

# THECLINAE OF RONDÔNIA, BRAZIL: *OLYNTHUS*, WITH DESCRIPTIONS OF NEW SPECIES (LEPIDOPTERA: LYCAENIDAE)

GEORGE T. AUSTIN AND KURT JOHNSON

Nevada State Museum and Historical Society, 700 Twin Lakes Drive, Las Vegas, Nevada 89107, USA; and  
Environmental Affairs, The Ethical Cultural Society, 53 Prospect Park West, Brooklyn, New York 11215, USA

**ABSTRACT.**—Fourteen species of *Olynthus* (Lepidoptera: Lycaenidae) were encountered near Cacaúlândia in central Rondônia, Brazil. Four of these *O. essus*, *O. punctum*, *O. fanci*, and *O. avoca* represent known species; ten, *O. negrus*, *O. lividus*, *O. fulvoventris*, *O. ochraventris*, *O. occultus*, *O. pallens*, *O. pressus*, *O. purpuratus*, *O. ruberangulus*, and *O. albosignum*, are described as new species. Distinctive genitalia readily separate species showing general external similarity. These species fly in the late dry and early wet seasons and there are marked annual differences in abundance.

**KEY WORDS:** Amazon, biodiversity, Eumaeini, French Guiana, Goias, Mato Grosso, Neotropical, *Olynthus albosignum* n. sp., *Olynthus fulvoventris* n. sp., *Olynthus lividus* n. sp., *Olynthus negrus* n. sp., *Olynthus occultus* n. sp., *Olynthus ochraventris* n. sp., *Olynthus pallens* n. sp., *Olynthus pressus* n. sp., *Olynthus purpuratus* n. sp., *Olynthus ruberangulus* n. sp., Peru, phenology, South America, Surinam, taxonomy.

Investigations of the butterfly fauna of central Rondônia, Brazil, ongoing since 1987 (Emmel, 1989; Emmel and Austin, 1990), have produced new distribution records and species (e.g., Austin, 1993; Austin and Mielke, 1993; Austin and Steinhauser, 1996). Included are numerous undescribed taxa of Eumaeini (Lycaenidae: Theclinae) which indicate a richness of sibling species in the area (e.g., Austin and Johnson, 1995, 1996). The genus *Olynthus* Hübner, is examined herein and 10 new species are described. The study area, approximately 4000 ha. of typical lowland tropical rainforest in the vicinity of the municipality of Cacaúlândia, was described by Emmel and Austin (1990) and Austin and Johnson (1995).

## METHODS

Abbreviations are FW and HW for forewing and hindwing, respectively, and D and V for dorsal (dorsum) and ventral (venter), respectively. FW length is the length of the costa from base to apex. We refer to the usually prominent cluster of androconial (= pheromonal) scales on the male FW as the "brand" consistent with long-term common usage and Eliot (1973). The type locality is considered the location of capture for the holotype. Numbers associated with types and other specimens refer to genitalia vial numbers.

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

## *OLYNTHUS* Hübner, 1819

Nicolay (1982) characterized *Olynthus* and discussed its 11 included species. Fourteen members of the genus were encountered in the Cacaúlândia area of which 10 represent undescribed species. Three species groups are erected here for ease of comparison and are based solely on superficial appearance.

## "*essus*" group

This group, including five species in central Rondônia, is characterized by broad black DFW margins which reach or include the brand in the FW discal cell.

### *Olynthus essus* (Herrich-Schäffer, 1853)

(Fig. 1-2)

This large and boldly marked species is represented by several males and one female from the Cacaúlândia area. These are identical in superficial and genital characters to the material illustrated by Nicolay (1982). Our records extend the distribution of this species southward; Nicolay (1982) recorded it from the immediate Amazon Basin to northern South America and Lamas (1994) found it at Madre de Dios, Peru.

**Specimens examined.**—BRAZIL.—Rondônia: 5 km S Cacaúlândia, Linha 10, 1 Aug 1996 (1 ♂, GTA #7418); 14 Aug 1995 (1 ♂); 16 Aug 1994 (1 ♂, GTA #6334); 3 Sep 1966 (1 ♂, GTA #7537); 4 Sep 1996 (2 ♂, GTA #7417, 7419); 5 Sep 1996 (1 ♂); 11 Sep 1996 (1 ♂); 18 Sep 1996 (1 ♂); 26 Sep 1996 (1 ♂); 3 Oct 1994 (1 ♂, GTA #6335); 4 Oct 1994 (1 ♂); 8 Oct 1996 (1 ♂, GTA #7538). Fazenda Rancho Grande, 11 Oct 1993 (1 ♂, GTA #7102); 13 Nov 1990 (1 ♂, GTA #6812). Linha 20, 10 km E B-65, lot 18, 18 Jul 1994 (1 ♀, GTA #6341).

### *Olynthus fanci* (Jones, 1912)

(Fig. 1-2)

Three males of *O. fanci* are known from the vicinity of Cacaúlândia. The genitalia are identical to those illustrated by Nicolay (1982), but, on the wings, the submarginal markings of the V are less complete; those on the FW are very faint. This species was previously known only from Paraguay and southeastern Brazil (Nicolay, 1982).

**Specimens examined.**—BRAZIL.—Rondônia: 5 km S of Cacaúlândia, Linha 10, 12 Sep 1996 (1 ♂, GTA #7423); 8 Oct 1995 (1 ♂, GTA #6305); 2 Nov 1995 (1 ♂, GTA #6538).



Fig. 1-4. *Olynthus* from Rondônia, Brazil: **1)** (dorsal surface). **Upper left** - *O. essus*, ♂, 16 Aug 1994; **upper middle** - *O. occultus*, holotype; **upper right** - *O. occultus*, ♀ paratype, 13 Aug 1994; **lower left** - *O. fanciæ*, ♂, 2 Nov 1995; **lower middle** - *O. ruberangulus*, holotype; **lower right** - *O. pressus*, holotype. **2)** *Olynthus* from Rondônia, Brazil (ventral surface). Same specimens as in Fig. 1. **3)** *Olynthus* from Rondônia, Brazil (dorsal surface). **Upper left** - *O. punctum*, ♂, 25 Sep 1996; **upper middle** - *O. punctum*, ♀, 21 Nov 1991; **upper right** - *O. lividus*, holotype; **lower left** - *O. fulvoventris*, holotype; **lower middle** - *O. ochraventris*, holotype; **lower right** - *O. pallens*, holotype. **4)** *Olynthus* from Rondônia, Brazil (ventral surface). Same specimens as in Fig. 3.

*Olynthus occultus* Austin & Johnson, new sp.

(Fig. 1-2, 7, 17)

**Diagnosis.**— *Wings*: Most similar to *Olynthus ostia* (Hewitson, 1867) and *O. fanciæ*, with DFW black costal margin curving to include brand; however, with V gray-brown, paler than either of those species and FW without trace of postmedian markings. *Morphology*: In males, caudal extensions blunt in V view (these sharply pointed on *O. ostia* and, especially, *O. fanciæ*), the valval bilobes on *O. occultus* have the curvature from the central portion extending further cephalad than on *O. ostia* and shorter in length than on *O. fanciæ*. The labides of *O. occultus* have an obviously narrower central notch than on *O. ostia*, but only slightly narrower than on *O. fanciæ*. In the female genitalia, the lateral processes of the lamellae are elongate and straight while on *O. ostia* and *O. fanciæ* these are short and recurved.

**Description.**— **MALE.**— FW length = 17.1mm (16.2-18.0, N = 4); D bright iridescent blue; FW with medium-sized (2mm) black brand at distal end of discal cell; costal margin black, curving to outer margin to include most of brand and continuing as broad marginal band, narrowing gradually to tornus; HW with costal margin broadly black, narrowing considerably along outer margin. V pale gray-brown; FW uniform, unmarked; HW with black and white postmedian line, well-developed posteriorly, poorly developed anteriorly, costal macule not prominent, no mid-costal macule, prominent red-orange thecla-spot with large black pupil and prominent red-orange macule proximad to large black macule at tornus; extreme base of costa of both wings with vague orange. *Genitalia*: of general form for genus; vinculum broadest in its middle; labides narrowly notched centrally; valvae with caudal extensions long, narrow, blunt at caudal end, bilobes with curvature of central portion to lateral lobes extending further cephalad than on many congeners

**FEMALE.**— FW length = 16.3mm (N = 1); D similar to male, no brand, dark margins much broader; V as on male. *Genitalia*: ductus bursae broad, of medium length for genus; lamellae with long, thin lateral processes

extending straight caudad; corpus bursae and signa typical for genus.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: 62 km S of Ariquemes (5 km N of Cacaulândia), Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 3 Nov 1993, leg. J. P. Brock (GTA #4617).

*Paratypes*: same location as holotype, 21 Jul 1996 (1 ♂). Rondônia: Linha C-10, 5 km S of Cacaulândia, 13 Aug 1994 (1 ♀, GTA #6340); 5 Sep 1996 (1 ♂, GTA #7440); 19 Sep 1993 (1 ♂, GTA #6811); 25 Sep 1994 (1 ♂, GTA #6317); 20 Oct 1996 (1 ♂, GTA #7663). Road B-80, between Linhas C-10 and C-15, 19 Nov 1991 (1 ♂, GTA #6810).

**Etymology.**— The name means "hidden" or "concealed" referring to the species similarity to others of the genus.

**Remarks.**— The very different genitalia of *O. occultus* compared to its superficially most similar congeners indicate its specific status.

*Olynthus ruberangulus* Austin & Johnson, new sp.

(Fig. 1-2, 8)

**Diagnosis.**— *Wings*: Very similar to *Olynthus stigmatos* (Druce, 1890), VHW with small red patch at anal angle (absent on *O. stigmatos*) and with costal macules much smaller. *Morphology*: Male genitalia differ from those of *O. stigmatos* by their broader cephalad end, more lance-like caudal extensions of the valvae, and the more broadly rounded bilobed area.

**Description.**— **MALE.**— FW length = 18.0mm (17.2-19.1, N = 4); D bright iridescent purple-blue; FW with round black brand of medium size (2mm) at distal end of discal cell; costal margin black, bending to outer margin just distad of discal cell and continuing as narrowing marginal band to tornus, the apical black area somewhat triangular; HW with costal margin broadly black continuing as narrow black outer margin. V olive-brown; FW paler gray-brown along anal margin, unmarked or with trace of postmedian line; HW with black and white postmedian line, well-developed, costal macule prominent, small mid-costal macule just basad of mid-cell Sc+R<sub>1</sub>-Rs, thecla-spot red-orange with black pupil and small red-orange macule proxi-



Fig. 5-6. *Olynthus* from Rondônia, Brazil: 5) (dorsal surface). **Upper left** - *O. purpuratus*, holotype; **upper middle** - *O. negrus*, holotype; **upper right** - *O. negrus*, ♀ paratype, 29 Oct 1995; **lower left** - *O. avoca*, ♂, 2 Dec 1991; **lower right** - *O. albosignum*, holotype. 6) *Olynthus* from Rondônia, Brazil (ventral surface). Same specimens as in Fig. 5.

mad to large black macule at tornus; extreme base of costa of both wings red-orange. *Genitalia*: of general form for genus; vinculum broad cephalad, narrowing caudad; labides fairly broad with rather broad central notch; valvae with long lance-like caudal extensions, pointed caudad in V view, blunt in lateral view, expanding gradually cephalad to bilobes which curve to broadly rounded lateral lobes.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-20, 7 km E of B-65, Fazenda Rancho Grande, 12 Jul 1992, leg. G. Bongioiolo (GTA #6813).

*Paratypes*: same location as holotype, 14 Jul 1994 (1 ♂, GTA #6354); 11 Oct 1993 (1 ♂, GTA #7101). Rondônia: Linha C-10, 5 km S of Cacaulândia, 25 Sep 1996 (1 ♂).

**Etymology.**— The name refers to the red macule at the anal angle of the VHW, absent on the most similar species, *O. stigmatos*.

**Remarks.**— *O. ruberangulus* is superficially similar to *O. stigmatos*, but has red at the anal angle of the VHW and the costal macules on the same wing are smaller with the mid-costal macule more distad (that on *O. stigmatos* is near the base of Sc+R<sub>1</sub>-Rs). *O. ruberangulus* may be the same species referred to by Lamas (1994) as *Olynthus* near *stigmatos*. *O. stigmatos*, itself, is known from the lower Amazon basin north and westward to Panama (Nicolay, 1982).

#### *Olynthus pressus* Austin & Johnson, new sp.

(Fig. 1-2, 9)

**Diagnosis.**— *Wings*: Like *O. essus* and *O. occultus* with broad DFW black costal margin including end of discal cell; much smaller in size, V most similar to *O. essus* but grayer and with more irregular postmedian line on VHW. *Morphology*: Male genitalia relatively slender as for *O. essus*, but more broadly rounded cephalad and with proportionally longer caudal extensions of the valvae; the falces are longer and narrower than on either *O.*

*essus* or *O. occultus*.

**Description.**— MALE.— FW length = 15.4mm (15.0-15.7, N = 3); D bright iridescent blue; FW with medium-sized (2mm) black brand at distal end of discal cell; costal margin black, curving broadly to outer margin to include brand in discal cell and continuing as narrowing marginal band to tornus; HW with costal margin broadly black continuing as narrow black outer margin. V gray-brown; FW slightly paler along anal margin, unmarked; HW with black and white postmedian line, well-developed, each macule in anterior portion chevron-shaped, costal macule prominent, no mid-costal macule, thecla-spot red-orange with black pupil and prominent red-orange macule proximad to small black macule at tornus; extreme base of costa of both wings orange. *Genitalia*: of general form for genus; genital capsule slender, broadly rounded cephalad; labides narrow with rather narrow central notch; valvae with long caudal extensions, pointed caudad in V and lateral views, expanding gradually cephalad to bilobes which curve to rather narrow lateral lobes.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 12 Sep 1996, leg. O. Gomes (GTA #7416).

*Paratypes*: same location as holotype, 12 Sep 1996 (1 ♂, GTA #7536); 19 Sep 1996 (1 ♂, GTA #7449).

**Etymology.**— The name means "compressed" or "concise" and refers to this species' similarity to the much larger *O. essus*.

**Remarks.**— *O. pressus*, although superficially similar to *O. essus*, is much smaller in size (male FW length of *O. essus* = 18.3mm [17.1-19.3, N = 10]) and with the wings much less elongate and appearing stubby.

#### "punctum" group

The "punctum" group of *Olynthus* has narrow black DFW margins which are far distad of the discal cell. Seven species are known from central Rondônia.

#### *Olynthus punctum* (Herrich-Schäffer, 1858)

(Fig. 3-4)

Five males and two females of *O. punctum* are among the central Rondônia material. These have no trace of a VFW postmedian line or a mid-costal macule on the VHW. Nicolay (1982) remarked in detail about the variation of this species and the apparent status of *Thecla obsoleta* Lathy, 1926. This latter name, based upon a figure by Hewitson (1867), requires a neotype to be designated (Nicolay, 1982). The variation ascribed to *O. punctum* may be assessed only after this has been accomplished. The species occurs from Panama to the vicinity of Rio de Janeiro, Brazil (Nicolay, 1982), but our records fill a distributional gap between the upper Amazon River and the state of Goiás, Brazil; Lamas *et al.* (1991) and Lamas (1994) found the species in Peru.

**Specimens examined.**— BRAZIL.— Rondônia: 5 km S Cacaulândia, Linha 10, 4 Sep 1996 (1 ♂, GTA #7415); 11 Sep 1996 (1 ♂, GTA #7448); 25 Sep 1996 (1 ♂, GTA #7425); 26 Oct 1994 (1 ♂, GTA #6333); 11 Nov 1994 (1 ♂, GTA #6314). Fazenda Rancho Grande, 15 Jul 1994 (1 ♀, GTA #6339); B-80, between Linhas C-10 and C-15, 21 Nov 1991 (1 ♀, GTA #7103).

#### *Olynthus lividus* Austin & Johnson, new sp.

(Fig. 3-4, 10)

**Diagnosis.**— *Wings*: Puzzlingly like the previously discussed species, *O. punctum*, with DFW black costal margin curving well distad of discal cell; V much paler than on *O. nitor*, but very similar to *O. punctum* in color and markings and in lacking the prominent subapical macule on the VHW; distinctive in the genitalia. *Morphology*: Male genitalia differ from the superficially most similar species noted above by the relatively broad central notch of the labides, the broad vinculum cephalad, and the configuration of the valval bilobes which curve to the lateral lobes far cephalad as on another congener, *O. fanci*.

**Description.**— MALE.— FW length = 16.3mm (15.7-17.0, N = 8); D bright

iridescent blue; FW with small (1.5mm) black brand at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as narrowing marginal band to tornus; HW with costal margin broadly black continuing as very narrow black outer margin. V gray-brown; FW slightly paler along anal margin, unmarked; HW with black and white postmedian line, not well-developed especially anteriorly, costal macule faint, no mid-costal macule, thecla-spot red-orange with black pupil and prominent red-orange macule proximad to small black macule at tornus; extreme base of costa of both wings orange. *Genitalia*: of general form for genus; vinculum broad cephalad, narrowing caudad; labides narrow with rather broad central notch; valvae with long caudal extensions, pointed caudad in V view, blunt in lateral view, expanding gradually cephalad to bilobes which curve far cephalad to lateral lobes.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 22 Aug 1996, leg. O. Gomes (GTA #7428).

*Paratypes*: same location as holotype, 1 Jul 1995 (1 ♂, GTA #6532); 15 Jul 1995 (1 ♂, GTA #6445); 14 Aug 1996 (1 ♂, GTA #7422); 28 Aug 1996 (1 ♂, GTA #7535); 4 Sep 1996 (1 ♂, GTA #7438); 5 Sep 1996 (1 ♂, GTA #7534); 13 Sep 1996 (2 ♂, GTA #7531, 7532); 26 Sep 1996 (2 ♂, GTA #7420, 7424); 3 Oct 1996 (1 ♂, GTA #7539); 9 Oct 1994 (1 ♂, GTA #6353).

**Etymology.**— The name means "black and blue" and refers to the D color of this and many other hairstreaks.

**Remarks.**— *O. lividus*, although similar superficially to *O. punctum* and without comparative material may well be determined as such, has obviously different genitalia. It is somewhat smaller than *O. punctum* (male FW length of *O. punctum* = 17.6mm [16.9-18.1, N = 5; sample from Rondônia]), has narrower black margins on both the FW and HW, and the V pattern is less clearly defined, especially anteriorly on the HW. Since it is sympatric with a phenotype having typical *O. punctum* genitalia, we do not hesitate to describe *O. lividus* as a separate species.

***Olythus fulvoventris* Austin & Johnson, new sp.**

(Fig. 3-4, 11)

**Diagnosis.**— *Wings*: Superficially like *O. punctum*; differs from *O. lividus* by having a bolder pattern on VHW; genitalia distinct from both species. *Morphology*: Male genitalia differing from *O. punctum* by shorter and broader caudal extensions, central portion of bilobes conspicuously curving caudad over their "cup-like" lateral lobes (curving less caudad on *O. punctum*), saccus broader, and aedeagus more curved; differing from *O. lividus* by broader labides, genital capsule narrowing cephalad to a narrower saccus, broader caudal extensions, less robust junction from caudal extensions to the bilobes, and a more robust and less curved aedeagus.

**Description.**— MALE.— FW length = 16.6mm (holotype), 17.2mm (paratype); D bright iridescent blue; FW with medium-sized (2mm) black brand at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as marginal band narrowing to tornus; HW with costal margin broadly black, narrowing considerably along outer margin. V relatively uniform medium tan; FW slightly paler gray-brown along anal margin, unmarked or with very faint trace of a postmedian line; HW with ground color becoming paler towards anal margin, prominent black and white postmedian line extending anteriorly to  $M_1$ , costal macule of moderate size, faint mid-costal macule, dark gray distad to postmedian line, prominent red thecla-spot with black pupil and prominent red macule proximad to small black macule at tornus; extreme base of costa of both wings red-orange. *Genitalia*: of general form for genus; vinculum broadest just cephalad to midpoint; labides broad with broad central notch, saccus narrower than most species of genus; valvae with caudal extensions of moderate length and broad, bilobes with central portion conspicuously curved caudad to lateral lobes; aedeagus robust, moderately curved.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 18 Sep 1993, leg. O. Gomes (GTA #6809).

*Paratypes*: same location as holotype, 29 Aug 1993 (1 ♂, GTA #6808); 21 Sep 1992 (1 ♂, GTA #7306).

**Etymology.**— The name refers to the tan V surface.

**Remarks.**— *O. fulvoventris*, with its black margin on the FW curving far distad of the brand and with its tan V, is similar to both *O. lividus* and *O. punctum*. The VHW is marked more boldly than on *O. lividus* and is very similar to that on *O. punctum*. As noted in the diagnosis above, the three species obviously differ in their male genital morphology; identification of females may further reinforce their distinction.

***Olythus ochraventris* Austin & Johnson, new sp.**

(Fig. 3-4, 12)

**Diagnosis.**— *Wings*: Superficially most like *O. lividus*; differs from this and other similar species (*O. punctum*, *O. fulvoventris*) by yellow-brown (rather than gray or tan) V; distinctive in the genitalia. *Morphology*: Male genitalia differing from all superficially similar species by broad genital capsule and rounded bilobes of valvae.

**Description.**— MALE.— FW length = 17+mm (holotype, wing tips worn); D bright iridescent blue; FW with large (2.5mm) dark gray-brown brand at distal end of discal cell; costal margin narrowly black, curving to outer margin well distad of discal cell and continuing as marginal band narrowing to tornus; HW with costal margin broadly black, narrowing considerably along outer margin. V relatively uniform medium yellow-brown; FW slightly paler gray-brown along anal margin, with very faint trace (a few dark scales in each cell) of a postmedian line; HW with prominent black and white postmedian line extending anteriorly to  $M_1$ , no costal macules, prominent deep red thecla-spot with black pupil and prominent deep red macule proximad to moderately sized black macule at tornus, the red macules joined by narrow line of red; extreme base of costa of both wings orange. *Genitalia*: of general form for genus; genital capsule prominently broad, vinculum broadest just cephalad to midpoint; labides broad with rather narrow central notch, saccus expansive, grading into vinculum; valvae with caudal extensions of moderate length, bilobes with central portion curved to broadly rounded lateral lobes; aedeagus moderately curved.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: 62 km S of Ariquemes, Linha C-20, 7 km E of B-65, Fazenda Rancho Grande, 21-30 Oct 1992, leg. J. P. Brock (GTA #7393).

**Etymology.**— The name refers to the yellow-brown V surface.

**Remarks.**— *O. ochraventris*, with its narrow black FW margin curving distad of the brand, is similar to *O. lividus*, *O. punctum*, and *O. fulvoventris*. The VHW resembles *O. lividus* and some individuals of *O. punctum* in lacking a costal pattern, but the yellow-brown color is immediately recognizable in comparison to the gray aspects of those species. The broadly rounded bilobes have been seen on no other *Olythus*.

***Olythus pallens* Austin & Johnson, new sp.**

(Fig. 3-4, 13)

**Diagnosis.**— *Wings*: With narrow black margins typical of "punctum" group, but relatively small in size, somewhat blue-green instead of purple-blue, VHW differs from others of the genus, except the larger and dorsally darker *O. fulvoventris*, by becoming noticeably paler towards anal margin. *Morphology*: Male genitalia most similar to those of the superficially different *O. ochraventris*, but the genital capsule is conspicuously narrower.

**Description.**— MALE.— FW length = 15.5mm (14.8-16.0, N = 6); D bright iridescent, somewhat greenish, blue approaching turquoise; FW with small (1.5-2mm) round black brand at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as narrowing marginal band to tornus; HW with costal margin broadly black continuing as very narrow black outer margin. V rich gray-brown; HW obviously paler towards anal margin; FW slightly paler along anal margin, unmarked or with trace of postmedian macules; HW with black and white postmedian line, costal macule present but not prominent, no mid-costal macule, thecla-spot red-orange with small black pupil and prominent red-orange macule proximad to small black macule at tornus; extreme base of costa of both wings orange. *Genitalia*: of general form for genus; vinculum moderately broad; labides narrow with rather broad central notch; valvae with long caudal extensions,

bluntly pointed caudad especially in lateral view, expanding gradually cephalad to bilobes which curve broadly and far cephalad to lateral lobes.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 4 Sep 1996, leg. O. Gomes (GTA #7438).

*Paratypes*: same location as holotype, 1 Aug 1996 (1 ♂, GTA #7427); 28 Aug 1996 (1 ♂, GTA #7426); 4 Sep 1996 (1 ♂, GTA #7413); 5 Sep 1996 (1 ♂, GTA #7437); 13 Sep 1996 (1 ♂, GTA #7414); 8 Oct 1996 (1 ♂, GTA #7533); 25 Oct 1995 (1 ♂, GTA #6277).

**Etymology.**— The name refers to the pale aspect of this species on both wing surfaces.

**Remarks.**— *O. pallens* is rather easily determined superficially by its pale blue-green D color and the distinctly pale area posteriorly on the VHW.

*Olynythus purpuratus* Austin & Johnson, new sp.

(Fig. 5-6, 14)

**Diagnosis.**— *Wings*: Similar to other species of "*punctum*" group with narrow black DFW margin, color deeper purple-blue than the foregoing, V color relatively dark brown and darker even than *O. fanci*, wings rather short and angular, and VHW pattern with thin, but well-defined, macules and lines. *Morphology*: Male genitalia with capsule slender, cephalad end somewhat more angular than congeners, caudal extensions of valvae broad and blunt in lateral view, lateral lobes very broadly rounded like those of the superficially different *O. ochraventr*.

**Description.**— MALE.— FW length = 16.3mm (16.0-16.7, N = 3); D bright iridescent dark purple-blue; FW with small (1.5-2mm) round black brand at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as narrowing marginal band to tornus; HW with costal margin broadly black continuing as moderately broad black outer margin. V charcoal-brown; FW slightly paler along anal margin, unmarked; HW with thin, but sharply defined, black and white postmedian line, costal macule small, no mid-costal macule, thecla-spot deep red-orange with triangular black pupil and prominent red-orange macule proximad to medium-sized black macule at tornus; extreme base of costa of both wings orange. *Genitalia*: of general form for genus; vinculum slender, cephalad end somewhat angular; labides narrow with rather broad central notch; valvae with long caudal extensions, caudal end bluntly rounded in V view, broad and with squared-off caudal end in lateral view, expanding gradually cephalad to bilobes which curve far cephalad to broadly rounded lateral lobes.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 14 Aug 1996, leg. O. Gomes (GTA #7421).

*Paratypes*: same location as holotype, 11 Sep 1996 (1 ♂, GTA #7435); 3 Oct 1996 (1 ♂, GTA #7434).

**Etymology.**— The name means "clad in purple" and refers to the D color of this hairstreak.

**Remarks.**— *O. purpuratus* is deeper purple-blue than most *Olynythus*: this, its medium size, and the dark V set the species apart from its congeners except for *O. fanci* which differs by having broader black margins on the DFW.

*Olynythus negrus* Austin & Johnson, new sp.

(Fig. 5-6, 15, 18)

**Diagnosis.**— *Wings*: Superficially like *O. nitor*, female differing in being completely brown; both sexes with distinct genitalia. *Morphology*: Male genitalia differing from *O. nitor* by far shorter and broader caudal extensions, these longest on their interior edge in V view (longest on outer edge on *O. nitor*), central portion of bilobes conspicuously curving caudad over their "cup-like" lateral lobes (not curving conspicuously caudad on *O. nitor*), cephalad portion of vinculum broader than on *O. nitor* in both V and lateral views. Female genitalia of *O. negrus* with a longer and more slender ductus bursae and with prominent lateral processes of the lamellae recurved (latter straight on *O. nitor*).

**Description.**— MALE: FW length = 14.8mm (14.0-15.9, N = 7); D bright iridescent blue; FW with small (1-1.5mm) black brand at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as broad marginal band of relatively even width to tornus; HW with costal margin broadly black, narrowing considerably along outer margin. V relatively dark and shining purple-brown; FW paler gray-brown along anal margin, unmarked or with very faint trace of postmedian line; HW with thin black and white postmedian line, poorly developed anteriorly, costal macule small, no mid-costal macule, prominent red thecla-spot with black pupil and prominent red macule proximad to small black macule at tornus; extreme base of costa of both wings red-orange. *Genitalia*: of general form for genus; vinculum prominently broad; labides with relatively broad central notch; valvae with caudal extensions short and broad, longest on interior edge in V view, bilobes with central portion conspicuously curved caudad to lateral lobes.

FEMALE.— FW length = 14.8mm (12.8-15.4, N = 5); D uniform brown; V as on male, but slightly paler. *Genitalia*: ductus bursae long, slender, slightly expanded caudad; lamellae with lateral projections strongly recurved; corpus bursae and signa typical for genus.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha C-10, 5 km S of Cacaulândia, 5 Oct 1994, leg. O. Gomes (GTA #6337).

*Paratypes*: same location as holotype, 6 Jul 1995 (1 ♂, GTA #6278); 8 Jul 1995 (2 ♂, GTA #6533, 6743); 15 Jul 1995 (1 ♂, GTA #6433); 6 Aug 1996 (4 ♂, GTA #7432, 7433); 14 Aug 1996 (2 ♂, GTA #7429); 28 Aug 1996 (1 ♂); 3 Sep 1996 (1 ♂, GTA #7540); 4 Sep 1996 (2 ♂, GTA #7431); 5 Sep 1996 (4 ♂, GTA #7430, 7541); 11 Sep 1996 (4 ♂); 12 Sep 1996 (1 ♂); 14 Sep 1993 (1 ♀, GTA #6816); 21 Sep 1994 (1 ♂, GTA #6336); 28 Sep 1996 (1 ♂, GTA #7436); 4 Oct 1994 (1 ♀, GTA #6357); 6 Oct 1993 (1 ♂, GTA #6820); 7 Oct 1995 (2 ♂, GTA #6534, 6744); 8 Oct 1995 (1 ♂, GTA #6533); 12 Oct 1996 (1 ♂); 22 Oct 1995 (1 ♂, GTA #6338); 25 Oct 1995 (1 ♂); 29 Oct 1995 (1 ♀, GTA #6446); 30 Oct 1996 (1 ♂); 31 Oct 1995 (1 ♂, GTA #6536); 2 Nov 1995 (1 ♂); 16 Nov 1995 (2 ♂, GTA #6432, 6537). Linha C-20, 7 km E B-65, Fazenda Rancho Grande, 11 Jul 1992 (1 ♂, GTA #6805); 12 Jul 1992 (1 ♂, GTA #6821); 15 Jul 1991 (1 ♂, GTA #6819); 8 Aug 1992 (1 ♂, GTA #6824); 1 Sep 1991 (1 ♂, GTA #6806); 7 Oct 1993 (5 ♂, GTA #6799-6802, 6804; 1 ♀, GTA #6814); 11 Oct 1993 (1 ♂, GTA #6803); 12 Oct 1993 (2 ♂, GTA #6822, 6823); 10 Nov 1994 (1 ♂, GTA #6304); 12 Nov 1990 (1 ♂, GTA #6817); 17 Nov 1990 (1 ♂, GTA #6818). Linha C-20, 10 km E B-65, lot 18, 23 Sep 1992 (1 ♂, GTA #6807). Linha 15, lot 36, west of Cacaulândia, 9 Oct 1993 (1 ♂, GTA #6798; 1 ♀, GTA #6815).

**Etymology.**— The species is named after its dark V.

**Remarks.**— *O. negrus* is by far the most common *Olynythus* in central Rondônia. Given the general appearance of the male, it might be determined as *O. nitor*, but the genitalia of the two species are unmistakably different and females differ externally in color. In males, we cannot find any superficial character clearly differentiating the two species. However, consistent with our view, Nicolay (1982) illustrated the female of *O. nitor* with D blue while D'Abrera (1995) showed an all brown female from Cayenne, French Guiana. Since Nicolay (1982) did not list *O. nitor* among material at The Natural History Museum, this suggests that D'Abrera's (1995) specimen represents *O. negrus*, the female of *O. nitor* being characterized by D blue. Nicolay (1982) recorded *O. nitor* from Surinam, French Guiana (but not Cayenne), Peru, and Brazil (upper Amazon drainage and Mato Grosso).

Nicolay (1992) outlined the history of the putative synonym of *O. punctum*, *Thecla obsoleta* Lathy 1926. D'Abrera (1995) illustrated supposed specimens of this latter including the brown female. These specimens are similar superficially to *O. negrus*, but are as large as *O. punctum*. Accordingly, dissection is required to ascertain their identity.

"avoca" group

The "*avoca*" group of *Olynythus* is distinctive in the extensive white markings of the V, especially on the HW. Two species were encountered in the Cacaulândia area.



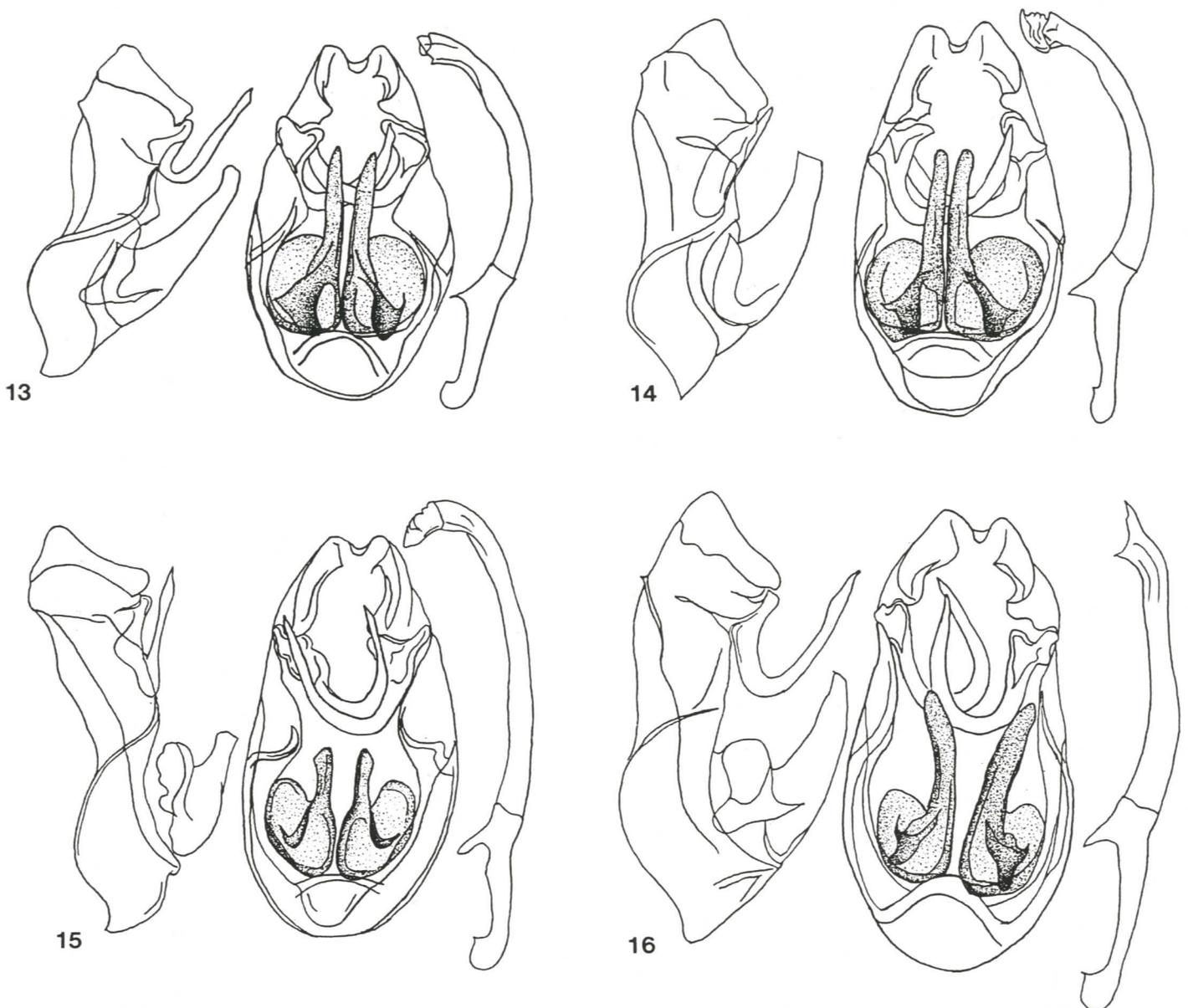


Fig. 13-16. Male genitalia of *Olynythus* from Rondônia, Brazil: 13) *O. pallens*, holotype. 14) *O. purpuratus*, holotype. 15) *O. negrus*, holotype. 16) *O. albosignum*, holotype.

*Olynythus avoca* (Hewitson, 1867)

(Fig. 5-6)

Two males of *O. avoca* are known from the Cacaúlândia region. The species is distributed from northeastern South America to just south of the Amazon River and into Peru (Nicolay, 1982; Lamas, 1994); the records for Rondônia extend the distribution southward. **Specimens examined.**— BRAZIL.— Rondônia: vic. Cacaúlândia, Fazenda Rancho Grande, 2 Dec 1991 (1 ♂, GTA #7126); Linha C-5, off B-65, 10 km S of Cacaúlândia, 4 Nov 1990 (1 ♂, GTA #7392).

*Olynythus albosignum* Austin & Johnson, new sp.

(Fig. 5-6, 16)

**Diagnosis.**— *Wings*: Resembles only *O. avoca*; distinguished superficially by more distal placement of the postmedian line on the VFW with the elements in cells  $M_1$  and  $M_2$  distad of the remainder of the line. *Morphology*: Male genitalia differ from those of *O. avoca* by a broader vinculum, very broad

caudal extensions of the valvae, the different configuration of the bilobes being broadest caudad (more cephalad on *O. avoca*) and robust at the curvature from the central portion (this is small and not extending as far cephalad on *O. avoca*), and the more robust and straighter aedeagus.

**Description.**— MALE.— FW length = 16.9mm (holotype), 16.8mm (paratype); D bright iridescent blue; FW with small (1.5-2mm) black band at distal end of discal cell; costal margin black, curving to outer margin well distad of discal cell and continuing as narrowing marginal band to tornus; HW with costal margin broadly black, continuing to narrow black outer margin. V dark purplish gray-brown; FW paler gray-brown along anal margin, postmedian line white, extending from  $R_2$  to  $CuA_2$ , portion between  $M_1$  and  $M_3$  well distad of rest of line; HW with irregular submedian and postmedian series of white marks, submargin mottled with white, thecla-spot red-orange with small black pupil distad; tornus with black at margin and capped with small red-orange macule; much white overscaling between vein  $CuA_2$  and anal margin; extreme base of costa of both wings red-orange. *Genitalia*: of general form for genus; vinculum broad cephalad narrowing somewhat caudad; labides with rather narrow central notch; valvae with caudal extensions very broad and blunt-ended, curvature of bilobes to lateral lobes extending far

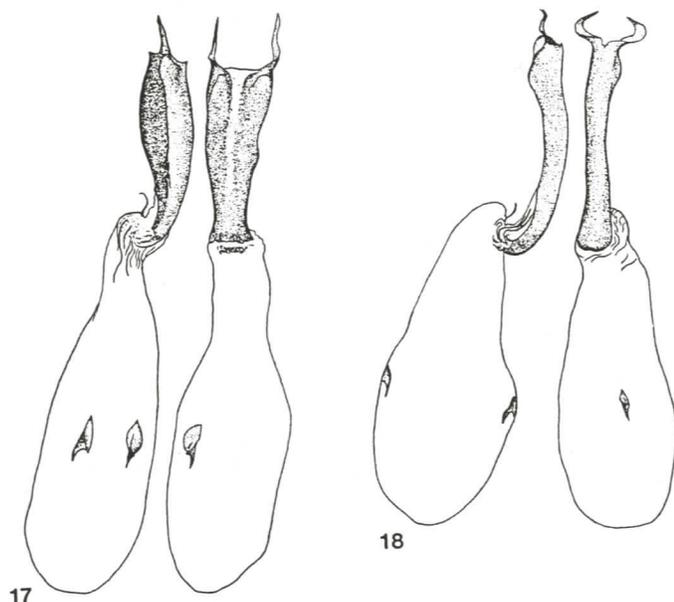


Fig. 17-18. Female genitalia of *Olynthus* from Rondônia, Brazil: **17**) Female genitalia of *O. occultus*, paratype. **18**) Female genitalia of *O. negrus*, paratype.

cephalad; aedeagus more robust and straighter than usual for genus.

FEMALE.— Unknown.

**Types.**— *Holotype* ♂: BRAZIL.— Rondônia: Linha 10, 5 km S of Cacaulândia, 3 Oct 1994, leg. O. Gomes (GTA #6330).

*Paratypes*: same location as holotype, 24 Sep 1996 (1 ♂); 2 Oct 1996 (1 ♂).

**Etymology.**— The name refers to the prominent white marks on the V surface.

**Remarks.**— *Olynthus albosignum* was originally determined as *O. avoca* until compared directly, especially the genitalia, to that species which also occurs in the Cacaulândia area.

## DISCUSSION

The number of new species identified from the vicinity of Cacaulândia is particularly interesting because, given the previous work of Nicolay (1982), *Olynthus* could be considered one of the more relatively "well-known" of the eumaeine genera. The new species generally resemble previously described taxa, but differ in the details of their pattern and often extraordinarily in their genitalia. This study demonstrates the importance of dissecting virtually every specimen of Neotropical Eumaeini, not only those which "look a little different" superficially, but also those with "certain" identity. As we have previously emphasized (Austin and Johnson, 1995, 1996; Johnson and Sourakov, 1993), the species concept (as seen in local faunal lists or uncritical photofiles like D'Abreu, 1995) is often applied to suites of species showing generalized external characters.

Historically, studies of Eumaeini have suffered from lack of sufficiently large samples from any single locale from which to examine and interpret variability. With larger samples now becoming available, it is pertinent to question how many previously published local lists actually contain undescribed species within the common taxonomic usages. It is too easy to be uncritical of identifications in supposedly "well-known" groups of butterflies and workers involved in biodiversity studies should be aware of this pervasive problem. Surprises abound even among recently reviewed groups, and the central Rondônia material provides a unique opportunity to examine species richness in a localized tropical ecosystem.

This study also indicates the apparent short flight season (5

months) of *Olynthus* in central Rondônia (Figs. 19-20). The various species have been recorded only from early July through early December with a strong peak in species richness and abundance in September and October. Flight begins in the middle of the well-marked dry season (May-September) and continues through the early rainy season, the peak more or less corresponding to the time of the first heavy rains. Members of the genus were rarely recorded in 1990-1992 (3-4 species each year with 4-7 individuals), were recorded in moderate numbers in 1993-1995 (5-7 species, 14-20 individuals), and were quite abundant in 1996 (11 species, 64 individuals). One species, *O. negrus*, was recorded every year (1990-1996), three species were recorded in but one year, and five species were recorded in only two years. Peaks in abundance appeared during October in each year from 1993 to 1995 and, overwhelmingly, in September of 1996. Such data emphasize the potential problem of sampling error in historical museum material. Given the sporadic character of historical collecting, it is doubtful that its result could come close to reflecting the actual species richness of *Olynthus*. This situation may typify many groups of Eumaeini and further stresses the importance of elaborating species richness from extensive localized samples.

## Key to *Olynthus* Males Known from Central Rondônia

1. VHW with extensive white overscaling . . . . . "avoca" group 2  
VHW without white overscaling . . . . . 3
2. VFW postmedian line as evenly curved series of macules *avoca*  
VFW postmedian with portion between  $M_1$  and  $M_3$  offset distad  
. . . . . *albosignum*
3. DFW with black outer margin narrow throughout and not including  
brand . . . . . "punctum" group 4  
DFW with black outer margin broad to touch or include brand . .  
. . . . . "essus" group 10
4. V dark purple-brown . . . . . *negrus*  
V paler (gray, brown, tan, or yellow-brown) . . . . . 5
5. D with very narrow black margins, brand large, V yellow-brown  
with VHW markings prominent . . . . . *ochraventris*  
Without this combination of characters . . . . . 6
6. VHW becoming gradually paler towards anal margin (this not  
obvious on all *O. punctum*) . . . . . 7  
VHW more or less evenly colored although the anal margin itself  
may be distinctly paler . . . . . 9
7. D paler, more blue-green; smaller (FW < 16.1mm) . . . . . *pallens*  
D darker, more purple-blue, larger (FW > 16.1mm) . . . . . 8
8. DFW black margin broader, curving broadly to black on costal  
margin, V ground color medium gray-brown . . . . . *punctum*  
DFW black margin narrower, less broadly curved to black costal  
margin, V ground color tan . . . . . *fulvoventris*
9. D deep purple-blue, V charcoal-brown, VHW markings thin but  
well-defined, red of thecla-spot and at anal angle deep red-orange,  
FW short and angular . . . . . *purpuratus*  
D blue, V generally paler, VHW markings broader, red of thecla-  
spot and at anal angle paler red-orange, FW longer and more  
produced . . . . . *lividus*
10. DFW with triangular black apex, V dull brown, VHW with  
prominent subapical and mid-costal macules, red macule at VHW  
tornus smaller than black macule . . . . . *ruberangulus*  
Without this combination of characters . . . . . 11
11. V dark gray-brown . . . . . *fancia*  
V pale gray-brown . . . . . 12
12. Small (FW < 16mm) . . . . . *pressus*  
Large (FW > 16mm) . . . . . 13
13. V pattern bold . . . . . *essus*  
V pattern finer . . . . . *occultus*

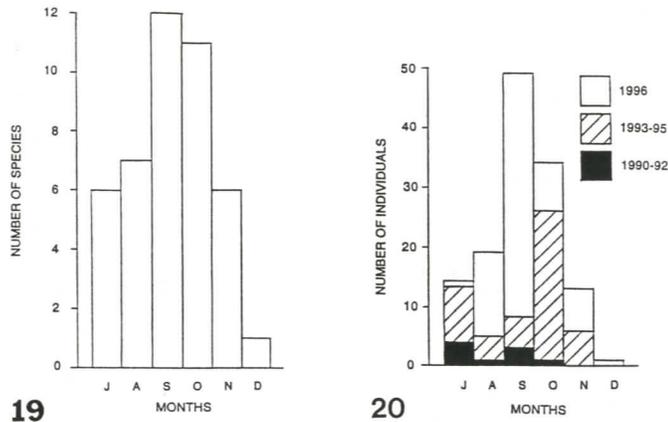


Fig. 19-20. Phenology of *Olynthus* in Rondônia, Brazil (1990-1996): **19**) Species richness by month. **20**) Relative abundance and annual differences.

### ACKNOWLEDGMENTS

The senior author thanks O. H. H. Mielke and V. Becker for making his studies of Rondônia butterflies possible. J. P. Brock, O. Gomes, and J. D. Turner assisted in the field. T. C. Emmel has provided encouragement and support since inception of investigations in Rondônia. The Schmitz family at Fazenda Rancho Grande makes field studies in Rondônia a comfortable and enjoyable experience. The Conselho Nacional de Desenvolvimento Científico e Tecnológico kindly issued the authorization permits from the Ministério da Ciência e Tecnologia for our studies in Rondônia in collaboration with EMBRAPA/CPAC and Universidad Federal do Paraná.

### LITERATURE CITED

#### Austin, G. T.

1993. A review of the *Phanus vitreus* group (Lepidoptera: Hesperidae: Pyrginae). *Trop. Lepid.* (Gainesville), 4 (suppl. 2):21-36.

#### Austin, G. T., and K. Johnson

1995. Theclinae of Rondônia, Brazil: *Arcas*, with descriptions of three new species (Lepidoptera: Lycaenidae). *Trop. Lepid.* (Gainesville), 6:31-39.

1996. Theclinae of Rondônia, Brazil: *Iaspis*, taxonomic comments and descriptions of new species (Lepidoptera: Lycaenidae). *Trop. Lepid.* (Gainesville), 7:45-59.

#### Austin, G. T., and O. H. H. Mielke

1993. Two new nymphalid species from western Brazil (Lepidoptera: Nymphalidae). *Trop. Lepid.* (Gainesville), 4:123-126.

#### Austin, G. T., and S. R. Steinhauser

1996. Hesperidae of central Rondônia, Brazil: *Celaenorhinus* Hübner (Pyrginae), with descriptions of three new species and taxonomic comments. *Insecta Mundi* (Gainesville), 10:25-44.

#### D'Abreu, B.

1995. *Butterflies of the Neotropical Region. Part VII. Lycaenidae*. Victoria, Australia: Hill House. pp. 1098-1270.

#### Eliot, J. N.

1973. The higher classification of the Lycaenidae (Lepidoptera): a tentative arrangement. *Bull. Brit. Mus. Nat. Hist. (Ent.)* (London), 28:371-515.

#### Emmel, T. C.

1989. The incredible butterfly diversity of the Rondonian rain forest in Brazil: a phenomenon soon to disappear. *News Lepid. Soc.* (Los Angeles), 1989(4):53-55.

#### Emmel, T. C., and G. T. Austin

1990. The tropical rainforest butterfly fauna of Rondonia, Brazil: species diversity and conservation. *Trop. Lepid.* (Gainesville), 1:1-12.

#### Hewitson, W. C.

1863-78 [1867]. *Illustrations of Diurnal Lepidoptera. Lycaenidae. Vol. 1*. London: J. Van Voorst. 228pp.

#### Johnson, K., and A. Sourakov

1993. Hairstreak butterflies of the genus *Serratofalca* (Lepidoptera: Lycaenidae). *Trop. Lepid.* (Gainesville), 4:107-118.

#### Lamas, G.

1994. Butterflies of the Explorer's Inn Reserve. Pp. 162-177 in R. B. Foster, J. L. Carr, and A. B. Forsyth (eds.), *The Tambopata-Candamo Reserved Zone of Southeastern Perú: A Biological Assessment*. RAP Working Papers 6. 184pp.

#### Lamas, G., R. K. Robbins, and D. J. Harvey

1991. A preliminary survey of the butterfly fauna of Pakitza, Parque Nacional del Manu, Peru, with an estimate of its species richness. *Publ. Mus. Hist. Nat., UNMSM* (Lima), 40:1-19.

#### Nicolay, S. S.

1982. Studies in the genera of American Hairstreaks. 6. A review of the Hubnerian genus *Olynthus* (Lycaenidae: Eumacini). *Bull. Allyn Mus.* (Sarasota), 74:1-30.