gentius*) with somewhat narrower black margins on the dorsal hindwing and less black in the anal margin of the ventral hindwing. The forewing macules in the anterior discal band, in the submargin, and in M_3 - CuA_1 are not hyaline as on *E. gentius*. *E. bombus* may be larger in size than *E. gentius* and with a less curved forewing costa and has black in the collar and on the dorsal head (*E. gentius* does not have black scaling on the head and in the collar). The hair tuft on the hind tibia of *E. gentius* is yellow-brown with a broadly black tip compared with a solid yellow-orange tuft on *E. bombus*. The differences in the male genitalia were outlined above.

The female of *E. bombus* has a more rounded forewing apex than *E. gentius*, somewhat more extensive orange in the forewing discal cell, larger pale orange macules at the mid forewing costa, and narrower dark margins on the hindwing (especially prominent on the venter). The genitalia are quite different. Those of *E. gentius* have a somewhat broader central portion of the lamella postvaginalis and a much broader lateral plates with many diverging teeth on the caudal edge (fewer teeth on *E. bombus*, the larger teeth being more or less parallel).

***Entheus aureolus* Austin, Mielke & Steinhauser, n. sp.**

(Fig. 1-4, 11, 18)

Entheus gentius; Williams & Bell, 1931 (part?); Evans, 1952 (part)

Description.— MALE: forewing length = 19.3mm (18.6-20.2, n = 10); forewing apex pointed, not produced, termen evenly curved; hindwing subquadrate, slightly angled at vein M_3 ; dorsum marked with black and opaque bright yellow-orange (intermediate between Spectrum Orange and Orange Yellow, more orange than any other species in *Entheus gentius* group); forewing with yellow-orange basal third; broad opaque yellow-orange discal band from vein Sc through distal end of discal cell nearly to outer margin in CuA_2 -2A, edges nearly parallel; yellow-orange parallelogram-shaped opaque macule in M_3 - CuA_1 , somewhat closer to termen than to discal band; slightly curved series of four elongate, conjoined, yellow-orange subapical hyaline macules from vein R_2 - R_3 to R_5 - M_1 , clearly separate from discal band anteriorly; these continuous with similar, but opaque, submarginal macules in cells M_1 - M_2 and M_2 - M_3 , latter smaller than former and placed halfway between anterior distal corner of macule in M_3 - CuA_1 and termen; hindwing yellow-orange with narrow black outer and anal margins (3A to anal margin); extreme base of wing with slight black smudge, this extending narrowly less than 1/4 distance to apex along costa; fringes black on both wings.

Ventral surface nearly identical to dorsum; yellow; black margin of hindwing narrower at apex, broader at tornus; no black on anal margin.

Head black with scattered yellow scales, pale yellow beneath and behind eyes; palpi black above and on inner surface, otherwise pale yellow, third segment entirely black; antennae black above, yellow-orange beneath, nudum of 23 (n = 8), 24 (n = 2), or 25 (n = 3) segments; thorax and abdomen bright yellow-orange above, collar black, thorax yellow-orange beneath with pale yellow forecoxae; legs black proximad with long yellow-orange scales, yellow-orange distad, mid tibia with one pair of spurs, outer shorter than inner, hind tibiae with similar spurs and hair tuft fitting into groove on back of flattened and elongate first tarsal segment, this with inner portion yellow-orange, extending 2/3 to 3/4 length of first tarsal segment, outer portion orange-brown with black tip (1/4 to 1/2 its length) and short, extending distad 1/3 to 1/2 length of first tarsal segment; abdomen pale yellow beneath.

Genitalia: similar to *E. gentius* as described above; caudal processes of tegumen shorter and more robust; uncus much broader in lateral view and angled downward beyond its middle; uncus and gnathos broader in ventral view, gnathos spade-shaped; valva with relatively broad harpe; aedeagus of penis less bulbous than on *E. gentius*; phallobase proportionally long; 7 (n = 3) or 8 (n = 2) spike-like cornuti, 2-4 of these are large. FEMALE: forewing length = 19.8mm (18.3-20.9, n = 10); apex slightly more rounded and produced than on male; dorsum dark brown; forewing with white, hyaline macules as follows: discal cell, nearly square; M_3 - CuA_1 , parallelogram, near termen; CuA_1 - CuA_2 , rhomboidal to triangular, posterior edge much longer than anterior, midway between macules in discal cell and M_3 - CuA_1 ; anterior CuA_2 -2A, rhomboidal, anterior edge slightly longer than posterior, somewhat smaller than macule in CuA_1 - CuA_2 , outer edges of two in line; posterior CuA_2 -2A, quadrate to triangular, of similar size or smaller than and offset proximad from macule in anterior portion of same cell; four subapical, elongate, posteriormost offset slightly distad; two submarginal in cells M_1 - M_2 and M_2 - M_3 , square, offset distad from but usually contiguous with subapical macules, subapical-submarginal macular series crossed by dark veins; no mid costal macules; base of discal cell with narrow orange streak extending 2/3 to 3/4 distance to discal cell macule; hindwing with large white patch extending from vein Rs to anal margin where broadest, this more than half the width of the wing leaving the extreme base, costal margin, and outer margin brown.

Ventral forewing similar to dorsum; white macules anterior to and usually wider than discal cell macule; anal margin whitish to under distal edge of posterior macule in CuA_2 -2A; base of discal cell whitish anteriorly to costa, pale orange posteriorly; hindwing with white patch more extensive, extending to base and nearly to costal margin.

Head black with white macules above, white line beneath antennae, white beneath and behind eyes; palpi white, black on dorsal and inner

surfaces; antennae black proximad, pale yellowish beneath distad and beneath club, nudum of 23 (n = 5) or 25 (n = 2) segments; thorax brown above with a few white scales in collar and scattered yellow scales, white beneath; legs pale brown, outer surface white, tibial spurs as on male; abdomen white or white with a mid ventral black line.

Genitalia: central lamella postvaginalis more or less quadrate, slightly broader than long with prominent central indentation on caudal edge, fused cephalad with short trough leading to ostium bursae at caudal end of distinct antrum; lateral lamella postvaginalis with relatively narrow plates not overlapping central lamella postvaginalis, caudal end with one very long tooth extending well caudad of caudal end of central lamella postvaginalis and one or more shorter teeth, covered cephalad by membranous flap with sparse striations; ductus bursae bulbous; corpus bursae oval, elongate.

Types.— *Holotype* ♂ with the following labels: white, printed - BRASIL: Rondonia / 62 km S Ariquemes / off B-65, vicinity / Fazenda Rancho / Grande, 180m / 22 October 1989 / leg. G. T. Austin; yellow, printed - photographed / G. T. Austin & / J. P. Brock / March 1992; red, printed - HOLOTYPE / *Entheus aureolus* / Austin, Mielke & Steinhauser.

Paratypes (all BRAZIL: Rondônia, leg. G. T. Austin unless noted): same location as holotype, 18 Jul 1994 (2 ♂); 22 Jul 1994 (2 ♂); 15 Aug 1993, at paper lures, 1100-1130h (1 ♂); 20 Aug 1993, assoc. with *Eciton burchelli* (Hymenoptera: Formicidae), 1130-1200h (1 ♂); 25 Sep 1992 (1 ♀); 28 Oct 1989 (1 ♀); 29 Oct 1989 (1 ♂); 4 Nov 1989 (1 ♂, 2 ♀); 9 Nov 1989 (4 ♀); 9 Nov 1994 (1 ♂); 10 Nov 1991, leg. J. P. Brock (1 ♂); 10 Nov 1994, at paper lures, 0730-0800h (1 ♂); 10 Nov 1994, at paper lures, 0900-0930h (1 ♂); 13 Nov 1994, assoc. with *Eciton burchelli*, 1030-1100h (1 ♂); 14 Nov 1994, assoc. with *Eciton burchelli*, 1400-1430 (1 ♂); 15 Nov 1992 (2 ♀); 18 Nov 1992, assoc. with *Eciton burchelli*, 0930-1000h (1 ♂); 18 Nov 1994 (2 ♂); 19 Nov 1991, leg. J. P. Brock (1 ♂); 20 Nov 1991, leg. J. P. Brock (1 ♂); 19 Nov 1991, leg. O. Mielke (1 ♂); 21 Nov 1991, leg. O. Mielke (3 ♀); Cacaúlândia, 8-19 Nov 1994, leg. O. Mielke (1 ♂); 3 km E Fazenda Rancho Grande, lot 18, 22 Sep 1992 (1 ♂); 18 Nov 1992 (1 ♂); Linea 10, 5 km S Cacaúlândia, 3 Feb 1994, leg. O. Gomes (1 ♂); 18 Aug 1993 (1 ♂); 22 Sep 1994, leg. O. Gomes (1 ♂); 16 Oct 1994, leg. O. Gomes (1 ♂); Ariquemes, 6 Jun 1988, leg. Miers (1 ♂); same location and collector, 1-30 Jul 1989 (1 ♂), same location and collector, 12 Jun 1986 (1 ♂).

Deposition of types.— The holotype and eight paratypes will be deposited at the Dept. de Zoologia, Universidade Federal do Paraná, Curitiba, Brazil. The remaining paratypes will be deposited at the Allyn Museum of Entomology and other collections.

Type locality.— BRAZIL: Rondônia; 62 km south of Ariquemes, linea C-20, 7 km (by road) east of route B-65, Fazenda Rancho Grande, at an elevation of 180m. This is approximately 5 km northeast of Cacaúlândia in typical lowland tropical rainforest. As usual for the genus, these butterflies inhabit the dark areas of the forest interior and perch beneath leaves; male also are associated with army ants.

Etymology.— The name means golden (the color of the species) or glittering (the appearance of the species in the dark forest interior) in Latin.

Distribution and phenology.— This is a relatively common forest species in Rondônia with records for February and June through November. We have also seen a male of this species from Surinam (Phedra, December) in the collection of the Nationaal Natuurhistorisch Museum, Leiden. Mielke examined specimens from several localities: Brazil (Acre: Rio Branco, Cruzeiro do Sul; Amazonas: São Gabriel; Pará: Cachoeira Paciência, Rio Cuminá; Rio Tapajóz; Óbidos; Rondônia: Linha 105, km 4, 50 km N Ariquemes), Peru (Iquitos; Madre de Dios: Pakitza, Parque Manu), Surinam (no further data), and Venezuela (Terr. Federal

do Amazonas: Ocano) with collection dates in March, April, and June through October.

Diagnosis and Discussion.— This species is distinguished from *E. gentius* and *E. bombus* by its more orange aspect, the narrow black margins of the dorsal hindwing, and the lack of black on the anal margin of the ventral hindwing. The head and body of *E. gentius* are entirely yellow and it has at least one hyaline macule, that in the discal cell of the forewing. The outer part of the hair tuft on the hind tibia is long with a black tip on *E. gentius*, somewhat shorter, the outer portion yellow-orange, and the inner portion pale yellow on *E. bombus*, and short with a black tip on *E. aureolus*.

Females differ from those of *E. bombus* and *E. gentius* by their less rounded and produced forewings, less extensive orange in the forewing discal cell on Rondônia specimens (but approaching that on *E. gentius*, specimens from Acre and Venezuela have more extensive orange in the forewing discal cell), no pale orange macules at the mid forewing costa (macules absent or faint and white on *E. aureolus*), the pure white on the hindwing (with yellowish tinge on *E. gentius* and often on *E. bombus*), and the narrower dark hindwing margins.

The genitalia of *E. aureolus* are also distinctive. Those of the male differ from *E. bombus* (*E. gentius* was compared above) by the shorter and broader processes of the tegumen, the broader and more angled uncus, the more robust and spade shaped gnathos in ventral view, the more broadly curved costal process of the valva, the twisted cephalad process of the costal arm, the more broadly rounded harpe, and the longer and more slender penis. The female genitalia of *E. aureolus* differ from both *E. gentius* and *E. bombus* by the nearly square central lamella postvaginalis, the very short trough leading to the ostium bursae, and the narrow lamella postvaginalis plates with few teeth on the medial surface (like *E. gentius*, several on *E. bombus*), a very long spine-like tooth on the caudal end which extends well caudad of the central lamella postvaginalis, and sparser feather-like striations on the membranous flap cephalad.

The Williams and Bell (1931) figure of male genitalia of *E. gentius* seems to represent those of *E. aureolus* with the short processes of the tegumen, broad uncus, and slender penis. Evans' (1952) description of the female genitalia of *E. gentius* ("with long spines") also may refer to *E. aureolus* and the variability he saw among males may have been the result of a mixed series of *E. gentius*, *E. bombus*, and/or *E. aureolus*.

DISCUSSION

Entheus, as noted above, is a difficult genus which requires sufficient material to establish local diversity and to correctly associate sexes; careful comparisons of superficial and genitalic characters of both sexes are needed. The treatment of the genus by Evans (1952) has been shown to be too simplified. Steinhauser (1989) found that Evans' (1952) concept of *Entheus matho* Godman & Salvin, 1879, included at least two species. The present study demonstrated the existence of three species of the *E. eumelus* group, that *E. priassus* consists of more than one species, and that there are two additional species of *E. gentius*-like phenotypes. The variation noted among *E. gentius* by Evans (1952) and de Jong (1983) awaits further study. Relationships within the *E. matho*, *E. priassus*, and *E. eumelus* groups are yet

to be fully resolved and there are additional undescribed phenotypes (Steinhauser, 1989; Austin, 1997, and this study).

Below, we present a key to the *Entheus* known from our Rondônia study site.

Key to Male *Entheus* of Central Rondônia, Brazil

1. - Hindwing largely yellow or orange 2
- Hindwing entirely dark brown 4
2. - Forewing macules white (pale yellowish where hyaline) *eunyas*
- Forewing macules yellow or yellow-orange 3
3. - Yellow-orange, tuft on hind tibia with dark tip, VHW anal margin yellow *aureolus*
- Yellow, tuft on hind tibia entirely yellow-orange, VHW anal margin black *bombus*
4. - Forewing discal macules not hyaline, subapical macules joined with discal band at costa and macule in M_3 - CuA_1 isolating small brown triangle *telemus*
- Forewing discal macules (especially in M_3 - CuA_1) hyaline cephalad, subapical macules usually not joined to discal band but, if so, isolated brown area large 5
5. - Forewing discal band narrow, regular, without hyaline areas, subapical macules in smooth series with submarginal macules *priassus pralina*
- Forewing discal band broader, proximal edge irregular, with hyaline areas, submarginal macules slightly offset distad from subapical macules *aureanota*

Key to Female *Entheus* of Central Rondônia, Brazil

(female *E. priassus pralina* not yet seen from Rondônia)

1. - Ventral forewing with yellow or orange at base of discal cell . 2
- Ventral forewing without yellow or orange at base of discal cell 4
2. - Forewing discal macules as a continuous series, hind tibiae with two pairs of spurs *eunyas*
- Forewing discal macules not a continuous series, hind tibiae with one pair of spurs 3
3. - Lateral plates of lamella postvaginalis with one very long spine extending far caudad of caudal end of central lamella postvaginalis *aureolus*
- Lateral plates of lamella postvaginalis without one very long spine extending far caudad of caudal end of central lamella postvaginalis *bombus*
4. - Smaller (< 20mm), lateral plates of lamella postvaginalis gradually broadening cephalad *telemus*
- Larger (> 20mm), lateral plates of lamella postvaginalis abruptly broadening cephalad *aureanota*

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LITERATURE CITED

- Austin, G. T.**
1997. Two new *Entheus* from Ecuador and Peru (Hesperidae: Pyrginae). *Trop. Lepid.* (Gainesville), 8:19-21.
- Cramer, P.**
[1777]. *Uitlandsche Kapellen, voor Kemende in de drie Waereld-Deelen Asia, Africa en America, by een ver zameld en bescreeven*. Vol. 2. Amsterdam: Baalde, and Utrecht, Wild. 152pp.
- de Jong, R.**
1983. Annotated list of the Hesperidae (Lepidoptera) of Surinam, with descriptions of new taxa. *Tijds. Ent.* (Amsterdam), 126: 233-268.
- Druce, H. H.**
1912. Description of some new exotic Lycaenidae and Hesperidae. *Ent. Mon. Mag.* (London), 48:128-132.
- Emmel, T. C., and G. T. Austin**
1990. The tropical rain forest butterfly fauna of Rondonia, Brazil: species diversity and conservation. *Trop. Lepid.* (Gainesville), 1:1-12.
- Evans, W. H.**
1952. *A Catalogue of the American Hesperidae in the British Museum (Natural History) Part II: Pyrginae - Section 1*. London: Br. Mus. (Nat. Hist.). 246pp.
- Godman, F. D., and O. Salvin**
1879. Descriptions of new species of Rhopalocera from Central and South America. *Proc. Zool. Soc. London*, 1879:150-155.
- Linnaeus, C.**
1758. *Systema naturae per regna tria naturae, secundum Classes, Ordines, Genera, Species, cum characteribus, differentiis, synonymis, locis*. (Animalia). (10th ed.). Stockholm: Laurentii Salvii. 824pp.
- Mabille, P.**
1898. Description de Lépidoptères nouveaux. *Ann. Soc. Ent. Fr.* (Paris), 66:182-231.
- Moss, A. M.**
1949. Biological notes on some Hesperidae of Pará and the Amazon (Lepidoptera: Rhopalocera). *Acta Zool. Lilloana* (Tucuman), 7: 29-79.
- Smithe, F. B.**
1975. *Naturalist's Color Guide*. New York: Amer. Mus. Nat. Hist. (unnumbered pp.)
1981. *Naturalist's Color Guide Part III*. New York: Amer. Mus. Nat. Hist. (unnumbered pp.)
- Steinhauser, S. R.**
1986. A review of the *narcosius* group of species of the genus *Astrartes* Hübner (sensu Evans, 1952) and erection of a new genus. Lepidoptera: Hesperidae. *Bull. Allyn Museum* (Sarasota), 104:1-43.
1989. Taxonomic notes and descriptions of new taxa in the Neotropical Hesperidae. Part I. Pyrginae. *Bull. Allyn Museum* (Sarasota), 127:1-70.
- Williams, R. C., Jr., and E. L. Bell**
1931. Hesperidae of the Forbes expedition to Dutch and British Guiana (Lepidoptera). *Trans. Amer. Ent. Soc.* (Philadelphia), 57:249-287.
1934. Studies in American Hesperioidea, Paper IV (Lepidoptera). On the synonymy and the male genitalia of some species. *Trans. Amer. Ent. Soc.* (Philadelphia), 60:265-280.