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George T. Austin

Nevada State Museum and Historical Society, Las Vegas, Nevada

Kurt Johnson

American Museum of Natural History, New York, New York

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Theclinae of Rondônia, Brazil: *Gigantorubra* and *Angulopsis*, with descriptions of new species (Lepidoptera: Lycaenidae)

George T. Austin

Nevada State Museum and Historical Society,
700 Twin Lakes Drive, Las Vegas, Nevada 89107

and

Kurt Johnson

Department of Entomology, American Museum of Natural History,
Central Park West at 79th Street, New York, New York 10024

Abstract: The species of *Gigantorubra* and *Angulopsis* encountered in the Cacaúlândia area of central Rondônia, Brazil, are reviewed. These include ten species (all new) of *Gigantorubra* (*G. microserrata*, *G. divergens*, *G. quadramacula*, *G. ampla*, *G. fuscafascia*, *G. silva*, *G. rondonia*, *G. obscura*, *G. perplexa*, *G. purpura*) and one new species of *Angulopsis* (*A. tenuis*). *Thecla sangala* Hewitson (1868) is recognized as having priority over *Thecla autoclea* Hewitson (1863-1878 [1877]), new synonym. Rondônia continues to appear as a center of thecline endemism and to provide abundant examples of sibling species diversity.

Key words: *Angulopsis*, Brazil, *Gigantorubra*, hairstreaks, Lepidoptera, Lycaenidae, Theclinae, tropical.

Introduction

Our studies on the Theclinae of the vicinity of Cacaúlândia in central Rondônia, Brazil, were introduced by Austin and Johnson (1995). The region, in typical lowland tropical rainforest, supports the richest butterfly fauna known (Emmel and Austin 1990, Austin and Johnson 1995). What initially appeared to be a rather straightforward assessment of the genus *Angulopsis* and related taxa in the area became complicated as many more species existed than were superficially evident. This necessitated detailed studies of each group; we herein examine the genera *Gigantorubra* and *Angulopsis*.

Methods and Materials

Abbreviations are FW and HW for forewing and hindwing and D and V for dorsal and ventral, respectively. Capitalized color names are after Smithe (1975, 1981). FW length is length of costa from base to apex. Numbers associated with types and other specimens refer to genitalia vial numbers. The type locality for each new taxon is the location of capture for the holotype.

Males and females of a species were tentatively associated by the near identity in details of their ventral patterns. Due to the many superficially very similar species, this method, however, may not be infallible. Whenever there was some doubt in our correct association of the sexes, we used only one sex as types to avoid potential future taxonomic

problems. In these cases, specimens of the presumed opposite sex are listed as additional material. In copula pairs and reared series from individual females will eventually allow unequivocal association of males and females.

Primary types are deposited at the Departamento de Zoologia, Universidade Federal do Paraná, Curitiba, Paraná, Brazil. Paratypes and other material are deposited at the Universidade Federal do Paraná, The Natural History Museum, American Museum of Natural History, and the Nevada State Museum.

Gigantorubra Johnson

Johnson (1993) proposed *Gigantorubra* for a group of nineteen species of Eumaeini ranging from central Mexico to Argentina. His study was based upon historical material, particularly type material, and it was acknowledged that additional species would no doubt become apparent from contemporaneous collections.

Gigantorubra was characterized by broad wings, no scent brand (*sensu* Eliot 1973), a distinctive ventral pattern often with broad bands of brown or red over variegated beige to blackish ground colors, and robust male genitalia having the falces serrated or toothed. Females are recognized by their variously sculptured lamellae terminating at elongated, fluted, ductus bursae. The closest relative of *Gigantorubra*, *Angulopsis* (Johnson 1991) shows generally narrow ventral pattern elements over

concolorous grounds, has falces of even contour, and far less elaborate female terminalia. Both genera have widespread and generally overlapping Neotropical distributions.

Johnson (1993) divided *Gigantorubra* into four species groups based, for simplicity, largely on the VHW pattern. The fauna of central Rondônia contains at least ten species of *Gigantorubra*, all of which are undescribed taxa.

"simplica" group

Species of the *"simplica"* species group of *Gigantorubra* are typified by brown color on both wing surfaces, simple postmedian lines on the venter, and rather slender genitalia. Four species, occurring south of the Amazon River to Bolivia, northern Argentina, and southeastern Brazil, were recognized by Johnson (1993). At Cacaupôndia, the following additional two species are evident.

Gigantorubra microserrata, new species (Figs. 1, 10, 18, 27)

Diagnosis. Wings. Both sexes nondescript brown above and below, distinguished from congeners by the very narrow postmedian lines on the V and by the genitalia; the latter and the shallow W-shape of the VHW postmedian line distinguish the species from superficially similar *Angulopsis*. Morphology. Male genitalia differ from similar species by the falces being finely serrate for much of their length, the vincular processes being narrower and longer than on other congeners, the valvae having broadly shouldered bilobes and narrow caudal extensions, and the saccus being short and broad. Female genitalia are distinctive with a broadly ovate lamellar plate with a highly sculptured caudal margin.

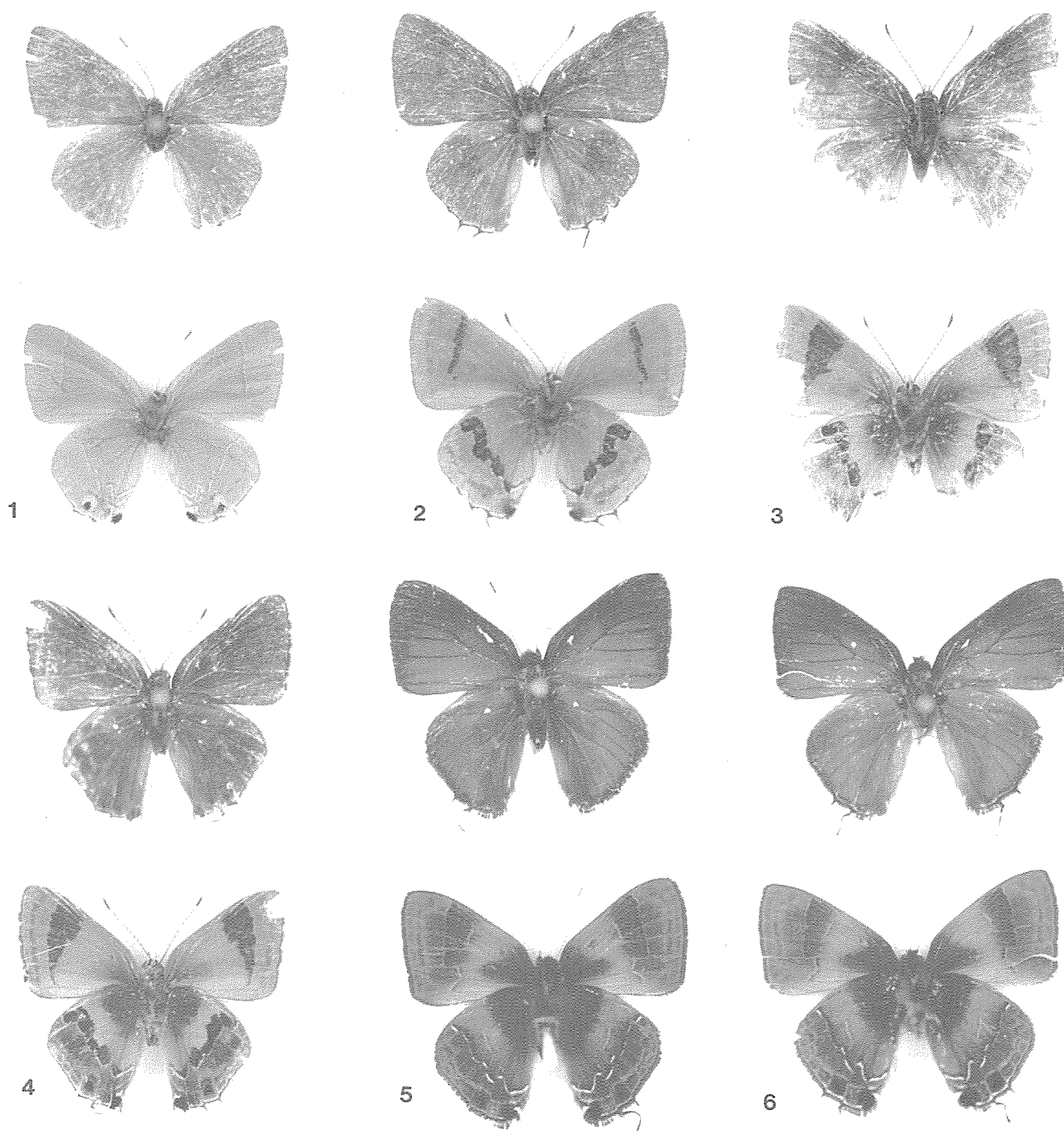
Description. Male. FW length = 14.1 mm (holotype); single known male worn; dorsum uniform brown; HW tornus with vaguely yellow-tan (faded?) macule; white marginal line from CuA_1 to 2A; fringes worn. Venter tan; FW pale tan line at distal end of discal cell; bipartite (pale tan distad, brown proximad) postmedian line, nearly straight from R_2 to CuA_2 , very vague submarginal brown bars; HW with vague pale tan line at distal end of discal cell edged proximad with slightly darker brown than ground color; bipartite (white distad, dark brown [black?] proximad) postmedian line, element in $Sc+R_1$ slightly offset distad; elements in Rs , M_1 , and M_2 in straight line; element in M_3 offset proximad; deep W-shape from CuA_1 to 3A; submar-

gin with vague brown line; thecla-spot yellow-tan [faded?] with large round black pupil; CuA_2 with scattered white scales over dark brown field; tornus with marginal black macule, short white slash from margin, and broad yellow-orange [faded?] proximad. Male Genitalia - genital capsule slender; saccus short, stoutly triangular, expanding gradually caudad to vinculum; vinculum with narrow protruding processes; valvae with triangular bilobes, broadly shouldered, caudal extensions very thin throughout their length, serrated on outer edges; falces finely serrated along outer edge of distal 1/2; aedeagus slightly sinuate, 1.5x genital capsule length, caecum 22% of aedeagus length.

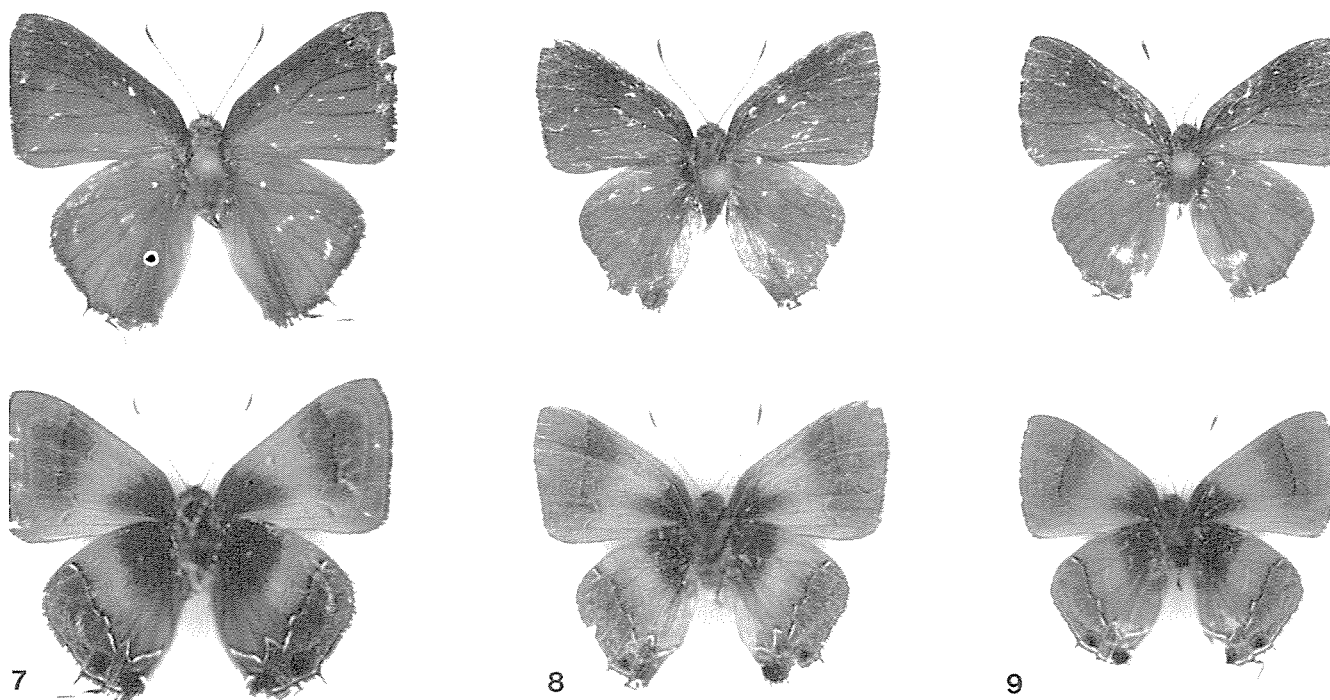
Female. FW length = 13.3 mm ($N = 1$); dorsum brown (Hair Brown), HW costal and anal margin slightly paler; HW tornus with orange macule; white marginal line from CuA_1 to 2A; fringes tan. Venter tan (near Drab); FW with vague pale tan line at distal end of discal cell; bipartite (pale tan distad, brown proximad) postmedian line, nearly straight from R_3 to CuA_2 , very vague submarginal brown bars; HW with vague pale tan line at distal end of discal cell edged proximad with slightly darker brown than ground color; bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ slightly offset distad; elements in Rs , M_1 , and M_2 in straight line; element in M_3 offset proximad; W-shape from CuA_1 to 3A, this portion with narrow orange scaling proximad; submargin with vague brown line; a few orange scales in M_3 ; thecla-spot red-orange with large black pupil; CuA_2 with scattered white scales over black field, small orange macule adjacent to vein 2A; tornus with marginal black macule, short white slash from margin, and broad orange proximad; white marginal line from M_2 to 2A. Female Genitalia - ductus bursae straight as typical of genus, not expanded at cervix bursae; lamellae broadly ovate, struts well-developed, terminating in a highly sculptured caudal lamellar margin.

Type. Holotype male, Brazil: Rondônia; 62 km S of Ariquemes; Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 15 Nov. 1990, leg. J. Lane (GTA #5817). Additional material, Brazil: Rondônia; 70 km S Ariquemes, B-80, between linhas C-10 and C-15, 19 Nov. 1991 (1 female, GTA #6129).

Remarks. This species is superficially nondescript. Like some other members of the species group, *G. microserrata* with its narrow VHW postmedian line does not initially appear to be of this genus; the genitalia, however, unequivocally place it there. The male genitalia are unlike any other



Figs. 1-6. Males of new species of *Gigantorubra* from Rondônia, Brazil (all from the vicinity of Cacaulândia); dorsal surface above and ventral surface below. 1. *Gigantorubra microserrata*, holotype; 2. *Gigantorubra quadramacula*, holotype; 3. *Gigantorubra ampla*, holotype; 4. *Gigantorubra fuscafascia*, holotype; 5. *Gigantorubra silva*, holotype; 6. *Gigantorubra rondonia*, holotype.



Figs. 7-9. Males of new species of *Gigantorubra* from Rondônia, Brazil (all from the vicinity of Cacaulândia); dorsal surface above and ventral surface below. 7. *Gigantorubra obscura*, holotype; 8. *Gigantorubra perplexa*, holotype; 9. *Gigantorubra purpura*, holotype.

species with their combination of a short and triangular saccus, finely serrated falces, broadly triangular and shouldered bilobes, and thin caudal extensions. The broadly ovate lamella of the female is not approached by any other known *Gigantorubra* species.

Etymology. The name refers to the finely serrate falces.

***Gigantorubra divergens*, new species**
(Figs. 11, 28)

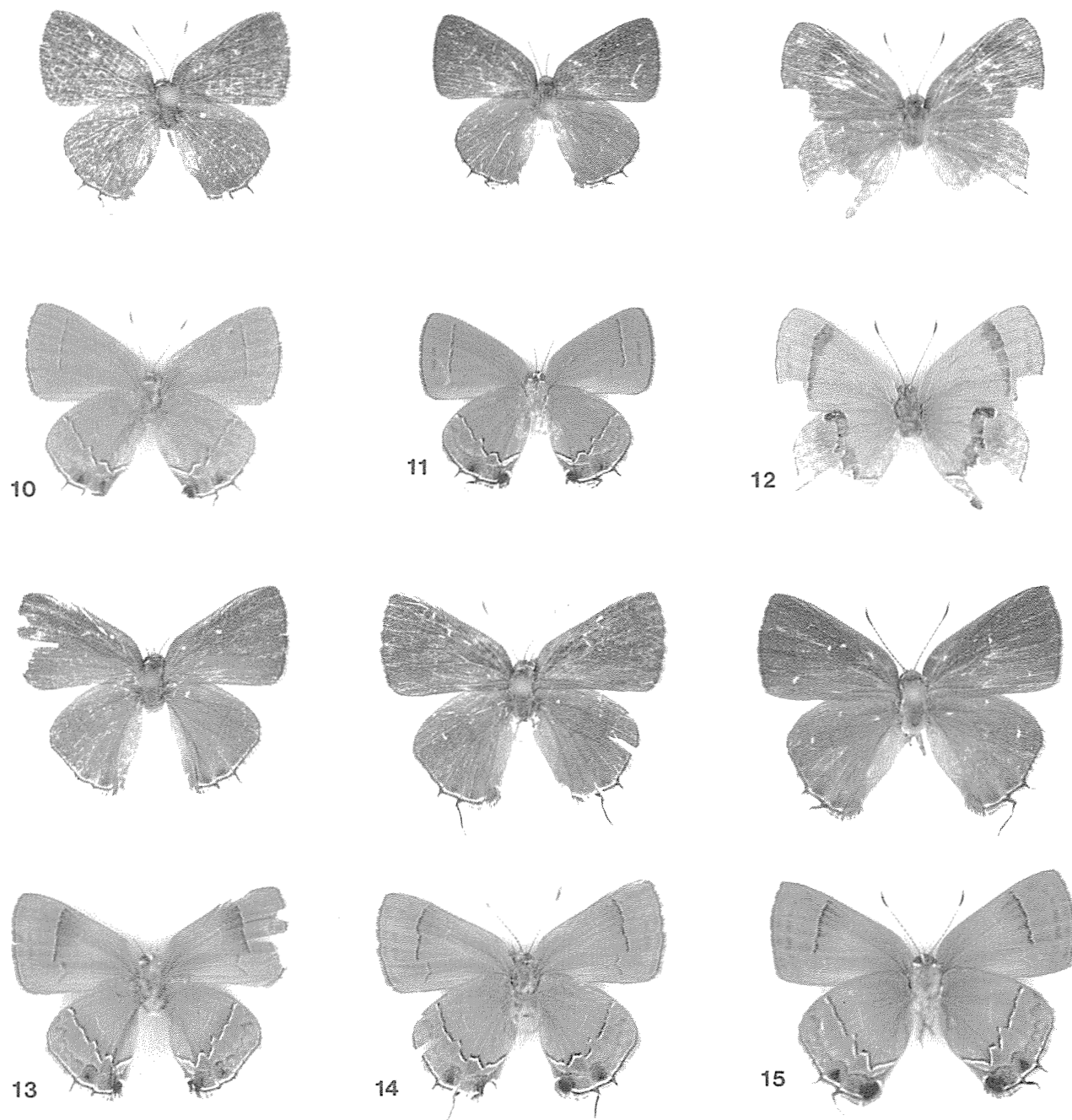
Diagnosis. Wings. Most similar to *G. microserata* but VHW pattern somewhat more lavish, best distinguished by genitalia. Morphology. Female distinguished by broad lamella with lobes ovate and caudal edge deeply sculptured centrally; the struts are well developed and broadly divergent caudad.

Description. Male. Unknown. **Female.** FW length = 12.0 mm (holotype); wings broad, rounded; dorsum brown (Vandyke Brown, color 121); HW tornus with prominent orange macule; white marginal line from CuA_1 to 2A; fringes pale gray-tan. Venter dark gray-brown (Dark Drab); FW with bipartite (white distad, black proximad) postmedian line, nearly straight from R_3 to CuA_2 , vague submarginal brown bars, most prominent in cells M_3 and CuA_1 ; HW with bipartite (white distad, black proximad), a few proximal orange scales in cell M_2 , orange

more prominent posterior to vein CuA_1) postmedian line, element in $Sc+R_1$ slightly offset distad; elements in R_s , M_1 , and M_2 in slightly sinuate line; element in M_3 offset well proximad; shallow W-shape from CuA_1 to 3A, white distal edging very broad and prominent in cell 2A; submargin with brown line, outlined by pale gray-brown; considerable orange scaling in M_3 ; thecla-spot red-orange with triangular black pupil distad; CuA_2 with scattered white scales over black field, orange adjacent to vein 2A; tornus with marginal black macule, short white slash from margin, and broad red-orange proximad; white marginal line from M_2 to 2A. Female Genitalia - ductus bursae straight, slightly expanded at cervix bursae; lamella broadly bilobate, lobes oval, caudal edge deeply sculptured, struts diverging broadly caudad.

Type. Holotype female, Brazil: Rondônia; Linha C-10, 5 km S of Cacaulândia, 21 Sept. 1994, leg. O. Gomes (GTA #6130).

Remarks. Typical of the unremarkable patterns of the "*simplica*" group, this is another "plain brown" hairstreak associated with *Gigantorubra* by the structure of the genitalia. The broad bilobed lamella is most similar to that of *Gigantorubra bahia* Johnson (a species with an elaborate ventral pattern), but *G. divergens* is immediately distinguished by the divergent struts.



Figs. 10-15. Females of new species of *Gigantorubra* from Rondônia, Brazil (all from the vicinity of Cacaulândia); dorsal surface above and ventral surface below. 10. *Gigantorubra microserrata*, rd. B-80, between linhas C-10 and 15, 19 Nov. 1991; 11. *Gigantorubra divergens*, holotype; 12. *Gigantorubra quadramacula*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 30 Oct. 1990; 13. *Gigantorubra silva*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 16 Aug. 1993; 14. *Gigantorubra rondonia*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 15 Nov. 1990; 15. *Gigantorubra obscura*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 30 Oct. 1993.

Etymology. The name refers to the divergent struts across the lamellae.

“*exotissima*” group

This group is recognized by the largely brown or black dorsum, a broad and usually tapering postmedian band on the VFW, and the exaggerated postmedian band on the VHW with the element in $Sc+R_1$ very broad. Johnson (1993) recognized six South American species with none of these occurring in the Amazon drainage. At Cacaúlândia, we have discovered the following three distinctive congeners.

***Gigantorubra quadramacula*, new species**
(Figs. 2, 12, 19, 29)

Diagnosis. Wings. DFW and DHW with areas of pale blue scaling. Venter distinguished from similar species by the broad VHW postmedian elements in M_1 and M_2 which give the band a convex aspect; this straight or even concave on other broad-banded *Gigantorubra* (see Remarks). Morphology. Genitalia distinctive, with male most similar to *Gigantorubra nebadaca* Johnson but with shoulders of the bilobes shorter and falces less serrate; female with a broad triangular lamella, most similar to *Gigantorubra picentia* (Hewitson), but less angular.

Description. Male. FW length = 14.1 mm (holotype); FW broad, apex slightly rounded, termen convex; HW with long tail at CuA_2 , shorter tail at CuA_1 ; dorsum gray-brown (near Olive Brown); FW with pale blue (Sky Blue, color 168c) scaling along basal 1/2 of vein 2A; HW with sparse Sky Blue scaling in posterior 1/2 of discal cell, basal 1/2 of CuA_1 , and most of CuA_2 ; costal and anal margins pale brown; tornus with yellow-orange macule; fringes of both wings brown. Venter pale brown (near Cinnamon-Drab); FW paler along anal margin; relatively broad black postmedian line with a few central orange scales, shallowly sinuate from R_2 to CuA_2 , narrow brown element offset proximad in CuA_2 ; submargin with vague brown line; HW with broad postmedian band, deep red-brown margined on both sides by black and with a thin white line distad, element in $Sc+R_1$ rectangular, distal edge extending beyond rest of band; element in R_s quadrate, narrower; elements in M_1 and M_2 somewhat broader; very small element in M_3 ; elements in CuA_1 and anterior CuA_2 conjoined into macule about same size as in M_1 and M_2 ; elements in posterior CuA_2 and 2A conjoined into curved mac-

ule narrowing posteriorly; submargin with vague brown line; thecla-spot small, mostly orange with a few black scales distad; submargin of cell CuA_2 with a few scattered white scales and orange adjacent to 2A; tornus with a small marginal black macule and broad orange proximad. Male Genitalia - genital capsule robust; saccus triangular and rather sharply pointed; falces robust with two small tooth-like serrations just distad of bend; valvae robust, bilobes ovate with short, wing-like shoulders, caudal extensions narrowing gradually to pointed and divergent tips; aedeagus straight except curved in caudal 1/4, 1.4x genital capsule length, caecum 21% of aedeagus length.

Female. FW length = 13.5 mm; similar to male; wings more rounded; no blue; VFW postmedian band broader with expansion of central orange, this browner than on male, band margined vaguely distad with line of white; VHW similar to male; postmedian band color more orange than on male, white distal edging more prominent. Female Genitalia - ductus bursae straight, slightly expanded cephalad; lamellar plate broad, triangular, caudal edge moderately indented centrally, struts widely spaced.

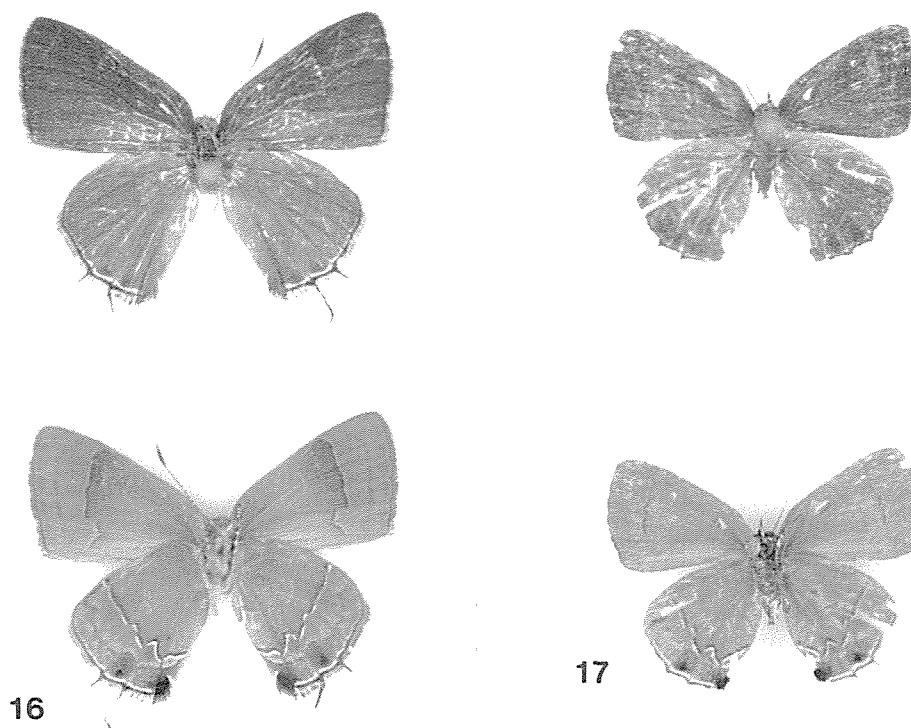
Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaúlândia, 15 Nov. 1994, leg. G. T. Austin (GTA #5796). Paratype, Brazil: Rondônia; 62 km S of Ariquemes, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 30 Oct. 1990 (1 female, GTA #5797).

Remarks. Heretowith, structural (blue) color in *Gigantorubra* has been seen only in the “*orcidia*” group which shows generally deep azure dorsal wing surfaces. The broad VHW postmedian macules on both sexes and their color, however, place this species in the “*exotissima*” group. Males of Johnson’s (1993) “*collucia*” group have much narrower VHW postmedian elements than females and, on both sexes, the macules are not block-like. Ventral stripe colors in the “*collucia*” group are usually red or orange, not red-brown to magenta as on the “*exotissima*” group.

Etymology. The name refers to the quadrate macules of the VHW postmedian band.

***Gigantorubra ampla*, new species**
(Figs. 3, 20)

Diagnosis. Wings. Similar to *G. quadramacula*, dorsum darker without blue; venter darker and grayer with broader VFW postmedian band and less red in VHW postmedian band and with a prominent dark suffusion distad of the latter. Mor-



Figs. 16-17. Females of new species of *Gigantorubra* and *Angulopsis* from Rondônia, Brazil (all from the vicinity of Cacaulândia); dorsal surface above and ventral surface below. Fig. 16. *Gigantorubra perplexa*, Linha 10, 5 km S Cacaulândia, 4 July 1995; Fig. 17. *Angulopsis tenuis*, holotype.

phology. The male genital capsule is broad; the saccus is triangular, long, and sharply pointed; the falces have several teeth from the bend distad; the valvae are relatively slender with rounded shoulders on the bilobes and caudal extensions gradually narrowing. These have no particular resemblance to any other described *Gigantorubra* species (see following species).

Description. Male. FW length = 14.4 mm (holotype); worn, hindwing margin ragged; FW broad, apex pointed, termen nearly straight; dorsum uniform dark gray-brown (Dark Drab or darker). Venter pale brown (Light Drab), dark brown at base of FW cell CuA_2 extending into base of discal cell; FW paler along anal margin; very broad (extending to distal end of discal cell) dark brown postmedian band with a paler red-brown cast proximad, distal margin somewhat scalloped from R_1 to mid cell 2A, narrowing behind CuA_1 ; submargin with broad but vague brown line; HW base dark brown; broad postmedian band, black with deep red-brown margined with a thin white line distad, element in $Sc+R_1$ rectangular, mostly black, distal edge extending beyond rest of band; element in R_s quadrate, narrower; elements in M_1 and M_2 still narrower; very small element in M_3 ; elements in

CuA_1 and anterior CuA_2 conjoined into macule larger than macule in M_1 and M_2 , well separated from element in posterior CuA_2 ; elements in posterior CuA_2 and 2A conjoined into curved macule narrowing posteriorly; submargin with dark blackish brown distad of postmedian, margin pale brown; thecla-spot small. Male Genitalia - genital capsule robust; saccus triangular, relatively long, sharply pointed cephalad; falces robust with series of dentate serrations distad of bend but not extending to tip; valvae with slender bilobes having rounded shoulders gradually narrowing to pointed caudal extensions; aedeagus straight, 1.4x genital capsule length, caecum relatively short (19% of aedeagus length).

Female. Unknown.

Types: Holotype male, Brazil: Rondônia; 65 km S of Ariquemes, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 12 Nov. 1990 (1 male, GTA #5798).

Remarks. The ventral pattern of this species with the broad FW postmedian and the dark suffusion distad of the HW postmedian approaches that seen on "orcidia" group taxa. The brown dorsum, however, differs from the dark blue of *Gigantorubra orcidia* (Hewitson) and its relatives.

Etymology. The name refers to the broad postmedian bands on the venter.

***Gigantorubra fuscafascia*, new species**

(Figs. 4, 21)

Diagnosis. Wings. Virtually identical with *G. ampla*, only distinguishable by genitalia until more material is examined to assess variability. Morphology. Male genital capsule is broad; the saccus is narrowly triangular, long, and sharply pointed; the falces have several robust teeth from the bend distad; the valvae are moderately broad with wing-like produced shoulders on the bilobes and caudal extensions gradually narrowing. These resemble *G. ampla* but have a longer saccus, more extensively toothed falces, and more expanded and angular shoulders on the bilobes of the valvae.

Description. Male. FW length = 14.6, 14.7 mm; FW broad, apex pointed, termen nearly straight; HW with long tail at CuA_2 , shorter tail at CuA_1 ; dorsum uniform dark gray-brown (near Sepia, color 219); costal and anal margins of hindwing pale brown; tornus with red-brown macule; fringes of both wings pale brown. Venter gray-brown (near Dark Drab), dark brown at base of FW cell CuA_2 ; FW paler along anal margin; very broad (extending to distal end of discal cell) black postmedian band with a slight red-brown cast proximad, distal margin scalloped from R_1 to mid cell CuA_2 or to vein 2A, abruptly narrower and then triangular posteriorly, narrowing behind CuA_1 ; submargin with broad but vague brown line; HW base dark brown; broad postmedian band, black with deep red-brown margined with a thin dull white line distad, element in $Sc+R_1$ rectangular, mostly black, distal edge extending beyond rest of band; element in Rs quadrate, narrower; elements in M_1 and M_2 still narrower; very small element in M_3 ; elements in CuA_1 and anterior CuA_2 conjoined into macule larger than macule in M_1 and M_2 ; elements in posterior CuA_2 and 2A conjoined into curved macule narrowing posteriorly; submargin with dark blackish brown distad of postmedian, margin pale brown; theclasp spot black with narrow proximal orange margin; submargin of cell CuA_2 with a few scattered white scales over black field, a few orange scales adjacent to 2A; tornus with a large marginal black macule, white and a narrow orange line proximad. Male Genitalia - genital capsule robust; saccus narrowly triangular, relatively long and narrow cephalad; falces slender with series of prominent teeth in middle, serrated nearly to tip; valvae with moder-

ately broad bilobes sharply shouldered, narrowing to pointed and slightly divergent caudal extensions; aedeagus straight except slightly curved caudad, 1.3x genital capsule length, caecum relatively short (20% of aedeagus length).

Female. Unknown.

Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaupônia, 16 Nov. 1995, leg. O. Gomes (GTA #6240). Paratype, Brazil: Rondônia; 65 km S of Ariquemes, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 19 Nov. 1994, leg. G. T. Austin (1 male, GTA #5799).

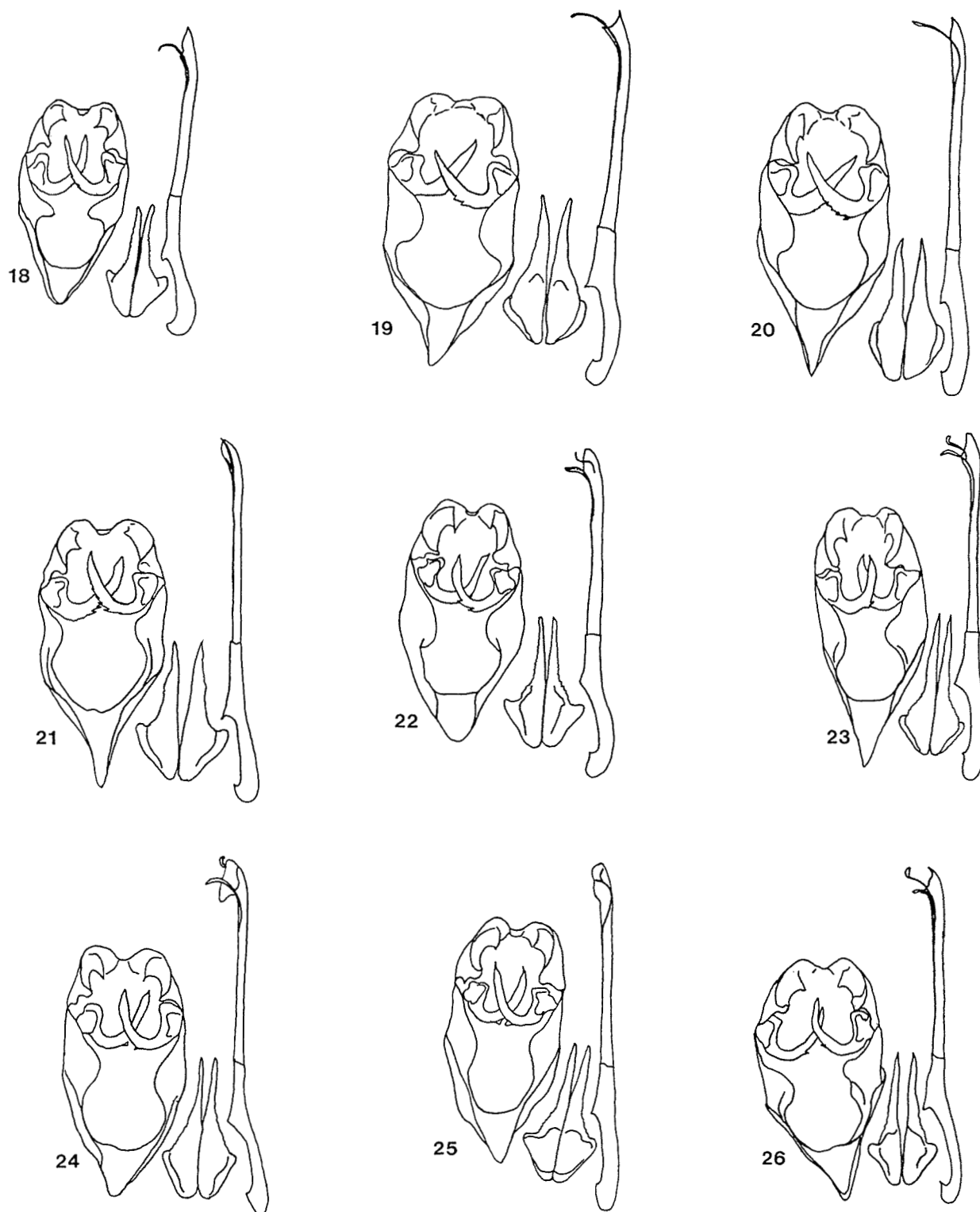
Remarks. The remarks under *G. ampla* also are applicable here. This species was not recognized until the second male was dissected and carefully compared with the holotype of *G. ampla*. Since the two species are virtually identical superficially, the importance of dissecting virtually all specimens of Neotropical theclines is again emphasized (see Austin and Johnson 1995, 1996).

Etymology. The name refers to the dark postmedian bands on the venter.

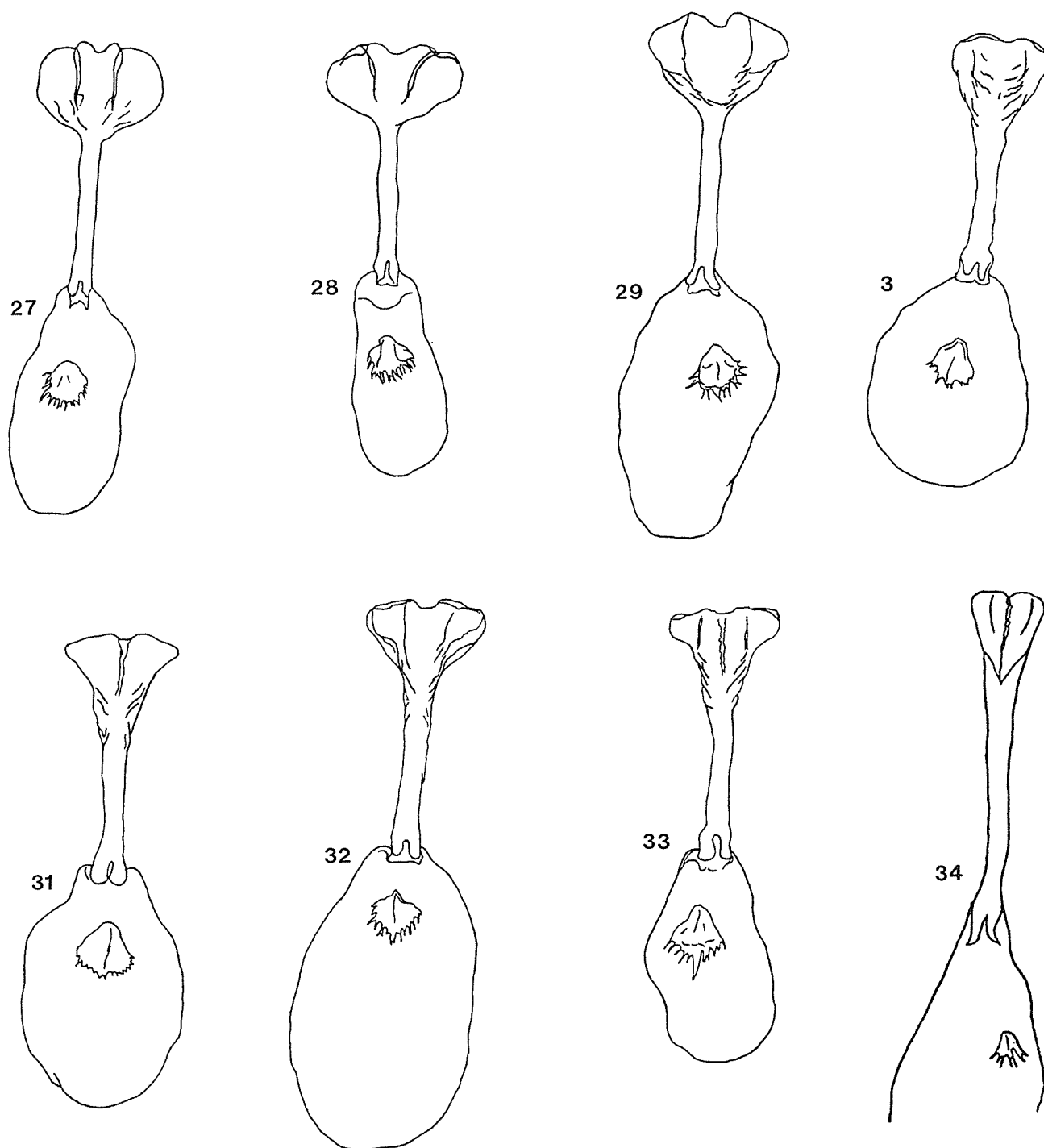
“*orcidia*” group

This group of *Gigantorubra* is characterized by the dark blue dorsum and the very broad dark areas (basal, postmedian) on the venter. The three species discussed by Johnson (1993) are known from Mexico to northern South America and from Argentina, but, as was pointed out, the group was not fully elaborated. Five undescribed species are known from central Rondônia. These substantially expand our knowledge of this group as females are associated for the first time. These discoveries enhance the understanding of diversity in the group as well. Johnson (1993) had not attempted to elaborate the complexity of the “*orcidia*” group, but did recognize and describe some distinctive, apparently regional, endemics: *G. shueyi* (Yucatan and Belize tropical forests) and *G. tafiensis* (northwestern Argentina subtropical forests). The results of the study of samples from Rondônia, including association of companion females, confirm there is substantial hidden species diversity in this group, previously not recognized most probably because of the generally similar dark blue dorsal surfaces of males.

The generic diagnosis for female *Gigantorubra* stated that they showed a “similar ventral pattern [to males] but with more expansive bands” and their description included “dorsal color similar to males on FW, on HW often with light blue across basal or distal areas depending on the species”



Figs. 18-26. Male genitalia of new species of *Gigantorubra* from Rondônia, Brazil (all from the vicinity of Cacaulândia); ventral surface of genital capsule, lateral view of aedeagus. Fig. 18. *Gigantorubra microserrata*, holotype; Fig. 19. *Gigantorubra quadramacula*, holotype; Fig. 20. *Gigantorubra ampla*, holotype; Fig. 21. *Gigantorubra fuscifascia*, holotype; Fig. 22. *Gigantorubra silva*, paratype, Linha 10, 5 km S Cacaulândia, 10 Nov. 1994 (GTA #5803); Fig. 23. *Gigantorubra rondonia*, paratype, Linha 10, 5 km S Cacaulândia, 24 Nov. 1994 (GTA #5805); Fig. 24. *Gigantorubra obscura*, paratype, Linha 10, 5 km S Cacaulândia, 19 Sept. 1993 (GTA #5794); Fig. 25. *Gigantorubra perplexa*, holotype; Fig. 26. *Gigantorubra purpura*, holotype.



Figs. 27-34. Female genitalia of new species of *Gigantorubra* and *Angulopsis* from Rondônia, Brazil (all from the vicinity of Cacauplandia); ventral view. Fig. 27. *Gigantorubra microserrata*, rd. B-80, between C-10 and 15, 19 Nov. 1991 (GTA #6129); Fig. 28. *Gigantorubra divergens*, holotype; Fig. 29. *Gigantorubra quadramacula*, paratype, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 30 Oct. 1990 (GTA #5797); Fig. 30. *Gigantorubra silva*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 10 Aug. 1993 (GTA #5850); Fig. 31. *Gigantorubra rondonia*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 8 Nov. 1990 (GTA #5866); Fig. 32. *Gigantorubra obscura*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 31 Oct. 1989 (GTA #5851); Fig. 33. *Gigantorubra perplexa*, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 31 Oct. 1989 (GTA #5971); Fig. 34. *Angulopsis tenuis*, holotype.

(Johnson 1993). Females of the "*orcidia*" group, however, were not seen by Johnson (1993) and those from Rondônia were initially overlooked as such. Their overall aspect, the basally suffused postmedian band on the VFW, and their genital morphology indicated their identity as *Gigantorubra*. The process of elimination eventually led to their determination as females of obvious "*ocridia*" group males. The original diagnosis of female *Gigantorubra* is correct in that the postmedian line itself of "*ocridia*" group females is more expansive than on males; this is not initially obvious because of the prominent associated dark areas on males. The description of females, however, needs modification to account for the unique (among *Gigantorubra*) sexual dimorphism of "*ocridia*" group taxa, males being dark iridescent blue on the dorsum and with a broad postmedian pattern on the venter and females being brown and with a postmedian pattern consisting only of the postmedian line.

In the following accounts, females are associated with males based upon size and overall aspect of the ventral pattern. These associations are tentative and require eventual confirmation via mated pairs or rearing. Consequently, females are not included in the type series.

***Gigantorubra silva*, new species**

(Figs. 5, 13, 22, 30)

Diagnosis. Wings. Dorsum dark iridescent blue with black margins. Venter medium brown with broad dark brown areas basad and associated with postmedian lines. Similar to other "*orcidia*" group members, differs from all described species of the group by lacking red in postmedian bands on the venter (see following four species). Morphology. Male resembling no other described species of the genus having the genital capsule robust; a short, stout, and triangular saccus; falces with one or two teeth; valvae with bilobes having broad lateral lobes and caudal extensions narrowing to a pointed tip. Female genitalia have a robust ductus bursae and broad, somewhat rhomboidal lamella with weakly developed struts.

Description. Male. FW length = 14.6, 14.8, 15.2 mm; FW broad, apex pointed, termen convex; HW with long black, white-tipped tail at CuA_2 , similar but shorter tail at CuA_1 ; dorsum dark iridescent blue (Spectrum Blue); FW with black costal and outer margins, broadest at apex, veins black; HW costa gray-brown grading into narrow black outer margin, anal margin dark gray, long dark gray scales over posterior 1/3 of wing, tornus with

small orange macule; fringes of both wings dark gray. Venter medium brown (Army Brown) with purple sheen distad; FW with base dark, blackish in base of CuA_2 extending to just distad of origin of vein CuA_2 , dark brown in discal cell and anterior to costa; pale brown line at distal end of discal cell; bipartite (vague whitish distad, black proximad) postmedian line, nearly straight from R_2 to CuA_2 , offset far proximad and chevron-shaped in cell CuA_2 , dark purple-brown band proximad to postmedian line extending to end of discal cell; narrow purplish area between postmedian line and vague blackish submarginal line, proximal 3/4 dark, distal 1/4 violet; HW with median area darker posteriorly; dark brown basal area from costa to anal margin, pale brown line at distal end of discal cell; bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ offset distad, portion between R_s and M_3 nearly straight, the distal white somewhat obscure, shallow W-shape posterior to M_3 , this enclosed in dark purplish and brown band becoming brown posteriad, band mostly distad of postmedian line becoming violet before vague dark brown submarginal line; thecla-spot dark brown with small black pupil; scattered marginal white scales in CuA_2 ; tornus black with a white bar proximad extending 1/2 distance from anal margin to 2A; vague white marginal line in CuA_1 and CuA_2 . Male Genitalia - genital capsule robust; saccus rather short and stout, triangular; falces slender with one or two prominent spine-like teeth distad of bend; bilobes of valvae somewhat triangular, serrate caudad with prominent protruding lateral lobes, caudal extensions narrow; aedeagus very slightly curved, 1.4x genital capsule length, caecum 23% of aedeagus length.

Female. FW length = 14.0 mm (N = 1); FW less highly arched than on male, both wings more rounded; dorsum gray-brown (Hair Brown); vague blue-gray (near Pratt's Payne's Gray) basad on FW behind discal cell and vein CuA_2 extending to 2/3 distance to termen and from discal cell to vein 2A on HW, extending nearly to termen; HW with orange macule at tornus; white marginal line from vein M_1 to 2A; fringes of both wings pale tan. Venter tan (Drab); FW paler along anal margin; very vague pale line at distal end of discal cell; postmedian band from R_2 to CuA_2 , relatively straight, thin white line distad followed by dark brown line of same width with a few orange scales still proximad, pale brown scales grading proximad to ground color at distal end of discal cell, band narrowing posteriad, postmedian element in cell CuA_2 offset proxi-

mad, chevron-shaped; submargin with vague brown line; HW with bold tripartite (white distad followed by black and then sparse orange, sparsest anteriorly) postmedian band, slightly sinuate from vein $Sc+R_1$ to vein M_3 , element in M_3 slightly offset proximad followed by W-shape from vein CuA_1 to 3A; submargin with vague brown line with some orange distad in M_2 and M_3 , thecla-spot red-orange with small black pupil distad and capped with black bar proximad; cell CuA_2 with scattered white scales in black field, orange at vein 2A; tornus with small black macule at margin and orange proximad separated posteriorly by white slash from anal margin; white marginal line from Rs to 2A. Female Genitalia - ductus bursae very broad expanding somewhat cephalad; lamellae robust, more or less rhomboidal, caudal edge slightly indented centrally, struts weakly developed.

Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaupônia, 14 Nov. 1994, *leg.* O. Gomes (GTA #5807). Paratypes, same location as holotype, 10 Nov. 1994 (2 males; GTA #5795, 5803). Additional material, Brazil: Rondônia; 62 km S of Ariquemes, Linha C-20, 7 km E of B-65, Fazenda Rancho Grande, 10 Aug. 1993 (1 female, GTA #5850).

Remarks. See under *G. perplexa* below.

Etymology. This butterfly is named after the senior author's wonderful and beautiful friend Marleti Sousa da Silva.

Gigantorubra rondonia, new species

(Figs. 6, 14, 23, 31)

Diagnosis. Wings. Dorsum dark iridescent blue with black margins. Venter medium brown with broad dark brown areas basad and associated with postmedian lines. Similar to species of the "*orcidia*" group, differs from all described species of the group except *G. silva* by lacking red in postmedian bands on the venter. Virtually identical to *G. silva* on dorsum, venter with paler ground color and somewhat less expansive dark areas especially in median area posteriorly, best distinguished by combination of superficial and genital characters. Morphology. Male having genital capsule very slender for genus; the valvae are similarly slender, the bilobes having narrow lateral lobes and the caudal extensions are very thin. The female genitalia have a relatively stout ductus bursae and triangular lamellae without obvious struts.

Description. Male. FW length = 14.6 mm (14.2-15.2, N = 4); FW broad, apex pointed, termen slightly convex; HW with long black, white-tipped

tail at CuA_2 , similar but shorter tail at CuA_1 ; dorsum dark iridescent blue (Spectrum Blue); FW with black costal and outer margins, broadest at apex, veins black; HW costa gray-brown grading into narrow black outer margin, anal margin dark gray, long dark gray scales over posterior 1/3 of wing, tornus with small orange macule; fringes of both wings dark gray. Venter medium gray-brown (Drab) with purple sheen distad; FW with base dark, blackish in base of CuA_2 extending to just distad of origin of vein CuA_2 , dark brown in discal cell and anteriorly to costa; pale brown line at distal end of discal cell; bipartite (vague whitish distad, black proximad) postmedian line, nearly straight from R_2 to CuA_2 , offset far proximad and chevron-shaped in cell CuA_2 , dark purple-brown band proximad to postmedian line extending to end of discal cell; narrow purplish area between postmedian line and vague blackish submarginal line, proximal 3/4 dark, distal 1/4 violet; HW with dark brown basal area from costa to anal margin, pale brown line at distal end of discal cell; bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ offset distad, portion between Rs and M_3 nearly straight, the distal white somewhat obscure, shallow W-shape posterior to M_3 , this enclosed in dark purplish and brown band becoming brown posteriorly, band mostly distad of postmedian line becoming violet before vague dark brown submarginal line; thecla-spot dark brown (margined narrowly with orange proximad on holotype) with small black pupil; scattered marginal white scales in CuA_2 ; tornus black with a white bar proximad extending 1/2 distance from anal margin to 2A; white marginal line in CuA_1 and CuA_2 . Male Genitalia - genital capsule very slender; saccus pointed cephalad, triangular grading into narrow vinculum; falces relatively robust with one or two spine-like teeth distad of bend; valvae very slender, bilobes triangular, weakly serrated caudad, lateral lobes short, narrow with rounded shoulders, caudal extensions very narrow and elongate; aedeagus straight, 1.3x genital capsule length, caecum 21% of aedeagus length.

Female. FW length = 14.2 mm (13.8-15.0, N = 5); FW less highly arched than on male, both wings more rounded; dorsum brown (Raw Umber); vague blue-gray (near Pratt's Payne's Gray) basad on FW behind discal cell and vein CuA_2 , extending to about origin of CuA_2 except nearly to termen in 2A and from discal cell to vein 2A on HW, extending to end of discal cell and 2/3 distance to termen posteriorly; HW with orange macule at tornus; white marginal

line from vein M_1 or M_2 to 2A; fringes of both wings pale tan. Venter tan (Drab); FW slightly paler along anal margin; very vague pale line at distal end of discal cell; postmedian band from R_2 to CuA_2 , relatively straight, thin pale tan line distad followed by dark brown line of same width often with a few vague orange scales still proximad, pale brown scales grading proximad to ground color before distal end of discal cell, band narrowing posteriad, postmedian element in cell CuA_2 offset proximad, chevron-shaped; submargin with vague submarginal brown line, most evident in CuA_1 and CuA_2 ; HW with tripartite (white distad followed by black and then sparse orange, sparsest anteriorly) postmedian band, straight from vein $Sc+R_1$ to vein M_3 , element in M_3 slightly offset proximad followed by shallow W-shape from vein CuA_1 to 3A; submargin with vague brown line with some orange distad in M_3 , thecla-spot red-orange with small black pupil distad and capped with brown bar proximad; cell CuA_2 with scattered white scales in black field, orange at vein 2A; tornus with small black macule at margin and orange proximad separated posteriorly by white slash from anal margin; white marginal line from M_2 to 2A. Female Genitalia - ductus bursae stout, very slightly expanded cephalad; lamellae broadly triangular, slight indentation in center of caudal margin, struts not developed.

Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaulândia, 28 Sept. 1994, leg. O. Gomes (GTA #5809). Paratypes, same location as holotype, 24 Nov. 1994 (1 male, GTA #5805); Brazil: Rondônia, 62 km S of Ariquemes, Linha C-20, 7 km E of B-65, Fazenda Rancho Grande, 7 Aug. 1995 (1 male, GTA #6235), 11 Oct. 1993 (1 male, GTA #5793). Additional material, same location as holotype, 31 Oct. 1994 (1 female, GTA #6068), 3 Nov. 1994 (1 female, GTA #6069); Fazenda Rancho Grande, 8 Nov. 1990 (1 female, GTA #5866), 15 Nov. 1990 (1 female, GTA #6066), 10 Dec. 1989 (1 female, GTA #5969).

Remarks. See under *G. perplexa* below.

Etymology. The species is named after the state of Rondônia, Brazil, its type locality.

Gigantorubra obscura, new species

(Figs. 7, 15, 24, 32)

Diagnosis. Wings. Dorsum dark iridescent blue with black margins. Venter medium brown with broad dark brown areas basad and associated with postmedian lines. Similar to species of the "*orcidia*" group, differs from all described species of the group except the previous two by lacking red in

postmedian bands on the venter. Differs from *G. silva* and *G. rondonia* by its somewhat larger size, ochreous in median area of VFW, and more prominent purple sheen in the median area of the VHW, best distinguished by combination of superficial and genital characters. Morphology. Male genitalia having the genital capsule short and stout, a short saccus, and slender valvae with narrow lateral lobes on bilobes and very thin caudal extensions. Female genitalia have a stout ductus bursae and triangular lamellae, similar to *G. rondonia*, but more robust.

Description. Male. FW length = 15.3 mm (14.9-15.8, $N = 7$); FW broad, apex pointed, termen slightly convex; HW with long black, white-tipped tail at CuA_2 , similar but shorter tail at CuA_1 ; dorsum dark iridescent blue (Spectrum Blue); FW with black costal and outer margins, broadest at apex, veins black; HW costa gray-brown grading into narrow black outer margin, anal margin dark gray, long dark gray scales over posterior 1/3 of wing, tornus with small orange macule; fringes of both wings dark gray. Venter medium brown (near Drab) with purple sheen distad and in median area of VHW; FW with base dark, blackish in base of CuA_2 extending considerably (1/2 distance to postmedian band) distad of origin of vein CuA_2 , dark brown in discal cell and anteriorly to costa; pale brown line at distal end of discal cell; area between basal and postmedian dark areas ochreous-brown; bipartite (vague whitish distad, black proximad) postmedian line, nearly straight from R_2 to CuA_2 , offset far proximad and chevron-shaped in cell CuA_2 , purple-brown band proximad to postmedian line extending to end of discal cell; narrow purplish area between postmedian line and vague blackish submarginal line, proximal 3/4 dark, distal 1/4 violet; HW with dark brown basal area from costa to anal margin extending distad behind CuA_1 to postmedian band as somewhat paler brown; pale brown line at distal end of discal cell; bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ offset distad, portion between R_s and M_3 nearly straight, the distal white somewhat obscure, shallow W-shape posterior to M_3 , this enclosed in dark purplish and brown band becoming brown posteriad, band mostly distad of postmedian line becoming violet before vague dark brown submarginal line; thecla-spot dark brown with some proximal orange and small black pupil; scattered marginal white scales in CuA_2 ; tornus black with a white bar proximad extending 1/2 distance from anal margin to 2A and a few orange scales towards

vein 2A; vague white marginal line in CuA_1 and CuA_2 . Male Genitalia - genital capsule short and stout; saccus short, triangular, grading into vinculum; falces with single spine-like tooth just distad of bend; valvae slender, bilobes triangular, somewhat irregular caudad, lateral lobes long, narrow with rounded shoulders, caudal extensions thinly pointed; aedeagus 1.5x genital capsule length, arched cephalad, straight caudad, caecum 23% of aedeagus length.

Female. FW length = 14.6 mm (14.0-15.1, N = 4); FW less highly arched than on male, both wings more rounded; dorsum dark brown (Sepia, color 119); vague blue-gray (near Pratt's Payne's Gray) basad on FW behind discal cell and vein CuA_2 , extending 2/3 distance to termen in CuA_2 and to termen in 2A and from discal cell to vein 2A on HW, extending to end of discal cell and nearly to termen posteriad; HW with orange macule at tornus; white marginal line from vein M_3 to 2A; fringes of both wings pale tan. Venter medium tan (Army Brown); FW paler along anal margin; very vague pale line at distal end of discal cell; postmedian band from R_2 to CuA_2 , relatively straight, thin white line distad followed by dark brown line of same width with a very few orange scales still proximad, brown scales grading proximad into ground color just before distal end of discal cell, band narrowing posteriad, postmedian element in cell CuA_2 offset proximad, chevron-shaped; submargin with relatively pronounced brown bars; HW with bold tripartite (white distad followed by black and then sparse orange, sparsest anteriad) postmedian band, slightly sinuate from vein $Sc+R_1$ to vein M_3 , element in M_3 slightly offset proximad followed by shallow W-shape from vein CuA_1 to 3A; submargin with prominent brown line outlined with pale tan and describing small brown marginal macules, some orange distad in M_3 , thecla-spot red-orange with black pupil distad and capped with black bar proximad; cell CuA_2 with scattered white scales in black field, orange at vein 2A; tornus with small black macule at margin and orange proximad separated posteriorly by white slash from anal margin; white marginal line from R_s to 2A. Female Genitalia - ductus bursae robust, straight, very slightly expanded cephalad; lamellae robustly triangular, slight indentation at center of caudal margin, struts weakly developed.

Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaúlândia, 25 Oct. 1994, leg. O. Gomes (GTA #5800). Paratypes, same location as holotype, 6 July 1995 (1 male, GTA #6236), 19 Sept. 1993 (1 male, GTA #5794), 3 Oct. 1994 (1 male,

GTA #5801), 6 Oct. 1994 (1 male, GTA #5808), 7 Oct. 1995 (1 male, GTA #6219), 13 Oct. 1994 (1 male, GTA #5802), 25 Oct. 1995 (1 male, GTA #6234). Additional material, Brazil: Rondônia; 62 km S of Ariquemes, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 30 Oct. 1993 (1 female, GTA #5978), 31 Oct. 1989 (1 female, GTA #5851), 15 Nov. 1995 (1 female, GTA #6239); same location as holotype, 16 Nov. 1995 (1 female, GTA #6221).

Remarks. See under *G. perplexa* below.

Etymology. The name refers to the relatively dark aspect of the venter.

Gigantorubra perplexa, new species

(Figs. 8, 16, 25, 33)

Diagnosis. Wings. Dorsum iridescent blue with black margins. Venter medium brown with broad dark brown areas basad and associated with postmedian lines. Similar to species of the "*orcidia*" group, differs from all described species of the group except preceeding three species by lacking red in postmedian bands on the venter. Differs from these latter species by its notably smaller size, paler blue on the dorsum, paler venter, and narrower ventral postmedian bands. Morphology. Male having genital capsule moderately robust, short and triangular saccus, and bilobes of valvae broadly triangular with long lateral lobes and thin and bluntly pointed caudal extensions. Female genitalia very similar to those of *G. obscura*, but less robust.

Description. Male. FW length = 13.7, 13.8, 13.9 mm; FW broad, apex pointed, termen slightly convex; HW with long black, white-tipped tail at CuA_2 , similar but shorter tail at CuA_1 ; dorsum iridescent blue (Smalt Blue, color 170); FW with black costal and outer margins, broadest at apex, veins black; HW costa gray-brown grading into narrow black outer margin, anal margin dark gray, long dark gray scales over posterior 1/3 of wing, tornus with small orange macule; fringes of both wings dark gray. Venter pale gray-brown (Light Drab) with very faint purple sheen distad; FW with base dark, blackish in base of CuA_2 extending to origin of vein CuA_2 , dark brown in discal cell and anteriad to costa; pale brown line at distal end of discal cell; bipartite (vague whitish distad, black proximad) postmedian line, nearly straight from R_2 to CuA_2 , offset far proximad and chevron-shaped in cell CuA_2 , dark purple-brown band proximad to postmedian line extending to end of discal cell; faint, narrow brown area from postmedian line to 3/4 distance to vague blackish submarginal line; HW

with dark brown basal area from costa to anal margin, pale brown line at distal end of discal cell; bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ offset distad, portion between R_s and M_3 nearly straight, the distal white somewhat obscure, shallow W-shape posterior to M_3 , this enclosed in dark purplish and brown band becoming brown posteriad, band mostly distad of postmedian line, very vague and narrow proximad, separated by ground color from vague dark brown submarginal line; thecla-spot dark brown with narrow orange proximad and large black pupil; scattered marginal white scales in CuA_2 ; tornus black with a white bar proximad extending 1/2 distance from anal margin to 2A, with a few orange scales on one specimen; vague white marginal line in CuA_1 and CuA_2 . Male Genitalia - genital capsule relatively robust; saccus short, triangular, obviously narrower than cephalad end of vinculum; falces with single spine-like tooth just distad of bend; valvae moderately broad, bilobes broadly triangular, finely serrate caudad, as broad caudad as lateral lobes, latter with rounded shoulders, narrowing abruptly to relatively thin, bluntly pointed caudal extensions; aedeagus straight, 1.4x genital capsule length, caecum 22% of aedeagus length.

Female. FW length = 12.8 mm (12.3-13.5, N = 6); FW less highly arched than on male, both wings more rounded; dorsum dark brown (Sepia, color 119); vague blue-gray (near Pratt's Payne's Gray) basad on FW behind discal cell and vein CuA_2 , extending to just beyond origin of CuA_2 except to termen in 2A and from discal cell to vein 2A on HW, extending to end of discal cell and nearly to termen posteriad; HW with orange macule at tornus; white marginal line from vein M_3 to 2A; fringes of both wings pale tan. Venter median tan (near Army Brown); FW paler along anal margin; very vague pale line at distal end of discal cell; postmedian band from R_2 to CuA_2 , slightly convex, thin pale tan line distad followed by dark brown line of same width with a few orange scales still proximad, pale brown scales grading proximad to ground color towards distal end of discal cell, band narrowing posteriad, postmedian element in cell CuA_2 offset proximad, chevron-shaped; submargin with vague brown bars, most prominent in CuA_1 and CuA_2 ; HW with bold tripartite (white distad followed by black and then sparse orange, sparsest anteriad) postmedian band, slightly sinuate from vein $Sc+R_1$ to vein M_3 , element in M_3 slightly offset proximad followed by shallow W-shape from vein CuA_1 to 3A; submargin with vague brown line with some orange distad in M_3 , thecla-spot red-orange with small to medi-

um-sized black pupil distad and capped with black bar proximad; cell CuA_2 with scattered white scales in black field, orange at vein 2A; tornus with small black macule at margin and orange proximad separated posteriorly by white slash from anal margin; white marginal line from M_1 to 2A. Female Genitalia - ductus bursae relatively long, expanded cephalad; lamellae narrowly triangular with central indentation on caudal margin, struts moderately developed.

Types: Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaúlândia, 15 Nov. 1994, leg. O. Gomes (GTA #5804). Paratypes, same location as holotype, 3 Nov. 1994 (1 male, GTA #6043), 7 Nov. 1994 (1 male, GTA #5806). Additional material, same location as holotype, 4 July 1995 (1 female, GTA #6238), 4 Oct. 1994 (1 female, GTA #5865); Brazil: Rondônia; 62 km S Ariquemes, Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 19 Aug. 1993 (1 female, GTA #6127), 22 Sept. 1992 (1 female, GTA #6128), 31 Oct. 1989 (1 female, GTA #5971), 6 Nov. 1990 (1 female, GTA #5864), 22 Nov. 1991 (2 females; GTA #5849, 6040); Brazil: Rondônia; rd B-65, 1 km N Cacaúlândia, 28 Oct. 1990 (1 female, GTA #6067).

Remarks. The four species of the "orcidia" group of *Gigantorubra* from central Rondônia discussed so far are very similar in general superficial characters. They were initially grouped as one species and it wasn't until all were dissected and females associated that four distinct specific entities were evident. The morphological differences which corroborate the consistent superficial differences suggest the importance of the extent and color of the VHW bands and degrees of dark ground color suffusion in distinguishing species of this group. Johnson (1993) noted such differences in species of the "exotissima" group, but, as noted hitherto concerning the "orcidia" group, very similar dorsal surfaces and lack of previously association of the quite different females, have hindered appreciation of the diversity in this latter group. All four of these species from Rondônia differ from the three previously described species of the group by the lack of distinct red in the VHW postmedian line. The species to be described next is the most distinctive of this group in the Cacaúlândian area.

Etymology. The name means confusing or ambiguous referring to the overall similarity among this group of *Gigantorubra*.

Gigantorubra purpura, new species
(Figs. 9, 26)

Diagnosis. Wings. Dorsum dark, rather dull purple-blue with black margins. Venter medium brown with broad dark brown areas basad and associated with postmedian lines. Similar to other "*orcidia*" group members, differs from all described species of the group except preceeding four by lacking red in postmedian bands on the venter, ventral bands narrow, venter with stronger purple sheen than any known species of the "*orcidia*" group. Morphology. Genitalia similar to *G. silva*, male genital capsule more robust and angular, triangular saccus sharply pointed, falces with one blunt tooth, valvae with bilobes more narrowly triangular than on *G. silva*, but caudal extensions similar.

Description. Male. FW length = 12.7, 14.1 mm (holotype); FW broad, apex pointed, termen convex; HW with long black, white-tipped tail at CuA_2 , similar but shorter tail at CuA_1 ; dorsum dark, slightly iridescent purple-blue (Cyanine Blue); FW with black costal and outer margins, broadest at apex, narrowing to terminal line in cell CuA_2 , veins black; HW costa gray-brown grading into narrow black outer margin, anal margin dark gray, long dark gray scales over posterior 1/3 of wing, tornus with small orange macule; fringes of both wings dark gray. Venter dark tan (Dark Drab) with very prominent purple sheen on both wings; FW with base dark, blackish in base of CuA_2 extending to just distad of origin of vein CuA_2 , dark brown in discal cell and anterior to costa; pale brown line at distal end of discal cell; black postmedian line, nearly straight from R_2 to CuA_2 , dark purple band proximad to postmedian line extending to end of discal cell; paler purple band between postmedian line and very vague blackish submarginal line; HW with dark brown basal area from costa to anal margin, pale brown line at distal end of discal cell; bipartite (white distad, black proximad, a very few orange scales on proximal edge) postmedian line, element in $Sc+R_1$ angled, portion between R_s and M_3 nearly straight, the distal edging purple, shallow W-shape posterior to M_3 , this enclosed in dark purplish and brown band becoming brown posteriorly, band nearly entirely distad of postmedian line, vague dark brown submarginal line; thecla-spot orange with large black pupil; scattered marginal white scales in CuA_2 ; tornus black with a white bar proximad extending 1/2 distance from anal margin to 2A, orange bar more proximad; white marginal line from vein M_2 to 2A. Male Genitalia - genital capsule broadly robust; saccus short and stout, triangular, sharply pointed, grading gradually into

angular vinculum; falces slender with a single blunt tooth distad of bend; bilobes of valvae ovate, serrate caudad with narrowly triangular lateral lobes having pointed shoulders, caudal extensions relatively narrow; aedeagus nearly straight, 1.4x genital capsule length; caecum 22% of aedeagus length.

Female. Unknown

Type. Holotype male, Brazil: Rondônia; Linha C-10, 5 km S of Cacaúlândia, 7 Oct. 1995, leg. O. Gomes (GTA #6220). Paratype, same location as holotype, 16 Nov. 1995 (GTA #6237).

Remarks. Superficially, this is the most distinctive of the "*orcidia*" group in central Rondônia. The very dark purple dorsum and the strong purple sheen on the venter immediately allow determination.

Etymology. The species is named after the deep purple dorsal color and sheen of the same color on the venter.

Angulopsis Johnson

Angulopsis was initially proposed by Johnson (1991) to include an assemblage of species of the "*Electrostrymon*" grade of Eumaeini not congeneric with *Electrostrymon* Clench. Further study indicated that the original broad concept of the genus was not monophyletic (Johnson 1993) and *Angulopsis* was fully elaborated (Johnson and Kroenlein 1993a) with still an additional species described later (Johnson and Kroenlein 1993b). The genus, although very generally similar to *Gigantorubra*, is characterized by a lack of elaborate patterns associated with the postmedian band of the VHW, male genitalia without serrated or spined falces, and female genitalia with less elaborately sculptured lamellae. The twenty-six species previously recognized range from southern Mexico to southern Brazil and northern Argentina. *Angulopsis* is poorly represented among the material from Rondônia, but one undescribed species, tentatively associated here, has been encountered.

"*sangala*" group

Johnson and Kroenlein (1993a) originally used the species *Thecla autoclea* Hewitson (1863-1878 [1877]) as the titular taxon of this species group. Although they acknowledged that this species and *Thecla sangala* Hewitson (1868) were synonyms, the actual date of publication for the former name (1877) was not recognized and the synonymies were reversed. We correct this, recognizing *T. autoclea*

as a junior synonym of *Thecla sangala* (see Remarks under *A. tenuis* below).

This group of *Angulopsis* was characterized by their small size, usually brown color, and the simple VHW pattern. Seven species, ranging from Mexico to southeastern Brazil and northern Argentina, were recognized (Johnson and Kroenlein 1993a).

***Angulopsis tenuis*, new species**

(Figs. 17, 34)

Diagnosis. Wings. This is a nondescript plain brown species most similar superficially to *Angulopsis sangala* (Hewitson); the genitalia are quite different. Morphology. Female genitalia are the most slender of all the known *Angulopsis* with the lamellae very narrow.

Description. Male. Unknown. **Female.** FW length = 10.8 mm (holotype); wings broad, FW termen convex; dorsum dark brown (Hair Brown), HW with costal and anal margins paler brown; HW tornus with vague orange macule; vague whitish marginal line from CuA_1 to $2A$; fringes brown. Venter gray-brown (Drab), FW slightly paler along anal margin; FW with bipartite (vague pale tan distad, brown proximad) postmedian line, sinuate from R_2 to CuA_2 , very vague submarginal brown bars; HW with bipartite (white distad, black proximad) postmedian line, element in $Sc+R_1$ vague, slightly offset distad; elements in Rs , M_1 , and M_2 in straight line; element in M_3 offset proximad; W-shape from CuA_1 to $3A$ edged proximad with a few orange scales; submargin with vague brown line outlined with a few pale brown scales; thecla-spot orange with triangular black pupil distad; CuA_2 with scattered white scales over blackish field; tornus with large marginal black macule, short white slash from margin, and narrow orange [faded?] proximad; white marginal line from M_2 to $2A$. Female Genitalia - ductus bursae very slender and long; lamellae narrow, broadening slightly caudad and with very shallow central indentation on caudal margin, struts weakly developed.

Type. Holotype female, Brazil: Rondônia; 62 km S of Ariquemes; Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 27 Oct. 1989, leg. G. T. Austin (GTA #5972).

Remarks. This is a small brown species with little to distinguish it superficially. The ventral pattern is of the angulopine type and the female genitalia, although very slender, associate the species with *Angulopsis*. It is important to recall here that Johnson *et al.* (1988), Johnson (1991), and

Johnson and Kroenlein (1993a) noted *Angulopsis sangala* (as *A. autoclea*) as one of the best examples in the Eumaeini of species with very consistent genitalic features across a large geographic range (Mexico to Argentina). This is one reason for the clear synonymy of *A. sangala* (TL: Venezuela) and *A. autoclea* (TL: Nicaragua), type of the former being a much paler colored (xeric?) morph. Based on this morphological consistency, Johnson and Kroenlein (1993a) described *Angulopsis desjardenas*, a genitally distinctive *Angulopsis* from northwestern Argentina subtropical forest (TL: Parque Nacional Calilegua) which differs on the wing from locally sympatric *A. sangala* by a far larger size and slightly broader VHW bands. Since this description, numerous additional specimens of *A. desjardenas* have been identified from papered northwestern Argentina material formerly all overlooked as *A. sangala*. Thus, the description of *A. tenuis* continues to show that, given the consistency in the morphology of *A. sangala*, additional distinctive species in the "*sangala*" group should be easy to identify. In Parque Nacional Calilegua, *A. sangala* has been found only some 1000m lower in elevation than *A. desjardenas* in the disturbed and dry lowland areas that surround the park.

Etymology. The name means slender and refers to the female genitalia.

Discussion

Neither *Gigantorubra* nor *Angulopsis* have previously been recorded in the southwestern Amazon basin of Brazil although a few species are known from Bolivia to the west (Johnson 1993, Johnson and Kroenlein 1993a). Now that samples are available from this region, the Cacaupora area in central Rondônia continues to appear as a center of endemism for thecline butterflies and to provide abundant examples of local sibling species diversity (Austin and Johnson 1995, 1996). Of the ten species of *Gigantorubra* and one species of *Angulopsis* found here, all represent new species and have not appeared among samples of these genera from elsewhere. As noted in Remarks under various taxonomic entries above, the new species from Rondônia often illustrate important character constellations for both genera. In *Gigantorubra*, these include the first report of marked sexual dimorphism of the species of the "*orcidia*" species group and, considering genitalic data in this group, the importance to species recognition of external differences in the expanse and color of the VHW bands (previously demonstrated as important in the "*exotissima*"

group). In *Angulopsis*, the new species in the "*sangala*" group illustrates that distinctive regional endemics continue to be recognizable within the pan-Neotropical range of the common congener *A. sangala*, a species whose farflung populations show remarkable consistency in morphological characters of both sexes (Johnson *et al.* 1988, Johnson 1991, Johnson and Kroenlein 1993a). Undoubtedly, some of the new species of *Gigantorubra* and *Angulopsis* named herein from Rondônia will be discovered to be more widespread. The study of their biology will be important in understanding both the ecological and species diversity represented by these two fascinating genera. From our present knowledge, *Gigantorubra* appears widespread in the Amazon drainage while *Angulopsis* reaches its greatest species richness peripherally to the west and south. It remains to be shown if this is real or an artifact of sampling bias. Nonetheless, central Rondônia appears as a major center of species richness for *Gigantorubra*, but is species poor for *Angulopsis*.

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References

- Austin, G. T., and K. Johnson. 1995. Theclinae of Rondônia, Brazil: *Arcas*, with descriptions of three new species (Lepidoptera: Lycaenidae). *Trop. Lepid.* 6:31-39.
- Austin, G. T., and K. Johnson. 1996. Theclinae of Rondônia, Brazil: *Iaspis* Kaye, taxonomic comments and descriptions of new species (Lepidoptera: Lycaenidae). *Trop. Lepid.* 7:45-59.
- Emmel, T. C., and G. T. Austin. 1990. The tropical rainforest butterfly fauna of Rondonia, Brazil: species diversity and conservation. *Trop. Lepid.* 1:1-12.
- Johnson, K. 1991. Neotropical hairstreak butterflies: genera of the "*Calycopis* / *Calystryma* grade" of Eumaeini (Lepidoptera, Lycaenidae, Theclinae) and their diagnostics. *Reports Mus. Nat. Hist., Univ. Wisconsin (Stevens Point)* 21:1-127.
- Johnson, K. 1993. Neotropical hairstreak butterflies: new sister genera of the "*Electrostrymon* / *Angulopsis*" grade of Eumaeini (Lepidoptera, Lycaenidae, Theclinae). *Reports Mus. Nat. Hist., Univ. Wisconsin (Stevens Point)* 32:1-76.
- Johnson, K., R. Eisele, and B. MacPherson. 1988. The "hairstreak butterflies" (Lycaenidae, Theclinae) of northwestern Argentina. I. Introduction, *Calycopis*, *Calystryma*, *Tergissima*, & *Femniterga*. *Bull. Allyn Mus.* 123:1-49.
- Johnson, K., and K. R. Kroenlein. 1993a. Revision of *Angulopsis* (Lepidoptera, Lycaenidae, Theclinae). *Reports Mus. Nat. Hist., Univ. Wisconsin (Stevens Point)* 33:1-38.
- Johnson, K., and K. R. Kroenlein. 1993b. New genera and species of the "Gem Butterflies" (Lepidoptera, Lycaenidae, Theclinae). *Reports Mus. Nat. Hist., Univ. Wisconsin (Stevens Point)* 34:1-42.
- Smithe, F. B. 1975. *Naturalist's color guide*. New York: American Museum of Natural History.
- Smithe, F. B. 1981. *Naturalist's color guide part III*. New York: American Museum of Natural History.