Reports of the Museum of Natural History
University of Wisconsin (Stevens Point)

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University of Wisconsin (Stevens Point)

REPORTS **34 (in part)-42**

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A MESSAGE FROM THE MUSEUM

After publication of *Report* #31, "Phenology in Wisconsin" (K. Lettau and H. H. Lettau, edts.), we are pleased to return to a series of papers treating butterflies of the New World tropics. In November 1993 the UWSP Museum of Natural History received an "Award of Appreciation" (signified by a large plaque now in the Museum) from an association of Colombian lepidopterists, museums and institutions in gratitude for the many new generic names for butterflies recently made available by the museum *Reports*.

Butterflies are among the best "indicators" of ecologies, and ecological health, among the various organisms studied by tropical biologists. Not only are contemporary species readily sampled by scientists, students and other collectors, a wealth of historical material exists because of the long term interest in these colorful insects. Thus, butterflies are one of the major study groups in the effort to understand "hot spots", or priority areas, in the efforts to preserve biodiversity worldwide (see New York Times, Science Times, 9/28/93, p. 4).

Over the last years, to create a basic resource for designating "target faunas" in the biodiversity conservation effort, major work been ongoing to prepare modern lists of butterflies inhabiting the New World tropics. The UWSP Museum of Natural History is pleased to be a major source of descriptive work in this direction. The current *Reports* continue this effort.

Frank Bowers, Ph.D.
Director

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across anal area; limbal area with prominent Thecla-spot compared to wing size, on fresher specimens showing the orange hue surrounding it and cells CuA2 to anal area seen more often in the large species *P. denarius*. FW length: 11.5-12.0 mm. (AMNH). ***Female***. Anticipated as marked similar to male though because of usually broader and more expansive DFW,DHW shape probably with bands appearing somewhat wider do to allometry of the wing shape. ***Male Genitalia and Tergal Morphology***. Fig. 2C. *Sipc* dorsal plate widely bilobate along the terminal margin with a central concave notch; brush organs abutting vincular dorsum to base of labides. Genitalia typical of genus with outstanding features including a more angulate vinculum (compared to all congeners except a new Argentine species named herein), a sharply constricted and terminally pointed saccus, and valvae showing extremely elliptic bilobes and robustly tapered caudal extensions. Aedeagus (shown here in Fig. 2Cd for generic purposes) typical of genus with bowed shaft and caecum (in this species caecum comprising about one-third of aedeagal length) and shaft terminating with pencilate cornutus.

TYPES. Holotype male, BMNH, "Thecla rugatus, TYPE H. H. Druce, Vina, Amazons, Godman - Salvin Coll. 1912-23, B.C.A. Lep. Rhop. Thecla rugatus".

DISTRIBUTION. ***Spatial***: Fig. 5. Needing elaboration from more material but herein seen from the western Amazon basin along the juncture of the Andes and Amazon River southward from Colombia (Putumayo) into Peru. ***Temporal***: dates on known specimens range from September to May.

REMARKS. There appears to be a single type of this taxon which Druce described from "Vina" ["Vinea" on some Druce labels] in northwest Peru. This species is very often misidentified and confused with a number of other dark black or brownish Eumaeini as far south as Argentina. Hayward (1973: 157, intentionally omitted from synonymy above) labelled certain IML specimens as "*rugatus*" which are *Nicolaea pertainea* Johnson 1993. Morphological characters illustrated here from *rugatus* type should aid in appropriate identification of this latter species and further elaboration of its geographic range. It may well be a classic "pan-Andean" distribution. The confusion of this *P. rugatus* with *Electrostrymon* has resulted from reference to generalized wing characters and a common usage view of that genus divorced from the clade of its type species (*P. endymion*). Historical association of the genus *Electrostrymon* with some, but not all, species ***Pendantus*** appears to have occurred almost at random depending on which of various local brown hairstreak taxa certain authors were treating, particularly in regional studies.

MATERIAL EXAMINED. Novella Grenada, [=Colombia] Cundinamarca, 1♂ (BMNH); Cundinimarca, 1900, leg. de Methan, 1♂ (BMNH); Rio Putumayo, coll. E. I. Huntington, 1♂ (AMNH). ECUADOR. Santo Domingo de los Colorados, submacrothermic rain forest, 24 December 1969, leg. H. Descimon, 1♂ (AMNH); LaChima, Sept. 1893, leg. de Mathan, 2♂♂ (BMNH); Rio Blanco, Santiago-Zamora, 1000 m., [humid tropical forest, Brown 1941), May 1939, leg. F. M. Brown, 1♂ (AMNH). PERU. see type; "Perou", Tarapoto, 1♂ (BMNH).

Pendantus sethon **(Godman and Salvin)**
NEW COMBINATION

Photoplate VI,1D; Fig. 2D.

Thecla sethon Godman and Salvin 1879-1901 [1887]: (2), 77, (3), pl. 57, f. 14. Draudt 1919: 796, pl. 158c; Comstock and Huntington 1958-1964 [1963]:118; Hoffman 1940: 716; Hayward 1973: 157 (identification uncertain, probably referring to *Angulopis* or *Gigantorubra* species, see Remarks). Johnson and Llorente 1992: 11,12.

Electostrymon sethon: Bridges 1988: I.319,II.33,III.70 (generic placement in error, see Remarks).

DIAGNOSIS. ***Wings***. A large species (FW 13.0 -15.5 mm.) standing out from all species (except the reddish "*guzanta*"-form of ***P. denarius***) by it wider and bolder cinnamon-brown to reddish-brown ventral bands which sweep boldly across both wings and, on the HW, form the most outstanding "W"-element of the genus. In the "*guzanta*"-form of *P. denarius*, the edging of the VHW band, as in the blackish nominate form, is concisely "blocked" in each wing cell but colored very red-orange. *P. sethon*'s bold band differs from *P. denarius* by its bold *suffusive* basal bands with coloration brown to more cinnamon.

However, females of *P. sethon* must be distinguished from a previously undescribed Mexican and Central American *Angulopis* species described in Appendix II herein. This species, *P. sethon* and *P. denarius* are distinguished in VHW outline drawings in Fig. 6. Workers should be suspicious of any large brown hairsteak on which the VHW band either convex toward the costa or shows the "W"-shaped anal element "widely open" or with an additional "jag" at cell M3. Such specimens will not be *P. sethon* by morphology (see Remarks).

Morphology. Dorsum of male *sipc* expansive, at its anterior substantially underlying tergite seven; male genital valvae with prominent parabolic bilobes, more elongate than contiguous, fingerlike, caudal extensions; female with antrum and terminal lamellae bold and produced, anterior transparent area small but bold, anterior ductus bursae relatively diminutive.

DESCRIPTION. ***Male***. DFW, DHW ground warm brown, HW with short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe not pronounced but colored orange-brown and heavily fringed with black and white. VFW, VHW warm beige to cinnamon beige; FW with succinct postmedian band from costa to cell CuA2 prominently suffused darker cinnamon to red-brown; VHW medial prominent for group, basally suffused cinnamon to darker red-brown, distally bright black and white, extending rather straight from costa to slight indention a M3 before broad "W"-element. Limbal area prominently surrounded basally by linear black and brown chevron-like edgings in each intercellular space, that of cell CuA1 framing prominent orangish to cinnamon-orange Thecla-spot. FW length: 13.0 - 15.5 mm. (AMNH). ***Female***. Marked similar to the male except for broader and more rounded wings, VHW showing broader medial band habitus. FW length: 13.5 - 15.5 mm. (AMNH). ***Male Genitalia and Tergal Morphology***. Fig. 2D. *Sipc* dorsal plate expansive, anterior substantially underlying tergite seven; genitalia typical of genus, vinculum along dorsum tapering to juncture with parabolic saccus; other outstanding features including valvae with prominently parabolic bilobes, thinly rimmed around the lateral edges; caudal extensions slightly shorter than bilobed and fingerlike in shape. ***Female Genitalia***. Fig. 2H. Lateral edges of tergite eight with sclerotized lips, anteriolateral as typical in genus. Genitalia with terminal superior plate very produced showing a broad antrum fluted to wide, hemispherical lamellae; ductus bursae commencing anterior of transparent area below antrum, narrow and about equal to or less than the combined length of antrum and lamellae.

TYPES. As with *Thecla plusios*, all specimens from localities mentioned by Godman and Salvin (1887: 77) qualify as syntypes. However, as with our treatment of *T. plusios*, we try to pick as lectotype the most obviously "well-known" or appropriate specimen. In the case of *sethon* we designate as lectotype Godman and Salvin's figured male, "Thecla sethon, type male, Guatemala, Calderas, Godman - Salvin Coll. 1912-23, B.C. A. Lep. Rhop. Thecla sethon Godman and Salvin".

DISTRIBUTION. ***Spatial***: Fig. 5. Currently known from Mexico southward through Central America and into Colombia. ***Temporal***: dates on specimens include December through August.

REMARKS. It would seem that *P. sethon* would be quite unambiguous. However, there are problems that appear to have resulted simply from this assumption. The situation is quite similar with *P. denarius* and Remarks under that entry also pertain. Of course, type material defines typical *Pendantus* characters, but there are so many other taxa mixed in with series of some *Pendantus* species at museums that dissecting these can lead one far astray at first. Fortunately, female morphology of *Pendantus* is outstanding and superficially similar large brown females from other groups can be separated readily by dissection. However, one must put up with some frustration before finding a "true" *sethon* female. Very often, series of a large *Angulopis* female (*Angulopis duplicatis*, Appendix 1) are mixed in with males of *P. sethon*. Thus, it must be mentioned here that it is entirely possible that the syntypes of *P. sethon* may include females of *A. duplicatis*. Once one has grouped specimens by morphology it is readily noted that males and females of *P. sethon* show quite straight costal elements in their VHW band and a large, but quite equilateral, "W" in the anal area. *A. duplicatis*, on the other hand, shows more concave and "wide-open" costal elements and a particularly "spread out" anal "W" with an additional "jag" at cell M3 (Fig. 6). The large size and morphology of *P. sethon* support Godman and Salvin's original decision to separate if from sympatric congener of *S. plusios* in the Central American region. Unfortunately, Godman and Salvin did not figure the latter species. Previous common usage combiation of both species with *Electrostrymon* demonstrates the rather random popular usages in Eumaeini. Among the many *Electrostrymon*-like "*Thecla*", *sethon* would certainly stand out by its size and darker brown wing color— little like *Electrostrymon* type species *Papilio endymion*.

MATERIAL EXAMINED. COLOMBIA. Chordelia, nod, 1♂ (AMNH); Chaochi, December 1914, nod, 1♂ (AMNH); "Colombia", coll. Philipe Ovale, 1♂ (AMNH); Buena Vista, Villavincencio, 25-30 July 1946, leg. Richter, 1♂ (AMNH). COSTA RICA. Guápiles, 2♂♂ (AMNH); "Costa Rica", leg. G. M. Gillott, 2♂♂,1♀ (BMNH). GUATEMALA. Polochic Valley, Godman & Salvin Coll., 2♂♂,1♀ (BMNH); Alto Verapaz, leg. Champion, 3♂♂, 2♀♀ (BMNH), Rabinal, 1♂,1♀ (AMNH). MEXICO. Guerrero, Rincon, 1680 m., 4 mi. E.

Chilpancingo, dense grassy scrub, 30 August 1967 leg. Miller and Pine, 1♂,1♀ (AMNH); San Luis Potosi, 2 mi. N Tamasunchate, in moist forest 90 m., 10 September 1967, leg. R. Pine, 1♂ (AMNH); Chiapas, Ochuc, 28 August 1982, leg. R. Rozycki, 1♂ (AMNH), same data but 15 July 1982, 1♂ (AMNH); Hildalgo, El Puerto de los Frijoies, 20 May 1960, leg. Welling, 1♂,1♀ (AMNH); Tamaulipas, Mts. SW of Cuidad Victoria, 11 July 1970, leg. W. Howe, 1♂ (AMNH). NICARAGUA. Chontales, leg. T. Belt, 3♂♂,2♀♀ (BMNH). PANAMA. La Boca, Canal Zone, 2 June 1979, 1♂ (AMNH), Chiriquí, Godman & Salvin Coll., 1♂ (BMNH); Isthmus of Panana, December 1907, leg. Pemberton, 1♂ (BMNH); Chiriquí, Arce, Godman & Salvin Coll., 1♂,2♀♀ (BMNH).

Pendantus denarius **(Butler and H. Druce)**
NEW COMBINATION

Photoplate VI,EF; Fig. 2.

Tmolus denarius Butler and H. Druce 1872: [1(5)]: 109. Butler 1869-1874 [1873]: misspelled as "renarius" [not constituting a species description (contrary to Comstock and Huntington 1958-1964 [1959]: 205)]. Bridges 1988: III.14.

Thecla denarius: Godman and Salvin 1879-1901 [1887]: 77; Draudt 1919: 796, pl. 158c; Comstock and Huntington 1958-1964 [1959]: 205; Hoffman 1940: 716; Ross 1976: 198; Johnson and Llorente 1992: 12.

Electostrymon denarius: Bridges 1988: I.103, II.33 (generic placement in error, see Remarks).

Thecla guzanta Schaus 1902 [putative **NEW SYNONYM** (see Remarks)]. Comstock and Huntington 1958-1964 [1960]: 122; Bridges 1988: I.150, II.106,III.103; Johnson and Llorente 1992: 10.

Status still requiring investigation from types (see Remarks):

Thecla calena Hewitson 1863-1878 [1877]: (1) 187, (2) pl. 74, f.581,582. Hoffman 1940: 716; Bridges 1988: I.67,II.33, III.68.

DIAGNOSIS. ***Wings.*** Widely misidentified because of historical uncertainty about typical identity and the occurrence in actuality of a cline from darker (black-banded) nominate morph to a red-orange morph (considered here as *Thecla guzanta* Schaus, a putative synonym) across which the morphology is uniform.

Moderately large (12.5-14.5 mm.) standing out from congeners by it more angulate wings, dark dorsal and ventral grounds in the nominate form but with bright bright-orange edging crisp black bands in the nominate form, band mostly crisp red-orange over a lighter beige grounds in Mexican "*guzanta*" morph. Limbal areas of both morphs with bold markings, particularly the orbiculate orange to more reddish Thecla-spot.

Morphology with dorsal plate of male *sipc* only slightly concave across terminal margin, genital valvae with sharp shoulder on the valval bilobes and steeply tapered caudal extensions of slightly shorter length than bilobes; female with antrum showing only moderate production but lamellae boldly produced, sweeping laterally in many specimens so as to show a band of lighter sclerotin midway in the superior plate; ductus bursae comparatively robust.

DESCRIPTION. ***Male.*** **Nominate morph**—DFW, DHW ground blackish, HW anal margin angulate; short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe barely apparent but basally with prominent black. VFW ground blackish brown; FW and HW bands blackish, rather straight on FW, quite scalloped between the cells on HW; "W"-shaped element near anal margin pronounced; limbal area marked with darker ground hues framing yellowish orange intercellular colors particularly around large black Thecla-spot and black blotches beneath anal lobe. **Mexican *guzanta* morph**—DFW,DHW ground bright auburn brown, HW anal margin angulate; short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe barely apparent, colored basally with red-brown. VFW ground tawny brown, marked with postmedian red-orange band edged distally with prominent white; VHW ground tawny brown; medial band suffused widely along base with red-brown to brighter red; limbal area marked with brown and beige chevrons surrounding bright orange Thecla-spot. FW length: 12.5-14.5 mm. (AMNH). ***Female.*** Marked similar to male but with broader and more rounded wing shape. FW length: 12.5-14.5 mm. (AMMH). ***Male Genitalia and Tergal Morphology.*** Fig. 2E. *Sipc* dorsal plate widely bilobate along terminal margin, showing gentle central concavity; brush organs abutting vincular dorsum to base of labides. Genitalia typical of genus, outstanding features including a sharp shoulder on the valval bilobes contrasting shorter, steeply sloped and rather pointed, caudal extensions. ***Female Genitalia.*** Fig. 2I. Lateral edges of tergite eight with anteriolateral sclerotized lip. Genitalia with terminal superior plate flared to hemispherical lamellae from a moderately produced antrum; anterior showing a transparent area before attachment of robust ductus bursae, length of latter exceeding by about one-fifth enpanse of terminal antrum and lamellae. Lamellae often appearing

flared widely such that lighter sclerotin becomes visible within the center of the superior plate.

TYPE. Holotype male, BMNH, noted as "TYPE, denarius Butl. & Druce", "Cartago, Costa Rica", in B.M. type collection [these label data may not be entirely precise as this species was considered an outgroup taxon when last studied by the senior author at the BMNH in 1992].

Thecla guzanta Schaus, type #5952, NMNH (TL Jalapa, Mexico) (see Remarks). *Thecla calena* Hewitson, type noted as BMNH (Bridges 1988) but not located there by us (see Remarks).

DISTRIBUTION. *Spatial*: Fig. 5. Currently known across a broad distribution from Mexico southward to Panama. *Temporal:* year round occurrence is suggested.

REMARKS. Infraspecific taxonomy in *P. denarius* typifies a problem common to Neotropical Eumaeini— that type material very often disagrees with historical common usage. However, in the present case, contrary to those in which type specimens actually differ greatly among taxa long considered synonymous, *P. denarius* appears to embrace a broad cline across Central America including at least one other taxon (and possibly two). Despite some differences in salient ventral wing color, uniform male and female morphology in the complex appears to also embrace the names *Thecla guzanta* Schaus and, most probably, *Thecla calena* Hewitson. Unfortunately, some of the types among these taxa were either unknown at the time *Pendantus* species were studied at the BMNH or are at institutions historically unresponsive to material requests. In one case, the type of *Thecla calena* (BMNH) will need to be located and dissected. There are simply too many surprises among large brown hairstreaks in Central American to assume a particular identity from a type photograph. In the case of *Thecla guzanta*, the putative synonym used here will also need confirmation. As noted heretofore, AMNH requests for eumaeine materials from the NMNH have gone unanswered for several years. In this regard, the senior author has opted for being neither a pest nor a beggar. Dissection of AMNH material identified by numerous workers as *T. guzanta* (including Comstock and Huntington) appears well within the structural cline discussed here for *P. denarius*. However, as noted in the description of *Arases spectaculorum* Johnson and Adams (1993), it is always possible that the type of *Thecla guzanta* represents some other "surprise"morph among these confusingly similar looking butterflies. As with *P. sethon*, workers should not confuse females of *P. denarius* with that of *Angulopis duplicatus* (Appendix 1). Outline drawings of Fig. 6 serve to point out differences in the wing patterns of these species which, even considering this aid, are extremely similar.

Ross (1976) reported *P. denarius* as "locally common" in *Pinus-Quercus* associations of deciduous woodlands and mentioned an affinity for young terminal pine shoots.

MATERIAL EXAMINED. [diacriticals employed as on labels]. COSTA RICA. 7 km. NE Las Alturus, 21 March 1991, leg. R. Rozycki, 1 ♂,1♀ (AMNH); Libano Gunacaste, May 1927, 1♀ (AMNH); La Florida, March 1907, 2♂ (AMNH). GUATEMALA. San Geronimo, Verapaz, leg. Champion, 1♂, 2♀♀ (BMNH); Mpio Acatenago, Chimaltenango, 20 November 1965, leg. Welling, 1♂ (AMNH); Panajabal Mpo. San Pedro, August to November 1965, leg. Welling, 2♂♂, 2♀♀ (AMNH). HONDURAS. "Honduras", nod, Coll. E. I. Huntington Coll. 1♂ (AMNH); San Pedro Sula, July, 1♂,1♀ (BMNH). MEXICO, Chiapas, Ochuc, 3500-6000 ft., 28 July - 15 August, 1978, leg. R. Rozycki, 1♂ (AMNH); Chiapas, San Cristobal, 26 August 1987, 1♂ (AMNH); Hildalgo, Cuesta Colorado, 2 September 1978, leg. W. Howe, 1♀ (AMNH); Guerrero, Iaxco, 24 June 1934, leg. Hoffman, 1♂ AMNH; Colima, Colima, February, leg. Hoffman, 2♂♂, 1♀ (AMNH); Vera Cruz, Presidio, May 1941, leg. Hoffman, 1♂ (AMNH); Guerrero, Rincon, 1680 m., 4 mi. E. Chilpancingo, dense grassy scrub, 30 August 1967 leg. Miller and Pine, 1♂ (AMNH); Coatepec, 23,27 May 19-28, coll. E. I. Huntington, 2♂♂ (AMNH); Jalapa, nod, 1♂ (AMNH); Texolo, 14 June 1928, coll. E. I. Huntington, 1♂ (AMNH); Tabasco, nod, 1♂, 1♀ (AMNH). NICARAGUA. Chontales, nod, 1♀ (BMNH). PANAMA. Chiriquí, Godman & Salvin coll., 1♂,2♀♀ (BMNH); El Volcan, Chiriqui, 24 November 1936, 1♂ [a small male apparently collected with many large females of *A. duplicatis*].

***Pendantus argentinensis*,**
NEW SPECIES
Photoplate VI,1G; Fig. 2F.

DIAGNOSIS. ***Wings***. Known male with VFW, VHW ground beige and thin orange-brown bands bordered only narrowly with black and white; band showing into rather straight element from costa to M3, then an indention and the remaining anal portion of band nearly without a "W" in the anal area (instead, a more convex inverted "U"). Wings angulate, especially FW; DFW, DHW warm brown.

Morphology. Male *sipc* extremely angulate along all margins; male genitalia with vinculum far more angulate than congeners, falces very undulate, valvae greatly sculptured, showing wide lateral rims on the bilobes immediately sloped terminally to short pointed caudal extensions.

DESCRIPTION. ***Male***. DFW,DHW ground warm brown, status of tails on HW not known from extant specimen; HW anal lobe black, slightly pronounced and heavily fringed. VFW, VHW ground warm brown; bands narrowly red-orange basally, edged thinly white and black distally; FW rather straight from costa to cell CuA2; HW rather straight from costa to M3, then indented with remaining anal portion of band nearly without a "W" and, instead, a more convex inverted "U". Limbal area rather dull except for large bright yellow-orange Thecla-spot and black at base of anal lobe. FW length: 12.5 mm. (holotype). ***Female***. Unknown. ***Male Genitalia and Tergal Morphology***. Fig. 2F. *Sipc* dorsum angulate along all margins— terminus with two more pronglike terminal extensions compared to congeners, lateral margin shouldered and anterior margin extending will under tergite seven. Genitalia with typical generic characters but labides pointed, falces greatly undulate, valvae greatly scuptured, showing wide lateral rims on the bilobes immediately sloped terminally to short and pointed caudal extensions.

TYPE. Holotype male, ARGENTINA, Prov. Jujuy, Parque Nacional Callilegua, upland on park track at 11-13 km. W. of Rt. 34 in hot humid forest break, 14 Febr. 1991, circa 1200 hr., leg. K. Johnson, deposited AMNH (see Remarks).

DISTRIBUTION. ***Spatial***: Fig. 5. Currently known only from the type locality (see Remarks). ***Temporal***: currently known only from the February type data.

REMARKS. This was immediately identified as an unknown species when collected but was of uncertain generic placement until this genus was elaborated. Flooding near the river entrance to the Parque Nacional necessitated fording the river on foot and the walk upland on February 14 left only two collectors active by midday, the rest having turned back because of bad weather. However, from about 1200-1300 hrs. sun broke through at a large break along the upland track marked by an expansive "S"-shaped upgrade in the trail and further identifiable by expanses of red-rock cliffs in the background. Myriads of butterflies emerged in the sunlight (including many *Morpho*); collecting was done rather frantically with specimens literally tossed in piles until workers could return to paper individual specimens. Since this was the last day for the AMNH expedition in the field, and Theclinae collecting is fortuitous at best, this seemed the only way to take advantage of the sudden weather change. Even at this, many individuals flying out from the trail over step gulches could not be netted.

ETYMOLOGY. Named for the country of occurrence.

GROUP DISCUSSION

As mentioned in introductory notes and Remarks under various taxon entries, this genus was included in the present work because the affinities of its morphological characters and its taxon admixture were rather unexpected. We did not suspect the consilience of structural characters uniting the group, the wide hiatus of these from "true" *Electrostrymon*, nor the obvious heterogeneity in Caribbean populations which have historically been placed in *"Electrostrymon" sens. lat.*. Thus, to ignore this clade would have left a significant piece of the Neotropical eumaeine puzzle out of the overall picture. Particularly, elaboration of *Pendantus* has been necessary for a full appreciation of the genus described immediately below. If not for *Pendantus*, and other small genera of "Gem Butterflies", the genus below would seem most akin to the large hairstreak butteflies of the genus *Gigantorubra*. Considering all the "Gem Butterflies" it now appears that the serrate falces of the genus described immediately below is probably homoplesious. Indeed, serrate falces have also been shown in a genus of Calycopina (*Serratofalca* (Johnson 1991a; Johnson and Sourakov in press).

RUBROSERRATA, NEW GENUS

Photoplate VI,2; Fig. 1.

Synopsis-- contains selected members of Draudt's (1919) *Thecla "cleon* Group" and undescribed relatives which show a serrate inner margin on the falces and other unique characters on generally diminutive genitalia.

DIAGNOSIS. ***Wings*** generally of slight expanse, (FW length most commonly 12.0 - 14.0 mm.) and not greatly angulate (contrast *Gigantorubra* Johnson in press a, *Angulopis* Johnson 1991a) ventral surfaces marked by brick- or blood-red to brown or blackish linear bands [using "linear" for this genus, as opposed to lineal for others since former denotes uniform width], HW with prominent band generally staight across wing until a slight "W"-shape at angle between veins M3 and 2A; distal areas

of HW (including limbal area) often with lavish mottling— including white chevrons or patches of contrasting brown grounds in addition to bold Thecla-spot marginal in cell CuA1. All with a common structural habitus.

Male Morphology showing no *sipc* (present in *Pendantus* of previous entry); genitalia marked by serrate inner margin on the falces (similar only to *Gigantorubra*) but all other structures comparatively diminutive, including small saccus, short stout valvae, short brush organs, and short aedeagus.

Female Morphology showing simple *sipc*; genitalia differing from all superficially similar Eumaeini genera by a simple and tubular ductus bursae terminating in unevenly sclerotized, biramous and flaplike, lamellae; cervix bursae with a characteristic small hood covering distal end of corpus bursae.

DESCRIPTION. ***Adult***. ***Male***. Head with frons fuscous, eye lining white, antennae finely striped white, tagmata fuscous. ***Wings***. FW alar expanse [hereafter "FW length:"] generally small, 12.0 to 14.0 mm.; wing shape not greatly angulate. DFW,DHW grounds generally dark brown to blackish with numerous species showing brightly defined blue distad (particularly distal of discal cell) on HW. VFW,VHW with generally brown grounds. FW usually with mark in discal cell along with postmedial band of brick-red, dark red, brown or black from costa to cell CuA1. HW with medial band (brick-red, dark red, brown or black) varying from linear (.5 mm.) to wider (1.0 mm.) (depending on species) continguous with a "W"-shaped element near the anal angle. Limbal areas of HW generally well marked compared to other genera of *Electrostrymon* grade with white chevrons, blotches of lighter ground, or gray-blue suffusion around a usually orange to reddish Thecla-spot. ***Female***. Head with frons fuscous, eye lining white, antennae finely striped white, tagmata fuscous. ***Wings***. More rounded and broad than in males; dorsal color similar to males on FW, on HW often with brighter light blue across basal or distal areas depending on the species; ventral pattern similar to males but with bands (particularly on HW) somewhat broader. ***Male Tergal Morphology and Genitalia***. Fig. 1. Contrasting *Pendantus*, terminal tergites without *sipc*. Short brush organs occurring along vincular dorsum, extending to base or midline of labides. Genitalia distinctly with diminutive parts (see Remarks) generally more similar to *Caerofethra* and *Aubergina* (Johnson 1991a) than to *Gigantorubra* (a genus also showing serrate falces). Differing from *Pendantus* by lack of latter's distinctive right-angled lateral labides shape and undulate base on the falces. Showing instead a normal "crowned" labides, thin vinculum angled to diminutive saccus, and falces elliptic at the base. Falces distally arched and with fine serrations along inner margin. Valvae diminutive, comprised of small elliptic bilobes and short tapered caudal extensions. Aedeagus appearing diminutive, comprised of narrow shaft and caecum (usually exceeding rest of genitalia by at least caecum length), terminating with single pointed cornutus. ***Female Tergal Morphology and Genitalia***. Fig. 1. Abdomen with *sipc* of simplist kind, only with slight bilobate sclerotization of terminal tergite. Genitalia outstanding in distinctive features. Compared to other grade members, ductus bursae a simple robust tube terminating generally in unevenly sclerotized, biramous, flaplike lamellae usually comprising one-third to over one-half of the genitalic length; cervix bursae with a characteristic small hood covering distal end of corpus bursae; corpus bursae generally lacking signa.

TYPE SPECIES. *Thecla mathewi* Hewitson 1874 (see Remarks).

DIVERSITY. Currently contains eight taxa— four which widespread and historically well-known, four others suggesting local or regional endemism.

DISTRIBUTION. Fig. 4. Eight taxa together occurring across the mainland neotropics from Mexico southward to northern Argentina.

REMARKS. This is a very distinctive clade of eumaeines. When the morphology is first studied from a single taxon or a single sex, one thinks immediately of *Caerofethra* and *Aubergina* (Johnson 1991a). However, the serrate falces introduces a unique character as does the entire habitus of the female genitalia. Previously, upon cursory examination of some taxa for faunal lists, some workers have considered *Thecla cleon* Fabricius as part of *Ministrymon* Clench. However, this notion is easily set aside by comparing the morphologies of the two groups (see Johnson and Miller 1990). This is one reason for not chosing *T. cleon* as the type species; another is that *T. cleon* needs to be studied biologically vis-a-vis *T. ecbatana* Hewitson (see entries below) and the type of *Papilio cleon* is relatively inaccessible compared to BMNH material.

ETYMOLOGY. Considered feminine. A euphonious combination of Latin roots for "red" and "serrate" referring to the dark red bands on VFW,VHW and serrate inner margins on falces of the male genitalia.

***Rubroserrata cleon/ecbatana* complex**

It is probable that this complex is biologically conspecific but, given distinctions within the populations

regarded historically as *cleon* and *ecbatana*, and some morphological disparity across a large geographic distribution, it seems best to elucidate all populations from extant types and then refer final comment to field biologists for study of which, if any, local or regional populations are biologically distinct.

***Rubroserrata cleon* (Fabricius)**
NEW COMBINATION
Photoplate VI,2B; Fig. 1E.

Papilio cleon Fabricius 1775: 522.

Thecla cleon: Hewitson 1874: (1) 178, (2) pl. 70, f. 525,526 (as variety of *cleon* Fabricius, see Remarks); Kirby 1871: 400; Draudt 1919: 804. Druce 1907: 621 (as synonym of *cleon*, see below Remarks); Godman and Salvin 18-79-1901 [1877]: (2) 290; Druce 1907: 612; Draudt 1919: 805, pl. 159e; Comstock and Huntington 1958-1964 [1961]: 163. Bridges 1988: I. 217, II.107, III.70.

Ministrymon cleon: Lamas, Robbins and Harvey 1991: 13.

DIAGNOSIS. ***cleon* morph-- *Wings*.** Compared to *ecbatana* morph, showing a more suffusive VFW,VHW with dark brown areas complementing the mottled lighter brown grounds more extensive and less well-defined; consequently, the VFW, VHW is more grizzled, especially tending to be suffuse basally and distally around the blood-red FW and HW bands.

Morphology of topotypical *cleon* and populations southward in eastern South America with female ductus bursae more robust than in the *ecbatana* morph and with more elongate and lineal lamellae; male with saccus more constricted and terminally pointed, valvae more shouldered, aedeagus straighter.

DESCRIPTION. ***Male*. *Male*.** DFW,DHW ground blackish brown, FW with suffusive silvery blue across base and, on HW over most of wing; apex of discal cell with black elliptic scent brand; HW tail stub at vein CuA1 terminus, long tail at CuA2 terminus; HW anal lobe not produced but black. VFW ground ruddy-gray to grizzled gray-brown with suffusive patches of brown ground in basal areas and in wide patches on HW distad and basad of the medial band. FW with band wide and suffusive brick red distally with black on both sides; discal cell with black slash; HW band similarly wide and brick-red but with elements toward costa not necesarily orbiculate but wider and more widely suffused; distad of band, suffusive browns as aforementioned, limbal area with ruddy white and gray-brown; Thecla-spot at CuA1 black with red-orange edging. FW length: 10.5 - 12.5 mm. (Material Examined). ***Female*.** Marked similar to male except for rounder wing shape and lack of FW scent brand. FW length: 11.5 - 13.0 mm. (Material Examined). ***Male Genitalia*.** Fig. 1E, left. Brush organs abutting vincular dorsum. Genitalia with valvae bilobes very shouldered, sloping to short fingerlike caudal extensions; vincular arc angulate sloping narrowly to a widely parabolic saccus which is constricted terminally to a sharp point; aedeagus rather straight both in shaft and caecum. ***Female Genitalia*.** Fig. 1E, right. Genitalia with terminal lamellae elongate and lineal, ductus bursae robust.

TYPE. A female type of *cleon* is in the Banks Collection, London; in addition an informative old specimen is Hewitson's "cleon 1", BMNH ["cleon" "Amazon Hewitson Coll. 79.69.- Thecla cleon. 1"], which he used for comparison to his species *ecbatana* (see below).

DISTRIBUTION. ***Spatial*:** Fig. 4. Typifies the eastern distribution of the complex from Colombia eastward around mouth of Amazon and along coastal Brazil. ***Temporal*:** few historical specimens are dated; dates include only January through March.

REMARKS. It seems unlikely that *cleon* and *ecbatana* are separate species but pointing out the differences in characters across their wide combined distributions provides a good subject for biological study. It is most probable that the complex comprises an ecological generalist and this accounts for the widespread distribution and regional variance in features. Of note is persistence of the eastern Brazilian morph westward into the "yungas" region of Bolivia, a trait typical of larger more vagile butterflies or of ecological generalists among the Theclinae and riodinids. Since we initially studied the large BMNH series of this complex with a comparative view of the *cleon* and *ecbatana* morphs, it appeared useful here to preserve this detail in Material Examined.

MATERIAL EXAMINED [diacriticals employed as on labels]. BOLIVIA. S. Cruz de la Sierra, Steinbach 1905/1906 1♀ (BMNH); Prov. Sara, Dept. Santa Cruz, Steinbach ♂; Buenavista Bol., 1♂ (BMNH); Santa Cruz, E. I. Huntington Coll., 1♀ (AMNH). BRAZIL. Para, L. Amazon, leg. H. W. Bate, 1♂,1♀ (BMNH); Corumba, nod [no other data], 1♂ (BMNH); Chapada, Mato Grosso 1♂ (BMNH); Rio Clone [sic] 1♂ (BMNH); Pernambuco, nod, 1♂ (BMNH); Chapada, Matto [sic] Grosso 1♂ (BMNH); Para [=Belém], leg. Miles Moss, 5♂♂; Igarapi-Assũ, Paraná, leg. Parish, 8♂♂, 9♀♀ (AMNH). COLOMBIA. Cauca Valley [nod], 1♂ (BMNH); Nov. Grenada [=Colombia], 1♂,1♀ (BMNH); Cundinamarca, nod, 1♂ (BMNH); Conanche, leg. M. de Methan, 1900, 2♂♂

(BMNH); Valdevia, leg. Pratt 1897 1♂ (BMNH); Cali District, Western Cordillera, 4500 ft., 24 January 1935, 1♂ (AMNH); Cali District, Cauca Valley, 3200 ft, 6 March 1935, 1♀, 4 February 1935, 1♀ (AMNH). FRENCH GUYANA. Maroni, French Guiana, March 1919, leg. Le Moult 1♂ (BMNH); St. Jean de Maroni, 1909, leg. Le Moult, 3 ♂♂, 1♀ (MNHN); St. Laurent de Maroni, 1909, leg. Le Moult, 1♂, 2♀♀ (MNHN); Rives de Maroni, 1909, leg. Le Moult, 2♂♂, 1♀ (MNHN); Guyane Francaise, 1909, leg. Le Moult, 1♂ (MNHN). GUYANA. Ceara River, 2♂♂ (BMNH).

***ecbatana* morph—**

Photoplate VI,2A; Fig. 1A.

Thecla ecbatana Hewitson 1868: p. 24. Hewitson 1874: (1) 178, (2) pl. 70, f. 525,526 (as variety of *cleon* Fabricius, see Remarks); Kirby 1871: 400; Draudt 1919: 804. Druce 1907: 621 (as synonym of *cleon*, see Remarks); Comstock and Huntington 1958-1964 [1960]: 49; Bridges 1988: I.114; II.105 (as synonym of *cleon* following above, see Remarks), III.68.

DIAGNOSIS. This taxon and *cleon* Fabricius are superficially similar in a wide view, but there are regional wing character and genitalic differences and consistent morphs alignable with the *ecbatana* types versus *cleon* of common usage; most likely only biological study will verify if any insular species occur in the complex.

Wings of *ecbatana* morph with crisp light gray to white VFW,VHW ground crossed by thick and succinct wing bands, basally colored blood-red and edged crisply with white and black, not widely suffused and ruddy as in *cleon* morph.

Morphology of type and other specimens showing males with valvae less shouldered than in *cleon* morph,with a more pointed (not "funnel"-shaped) saccus, and a more bowed aedeagus; females with a more constricted ductus bursae forming a terminal antrum before paired and spatulate lamellae.

DESCRIPTION. ***Male***. DFW, DHW ground blackish brown, FW with suffusive silvery blue across base and, on HW over most of wing; apex of discal cell with elliptic black scent brand; HW tail stub at vein CuA1 terminus, long tail at CuA2 terminus; HW anal lobe not produced but black. VFW ground gray-white with succinct patches of brown ground in basal areas and in wide patch on HW just distad the medial band. FW band wide and distally blood-red with black on either side; discal cell with black slash; HW band similarly wide and blood-red but with elements (particularly toward SC+R1) produced and orbiculate; distad of band, ground crisp brown as aforementioned, limbal area with crisp white or gray extending through the cells, Thecla-spot at CuA1 black with red-orange edging. FW length: 11.5 - 12.5 mm. (Material Examined). ***Female***. Marked similar to male except for rounder wing shape and lack of FW scent brand. FW length: 11.5 - 13.0 mm. (Material Examined). ***Male Genitalia***. Fig. 1a,left. Brush organs abutting dorsum of vinculum. Genitalia, based on type and similar specimens, with vincular ventrum elliptic, robust mostly near falces, then sloping narrowly to thinly pointed saccus. Valvae with bilobes comprising about three-forths length and elongately elliptic contrasting short tapered caudal extensions. ***Female Genitalia***. Fig. 1A, right. Ductus bursae comprised of simple tube compressed centrally and widely flutd posteriorly and anteriorly, former with terminating in widely elliptic bilobate lamellae, latter with stoutly bifurcate base for cervix bursae. Cervix bursae with slight bifucate struts strattling the distal surface of corpus bursae.

TYPES. Lectotype male, BMNH, designated here, labelled "type" "ecbatana" "Amazon Hewitson Coll. 79.69.- Thecla cleon. 2", B.M. Rhop. type #1063.

DISTRIBUTION. ***Spatial***: Fig. 4. Known from numerous localities encompassing the Amazon basin and westward along the juncture with the Andes region. ***Temporal***: few historical specimens are dated, data limited to August and September; it is likely the butterfly occurs year-round.

REMARKS. Remarks under the generic and "*cleon* morph" entry pertain.

MATERIAL EXAMINED [discriticals employed as on labels]. BRAZIL. Sao Paulo de Olivenca, leg. S. Wachner, 1933, 1♀ (BMNH); Bagrenda, Amazons, J. J. Joicey Coll. 1♀ (BMNH); Manaus, nod, 1♂ (BMNH); "Rio Amazon", nod, 1♂ (BMNH); Tapajos, leg. Bates, 1♂ (BMNH); "S. P." [sic] de Olivenca, leg. Bates 1♂ (BMNH); "Amazons", nod, leg. Bates 1♂,1♀ (BMNH). PERU. Tarapoto, leg. de Methan,. 1♂ (BMNH); Chanchamayo, 1♂ (AMNH); Rio Pacaya, Lower Ucayali, Aug. -Sept. 1913, 1♂,♀ (BMNH).

***Rubroserrata mathewi* (Hewitson)**
NEW COMBINATION

Photoplate VI,2C; Fig. 1B.

Thecla mathewi Hewitson 1874: (2), 106. Hewitson 1877: (1) 196, (2), pl. 78, f. 629,630; Godman and Salvin 1879-1901 [1877]: (2) 290; Druce

1907: 612; Draudt 1919: 805, pl. 159e; Comstock and Huntington 1958-1964 [1961]: 163. Bridges 1988: I.217, II.107, III.70.

DIAGNOSIS. ***Wings.*** Male with DFW, DHW each showing succinctly defined, small patches of dark azure blue-- FW in duller hemispherical patch arching across center of discal cell near tornus; HW in brighter, succinctly margined, patch extending from postbasal region of costa to margin at vein M1. HW shape quite angulate for genus and, contrasting *R. sesara*, showing no DHW marginal black spots in the blue field. On VHW, contrasting *R. sesara* by the "W"-element being greatly angled and concise, bright red orange, and highlighted brilliantly by surrounding black and white edging. Female browner across DHW; both sexes with longer CuA1 tail than in *R. cleon* complex.

Morphology showing male genitalia distinctively more robust from vinculum to saccus and with valvae diminutive in caudal extensions compared to bilobes; female somewhat atypical for genus in showing a more uniramous (but membranous) lamellae, covered with microtrichia (see Remarks).

DESCRIPTION. ***Male.*** DFW, DHW ground blackish brown, FW with dark azure blue in consise hemispherical patch arching across middle of discal cell to FW tornus; apex of discal cell with elliptic scent brand; HW with short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe indistinct. DHW color bright dark azure blue posterior of very succinct margin extending from postbasal area of costa to margin at vein M1. VFW ground tan, more distally mottled than on *R. sesara* but not approaching the extreme mottling of *R. ecbatana* and *R. cleon*; orange-red postmedian band short, extending from costa to cell M2 or M3 and paralleled by submarginal brown mottling. VHW tan with thin red-orange medial band, mostly straight from costa and with little emphasis on SC+R1 element; angled elements of veins M3 to 2A forming a compact "W"-shape closely adjacent lavish limbal markings; latter area marked with black spots surrounded by red-orange marginad in cell CuA2 and adjacent the anal angle; intervening area variously strewn with white and bluish suffusion. FW length: 12.5-14.0 mm. (Material Examined). ***Female.*** Marked similar to male except for rounder wing shape and lack of FW scent brand. FW length: 12.5 - 14.0 mm. (Material Examined). ***Male Genitalia.*** Fig. 1B,left. Vincular dorsum with short brush organs extending along base of falces. Genitalia with vincular ventrum robust and angulate, saccus robust and parabolic; valvae with bilobes comprising about three-fifths of valvae length, former rather ovate and particularly convex in lateral view, latter thinly tapered. Aedeagus rather slim, caecum comprising about two-fifths of length and generally in same plane as mostly straight aedeagal shaft (latter flared terminally to only a slight dorsal inclination near the single cornutus). ***Female Genitalia.*** Fig. 1B,right. Ductus bursae with robust habitus, flared widely in the posterior to a conical terminus showing only slight lamellal development compared to congeners. Lamellae comprised of rather transluscent dorsal flap showing dispersed, hair-like, microtrichia and some membranous extensions along the lateral edges of the lamellae. Anterior of ductal tube flared to robust bifurcate anchor for cervix bursae, latter with a stout ring surrounding the distal end of the corpus bursae.

TYPE. Holotype male, BMNH, labelled "Mexico, Hewitson Coll. 79-69., mathewi 1." "type", B.M. type #1000.

DISTRIBUTION. ***Spatial***: Fig. 4. Known from numerous localities extending from southern Mexico (Oaxaca) through Central America. ***Temporal***: dates on specimens range from September to May.

REMARKS. I chose this species as the type species because of the uncertain status of *R. ecbatana* and *R. cleon* and the fact that the latter has been used in common usage by some workers in the genus *Ministrymon*. It must be admitted that in many groups (see also *Tigrinota* Johnson 1992) the Mexican/ Central American congener can be somewhat divergent in morphology. This appears true in the female of *R. mathewi* which seems to be the only species without completely biramous lamellae on the female genitalia. Subsequent to the preparation of this manuscript, Vargas Fernandez, Llorente-Bousquets and Martinez (1991) reported *R. mathewi* in a list of Oaxacan Theclinae (see Johnson and Llorente-Bousquets 1992). Since the present genus was combined with the others of this paper shortly between review and press, these citations could not be noted in the synonymy. Also, I discovered three additional males of subsequently described *R. gloriosa* misidentified as *R. mathewi* in old AMNH material. Among other characters, the darker azure DHW patch of *R. mathewi* stands out (as in darker cast on Photoplate VI,2C) from the bright silvery blue on both wings in *R. gloriosa*. Both these species share the succinct and wide-banded ventral wing band habitus and may represent respective Central and South American sister species.

MATERIAL EXAMINED. GUATEMALA. Rabinal, 12 September 1947, 1♂ (AMNH); Polochic Valley, 1♀ (BMNH); Guazacapan, 1♂ (BMNH); San Geronimo, Verapaz, leg. Champion, 1♂ (BMNH). HONDURAS.

San Pedro Sula, Erich Wittkugal 1896, 2♂♂ (BMNH). MEXICO. Oaxaca, Mpi. Yolox, 18 September 1962, leg. E. C. Welling, 1♂ (CMNH); same data, 1♂, 1♀ (AME); Colima, Colima, February, leg. Hoffman, 1♂ (AMNH); Vera Cruz, Presidio, leg. Hoffman, May 1941, 1♂, August 1940, 2♂♂ (AMNH). NICARAGUA. Chontales, 1♀ (BMNH); Nagarote, 1♂,1♀ (AMNH); "Nicaragua", nod [no other data], Comstock Coll., 1♂ (AMNH); PANAMA. Barro Colorado Island, Panama, leg. W. J. Gertsch, 11-19 March 1936, 1♂,1♀ (AMNH).

Rubroserrata sesara (Godman and Salvin)
NEW COMBINATION

Photoplate VI,2D; Fig. 1C.

Thecla sesara Godman and Salvin 1879-1901 [1877]: (2) 290; Druce 1907: 612; Draudt 1919: 805, pl. 159e; Comstock and Huntington 1958-1964 [1961]: 163. Bridges 1988: I.217, II.107, III.70.

[*nec Thecla sesara* Godman and Salvin 1879-1901 [1901]: (2) 722, (3) pl. 111, f. 7,8, homonym replaced as *Arases clenchi* Johnson 1992: 197.

DIAGNOSIS. ***Wings.*** DHW marked in both sexes with brilliant silvery blue HW patch, marked with a black marginal spot at CuA1 and confined posterior of a succinct oblique margin with blackish ground from center of HW costa to vein CuA1. On VHW the band shows elements rather oblique to each other compared to congeners, forming a much more widely arched band than other species, with a far more "open" "W"-element. Type and other specimen show more elongate CuA1 tail than *R. cleon* complex.

Morphology of male showing vinculum steeply declined to parabolic saccus, valvae with rounded bilobes and short pointed caudal extensions, and aedeagus robust and undulate.

DESCRIPTION. ***Male.*** DFW, DHW ground blackish, FW with succint elliptic androconial brand, HW with black along costa with brilliantly contrasted bright silvery blue posterior of a succinct margin extending from center of HW costa to margin at vein CuA1; latter blue patch marked with succinct black marginal spots in cells CuA1, CuA1 and adjoining the anal lobe; short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe only slightly produced. VFW ground beige, marked with brick-red postmedian band from costa to cell CuA2 paralleled by browns steak along apex of discal cell; VHW ground beige; medial band linear and brick-red, slightly offset distally in cell SC+Rl, then proceeding rather straight to contiguous "W"-shaped elements between veins M3 and 2A; limbal area slightly mottled with hemispherical marks of contrasting lighter and darker brown. FW length: 11.0 - 12.0 mm. ***Female.*** Currently unknown to the authors. ***Male Genitalia.*** Fig. 1C. Short brush organs abutting vincular dorsum as typical of genus; genitalia with vinculum (in ventral view) steeply and narrowly extending anterior to a parabolic saccus. Valvae bilobes more rounded than parabolic and with a rather wide marginal rim, caudal extensions steeply pointed. Aedeagus robust with a produced caecum comprising some two-fifths of aedeagal length and a uniquely undulate shaft.

TYPES. Holotype male, BMNH, labelled "Type" "Manaure, N. colombia, F. Simons", "God- Sal. Thecla sesara G. & S.", B. M. Rhop. type #1002. The type has two very succinct tails.

DISTRIBUTION. ***Spatial***: Fig. 4. Known only from Panama and Colombia. ***Temporal***: a single specimen is dated from July.

REMARKS. This is a poorly known species which appears very distinctive in known material. As noted in the synonymy, Godman and Salvin (perhaps inadvertantly) made a homonym of this taxon. It was recently replaced by Johnson in his new genus *Arases* (Johnson 1992) using the name spelled in reverse as originally suggested in museum material by H. K. Clench (CMNH).

MATERIAL EXAMINED. See type above. PANAMA. Ancon, Canal Zone, 25 July 1907, Comstock Coll., 1♂ (AMNH).

Rubroserrata gloriosa,
NEW SPECIES

Photoplate VI,2E; Fig. 1F.

DIAGNOSIS. ***Wings.*** DFW,DHW nearly completely covered with brilliant silvery blue, far shinier than on congeners and lacking only around FW apex and submargins (thus resembling, and originally idnentified at BMNH as members of *Calycopis/ Calystryma* grade, specifically *Thecla cyanea* Draudt). VHW with concise, bright and thin medial band bent into emphatic "W" between veins M3 to 2A (also readily mistakable for *Calystryma* species until element in cell M3 is noted as contiguous with rest of band).

Morphology of known males showing huge elliptic saccus compared to rest of genitalia and valvae extremely robust in both bilobes and caudal extensions.

DESCRIPTION. ***Male.*** DFW, DHW ground brilliant silvery blue except for dark brown FW apex and

submargins, HW with very short tail at vein CuA1 terminus, elongate tail at CuA2 terminus; HW anal lobe not produced. VFW ground tan; postmedian band thin but concise and bright red-orange, marked tripartite by vivid distal black and white edging; band extending rather straight to cell M2, then with M3 reduced before widely angled "W"-shaped element between cell M3 and the anal margin. Limbal area marked basically with white to lighter tan mottling, a black Thecla-spot circumferenced with orange, black at the anal angle, and with intervening cells stewn with white and blue-white suffusion. FW length: 12.0 mm. (holotype); 12.0-12.5 mm. (paratypes). ***Female***. Unknown. ***Male Genitalia***. Fig. 1F. Short brush organs along dorsum of vinculum. Genitalia with vincular ventrum angulate, though vinculum surrounding valvae rather thin before slopng to enlarged and robust saccus. Valvae with bilobes prominent and rather ovate, diameter nearly equalling the length of the relatively long, but thinly tapered, caudal extensions. Aedeagus very robust, length exceeding rest of genitalia by only part of caecum length; caecum comprising one-fourth of aedeagal length and extremely bowed.

TYPES. Holotype male, ECUADOR, Balzapamba, Prov. de Bolivar, leg. M. de Mathan, December 1893 - February 1894, deposited BMNH (see Remarks). ***Paratypes***. AMNH. ECUADOR, Palmar, Manabi, 200 m., 21 May 1941, leg. D. B. Ladday, 1♂; Abitagua, Napo-Pastaza, 1300 m., 14 March 1939, leg. F. M. Brown, 2♂♂.

DISTRIBUTION. ***Spatial***: Fig. 4. Currently known from several localities in Ecuador. ***Temporal***: dates on specimens range from December to May.

REMARKS. This species is an example of the diversity that results form numerous look-alike species in the Eumaeini. Most workers would identify the specimens as "*Thecla cyanea* Draudt", a poorly documented taxon (type deposition historically unknown) whose 1919 figure shows bright silvery blue in similar areas of the wing as *R. gloriosa*. As noted by Johnson (1991), probable "*Thecla cyanea*" (from numerous Andean specimens appearing to represent the species) is a member of the Calycopina (see Appendix II). Few eumaeines could are as different morphologically as calycopines and members of *Rubroserrata*. The similarly probably results from a selective premium on the bright DFW,DHW blue in the tropical areas of the Andes home to both species.

ETYMOLOGY. The Latin name means "glorious" referring to the brilliant blue dorsal color.

Rubroserrata arima,
NEW SPECIES
Photoplate VI,2F; Fig. 1G.

DIAGNOSIS. ***Wings***. Described from an exceptionally small specimen (FW alar 8.0 mm.) with very wide red-brown VFW and VHW bands. Showing the HW tails typical of genus and, as witness to peculiarity of the wide ventral bands, identified at BMNH as a dwarf "*Thecla collucia*" [see *Gigantorubra collucia* Johnson 1993].

Morphology. Belying the idenfitication as *Thecla collucia* and showing a peculiar habitus within the *Rubroserrata* ground plan— terminal biramous elements of female genitalia dominating over one-half of genital length and with thick lateral edges finely serrate along their inner margins.

DESCRIPTION. ***Male***. Unknown. ***Female***. DFW,DHW ground brown, HW with tail stub at vein CuA1 terminus, long tail at CuA2 terminus; HW anal lobe not produced, colored black. VFW, VHW ground light buff, bands widely quadrapartite, red-orange central color outlined by distal black and white and basal black; FW postmedial band, costa to cell CuA2; VHW medial band maintaining significant width between SC+Rl element and "W"-shaped element at CuA1 compared to congeners; limbal area mostly unicolorous except for small reddish CuA1 Thecla-spot. FW length: 8.0 mm. (holotype). ***Female Genitalia***. Fig. 1G. Genitalia with robust ductus bursae comprising anterior one-half of genital length, terminal one half comprised of the biramous lamellae typical of genus, these strongly sclerotized laterally with their inner margins finely serrate; cervix bursae slightly swollen.

TYPE. Holotype female, TRINIDAD-TOBAGO, labelled "Arima", "Trinidad", "J. J. Joicey Collection", deposited BMNH (see Remarks).

DISTRIBUTION. ***Spatial***: Fig. 4. Known only from the generalized type locality data. ***Temporal***: the type is undated.

REMARKS. I name this species because Ronald Hernandez is working avidly on Trinidadian Theclinae, particularly in the Arima Valley, and it is thus possible to search for additional specimens of this demure thecline. Given the extreme genital habitus of *Gigantorubra collucia*, it appears that the holotype designated above is an authentic new entity. My work on many samples from Trinidad-Tobago suggests clearly that the island harbors many more unknown Theclinae than has been previously anticipated. The naming of numerous new Trinidadian taxa in the present *Reports* volume should spur new interest in consciencious review of island specimens.

ETYMOLOGY. Named for the general area of the type locality.

Figures 4 and 5. Distributions of *Rubroserrata, Pendantus* and *Kisutam*

Fig. 4 (facing page). ***Rubroserrata***

- *Rubroserrata ecbatana**
- *Rubroserrata cleon**
- *Rubroserrata sesara*
- *Rubroserrata mathewi*
- *Rubroserrata punta*
- *Rubroserrata gloriosa*
- *Rubroserrata arima*
- *Rubroserrata rubiferata*

Fig. 5 (overleaf). ***Pendantus***

- *Pendantus plusios*
- *Pendantus perisus*
- *Pendantus rugatus*
- *Pendantus sethon*
- *Pendantus denarius*
- *Pendantus argentinensis*

Kisutam

- *Kisutam syllis*
- *Kisutam simplisis*
- *Kisutam spadectis*

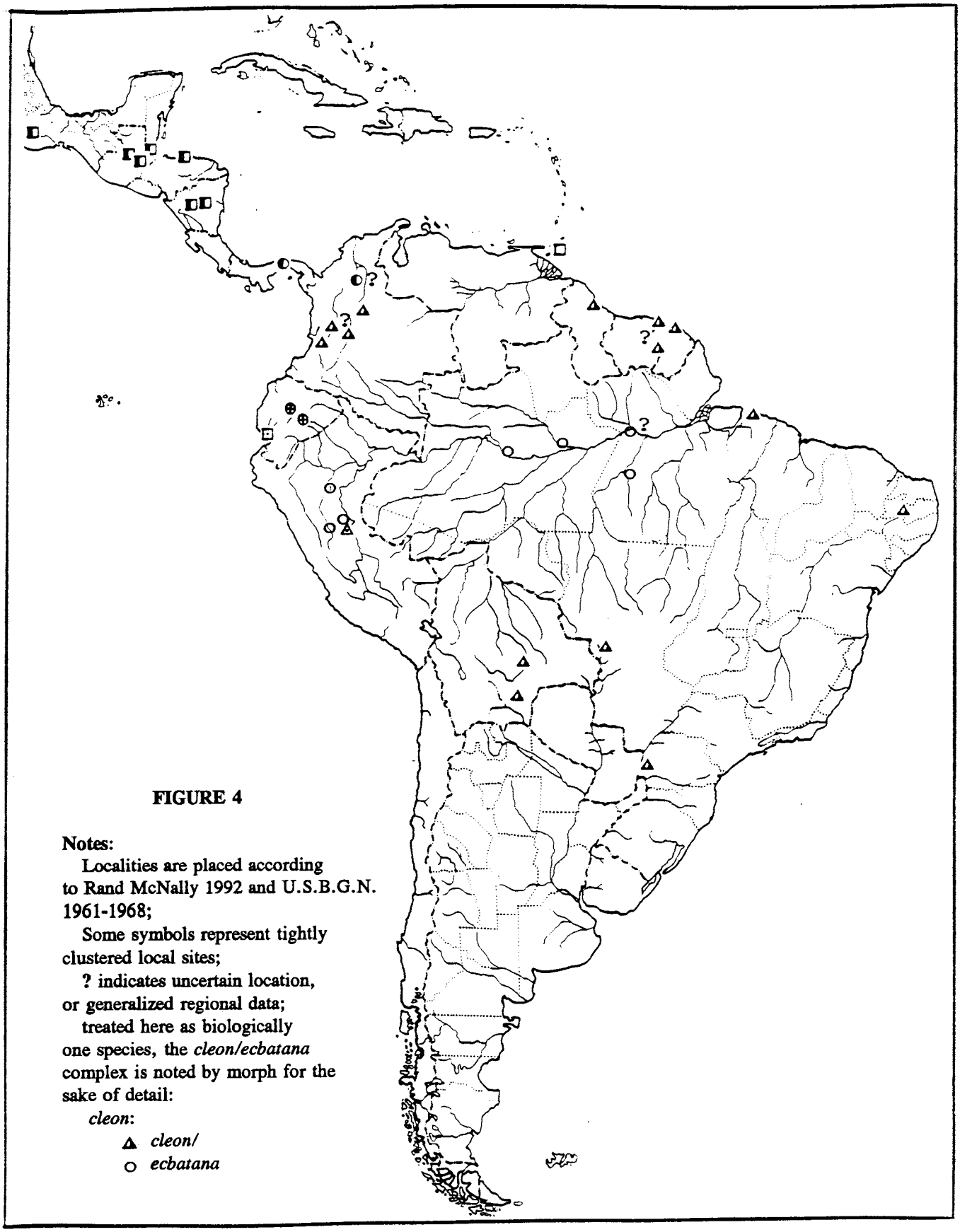

FIGURE 4

Notes:

Localities are placed according to Rand McNally 1992 and U.S.B.G.N. 1961-1968;

Some symbols represent tightly clustered local sites;

? indicates uncertain location, or generalized regional data;

treated here as biologically one species, the *cleon/ecbatana* complex is noted by morph for the sake of detail:

cleon:

△ *cleon/*

○ *ecbatana*

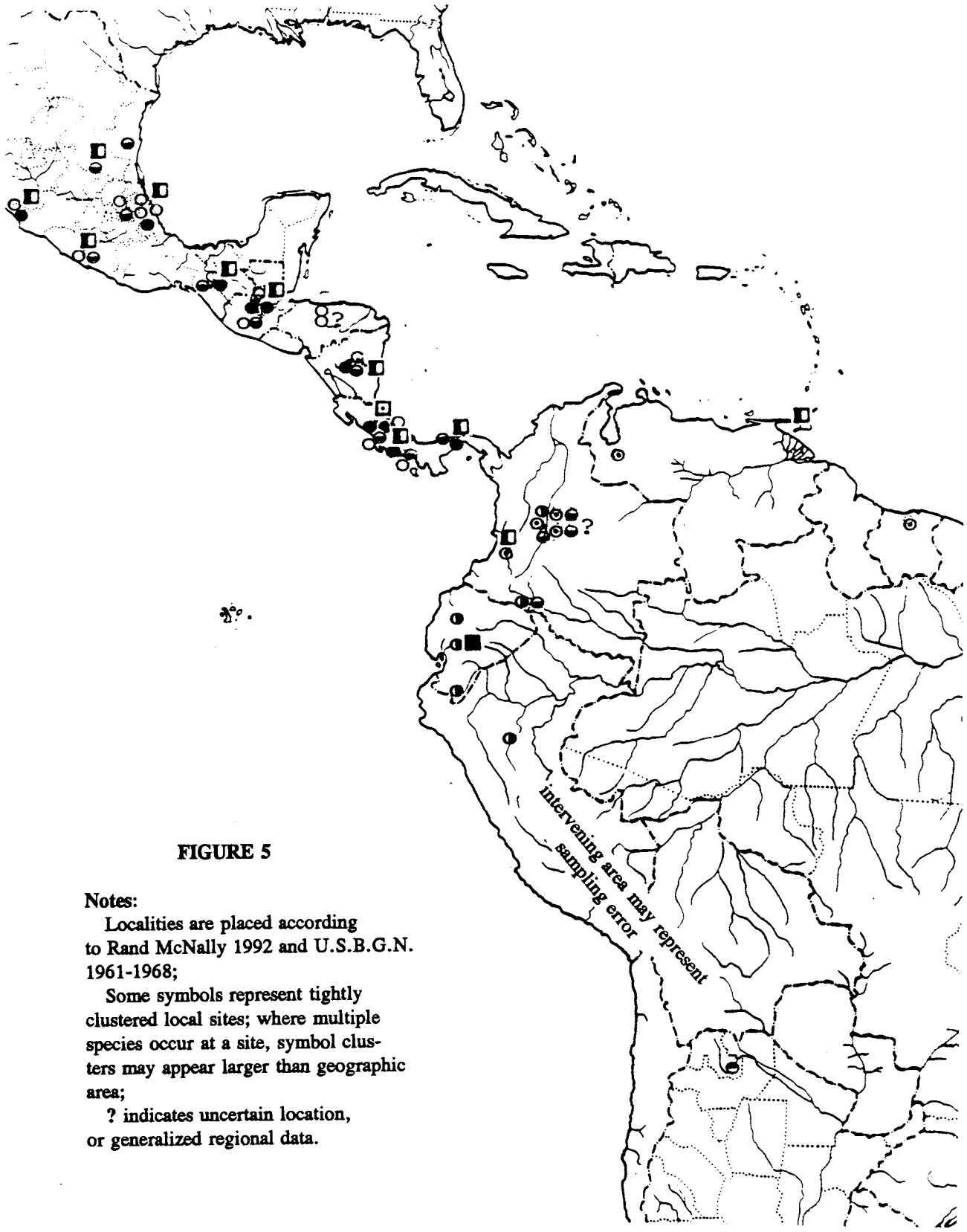

FIGURE 5

Notes:

Localities are placed according to Rand McNally 1992 and U.S.B.G.N. 1961-1968;

Some symbols represent tightly clustered local sites; where multiple species occur at a site, symbol clusters may appear larger than geographic area;

? indicates uncertain location, or generalized regional data.

Rubroserrata punta,
NEW SPECIES
Photoplate VI,2H; Fig. 2D.

DIAGNOSIS. ***Wings.*** Small (FW alar 9.0 mm); DFW,DHW suffused dark azure blue over darker under-ground across entire surface except FW apex; HW with two tails. VFW,VHW ground brown with peculiar bands— FW brick-red across entire wing; HW generally thin and linear except with elements of cells M1 and M2 which are bulbous and rectangulate.

Morphology. Known female showing habitus of genus modified to greatly fluted ductus bursae terminating in the final two-fifths to broadly bifurcate lamellae broken by a wide, nearly rhomboid, central fissure.

DESCRIPTION. ***Male.*** Unknown. ***Female.*** DFW,DHW ground suffusive azure blue over darker blackish under-ground; HW with short tail stub at vein CuA1 terminus, slightly longer tail at CuA2 terminus; HW anal lobe not pronounced but marked notably black. VFW,VHW ground crisp beige; FW crossed by brick-red postmedial band across entire wing; HW with medial band succinct, thin and linear; colored crisp brick-red basally and comprised of particular rectangulate elements, these at cells M1 and M2 bulbous and distally displaced. Each rectangulate element of band further highlighted by crisp black and white edging. Postmedial HW area suffused with white, limbal area slightly mottled light tan and brown ground, Thecla-spot very small and black. FW length: 9.0 mm. (holotype). ***Female Genitalia.*** Fig. 1D. Overall habitus typical of genus but greatly modified to a fluted ductus bursae terminating in its final two-fifths to broadly bifurcate and terminally pointed lamellae broken by a wide, nearly rhomboid, central fissure.

TYPES. Holotype male, ECUADOR, Puna Island, Adams Bequest, deposited BMNH.

DISTRIBUTION. ***Spatial:*** Fig. 4. Known only from the type locality data. ***Temporal:*** the type is undated.

REMARKS. The Adams Bequest (both as included in the BMNH general colletion and represented in yet uncurated BMNH "Old Accessions") harbors many interesting specimens. Most often the data is very poor. The present specimen is particularly interesting, and given the type data may indicate a vicariance from an early ancestral population of the genus. The species may well occur on the Ecuadorian coastal lowlands also but it is notable that the wing and genital facies of *R. punta* do not closely proximate any known congener.

ETYMOLOGY. An arbitrary spelling referring to the type locality.

Rubroserrata rubiferata,
NEW SPECIES
Photoplate VI,2G; Fig. H.

DIAGNOSIS. ***Wings.*** Small (9.0 - 10.5 mm.), VHW band showing costal elements meandering basally and the discal element broken by lighter discal slash so as to cursorily resemble species of the *Crimsinota rubifer* Species Group. However, refer to Plate II,G (*Crimsinota argentina*) to see how these bands are actually very different (*C. argentina* split down the middle basally to the top of the "W", *R. rubiferata* with simple meandering of the orbiculate elements of the band). Female showing wider band as typical of genus.

Morphology in male showing narrow tapered vinculum to pointed saccus, falces at arch undulate, bilobes of valvae prominently parabolic with short sharp cuadal extensions, aedeagus elongate with caecum displaced out of plane of shaft; female with ductus robust into the terminal one-third of it length with biramous opening comparatively smaller than in congeners and incised along the central fissure well into the terminal one-half of the ductal length.

DESCRIPTION. ***Male.*** DFW,DHW ground fuscous brown, HW appearing to have single tail at CuA2 terminus; HW anal lobe not produced but colored gray-black. DHW with some lightening of ground in limbal area. VFW,VHW ground light beige; FW postmedian band orange-red, linear and quite straight across wing from costa to cell CuA2; HW with wide red-orange bands showing staggered and meandering orbiculate elements particularly toward the costa, forming a pecular habitus for genus. Distal wing area crisp white across postmedian area showing some mottling along submargin and a small red-orange Thecla-spot at cell CuA1. FW length: 9.0 mm. (holotype). ***Female.*** Marked similar to male, including lighter limbal area on DHW;VFW,VHW bands greatly showing the wider habitus resulting from broader and rounder wing shape. FW length: 10.5 mm. (allotype). ***Male Genitalia.*** Fig. 1H,left. Brush organs abutting along vincular dorsum. Genitalia with vinculum narrowly tapered to pointed saccus, falces at arch undulate in a fashion unique for genus. Valvae with bilobes prominently parabolic, nearly rounded, with short sharp cuadal extensions. Aedeagus elongate, length exceeding rest of genitalia by well over caecum length; caecum comprising just under one-third of aedeagal length and displaced thirty degrees out of the plane of the aedeagal shaft. ***Female***

just under one-third of aedeagal length and displaced thirty degrees out of the plane of the aedeagal shaft. ***Female Genitalia***. Fig. 1H, right. Ductus bursae stoutly cylindrical and robust into its posterior one-third, then terminating with strong biramous lamellae divided by a central fissure somewhat serrate along its inner margin. Anterior one-third of ductus bursae somewhat constricted before a swollen cervix bursae.

TYPES. Holotype male, allotype female, PERU, labelled "Chanchamayo, E. Peru, 1000 m., Oct., Nov., Dec., 1906, BM 1929-535", deposited BMNH (see Remarks).

DISTRIBUTION. ***Spatial***: Fig. 4. Although now represented by a pair of specimens marked "sp. nov." in the BMNH, probably more widely represented in Peru and the western Andean region (see Remarks). ***Temporal***: dates on specimens range from October to December.

REMARKS. This pair was noted as "sp. nov." in the BMNH collection along with specimens associated with "*Thecla volumen*". As noted by Johnson (in press a) there is some confusion of uncurated BMNH material called "*Thecla volumen*" and "*Thecla rubifer*". Previous workers have been aware of the apparent diversity of specimens however, the above pair recognized (perhaps by G. E. Tite) as not representing either of the above taxa. It appears nearly assured that future curation of BMNH and other museum material will increase our knowledge of this taxon.

ETYMOLOGY. An arbitrary combination from the species "*rubifer*" suggesting the historical confusion of the new species with the former and other poorly known Theclinae.

GROUP DISCUSSION

Rubroserrata became important as a genus in assemblages revised in the present paper when it was first studied in relation to *Gigantorubra* (Johnson in press a). There can be little doubt that small species of the *simplica* Group of *Gigantorubra* have historically confused the relationship of "*Thecla*" taxa which here comprise *Rubroserrata* and *Gigantorubra* Johnson. Indeed, at superficial glance, even the serrate falces in the genitalia of both genera would suggest a close relation. However, the diminutive nature of the rest of the male genital apparatus in *Rubroserrata* and the entire facies of the female genitalia strongly argue that serrate falces (as also seen in the calycopine genus *Serratofalca* [Johnson 1991a, Johnson and Sourakov, in press]) are more likely homoplesious. Thus, in order to segregate distinctive clades in the Eumaeini for eventual cladistic study, we preserve the species of *Rubroserrata* in a separate genus, and treat them here among the other small "Gem Butterflies". It is most likely that *Rubroserrata* is an angulopine genus (see Appendix II); however, the distinction between it and the other red-banded species of *Angulopis* and *Gigantorubra* appears certain. Of these three genera, it is the female genitalia of *Angulopis* and *Gigantorubra* that are most alike, with these genera separated by the robust male morphology of the latter genus, including its robust and serrate falces.

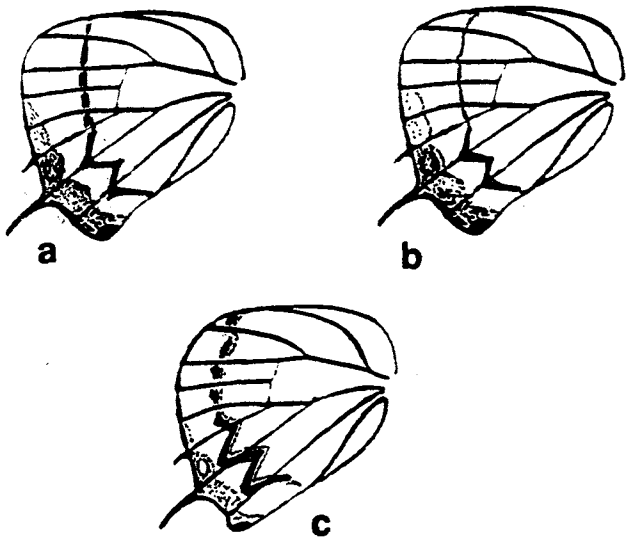

FIGURE 6

Line drawings of generalized diagnostic markings for (a) *Pendantus sethon*; (b) *Pendantus denarius*; and (c) *Angulopis duplicatis* using style of Johnson (1991a). As with those in Johnson (1991a) some distortion occurs because of the arbitrary drawing of the wing surfaces and veins to a common format (particularly for calycopines of Johnson, 1991a) a somewhat "larger than real" wing surface in the veins after CuA2 (*e.g.* 2A-3A). The emphasis in Figure 6 is to show basic pattern differences, using some exaggeration to advantage (e.g. **a**, *sethon* with costal elements rather bold and straight, "W" large; **b**, *denarius* with costal elements more lineal and slightly concave, "W" moderate; **c**, *duplicatus*, as typical of *Angulopis* with bold, meandering to jagged, costal elements and a huge "W" also "jagging" severely costad of the "W" in near M3. As noted in the text, color is also important in distinguishing *sethon* and *denarius*.

KISUTAM,
NEW GENUS

Synopsis-- contains *Thecla syllis* Godman and Salvin and some apparent undescribed relatives which share eighth tergite modification and reduced valval habitus suggesting a distinctive clade and enlightening roots of the *Electrostrymon/ Nesiostrymon* ground plan.

DIAGNOSIS. A tightknit group structurally but with some wing pattern divergence due to pan-Neotropical distribution and poorly known, disjunctive species. ***Wings*** generally of moderate to large expanse (FW lengths commonly 12.5 - 15.0 mm.) and with FW quite angulate, much resembling *Angulopis* since most species are brown to blackish above. Ventral surfaces similarly reminiscent of *Angulopis* but always differing either by the presence of a simple jagged black or brown medial band, or (in *syllis*) basal orange band edging and with anteior elements flaring costad.

Female morphology unmistakable, amongst *Angulopis* and genera of the present revision only slightly reminiscent of *Pendantus* but with dorsum of *sipc* lipped posterior (not anterior) and sutured across a long abuttment with lateral edges of the female superior plate. Genitalia bipartite with variably occurring antrum; terminus with greatly expansive lamellae, "fanned" and recurvate anteriolaterally to a juncture with the terminolateral edge of the *sipc*.

Male morphology with genitalia showing the diminitive valval habitus of *Electrostrymon* or *Nesiostrymon* and, like the latter genus, showing an *sipc* (in the case of *Kisutam* flat but lacking the terminal tooth common in *Nesiostrymon*).

DESCRIPTION. ***Adult. Male.*** Head with frons fuscous, eye lining white, antennae finely striped white, tagmata fuscous. ***Wings.*** FW alar expanse [hereafter "FW length:"] large, generally 12.5 to 15.0 mm. Wing shape showing FW,HW (especially HW) very angulate at anal angle. HW with short tail at CuA1 terminus, longer tail at CuA2 terminus. DFW,DHW generally unicolorous including dark brown and a tendency notable in new species to be greatly black. VFW,VHW with generally brown to blackish-brown ground colors crossed by simple thin, brown to black, stripes— postmedial on FW, medial on HW with prominent "W"-shaped element in the anal area. One species with thin orange basal color on HW medial band, other species purely black and in these a common tendency to very dark limbal color including black Thecla-spot and black along cells surrounding the HW tails and anal lobe. [Wing habitus here for males inferred from females in two species]. ***Female.*** Head with frons fuscous, eye lining white, antennae finely striped with white, tagmata fuscous. ***Wings.*** FW alar expanse [hereafter "FW length:"] large, generally 13.0 to 15.0 mm. Wing shape showing FW,HW (especially HW) more rounded than in males; HW with short tail at CuA1 terminus, longer tail at CuA2 terminus as on males. DFW, DHW generally unicolorous and dark brown to very black in two known species. VFW,VHW similar to that noted on males above but with emphasis needed on blackish tendencies both in grounds and pattern elements (latter in both bands and limbal markings). ***Male Tergal Morphology and Genitalia.*** Fig. 3. Tergite eight with *sipc* showing broad rectangulate dorsal plate (Fig. 3F). Genitalia with broadly open vincular arc anteriorly with a short elliptic saccus, falces with bases bulbous, termini arched and tapered directly to points. Valvae very distinctive, showing reduced and highly sculptured habitus in which thick terminal microtrichia replace the usual caudal extension seen in most Eumaeini (except *Electrostrymon*, *Nesiostrymon* and a few others). Aedeagus with length exceeding rest of genitalia by at least caecum length, shaft and caecum both bowed in known species. ***Female Tergal Morphology and Genitalia.*** Fig. 3. Tergite eight with *sipc* more elaborately sclerotized than in other genera of this *Report*, sculptured along the terminolateral edge with a rimmed lobe abutting with strong membranes to the lateral edges of the genital superior plate. Genitalia with habitus bipartite, comprised of variably sized anterior tube, then a transparent juncture to an anterior tube (sometimes antrum-like). Terminus with broadly expansive superior plate (=lamellae postvaginalis) which extends widely laterad and recurves along the terminolateral edge of the *sipc*. Cervix bursae with a hood of various size over distal end of corpus bursae; signa broadly platelike with dendritic margins.

TYPE SPECIES. *Thecla syllis* Godman and Salvin 1879-1901 [1887].

DIVERSITY. Presently indicating three species, two of which are poorly known, the other widespread across Central America and northern South America.

DISTRIBUTION. Fig. 5. Known species occur from Central America to northern South America.

REMARKS. We were surprised by the "incredible" morphology of *Thecla syllis*. Lepidopterists have mused and searched for relatives of the Caribbean hairstreaks of common usage (*Electrostrymon* and *Nesiostrymon* Clench) for many years (see Clench 1964). Johnson (1991b) revised *Nesiostrymon* and showed it and its sister genus *Terra* Johnson and Matusik occurred both on the mainland and in the Caribbean. However, search for sister groups of the Caribbean fauna on the mainland

no less relevant even if certain clades (like *Nesiostrymon* and some *Electrostrymon* of common usage) prove not to be Antillean endemics but disjuncts of mainland clades at the generic level. In fact, a puzzle in which numerous mainland clades show Antillean disjuncts is as interesting to biogeography as the long cherished views of Antillean generic endemism. Particularly, if Antillean disjuncts fall into cladograms "very low" in the hierarchy (as was the case with *Nesiostrymon* and *Terra*), it implies that these elements of the Caribbean fauna are very old and represent pieces of a larger ancestral butterfly fauna perhaps rafted *en masse* into the Caribbean by early tectonic movement. Thus, the morphology of *Thecla syllis* takes on some importance if additional congeners can be located supporting the view that *syllis* itself is not an "isolated taxon" but part of larger clade. From the present study it appears that there are at least two possible mainland sisters of *T. syllis*. Since both of these are externally demure butterflies discovered only by random dissection, more research is needed both on their veracity and their actual ranges and diversities. Even with the number of taxa covered by revisionary works of this *Reports* volume and Johnson (1991a), there is still a cluster of brown and black, otherwise unspectacular, "Thecla" that needs to be looked at. The senior author has in preparation a large work on the clade *Profieldia* (Johnson 1991a, 1992b) which has turned out not only to be larger than thought but to include both dark black and brown species as well as iridescent ones. Thus, acknowlegment here of *Kisutam* is a "hedged bet" that the clade is an important "player" in working out mainland Caribbean affinities. Certainly, there is no other mainland species known to the authors that fits closer into the morphological puzzle of *Electrostrymon* and *Nesiostrymon* and yet shows a set of wing characters clearly bridging to *Angulopis* and other angulopines.

ETYMOLOGY. An anagram of the surname Matusik, honoring David Matusik (FMNH Field Associate) who has contributed immeasureably to the preparation and study of Theclinae at the AMNH and whose field works has led to the discovery of numerous insular Caribbean taxa.

Kisutam syllis (Godman and Salvin)
NEW COMBINATION
Photoplate VI,3A; Fig. 3.

Thecla syllis Godman and Salvin 1879-1901 [1887]: (2) 92, (3) pl.58, f. 6,7. Draudt 1919: 806, pl. 159g; Hoffman 1940: 719; Comstock and Huntington 1958-1964 [1964]: 64. Bridges 1988: I.338 I.108,III.56.

DIAGNOSIS. ***Wings***. Generally resembling an *Angulopis* species (historically allied in common usage to *A. ceromia*). However, over all other things, VHW band distinctive in that the costal elements from M cells to costa are very narrow and *angle outward*, almost convexly, toward the costal margin (not angled up or inward as in the red-orange banded *Angulopis*). With experience one can easily "eye" *K. syllis* with this tool. Compared to congeners linked here by female morphology, other *Kisutam* species have dark (brown to blackish) upper surfaces and ventral surface with thin brown or black bands forming a wide "W"-shape in the anal area.

Morphology distinctive in both sexes; male with valvae reduced such that terminus is a microtrichia-covered tooth, not the usual full caudal extension of most eumaeines (save *Electrostrymon* and *Nesiostrymon*); female showing the generic habitus separating *Kisutam* from the latter genera but in the most extreme bipartite configuration— both anterior and posterior element elongate, antrum not much apparent, lamellae laterally expansive to membranous abutment along dorsum of *sipc*.

DESCRIPTION. ***Male***. DFW,DHW brown; HW with short tail at vein CuA1 terminus, longer tail at CuA2 terminus, HW anal lobe not much produces, suffused blackish. VFW,VHW ground beige; bands thinly tripartite red-orange (basal) black (central), white (distal), and simply patterned, having an overall "*Angulopis*-look" except that elements in costal area of HW, particularly including an obliquely set SC+R1 element, appear to bend more outward (or "costad") than in other angulopines. This might appear a minor character, but once it is noticed is very useful in superficially picking the species out from either *Angulopis* or *Gigantorubra* taxa (see Remarks). VHW limbal area somewhat lavish, reminiscent of latter two genera, markings comprised of red to orange Thecla-spot, gray to blue-white suffusions in adjacent cells, marginal white line and black scallops lining the submarginal cell spaces. FW length: 13.0 - 14.5 mm. (Material Examined). ***Female***. DFW ground brown, DHW ground suffused with light gray-blue in fresher specimens. VFW,VHW marked similar to male but with somewhat more rounded and expansive wing shape. FW length: 13.5-15.0 mm. (Material Examined). ***Male Genitalia and Tergal Morphology***. Fig. 3D,left; F. Tergite eight with *sipc* showing broad rectangulate dorsal plate (3F). Genitalia with vincular ventrum broadly open, anterior sloping to short elliptic saccus, falces with bases bulbous, termini arched severely and tapered directly to points. Valvae very distinctive, showing a reduced and highly sculptured

habitus in which thick terminal microtrichia line a sculptured terminal tooth and replace the usual caudal extension seen in most Eumaeini. Aedeagus robust, with length exceeding rest of genitalia by at least caecum length, shaft and caecum both bowed in known species. ***Female Genitalia and Tergal Morphology.*** Fig. 3E,right. *Sipc* of tergite eight terminolaterally sclerotized to a rimmed lobe abutting the female superior genital plate; anterior of *sipc* quite elongate, extending beneath tergite seven toward tergite six. Genitalia extremely bipartite, posterior and anterior elements of about equal length, anterior tube swollen throughout, posterior tube thin and somewhat undulate. Terminus with laterally expansive superior plate (or lamella postvaginalis) extending widely laterad and recurving along the terminolateral edge of the *sipc*. Cervix bursae with ventrum swollen, dorsally with small hood over distal end of corpus bursae; signa broadly platelike with dendritic margins.

TYPES. All specimens referrable to the original description could constitute syntypes. At the BMNH we have been able to select the male of the original figure as lectotype— labelled "type sp. figured", "Type", "San Geronimo, Verapaz, Champion", "Godman-Salvin Coll. 1912-23. B.C.A. Lepid. Rhop. Thecla syllis G. & S.", R. 1951 N.H.B. 553", B.M. type #1018. As noted in Remarks, this specimen is fresh enough to show a slight sheen of burnished blue on DFW,DHW.

DISTRIBUTION. *Spatial*: Fig. 5. Known from Mexico (though poorly recorded, see Remarks) through Central America and across northern South America to Trinidad-Tobago. ***Temporal***: dates on specimens suggest year-round occurrence in tropical areas.

REMARKS. Once identified properly the first time, this species is fairly readily picked out by the shape of the thin red-orange VHW band in the costal area where, along with an obliquely set SC+R1 element, the costal area of the band bends more outward than in confusable species of *Angulopis* or *Gigantorubra*. As noted under the generic entry, this wing habitus is even more distinctive when one considers that the morphological characters differ completely from these two genera and instead approach the habitus of *Electrostrymon* and *Nesiostrymon*. The DFW,DHW is so simple in *K. syllis* that we do not figure it. We opt instead for figuring two undersurfaces showing the extremes of facies in fresh and more worn specimens. Both are confusable with *Angulopis* taxa until one "gets a feel" for the shape of the VHW band. In addition, there is a slight bluish sheen to very fresh males, and a blue-gray sheen that survives wear on the DHW of many females. Generic Remarks and Remarks under congener entries below also pertain. In the Material Examined below we rely on AMNH depositions because the status of this species was not appreciated when studied at the BMNH in 1992.

MATERIAL EXAMINED. COLOMBIA. Cali District, W. Colombia, 5500', 19 February 1935, 2♂♂, 1♀ (AMNH). COSTA RICA. Guápiles, 2♂♂ (AMNH). GUATEMALA. Rabinal, 2♂♂,1♀ (AMNH). MEXICO. Vera Cruz, Presidio, leg. Hoffman, May 1941, 3♂♂, August 1940, 2♂♂ (AMNH); Jalapa, Vera Cruz, ex. Hoffman Coll., 1♀; Chiapas, Ochuc, 28 August 1982, leg. R. Rozycki, 1♂ (AMNH), same data but 15 July 1982, 1♂ (AMNH); Colima, leg. Hoffman, 2♂♂ (AMNH); Guerrero, Rincon, 1680 m., 4 mi. E. Chilpancingo, dense grassy scrub, 30 August 1967 leg. Miller and Pine, 1♂ (AMNH); San Luis Potosi, 2 mi. N Tamasunchate, in moist forest 90 m., 10 September 1967, leg. R. Pine, 1♀ (AMNH); Chiapas, Ochuc, 28 August 1982, leg. R. Rozycki, 1♂ (AMNH), same data but 15 July 1982, 1♀ (AMNH). NICARAGUA. Nagarote, 1♂,1♀ (AMNH); "Nicaragua", nod [no other data], Comstock Coll., 1♂ (AMNH); PANAMA. Barro Colorado Island, Panama, leg. W. J. Gertsch, 11-19 March 1936, 2♂♂,1♀ (AMNH). TRINIDAD-TOBAGO, Arima Valley, 800-1200 ft., 10-20 February 1964, leg. R. Rozycki (AMNH).

Kisutam simplisis,
NEW SPECIES
Photoplate VI,3B; Fig. 3E.

DIAGNOSIS. ***Wings***. Very blackish on DFW, DHW and VFW,VHW and, on VHW, with only a thin black medial band forming a wide "W"-shaped element in the anal area. Presently known from Costa Rica; thus, if anything, appearing like a very dark *P. denarius* without any orange edging to the VHW band. Limbal area also very dark, a trait which appears of significance in light of characters in South American taxon of subsequent entry. Differing from this latter *K. spadectis* (Ecuador) by latter's (i) bold M3 VHW band element (appearing to break the band as if a calycopine) and (ii) lavish limbal black at Thecla-spot, anal lobe and in adjacent cells.

DESCRIPTION. ***Male***. Unknown. ***Female***. DFW, DHW ground dark blackish, short tail at vein Cu-A1 terminus, longer tail at CuA2 terminus; HW anal lobe only slightly produced and black. VFW, VHW ground very dark suffusive sooty black; FW with thin black lineal band from costa to cell CuA2; HW with thin black medial

band lined only with white distally and proceeding rather straight from costa and the forming a bold, and quite open "W"-shaped element in the anal area. Limbal area also dark, markings similar to those in *K. syllis* but darker— black Thecla spot and suffusions in surrounding cells, submargins outlined with black scallops, margin with white marginal line. FW length: 13.0 mm. (holotype). ***Female Genitalia and Tergal Morphology***. Fig. 3E. *Sipc* terminolaterlly much like *K. syllis*, but anterior not as expansive. Genitalia with posterior element quite small (resembling more a prominent antrum) but with lateral edges of lamellae very expansive and recurvate (latter strongly aligned with membranous material along the side of the *sipc*). Anterior element robust and elongate compared to posterior; cervix bursae robust, with hood over distal end of corpus bursae very prominent; signa typical of genus.

TYPE. Holotype female, COSTA RICA, Prov. Puntarenes, 35 km. NE of San Vito, nr. Las Alturas Field Station, 1200 m., 16 June 1992, about one month into rainy season, leg. Calvin Snyder, mid-morning in weedy ditch at egde of patch of remnant primary rain forest amid coffee plantations; netted on scrub about 3-4' above ground (see Remarks), deposited AMNH.

DISTRIBUTION. *Spatial*: Fig. 5. Currently known only from type locality (see Remarks). *Temporal*: known to date only from June.

REMARKS. The type locality area has been collected by numerous workers, particularly Andrei Sourakov (University of Florida) in 1993, and these samples may have additional specimens. It is not known at present whether the capture of the type proximate a remnant of primary rain forest has significance; the collector noted numerous common xerophiles also at the site. If indeed this taxon becomes buttressed by additional specimens, including knowledge of the male, the diversity of the generic clade becomes more authenticated. However, some caution is warranted in looking at superficially similar specimens and judging them as the opposite sex of a particular specimen. In a forthcoming paper (Johnson and Kroenlein, in press c) we have documented some startling superficial resemblances involving not just two sympatric congeners but more than two and including additional noncongeners. We prepared this paper when we were startled by such discoveries. Without dissection one would "absolutely" have taken the relationships for granted. In Remarks under the following entry we note that we have already seen specimens similar to that taxon from the western Amazon basin that are no way like it in morphology. However, these latter do not come from any group that has been recently revised in the Eumaeini and still lack a placement. The senior author suspects that more time can be put into this pursuit when the problem of the Caribbean fauna is approached as a special project.

ETYMOLOGY. The name is from the Latin for "simple" and refers to the simple wing pattern of this blackish species.

Kisutam spadectis,
NEW SPECIES
Photoplate VI,3C; Fig. 3G.

DIAGNOSIS. ***Wings***. Appearing most like *K. simplisis* and a group of non-congeners from the western Amazon basin that are presently unplaced in the Eumaeini. Differing from *K. simplisis* and the above other eumaeines by the M3 element of the VHW band breaking the plane of the band aside the anal "W" and showing a limbal area dominated by lavish black— at the Thecla-spot, base of anal lobe and prominently in submargins of M3 and CuA2 (see Remarks).

Morphology. Known female showing *sipc* and expansive lamellae typical of genus but with a truncate ductus bursae terminating at the anterior with a rather abrupt juncture to the corpus bursae.

DESCRIPTION. ***Male***. Unknown. ***Female***. DFW,DHW ground dark blackish, short tail at vein CuA1 terminus, longer tail at CuA2 terminus; HW anal lobe only slightly produced and black; wings quite expansive and rounded compared to congeners. VFW, VHW ground dark suffusive sooty black; FW with thin black lineal band from costa to cell CuA2; HW with thin black medial band lined only with thin distal white, proceeding in a meandering and rather dashed fashion from costa, then appearing broken by a elongate black M3 element from a broad and very open "W"-shaped element in the anal area. Limbal area very dark— black at Thecla spot, base of anal lobe and prominently in submargins of M3 and CuA2 (see Remarks). FW length: 13.5 mm. (holotype). ***Female Genitalia and Tergal Morphology***. Fig. 3G. *Sipc* terminolaterlly much like *K. syllis* and anterior also exceeding under the seventh tergite. Genitalia widely expansive and fanlike lamellae, recurved along terminolateral margin of sipc. Transparent area beneath lamellae rather immediate and then with anterior of ductus bursae rather truncate and proceeding directly to the cervix bursae and corpus bursae. Slight hood on distal end of corpus bursae; signa typical of genus.

TYPE. Holotype female, ECUADOR, Rio Blanco, Santiago-Zamora, 1000 m., [humid tropical forest,

Brown 1941), May 1939, leg. F. M. Brown, deposited AMNH.

REMARKS. The specimen noted just above as holotype of this taxon was discovered in a survey for an aforementioned paper by Johnson and Kroenlein (in press a). Dissections were performed on a "swarm" of dark to blackish hairstreaks from the western Amazon basin and adjacent Andes margin which show a panoply of variation in the facies of the VHW limbal area, band and "W"-shaped element. A profuse limbal area is common to many of these specimens and we were surprised that this "grade" (usually found in the unidentified sections of museums or placed rather at random with species like "*Thecla pisis*", "*T. anthora*", "*T. meleager*" etc.) contained both Calycopina, Angulopina (see Appendix II) and structural facies of initially uncertain placement (see *Rindgea pyxis*, Johnson in press b). When careful comparison is made between segregations based on structural characters, certain wing character differences are also apparent in these specimens. However, complete identification of all these groups is only in a preliminary stage. Since structural facies are clear even in large groupings of Theclinae (like Angulopina versus Calycopina), there is no doubt that the nonmonophyletic (indeed polygeneric) makeup of these blackish hairstreaks is authentic. Similarly, "green hairstreaks" are nonmonophyletic, "elfin-like hairstreaks" nonmonophyletic, etc.. The many "blackish" hairstreaks are apparently just another such grade which have not been studied. Thus, considering this and the blackish facies of *Kisutam simplicis* from Costa Rica, the specimen referred to here as *K. spadectis* does not seem so surprising. The female morphology is readily linked to *Kisutam* as contrasted by the divergent characters that would indicate a dark Calycopina (see *Klaufera* Johnson 1991a), dark Angulopina (see *Ziegleria* Johnson in press a) or *Rindgea* (see Johnson in press b). It is only perhaps unfortunate that mention needed to be made of *Kisutam* so soon; it comes about only because of the position of *Thecla syllis* and its superficial similarity to angulopines.

ETYMOLOGY. The Latinized name refers to the "spade"-like shape of the female genitalia which link this species to the genus.

GROUP DISCUSSION

Some important points were made just above in Remarks under *K. spadectis*. This genus was included because of the structural facies of *Thecla syllis* and the superficial resemblance of this taxon to members of *Angulopis* (the titular genus of the Angulopina). Aside from widespread *K. syllis*, knowledge of this assemblage is presently very poor and must be pursued through the dissection of many similar-looking dark brown and black hairstreaks. Inclusion of *Kisutam* in the present study of "Gem Butterflies" simply serves to put the matter into print and facilitate further exploration of these ill-studied groups.

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APPENDIX I

A New Species of *Angulopis* from specimens confused with *Pendantus denarius*.

At the AMNH, and possibily a many other museums, are series of specimens identified as females of *Pendantus denarius* which are an undescribed *Angulopis* species. In some cases females of this *Angulopis* species (showing genitalia typifying that genus in all respects) are side by side with authentic females of *P. denarius* (genitalia as illustrated in the present paper). The difference in the wings is apparent, with the *Angulopis* species showing an extremely wide "W" element in the anal area (see Fig. 6) most similar to that in Photoplate V,10A [*A. opacitas*] but differing from that species by the grizzled golden-brown ground and blackish suffusions distal of VHW band and in limbal area that resemble *P. denarius*. There are many specimens of the female of this undescribed *Angulopis* species but, at present, we cannot find where the corresponding males were placed. Males with duplicate collection data are *P. denarius* (as are females of *P. denarius* with duplicate data). The genitalia of the two genera are so disparate there is no question we are dealing with two different noncongeneric entities (see Fig. 7, below). The female genitalia shows some similarity to *A. llorentei* of western Mexico described herein and, although differing so in the wings as to not suggest conspecificity, it is possible that this *Angulopis* species is a sister of previously unknown *A. llorentei* from western Mexico. In addition to the different wing characters, the terminal tergite on the new entity differs from most *Angulopis* females in showing an extremely long dorsal plate more laterally produced toward the anterior than the posterior. We describe the other Mexican and Central American entity below.

***Angulopis duplicatis*,**
NEW SPECIES
Figs 6,7.

DIAGNOSIS. ***Wings***. Known females VFW, VHW with yellow-brown [buff] ground grizzled with darker brown over the area basad of thin white postmedial band, latter widely angled on HW with expansive "W" at anal area and additional angle at cell M3. Limbal area darkly grizzled as above around bright orange Thecla-spot.

Morphology with female showing elongated *sipc* dorsal plate and ductus bursae fluted in terminal three-fourths after a constriction in the anterior one-fourth; terminolateral lobes of lamellae produced posteriolaterally.

DESCRIPTION. ***Male***. Unknown. Presumed to look similar to female but smaller and with more angled wings [however, easily confused with *Pendantus denarius*]. ***Female***. DFW,DHW fuscous to warmer brown distally; VFW, VHW ground yellow-brown [buff] grizzled darker brown over the area basad of thin white postmedial band, latter suffused basally black and with overall shape widely angled on HW with expansive "W" at anal area and additional angle at cell M3. Limbal area darkly grizzled brown around bright orange Thecla-spot. FW length: 13.5 mm. (holotype), 13.5-14.5 mm. (paratypes). ***Female Tergal Morphology and Genitalia***. Fig. 7. Dorsum of tergite eight quite elongate and with lateral shape less lobate than most congeners. Genitalia with ductus bursae fluted in terminal three-fourths after a severe constriction in the anterior one-fourth; terminolateral lobes of lamellae produced posteriolaterally from a robust ductal opening showing heavily sclerotized rims. Corpus bursae with dendritic signa typical of genus.

TYPES. Holotype female, MEXICO, Coatepec, 23 May 1928, ex. Coll. E. I. Huntington, deposited AMNH. ***Paratypes***. AMNH: 12 females, same data as primary type; 1 female, Jalapa, 27 May 1928, rest as primary type ("rapt"); 1 female, Texolo, Mexico, 14 June 1928, rapt.

Additional Material Examined. GUATEMALA. Rabinal, 1 female (AMNH). PANAMA, El Volcán, Chiriqui, 24 February 1936, 3 females (AMNH).

DISTRIBUTION. ***Spatial***: Central America from central Mexico southward to Panama. ***Temporal***: dates on specimens ranges from February to June.

REMARKS. Remarks under *Pendantus denarius* pertain. It should be reemphasized that one may need to search a bit to find a typical *P. denarius* female when so many *A. duplicatis* are present in collections.

ETYMOLOGY. From the Latin of "duplicate" referring to the superficial similarity to *Pendantus denarius*.

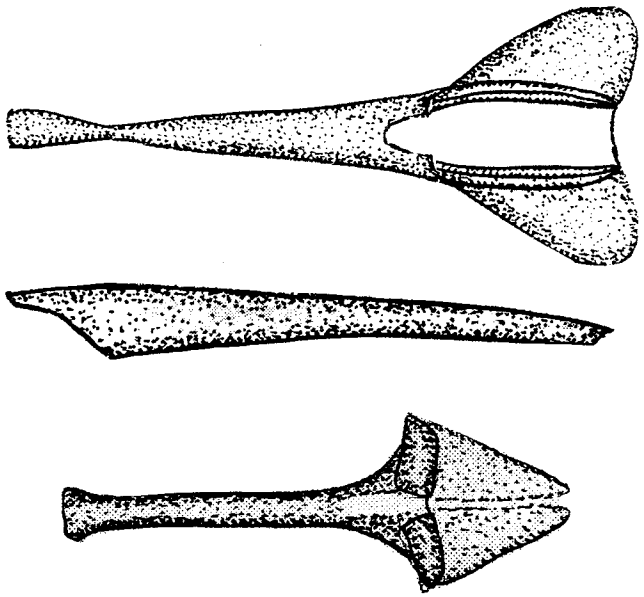

Fig. 7. Above, female genitalia of *A. duplicatis*, ventral view (middle, lateral view, *sipc* dorsum). Below, female genitalia *Electrostrymon grumus*, ventral view.

APPENDIX I,B (added at proof)

Diagnostics and Taxa of *Electrostrymon sensu stricto*.

At proof it was apparent that further elaboration concerning *Electrostrymon sens. strict.* would be extremely helpful since the group is referred to both in the original description of *Angulopis* (Johnson 1991a) and in the body of the revisionary format including "Gem Butterflies". This had been brought our attention by South American colleagues who had either seen the manuscript or to whom we had provided a list of species that would be figured. As a result of their requests, we added photographs of a number of species of mainland *Electrostrymon* which show the structural characters of the type species *Papilio endymion* (see Photographic Plates and captions).

The facies of *Electrostrymon*, as limited by its type, have been illustrated both in the above revisionary text concerning "Gem Butterflies" and in the original description of *Angulopis* (Johnson 1991a). The purpose of this Appendix is to guide the reader to results concerning mainland taxa whose type material has been examined to confirm placement in *Electrostrymon*. As previously noted, it has not been possible to include *Electrostrymon*

in the fully revised format concerning "Gem Butterflies" because the common usage Caribbean nomenclature for *Electrostrymon* is generally in error and requires a complete and separate review. This separate review is necessary because although some Caribbean taxa may belong in *Electrostrymon*, others appear to belong in (or be closely related to) genera described in the present volume of UWSP ***Reports***. Thus, study of the Antillean fauna must wait until all relevant generic names are available.

We point out the major mainland components of *Electrostrymon* below. Also, to emphasize the existence of undescribed Neotropical Eumaeini species also referable to *Electrostrymon*, we describe a new species from Trinidad-Tobago.

Species of *Electrostrymon* Included Herein

Electrostrymon endymion (Fabricius). Photoplate VI,4 [added at proof], A. Male, female. Morphology, Fig. 3.

Electrostrymon nubes (H. H. Druce). Photoplate VI, 4,B. Male, female. Morphology, Fig. 3. Types dissected and examined BMNH.

Electrostrymon joya (Dognin). Photoplate VI,4C. Male, female. Types dissected and examined BMNH.

Electrostrymon canus (H. H. Druce). Photoplate VI, 4D. Male, female. Types dissected and examined BMNH.

Electrostrymon grumus,
NEW SPECIES
Photoplate VI,4E; Fig. 7.

DIAGNOSIS. ***Wings***. Known female DHW blue-white across posterior two thirds framing black marginal spot at cell CuA1. This differentiates readily from *E. nubes* (DHW brown) but confuses with species of *Ministrymon*. VFW,VHW similar to *E. nubes* and *E. endymion* (most like latter with more disjunctive HW medial band elements). Disjunctive band elements, however, again resemble *Ministrymon azia* Hewitson (see Morphology).

Morphology typical *Electrostrymon*— most like *E. nubes* but with ductus bursae, relative to size of genital terminus, only about one-half length of that in *nubes* (Fig. 3) and with robust terminal lamellae heavily sculptured along the antevaginal lip (Fig. 7).

DESCRIPTION. ***Male***. Unknown. ***Female***. DFW brownish black, DHW same but with bright blue-white over posterior two-thirds framing black marginal spot at cell CuA1. HW with white marginal line, short tail at CuA1, longer tail at CuA2. VFW, VHW ground light beige; FW with vague orange postmedial band from costa to cell CuA2, FHW with brighter medial band, orange-based, white distally, disjunctive enough to appear slightly wavy from costa to anal area, anal area with "W" element not much larger than angled elements costad; limbal area with slight red-orange Thecla-spot and black at base of anal angle. FW length: 12.0 mm.(holotype). ***Female Genitalia***. Fig. 7, bottom. Ductus bursae very short compared to *E. nubes*, terminal triangulate lamellae some one-half length of ductus bursae and heavily sculptured along the lamella antevaginalis. This habitus is similar only to *E. nubes* but latter shows a greatly elongate ductus bursae and diminutive lamellae more typical of congeners.

TYPE. Holotype female, TRINIDAD-TOBAGO, Trinidad, Arima Valley, 28 January 1962, leg. Bernard Heineman, deposited AMNH.

REMARKS. The holotype was identified as *Ministrymon azia* by AMNH general curatorial staff but stood out by its larger size and more expansive pattern elements. Dissection showed the species belonged in *Electrostrymon*. *Ministrymon* female genitalia bear little resemblance to the habitus of Electrostrymon (see Johnson, K. and L. D. Miller 1992, The genus *Ministrymon* Clench 1961 in Chile and a new species from the Northern Desert Biotic Province. Acta Ent. Chilena 16: 183-192).

ETYMOLOGY. From the Latin for "thick" or "grainy" referring to the distinctive DHW color.

Caribbean *Electrostrymon*.

For the most recent usages concerning *Electrostrymon* in Caribbean region see Riley (1975). Although not monophyletic, we suspect this nomenclature will persist into the new Caribbean guide by D. Spencer Smith and L. D. and J. Y. Miller (Oxford University Press). It is unfortunate that Clench did not choose an Antillean species as the type of *Electrostrymon*. *Electrostrymon sensu stricto*, necessarily tied to its mainland type species *Papilio endymion*, gives a very different complexion to the group in the Antilles than Clench intended. It is clear by morphology that disparate groups like *Pendantus*, *Gigantorubra*, *Rubroserrata* and *Kisutam* are all relevant to the various structural features shown in Antillean "*Electrostrymon*".

APPENDIX II

An Overview of the Neotropical *Eumaeini* by Genera Available as of 1993, Formalizing Certain Subgroups.

Introduction

There have been numerous requests for an updated list of generic names in the Neotropical Eumaeini including the many recent publications of the senior author. A list, with various abbreviated comments, is provided below. The list also formalizes certain subgroup names used in recent publications.

For genera where revisionary work has been done by the senior author, or him and colleagues, a count is provided of the number of species which have been elaborated in a full revisionary format. Because of uneveness of treatment in other historical studies of the Eumaeini, the list cannot be definitive concerning groups not directly revised by the present authors. For such groups no taxa counts are given. However, in parentheses after each generic entry, certain other comments are generalized by symbols keyed at the end of the list.

Since the present list is appended to a specific revisionary study, repetitious or additional literature citations are avoided by providing recent descriptive sources within the initial infratribal entries only. For genera not recently described, or published by authors other than Johnson *et al.*, Hemming [1967, The Generic Names of the Butterflies and their Type-Species (Lepidoptera: Rhopalocera), Bull. BMNH Supp. 9, 509 pp.] should be consulted. For certain other entries not included in the bibliography of the major text, a general knowledge of historical literature (especially publications of the AME, NMNH, Lepidopterists' Society or C. A. Bridges) should lead one readily to other original descriptions.

The list reflects the categories used for curation at the AMNH. In 1993, the AMNH incorporated a large number of new Eumaeini specimens into the AMNH collection. A count of the *Neotropical* [emphasis added] Eumaeini in the collection prior to this incorporation totalled 8,798; a count after the incorporation totalled 15,127. The latter number does not include some other specimens still requiring preparation or labelling.

NEOTROPICAL EUMAEINI GENERA

EUMAEUS SECTION *sensu* Eliot (1973)

Infratribe **CALLOPHRYINA** (from taxa first proposed by Johnson 1990 [Appendix], 1992 and Johnson, Eisele and MacPherson 1993, UWSP *Report* 39) (infratribe also includes Holarctic members of Johnson, K. 1992, Neue. Ent. Nachr. 29: 141 pp.).

Cyanophrys Clench (21**,+,+-,+++)
Plesiocyanophrys Johnson, Eisele and MacPherson (2**, +++)
Antephrys Johnson, Eisele and MacPherson (3**)
Cisincisalia Johnson (2**, depending on species included may include *Loranthomitoura* Ballmer and Pratt but most of latter are Nearctic).
[Note: Holarctic genera which pertain to the Callophryina include *Sandia* Clench, *Xamia* Clench, *Incisalia* Scudder, *Callophrys* Billberg, *Mitoura* Scudder, *Cissatsuma* Johnson, *Novosatsuma* Johnson, *Ahlbergia* Bryk and *Deciduphagus* Johnson (Nearctic forb-feeding *"Incisalia"*].

Infratribe **THECLOXURINA** Johnson (from taxa first proposed by Johnson 1990 [Appendix], 1992)

Thecloxurina Johnson (13**,+-)
Pons Johnson (5**)
Abloxurina Johnson (5**)
Candora Johnson (7**)
Pontirama Johnson (8**,+-)
Rhamma Johnson (27**, +-)
Shapiroana Johnson (7**)
Paralustrus Johnson (5**,+-)
Penaincisalia Johnson (15**,+-)
Galba Johnson (2**)
Radissima Johnson (7**,+-)
Variegatta Johnson (2**)
Lamasa Johnson (3**,+-)
Solanorum Johnson (3**,+-)

Infratribe **CALYCOPINA** (from taxa first proposed by Johnson 1991a)

Calycopis Scudder (25**,+-,++,+++)
Calystryma Field (11**,+-,++,+++)
Serratofalca Johnson (6**,+-)
Klaufera Johnson (6**,++,+++)

Gigantofalca Johnson (3**,+++)
Distissima Johnson (2**,++)
Serratoterga Johnson (3**,++)
Terminospinissima Johnson (5**,++,+++)
Furcovalva Johnson (2**,++)
Cyanodivida Johnson (2**,++)
Morphissima Johnson (7**,++)
Profieldia Johnson (replaced *Fieldia* Johnson) (3**, ++,+++)
Femniterga Johnson (11**)
Tergissima Johnson (4**)
Kroenleina Johnson (2**,++)
Antrissima Johnson (2**,++)
Reversustus Johnson (2**,++,+++)
Mercedes Johnson (8**,++)
Argentostriatus Johnson (8**,+-)
Iaspis Kaye (6**,+,++,+++)

Infratribe **ANGULOPINA** (from taxa first proposed by Johnson 1991a, 1993 and Johnson and Kroenlein 1993)

Angulopis Johnson (21**,+-)
Pendantus Johnson and Kroenlein (6**)
Rubroserrata Johnson and Kroenlein (7**)
Kisutam Johnson and Kroenlein (3**)
Electrostrymon Clench (4**,u)
Gigantorubra Johnson (19**)
Crimsinota Johnson (7**)
Ziegleria Johnson (7**)
Nicolaea Johnson (7**)
Rindgea Johnson (2**)

Infratribe **THEREUSINA** (from taxa first proposed by Robbins 1991)

Rekoa Kaye (**,+-)
Thereus Hübner (u)
Noreena Johnson, MacPherson and Ingraham (11**, #+)
Contrafacia Johnson (4**,#+)
Orcya Johnson (12**,#+)
Atlides Hübner (u,+-)
Brangas Hübner (u)

Infratribe **STRYMONINA** (from taxa in recent work by Johnson, Eisele and MacPherson, 1988, 1990 AME Bulletins 123, 49 pp., 130, 77 pp. and Johnson, Miller and Herrera, 1992, Acta Ent. Chilena 17: 107-146).

Strymon Hübner (30**,+,+-,++,+++,u) [still appears nonmonophyletic vis-a-vis type species]
Eiseliana Ajmat de Toledo (7**,+)
Heoda Johnson, Miller and Herrera (6**).

"Gem Butterflies"— overall, a nonmonophyletic assemblage but at least with names available for its various monophyletic clades grouped as genera below; as noted in present revision, the "Group" was formed to facilitate recognition and loan purposes.

Nesiostrymon Clench (5**,+)
Terra Johnson and Matusik (7**)
Uzzia Johnson (3**,++)
Dicya Johnson (3**,++,+++)
Celmia Johnson (2**,++,+++)
Caerofethra Johnson (6**,++,+++)
Aubergina Johnson (3**,++,+++)
Sipaea Johnson (2**,++)
Tigrinota Johnson (10**,+-)
Dolymorpha Holland (r,u)
Ignata Johnson (3**,++)
Arases Johnson (5**,+-)
Chlorostrymon Clench (8**,+,+-)
Chalybs Hübner (4**,u)
Sarracenota Johnson, Eisele and MacPherson (4**,u,++)
Androcona Johnson, Eisele and MacPherson (3**,u,++)
Necmitoura Johnson, Eisele and MacPherson (1**)
Ministrymon Clench (23**,+,+-,++,+++)

Miscellaneous Other Genera Currently Not Subgrouped

Panthiades Hübner (**,n)
Oenomaus Hübner (**,n)
Cycnus Hübner (**,n)
Olynthus Hübner (**,n)
Parhassius Hübner (**,n)
Michaelus Nicolay (**,n)
Symbiopsis Nicolay (**,n,+++)
Magnastigma Nicolay (**,n,+++)
Ocaria Clench (u)
Theclopsis Godman & Salvin (u)
Lamprospilus Geyer (u)
Pseudolycaena Wallengren (u)
Allosmaitia Clench (u,#)
Heterosmaitia Clench (u,# see *Rekoa*)
Janthecla Robbins and Venables (**,r)
Tmolus Hübner (u,c)
Arawacus Kaye (u)

Micandra Staudinger (r)
Mithras Hübner (r)
Macusia Kaye (r)
Denivia Johnson (5**, +-, + +)
Cryptaenota Johnson (2**,u)
Evenus Hübner (u)
Arcas Swainson (**,n)
Paiwarria Kaye (u)

"*Thecla*— New World Eumaeini" u,c (many species still not placed to genus). Bridges (1988) lists those taxa prior to subsequent work by Johnson *et al.* above and others.

TRICHONIS SECTION *sensu* Eliot 1973

Trichonis Hewitson (**,r)
Theorema Hewitson (u)

SYMBOL KEY

[number] includes total number, to date, of taxa fully elaborated from studies of type material

** fully elaborated from type material by Johnson and colleagues

+- various authors added additional taxa after the above

**,n see work of S. S. Nicolay

**,r see work of R. K. Robbins and colleagues

+ full elaboration after OD done by Johnson and colleagues

++ additional species known but descriptions not prepared

+++ additional species known, descriptions prepared or in preparation.

r redefined from type material in recent work but not fully elaborated

u historical name, unelaborated

u,c historical name, unelaborated and a frequent common usage "catch-all"

status changed or questioned by another author

#+ status maintained here if (i) change was simply result of lowering a cladistic node for generic recognition and (ii) autapomorphies are present

Three Remarkable New Species of *Strymon* Hübner From Brazil and Ecuador (Lepidoptera, Lycaenidae, Theclinae)

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NO. 35

ABSTRACT

Three new species of *Strymon* Hübner (tribe Eumaeini), not externally suggestive of the genus but unequivocal by structural character, are described as *S. alexandra*, *S. rojos* and *S. altamiraensis*, respectively. *S. alexandra* is one of the "bluest" known eumaeines and reminiscent of members of the traditional "*Thecla strephon*- Group" of Draudt; *S. rojos* resembles the "red-banded" members of the genus *Nicolaea* Johnson, and *S. altamiraensis* appears more like members of *Ministrymon* Clench. Since all the specimens appear to derive from lowland primary rain forest, divergent external characters may represent extreme autapomorphic innovations on the part of these taxa. The species exemplify the problem of "look-alike" taxa in the Eumaeini. To further aid identification of strikingly marked *Strymon* species, additional photographs are published for the following recently described *Strymon* species also known from few specimens: male of *S. campbelli* Johnson and Salazar, female of *S. glorissima* Johnson and Salazar, male of *S. trunctogen* Johnson and Salazar.

INTRODUCTION

This paper describes three species of *Strymon* Hübner which were not associable with that genus until dissected. Hitherto, the specimens had been placed with unidentified Eumaeini not associable by external characters with any particular genus.

Specimens of these species, respectively named here as *S. alexandra*, *S. rojos* and *S. altamiraensis*, gave conflicting external clues as to generic affinity. *Strymon alexandra* (perhaps the bluest eumaeine known to the senior author) suggested only brilliant members of the traditional "*Thecla*" *strephon*-Group of Draudt (1919). *Strymon rojos* appeared like members of the "red-banded" "*Thecla*" *basidia*-Group of Draudt (1919) (some members, along with other "bright red *Thecla*" Johnson (in press a) included in the new genus *Nicolaea). Strymon altamiraensis* appeared somewhat like members of *Ministrymon* Clench but had other external characters conflicting with this diagnosis.

The species were recognized when the authors dissected numbers of specimens currently on loan to the AMNH which showed no particular external generic affinity. Since structural features of *Strymon* are unequivocal in both males and females (Johnson, Eisele and MacPherson 1990, Johnson and Salazar 1993, Johnson and Sourakov, in press) it was decided to describe the new species here as a further elaboration of this speciose genus. Subsequent to submission and review of this paper, the senior author became aware of additional unusual *Strymon* species, either discovered during the study of other groups or called to his attention by reviewers. These additional taxa led to development of a separate paper concerning the frequency of "look-alike" taxa in the Eumaeini (Johnson and Kroenlein, in press) and the discernment of one new genus comprised of such members (Johnson, in press b). Because of the sheer number of such "look-alike" taxa, the present paper was left intact to contain three new species of *Strymon*. All the above studies, and a recent catalog of historical and new Polyommatinae (Bálint 1993), point up the fact that numerous species of Neotropical Lycaenidae remain unrecognized in world collections due either to initial misdiagnosis of gender or improper placement as to genus or "*Thecla*" group. It is hoped that clear delineation of numerous of these taxa, by morphological comparison and reference to type specimens, will provide an impetus for improving the "real" knowledge of species diversity not only in *Strymon* but many other groups of Neotropical Eumaeini.

TAXONOMIC DESCRIPTIONS

For convenience we refer to the species groups of *Strymon* noted by Johnson, Eisele and MacPherson (1988) and Johnson and Salazar (1993) and abbreviate dorsal and ventral fore- and hindwings as DFW,DHW and VFW, VHW respectively.

Species 1.

The following species derives from collections sent to the author by a City University of New York student, Carlos Vela, who collected butterflies in Ecuador along the Napo (Tiputini) River in 1988.

Strymon alexandra,
NEW SPECIES

Photoplate VII,1A; Fig. 1A

DIAGNOSIS. ***Wings.*** Large (FW alar 16.5 mm.); DFW,DHW such brilliant "crusty" powder blue as to not be readily confused with any other eumaeine, extent of thick blue overscaling covering margins of HW and extending nearly to apex of FW (obscuring a blackish FW androconial brand which blends to the black FW apex). VFW,VHW much like "*Thecla*" *malvania* Hewitson (or other similar "*Thecla*", see Draudt 1919, Plate 151) with ground beige-gray with a simple meandering black and brown postmedial HW band offset by orange-red "*Thecla*-spot" submarginad in cell CuA1.

Male genitalia. Typical of "*basalides* Group" of *Strymon* with symmetric elliptical saccus, elongate valvae, and generally straight aedeagus shaft.

DESCRIPTION. ***Male***. DFW ground brilliant grainy [actually "crusty"] powder blue, to an extent not observed previously in Neotropical Eumaeini although familiar in some East Indean hairstreak genera (see Remarks), contrasted only by black FW apex, with blue invading apex and obscuring a suffusive black androconial brand generally concolorous with apical black. HW brilliant blue as FW with very thin black margin and two elongate tails at termini of veins CuA1 and CuA2. VFW, VHW ground beige gray, FW with thin band (basally black, distally brown) extending from costa to cell CuA2, HW with meandering postmedial band colored as on FW. HW limbal area marked with bright red-orange "Thecla-spot" submarginad in cell CuA2. FW length: 16.5 mm. (holotype). ***Female***. Unknown.

Male Genitalia. Fig. 1A. Typical of "*basalides* Group" of *Strymon*. Vincular dorsum with cluster of brush organs; vincular ventrum oblongate and terminating in a symmetric parabolic saccus. Valvae with thin, elongate, caudal extensions tapering from shouldered bilobes, later showing heavy sclerotization along the terminolateral angle. Aedeagus with length exceeding rest of genitalia by length of caecum, latter rather robust; aedeagus shaft mostly straight except for slight bow in the terminal two-thirds; terminus of aedeagus with two lineal cornuti as typical of the genus.

TYPES. Holotype male, ECUADOR, at portage along Rio Napo (Tiputini) near northwest edge of Parque Nacional Yasuni, December 1988, leg. Carlos Vela (see Remarks), deposited American Museum of Natural History (AMNH).

REMARKS. The collector, who became interested in butterflies while a student at the City University of New York, corresponded with the senior author cursorily after returning from the United States to Ecuador. Unfortunately, this contact was interrupted before there was further clarification concerning the exact collecting locality of the holotype specimen. Accordingly, the label data is construed from a letter to the AMNH by Vela, mailed by him prior to his shipment of the holotype and six additional specimens of assorted Theclinae. This latter shipment arrived without additional labels on the specimens and followup correspondence brought no reply. It is known, however, that Mr. Vela supplied specimens representing some other families of butterflies to David Matusik (Field Associate, Field Museum, Chicago) acquired on the same field trip (D. Matusik, pers. comm. to senior author). In earlier correspondence to the AMNH, Mr. Vela expressed his interest in collecting outside of Quito and looked forward to the above-noted trip down the Rio Napo, which appeared to involve some kind of commercial arrangement. Vela noted some reservation about the personal comfort of the trip, its expense, and how much time could actually be spent collecting. It is always possible that these considerations (along with the small result in specimen numbers) led to his abandoning additional collecting activities. The situation remains a curiosity because *S. alexandra* is a unique butterfly and it is still uncertain whether Mr. Vela ever received the followup correspondence acknowledging its discovery. The species was diagnosed as the junior author pursued morphological study of numerous odd Theclinae assembled at the AMNH which suggested no immediate identification as to genus or "*Thecla*" group.

The "crusty" brilliant upper surface blue in *S. alexandra* appears unique among known Neotropical Eumaeini, far exceeding the bright blue of members of the "*Thecla*" *strephon* Group (Draudt 1919) aforementioned. Such crusty blue is more familiar in some groups of East Indean (Borneo, New Guinea) hairstreaks (see Seki, Takanami and Otsuka 1991) and is unmistakable in it brilliance and luster, appearing more like a mineralized "crust" on a geological specimens than the more familiar iridescence known in many Neotropical hairstreak butterflies.

Mention here of *S. alexandra* and the "*basalides* Group" of *Strymon* is tentative since it is based on observation of the male genitalia only. As noted by Johnson, Eisele and MacPherson (1990), females of this group lack a complete spiral in the ductus bursae and show instead only a concave "dip" before the corpus bursae. The female of *S. alexandra* is, as noted above, currently unknown.

ETYMOLOGY. At the request of the junior author, named for a friend Alexandra Jones.

Species 2.

The following species was originally discovered among specimens of unincorporated "Accessions" at the Natural History Museum London (BMNH) and subsequently located in new Ecuadorian material at the AMNH. The BMNH specimens were collected on a Cambridge University Amazon expedition in 1954 and identified, along with several other specimens, as a "sp. nov.". This specimen series proved heterogeneous, containing several other undescribed (but superficially similar) Eumaeini (see Remarks and Johnson and Kroenlein, in press).

Strymon altamiraensis,
NEW SPECIES
Photoplate VII,1B; Fig. 1B

DIAGNOSIS. *Wings*. Very small (FW alar 10.0 mm.) DFW,DHW made further distinctive by vivid fine-grained iridescent azure blue across posterior two-thirds of the HW contrasting bright orange anal lobes with adjacent black tail at vein CuA2. VHW with disjunctive medial band of fine, closely aligned, orange dashes bordered postmedially by whitish suffusion. Among *Strymon* similar only to the much larger *S. valentina* Berg and S. nicolayi Johnson, Eisele and MacPherson of Argentina and therefore more generally confusable with various, more widely distributed, species of *Ministrymon* Clench (see Remarks).

Male genitalia. Typical of *Strymon* species of supralimital character— diagnosed as *Strymon* from basic characters (assymetrical saccus, generally simple tapered valvae, shape of aedeagus) but more robust than in most congeners and showing unique dentation, covered with heavy microtrichia, along the lateral edge of the valval bilobes.

DESCRIPTION. *Male*. DFW and costal one-third of HW brownish black, FW with rather round black androconial brand; DHW with distal two-thirds covered with vivid fine-grained and glossy azure blue greatly contrasting bright orange anal lobes and adjacent black tail at terminus of cell CuA2. VFW, VHW ground light beige, FW crossed by thin orange line from costa to cell CuA2; HW crossed by wider medial band comprised of closely aligned orange dashes bordered postmedially by suffusive white; limbal areas with orange at "Thecla-spot" and anal lobe. FW length: 10.0 mm. (holotype and paratypes). ***Female***. Unknown. ***Male Genitalia***. Fig. 1B. Typical of *Strymon* showing supralimital characters. General characters typical of genus— vincular dorsum with cluster of brush organs, vincular ventrum oblongate terminating in asymmetic parabolic saccus, valvae tapered, aedeagus non-lineal. However, not readily associated with taxa of superficially similar "*valentina* Group" (Johnson, Eisele and MacPherson, 1990, figs. 30-33) because of structural variance in latter (unfortunately common in isolated austral and temperate South American taxa). Valvae with robust, oblongate, and gradually tapered caudal extensions terminating from parabolic bilobes, latter showing a dentate terminolateral margin heavily covered with microtrichia (these not shown among sclerotized elements of fig. 1B). Aedeagus with caecum and shaft both bowed, latter comprising about two-thirds of entire aedeagal length; terminus of aedeagus with two lineal cornuti as typical of the genus.

TYPES. Holotype male, paratype male, BRAZIL, "Alta Mira" [Altamira], Pará State, 21 August 1954, 1954 Cambridge University Amazon Expedition, deposited BMNH; paratype male, ECUADOR, Malacatus, 150 m., 22 March 1941, leg. F. M. Brown, deposited AMNH.

REMARKS. Although this species is quite outstanding, it may have escaped initial detection because of confusion with *Ministrymon* species which show some blue on the top of the hindwing and various red-orange bands beneath. Subsequent discovery of a specimen of *S. altamiraensis* from Ecuador, mixed with unincorporated *Ministrymon* at the AMNH, reinforces the possibility that the *Strymon* species is actually more common in extant collections. *S. altamiraensis* is the second undescribed species the authors found mixed with *Ministrymon azia* (Hewitson) (see Johnson and Kroenlein, in press, under *Electrostrymon*). Actually, various wing markings of *Strymon altamiraensis* differ greatly from *M. azia* (probably explaining why the former was set aside in London as a "sp. nov."). To one who knows *Ministrymon*, *S. altamiraensis* is simply "too blue" above with "too disjunct" a hindwing band beneath to readily resemble *Ministrymon*. Further, the bright orange anal lobes contrasting the uppersurface blue make this little butterfly quite outstanding. Among *Strymon*, the crisp broken VHW band on *S. altamiraensis* is reminiscent of some larger *Strymon* species restricted to temperate and austral areas of South America— *valentina* Berg and *nicolayi* Johnson, Eisele and MacPherson. There is no easy way to verify a possible phylogenetic link, however, since (as typical of numerous isolated temperate and austral Theclinae) interspecific differences in structural characters of the "*valentina* Group" (Johnson, Eisele and MacPherson 1990) are great. The latter allow distinctive isolates to be identified but cause problems with clustering the same over a larger geographic area.

ETYMOLOGY. The name is taken from the original BMNH type locality.

Species 3.

The species described below is from series collected in southeastern Brazil by Gagarin and now housed at the Milwaukee Public Museum (MPM). The specimens were mixed with samples of *Crimsinota socia* (Hewitson) and *Nicolaea cauter* (H. H. Druce) and contained not only this *Strymon* species but another curious *Strymon* and a large undescribed species of *Ministrymon*. The similarity between these latter specimens was so great that even the senior author, very familiar with "look-alike" phenomena

Figure 1

Morphological Features of Unusual Species of *Strymon*

As noted by Johnson, Eisele and MacPherson (1990) and Johnson, Miller and Herrera (1992) the morphological ground plan of *Strymon* is very simple, making recognition of structural groupings within it somewhat difficult. However, wing patterns are very innovative in the genus (as notable in the three species described herein). Accordingly, Johnson, Eisele and MacPherson (1990) designated some species groups for southern South American *Strymon* based on superficial characters useful for diagnostic purposes, although they noted consilence between these characters and some more obvious structural groupings (as in the "*basalides* Group" whose species lack a full spiral in the ductus bursae of females). Johnson and Salazar (1993) noted other structural groupings in *Strymon*, giving characters for a "*melinus* Group" and "*oreala* Group." Johnson, Eisele and MacPherson (1990) and Johnson, Miller and Herrera (1992) showed a consilience of structural and wing pattern characters in the "*eurytulus* Group" of *Strymon* and high andean lineages related to *Strymon*— *Eiseliana* de Toledo and *Heoda* Johnson, Miller and Herrera.

The challenge to continue identifying species groups of *Strymon* with a consilience of wing and structural characters is heightened by the location of taxa with supralimital external characters, as in the case of the species described herein— *S. alexandra*, *S. altamiraensis*, and *S. rojos* whose male genitalia are illustrated on the facing page as **A**, **B** and **C**, respectively.

Format for Figure 1. In each of **A-C**, male genitalia shown in ventral view at left with aedeagus removed and placed at far right in lateral view. Ventral genital view shows left half of labides, vinculum and entire saccus, valvae immediately above the saccus and right half of genitalia replaced by a lateral view of the left valve. For clarity, drawings are shown devoid of microtrichia; particular features are discussed for each species below.

Consistent with previous commentary on *Strymon*, it is diffucult to be conclusive about species group placement when female facies are important as grouping-related data. However, the following interesting observations can be made from the males.

S. alexandra's (**A**) hindwing pattern, suggestive of the "*basalides* Group", is not contravened by the characters of the male genitalia which, like other members of the "*basalides* Group" show a thin vinculum adjacent a broad symmetrical saccus (immediate right of **A**) and elongate undulate aedeagus (far right of **A**). An autapomorphy, apparent to experienced students of *Strymon*, appears in wider and laterally produced sclerotin which slightly sculptures the shoulders of the valvae bilobes (shown near **A** immediately above the saccus). As noted in literature cited hitherto (and Smith, Miller, Johnson and MacKenzie 1991), although all *Strymon* species maintain a basic simple morphological ground plan, some taxa show "minor" but consistent structural autapomorphies in the elements comprising this plan. Innovative sclerotinal sculpturing of valvae in males or the cervix bursae in females is most common and such autapomorphies appear to occur mostly where there has been significant geographic isolation.

S. altamiraensis (**B**), once one has disposed of the superficial resemblance to *Ministrymon*, clearly suggests the "*valentina* Group" in its ventral wing characters, a group hitherto construed as occurring in South America from northern Argentina southward. The wing pattern may be homoplesious. Although the robust genitalia of *S. altamiraensis*, with wide and slightly asymmetrical saccus, depart from the "*melinus* Group" structurally, such departure is typical of other *Strymon* "groups" either defined solely by wing pattern or needing female genitalic data to be informative (e.g. "*crossoea*", "*rufofusca*" and "*valentina*" groups of Johnson, Eisele and MacPherson 1990). Yet, arguing against homoplasy, one must note similarity of features in a known isolate of the "*valentina* Group", *S. montevagus* Johnson, Eisele and MacPherson (1990, fig. 31). As with *S. alexandra*, sculpturing along the lateral edge of the valval bilobe in *S. altamiraensis* constitutes an (*continued behind figure...*)

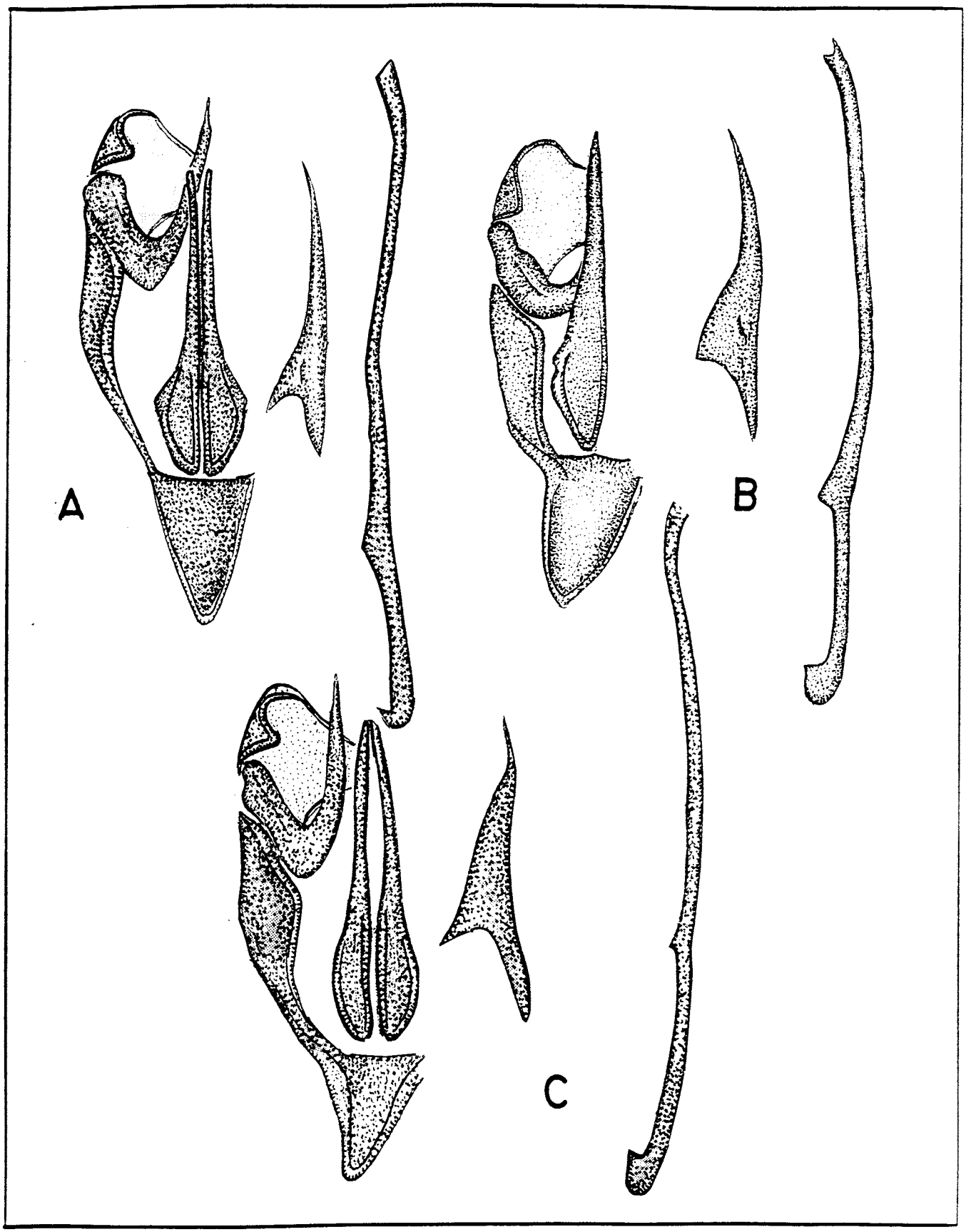
A
B
C

***Figure 1 Caption*, continued...**
autapomorphy illustrated in **B** as a single lobe above the broad saccus and with stout microtrichia aligned along this sculpturing not shown in the present drawing).

S. rojos (C) gives few clues in its wing characters but one is reminded of the "*basalides* Group" in both the DHW blue patch and VHW red elements (indeed similar to the "*Thecla socia*" with which the specimen was first associated by the collector). Structurally, the suggestion of the "*basalides* Group" of *Strymon* is not incompatible with the slightly asymmetrical saccus and elongate aedeagus (also seen in highly autapomorphic group member *S. golbachi* Johnson, Eisele and MacPherson 1990, fig. 19). *S. rojos* shows an odd autapomorphy, a thickened, heavily ridged, juncture of vinculum and saccus (shown ventrally to left of C, unfortunately more apparent in the lateral view). Both *S. rojos* and *S. alexandra* show a prominently angled "elbow" in the falces not previously seen in any *Strymon* by the senior author. The above combinations of facies appear to deny that *S. rojos*, known only from SE Brazil and possibly now extinct, might show some structural similarity to the odd "red" *Strymon*, *S. cyanofusca* Johnson, Eisele and MacPherson, known only from the Valdez Peninsula southward along the coast of Argentina. Rather, as noted in the text of the present paper, it appears more likely that selective factors have put some kind of premium on undersurface red banding, prominent in multigeneric taxa of these regions.

in the Eumaeini, assumed they represented males and females of the same species. The "females" were dissected only "in due course" to allow their illustration in the present paper and proved to be males of a large undescribed *Ministrymon* species. This event spurred drafting of a separate paper concerning bizarre "look-alike" taxa in the Eumaeini even though separate descriptions of some of these taxa had already gone out for review at other journals (Johnson, ms.) and could not be included.

Strymon rojos,
NEW SPECIES
Photoplate VII,1C; Fig. 1C

DIAGNOSIS. ***Wings***. Medium sized (FW alar 14.5 mm.); DHW in male showing block of light silvery blue iridescence across HW limbal area. DFW, DHW otherwise unicolorous blackish but with black androconial brand. VFW,VHW showing grizzled gray ground, crossed on HW by dashed lunulate postmedial band of red, most similar to *Crimsinota socia* and congeners (see Johnson 1993) but more disjunctive and without the lavish blue limbal suffusion of this latter noncongener. Confusable with another SE Brazilian *Strymon* described elsewhere by the present authors (Johnson and Kroenlein, in press) from which it generally differs by (i) the latter species upper surface HW blue occuring in intercellular "blocks" and terminating near the margin with bright red-orange suffusions and (ii) genital characters.

Male genitalia. Generally typical of the "*basalides* Group" of *Strymon* with nearly symmetric elliptical saccus, elongate valvae, and only slightly bowed aedeagus shaft.

DESCRIPTION. ***Male***. DFW and costal one-half of DHW brownish black, posterior one-third of HW suffused light silvery-blue across the limbal area; FW with dark ellipsoid androconial brand barely discernable over blackish ground; HW with tail at vein CuA2 terminus. VFW,VHW ground grizzled beige-gray crossed on FW by suffusive reddish band from costa to cell CuA1; VHW with postmedial band of disjunctive blocklike red elements, each finely outline with grizzled black and brown; limabl area generally suffused somewhat darker brown with scant orange-brown overscaling in cells CuA1 and CuA2. FW length: 14.5 mm. (holotype). ***Male Genitalia***. Fig. 1C. Generally suggestive of "*basalides* Group" of *Strymon*. Vincular dorsum with cluster of brush organs; vincular ventrum oblongate, thickly abutting (especially in lateral aspect) slightly asymmetical and parabolicly shaped saccus. Valvae with caudeal extension thin and elongate, somewhat inwardly recurvate from parabolic bilobes. Aedeagus rather elongate, length exceeding rest of genitalic parts by at least lenght of elongate caecum, latter bowed and comprising two-fifths off aedeagal length; remaining aedeagal shaft slightly bowed with undulation near the terminus; terminus with two lineal cornuti typical of the genus.

TYPES. Holotype male, BRAZIL, Umurarama, São Paulo, 1800 m., 3-15 February 1937, leg. Gagarin, deposited MPM.

REMARKS. The type is somewhat worn; the species must be quite pretty when fresh and it is unfortunate that, in contrast to the other undescribed species of the overall Gagarin series (herein and in Johnson and Kroenlein, in press), paratypical material is not currently known. It is possible that additional specimens may be found in material of the Gagarin collection not yet seen by the senior author. Specimens taken on loan from this collection, for entities of uncertain assignment, were originally culled on an "example" basis and the phenomenon of multigeneric "look-alikes" was not as well known at that time.

One must speculate that considering sympatric and synchronic species of six genera showing bright VHW red bands (*Nicolaea*, *Crimsinota*, *Strymon*, *Ministrymon* [plus two additional new genera (Johnson, in press)], each with very distinctive morphologies and all occurring in areas originally of primary rain forest, some selective value is involved in the occurrence of brilliant undersurface red. As noted by Constantino, Salazar and Johnson (1993) there is further implication concerning the fact that such red is restricted mostly to the hindwing undersurface, contrasting the upper surface display most widely associated with Müllerian mimicry rings. In this regard is should be noted that in at least two of these species (the *Strymon* and *Ministrymon* taxa mentioned above and described in Johnson and Kroenlein, in press) red suffusion has been achieved also on the HW uppersurface.

ETYMOLOGY. The name means "red" in Spanish and denotes the color of the VFW band typifying this species.

Acknowledgements

The authors thank Carlos Vela for the donation of *Strymon alexandra* and BMNH curators P. Ackery and C. Smith, and MPM curators A. Young and S. Borkin for access to the samples which contained the other unusual *Strymon* species. Jean Francois Le Crom, Julián Salazar and Luis Constantino (Bogota, Colombia) kindly reviewed information pertaining to these descriptions and offered comments on contemporaneous South American specimens known to them.

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PHOTOGRAPHIC FIGURES

Photoplate VII, Section 1, as follows:

VII,1A. Dorsal surface, left; ventral surface, right. *Strymon alexandra*, holotype male.
VII,1B. Dorsal surface, left; ventral surface, right. *Strymon altamiraensis*, holotype male.
VII,1C. Dorsal surface, left; ventral surface, right. *Strymon rojos*, holotype male.
VII,1D. Dorsal surface, left; ventral surface, right. *Strymon campbelli*, holotype male.
VII,1E. Dorsal surface, left; ventral surface, right. *Strymon glorissima*, allotype female.
VII,1F. Dorsal surface, left; ventral surface, right. *Strymon trunctogen*, holotype male.

APPENDIX

Distinctive Characters of Recently Described Species of *Strymon*

The present article and Johnson and Salazar (1993) added eight new *Strymon* species to the South American (and particularly Colombian) fauna. Each of these species was extremely distinct, each showed supralimital characters for the genus, and some were not readily recognized as congeneric until morphological study.

To further clarify these distinctive species, taxa with limited photographic coverage in Johnson and Salazar (1993) are figured once again on photoplates herein. In the case of *Strymon glorissima*, a female is figured herein for the first time. Comparison of recently published photographs with numerous contemporaneous Colombian butterfly collections has shown relatively good success in locating additional specimens of recently described taxa. The frequency of these additional identifications has given Colombian workers a high confidence level for describing new taxa from a few specimens, if the taxa are extremely distinctive.

Below are listed briefly the supralimital external characters of the eight species photoplated herein, for rapid reference.

Strymon alexandra— herein, **Photoplate VII,1A.** Dorsal surface with brilliant crusty blue iridescence surpassing the luster and density of any iridescence heretofore observed in the genus, or quite probably, the entire Eumaeini.

Strymon altamiraensis— herein, **Photoplate VII,1B.** Reminiscent of *Ministrymon* species but too blue on the dorsal HW and with too disjunct a ventral HW medial band for this genus. Further, showing a unique vivid contrast of dorsal HW blue, orange HW anal lobe, and elongate black tails.

Strymon rojos— herein, **Photoplate VII,1C.** looking like *Strymon* above, with the silvery blue across the HW that might typify *S. canitus* (H. H. Druce) or *S. crossoea* (Hewitson) but with ventral HW showing deep red lunulate band more familiar in "*Thecla socia*" and other noncongeners*.

Strymon campbelli— Johnson and Salazar 1993, **Photoplate II,3C.** Wing shape angulate with FW outer margin appearing very short compared to expanse of angulate HW; FW with dusky elongate and angulate androconial brand quite unlike any congener; ventral ground dusky with only slight semblance of orange medial HW band typifying many *Strymon*.

Strymon glorissima— Johnson and Salazar 1993, **Photoplate II,3AB.** Extremely large, as large or exceeding *S. oreala* (Hewitson) and/or *S. gabatha* (Hewitson); dorsal silvery-blue iridescence extremely bright in both sexes with elongate black FW brand in male; ventral facies with medial band of large red orbicular marks in both sexes.

Strymon trunctogen— Johnson and Salazar 1993, **Photoplate II,3E.** Upper surface flecked deep azure blue like the *Strymon megarus* (Godart), *S. arola* (Hewitson) assemblage but differing completely below by a simple lunulate brown HW medial band more reminiscent of the *S. diaguita* (Hayward), *S. eremica* (Hayward) assemblage.

*It should be noted that this species occurs sympatric and synchronic with another new *Strymon* species, not described here but subsequently (Johnson and Kroenlein, in press). For completeness here, this latter new species can be distinguished from *S. rojos* by the former showing distal red-orange suffusion in the dorsal HW blue field and, on the ventral HW, a pattern of red-orange more like the *Thecla volumen* (Druce) complex (genus *Nicolaea* Johnson), not *Thecla soccia* (genus *Crimsinota* Johnson).

Hairstreak Butterflies of the Genus *Argentostriatus* (Lepidoptera, Lycaenidae, Theclinae)

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ABSTRACT

The genus *Argentostriatus* Johnson 1991 is revised to add four new species, *A. eitschbergeri*, *A. wolfii*, *A. mysticus* and *A. roraimaevagus* along with geographic data on the previously listed congeners *A. calus* (Godart), *A. clarina* (Hewitson), *A. clarissa* (Draudt), *A. matho* (Godman & Salvin),*A. tamos* (Godman & Salvin). The new species derive, respectively, from old tropical forest collections from the Guyana Shield, Brazilian Amazon region and southeastern Brazil. Genitalia of type specimens not previously illustrated are figured. Previously, *A. calus* has been considered an "isolated" lineage in the Eumaeini of uncertain sister relation. The new species are sisters of *A. calus* and have evidently escaped detection because their upper surfaces, contrasting the bright blue of *A. calus*, are drab or brown. Curators apparently did not check the undersurfaces of these specimens which clearly show the ventral traits of *A. calus*. With new additions, the genus is pan-Neotropical, the well-known taxa showing marked regions of sympatry. *A. matho* extends southward into the scattered northern Argentine tropical forests, as has been shown recently for many species of tropical Eumaeini.

INTRODUCTION

I described *Argentostriatus* in 1991 to contain members of the *Thecla* "*calus*" and "*clarina*" species groups of Draudt (1919). I noted at that time two species that remained undescribed. A third has been discovered subsequently. I also noted that among congeners, *A. calus* (Godart) has been considered quite an "isolated" taxon (Draudt 1919) with search for sister taxa of this divergent species an important aspect to further delineation of the group. In 1992 I completed curatorial work on most of the historical (curated and uncurated) materials pertaining to this hairstreak group, particularly at the Natural History Museum in London (BMNH). This allowed amplification of the known distributions of the species as well as further search for specimens of the undescribed species. Subsequently, other new congeners were discovered in the old Gagarin material from southeastern Brazil (Milwaukee Public Museum, MPM) and from Mt. Roraima material at the AMNH. Thus, the purpose of this paper is to revise the genus *Argentostriatus*, adding the distributional data and new species. The group now appears fully pan-Neotropical with significant sympatry between the more well-known species. Two of the new species are from areas of sympatry with previously known congeners. The other two taxa are from areas well known for endemism— Brazilian coastal forest and the Roraima Plateau.

MATERIAL AND METHODS

Collections. Specimens were studied from the Allyn Museum of Entomology, Florida Museum of Natural History (AME); American Museum of Natural History (AMNH); Natural History Museum, London (BMNH[1]); Carnegie Museum of Natural History (CMNH); Field Museum of Natural History (FMNH); Instituto Zoología, Fundación Miguel Lillo (IML); Milwaukee Public Museum (MPM); and Muséum National d'Histoire Naturelle (Paris) (MNNH). In certain cases (AME, CMNH, FMNH) material had been received by loan on a synoptic basis and therefore may not include all the unsorted holdings of those depositories representing the genus. Specimens from private collections of Henri Descimon (Marseille, France), Robert C. Eisele and Bruce MacPherson (Jujuy, Argentina), Julián Salazar E. (Cali, Colombia) and David Matusik (Skokie, Illinois) were also included with some representative specimens deposited at the AMNH.

Terminology. Generally, morphological terminology follows Johnson (1991) as summarized and cited therein by him (including abbreviation to DFW,DHW and VFW,VHW respectively for dorsal fore- and hindwings, ventral fore- and hindwings). On the male DFW some species show various clusters of androconial (pheremonal) scales. Eliot (1973) (and many other authors, e.g.; Johnson 1991) have referred to these as "brands". However, in *Argentostriatus* and other tropical groups (like *Iaspis* Kaye, see Johnson 1991) such clusters are often "diffuse". Concerning the valvae in males, I use the terms "bilobes" and "caudal extensions" familiarized in many recent publications by Johnson and the term "vincular ventrum" to refer to the overall shape of vinculum (or genital ring) when seen in ventral view. I continue use of the terminology for terminal tergites initiated by Field (1967a,b) and, thereafter, Johnson (1988; 1989a,b; 1990a & 1991) *e.g.* "subcordate incised posterior cavity" [abbreviated *sipc*]. The term "brush organ" is used consistent with Eliot (1973) to refer to bundles of elongate microtrichia which clear to the vinculum dorsum when genitalia are removed by dissection. General terms used in abbreviated fashion include OD (original description), TL (type locality), N etc. (north, etc.), C (central), GP(s) (genitalic preparation [s]), LD (locality description), ID (identified

[1] I use this abbreviation consistent with the United Kingdom ("UK") statutory name "British Museum (Natural History)" which, for legal purposes in the UK, has remained unchanged.

by). Geographic data is listed on an "as is" basis as read by the author with localities conformed to Rand McNally & Company (1992) supplemented by U.S.B. G.N. (1961-1968).

TAXONOMY

Format. An abbreviated diagnostic format is used for previously described taxa. Full descriptive format is used for new species.

Considering new species, the genus is divided for the first time into two species groups, the "*tamos* Group" including those species with unicolorous VFW 's inside the submargins and the "*calus* Group" for species showing inside the submargins a bold blackish-brown triangulate patch (heretofore associated only with *A. calus* (Godart)).

Photographs of adults are keyed to glossy photopages interspersed in the volume (for this study Photoplate VII, Section 2 ("VII,2") as labelled thereon to genus and species. Line drawings are keyed to captioned illustrations included within this number. In the generic diagnosis below, general DFW,DHW traits are noted first (since pinned collections usually face workers with this surface); following are the more distinctive traits of the VFW,VHW.

GENERIC SYNOPSIS

***ARGENTOSTRIATUS* Johnson**
Photoplate VII,2, Figs. 1,2,5
Argentostriatus Johnson 1991: 37. Johnson and Llorente Bousquets 1992: 9-11.

DIAGNOSIS. ***Wings.*** Most generally— of moderate size (FW 13.5-15.0 mm.) with FW and HW apices sharply angled; males with DFW,DHW showing bright structural color (silvery blue to violet iridescence) greatly contrasting dark brown and black apical grounds, females colored brown (sometimes with contrasting areas of flat blue gray or violet). Most outstandingly, VHW showing yellow to yellow-brown ground crossed by a bright silver or silver-white band bent to a "W-shape" between cells CuA2 and 3A (band wide [to 1.5 mm.] in *tamos* Group, narrow [< .5 mm.] in *calus* Group).

Other hairstreaks showing an outstanding "W-shaped" element near the anal margin have this feature in cells CuA1 to 2A (Calycopis/Calystryma grade ingroup, see Johnson 1991); other Eumaeini showing a thick silverish VHW band (*Chlorostrymon* Clench) have green, particularly chartreuse, grounds (see revision by Johnson, 1989).

Male Tergal Morphology and Genitalia. Fig. 1. Compared to other Eumaeini with a W-shaped VHW band, subcordate incised posterior cavity ("*sipc*" after Johnson 1991) of terminal tergites showing dorsum of ovate to pent- or octagonal shape with no strongly produced lateral or terminal lobes. Genitalia with lateral surface of vinculum very wide (from labides to saccus) but angulate at each elemental juncture; valvae with ventrum dominated by a robust base greatly contrasting shorter, often spikelike or very angulate, caudal extensions. Aedeagus robust and often elongate (exceeding length of rest of genitalia by one-fourth to two-fifths) and with caecal and shaft elements often bowed or curvate. Interspecific differences usually involve overall shapes and components of the vinculum, valvae and/or aedeagus.

Female Tergal Morphology and Genitalia. Fig. 2. Compared to other Eumaeini with a W-shaped VHW band, terminal tergites with no unusual modifications. Genitalia with ductus bursae occurring as a robust tapered tube terminating in curvate lamellae (comprised of a widely bilobate inferior lobe curving contiguously into a more expansive dorsal lobe), cervix bursae occurring as a flat and spatulate juncture to the ductus bursae. Interspecific differences usually involve overall shape of ductal structures from the lamellae to the cervix bursae.

DESCRIPTION. See Johnson 1991, pp. 37-38.

TYPE SPECIES. *Thecla tamos* Godman and Salvin 1879-1901 [1887] by original designation.

SYNOPSIS OF SPECIES

***tamos* Species Group**

VFW inside submarginal or postmedial lines generally unicolorous yellow or yellow brown; VHW with silver band often wide and usually bold.

***Argentostriatus tamos* (Godman & Salvin)**
Photoplate VII,2A; Fig. 22AB Johnson 1991.
Thecla tamos Godman & Salvin 1879-1901 [1887].
Argentostriatus tamos: Johnson 1991: 38.

DIAGNOSIS. ***Wings.*** Primarily Central American and most similar to *A. matho* (Godman & Salvin) of western South America with which it shares the greatly tapered (costal to anal) shape in the VHW silver band and dulled dark azure blue dorsal color. However, differing from *A. matho* by showing consistently wider and swollen

band (*matho*'s greatly tapering to anal area) and, in the limbal area, lavish black crescent markings framing red or orange lunulate marks (*matho* conservative in limbal area with marked much less jagged and red or orange much less pronounced).

Morphology. Male genitalia with narrow vinculum, saccus widely parabolic saccus, valvae with rather rectangulate bilobe bases fluting to a sharp shoulder before narrow, inwardly curving caudal extensions.

GENITALIA. ***Male***. Johnson (1991) p. 85, fig. 22A. *Sipc* very simple— a rather pentagonal plate concave centrally along terminal margin. Genitalia with vincular ventrum narrow tapering to robust parabolic saccus. Valvae with rectangulate bilobe bases fluting to a sharp shoulder before narrow, inwardly curving, caudal extensions with length about equal to bilobes. Aedeagus elongate with broadly bowed shaft comprising about three-forths aedeagal length, caecum diminutive and also bowed. ***Female***. Johnson (1991) p. 85, fig. 22B. Ductus bursae straight to slightly fluted (southward range) terminating in two prominent ductal struts that support a broad superior plate with gradually rounded lateral margins (plate some one-fourth total genital length) and at anterior with somewhat swollen cervix bursae ventrum; corpus bursae with paired dendritic signa characteristic of calycopines.

TYPE. Holotype male, BMNH, labelled "R. Sucio, Costa Rica, H. Rogers, Godmam-Salvin Coll. 1912.-23. B.C.A. Lep. Rhop. Thecla tamos G. & S., Type. Sp. figured, type, B.M. Type No. Rh. 931", GP K. Johnson.

DISTRIBUTION. *Spatial*: Fig. 3. From Chiapas State, Mexico southward into the Cauca Valley area and region of Bogotá, Colombia (see Remarks). ***Temporal***: the few dated specimens show dates from July to September.

REMARKS. Although known throughout Central America, not well represented in collections (noted "rare" in deciduous woodland and montane rain forest by Ross 1976); generally found in collections where local collectors have sampled an area concertedly. The veracity of old specimens from Colombia needs to be investigated in relation to *A. matho* of subsequent entry. Ideally, current specimens with good data are needed to clarify the relation of *A. tamos* and *A. matho* (of subsequent entry) along the cusp of South and Central America. Although the genitalia of the types of these species differ radically, the precise relation of populations in a verified contact zone, if any, requires elaboration. The complexity of the assemblage is emphasized out by the appearance of a new taxon described herein as *A. roraimaevagus*. It perhaps testifies to the insular nature of species in this group. If these species show low density and isolation within moist tropical forest habitats, it is quite possible that several species are involved both regionally and as highly localized endemics.

MATERIAL EXAMINED. See type above. COLOMBIA. Canache, 1 male (AMNH); Cundinimarca, September 1903, 1 male (AMNH); Cundinamarca, Conache, leg. M. de Methan, 1900, 2 males (BMNH); Novella Grenada [=Colombia], 1 male, 1 female (BMNH). COSTA RICA. Irazu, 6-8000 ft., leg. H. Rogers, 1 male (AMNH). GUATEMALA. Varieda des VauRies, 4 July 1947, 1 male (AMNH). MEXICO. Chiapas, San Geronimo, 300 ft., 1 female, leg. Godman & Salvin; PANAMA, Chiriqui, El Volcan, February 24, 1936, 1 male, 1 female (AMNH).

Argentostriatus matho **(Godman & Salvin)**
Photoplate VII,2B; Fig. 1B,2A.
Thecla matho Godman & Salvin 1879-1901 [1887]
Argentostriatus matho: Johnson 1991: 38.

DIAGNOSIS. ***Wings***. South American; most like *A. tamos* but differing by the extreme taper of the VHW silver and the conservative markings in the limbal area (showing less jagged edging of duller red or orange cellular orbs).

Morphology. Male genitalia distinctive by, among other characters, widely bifurcate falces (see Remarks); valvae very robust, widely shouldered in bilobes with short, outwardly angled caudal extension. Female genitalia with fluted ductal habitus terminating with rather trapezoidal superior plate, broadly flat along the terminal margin and supported by two prominent ductal struts.

GENITALIA. ***Male***. Fig. 1B. Dorsum of *sipc* simple, with centrally concave terminal margin. Male genitalia with robust vinculum, angulate near base of falces and falces showing terminal bifurcation (see Remarks). Saccus of moderate length (about equalling valve length) and with terminus blunt to slightly knob-ended. Valvae ventrally with greatly rounded shoulder in the bilobes and caudal extensions short (one-half bilobe length) and stout, but shortly recurved outward at the terminus. Aedeagus markedly less robust then in *A. tamos* and elongate, shaft rather straight contrasting bowed caecum. ***Female***. Fig. 2A. Ductus bursae typified by robust, caudally fluted tube, terminating in the posterior with prominent lateral struts supporting a superior genital plate in the form of a produced and angulate dorsal plate;

in the anterior by a narrowing and slightly undulate habitus adjacent to the cervix bursae ventrum; corpus bursae with paired dendritic signa characteristic of calycopines.

TYPE. Holotype male, BMNH, labelled "Carimang R., B. Guiana, H. Whitely, Godman-Salvin Coll. 1912.-23. B.C.A. Lepd. Rhop. Thecla matho G. & S., type, B.M. Type No. Rh. 932", GP K. Johnson.

DISTRIBUTION. ***Spatial***: Fig. 3. Circum-Amazonian in a rather classic fashion (see Remarks). ***Temporal***: the few dated specimens shown dates from August to April.

REMARKS. Old specimens from Colombia with generalized data need verification by current specimens in relation to the status and distribution of *A. tamos*. The available old specimens maintain the identity of the respective type specimens but rechecking from modern samples regarding possible sympatry would be immensely helpful. If more material was available, additional morphological analysis from the intervening areas suggested by the currently known distribution would also be useful. With such radical morphological differences displayed by respective type specimens, it appears likely that not only *A. tamos* and *A. matho* are distinct but that there may be more diversity in the latter assemblage itself. This likelihood is supported by the peculiar facies of the Mt. Roraima population described immediately below.

MATERIAL EXAMINED. See type above. BOLIVIA. "Bolivia", also noted as "Thecla matho, coll. Hewitson", 1 male (BMNH). COLOMBIA. Environs Bogotá, no other data, 1 male (MNHN); Novella Grenada (=Colombia), 1 female (BMNH); GUYANA. Carimang River, leg. Whitely, 2 males (BMNH); Bartica, March-April 1901, 1 male (BMNH);. FRENCH GUIANA. "French Guiana" leg. Whitely, 1 male (BMNH); St. Laurent de Maroni, 1909, leg. Le Moult, 2 males, 2 females (MNHN). PERU. Pumayaca, Dept. Loreto, August 1933, 1 male (AMNH); Huanuco, Cayumba Puente, 2750 ft., 24 October 1947, leg. J. M. Pallister, 1 male (AMNH). SURINAM. Essequibo River, 1 male (BMNH); Christianburg, 1 male (BMNH).

Argentostriatus clarissa **(Draudt)**

Thecla clarissa Draudt 1917-1924 [1920]

Argentostriatus clarissa: Johnson 1991: 38.

DIAGNOSIS. Little known, with extant specimens departing somewhat from prominent features of original description. Original description notes reddish tint along VHW band and profused limbal red. Specimens attributed to *clarissa* herein show thin lineal VHW silver band suffused reddish orange along distal margin and with quite light suffusion of red-orange around the limbal area.

TYPE. Type originally in Draudt collection, and perhaps found recently by G. Lamas in his fortuitous discovery of numerous Draudt types still extant in Europe. TL: São Paulo, Brazil.

DISTRIBUTION. ***Spatial***: Fig. 3. Aside from type locality, noted herein from MNHN specimens westward in Paraná State, Brazil (see Remarks). ***Temporal***: Not precisely known.

REMARKS. The status of this species requires elucidation from its type, if it has been rediscovered by Lamas. The single specimen from western Paraná known to me is at the MNHN and shows only very light suffusion along the submarginal limbal area. The relation of such specimens should be studied in more detail not only to the type of *clarissa* (if extant) but to western South American material of *A. matho*. It is possible that the red-suffused *clarissa* is not specific from *A. matho*, but, given the characters of the falces in the latter species, this may not be difficult to determine if true *clarissa* can be located. It is also possible that *clarissa* may be a species of *Mercedes* Johnson 1991 (species have thin silver bands, among other characters, differing from *Argentostriatus*). I did not dissect the MNHN specimen because I did not anticipate this revisionary work at the time of my last visit there.

MATERIAL EXAMINED. BRAZIL. Paraná, Londri[na?], no other data, 1 male (MNHN) (see Remarks).

Argentostriatus roraimaevagus,
NEW SPECIES

Photoplate VII,2C; Fig. 1A.

DIAGNOSIS. ***Wings***. Large (FW alar 14.0 mm.); male DFW blackish above, DHW with dark azure blue patch posterior of vein CuA1 undulating basally along anal margin; VHW with two silver-white bands, first the typical one (produced costally, tapered anally), the second formed by wide white lining (edged distally black) around entire limbal area from costa to anal margin; limbal area lavishly suffused blue-white, Thecla-spot greatly orange.

Morphology. Known male with reduced valvae, radically ovate in the bilobes and with hardly any caudal extension save a slight point (Fig. 1A "a,b"); saccus stout and short, aedeagus extremely robust in shaft and caecum.

DESCRIPTION. ***Male***. DFW blackish, DHW same but with dark iridescent azure blue patch occurring

from medial to submarginal area; HW with short tail at CuA1 terminus, long tail at CuA2 terminus, anal lobe not greatly emphasized. VFW, VHW ground brown; FW with postmedian band (black basally, white distally) very thin from costa to cell CuA2; HW with emphatic silver-white band produced at costa, tapering steeply in anal area to an emphatic "W"-shaped element lined basally black and more widely with distal white. Limbal area lavish, outlined by second silver-white band enclosing limbal elements from costa to anal angle. Limbal area with CuA1 Thecla-spot distally black, surrounded by orange; adjacent cells with blue-white suffusion extending toward costa; anal angle basally black. These limbal elements differ markedly from *A. matho* just north on the Guyana Shield. FW length: 14.0 mm. (holotype). ***Female***. Unknown. ***Male Tergal Morphology and Genitalia***. Fig. 1A. *Sipc* dorsum of rather pentagonal shape, concave at center of terminal margin. Genitalia with vinculum extremely robust, rounding from labides to short, stout, and rather flat-ended saccus. Valvae very robust, reduced to stout, widely hemispherical, bilobes which terminate merely in a short point, showing no appreciable caudal extension (see Remarks). Aedeagus extremely robust, length exceeding rest of genitalia by only part of caecum length and with shaft and caecum both arched and of generally even contour.

TYPES. Holotype male, Mt. Roraima, Brazil, "Aradupu 4200'", 26 December 1927, Lee Garnet Day Expedition, deposited AMNH (see Remarks).

DISTRIBUTION. ***Spatial***: Fig. 3. Currently known only from the type locality (see Remarks). ***Temporal***: known only from the December type data.

REMARKS. Johnson and Smith (1993) recently described another species unique to material from the Lee Garnet Day Expedition at the AMNH. It appears that the above specimen, herein made the holotype of *A. roraimaevagus*, shows the same endemicity of *Cyanophrys roraimiensis* (a species with sister taxa restricted, oddly, to Jamaica). The curiosity of the new *Argentostriatus* taxon is its illustration that within the *A. matho* assemblage occur some highly divergent, and extremely localized, populations strongly suggesting species distinction. This fact must be considered not only in regard to assessing the statuses of *A. tamos* and *A. matho*, but for its strong suggestion that, within the wider *A. matho* assemblage, additional localized endemic species may occur. Certainly, distinctions in the structural characters of the three taxa included in the present revision are outstanding. The importance of these distinctions is further emphasized by the rarity of specimens in the *tamos* Group and their frequent association with "damp tropical forest" habitat notations. If the latter ecological association is indeed typical of this Species Group, compred to the "generalist" reputation of widespread *A. calus* of the subsequent Species Group, great care must be taken in working out the taxonomy of the *tamos* and *matho* assemblages. The need for biological study is strongly suggested in regard to the reality of sister species and sister lineages.

ETYMOLOGY. The suffix "vag[us]", meaning "roamer", is added to the general name of the type locality.

GROUP DISCUSSION

Prior to my 1991 seminal work, species of this Group had been separated from those of the group treated just below (Draudt 1919 and other authors). Draudt called the Group just treated the "Clarina-Group" (1919: 797) and separated *Thecla calus* Godart from it as the "Calus-Group" (1919: 797). Concerning the latter group, Draudt called *calus* "the only representative". He also strongly emphasized the "*Morpho*-blue" of *calus*. Aside from the fact that I have discoverd non-blue sister species of *calus*, I do not use the name "*clarina* Group" for the group treated just above. This is because, of all the *Argentostriatus* taxa, *clarina* has the most divergent morphology. If any species deserves to be removed from the overall generic assemblage, it is *clarina* (testifying to how feeble external characters are in deciphering relations in the genus). However, because morphologies of taxa isolated to Mexico and Central America often appear divergent (see also *Tigrinota hypocrita* in the following revision of *Tigrinota*), and to be taxonomically conservative, I leave *A. clarina* in the genus (but as a separate, monotypic, Species Group).

calus Species Group

VFW inside submarginal or postmedial lines with bold black or brown triangulate patch covering the entire mediocostal area; VHW with silver band thin and lineal, sometimes obscured.

Argentostriatus calus **(Godart)**
Photoplate VII,2D; Fig. 5AB.
Thecla calus Godart 1819-1824 [1824]
Argentostriatus calus: Johnson 1991: 38.

DIAGNOSIS. ***Wings***. Traditionally identified by the characters cited above for the Species Group along

Figure 1

Male Genitalia of *Argentostriatus*

Format for males of *Argentostriatus*: **a**, genitalia, ventral view, with aedeagus removed, "a" placed directly above paired valvae; **b**, valve, lateral view; **c**, aedeagus, lateral view; **d**, dorsal plate of *sipc* figured x.33 other elements.

A. *Argentostriatus roraimaevagus*, holotype male (AMNH).

B. *Argentostriatus matho*, holotype male (BMNH).

C. *Argentostriatus clarina*, lectotype male (BMNH).

D. *Argentostriatus wolfii*, holotype male (BMNH).

E. *Argentostriatus eitschbergeri*, holotype male (BMNH).

Figure 2 (overleaf)

Female Genitalia of *Argentostriatus*

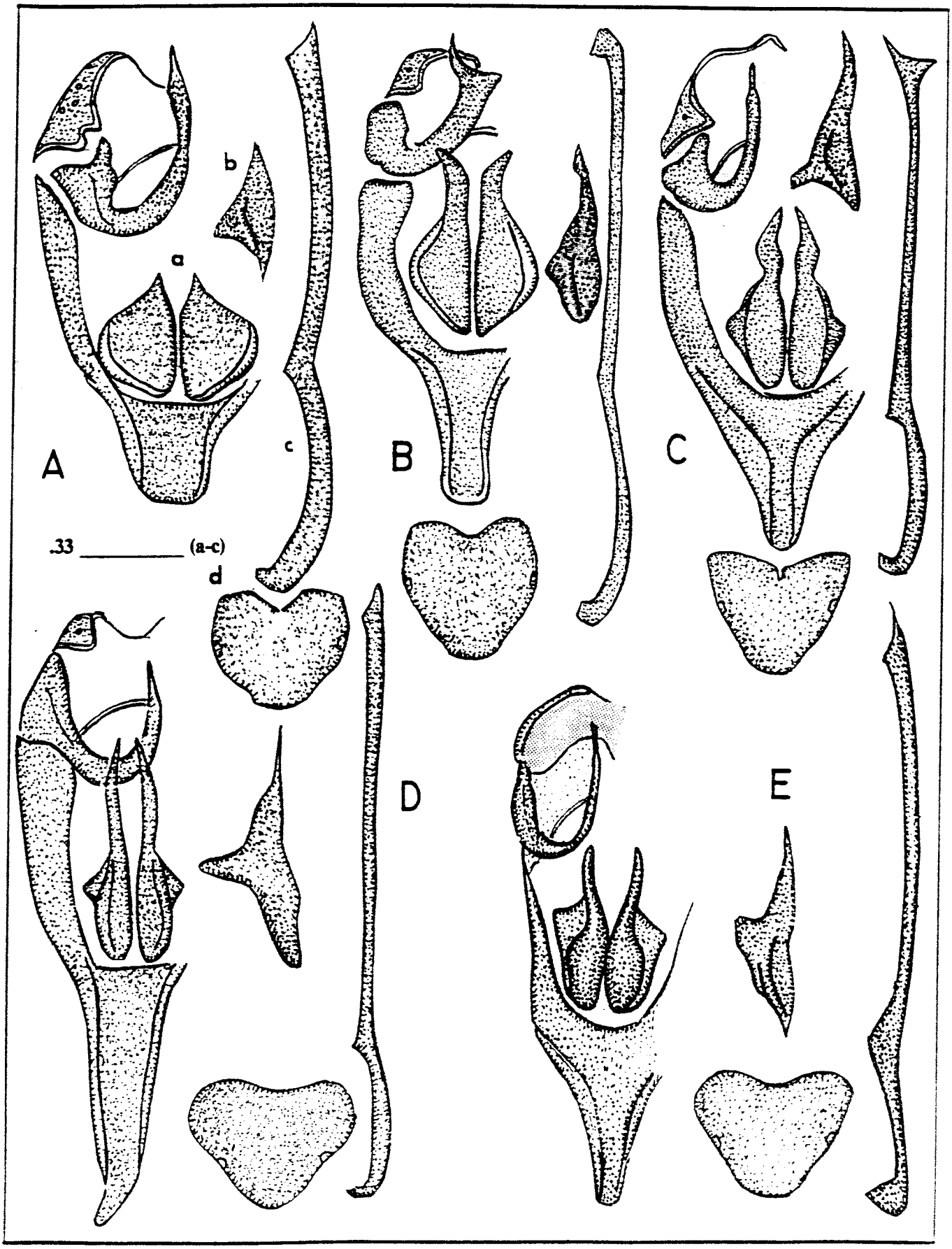
Format for females of *Argentostriatus*: **a**, genitalia, including lamellae, ductus bursae and ventrum of cervix bursae, ventral view.

A. *Argentostriatus matho*, female, St. Laurent, French Guiana (MNHN).

B. *Argentostriatus wolfii*, allotype female (BMNH).

C. *Argentostriatus eitschbergeri*, allotype female (BMNH).

D. *Argentostriatus mysticus*, holotype female (MPM).


a
b
c
d
A
B
C
D
E
.33 _____ (a-c)

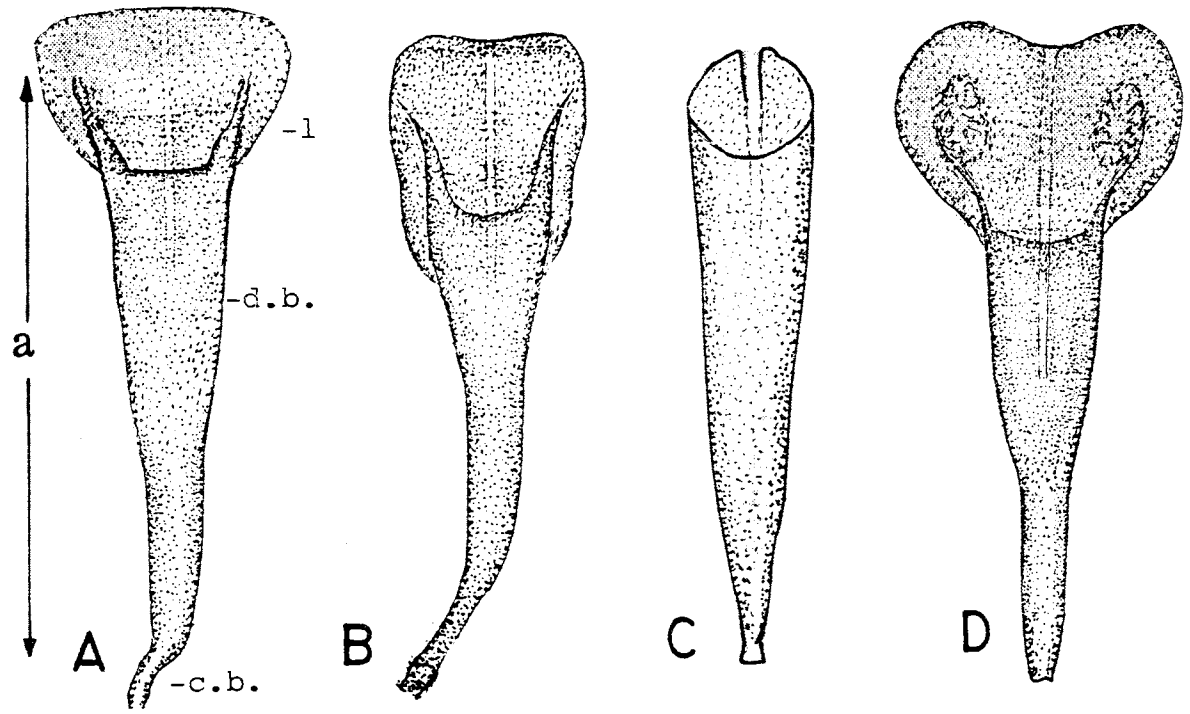


Figure 2

Figure 3 (facing page). Distributions of *Argentostriatus, tamos* Species Group

***tamos* Subgroup**

- ◒ *Argentostriatus tamos* ⊖ *Argentostriatus roraimaevagus*
- o *Argentostriatus matho*
- ⊖ *Argentostriatus clarissa*

***clarina* Subgroup**

- ● *Argentostriatus clarina*

Note: Due to occurrence of several species at some sites, symbols are occasionally clustered

? indicates generalized data

?+/- indicates possible intermediate population suggesting conspecifity

with the occurrence, in males, of bold brilliant structural color (iridescent blue) on base to submargin of FW and medial area to submargin on HW; HW with single elongate tail. With additional sister species now discovered, compared to rest of *calus* Group as follows: larger than *A. wolfii* and *A. eitschbergeri* (*calus* FW alar generally 12.0 - 15.0 mm.) and with extremely bold dorsal structural color as noted above; sister taxa are dull steel blue to sheened peuter blue in males. Females DFW, DHW dull fuscous to fuscous with a slight gray-violet sheen (VFW, VHW as on males); these are less separable from females of sister species except by size and genitalia.

Morphology with males showing extremely robust, triangulate and asymmetrical saccus, valvae with robust oblongate bilobes lacking lateral shoulders of sister taxa and with narrow recurvate caudal extensions; females with robust "wrench"-shaped ductus bursae terminating posteriorly with robust shouldered lips and anteriorly with a swollen cervix bursae.

DESCRIPTION. ***Male***. DFW,DHW brilliant iridescent blue from base to submargin of FW and medial area to submargin on HW; HW with single elongate tail at vein CuA2. VFW,VHW ground yellow-brown crossed on FW with narrow blackish submarginal line and marked with bold black to brown-black triangulate patch across medial area of wing (outlined distally with white). HW with narrow silver-white lineal band extending straight from costa and bending to a radical "W" in anal area; limbal area with orange to yellowish Thecla-spot and bold black suffusion between latter and black anal lobe. FW length: 12.0 - 15.0 mm. (Material Examined). ***Female***. DFW,DHW fuscous brown covered with violaceous-gray from base to postmedial areas; VFW,VHW similar to males. FW length: 12.0-14.5 mm. (Material Examined). ***Male Tergal Morphology and Genitalia***. Fig. 5A. *Sipc* dorsum rather ovate except for flattened terminal margin covered with thick microtrichia. Genitalia with extremely robust, triangulate and asymmetrical saccus. Valvae with robust and broadly elliptic bilobes lacking any lateral shoulders or wing-like projections and with recurvate caudal extensions of about same length as the bilobes. Aedeagus robust, caecum bowed and comprising about one-third aedeagal length; shaft slightly bowed and slightly fluted terminally. ***Female Genitalia***. Fig. 5B. Ductus bursae forming a robust "wrench"-like shape with posterior terminus marked by robust and shouldered lamellal lips variously expansive from shaft of ductus depending on specimens; anterior with cervix bursae notably swollen.

TYPE. Type material was not located in the Godart material at the MNHN (Paris) (Johnson 1991a), see Remarks.

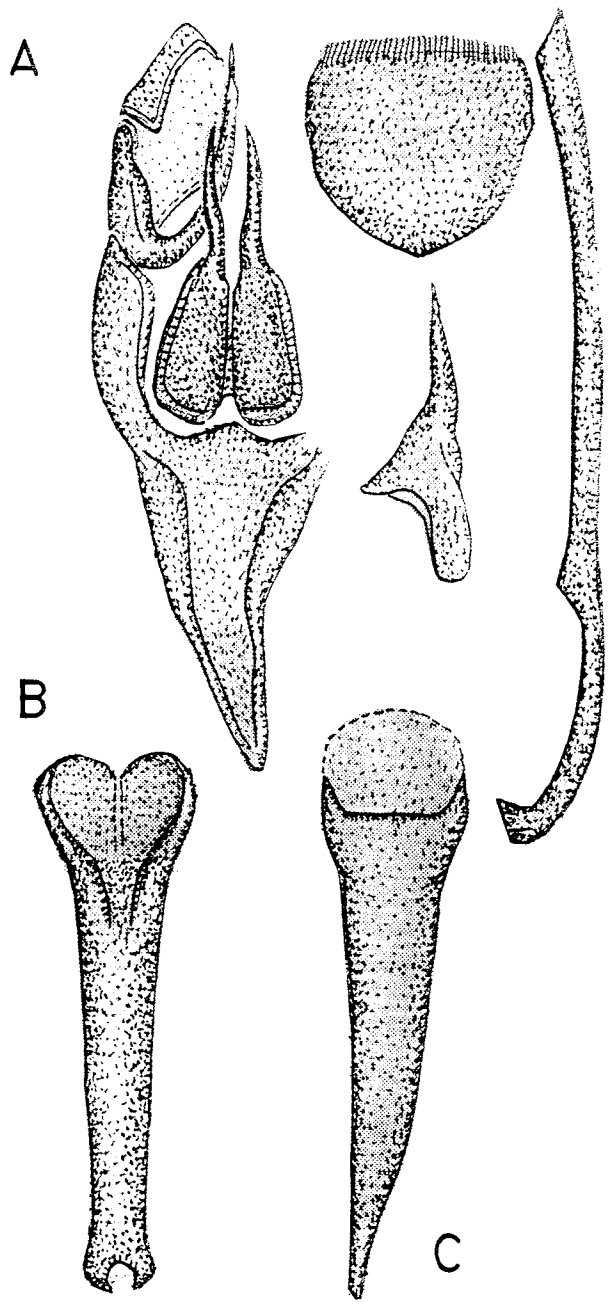


Fig. 5. Genitalia of *Argentostriatus calus* and *A. clarina* female (elements figured as in Figs. 1,2. **A.** *A. calus* male, Santander, Colombia (AMNH); **B.** *A. calus* female, same data; **C.** *A. clarina* female, Jalapa, Mexico (AMNH) --- = slight terminal damage; for male see Fig. 1C.

DISTRIBUTION. *Spatial*: Fig. 4. A very "generalist" distribution, extending from the Panamanian region throughout South America, west in the trans-Andean region south to southern Bolivia, east to Paraguay and SE Brazil, and through the Amazon basin as no other congener. Also across the Guyana Shield (only here and in SE Brazil occurring with previously undescribed sister taxa). *Temporal*: year-round occurrence in the tropical zones is strongly suggested.

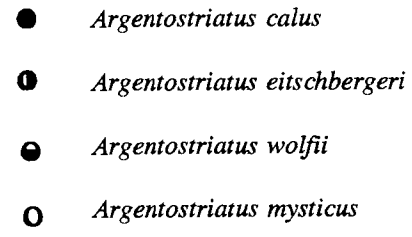
REMARKS. Although Godart types have been documented at the MNHN (see Johnson 1991a), the type of *Polyommatus calus* was not located among Godart specimens in the special care of the MNNH curators. It remains to be seen if the type can be discovered by a subsequent worker.

Remarks under the Group Discussion of the *tamos* Species Group pertain here. As noted, *A. calus* has previously been considered an "isolated species". However, from basic phylogenetics it could have been predicted this was not true and I thus initiated a search for immediate sister taxa. Having discovered the sister species described in subsequent entries, it is apparent now that such taxa went unnoticed because they differ mostly in their males lacking (or showing very diminutive) structural color. "*Morpho*-blue" structural color has been the principal superficial character associated previously with *A. calus*. Fortunately, sister taxa lacking male structural color are easily recognized because they show the VFW black triangulate patch also characterizing *A. calus*. I am not the only worker who noticed this; one of the new species described herein had been placed near *A. calus* in the BMNH and marked "sp. nov.". The other new species come from BMNH "Old Accessions" (Johnson and Smith 1993) and from early SE Brazilian material at the MPM (noted for containing many endemics).

The fact that immediate sister species of *A. calus* exist is interesting for the same reasons pointed out above for the *tamos* Species Group. Previously unknown sister taxa are most often localized endemics; however, the areas from which they hail are usually noted for endemism. Thus, one can conduct the search for localized endemics either by characters or by distribution areas (a fact very helpful when facing large quantities of unsorted material). In the present case, two sister species of *A. calus* hail from the Guyana Shield. By now this is not a surprise. The number of instances in which the Guyana Shield hosts a localized or regional endemic, shown to be sympatric with a sister species of much wider distribution, are now nearly myriad in the Theclinae. However, it is important to add these new *Argentostriatus* species to this evergrowing list. Just as SE Brazilian endemism has made the Gagarin Collection (MPM) important, so are the vast collections from the Guyana Shield made by early expeditions of the MNHN.

MATERIAL EXAMINED. [diacriticals employed as on labels]. BOLIVIA. Santa Cruz de la Sierra, 2 males (BMNH); Cochchabamba, Yungas del Espirito Santo, leg. Germain, 1 male (BMNH); Chulumani, beginning of wet season, S. Cruz de las Sierra, 2000 m., December, leg. Steinbach, 1 male (BMNH); Rio Surutu, E. Bolivia, 2 male, 1 female (IML); "Envs. Bolivie", 2 males (MNHN). BRAZIL. Pará [=Belém], leg. Miles Moss, 1 female (BMNH); Chapada, Mato Grosso, leg. H. H. Smith, 1 male (BMNH); Sao Paulo de Olivenca, S. Wachner 19-33, 1 female (BMNH); Sao Paulo de Olivenca, leg. Staudinger, 1 male, 1 female (BMNH); Paraná, Castro, 2900 ft., leg. Jones, 1 male, 1 female (BMNH); Sao Paulo, upper Amazons, leg. Bates, 3 males [labelled "calus 1, 2, & 3"]; Amazons, leg. Bates, 1 male, 1 female (BMNH); Sao Paulo de Olivenca, 1880, leg. de Methan, 2 males, 3 females (BMNH); Tonantins, 1880, leg. de Mathan, 1 male, 1 female (BMNH); Matto Grosso [sic], Chapada, leg. H. H. Smith, 1 male (CMNH); Matto Crosso [sic], leg. Jacobsen, 1 male (CMNH); Matto Grosso, Chapada dos Veneiros, leg. E. de Goyas, 1 male (MPM); Parana, Rolandia, May 1948, leg. A. Maller, 1 male (AMNH); Rio Madeiro, Manicore, leg. E. May, 1 male, (MPM); Amazonas, Santarem, 24 March 1030, 1 male (MPM); "Amazons", nod, 1 male (BMNH). COLOMBIA. "Colombia", leg. Le Moult, 7 males (BMNH); "Bogota", 1898, 1 male (BMNH); "Bogota", nod, 1 male (AMNH); "Bogota", 1889, 1 male (BMNH); "Bogota", leg. Lidday, 1 female (BMNH); Canache, Cundinimarca, September 1963, 1 male (BMNH); Canache, 3 males (BMNH); "Novella Grenada" [=Colombia], nod, 1 male (BMNH), same data but leg. de Methan 1899, 1 male (BMNH); Env. Bogotá, 1917, leg. Fr. Apollinaire, 3 males; same data but 1917, 2 males (BMNH); Cauca Valley, Dist. Pereira, 18-86, 1 male (BMNH); Rio Orteguaza, 15 September 1947 "in the forest", 1 male (AMNH); Santander, Rio Suarez, 1 male (AMNH). ECUADOR. Paramba, 3500', April 18-97, dry season, leg. Rosenberg, 1 male (BMNH); Paramba, J. J. Joicey Coll., 1 male (BMMH); Balsapto, March 1939, leg. F. M. Brown, 2 males (AMNH); Aguarico, Ecuador, November, 1 male, leg. H. Decsimon, 1 male (AMNH); Banos, Tungaruhua, February 1939, leg. F. M. Brown, 1 male, 1 female (AMNH); "Envs. Equatuer", 2 males (MNHN); Banos, nod, 2 males (FMNH). FRENCH GUIANA. St. Laurent de Maroni, 1909, leg.

Figure 4. Distributions of *Argentostriatus, calus* Species Group



Note: Some symbols represent tightly clustered local sites

? indicates uncertain location or data

Le Moult, 2 males, 1 females (MNHN); Rives de Maroni, 1909, leg. Le Moult, 3 males, 2 females (MNHN). GUATEMALA. Polochic Valley, coll. Godman & Salvin, 2 males (BMNH) GUYANA. Fort George, Sept. 1891, 1 male, 1 female (BMNH); "British Guiana", leg. Parish, 1 male (BMNH); Bartica, leg. H. S. Parrish, 1 male (BMNH). NICARAGUA. "Nicaragua", leg. Mari-Lopez, 1 (BMNH) male; Chontales, leg. T. Best, 1 male (BMNH). PANAMA. Barro Colorado, 21 March 1945, leg. C. D. Michener, 1 male (AMNH). PARAGUAY. Sapucay, 11 April 1904 [read from 4/11/04] leg. Foster, 1 male (AMNH); Cordillera, Santissima-Trinidad, leg. D. Podtiaguin, 1 male (AMNH). PERU. Pebas, Amazons, December 1906, leg. de Mathan, 1 male, 1 female (BMNH); La Merced, 7 November 1901 [read from "vii ix 1901"], leg. Simons, 1 male (BMNH); Chanchamayo, November 1904, C. S. Gchunke, 1 male (BMNH); Tarapoto, 1 male (BMNH); Chambireyacu, Urimaguas, June-August 1885, leg. de Mathan, 1 male, 1 female (BMNH); Iquitos, 1932, leg. G. King, 2 males (BMNH); Iquitos, January 1939, leg. Kluge, Descimon collection, 2 males, (AMNH). SURINAM. Surinam, leg. Fruhstorfer, 1 male (BMNH); Paramaribo, Oct.-November 1923, leg. T. T. Dyer, 2 males, 1 female (BMNH). VENEZUELA. Caripito, 9-20 March 1942, 1 male, 1 female (AMNH).

Argentostriatus wolfii,
NEW SPECIES

Photoplate VII,2E; Figs. 1D,2B.

DIAGNOSIS. ***Wings.*** Male very dull steel blue above, contrasting brilliant congeners and, on FW, with diffusive black-suffused patchlike androconial brand dominating the distal area of the discal cell; female similarly dull steel blue above, only slightly shinier at the wing bases. VFW with prominent dark brown costo-medial patch of *calus* Group but VHW with white medial band very thin and bordered thickly by basal black.

Morphology. Male genitalia with extremely elongate and terminally assymetrical saccus (length equal to rest of genitalia from saccus base to posterior of labides); valvae of extremely narrow habitus and elongate in both bilobes and caudal extensions. Female genitalia with fluted ductus bursae showing slight terminal antrum and with an elongate superior plate.

DESCRIPTION. ***Male.*** DFW,DHW fully dull steel blue, FW with diffusive black-suffused patchlike androconial brand dominating distal area of discal cell. HW tails typical of genus. VFW,VHW ground yellow, FW with deep brownish-black costomedial patch, HW with very thin white medial band markedly bordered with thick black basal line, area of wing distad of anal "W"-element marked lavish blue and gray across the anal lobe and with bright yellow at the Thecla-spot. FW length: 10.0 mm. (holotype). ***Female.*** DFW,DHW similar to male, although lacking brands, and showing shinery lighter blue suffusion at the wing bases. VFW,VHW as on males. FW length: 10.0 mm. (allotype). ***Male Tergal Morphology and Genitalia.*** Fig. 1D. *Sipc* more laterally expansive than congeners. Genitalia with vincular ventrum tapered anteriorly to an extremely elongate and terminally assymetrical saccus, length of latter equal to rest of genitalia from saccus base to posterior tip of labides. Valvae of narrow habitus compared to congeners, robust bilobes and elongate, somewhat terminally hooked caudal extensions broken only by slight laterally sculptured flaps at their juncture. Aedeagus elongate, length longer than already elongate genital habitus; shaft straight, caecum concave, former exceeding three-times length of latter. ***Female Genitalia.*** Fig. 2B. Ductus bursae elongate and fluted toward posterior, anterior slightly curvate laterally at the cervix bursae. Ductus terminus with slight antrum in terminal one-third, showing robust ductal struts supporting a rather elongate superior plate (nearly twice length of that seen in *A. matho*, for instance).

TYPES. Holotype male, allotype female, BRAZIL, Pará (=Belém), leg. A. Miles Moss, deposited BMNH. ***Paratype.*** BMNH: one female, same data as primary types.

DISTRIBUTION. ***Spatial***: Fig. 4. Known only from the mouth of the Amazon River from historical material of Miles Moss (see Remarks). ***Temporal***: the type material is undated.

REMARKS. The collections of A. Miles Moss from the area of Pará (=Belém), Brazil just following the turn of the century are extremely rich. The richness of the sample is compounded by Moss's concerted collecting while a longterm resident of the area. It is only unfortunate that many of his smaller specimens have poor data. It is possible that Moss gave such myriad smaller "unknowns" his last priority. Some of the unique Theclinae in his collection are labelled "rare", indicating that Moss was aware of the sparsity of some of the local Theclinae, even if he did not know the groups to which they belonged. As noted under *A. calus*, this species was placed with *A. calus* in the BMNH and noted as "sp. nov.". The additional paratype was located in BMNH "Old Accessions". The Miles Moss material at the BMNH, both in the general collection and in Old Accessions, is a "must" for

sorting when considering diversity in any Theclinae group.

ETYMOLOGY. Patronym for Mr. Werner Wolf, German lepidopterist and colleague of Dr. Eitschberger at the Marktleuthen Museum, in gratitude for his dedicated effort in seeing the monograph of Palaearctic "Elfin" butterflies (Johnson 1992) through press.

Argentostriatus eitschbergeri,
NEW SPECIES
Photoplate VII,2F; Figs. 1E,2C.

DIAGNOSIS. ***Wings.*** Small (FW alar 9.0 mm.), male showing dull (but solid) peuter blue basad of the discal cell on FW and in a well-defined hemispherical area bordering prominent black marginal line on HW; female completely dull with slight blue sheen. VFW, VHW of both sexes typifying *calus* Group but with HW band extremely thin, mostly blackish and contrasting vivid black (i) across the anal lobe to the HW tail and (ii) as a marginal line.

Morphology. Male genitalia with thinly tapered saccus; valvae with angulate wing-like extensions protruding laterally from lobate bilobes with short fingerlike caudal extensions immediately adjacent; female genitalia uniquely occurring as as a simple fluted tube with no produced terminal plates,

DESCRIPTION. ***Male.*** DFW dull (but solid) silvery blue basad of the discal cell, distal area of wing with suffusive black brand of indistinct shape shading into darker wing apices; DHW with dull silvery-blue in a well-defined hemispherical area bordering prominent black marginal line on HW. HW tails typical of genus. VFW,VHW with ground yellow-brown, FW with blackish brown costomedial patch typical of *calus* Group and with HW showing extremely thin, mostly blackish, band marked by black suffusion throughout the area of the "W"-element from the anal margin to the wing tail and with a prominent black marginal band around the wing. FW length: 9.0 mm. (holotype). ***Female.*** DFW,DHW ground pale gray-brown with slight violet-blue medial to submarginal; lacking brands; VFW,VHW as on males. FW length: 9.5. (allotype). ***Male Tergal Morphology and Genitalia.*** Fig. 2E. Male genitalia with vincular ventrum of generally tapered habitus, sweeping toward tapered and pointed and "blunt" saccus; valvae with (1) angulate wing-like extensions protruding laterally from (2) more lobate bilobes and (3) adjacent short fingerlike caudal extensions of about equal length. Valvae in lateral view with shape defined by above three elements, caudal extensions appearing somewhat serrate along their dorsal margin. Aedeagus relatively robust, length exceeding rest of genitalia only by a portion of the caecum. ***Female Genitalia.*** Fig. 2C. Habitus of ductus bursae a simple robust tube greatly fluted towared the posterior and opening in a wide, nearly ovate terminus without any notable adjacent lamellae or terminal plate.

TYPES. Holotype male, FRENCH GUIANA, Guyane Francaise, leg. C. Bar, allotype female, Fort George, Guyane Francaise, Sept. 1891, Rothschild Bequest, both deposited BMNH. ***Paratypes.*** One female, Fort George, Guyane Francaise Dec. 1891 (BMNH); two females, Fort George, 2 Nov. 1891, leg. E. W. Ellacombe (BMNH).

DISTRIBUTION. ***Spatial:*** Fig. 4. Currently known only from localities on the Guyana Shield. ***Temporal:*** the type material is dated from September to December.

REMARKS. The types were were located in BMNH "Old Accessions" (see Johnson and Smith 1992).

ETYMOLOGY. Patronym for Dr. Ulf Eitschberger, Marktleuthen, Germany, whose interest in the Palaearctic "Elfin"-like Theclinae paved the way to eventual publication of my long monograph on that unique Old World fauna.

Argentostriatus mysticus
NEW SPECIES
Photoplate VII,2G; Fig. 2D.

DIAGNOSIS. ***Wings.*** Known female large (FW alar 13.0 mm.) showing completely warm brown DFW, DHW with VFW showing very black triangular discal mark typifying species group. Grounds of VFW,VHW very yellow compared to congeners and with VHW band extremely thin, more rounded than congeners, with a less severe "W" at anal area contrasting lavish limbal markings highlighted by a blue-suffused Thecla-spot.

Morphology. Known female showing fluted ductus bursae with terminal two-fifth antrumnal and with widely bilobate hemispherical superior plate, each lobe showing membranous convolutions at the tips of the supporting ductal struts.

DESCRIPTION. ***Male.*** Unknown. ***Female.*** DFW,DHW showing completely warm brown ground, HW with very elongate tail at CuA2. Grounds of VFW, VHW very yellow compared to congeners; FW with bold blackish-brown triangulate patch typical of Species Group; HW with silver-white band extremely thin, more rounded than congeners and with a less severe "W"-shaped element

in anal area. Limbal area vividly contrasted, with yellow-orange at the Thecla-spot and suffusive sky blue in cell adjacent anal lobe (latter black at base and edged white and blue). This description is short but the distinctiveness of this habitus is most obvious in photographs, even black and white, because of the overall modification of details of pattern in this species which make it appear quite unique. Although the description sounds straightforward, I think it is the lineal nature of the medial HW band, contrasting the exotic limbal area, that appear most when viewing the taxon first hand (see Remarks). FW length: 13.0 mm. (holotype).

Female Genitalia. Fig. 2D. Ductus bursae fluted caudally, with entire terminal two-fifths forming a broad antrum terminating with prominent ductal struts supporting a wide and bilobate superior plate, each lobe of which shows membranous convolutions at the tips of the struts in a "window"-like fashion; corpus bursae with platelike, dendritically margined, signa as typical of the genus.

TYPE. Holotype female, BRAZIL, Independencia, Petropolis, 900 m., E.- do Rio, 25 August 1938, leg. Gagarin, deposited MPM.

DISTRIBUTION. *Spatial*: Fig. 4. Currently known only the type locality, perhaps an early coastal forest locality. ***Temporal***: known only from the August type data.

REMARKS. As mentioned earlier by Johnson (1993) and Johnson and Kroenlein (1993a,b) the Gagarin Collection at the MPM holds numerous valuable specimens collected in coastal areas of SE Brazil before the extreme deforestation of recent years. It will be interesting to see which of these species can be located in other historical material from the region and from recent collections. Among *Argentostriatus* species the thin band on *A. mysticus* more approximates that of *A. calus* and *A. clarina*. It is possible that the species has some primitive relation to the latter species, but this can only be clarified with further knowledge of poorly known SE Brazilian *A. clarissa*.

ETYMOLOGY. Latin, meaning mysterious or enigmatic, referring to the uniqueness of this singular specimen from Gagarin's early SE Brazilian material.

GROUP DISCUSSION

As noted hitherto, Draudt (1919: 797) separated *Polyommatus calus* Godart from other Theclinae with yellowish VFW,VHW ground colors and a silver-white medial VHW band, and recognized a monotypic "Calus-Group" with *calus* "the only representative". Strongly emphasizing the "*Morpho*-blue" DFW, DHW color of *calus*, Draudt apparently did not know of sister species of *calus* which show typical *calus*-like VFW,VHW markings (VFW black triangulate mark, VHW band thin and lineal) but little or no structural color above (even in their males). Draudt was probably also giving deference to the appearrance of DFW androconial brands on *calus* males and, in addition, called particular attention to the elongate CuA2 tail on *calus* (which he considered as a singular trait). The latter as a character is very subjective, considering the group as a whole (and Draudt's original text). Other species of this Group have a least a short stub at CuA1 and Draudt also mentioned a singular tail for *A. clarina*, a species which he placed in a different Species Group. With the discovery of additional sister taxa of *calus*, the phylogenetic position of *calus* does not appear as precarious. It appears as a broadly distributed generalist sympatric with at least three regional endemics of the same clade. I strongly think the new sister taxa have gone unnamed simply because workers never turned these fuscous or brown specimens over to observe the ventral surfaces. Only one of the taxa had been recognized hitherto, by a curator at the BMNH who placed it near *calus* and marked it "sp. nov.". With this as a clue, additional species were located by turning over countless specimens in the backlogs at several institutions. Since each of the new species hails from an area known for endemism, further discoveries in the *calus* Species Group may still occur.

clarina Species Group

Known Mexican/Central American member with DFW,DHW structural color limited to a silvery-violet patch basal to medial on males, basal to submedial on females; VFW band widely tapered white, VHW band mostly black basally, sometimes quite widely.

***Argentostriatus clarina* (Hewitson)**
Photoplate VII,2H; Fig. 2C,5C.
Thecla clarina Hewitson 1863-1878 [1874]
Argentostriatus clarina: Johnson 1991: 38.

DIAGNOSIS. ***Wings***. DFW,DHW easily differentated from congeners by reduced and light silver-

violet structural color that runs only along the top of the HW of both sexes (more expansive but lighter in females). VFW,VHW distinctive with *both* wings exhibiting vivid white bands, that on FW much wider and bolder than in *tamos* Species Group.

Morphology. Male showing vinculum thickly tapered to robust triangulate saccus; valvae heavily sclerotized ventrally, showing sharp angulate shoulders on the bilobes terminating in caudal extensions of moderate length (about two-thirds bilobe length) bent distally at midpoint, then recurved radically inwards at the tips. Available female slightly damaged but showing habitus more typical of that seen in *A. eitschbergeri* (see Remarks) with more overall tubular ductus shape and diminution of the terminal elements.

DESCRIPTION. ***Male***. DFW blackish except for slight sheen of violet-white along posterior margin. DHW bright violet-white to iridescent blue across submedial area, blackish distally. Elongate tail at vein CuA2. VFW, VHW ground buff to browner, FW with bold silver-white postmedial band from costa to CuA1 or CuA2; HW with bold silver-white band across entire wing, bent into emphatic "W" in anal area. Limbal area with black submarginal line of various intensity, Thecla-spot bright orange to red with adjacent cells slightly suffused red or orange and with black at anal lobe. FW length: 11.5-13.0 mm. (Material Examined). ***Female***. DFW similar to male; DHW with broader iridescence (to medial area) but lighter distally. VFW,VHW as is male. FW length: 11.5-13.0 mm. (Material Examined). ***Male Tergal Morphology and Genitalia***. Fig. 2C. Dorsum of *sipc* simple but, compared to congeners, flared distoterminally and with a central notch. Male genitalia with vinculum sloped gradually toward robust and somewhat triangulate saccus showing wide sclerotized margins. Valvae ventrally with heavily sclerotized and sharply angulate shoulders on the bilobes, caudal extensions of moderate length (about two-thirds bilobe length), stout and undulate (bent distally at midpoint, then recurved radically inwards at the tips). Aedeagus not greatly robust and like *A. tamos*, with shaft rather straight contrasting bowed caecum but with shaft terminus greatly flared and heavily sclerotized compared to congeners. ***Female Genitalia***. Fig. 5. Available specimen slightly damaged but showing a habitus relatively limited to a fluted ductus with terminal elements showing only elliptic lamellae not greatly expansive laterally from the ductus' terminal opening.

TYPE. Lectotype male, BMNH, labelled "Mexico, Hewitson Coll. 79-69, Thecla clarina. 2., Thecla/type/clarina, B.M. Type No. Rh. 930, GP K. Johnson.

DISTRIBUTION. ***Spatial***: Fig. 3. Mexico to Colombia. ***Temporal***: dates on specimens suggest possible year-round occurrence across range.

REMARKS. Ross (1976) noted the species as common in *Pinus/Quercus* association of the Sierra de Tuxla. Hoffman (1940) reported a wide Mexican range (Chiapas, Oaxaca, Guerrero, Jalisco & Colima).

MATERIAL EXAMINED. COLOMBIA. Santander, Rio Suarez, 11-28 August 1946, leg. L. Richter, 1 male (AMNH) COSTA RICA. "Costa Rica", nod, 1 male (BMNH). GUATEMALA. Polochic Valley, Godman & Salvin Collection, 1 male (BMNH). MEXICO. Coatepec, 1 female (BMNH); Guerrero, Rincon, 1 male (BMNH); Rincon, Guerrero, 2800', leg. H. H. Smith, 1 male (BMNH); Guadelahara, October 26, leg. Schaus, 1 female (BMNH); Coatepec, 18 June 1928, leg. E. I. Huntington, 1 female (AMNH); Oaxaca, Mpi. Yolox, 18 September 1962, leg. E. C. Welling, 1 male (AME); Vera Cruz, Presidio, leg. Hoffman, 1 male (AMNH); Morellos, Stat. No. 10, 1 mi. S. of Xochicaico Ruins, 1400 m., grassy scrub, 24 August 1967, leg. Miller and Pine, 1 male (AMNH), same data but 30 July 1967, 1 male (AMNH), same data but 24 August 1967, 2 females (AMNH). PANAMA. Colobre, nod, 1 male (BMNH); Arce, nod, 1 male (BMNH); Barro Colorado, 21 March 1945, leg. C. D. Michener, 1 male (AMNH).

GROUP DISCUSSION

The species *A. clarina*, typical of Central American populations in many Eumaeini, retains a habitus very distinctive from its South American congeners. However, if the examined female can be relied upon, there may be some clue in its morphology to the more simple genital apparatus seen in the smaller South American members of the *calus* Species Group, specifically *A. eitschbergeri*.

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PHOTOGRAPHIC FIGURES

Plate VII,2. Plate VII is divided into sections for three different genera treated in various *Reports*. Section **2** pertains to *Argentostriatus* species as follows, as noted in the captions on the plate.

VII,A. *Argentostriatus tamos* (Chiriqui, Panama, AMNH)
VII,B. *Argentostriatus matho* (Huanuco, Peru, AMNH)
VII,C. *Argentostriatus roraimaevagus* (holotype)
VII,D. *Argentostriatus calus* (Baños, Ecuador, AMNH)
VII,E. *Argentostriatus wolfii* (holotype, allotype)
VII,F. *Argentostriatus eitschbergeri* (holotype, allotype)
VII,G. *Argentostriatus mysticus* (holotype)
VII,H. *Argentostriatus clarina* (Morellos, Mexico, AMNH)

Sexes (**M,F**) and respective dorsal (**D**) and ventral (**V**) surfaces are as noted.

Hairstreak Butterflies of the Genus *Tigrinota* (Lepidoptera, Lycaenidae, Theclinae)

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NO. 37

ABSTRACT

The genus is revised and its geographic distributions elaborated based on resolution of some historical and nomenclatorial problems. A dilemma concerning the most commonly used historical name in the genus, *dolylas* Cramer (1777), is examined. The original illustration shows a specimen with two hindwing tails, corresponding to no known extant specimens. Further difficulty arises from a previously overlooked name (*dolosa* Staudinger 1888), which, as a congener with no hindwing tails, has historically been called *spurius* Felder and Felder (1865). Types of *spurius* show a species with a single hindwing tail thus corresponding to the historical usage of *dolylas*. To solve these problems amongst the *dolylas* Group of *Tigrinota* consistent with stability, historical precedent, and previous lectotype designations, the following is proposed: *dolosa* is recognized as the valid name for the Group member lacking tails; *spurius* is recognized as the valid name for the member with a single tail (little upsetting precedent because of common historical usage as "*dolylas spurius*", of authors). Lastly, action is suggested to petition to International Commission for Zoological Nomenclature for formal suppression of the name *dolylas* Cramer. Historical nomenclature for the *ellida* Group of *Tigrinota* requires no changes.

Based on the above, geographic distributions for known congeners (including the recently described *T. perinota* and *jennifera*) are elaborated along with the description of two new species, *T. catamarciana* (subtropical forest remnants, Catamarca Province, Argentina) and *T. chaosa* (southeastern Brazil, apparently in original coastal forest).

INTRODUCTION

I described *Tigrinota* in 1992 to include certain members of the *Thecla* "*dolylas*-Group" of Draudt (1919) consistent with monophyly and the characters of the types. I recognized three species groups— the "*dolylas*", "*ellida*" and "*binangula*" Groups. I was unaware at the time of two facts later brought to my attention by historical research at The Natural History Museum (London). First, the original plate of the most commonly acknowledged member of the genus, *Tigrinota dolylas* (Cramer 1775-1790 [1777]) shows a specimen clearly with two hindwing tails, a condition corresponding to no known specimens of the genus. This might be considered inconsequential were it not for several other facts, not the least of which is that presence or absence of distinctive hindwing tails has been the most common feature used to distinguish some species of the group. Second, the name *dolylas* has historically been used to refer to a congener with a single hairlike tail, the name *spurius* (Felder and Felder 1865-1875 [1965]) to the common *dolylas* Group member lacking tails. This usage has generally followed from the classic work of Draudt (1919). However, the types of *Pseudolycaena spurius* belie this interpretation and show a single tail. Further, facies of specimens representing an overlooked name (*dolosa* Staudinger 1888), quite ignorable as a synonym of *spurius* if the historical facts were straight, are tailless. Thus, *dolosa* is the historical "*spurius*", *spurius* the historical *dolylas*, and *dolylas* appears to correspond to nothing.

Some thought is required concerning a solution to these problems. The following is proposed, taking into account historical stability, previous lectotype designations, and a desire to initiate the fewest name changes. First, *dolosa* must be recognized as the valid name for widespread *dolylas* Group member lacking tails. Second, *spurius* must be used as the valid name for the widespread *dolylas* Group member with a single tail formerly called "*dolylas*" in common usage. Fortunately, the latter upsets little in the historical literature because so many authors have used the trinomial combination "*dolylas spurius*". Last, it appears there is only one way to solve the historical problem of *dolylas sensu* Cramer's original illustraion and that is to initiate a process to petition the International Commission for Zoological Nomenclature for formal suppression of this name.

Based on the changes above, the genus is elaborated below in a revisionary format. Additional data is presented on *T. perinota* and *jennifera* (Johnson 1992) and two new species are described—*T. catamarciana* (subtropical forest remnants, Catamarca Province, Argentina) and *T. chaosa* (southeastern Brazil, apparently in original coastal forest). The latter have been discovered in historical materials at the Instituto Miquel Lillo (Tucumán, Argentina) and Milwaukee Public Museum, respectively.

MATERIAL AND METHODS

Collections. Samples were included from the Allyn Museum of Entomology, Florida Museum of Natural History (AME); American Museum of Natural History (AMNH); the Natural History Museum, London (BMNH[1]); Carnegie Museum of Natural History (CMNH);

[1] I use this abbreviation consistent with the United Kingdom ("UK") statutory name "British Museum (Natural History)" which, for legal purposes in the UK, has remained unchanged.

Field Museum of Natural History (FMNH); Instituto Zoología, Fundación Miguel Lillo (IML); Milwaukee Public Museum (MPM); and Muséum National d'Histoire Naturelle (Paris) (MNNH). In certain cases (AME, CMNH, FMNH) material had been received by loan on a synoptic basis and therefore may not include all the unsorted holdings of those depositories representing the genus.

Terminology. Morphological terminology generally follows Johnson (1992) as summarized and cited therein by him (including abbreviation to DFW, DHW and VFW,VHW respectively for dorsal fore- and hindwings, ventral fore- and hindwings). On the males' DFW various clusters of androconial (pheremonal) scales are referred to as "brands" consistent with the usage of Eliot (1973) (and many other authors). Concerning the valvae in genitalia of males, I use the terms "bilobes" and "caudal extensions" familiarized in many recent publications by Johnson and the term "vincular ventrum" to refer to the overall shape of vinculum (or genital ring) when seen in ventral view. I use terminology for terminal tergites initiated by Field (1967 a,b) and, thereafter, Johnson (1988; 1989a,b; 1990a & 1991) *e.g.* "subcordate incised posterior cavity" [abbreviated *sipc*]. The term "brush organ" is used consistent with Eliot (1973) to refer to bundles of elongate microtrichia which clear to the vinculum dorsum when genitalia are removed by dissection. General terms used in abbreviated fashion include OD (original description), TL (type locality), N etc. (north, etc.), C (central), GP(s) (genitalic preparation [s]), LD (locality description), ID (identified by). Geographic data is listed on an "as is" basis as read by the author with localities conformed to Rand McNally & Company (1992) and U.S.B.G.N. (1961-1968).

TAXONOMY

Format. An abbreviated diagnostic format is used for previously described taxa. Full descriptive format is used for new species. Taxa are divided according to the species groups of Johnson (1992).

Photographs of adults are included only for those taxa not included in the extensive illustrations of Johnson (1992) but re-keyed to the latter photopages in the cases of nomenclatorial changes herein. New taxa are included in Photoplate VII, Section 3 ("VII,3") as labelled thereon to genus and species. Line drawings are keyed to captioned illustrations included within the text of this paper.

GENERIC SYNOPSIS

***TIGRINOTA* Johnson**

Photoplate VII,3; Fig. 1.

Tigrinota Johnson 1992: 185. Johnson and Llorente Bousquets 1992: 11.

DIAGNOSIS. ***Wings***. VFW,VHW with cryptically striped appearance, FW crossed by three to five bright orange, brown or yellow stripes over lighter ground color (usually white or yellow), HW with concentric bands of mottled or cryptic color usually alternating yellow or white with brown. Wing shape robust (with HW often angulate) HW tailless or with single robust tail at vein CuA2. DFW,DHW of blue to violet iridescence, FW with prominent ovate to hemirectangular brands.

Morphology. Male with terminal tergites normal; brush organ occurrences diffential. Genitalia (viewed ventrally) showing paired, rather smoothly sclerotized, oblongate valval lobes separated by a thin line of transparent sclerotin. Termini of each lobe with sclerotized ridges forming prominent rims around the bilobes (Fig. 1x) and with a caudolateral sculpturing of the terminus from which eminate clusters of robust microtrichia (Fig. 1y). Female with "simple *sipc*" (*sensu* Johnson 1991, 1992). Genital habitus comprised of an elongate anterior and robust posterior element joined by a transparent neck with posterior element widely fluted at the ductus terminus to prominent, variously angulate, lamellae; laterally, the lamellae abutt the *sipc* closely along a sclerotized flap.

DESCRIPTION. See Johnson 1992, p. 185.

TYPE SPECIES. *Thecla ellida* Hewitson 1883-1887 [1867] by original designation.

DISTRIBUTION. ***Spatial***: Figs. 2,3. Pan-Neotropical (excluding Antilles), extending from Mexico southward to southern Argentina. ***Temporal***: varying with species due to disparate ranges. However, generically including all months of the year.

REMARKS. The Introduction has already noted the significant factors influencing the content of the present paper. Compared to the revision of *Argentostriatus* published heretofore, there has not been need herein to reillustrate many of the species. Photographs of these can be found in Johnson (1992, figs. 191E-L) as re-keyed herein to the nomenclatorial changes required by the present study. The two new species described herein represent taxa from historical material, in both cases reflecting

species either sympatric with known congeners or from the extreme periphery of a species group range. Since both new taxa are from localities suggesting original occurrence of primary tropical or subtropical forest, they seemed worthy of historical recognition here. Several other comments concerning *Tigrinota* as revised here are pertinent and can obviate need for a lengthy "Discussion" section elsewhere.

Geographic Distributions and Material Examined. Compared to other Neotropical Eumaeini, species of *Triginota* are widely distributed and relatively well-represented in museum collections. There is a problem, however, in generalizing from their locality data because of clear bias in the Material Examined to localities historically noted for intensive Lepidoptera collecting. This historical problem was first noted by me in a revision of the genus *Chlorostrymon* Clench (Johnson 1989) where I published a map and locality list enumerating historical location of various longterm resident collectors or of intensive sampling by staff of various institutions. In *Chlorostrymon* this collection bias affected documentation of congener sympatry as well as the geographic spread of individual taxa. The same appears true with *Tigrinota* and likely arises from the same historical circumstances: (1) individual members of the genus are actually not overly abundant and records therefore tend to coincide with localities where more than casual collecting has occurred; (2) concerted collecting (a few years or more) generally "turns up" species of the genus because of their overall wide geographic range; (3) consequently, the group as a whole is considered "well-known" by lepidopterists and not greatly pursued by them after an initial collection of specimens. This kind of data problem is further compounded when there has also been historical confusion concerning both nomenclature and diagnostic characters, as has certainly been the case with *Tigrinota*.

Historical Nomenclatorial Confusion and Synonymic Problems. Because they are well-represented in collections, *Trigrinota* species are also widely listed in the historical literature. However, because of the nomenclatorial problems outlined in the Introduction above, it appears very difficult to discern the original meanings of authors. For example, Hayward (at Instituto Miguel Lillo, Tucumán, Argentina) did not deem *Trigrinota* species "difficult" enough to supply individual identification labels. However, at the same time, he was one of the few lepidopterists to recognize the validity of *dolosa* Staudinger (Hayward 1973). Can one then compare the usages of names by Hayward concerning the Argentine fauna with those of the many authors who apparently followed the more widely disseminated nomenclature by Draudt (1919)? Draudt's publication established the still-usable tradition of superficial species diagnosis by (1) tail number count and (2) shape of male forewing brands but, wrongly synonymizing *dolosa* with *spurius*, also started the "domino effect" of misplaced common usage (vis-a-vis type specimens) which has plagued the group ever since. In my own case, it was not until my second examination of the type of *Thecla spurius*, and comparative reference to Cramer's plates through the courtesy of the BMNH, that I discovered the problems that are addressed in the present rearrangement. I think it is plain that *Trigrinota* is a group where synonymic review of the literature has little economy. Instead, for modern taxonomic purposes it appears one must simply rely on (1) revision of the available names based on type specimens and original figures and (2) enumeration of geographic distributions based only on material personally examined. As a result, for purposes of the present text, I omit the many faunal-study citations I would otherwise include in revisionary work. Instead, I only include synonymic notations for the historical cases where major authors have adopted one or the other of the traditional nomenclatures for the *Trigrinota* assemblage. Even this "assemblage" has not been clear until very recently. As I have already noted (Johnson 1992), as was the case with *Chlorostrymon* (Johnson 1989), it was only after morphological study of *Trigrinota* that its austral members were recognized.

Diagnostics. Consistent with comments above, I emphasize in each "Diagnosis" characters of tail number, male forewing brand habitus, and wing pattern. I also cite the major structural features, keying to illustrations herein and in Johnson (1992) with reference to the differential occurrence of brush organs.

Hereafter, the **Species Groups** of *Tigrinota* are revised according the new nomenclature as follows:

"***ellida* Group"** [of historcal authors & Johnson 1992]: six taxa placed in five species.

"***spurius* Group"** [="*dolylas* Group" of authors & Johnson 1992]: four species.

"***binangula* Group"** [austral group not associated with genus prior to Johnson 1992]: two taxa placed in one species.

Based on these notes, *Tigrinota* can be revised as follows.

SYNOPSIS OF SPECIES

Historical Name of Doubtful Utility and Authenticity.

Papilio dolylas Cramer [1777] (2): 22; pl. 111B,C. As noted in the Introduction, even though this name has the widest historical usage in the genus (even Kirby 1871: 385 considered all other congeners known to him, except *ellida* Hewitson, synonyms of *dolylas*), the original plate figures an individual that fits no known specimen or phene. I am aware that many lepidopterists would advise, in a case like this, to simply "allow for past error" and shift use of this old name to some convenient extant population. Unfortunately, this cannot be readily done in *Tigrinota* because (1) each known distinctive population already has an available name supported by extant type specimen(s) and (2) to arbitrarily shift "*dolylas*" to some other population there is really no objective criterion (Cramer's figure shows a specimen with two discrete HW tails). Thus, there is no "best fit" for *dolylas* and also, within its relevant species group, no additional population that needs a name (note opposite situation in *ellida* Group [Remarks under *T. ellida*]).

Therefore, as I have in the past with the names *Papilio beon* Cramer (see Johnson 1991) and *Thecla imma* Prittwitz (see Johnson 1992b), I recommend dropping the name *dolylas* from the active nomenclature because it is objectively ambiguous (actually erroneous) and unusable according to the standards of the modern ICZN Code.

Nomenclature of Tigrinota.

"*ellida*" Species Group

VHW with single thickened tail a terminus of vein CuA2. VFW with five prominent stripes (obscured only by merging in extreme taxa), male DFW brands small and generally elliptic; male genitalia with tear-drop shaped saccus; female genitalia with structural innovation surrounding ductus seminalis extreme.

***Tigrinota ellida* (Hewitson)**

Figs. 191E, 217 *in* Johnson 1992.

Thecla ellida Hewitson 1863-1887 [1867] (1): 88; (2) 34f,62-64. Kirby 1871: 385; Comstock and Huntington 1958-1964 [1960]: 51; Bridges 1988: I.117,II.106,III.66.

Tigrinota ellida: Johnson 1992: 186.

Thecla ellida toba Hayward 1949: 569; Bridges 1988: I.350,II.106,III.62.

Tigrinota ellida toba (Hayward) **New Combination** (see Remarks).

DIAGNOSIS. VHW tail generally stout; VFW with four prominent orange-brown stripes distally flanked by a fifth light brown to tawny stripe; VHW with dark orange-brown basal patch followed distally by more cryptic markings (all of a *lighter* hue and only appearing bandlike as a medial cream or yellow line, if at all, in the anal and costal areas). *T. ellida* Group congeners *T. jennifera* and *T. perinota* with five equally dark orange or orange-brown VFW bands and VHW dark basal color repeated as one or two bands distally on the HW; *T. jennifera* with females lacking dorsal structural color.

New Species *T. catamarciana* differs greatly in VFW,VHW— VFW postmedial stripe (produced in *T. ellida*) reduced to a thin stripe while the submedial and two basal stripes (latter three discrete in all other group members) merge into a prominent "eyespot"-like marking encompassing grayish central color in the discal cell; VHW covered almost completely with deep, finely mottled, orange-brown.

T. chaosa with VFW showing five discrete (but produced and undulate) bands; VHW with brown basal spot extremely produced (encompassing base to medial area) and flanked by a peculiar mediocostal reticulate pattern of mottled white and grizzled yellow, brown and orange (see details under *T. chaosa*). These taxa appear to be peripheral endemics (one sympatric with *T. ellida* and *T. spurius*).

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 187; figs. 191E, 217.

TYPES. Lectotype male, BMNH, labelled "Venezuela? [sic] Hewitson Coll. 79-69 Thecla (2) ellida Hew." by Johnson 1992. Three male paralectotypes noted here based on location at BMNH in 1992— Hewitson "4" data labelled same as lectotype, "1" and "5" further labelled "San Estevan, Hahnel de Sagen 1877".

DISTRIBUTION. ***Spatial***: Fig. 2 (data from Johnson 1992 and additional Material Examined listed below). Because of map scale some symbols represent tightly clustered groups of localities. Remarks, below, summarize some pertinent comments concerning the distribution of this species. ***Temporal***: little of the historical material is dated. However, there is notable clustering of known dates January-March and another August-October.

More consistent data from Argentina indicates probable year-round occurrence.

REMARKS. ***Geographic Spread and Variation.*** This is perhaps the most well-known and phenotypically stable species of the genus, along with *T. spurius*. Although there can be some variation in the VFW and VHW details, the comparatively small DFW androconial brand, orange-brown VFW stripes and single stout tail have made this butterfly rather familiar to lepidopterists. The single described subspecies to date, *toba* Hayward, is weakly defined both phenotypically and distributionally. Use of this taxon is probably a matter of taxonomic choice. However, the geographically widespread gene pool of *ellida/ toba*, in which there has obviously been some overall plasticity in regional characters, has harbored what initially appeared to be two (Johnson 1992), and now appears to be four, sympatric and/or peripheral sister species. The former two elements, described in 1992 as *T. jennifera* and *T. perinota*, apparently represent the historical penetrations of the ancestral *ellida* assemblage into the Amazon Basin and here they have become quite distinct, both in wing and internal features. Both of these species are now represented by larger series of specimens. It will be of great interest whether these two species can be documented as sympatric with typical *T. ellida* in the western Amazon Basin, as has been shown for another eumaeine assemblage, *Serratofalca* (Johnson and Sourakov 1993). In *Serratofalca*, the Amazon Basin species is sympatric both east and west with respective eastern Amazon and western Andean sister species and here the genitalic difference includes a characters as radical as spiral versus lineal female genitalia. I suspect that *T. jennifera* and *T. perinota* are distinctive enough that they will be shown to be sympatric with any *T. ellida* population that has penetrated the western Amazon Basin. Unfortunately, I know of no such latter penetration at present and additional specimens of both *T. jennifera* and *T. perinota* have only reinforced, although slightly expanded, their insular ranges. Regarding this prediction of sympatry it is heartening both that (1) *T. chaosa*, described herein, is (or historically was) sympatric with *T. ellida* and *T. spurius* in SE Brazil and (2) the Catamarca, Argentina, specimen (which I consider a different species from all of *T. ellida*) departs radically from Argentina *T. ellida* (as represented by *T. ellida toba*) in the provinces of Argentina directly to the north. Also, when one considers the origin of butterfly series vis-a-vis longterm collector location, it is also heartening that at Pará (=Belém), Brazil, in the east Amazon Basin, *T. ellida* was taken by A. M. Moss. I feel very assured (given my comments on Moss's collections elsewhere, see *Crimsinota* Johnson 1993) that if we did not have Moss's collection we would not have *T. ellida* documented from the *eastern* Amazon Basin. Thus, my view of the *ellida* Species Group of *Tigrinota* is that it has had within it at least these four previously unrecognized species. It is also my view that it is more consistent with character analysis and biogeography to consider these entities "species" than to arbitrarily declare them "subspecies" because of the overall unity of the *ellida* clade. As with the case of *T. chaosa*, all it would take is more documentation of sympatry in this clade and the subspecies "wall" would come "tumbling down". As with the study of *Serratofalca*, one purpose of the present review is to stimulate field studies of these insects at the points of potential sympatry. It appears more and more common that tropical forest butterflies prove to have biologically distinctive sibling or sister species.

MATERIAL EXAMINED (since Johnson 1992; listed with diacriticals as on labels and collectors [when noted ("leg.")] abbreviated to last name from Johnson 1989 and Brown 1941. "*T. ellida ellida*"-- ARGENTINA. Corrientes, leg. Hayward, 2 males, 1 female (IML) [suture/ intergrade area with "ssp." *toba*]. BOLIVIA. "Bolivia", nod, leg. Buckley, 1 male, 1 female (BMNH); Coroico, 6500 ft., leg. Garlepp, 1 male, 1 female (BMNH); Rio Bermeijo to Rio Pilcomayo, December 1903, leg. Steinbach (CMNH); Chulumani, beginning of wet season, S. Cruz de las Sierra, 2000 m. December, leg. Steinbach, 2 males (BMNH); Rio Surutu, April 1915, leg. Steinbach, 1 male (CMNH). BRAZIL. [all BMNH]— Bahia, leg. Moss, 4 males; Bahia, no other data ["nod"], 3 males; "Brazil", leg. Fruhstorfer, 1 male; Para [=Belém], leg. Moss, 1 male, 1 female; Para, leg. Wallace, 1 male, 1 female; Pelotas, 20 March 1885, 1 male, 1 female, leg. not noted; Pernambuco, leg. Moss, 2 males, 3 females; Pernambuco, leg. Forbes, 1 male; Pernambuco, leg. Gonelle, 1 male; Pinheiro, N. Brazil, 3 males; São Paulo, leg. Jones, 3 males; Rio de Janeiro, leg. Smith, 1 male; "Santos" [sic], 1 female; "Novo Friburgo", 1 female; Rio de Janeiro, 1 female; Minas Geraes [sic], leg. Rogers 1 female; Castro Parana, 1 female; Sao Paulo, 1 male; Castro, leg. Jones, 4 males 1 female; Iguassu Parana, 1 male; Sta. Catherine [sic], 3 males; Para [=Belém] leg. Moss, 1 male. Guarani, Rio Grande del Sul, leg. Biezanko, 4 January 1954, 1 male

(AMNH); Rio Vermelho, Santa Catarina, January 1948, 1 male (AMNH); Gavea, Paraná, 1 February 1930, 1 male (MPM). COLOMBIA. "Bogota", nod, leg. Lundig (BMNH); Rio Putumayo, 28 August 1946, 1 male (AMNH); Pescador, Cauca Valley, 1,450 m, 9 February 1974, leg. S. Steinhauser (AME). ECUADOR. Napo, Rio Pastazza, 1938, leg. F. M. Brown, 1 male (AMNH). FRENCH GUIANA. St. Laurent, Maroni River, July-Sept. male, female; St. Jean de Maroni, 1909, leg. Le Moult, 2 males, 2 females (MNHN); St. Laurent de Maroni, 1909, leg. Le Moult, 1 male, 1 female (MNHN); Rives de Maroni, 1909, leg. Le Moult, 2 males, 1 female (MNHN); Guyane Francaise, 1909, leg. Le Moult, 2 males (MNHN); St. George, September 1905, leg. Le Moult 1 male (MNHN); Gordonville, 1 male (BMNH). Cayenne, 1 male, female (BMNH). GUYANA. "British Guiana", leg. Parrish, 1 male, 1 female (BMNH); Bartica, leg. Parrish, 1 male, 1 female (BMNH); Quonga, leg. Whitely, 1 male, 1 female (BMNH); Mabaruma, leg. C. Bar, 1 male, 1 female (BMNH). PARAGUAY. "Central Paraguay", 1898, leg. P. Germain, 1 male (BMNH); Villarica, Dececember 1933, leg. J. Schade, 1 male; "Paraguay", 13 January 1921, leg. Jorgensen, 2 males, 2 females (BMNH); Sapucay, October 1904, leg. W. Foster, 2 males (BMNH); Patino, leg. C. S. Banes, 1 male (BN=MNH); Cordillera Province, Santissima-Trinidad, B. Podtiaguin, 1 male, 2 female (AMNH). PERU. San Ramon, 6-8000 ft., 1 male (BMNH). SURINAM. "Surinam", 1 female (MNHN). TRINIDAD-TOBAGO. Arima Valley, leg. B. Heineman, 1 male (AMNH). URUGUAY. Montevideo, 2 males (AMNH). VENEZUELA. "Venezuela", Druce Coll., 6 males, 2 females (BMNH); San Estevan, leg. Hahnel, 1 male (BMNH); "Venezuela", 1 male (BMNH); Las Quaguas, Esteban Valley, March 1910, 2 males (BMNH); Cucuta, Druce Coll., 1 male (BMNH); "Venezuela", leg. Felder, 1 male (BMNH); Pto. Cabello, Godman & Salvin Coll. 2 males (BMNH); Valencia, leg. Goering, Moritz Coll., 3 males (BMNH); "Venezuela, Druce Coll., 1 female; "Venezuela", leg. Fruhstorfer, 1 female (BMNH); "Caracas", nod, 1 female (BMNH); Aragua, Portochuelo Pass, Parque Nacional Henri Wittier, July 24, 1981, leg. L. Miller, 1 male (AME).

"*Tigrinota ellida toba*": ARGENTINA. Oran, Rio Vermejo, leg. Whitely, 1 male (BMNH); [paratypes] Villa Ana, Sante Fe, 1949, leg. K. J. Hayward, 3 paratypes (IML); Tartagal, leg. R. Eisele, 2 males (IML). Intermediates between *ellida* and *toba*: ARGENTINA. Corrientes, leg. K. J. Hayward, 3 males, 1 female (IML).

Tigrinota jennifera Johnson

Figs. 191F, 218 *in* Johnson 1992.

Tigrinota jennifera Johnson 1992: 187.

DIAGNOSIS. Male DFW,DHW with dull blue iridescence above, female completely dark brown; VFW, VHW of both sexes profusely striped with vivid orange-brown, FW with five equally dark stripes, HW with dark orange-brown basal coloration repeated again over the entire medial-postmedial area of the wing (on male suffused nearly black at its darkest, in female deep orange-brown).

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 187-188; figs. 191F, 218.

TYPES. Holotype female, AMNH, COLOMBIA, Rio Tacanas, Amazonas, October 26-31, 1946 leg. L. Richter; allotype female, Leticia, Amazonas, 15 May 1946, leg. L. Richter. Paratypes AMNH.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 187; figs. 191F, 218.

DISTRIBUTION. ***Spatial***: Fig. 2 (data from Johnson 1992 and additional Material Examined listed below). ***Temporal***: additional specimen dates fall within the October to May dates of the original types.

REMARKS. *Additional Distribution Records*: BRAZIL. Tonantins, Amazonas, 1880, leg. de Mathan, 11 males, 2 females (BMNH).

Tigrinota perinota Johnson

Figs. 191G, 219 *in* Johnson 1992; herein Fig. 1C.

Tigrinota perinota: Johnson 1992: 188.

DIAGNOSIS. A very small species (FW 10.0 mm.) which by DFW,DHW characters would not be reaily identified with the genus (appearing more like a *Ministrymon*). From congeners, differs on the VFW,VHW from both *T. ellida* and *T. jennifera* by the repetition of the dark orange-brown stripes of the FW across the medial area and margin of the HW. Recent discovery of the female corroborates these VFW,VHW characters for that sex as well, with the DFW,DHW of female blackish gray with streaks of azure at FW base and HW base to costa.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 188; figs. 191G, 219. Recent discovery of the female allows the following description:

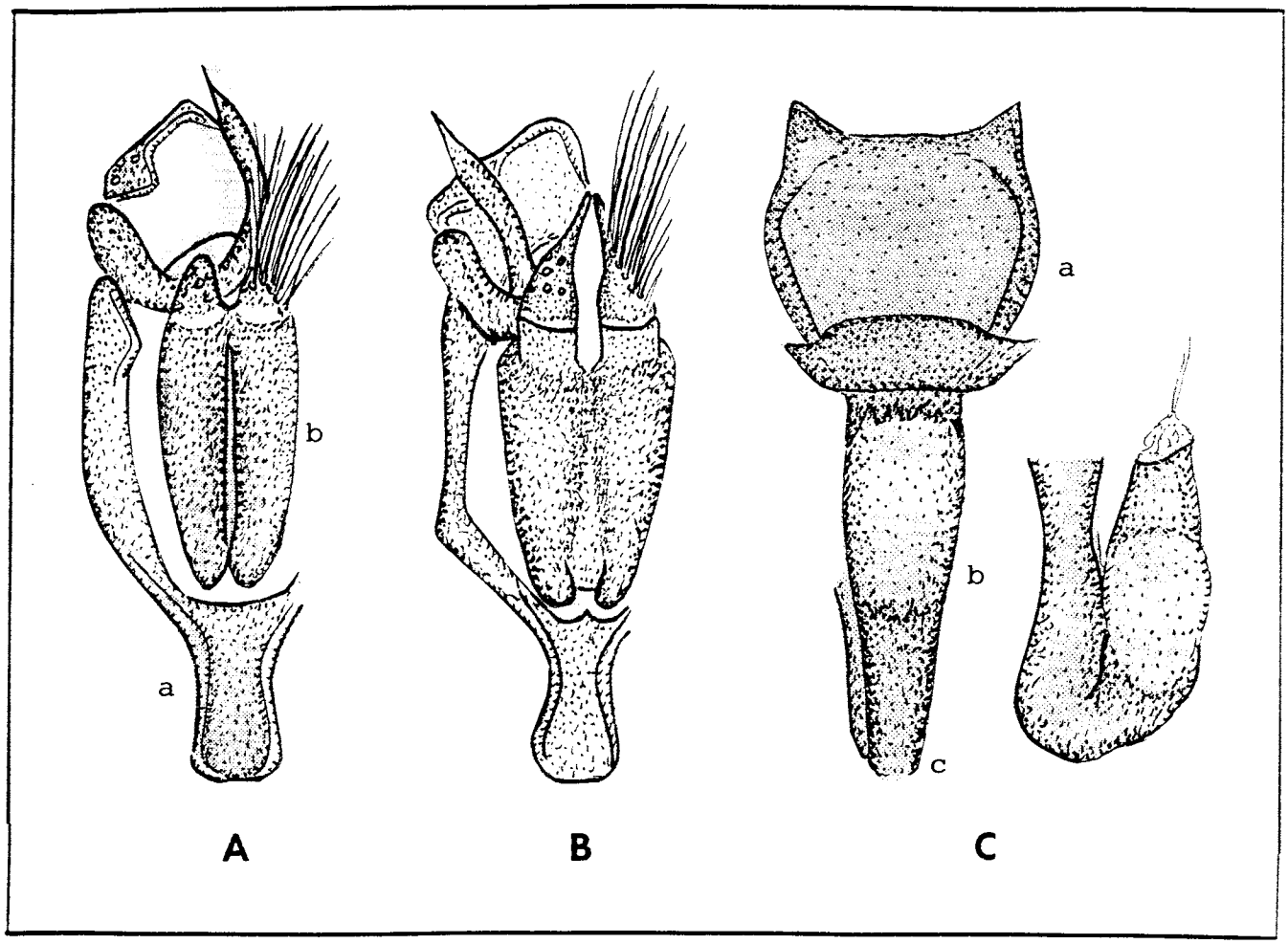

Figure 1. MORPHOLOGY of CERTAIN *TIGRINOTA* not figured in Johnson 1992

Format: males (**A,B**), genitalia in ventral view left with aedeagus removed showing left bilateral section of genitalia with saccus (a) and valvae (b) ventrally in full; elongate microtrichia protruding from valvae termini shown only on right valve; female (**C**), genitalia in ventral view (left) from terminal superior plate (top, a), along ductus bursae (b) to cervix bursae ventrum (c), at immediate right, lateral veiw of swollen cervix bursae typical of species group with right side showing emanation of ductus seminalis.

A. *Tigrinota chaosa*, holotype male (MPM)

B. *Tigrinota catamarciana*, holotype male (IML)

C. *Tigrinota perinota*, female example, "Perou" [Peru] (BMNH)

Figures 2-3. Distributions of *Tigrinota* Species

(according to the Species Groups of Johnson 1992 renamed as required by nomenclatorial changes herein)

Facing Page:

***ellida* Group**

- *Tigrinota ellida ellida*
- *Tigrinota ellida toba*

- *Tigrinota jennifera*
- *Tigrinota perinota*
- *Tigrinota catamarciana*
- *Tigrinota chaosa*

Overleaf:

***spurius* Group (= *dolylas* Group of Johnson 1992)**

- *Tigrinota spurius*
- *Tigrinota dolosa*
- *Tigrinota pallida*
- *Tigrinota hypocrita*

***binangula* Group**

- *Tigrinota binangula binangula*
- *Tigrinota binangula bolima*

Female. DFW,DHW blackish gray marked slightly lighter whitish along margins and with suffusive azure blue streaks at base of FW and base to costa on HW. Otherwise typifying characters of male. ***Female Genitalia***. Fig. 1C. Distinctive in uneven sclerotization of various elements, some appearing fully transparent. Ductus bursae swollen centrally at a rather transparent area comprising over one-half of entire width, opaque sclerotin reoccurring in anterior one-third and directly at base of inferior genital plate (latter formed by a strong membranous flap on the lamella antevaginalis). Superior plate very large and ovate, length from inferior plate only slightly less than entire ductus. Terminal margin of superior plate with paired triangulate distal prongs. Cervix bursae elaborate and swollen, recurving caudally as typical of Species Group but with area folded beneath ductus centrally swollen and transparent over its central two-thirds, terminal third sclerotized at emanation of ductus seminalis.

TYPES. Holotype male, AMNH, PERU, Tarapoto Region, 12 February 1926, leg. H. Bassler.

DISTRIBUTION. *Spatial*: Fig. 2 (data from Johnson 1992 and additional Material Examined listed below). *Temporal*: additional specimens are undated.

REMARKS. When I visited the BMNH in 1992 I was fortunate to locate additional specimens of both *T. jennifera* and *T. perinota*. Particularly, the female of *T. perinota* was located. These additional specimens support the species distinctions made in the original descriptions of both species.

Additional Distribution Records: PERU. "Perou", Tarapoto, leg. de Methan, 3 males (BMNH); "Perou", leg. de Methan, 1886, 1 female (BMNH).

***Tigrinota catamarciana*,**
NEW SPECIES
Photoplate VII,3A; Fig 1B.

DIAGNOSIS. *T. catamarciana* differs greatly from congeners in VFW,VHW— VFW with postmedial stripe (produced in *T. ellida*) reduced to a thin stripe while the submedial and two basal stripes (latter three discrete in all other group members) merge into a prominent "eyespot"-like element encompassing grayish central color in the discal cell; VHW covered almost completely with deep, finely mottled, orange-brown. On DFW, androconial brand is suffusive and elongate compared to congeners.

In the genitalia, the known male shows a very narrow vinculum contrasted by robust valvae which, contrasting all congeners, terminate with elongate conical extensions ending with long fingerlike projections anchoring the clusters of terminal microtrichia.

DESCRIPTION. ***Male***. DFW lustrous violet blue across basal one-half of wing contrasting an elongate, elliptic and suffusively black androconial brand; rest of wing brownish black. DHW violet to the submargins, latter well-defined in brownish black; HW with robust, heavily fringed tail at terminus of vein CuA2. VFW with postmedial stripe reduced to a thin lineal element while the submedial and two basal stripes merge into a wide and prominent "eyespot"-like marking encompassing grayish central color in the discal cell; VHW covered almost completely with deep and finely mottled orange-brown, showing little evidence of discrete stripes except vaguely toward the postmedial area. FW length: 13.5 mm. (holotype). ***Female***. Unknown. ***Male Genitalia***. Fig. 1B. Vincular ventrum extremely narrow and angulate before the saccus; saccus "tear"-shaped as typical of Species Group. Valvae prominently sculptured along the posteriolateral margins as paired elliptic elements, terminating with elongate conical extensions which are inwardly directed and end with long fingerlike projections anchoring clusters of terminal microtrichia.

TYPE. Holotype male, ARGENTINA, Catamarca Province, La Puerta [handwritten script reads closer to Perta but former is known locality], leg. R. Golbach, 7 January 1954, deposited IML.

DISTRIBUTION. *Spatial*: Fig. 2. Currently known only from Catamarca Province with data suggesting moist forest habitat (see Remarks). *Temporal*: known only from the type data.

REMARKS. Johnson (1992) cited records of various elfin butterflies, whose habitat is moist forest and moist forest/paramo margins, occurring southward into eastern Catamarca Province. These were all in IML backlog. The holotype designated above originates from the same collections. The habitats typical of the "la selva subtropical de montaña" of Argentina extend from the Santa Cruz area of Bolivia southward through Jujuy and into Salta; then, southward once again, a moist forest satellite biome occurs ("la selva tucumano-boliviana") from Tucumán into Catamarca. Both forest systems show lowland and upland forest segregations. A fuller knowledge of collection data on specimens such as the holotype above can eventually facilitate a clearer understanding of

of the butterfly faunas of these southerly forests. Of particular interest with such biomes is endemicity related to the combined factors of altitude and latitude. Johnson (1992, 1993), Johnson, Eisele and MacPherson (1988,1990) and Johnson and Kroenlein (1993a,b) have all described peculiar southerly endemics from the northern Argentine region. Considering these, the occurrence in Catamarca of a *Tigrinota* of extremely odd character does not appear as a total surprise.

ETYMOLOGY. An arbitrary euphonious combination referring to the type locality.

Tigrinota chaosa,
NEW SPECIES
Photoplate VII,3B; Fig 1A.

DIAGNOSIS. VFW,VHW elements appearing "chaotic" compared to congeners, showing five *very* thin discrete white lineal bands breaking costal red-brown ground color; VHW with brown basal patch extremely produced (encompassing base to medial area) and flanked by a peculiar mediocostal reticulate pattern of suffused white and grizzled yellow overlaying mottled brown and orange ground colors. DFW showing a thin subapical violet band paralleling the basal violet color otherwise typical of the group.

Genitalia showing "snub-ended" and "bullet"-shaped valvae which terminate abrupty, lacking elaboration of terminal sclerotal elements which anchor the microtrichia in congeners. Rather, microtrichia clustering simply around the abruptly rounded end of the elliptic valval lobe.

DESCRIPTION. ***Male.*** DFW rather flat violet blue in basal one-third, fuscous to black distally. FW brand rectangulate and grainy at distal edge of basal to medial violet; distally, rounding the subapex, another thin and lineal violet band. HW with robust, heavily fringed, tail at terminus of vein CuA2. VFW with five very thin, lineal and meandering, white bands breaking the costal red-brown ground (four variously basal, postbasal, medial and postmedial; fifth along the submargin); base and medial areas of wing mottled red and brown with some yellow overcast; VHW with the brown basal patch of genus extremely produced (encompassing base to medial area), flanked first by thin white edging and then by mediocostal reticulate pattern elements of suffusive white and grizzled yellow against the mottled brown and orange ground colors which dominate distally. In total, distal areas lacking the tendency to a banded habitus typical of the group and, with suffusive chaotic mottling, more appraching the cryptic habitus of *T. binangula*. FW length: 14.0 mm. (holotype). ***Female.*** Unknown. ***Male Genitalia.*** Fig. 1A. Vincular ventrum robust as generally typical of Species Group; genitalia differing mainly in the truncate condition of the valvae, latter comprised of abruptly terminating elliptic lobes, of rather "bullet"-shape, without any elaborate termini anchoring the caudal microtrichia; instead, abrupt termini comprising only about one-seventh of entire valval length.

TYPES. Holotype male, BRAZIL, Independencia, 22 June 1936 (see Remarks), deposited MPM.

DISTRIBUTION. ***Spatial***: Fig. 2. Currently known only from the type locality (see Remarks). ***Temporal***: known only from the type data.

REMARKS. Readers will recognize the numerous time this author has mentioned Gagarin material and collecting localities. I have also mentioned the sparse data on many of the smaller specimens (Theclinae, etc.) which Gargarin amassed. This probably resulted from their being a lower curatorial priority for him than the larger butterflies he could make some effort to identity. Keith Brown (pers. comm.) has told me that Gagarin took great care to return to sites where unusual specimens had been collected, to try to assemble larger series of species he was either unfamiliar with or had not seen before. In the present case it is hard to know whether a specimen of *Tigrinota*, no matter how divergent, would have excited him since there has been so much historical confusion of names in the group. However, it is apparent from other uniques taken at Independencia (see for instance, *Argentostriatus mysticus* [dated 1938] Johnson 1993a) that, whatever the precise habitat of such specimens, Gagarin continued to reap unusual results at "Independencia".

ETYMOLOGY. From the Latin "chaos", referring to the meandering, reticulate markings that characterize the VFW,VHW.

***"spurius"* Species Group** (= *dolylas* Group of Johnson 1992)

VFW with three prominent stripes, male brands very large and ovate to rectangule; male genitalia with parabolic to pointed saccus; female genitalia with structural innovation surrounding ductus seminalis reduced to less than one-half length of ductus bursae.

HW with no tails or single elongate tail depending on the species.

Format Note: To facilitate ready recognition of taxa where radical changes in names have resulted from the study of type specimens, I first cite in regular UWSP *Reports* format the name now applicable. Beneath it after "*Common Usage*:", I cite the old usage of the name. I then repeat the **Diagnosis** from the original generic treatment by Johnson (1992) which treats the appropriate taxon.

Tigrinota spurius **(Felder & Felder)**
Figs. 191H, 220 ***in*** Johnson 1992.
Common Usage: *"Thecla dolylas"* or *"Tigrinota dolylas"*.
Pseudolycaena spurius Felder & Felder 1865-1875 [1865], Kirby 1871: 385; Druce 1907: 597; Comstock and Huntington 1958-1964 [1963]: 197; Bridges 1988: I.117,II.106,III.66 (since Druce *op. cit.* as synonym of *dolosa* Staudinger 1884-1888 [1888] in error) (see introductory remarks and Remarks below).
Tigrinota dolylas [*nec dolylas* Cramer 1775-1790 [1777], plate 111f,bc]: Johnson 1992: 189.
Tigrinota spurius: Johnson 1992: 189 (referring to *Thecla dolosa* [synonymic error based on lack of recognition of availability of *dolosa* Staudinger 1884-1888 [1888].

DIAGNOSIS. ***Wings***. Single elongate hairlike tail at vein CuA2. Male FW brand black and ovate, blue structural color occurring on HW in basal patch extending obliquely across wing (*T. dolosa* tailless, brand rectangular, HW blue extending to HW submargins). VHW with wide dark brown patch connecting bases of all three wing bands.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 189; figs. 191H, 220.

TYPE. Lectotype male, BMNH, labelled "Bogota, [unreadable]m type", "Pseudolycaena spurius Feld.", "Felder Colln.", "B.M. Type No. 612", "Type".

DISTRIBUTION. *Spatial*: Fig. 3 (data from Johnson 1992 and additional Material Examined listed below). Because of map scale some symbols represent tightly clustered groups of localities. Although overall distribution reflects historical collecting localities as hertofore noted, species shows a South America distribution south of Panama much more invading of the Amazon River Basin than either true *T. ellida* (which appears to have speciated there) or sister taxa of subsequent entries which show a more classic circum-Amazonian range. Subsequent Remarks summarize some pertinent comments concerning the distribution of this species. ***Temporal***: a comparatively small number of historical specimens are dated. However, there are enough data to suggest a year-round occurrence in the tropical zone.

REMARKS. ***Nomenclature***. Introductory remarks have already addressed the historical problem surrounding the type of *Thecla spurius* appearing to subsume the historical usage of *Papilio dolylas* Cramer. The latter taxon, from its original plate, does not match any actual extant population of *Tigrinota* (once critical evaluation is made of characters in actual specimens). Further, one cannot readily substitute a "real" population for "*dolylas*" since there are already other names and extant types for those populations. However, one can limit the "collateral damage" from such a problem by appropriately using *spurius* Felder and Felder since this latter name has often been used in the historical literature as a subspecies of *dolylas*.

Distribution. I commented in introductory remarks concerning the problem of sampling error in elucidating the range of such a "common" species. With these considerations one can still observe that, contrary to the insular speciation that appears to have taken place in the *ellida* Group, *T. spurius* appears to have spread well through the Amazon Basin and maintained its integrity across a wide South American range. This may result from the species being a broad ecological generalist. It can be noted that the status and occurrence of the species in SE Brazil is somewhat uncertain, due to the problems of historical nomenclature. However, it is worth noting that Zikán and Zikán (1968) identified the taxon from SE Brazil. From the material I have seen, it is *T. dolosa* that is the primary *spurius* Group member inhabiting that region. Indeed, using the present study worker may be able to sort out the reality of current local sympatries in that region so these can be compared to those indicated in the historical material. It is difficult to rely on the historical literature, however, because of the nomenclatorial problems.

MATERIAL EXAMINED since Johnson 1992 [using diacriticals as employed on labels]. BOLIVIA. "Bolivia", Druce Coll., 1 male (BMNH); San Augustin, Mapiri, 1 male (BMNH); BRAZIL. Tefé, Amazon, 1 male (BMNH); São Paulo de Olivenca, January 1933, leg.

S. Waenner, 1 male, 1 female (BMNH); Sao Paulo, Amazons, Godman & Salvin Coll., 1 female (BMNH); Ega, Amazons, leg. Bates, 1 male, 1 female (BMNH); Tefé ["Teffe", sic] Amazonas, January 1905, leg. de Mathan, 1 male (BMNH); Tonantins, Amazonas, 1880 de Mathan, 1 male, 1 female (BMNH); São Paulo de Olivenca, leg. de Mathan, 1878, 1 male (BMNH); São Paulo de Olivenca, January, leg. S. Waenner, January 1933, 1 male, 1 female (BMNH); Pará [=Belém], leg. Miles Moss, 2 females (BMNH); Santarém, Amazonas, 1880, leg. de Methan, 1 male, 1 female (BMNH); Pará, nod, 2 female (BMNH); Maués, Amazon, leg. Bates, 1 male (BMNH); Rio Tapajós, Itaituba, leg. Fassl, 1 male (MNHN); "Curupa" [sic], Amazons, 1 male (BMNH). COLOMBIA. "Bogota", leg. Child, 1 male, 1 female (BMNH); "Bogota", leg. Lindig, 2 males (BMNH); Bogota, 2600 m., 1 male (BMNH); Bogota, dry season, 800 m., 1 male (BMNH). ECUADOR. Napo, Rio Pastazza, 1939, leg. F. M. Brown, 1 male (AMNH); "Env. Equatuer", 1 male, 1 female (MNHN); Rio Verde, Rio Pastaza [sic], 1 female (BMNH); "E. Ecuador", 5000', leg. Palmer, 2 males (BMNH), same data but 4200 ft., 4 males (BMNH). FRENCH GUIANA. St. Laurent, Maroni River, July-Sept., 1 male, 1 female (BMNH); "Guyane Francaise", leg. C. Bar. 1 male, 1 female (BMNH); Cayenne, n.o.d., 1 male, 2 females (BMNH); St. Jean de Maroni, 1909, leg. Le Moult, 2 males, 1 female (MNHN); St. Laurent de Maroni, 1909, leg. Le Moult, 3 males, 2 females (MNHN); Rives de Maroni, 1909, leg. Le Moult, 2 males, 2 females MNHN); Guyane Francaise, 1909, leg. Le Moult, 2 males (MNHN). GUYANA. "British Guiana", leg. Parish, 1 male, 1 female (BMNH); Bartica, leg. Parish, 1 male, 1 female (BMNH); Quonga, leg. Whitely, 1 male, 1 female (BMNH); Mabaruma, nod, 1 male, 1 female. PANAMA. Canal Zone, February, 1915, leg. A. Hall, 1 male (BMNH); Canal Zone, Pedro Miquel [sic, leg.?], 2 males (BMNH). PARAGUAY. Cordillera, Santissima-Trinidad, leg. B. Podtiaguin, 1 male (AMNH). PERU. "Charapa", N. Peru, 4000, ft., Oct. 1912, leg. Pratt, 1 female (BMNH); Chanchamayo, December, 1 female (BMNH); La Merced, 1 male, 1 female (BMNH); Moyobamba, leg. de Methan, 1 male (BMNH); Oroya, Inambari, 3000 April- May [read from "iv,v"] 1901, leg. Ockenden, 1 male (BMNH); Upper Rio Toro, La Merced, July to September [read from "vii ix"] 1901, leg. Simons, 1 male, 1 female (BMNH); Pozuzu, Huanuco, 1000 m., leg. Hoffman, 1 male (BMNH); Moyobamba, nod, 1 male (BMNH). SURINAM. Albina, Surinam, 1 male (BMNH); leg. Fruhstorfer, 2 males (BMNH); Surinam, May to September, leg. Ellacombe, 2 males, 1 female (BMNH); Paramaribo, Oct.-November 1923, leg. T. T. Dyer, 1 female (BMNH); Bergen-Daal, April 1892, E. Ellacombe, 1 male (BMNH); Ornoribe, Febr. 1893, 2 males (BMNH). TRINIDAD-TOBAGO. Arima Valley, leg. B. Heineman, 1 female (AMNH). VENEZUELA. Suapure, nod, 1 male (BMNH); La Vuelta, Caura River, May 1903, 1 male (BMNH); "Venezuela", 1 male. *Note*: AMNH data (Johnson 1992) recorded under "*Tigrinota dolylas*" therein.

Tigrinota dolosa **(Staudinger)**

191J, 222 *in* Johnson 1992.

Common Usage: *"Thecla spurius"* or *"Tigrinota spurius"*.

Thecla dolosa Staudinger 1884-1888 [1888]: (1) 286, (2) pl. 97. Comstock and Huntington 1958-1964 [1963]: 209; Bridges 1988: I.110,II.106,III.112 [see below, all as synonym of *spurius* in error].

Thecla spurius [nec *Pseudolycaena spurius* Felder & Felder 1865-1875 [1865]: Druce 1907: 597; Comstock and Huntington 1958-1964 [1963]: 1971; Bridges 1988: I.117,II.106,III.66 (as senior synonym of *dolosa* in error) (see introductory remarks and Remarks below).

Tigrinota spurius: Johnson 1992: 189 (not recognizing subsuming of *dolylas* Cramer 1775-1790 [1777], plate 111f,bc] by *P. spurius* Felder & Felder] or availability of *T. dolosa* Staudinger 1884-1888 [1888]).

Thecla dolosa: Hayward 1973: 150 (as valid species).

DIAGNOSIS. Tailless; otherwise differing from *T. spurius* by rectangular brown brand in male, male structural color covering entire DHW except for marginal borders and on VFW VHW elements of the FW and HW bands more broken, on HW postbsal and medial area forming more lununate patterns reminiscent of *T. binangula*.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 189; figs. 191J, 222.

TYPE. Lectotype male, designated here, "origin", "dolosa Staud." "Merida, Venezuela"; paralectotype male, same except "Puerto Cabello, Venezuela" based on photographs supplied by H. Hannemann, deposited Zoologisches Museum de Humbolt Universität zu Berlin (ZMH). Accordingly, there may be more paralectotypical

material extant at the ZMH.

DISTRIBUTION. ***Spatial***: Fig. 3 (data from Johnson 1992 and additional Material Examined listed below). Some map symbols are clustered in some cases to represent closely proximate localities. Overall distribution reflects some historical collecting bias and historical records are problematic because of past nomenclatorial problems. However, species shows a classic circum-Amazonian South America distribution which is much more invading of the SE Brazilian region than *T. spurius*. Subsequent Remarks summarize comments concerning the distribution of the species. ***Temporal***: relatively small numbers of historical specimens are dated. However, current data suggest a year-round occurrence in the tropical zone (the only dates missing being winter [June, July etc.]).

REMARKS. ***Nomenclature***. The main historical problem with *dolosa* has been lack of recognition of its availablity for the widespread, tailless and rectangularly branded, South American species. This lack of recognition includes the previous seminal work on the genus by Johnson (1992) but is traceable back to Druce (1907). Druce's initial misplacement of the taxon in synonymy was followed by nearly all subsequent authors. Previously, Hayward (1973) was the only author to recognize *dolosa* as a valid species. This probably resulted from Hayward's frequent use of the BMNH, where the types of various other *Trigrinota* taxa were housed. Although there is no record, it is likely that Hayward (who often labelled IML specimens with notes concerning comparisons he had made at London) recognized the problem involving the historical names *dolylas* and *spurius* as treated in the present study. If so, it would have followed that he would consider *dolosa* a valid species name for the material he had brought from Argentina to the BMNH for comparison. With the fall of the Berlin Wall and the opening up of specimen loans from the ZMH, it has been possible for numerous types of early Staudinger taxa to be located (Johnson 1990b).

Distribution. As noted above under Distribution, it appears that, aside from historical problems with names, *dolosa* as treated herein is the dominant *spurius* Group member in SE Brazil. However, as mentioned under the treatments of *T. ellida* and *T. spurius*, the former has been found in recent material from SE Brazil and the latter reported by Zikán and Zikán (1968, material should be at Curitiba). This matter deserves clarification and I am in the process of acquiring the remaining *Trigrinota* material from the MPM for treatment in a forthcoming study of SE Brazilian Theclinae. Given the occurrence of *T. chaosa* in material already examined, it will be important to dissect each specimen in this material to test the range of variation among identified taxa of "well-known" *Tigrinota* species. It may be that all the common species, *and* some endemics, have a history in SE Brazil.

MATERIAL EXAMINED since Johnson 1992 [diacriticals employed as on original labels]. See type(s) above. ARGENTINA. Tucuman, [all dates read as day, month, year from consecutive numbers], leg. Steinbach, 25 August 1922, 2 males, 21 May 1922, 2 males, 16 July 1922, 1 male, 25 May 1922, 1 male (BMNH). Villa Nougues, Tucuman, leg. Hayward, 21 January 1931, 2 males, December 1928, one female, leg. Golbach, February 1954 1 male (IML). BRAZIL. "Rio Grande" [=Rio Grande del Sul?], leg. Fruhstorfer, 1 female (BMNH); Petropolis, nod, 2 females (BMNH); Espirito Santo, leg. Fruhstorfer, 6 males (BMNH); Minas Gerais , Bates Coll., 1 male (BMNH); "Porto Real", North Brazil, 1 female (BMNH). Rio de Jeneiro, "Guapy", 19 May 1939, leg. Gagarin, 1 male (MPM); Independencia, 20 September 1936, leg. Gagarin, 1 male (MPM), 21 October 1936, 1 female, leg. Gagarin (MPM); Rio de Jeneiro, leg. K. Brown, Ehrlich Coll., 1 male (AMNH); Pelotas, Rio Grande del Sul, leg. Biezanko, 1 male (AMNH). FRENCH GUIANA. St. Laurent, Maroni River, July-Sept., 1 male, 1 female (BMNH); "Guyane Francaise", leg. C. Bar. 1 male, 1 female (BMNH); St. Jean de Maroni, 1909, leg. Le Moult, 1 males, 1 female (MNHN); St. Laurent de Maroni, 1909, leg. Le Moult, 3 males, 1 female (MNHN); Rives de Maroni, 1909, leg. Le Moult, 2 males, 1 female MNHN); Guyane Francaise, 1909, leg. Le Moult, 1 male, 1 female (BMNH). GUYANA. Bartica, March-April 1901, 1 male (BMNH); Bartica, leg. H. S. Parrish, 1 male (BMNH). PARAGUAY. Cordillera, Santissima-Trinidad, leg. B. Podtiaguin, 1 male (AMNH). SURINAM. "Surinam", nod, leg. Fruhstorfer, 1 male, 1 female. TRINIDAD-TOBAGO. Arima Valley, leg. B. Heineman, 1 male, 1 female (AMNH). VENEZUELA. Caracas, nod, 1 male, 1 female (BMNH); Walle [sic], Merida, 2200 m., 1 male (BMNH), same data but 2700 m., 1 male (BMNH); "Merida", nod, Godman & Salvin Coll., 1 male, 1 female (BMNH); Las Quiguas [sic], Nov.- March 1910, 1 male, 1 female (BMNH); Merida, 1897, nod, 1 male (BMNH); Caracas, 1877 May-June, leg. Thiene, 1 female (BMNH); Merida, nod, Staudinger Coll., 1 male (BMNH); Cucuta, nod, 1 male (BMNH); San Esteban [sic], Staudinger Coll.,

San Estevan [sic], 1877, 1 male (BMNH); "highlands above Merida", E. I. Huntington Coll., 1 male (AMNH).

Tigrinota pallida **(Felder & Felder)**
Figs. 191I, 221 *in* Johnson 1992.

Thecla dolylas pallida Lathy 1930: 135. Comstock and Huntington 1958-1964 [1959]: 209; Bridges 1988: I.264; II.106; III.80 (authors after Lathy with *pallida* as ssp. of *dolylas* (*e.g. spurius* of this revision); Johnson 1991a: 146.

Tigrinota pallida: Johnson 1992: 190.

DIAGNOSIS. Single HW tail; DHW of female completely white except for thin or suffusive charcoal margin, DFW with white along margin with HW, bordered with thin rim of blue before wide fuscous apices and borders. VFW with only two dark wing bands (postbasal and medial) and without any dark patch connecting the bottoms of these bands, only a dark patch at the wing base.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 190-91; figs. 191I, 221.

TYPE. Holotype male, MNHN, "Specimen typicum, Thecla dolylas pallida", "Type", and a label reading "Hab?" (see Johnson 1991a).

DISTRIBUTION. *Spatial*: Fig. 3 (data from Johnson 1992 and additional Material Examined listed below). Some map symbols are clustered to represent closely proximate localities. Overall distribution reflects some historical collecting bias due to this region being represented, at many institutions, by material of early origin furnished only with general data. However, species shows a classic Guyana Shield distribution (extending onto Trinidad and Tobago) and appears to be a regional endemic (see Remarks). *Temporal*: relatively small numbers of historical specimens are dated. However, current data suggest a year-round occurrence in the tropical zone (the only dates missing being winter [June, July etc.]).

REMARKS. Although this taxon has a single tail and is in the *spurius* Group, I went ahead in introductory Remarks and referred to the "common" single-tailed *Tigrinota* species" (e.g. *spurius* of this revision; *dolylas* of historical usage) since (i) most workers are unfamiliar with *pallida* and (ii) the status of *pallida* was only stressed after the location of its type (Johnson 1991a) and the subsequent seminal work accompanying the generic description (Johnson 1992). Thus, in a fuller view considering the morphology of the type of *T. pallida* and other specimens, it must be regarded as a regional endemic. Although the morphology of these specimens was also a surprise to me, it now appears less dramatic in context with the other new *Trigrinota* species described herein. The largest amount of material of *T. pallida* is voluminous MNHN material from the "French Guiana" region. However, these have only regional data in many cases.

MATERIAL EXAMINED since Johnson 1992 [diacriticals employed as on original labels]. See type above. GUYANA. Bartica, March-April 1901, 1 male, 2 females (BMNH); "British Guiana", 1 males (MNHN); Bartica, nod, 1 male (BMNH). FRENCH GUIANA. St. Jean de Maroni, 1909, leg. Le Moult, 1 male, 1 female (MNHN); St. Laurent de Maroni, 1909, leg. Le Moult, 2 males (MNHN); Rives de Maroni, 1909, leg. Le Moult, 2 males, 1 female (MNHN); Guyane Francaise, 1909, leg. Le Moult, 1 male (MNHN); Gourdonville [sic], Kourou River, September 1905, leg. Le Moult, 1 male (MNHN); Gordonville [sic], 1 male (BMNH). SURINAM. "Surinam" 2 males, 1 female (MNHN). TRINIDAD-TOBAGO. Arima Valley, 28 January 1962, leg. B. Heineman. VENEZUELA. Caripito, 9-20 March 1942, Coll. N.Y. Zool. Soc., 1 male, 1 female (AMNH); Aragua, Portochuelo Pass, Parque Nacional Henri Wittier, July 24, 1981, leg. L. Miller, 1 male (AME).

Tigrinota hypocrita **(Schaus)**
Figs. 191K, 223 *in* Johnson 1992.

Thecla hypocrita Schaus 1913. Hoffman, 1940: 707; Comstock and Huntington 1958-1964 [1961]: 85 [as "hyprocrita" misspelling]. Bridges 1988: I.162,II.107,III.104. Vargas Fernandez, Llorente Bousquets and Luis Martinez 1991: 38.

Tigrinota hypocrita: Johnson 1992: 191. Johnson and Llorente Bousquets 1992: 11.

DIAGNOSIS. HW tailless; DFW,DHW very dark, FW generally black, broken by large rectangulate brown brand in males; HW silvery blue with crisp black arc-shaped submarginal borders. VFW with two brownish black bands distad of blackened wing base; VHW crossed by reather straight medial brownish black band.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 191-192; figs. 191K, 223.

TYPE. Holotype male, reputed BMNH (Bridges 1988) but no located by Johnson 1992. TL; Tuis, Juan Vinas, Costa Rica.

DISTRIBUTION. *Spatial*: Fig. 3 (data from Johnson 1992 and additional Material Examined listed below, including citations by Hoffman 1940 and Llorente et al. 1991). From central Mexico southward into Costa Rica, perhaps southward but not documented to date. *Temporal*: dated specimens include March to August (Johnson 1992).

REMARKS. Hoffman (1940) and Vargas Fernandez et. al. (1991) included records from Guerrero State, Mexico. Because the species is unambiguous and also poorly known, I include these distributions in Figure 3. Additional specimens were also located since Johnson 1992 and are listed below.

The divergent morphology of *T. hypocrita* is typical of situations in which a clade includes mostly South American members except for one widely distributed Central American or Mexican congener. This undoubtedly results from the vicariant history of Central America versus South America but can cause some confusion if not understood in this context. Confusion can result because, in some cases, the differences are extreme in certain morphological elements otherwise "stable" across the entire ground plan of South American members of a clade. As a result, one must recognize the other elements of the ground plan that are still clearly held in common. In case North American workers find this unusual, a fine example is "in their backyard"— the case of Holarctic *Callophrys*. Anyone who has seen the genitalia of all Nearctic *Callophrys* versus all Palaearctic *Callophrys* realizes that if one does not fall back on the wing pattern of these species, one is hard pressed to find any synapomorphies between the morphologies. Thus, there can be significant changes in morphological ground plans across a clade of taxa which embraces two regions broken by a major vicariance event. The situation of Mexican members of *Argentostriatus* (Johnson in press) is similar and like situations will probably be recognized across many clades of Eumaeini. The problem becomes more difficult in the larger and "showy" Eumaeini, where major structural differences are often apparent even between sister taxa and these promise to make the task of clustering these species into genera far more difficult.

MATERIAL EXAMINED since Johnson 1992. COSTA RICA, Cartago, 4900 ft. 2 March 1926 F. W. Jackson, BM 1926-449, 1 male (BMNH). MEXICO. Presidio, Vera Cruz, nod, leg. Hoffman, 1 male (AMNH).

binangula Species Group

HW with short swollen tail; VFW,VHW cryptically marked with mottled ochre ground color crossed by lunulate, variously bandlike, elements of brown or greenish-brown ground. Cryptic ground also requires differentiation from *Dolymorpha jada* (Hewitson) which, contrasting lunulate elements in *T. binangula*, shows clearly distinguishable VHW stripes of ochre and cream.

***Tigrinota binangula* (Schaus)**

Figs. 191L, 224 *in* Johnson 1992.

Thecla binangula Schaus 1902: 415. Draudt 1919: 760 (see Discussion); Comstock and Huntington 1958-1964 [1959]: 164. Hayward 1973: 149. Bridges 1988: I.54,II.105,III.103.

Tigrinota binangula: Johnson 1992: 192.

Tigrinota binangula bolima (Schaus) **REVISED STATUS**

Thecla bolima Schaus 1902: 416. Draudt 1919: 760 (see Discussion); Comstock and Huntington 1958-1964 [1959]: 165 (treated separately from *binangula*); Bridges 1988: I.56,II.105,III.103.

Tigrinota [bolima]: Johnson 1992: 192 (treated as synonym of *binangula*).

DIAGNOSIS. HW with short thickened tail; DFW blackish with black elliptic brand, DHW black with brilliant angulate blue patches (often with black spot within). VFW,VHW cryptic with mottled ochre ground crossed by lunulate markings of brown, tawny, greenish-brown or orange variously coalesced into bands depending on the specimen. Nominate subspecies with less blue structural color and black spotting therein and less dramatic tail; Brazilian subspecies showing the latter traits, markedly in some specimens.

DESCRIPTION. Wings and internal morphology, see Johnson 1992: p. 192-193; figs. 191L, 224

TYPES. *Thecla binangula* holotype, NMNH No. 5941; *Thecla bolima*, NMNH No. 5942. **TL:** *T. binangula*, "Peru"; *T. bolima*, Castro, Paraná, Brazil.

DISTRIBUTION. *Spatial*: Fig. 3 (data from Johnson 1992 and additional Material Examined listed below). Two disjunctive populations treated as subspecies— nominate from central western Argentina northward in Andean region to Peru; SE Brazilian subspecies in montane SE Brazil. *Temporal*: the dated specimens indicate a restricted summer occurrence in Andean and austral regions, more widespread phenology in SE Brazilian regions representing the tropical zone.

REMARKS. I originally treated the two taxa *binangula* and *bolima* as synonyms since this has not been well-documented in the literature hitherto. However, in considering the entire genus in more detail and with a particular sensitivity to vicariant patterns in South America, it is more useful to consider the disjunctive montane SE Brazilian and austral/ Andean distributions as allopatric subspecies. It is important because biological, phylogenetic and biogeographic interrelations between many groups of Theclinae (either vicariant or contiguous) between SE Brazil and the Argentine region require careful study across many groups. Robert Eisele, Bruce MacPherson and I have completed the work on the smaller Theclinae from the tropical forests of western Argentina (Johnson, Eisele and MacPherson in press) and I will follow with a study of similar material in SE Brazil from the MPM Gagarin collection. Since the *binangula/bolima* disjunction is a part of this pattern it is good to set a precedent and mark the two populations as subspecies.

MATERIAL EXAMINED since Johnson 1992. *T. binangula binangula*: ARGENTINA. Cafayate, Salta Prov., dune area in monte biome, 1991 AMNH Expedition, 11 February 1991, 1 male (AMNH); La Rioja Prov., "Aguatay", February 1950, leg. R. Golbach, 1 female (IML).

DISCUSSION

Synonymies and Draudt (1919). Aside from the entry above concerning austral and SE Brazilian *T. binangula*, I have omitted from the symonymic listings initial references to Draudt's (1919) treatment of *Tigrinota* species. Draudt's names for *Tigrinota* species (his "Dolylas-Group", p. 761) mirror the problem addressed in this paper and appear to be the most widely disseminated source for a historical common usage that has been at variance with the type material. A synonymy of Draudt's usages mirrors the circularity noted in the synonymic entries above, beginning with Kirby in 1871 for the *dolylas/spurius* problem and with Druce in 1907 for the *spurius/dolosa* problem.

Draudt's text (p. 761) corresponds to his figures on Plate 150 line e. His treatment of *T. ellida* is straightforward and not problematic. However, with the *spurius* Species Group of the present revision, he presents the first color illustrations of the group associating a single tail with "*dolylas*" and no tail with "*spurius*". According to G. E. Tite, in comments handwritten in the BMNH cataloguing of "*Thecla*" species, Tite happened upon the problem of "*dolylas* Group" quite by accident, comparing Draudt's treatment first to the BMNH type of *Pseudolycaena spurius* and then Cramer's historical plate of *Papilio dolylas*. He discovered first one, and then a second, historical problem. Tite did not interrupt the common usage of the "*dolylas* Group" already in place in the BMNH general collection. However, he added notes containing his comments and stating that the matter had to be resolved. He noted "*P. dolylas* [sensu Cramer's plate]" as a meaningless facies compared to actual specimens, *spurius* [of the Felder type material] as the historical *dolylas*, and *dolosa* as a name not used in the BMNH collection but nonetheless valid for the "*spurius*" of common usage. Since K. J. Hayward and Tite often collaborated on Argentine identifications, it is possible that this judgment [undated in the cataloguing] is also the source of Hayward's later use (1973) of *dolosa* as a valid species name.

Considering the above, I have opted against arbitrarily shifting the facies of "*dolylas* [sensu the Cramer plate]" to another taxon based on positing a hypothetical "mistake" by Cramer. Indeed, if the taxon and types of *spurius* did not exist this might be a valid option. However, given the considerations of Tite and my efforts to curate at the BMNH consistent with recent revisionary studies, my judgment has been to opt for a finalization of Tite's views in the BMNH card catalog. This is particularly useful since BMNH curators have decided to leave much of the historical general collection "as is" (aside from notation labels concerning new taxa) and inculcate modern nomenclatorial changes primarily in the card catalog. The major consideration in this regard has been the possible damage that could result from the moving of specimens in the old glass-bottom BMNH drawers (P. Ackery, pers. comm.). They have also preferred studies of type material on a group by group basis (instead of as a whole [see Johnson 1991a]) since type material is more protected from infestation by being broadly distributed in the collection than curated together as a single group.

Tigrinota as a Study Group. Considering Johnson (1992) and the present study, much space has been devoted to studying taxa of this recently described genus. This originally resulted because *Tigrinota binangula* was "elfin"-like and required placement in the 1992 monograph of pan-Andean elfin butterflies (Johnson 1992). However, with the discovery of the dilemma first uncovered by Tite at the BMNH, and with a desire to fully elaborate as many recently described new genera as possible (see Johnson

and Sourakov 1993; Johnson 1993a) it appeared worthwhile to expand the treatment. Another factor was the discovery of new outlying and sympatric populations strongly arguing for description as additional species. Without this recognition of additional taxa, there is always the danger in the Eumaeini that groups wrongly appear historically "well-known" and taxonomically complete. If this was not true for a group as familiar as *Chlorostrymon* (Johnson 1989, 1991b; Johnson and Smith 1993) it is probably true of very few groups of Neotropical Theclinae.

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PHOTOGRAPHIC FIGURES

Plate VII,3. Plate VII is divided into sections for genera treated in various *Reports*. Section 3 illustrates *Tigrinota* species not formerly figured in Johnson 1992. These are as follows and as captioned on the plate.

VII,3A. *Tigrinota catamarciana* (holotype)
VII,3B. *Tigrinota chaosa* (holotype)

Sexes (**M,F**) and respective dorsal (**D**) and ventral (**V**) surfaces are as noted.

New Species and New Records of "Elfin"-like Hairstreak Butterflies From Colombia (Lepidoptera, Lycaenidae, Theclinae)

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REPORTS of the
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Stevens Point

NO. 38

ABSTRACT

Four new species of "elfin"-like hairstreak butterfliies are described from high Andean habitats in Colombia. They include *Solanorum rusticum*, *Pontirama nortea*, *Paralustrus salazari* and *Radissima torresi*. The holotype of *S. rusticum* is the first known female of the genus and, as expected, shows characters typical of the Eumaeini infratribe Thecloxurina. *Pontirama nortea* is the third known Colombian species of the genus; the genus is also speciose southward in the Andes. *Paralustrus salazari* is an important discovery because most other species of the genus are familiar to lepidopterists and widely distributed; *P. salazari* is the second species of the genus to appear regionally endemic. *Radissima torresi* is the first northern South America species of a poorly known subgeneric group including also *R. esolana* of southeastern Brazil. New Colombian records are provided for two poorly known elfins (*Candora triangulara* Johnson and *Abloxurina contracolora* Johnson, both previously known only from type material) and a recently described species that has proved well represented in collections (*Rhamma comstocki* Johnson).

INTRODUCTION

In 1992, the junior author published a monograph of Neotropical "elfin"-like butterflies, a multigeneric assemblage of often tailless and usually cryptically marked hairstreak butterflies (Johnson 1990,1992). These butterflies tend to be montane, often occurring at very high altitudes. It was anticipated that additional species would be discovered, particularly with a generic framework available to facilitate new species descriptions. Johnson and Adams (1993) followed with descriptions of new species and records of several poorly known species from the Sierra Nevada de Santa Marta of Colombia. Subsequently, the senior author curated the "elfin"-like hairstreaks in his personal collection and pursued resolution of what specimens constituted species new to science. The result is the present paper. Four new elfin species were found in the Le Crom Collection, along with additional records of several others elfin species, some of which had been described from old Colombian material but were poorly known.

METHODS AND MATERIALS

Specimen photographs, associated abdomens, and eventually specimens for deposition, were forwarded to the American Museum of Natural History (AMNH) for comparison with material (particularly type material) of trans-Andean elfin species treated by Johnson (1992). When it was determined that certain specimens required description as new species, descriptive texts and morphological illustrations were prepared according to the generic characters and terminology employed by Johnson (1992).

In the entries below, species are described after an appropriate generic citation. Diagnoses are given in English and Spanish, descriptions in English. In descriptions, consistent with Johnson (1992), DFW,DHW and VFW,VHW are respectively employed for dorsal fore- and hindwing, ventral fore- and hindwing. The Spanish equivalents used for these same wing areas are: AAD, Ala anterior dorsal; AAV, Ala anterior ventral; APD, Ala posterior dorsal; APV, Ala posterior ventral.

NEW SPECIES

Genus *Solanorum* Johnson 1992: 199.

***Solanorum rusticum*,**
NEW SPECIES
Photoplate VIIIA, Fig. 1A.

DIAGNOSIS. More similar to *S. goleta* than *S. gentilii*, lacking HW tail. VHW with cryptic "woody" appearance. Differing from *S. goleta* most markedly by golden orbiculate mark extending from limbal CuA2 to anal lobe; mottled brown of VHW lacking the white suffusion prominent on *S. goleta* along outer costal margin. Instead, *S. rusticum* with gray stripe extending undulate across postmedial area and indented with a more prominent gray spot at the end of the discal cell. ***Genitalia***: first known female of genus, showing characters typical of infratribe Thecloxurina— robust ductus bursae and corpus bursae with hood. Differing form other Thecloxurina by robust "goblet"-like shape; tergite eight with anterior apodeme, corpus bursae hood tripartite, signa shieldlike.

DIAGNOSTICO. ***Alas***. Más parecida a *S. goleta* que a *C. gentilii*, le falta la cola del AP. APV con una apariencia críptica de "madera". Se diferencia de *S. goleta* la cuál está más marcada por manchas doradas orbiculatas extendidas de la nervadura CuA2 hasta el lóbula anal. El moteado café del APV carece de la sufusión blanca que domina en *S. goleta* a lo largo del margen costal exterior. En su lugar, *S. rusticum* con una raya gris ondulada a través del área postmedia y dentatda

con más prominentes puntos grises al final de la celda discal. ***Genitalia***: Primera hembra conocida del género, muestra caracerísticas típicas de la subtribu Thecloxurina, robusto conducto de bursa y bursa copulatrix con sombrerete. Difiere de otros thecloxurina por su forma de robusta "copa de vino", 8 tergitos con el anterior apodema, sombrerete de la bursa copulatrix tripartita, signade en forma de escudo.

DESCRIPTION. ***Male***. Unknown. ***Female***. DFW,DHW dark brownish black, FW apex produced, HW with very slight marginal tooth at place of hairlike tail typical of many hairstreaks. VFW,VHW ground mottled black and shades of brown; FW with slightest appearance of brown to gray suffusive postmedial band from costal through cell CuA1; HW showing cryptic "woody" appearance from mix of grounds crossed in the medial area by slightly lighter suffusive gray-brown band of uneven edging against the mottled grounds extending across postmedial area and indented with a more prominent gray spot at the end of the discal cell. Area from limbal CuA2 to the anal lobe marked by golden orbiculate mark, expanded in CuA2 and meandering lineally caudad to the lobe; lacking white suffusion postmedially and marginally as prominent in other congeners. FW length: 9.0 mm. (holotype). ***Female Genitalia.*** Fig. 1A. Characters typical of Thecloxurina. Tergite eight heavily sclerotized and with anteriorly directed apodeme. Ductus bursae robust with an expansive "goblet"-like superior plate (formed of paired bilobate lobes separated by a thin central fissure) terminating a short ductus with length slightly less than terminal expanse of plate. Cervix bursae slightly swollen and attached to the corpus bursae with a terminal hood formed of tripartite, heavily sclerotized, elements; signa of corpus bursae paired and shieldlike with a slight central keel showing two internally-directed spikes.

TYPE. Holotype female, Villapinzon Cundinamarca, 3200 m., 22 December 1991, leg. J. F. LeCrom. Limit of montane forest and paramo, deposited Instituto de ciencias Naturales- Museo de ciencias Naturales, Universidad Nacional Bogotá, Colombia (MCNB).

REMARKS. For comparative purposes, we take this opportunity to figure the holotype of *S. gentilii* (Photoplate VIIIA,1) which was illustrated only in a line drawing in Johnson 1992. The specimen has since been deposited at the AMNH. More specimens of this poorly known generic complex are needed, particularly to undertand the interspecific differences in the female morphology.

ETYMOLOGY. From the Latin *rusticus* referring to the woody or barklike appearance of the VFW,VHW grounds and pattern.

Genus ***Pontirama*** **Johnson 1992:** 40.

Pontirama nortea,
NEW SPECIES
Photoplate VIIIB; Fig. 1B.

DIAGNOSIS. Differing generally from congeners by small size (10 mm.) and shorter HW anal lobe; DFW with extremely elongate brown (5 mm.) ellipsoid androconial brand; VFW without prominent postmedial line; VHW unique-- with undulate band formed by dark brown suffusion between medial and postmedial areas (reminiscent of *Heoda colombiana* Johnson, Miller and Herrera). Differing from *Shapiroana* species (of similar wingshape) by completely brown DFW,DFW in both sexes. ***Genitalia***: showing narrow and sculptured features typical of genus and contrasting *Shapiroana*; particularly, valvae very elongate and narrow (see below).

DIAGNOSTICO. ***Alas***. Se diferencian en general de sus congéneres por su pequeño tamaño (10 mm.), el lóbulo anal del AP más corto; AAD con una marca androconial café en forma elipsoidal extremadamente alargarda (5 mm.). AAV sin linea postmedia prominente. APV única, con una marca ondulante formada por una sufusión café oscura entre las áreas media y postmedia (recuerd a *Heoda colombiana* Johnson, Miller y Herrera). Difiere de las especies de *Shapiroana* (de forma de alas similar) por las alas dorsales completamente café en ambos sexos. ***Genitalia***: Presentan estrechas y esculpidas líneas típicas del género en contraste con *Shapiroana*: En particular valvas muy alargadas y estrechas (Ver abajo).

DESCRIPTION. ***Male***. DFW,DHW warm brown to slightly darker brown, depending on specimen wear; FW outer margin quite straight, DFW with dark elongate and ellipsoid androconial brand; HW showing negligible production of anal lobe. VFW,VHW ground grizzled brown to red-brown over lighter beige; FW with rather straight suffusive brown or red-brown postmedial line from costa to cell CuA2; HW with contrasting grounds and medial line forming an undulate pattern across wing, first postbasally with brown suffusive marks as typical of many congeners, secondly along a very undu-

late brown medial line with darker suffusive brown ground basad, and lastly along the postmedial area bordering slight suffusive brown chevrons in the cells along the margins. Because of the undulate medial line, these markings are reminiscent of noncongener *Heoda colombiana* Johnson, Miller and Herrera 1992a, b; the species is also reminiscent of some taxa of *Shapiroana* Johnson 1992 which show a similar lack of production to the HW anal lobe. FW length 8.0 (holotype), 9.0 mm. (paratype). ***Female***. Unknown. ***Male Genitalia***: Fig. 1B. Vinculum showing narrow ventrum sloping to short parabolic saccus, vincular spurs elongate and upturned; falces elongate and arched, labides rounded at each terminal lobe beneath prominent microtrichia; valvae quite narrow and elongate with swollen lateral outlines of bilobes and caudal extensions [typifying genus and immediate sister genera] not emphatic compared to many congeners (see Remarks). Aedeagus with caecum greatly displaced from plane of shaft, latter comprising about three-fifths of aedeagal length.

TYPES. Holotype male, Paramo de Cruz Verde Cundinamarca, 3200m., 2 November 1989, leg. J. F. Le Crom, deposited AMNH. ***Paratype***. One male, Laguna de Siechs, Cundinimarca, 3300 m., 22 November 1992, leg. J. F. Le Crom (LeCrom Collection). Captured in Chusque (*Swallenochloa tessellata*) along rook in paramo habitat.

REMARKS. The circumstances surrounding the identification of this species are greatly reminiscent of those concerning *Shapiroana matusiki* (Johnson 1992: 151) and illustrate the extreme homoplesious nature of wing pattern characters in high Andean Eumaeini. Just as *S. matusiki* looked so much like *Penaincisalia aurulenta* Johnson (1990: 111) that the former's totally different genitalia came as a great surprise, one would readily identify *P. nortea* as either a *Shapiroana* (from its wing shape [although belied by its brown DFW, DHW grounds] or as *Strymon colombiana* based on the undulate VHW medial line. When dissection confirms neither of these genera, but *Pontirama* instead, one is belatedly reminded of the consilience of this identification with the generic wing characters of *Pontirama*, e.g. brown DFW,DHW color, large ellipsoid FW brands, and interwoven and suffusive submedial VHW markings. Interestingly, however, one is more easily drawn at first by the "flashy" marks of *P. nortea*, which point to the wrong genera. When the authors exchanged photographs, both concurred that the entity was most probably a new species of *Shapiroana* or the first known modern collection of *Heoda colombiana*. Dissection belied both views. Among *Pontirama*, *P. nortea* is one of those species showing elongate valvae of nearly tapered shape. This has always been viewed by the junior author as the primitive precursor of the widely sculptured bilobes and caudal extensions characterizing the sister genera *Rhamma*, *Paralustrus* and *Shapiroana*. Characters of *P. nortea* support the view expressed by Johnson (1992) that less sculptured valvae among members of this clade are a primitive condition, along with lack of DFW,DHW structural color. One will also note the small size of *P. nortea*, also true of congener *P. adriana* Johnson (1992, TL Cuzco, Peru).

ETYMOLOGY. From the Latin referring to "north", here indicating the Colombian occurrence of this species compared to South American congeners.

Genus *Paralustrus* Johnson 1992: 153.

***Paralustrus salazari*,**
NEW SPECIES
Photoplate VIIIC; Fig. 1C.

DIAGNOSIS. Male looking much like females of other *Paralustrus* species-- wide DFW,DHW black marginal bands (4-5 mm. FW, 3 mm. HW) framing blue-green flecked iridescent ground; DHW anal lobes bright yellow. VFW with distinctive yellow-green postmedial band extending from costa to cell CuA2; VHW contrasting medial-costa yellow green "notch" of congeners by being bordered distally by a medial black band, latter showing a displaced black blotch along the anal angle toward the anal lobe. ***Genitalia***: Among other characters (see below), differing from all other *Paralustrus* by the particular angulate shape of the valve terminus, which is sculptured ventrally and laterally much like a "pike" (among "spear"-like shapes) and greatly setate laterally.

DIAGNOSTICO. ***Alas***. El macho se parece más a las hembras de otras especies de *Paralustrus* Ancho (4-5 mm. AA, 3 mm. AD). AAD y APD con bandas negras marginales enmarcando zonas con fondo azul verde iridiscente. APD: lóbulos anales amarillos brillantes. AAV con una distintiva banda postmedia amarilla verdosa de la costal a la celda CuA2. APV (en contraste con el corte medio costal amarillo-verde de los congéneres) con esta coloración esparcida como una banda a través del ala entera bordeada en le zona distal por una franja media negra, esta última que muestra una mancha negra corrida

Figure 1. MORPHOLOGY of NEW ELFIN BUTTERFLIES

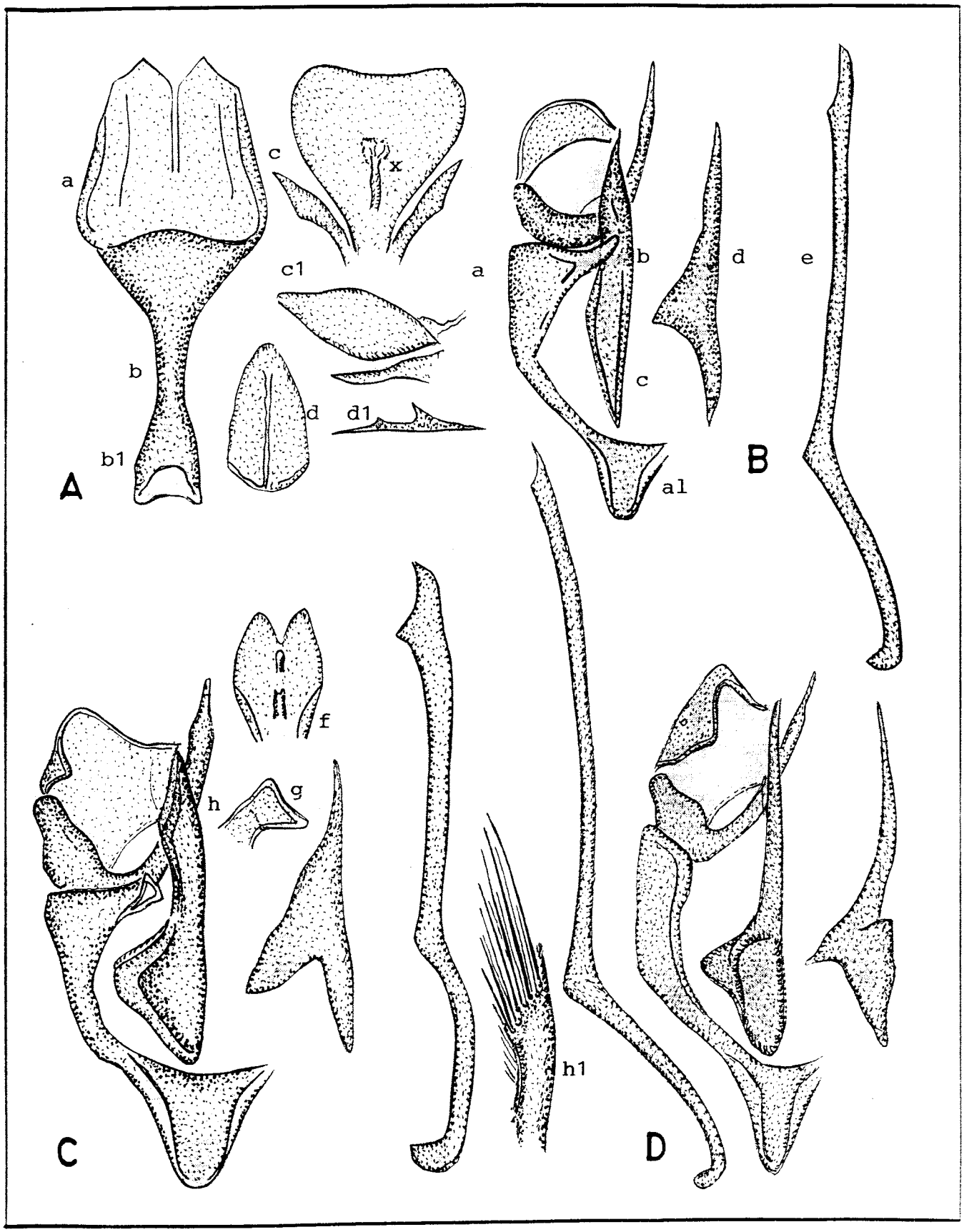
Format. *Female* (**A**), genitalia in ventral view (left) from terminal superior plate (top, a), along ductus bursae (b) to cervix bursae ventrum (b1); at immediate right (c) terminal view of cervix bursae "hood" typical of infratribe THECLOXURINA, tripartite in this species (ductus seminalis, x), lateral view of hood, c1; (d) outer view, corpus bursae signum, lateral view (d1). *Males* (**B-D**), genitalia in ventral view, left showing overall genitalia (a) with aedeagus removed [placed right, e, in lateral view;] genitalia showing (a) left bilateral section of genitalia with saccus in full (a1) and, on valvae (bc), left bilateral lobe denoting bilobed area (c), caudal extension (b) and lateral view of both (d). Additional features for **C,D**: in **C**, h shows robust sculptured valve terminus of *P. salazari*, at left without elongate microtrichia attached and obscuring sculptured spearlike terminus (right, h1, showing elongate microtrichia attached); g shows lateral view of vincular spur, f, ventral view of sculptured hood at aedeagus terminus.

A. ***Solanorum rusticum***, holotype female (MCNB).
First known female of genus, showing habitus typical of Thecloxurina infratribe.

B. ***Pontirama nortea***, holotype male (AMNH).
Showing valvae habitus typical of species and distinguishing it (along with brown wing color) from small *Shapiroana* species of more similar wing shape.

C. ***Paralustrus salazari***, holotype male (AMNH).
Emphasizing robust, sculptured, and pronglike valve terminus covered heavily with elongate microtrichia. Other *Paralustrus* species show bulbous terminus but far less robust in three dimensions and not approching the "spikelike" or "spear point" character of this taxon.

D. ***Radissima torresi***, holotype male (MCNB).
Although showing a wing pattern somewhat reminiscent of SE Brazilian *R. esolana*, genitalia are more typical of Andean *R. catadupa*. The shouldered valve bilobe and extremely elongate caudal extension are typical of many species of the genus.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a lo largo del ángulo anal hacia el lóbula anal. ***Genitalia***: Entre otras características (Ver más abajo) difiere de todas las otras *Paralustrus* por la valva de forma angulosa en la cual la parte fina está muy esclerotizada, en forma de punta y cubierta lateralmente de setas.

DESCRIPTION. ***Male***. DFW,DHW much like a *Paralustrus* female with wide black marginal bands (4-5mm. FW, 3 mm. HW) encompassing blue-green flecked iridescent ground; DHW anal lobes bright yellow, no tails. VFW,VHW ground yellow green with suffusions of brown as typical of genus but with divergent pattern on both wings— FW with yellowish green postmedial band extending from costa to cell CuA2; HW, in contrast to all congeners showing the medial-costa yellow-green "notch"-like patch, instead with a narrow notch bordered distally by a unique medial black band extending across wing and showing a displaced black bloth along the anal angle toward the anal lobe. FW length 12.0 mm. ***Male Genitalia***. Fig. 1C. Vincular ventrum robust, extending to widely parabolic saccus, vincular spurs robust and dorsally inclined in the terminal one-half; falces robust and broadly arched. Valvae extremely sculptured— bilobes widely rimmed and extremely shouldered, contrasting a central constriction and then a highly sculptured, tri-planed "pike"-like shape in the terminus anchoring robust and elongate microtrichia. The habitus of this valve shape is somewhat difficult to describe but differs from congeners most notably in the heavily sclerotized lateral and ventral sculpturings that form the "spear"-like terminus. These contrast the flatter, triangulate or more elliptic, termini of congeners in a way suggesting, among "spear"-like shapes, a "pike" (traditionally a rhomboid tip anchored in a produced [rounded or angulate] base). Aedeagus robust with shaft straight and caecum bowed; shaft comprising about three-fifths of aedeagal length, terminating with a bifurcate hood sheltering two cornuti.

TYPE. Holotype male, Cerro Aguacatal Quinchia Risaralda, 1600 m., 15 May 1993, leg. J. Salazar, hilltopping in primary forest, deposited AMNH. Additional specimens possibly in recent type locality samples not received at date of publication (see Remarks).

REMARKS. Julián Salazar collected the holotype and, subsequently, further samples have been made at the type locality by Colombian workers. Although the latter have not been received for examination, the distinctiveness of the holotype promises an exciting find when the companion females can be located. Heretofore, except for *P. paccius* Johnson of Bolivia and *P. orosiensis* Johnson, poorly known from old specimens from Costa Rica, the genus has been mostly known for its two widespread and familiar taxa *P. commodus* (Felder and Felder) and *P. familiaris* Johnson (the *Thecla viridis* Lathy of common usage). There has obviously been some doubt among lepidopterists whether this clade actually was diverse enough for generic worth and whether it harbored further regional or local endemics. *Paralustrus salazari* appears to be the first such find in northern South America (the second for South America). Excitement by the collectors at the peculiar wing pattern of the species was readily corroborated by dissection of the unusual genitalia. It appears that it will not be difficult to locate more examples of this species and its discovery is a further comfort to those who supported the initial description of the odd taxon *P. paccius* from old Paris museum material.

ETYMOLOGY. Named for Julián A. Salazar E. (Manizales, Colombia) who recently has published widely on Colombian butterflies and also collected the type specimen of this species.

Genus ***Radissima*** Johnson 1992: 170.

Radissima torresi,
NEW SPECIES
Photoplate VIIID; Fig. 1D.

DIAGNOSIS. Although known specimen is worn, superficially most similar in its rounded wing shape and VFW,VHW pattern to *R. esolana* Johnson of southeastern Brazil, showing a generally cryptic undersurface with basal to medial dentate markings on the HW (but these yellow-green, not brown and black as on *R. esolana*). DFW, DHW light silvery blue (*R. esolana* dark azure) with wide black wing margins (particularly on FW with bold elliptic androconial brand). ***Genitalia***: More similar to *R. catadupa* (Hewitson) [TL Ecuador] than *R. esolana*, vinculum narrow and widely elliptic across ventrum; valvae with caudal extensions elongate and narrowly tapered from broad elliptic and laterally shouldered base.

DIAGNOSTICO. ***Alas***: Aunque el especimen conocido está deñado es superficialmente más similar en la forma de alas redondeadas, AAV y APV, a *R. esolana* (S.E. de Brazil), mostrando dibujos crípticos generales debajo de la superficie del patrón con marcas dentadas de la zona basal a la zona media sobre AP (pero verde amari-

llo y no cafe y negro como para *esolana*). AAD y APD azul plateado claro (*esolana* azul oscuro) con bandas marginales negras anchas (particularmente en el AA con una gruesa marca androconial elíptica). ***Genitalia:*** Más parecida a *R. catadupa* que a *R. esolana*, vinculum achicado y en lo largo elíptico, valva en forma de cono alargado y estrecho a partir de una base ancha elíptica y reforzada lateralmente.

DESCRIPTION. ***Male.*** DFW,DHW light silvery blue with well-defined wide black margins on both wings, particularly around apex of FW; FW with bold blackish elliptic androconial brand; HW with slight tail at vein CuA2 terminus on known specimen. VFW,VHW showing wear but describable as showing yellow-green ground mottled in a cryptic fashion with overshades of yellow and brown. FW with a lineal brown band apparent from costa to cell CuA2; HW with dentate medial band apparent, comprised of suffusive brown, and similar to the black dentate medial band on *R. esolana* but not as narrow and lineal. Limbal area showing markings suggesting cryptic mottling of the ground, overlaid with a darker Thecla-spot marginal at cell CuA1. FW length: 11 mm. (holotype). ***Female.*** Unknown. ***Male Genitalia.*** Fig. 1D. Ventrum of vinculum narrow and widely elliptic, sloping to moderately small and somewhat pointed saccus; falces narrow and widely arched. Valvae typifying congeners showing the least varied sculpturing of the valvae (*e.g. catadupa* Species Group), with elongate and narrowly tapered caudal extensions and a broadly elliptic bilobed area with a steep lateral shoulder in the terminal one-half. Aedeagus elongate, considering that the caecum (which comprises at least one-third of the aedeagal length) is displaced some 60 degrees from the plane of the aedeagal shaft; aedeagus terminus simple, with two pencilate cornuti.

TYPE. Holotype male, Cerro Aguacatal Quinchia Risaralda, 1,600 m. 15 May 1993, leg. J. Salazar, deposited (MCNB).

REMARKS. This species is distinctive but it would be particularly helpful to have fresher specimens. The original photograph was suspected by the junior author as a thecloxurine elfin of some sort; dissection fortuitously placed the species easily in the *catadupa* Group of *Radissima*. Of great interest, the species departed from the wing pattern of the *R. catadupa*, *R. curitabaensis* sister pair and resembled instead *R. esolana*, a species known from a single SE Brazil specimen. If *R. esolana* and *R. torresi* form a sister pair, this pair would mirror the Ecuador/Colombia, SE Brazil disjunction of *R. catadupa* and *R. curitabaensis*. All of these latter species contrast more well known and widely distributed species of *Radissima* and indicate that, in all eumaeine genera, regional workers should be watchful for isolated endemics.

ETYMOLOGY. Patronym for Rodrigo Torres, Biology Professor at the Universidad Pedagogica in Bogotá and Curator of its Natural History Museum. Mr. Torres is an avid worker on Pieridae but, based on the recent availability of revisionary work, has also been organizing graduate students to sample Andean Lycaenidae.

NEW RECORDS

Among specimens forwarded by the senior author for study at the AMNH were recently collected examples of other elfin species, some formerly known only from type material. Following the precedent of Johnson and Adams (1993) we take this opportunity to record and illustrate the following.

Candora triangulara Johnson. 3 specimens, Guasca Cundinimarca 3400 m., 31 October 1992, leg. J. F. Le Crom, hilltopping in a little tree in the limit of tree line and paramo. This species was formerly known only from Antioquia, Colombia type material at the Allyn Museum of Entomology, Florida Museum of Natural History. Photoplate VII,E.

Abloxurina contracolora Johnson. 1 specimen tentatively identified because abdomen not extant. A very small specimen (FW alar 10.0 mm.) but fitting the female description of the species. An early member of the Le Crom lycaenid collection containing label data limited to Otanche Boyaca, Colombia. The species was known only from old material, TL "Bogotá, Andes of Colombia".

Rhamma comstocki Johnson. As noted in Johnson and Adams (1993) this species has proved frequent in Colombian uplands. The Le Crom Collection contained: 1 specimen, Neusa Cundinimarca, 3200 m., 26 March 1988, leg. J. F. Le Crom (FW 7 mm.); 1 specimen, Zipaquira Cundinimarca 3300 m., 9 May 1992 leg. J. F. LeCrom (FW 8.0 mm.). The habitat was montane primary forest at its limit with the paramo.

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PHOTOGRAPHIC FIGURES

Photographs of adults share a Plate, numbered **Plate VIII**, with specimens from certain other *Reports*. As marked on this plate of figures, Plate VIII contains the following specimens relevant to this *Report* **#38**.

VIII,A. *Solanorum rusticum* (holotype), ventral only.
VIII,A1. *Solarorum gentilii*, ventral only.
VIII,B. *Pontirama nortea* (holotype and paratype), dorsal and ventral of respective specimens.
VIII,C. *Paralustrus salazari* (holotype), dorsal and ventral.
VIII,D. *Radissima torresi* (holotype), dorsal and ventral.
VIII,E. *Candora triangulara* (recently captured specimens, dorsal and ventral of respective specimens).

PHOTOGRAPHIC PLATES

Unnumbered pages providing short additional captions for each photographic figure, noting colors (since photographs are in black and white) and specific wing characters important for diagnostic purposes.

Index to Photographs of Adults and Diagnostic Markings

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Plate VII,1. ***STRYMON***

Fig. VII,1A. *Strymon alexandra*, holotype male (very large; dorsal surface brilliant crusty powder-blue over HW and FW apices; ventral ground gray beige with simple lineal black and yellow-edged band bending to prominent "W" in anal area).

Fig. VII,1B. *Strymon altamiraensis*, holotype male [note size constraints dictate order of plate photographs] (small; dorsal surface brown with vivid azure blue patch in posterior half of HW; ventral surface gray-white, HW crossed by band of small lunulate orange elements each ringed narrowly with white and black) [reminiscent of *Ministrymon* species].

Fig. VII,1C. *Strymon rojos*, holotype male (dorsal color fuscous, FW brand black, HW with bright violet-blue between distal HW veins; ventral color beige, spot-bands bright dark red paralleled in postmedial areas by blotches of white).

Fig. VII,1D. *Strymon campbelli*, holotype male (large; wing shape angulate, FW brand large suffusive and rectangulate, dorsal color gray-blue, ventral color mottled to sooty beige with light orange lunulate bands).

Fig. VII,IE. *Strymon glorissima*, allotype female (very large; dorsal color bright flat blue-white except for fuscous FW apex, ventral color bright gray-white crossed by emphatic lunulate orange bands).

Fig. VII,IF. *Strymon trunctogen*, holotype male (moderate size; dorsal HW and posterior FW flecked with grainy azure blue against sooty ground; ventral ground light beige crossed by closely aligned brown lunulate elements).

Fig. VII,2. ***ARGENTOSTRIATUS***

Fig. VII,2A. *Argentostriatus tamos*, male left, female right, Chiriqui, Panama (AMNH) (a, submarginal and costal markings reduced compared to South American congeners, HW silver band over brown ground less radically tapered; dorsal color, HW iridescent silver-blue [male], flat blue-white [female], FW blackish to brown) [female inserted for *matho* below to show differences].

Fig. VII,2B. *Argentostriatus matho*, female, Cayumba Puente, Peru (AMNH, added as Material Examined at proof) (a, submarginal and costal markings more pronounced than Central American congener, silver band over brown ground more extremely tapered; dorsal HW iridescent silver-blue [male], flat blue-white [female], FW blackish to brown).

Index to Photographs of Adults and Diagnostic Markings

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Fig. VII,2. ***ARGENTOSTRIATUS*** **(continued)**

Fig. VII,2C. *Argentostriatus roraimaevagus*, holotype male (a, submarginal area with second prominent silver band in addition to medial silver band over brown ground; dorsal color black, HW with irregular distal patch of dark iridescent azure blue).

Fig. VII,2D. *Argentostriatus calus*, male left, female right, Banos, Ecuador (AMNH) (a, male dorsal brilliant iridescent dark silver-blue on both wings posterior of black FW medial and apex; female dorsal dull tawny brown with flat blue flush; ventral color yellow-beige [buff], FW with black triangulate patch, HW with lineal white band forming prominent "W" in anal area).

Fig. VII,2E. *Argentostriatus wolfii*, holotype male above right, allotype female, below left (small, a, male anal area flushed iridescent blue, b, remaining wing grainy flecked deep azure blue; ventral ground buff, FW with expansive angulate black patch, HW with very narrow band black/white band forming "W" in anal area; female dorsal dull blue-gray, ventral as male but suffusive).

Fig. VII,2F. *Argentostriatus eitschbergeri*, holotype male left, allotype female right (very small, a, ground dull silver-violet against very narrow fuscous borders; b, HW band obscure narrow white and quite entire, with reduced angles in anal area over yellow ground, FW patch suffusive; female dorsal dull violaceous gray, ventral as male but suffusive).

Fig. VII,2G. *Argentostriatus mysticus*, holotype male (a, limbal area of HW with bold black Thecla-spot against suffusive blue ground, b, obsolescent suffusive band over yellow ground, bolder only along "W" in anal area, FW with bold black triangulate patch; dorsal color black with grainy blue-green iridescence across HW and posterior FW).

Fig. VII,2H. *Argentostriatus clarina*, male, Presidio, Mexico (AMNH) (a, bright silver-blue over anterior of HW only, against gray-black ground; ventral ground brown crossed by vivid silver-white bands and red along limbal area; female dorsal with silver-blue across wider area of HW).

Plate VII,3. ***TIGRINOTA*** **(new species)**

Fig. VII,3A. *Tigrinota catamarciana*, holotype male [plate graphics in error] (a, eye-spot like maculation at base of FW of contrasted tawny gray and red-brown, b, HW nearly concolorous with grizzled orange-brown grounds; dorsal color lustrous violet against brown borders, FW brand elongate and suffusive).

Index to Photographs of Adults and Diagnostic Markings

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Plate VII,3. ***TIGRINOTA*** **(new species, continued)**

Fig. VII,3B. *Tigrinota chaosa*, holotype male [plate graphics in error] (a, dorsal FW with apical arc violet-blue in addition to rest of violet-blue blue against brown borders, FW brand rectangulate and grainy; b, FW with narrow "chaotic" costal bands not easily counted as "five" as on other group members, c, HW marks also "chaotic" dominated by large brown basal patch with additional brown mottling extending distally rather at random across wing).

Plate VIII. NEW ELFIN BUTTERFLIES

Fig. VIII,A. *Solanorum rusticum* and [for reference previously unfigured *Solanorum gentilii*], respectively holotype female and male, both V only. (*rusticum* ventral with "woody" cryptic pattern including bright gold discal mark and thin golden medial band; *gentilii* with suffusive white postmedial area after mottled gray and brown basal pattern).

Fig. VIII,B. *Pontirama nortea*, holotype male, D,V (ventral HW pattern greatly undulate across medial area, formed of red-brown elements over beige; dorsal color brown).

Fig. VIII,C. *Paralustrus salazari*, holotype male (dorsal with limited blue-green iridescence as in congener females; ventral with limited yellow costal "notch" and [not as clear in BxW] suffusive black medial band and subanal patch against green distal ground).

Fig. VIII,D. *Radissima torresi*, holotype male (dorsal silver-blue ground against blackish borders and brand; HW mottled cryptic yellow-green, worn specimen still showing dentate medial markings typical of group).

Fig. VIII,E. *Candora triangulara*, male, Guasca Cundinimarca, Colombia (AMNH), first specimens since types (large for genus; dorsal FW with bold black trangulate suffusion around brand, ventral with red-brown mottling and medially striped appearance).

Plate IX,1. GENERA OF GREEN HAIRSTREAKS

Fig. IX,A. *Androcona muridosca*, male, Jalapa, Mexico (AMNH) (a. HW base with broad grainy scent brand against grainy blue flecked ground; ventral color green with thin meandering stripes of white dashes and small yellow-white Thecla-spot).

Index to Photographs of Adults and Diagnostic Markings

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Plate IX,1. GENERA OF GREEN HAIRSTREAKS (continued)

Fig. IX,B. *Androcona lecromi*, holotype male (a, gigantic grainy gray scent brand against silver-blue ground; b, HW with two [postbasal, postmedial] narrow white stripes against aquamarine ground).

Fig. IX,C. *Chalybs janais*, male, Bartica, Guyana (AMNH) (a, HW with bold black Thecla-spot and thin anal line over brilliant grainy green ground; b, dorsal ground brilliant grainy azure, flecked over black).

Fig. IX,D. *Chalybs esmeralda*, male, Blumenau, Brazil (AMNH) (a, HW with jagged black line crossing through suffusive Thecla-spot and into limbal area over brilliant grainy green ground; dorsal ground brilliant grainy azure, flecked over black).

Fig. IX,E. *Chalybs schmidtmummi*, holotype male (a, [requiring distinction from *C. hassan* of Guyana Shield and appearing like species of *Sarracenota*]— with minute dashed white/black HW band and small white/black Thecla-spot like *Sarracenota* but with *Chalybs* genitalia and without orange limbal and Thecla-spot markings of *C. hassan*; dorsal color with succinct patches of azure blue over black as in *Chalybs*).

Fig. IX,F. *Sarracenota opisena* [graphics of plate misspelled], male, Cali District, Colombia (AMNH) (dorsal without brands, blue-gray against brown borders; ventral light green with white/black HW spot band and orange/black Thecla-spot).

Fig. IX,G. *Sarracenota gabina* [moved on plate at proof to be closer to IX,J], female, Panama Canal Zone (AMNH) (chosen to typify congeners with continous ventral white/black HW band and bold orange Thecla-spot over light green ground; dorsal color suffusive grainy blue over blackish) [must be separated from *Necmitoura marcusa*, Fig. IX,J].

Fig. IX,H. *Serracenota oleris*, Santissima-Trinidad, Paraguay (AMNH) (small; chosen to show female traits typical of congeners with continuous meandering white/black HW band and orange at Thecla-spot and adjacent anal cell over light green ground; dorsal brown with suffused silver-blue on HW).

Fig. IX,I. *Sarracenota myron*, female, Alturas, Costa Rica (AMNH) (chosen to show typical female dorsal in species blackish with grainy blue across HW).

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Plate IX,1. GENERA OF GREEN HAIRSTREAKS (continued)

Fig. IX,J. *Necmitoura marcusa*, holotype female (ventral ground dark [kelly] green crossed on HW by angulate continuous black/white band, limbal area with orange from anal lobe through M3 or M2, including bold orange/black Thecla-spot; dorsal color deep azure blue over brown framing HW spot between tails) [reminiscent of Nearctic *Mitoura*, especially *M. dospassosi*].

Fig. IX,K. *Cyanophrys agricolor* [generic type species], Alturas, Costa Rica (AMNH) (ventral markings not actually common in genus, e.g. mottled and suffusive brown and gray over yellow green) [all *Cyanophrys* males dorsally iridescent blue, ventral usually with white spots or white bands over flat green ground].

Fig. IX,M-O. Synoptic of Taxa of *Antephrys* [all males dorsally brown].

IX,M. *A. fusius*, female, Jalapa, Mexico (AMNH) (a, fully formed magenta scallops along HW limbal margins separate *Antephrys* females from *Cyanophrys*; HW spot-bands are irregular dashes, more continuous in anal area).

IX,N. *A. marialis*, female, Turrialba, Costa Rica (AMNH) (a, fully formed magenta scallops along HW limbal margins separate *Antephrys* females from *Cyanophrys*; HW spot-bands are irregular dashes, more continuous in anal area).

IX,O. *A. prestoni*, holotype male, allotype female (small; spot-band evenly spaced white dots in rather straight and oblique fashion across dark green HW, Thecla-spot small).

Plate IX,2. *RINDGEA*

Fig. IX,2A. *Rindgea umuarama*, holotype male left, allotype female right (a, male with bold black FW scent brand over brown ground, HW with fine-grained shiny deep blue iridescence across HW medial-limbal from top of discal cell to margins (female dorsal flat violaceous); both sexes, ventral ground tawny crossed on HW by continuous jagged black/white band forming slight "W" in anal area and with bold orange Thecla-spot).

Fig. IX,2B. *Rindgea pyxis*, holotype male (a, male with black FW scent brand on blackish ground, HW with brilliant, more medially restricted, iridescent blue; ventral ground tawny crossed on HW by continuous slightly jagged black/white band forming very slight "W" in anal area and with reduced red-brown Thecla-spot).

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Plate I ("2nd Series"*)
["Plate I" used here again because move of this paper to end of volume due to earlier mailing date of ***Report*** **31**]

Fig. I,IA-B/1-3. *Theorema sapho*, full sides, above male, below female (numbered facies as stressed in figure captions of text: **a**, bold white FW band in female, **b**, emerald dashes, **c**, no tails).

Fig. I,5-6. *Denivia saphonota*, half-sides [5/6] as noted in figures captions of text, holotype female (resembling *Theorema sapho*— **a**, bold white FW band, **b**, emerald dashes, **c**, tails).

Fig. I,6. *Atlides browni*, holotype male (**a**, brand broken near center; **b**, red limited to (i) enlarged lunule at base of hindwing above vein Sc+R1 and (ii) slight suffusion basad along vein 2A; **c**, emerald green arching across anal angle from anal margin to limbal area; dorsal color bright dark blue, black forewing margin suffusive, hindwing marginal emerald green limited to cell CuA2 and anal lobe).

Synoptic of certain other *Atlides*—
showing characters in Diagnosis and Remarks of *A. browni*.

Fig. I,7. *Atlides carpasia*, male, Presidio, Mexico (AMNH) (FW brand broken in distal one-third, dorsal color expansive deep suffusive blue; ventral ground concolorous sooty, ventral HW with two small red slashes (second posterior in cell Sc+R1) and prominent red streak to post medial area).

Fig. I,8. *Atlides halesus*, male, Brownsville, Texas (AMNH) (FW brand broken at half to basal one-third; dorsal color brilliant blue; ventral ground concolorous brown to sooty, ventral red very reduced and basal, emerald green from anal angle to limbal area).

Fig. I.9. *Atlides polybe*, male, Cumbres de San Javier, Argentina (AMNH) (FW brand broken in distal one-half; dorsal color intercellular brilliant powder-blue; ventral ground intercellular brown, red-brown to golden, red streaked outward along basal and anal intercellular spaces; green from anal angle to limbal area).

Fig. I.9A. [added at proof]. *Atlides atys*, male, Alturas, Costa Rica (AMNH). (FW brand broken in distal one-half to basal one-third, dorsal color suffusive silver-blue; ventral ground intercellular golden-brown, red streaked from basal to anal and costal intercellular spaces; green from anal angle to narrowly along limbal area).

Following hereafter as respective Plates VII,1-IX
are photofigures for ***Reports*** **35-40**
with those for ***Report*** **41** following immediately thereafter

Since Plates are not necessarily segregated
on separate pages, for rapid reference
Plate Nos. (**I**, **VI,2**, etc.) are placed
in **bold** at appropriate places per page.

VII,1—

STRYMON VII,1A *S. ALEXANDRA* MALE D,V

VII,1C *S. ROJOS* MALE D,V

VII,1B *S. ALTAMIRAENSIS* MALE D,V

VII,1D *S. CAMPBELLI* MALE D,V

VII,1F *S. TRUNCTOGEN* MALE D,V

VII,2—

VII,2 *ARGENTOSTRIATUS* A *A. TAMOS* MALE D,V

VII,2A *A. TAMOS* FEMALE D,V

◀VII,1E *S. GLORISSIMA* FEMALE D,V

VII,2B *A. MATHO* FEMALE D,V

VII,2C *A. RORAIMAEVAGUS* MALE D,V

VII,2D *A. CALUS* MALE D,V

VII,2D *A. CALUS* FEMALE D,V

VII,2E *A. WOLFII* MALE D,V

VII,2E *A. WOLFII* FEMALE D,V

VII,2F *A. EITSCHBERGERI* MALE V D

FEMALE D,V

VII,2G *A. MYSTICUS* MALE D,V

VII,2H *A. CLARINA* MALE D,V

VII,3—

VII,3A *T. CATAMARCIANA* FEMALE D,V

VII,3B *T. CHAOSA* FEMALE D,V

D

V

VIII,C *PARALUSTRUS SALAZARI* MALE D,V

PONTIRAMA

VIII,B *PONTIRAMA NORTEA* MALE

SOLANORUM

VIII,A *SOLANORUM RUSTICUM* FEMALE

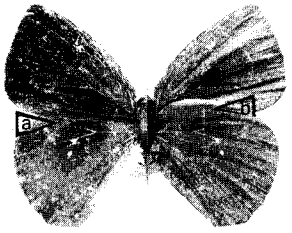
VIII,A1 *SOLANORUM GENTILII* MALE

VIII,D *RADISSIMA TORRESI* MALE D,V

VIII,E *CANDORA TRIANGULARA* MALE D

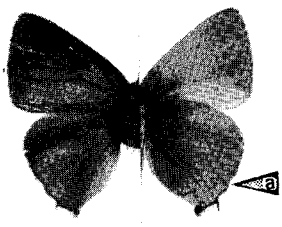
IX,1–

ANDROCONA MURIDOSCA MALE D,V



IX,B *A. LECROMI* MALE D,V

CHALYBS IX,C *C. JANAIS* MALE D,V



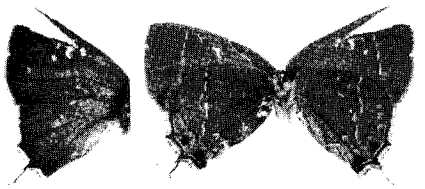
IX,D *C. ESMERALDA* IX,E *C. SCHMIDTMUMMI*

SARRACENOTA

IX,F *S. OPESINA* MALE D,V

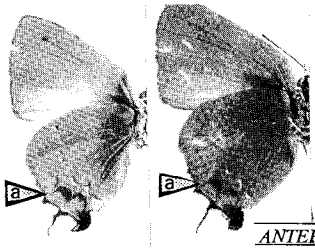
IX,I *S. MYRON* IX,H *S. OLERIS* FEMALE D,V

IX,G *S. GABINA*

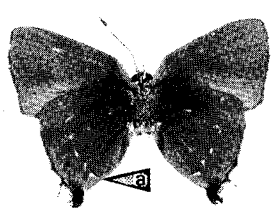


IX,J *NECMITOURA* IX,J *N. MARCUSA* FEMALE D,V

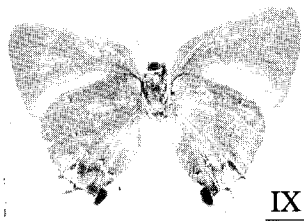
CYANOPHRYS



ANTEPHRYS



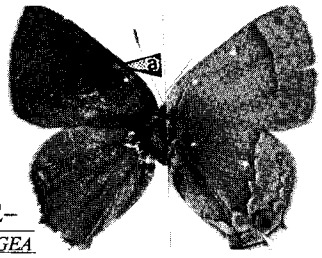
IX,K *C. AGRICOLOR* IX,M *A. FUSIUS* IX,N *A. MARIALIS*



IX,O *A. PRESTONI* MALE D,V

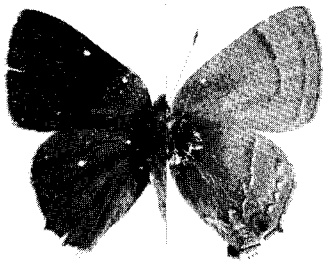
IX,2–

RINDGEA

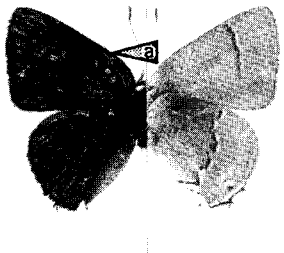


IX,O *A. PRESTONI* FEMALE D,V IX,2A *R. UMUARAMA* MALE D,V

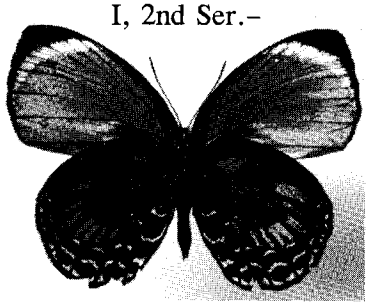
I, 2nd Ser.–



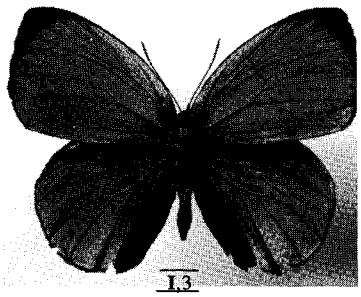
IX,2A *R. UMUARAMA* FEMALE D,V



IX,2B *R. PYXIS* MALE D,V

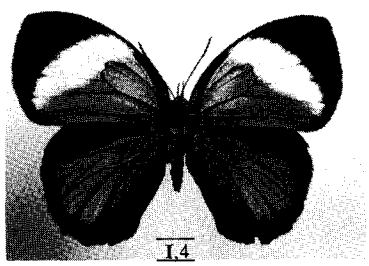


I,1A *T. SAPHO* MALE V



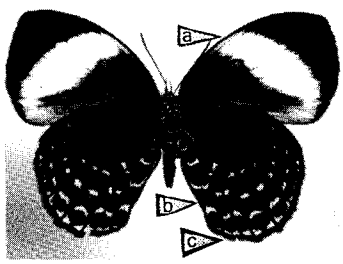
I,3

I, B *T. SAPHO* MALE D

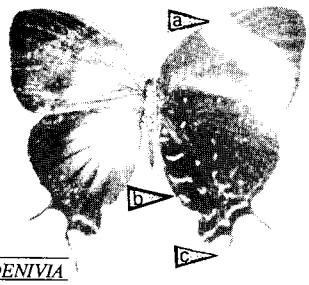


I,4

I, B *T. SAPHO* FEMALE D

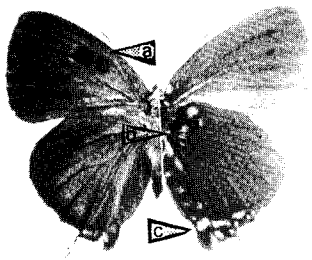


I,2A *T. SAPHO* FEMALE V



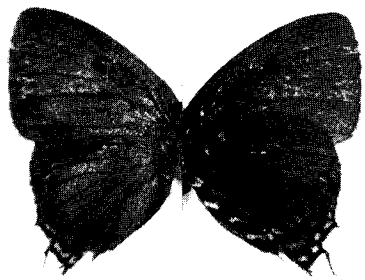
DENIVIA

I,5-6 *D. SAPHONOTA* FEMALE D,V

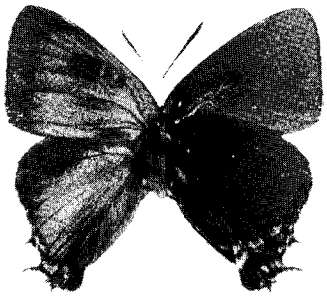


ATLIDES

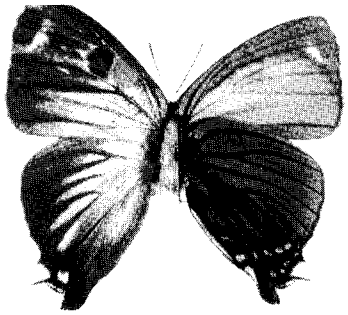
I,6 *A. BROWNI* MALE D,V



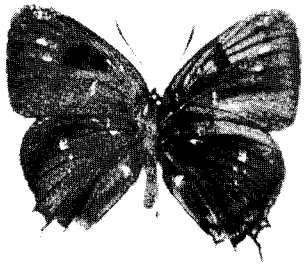
I,7 *A. CARPESIA* MALE D,V



I,8 *A. HALESUS* MALE D,V



I,9 *A. POLYBE* MALE D,V



I,9A *A. ATYS* MALE D,V at proof

Genera for the Small Green Hairstreak Butterflies of the Neotropical Realm (Lepidoptera, Lycaenidae, Theclinae)

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ABSTRACT

Genera of Neotropical "Green Hairstreak" butterflies are distinguished by a key and descriptions including the following genera: *Chlorostrymon* Clench, *Cyanophrys* Clench, *Plesiocyanophrys* **new genus**, *Antephrys* **new genus**, *Chalybs* Hübner, *Sarracenota* **new genus**, *Androcona* **new genus**, and *Necmitoura* **new genus**. *Chlorostrymon* has been previously revised.

Compared to old "common usage" (Draudt and authors), the first of these genera approximates the bright blue *"Thecla" "amyntor* group", the second a primitive assemblage of this group (Clench's *T. goodsoni, argentinensis* and relatives) and the third a brown sister group (the *Thecla "fusius* group"). The latter is described to provide more available names in cladistic structure including Nearctic *Sandia* Clench and *Deciduphagus* Johnson 1992. *Chalybs*, long neglected, is defined from its type species, with the remaining three genera including members of the *Thecla "badeta"* and *"nana"* Groups and, lastly, a Neotropical near look-alike of Nearctic *Mitoura* Scudder. Although systematic emphasis is on morphological characters, the key uses superficial wings characters to facilitate rapid initial identification.

New combinations among taxa selected for characterization or illustration include *Androcona muridosca* (Dyar), *Sarracenota opisena* (H. H. Druce), *S. myron* (Godman and Salvin), *S. oleris* (H. H. Druce) and *S. gabina* (Godman and Salvin).

New species include *Androcona lecromi*, *Necmitoura marcusa*, *Chalybs schmidtmummi* and *Antephrys prestoni*. Other *Chalybs* taxa treated include *C. janias* (Cramer) [*"C. janais"* (Hewitson)], *C. esmeralda* (Jones) and *C. hassan* (Stoll). As applicable, lists of *"Thecla"* species tentatively assessed as probable members of groups are provided.

INTRODUCTION

There are several groups of the Neotropical "Green Hairstreaks" that require distinction. The present paper concerning these has a rather peculiar origin. Initially, working on a study of "small Theclinae" of northern Argentina, we required several new genera for species in Argentina that represented southernmost members of various groups of Neotropical *"Thecla"*. Attempting to be selective for the regional study, we included descriptions of some new genera as an Appendix to that paper. However, reviewers suggested it was not desirable to have generic descriptions at the back of a paper and that we should move these forward. This created other problems— an imbalance in subject matter for the original paper *and* notable absence of other "green" groups when the whole of the Neotropics was considered. Thus, it seemed necessary to produce a short paper including all the green groups. In this treatment we could not hope to fully elaborate each of these groups' species (because this had not been our intent in original museum and reference work, particularly overseas). We could, however, provide a framework for understanding and generally recognizing these taxa.

The result is (i) a "Key" distinguishing "Green Hairsteak" genera of the Neotropical Realm based on very simple characters and (ii) various generic descriptions based on the morphology of selected congeners. This approach provides names for regional studies but also does not neglect the larger context of these widely distributed butterflies. Certainly, additional taxonomic characters should be used in further elaboration of each of these groups; however, for purposes here, the simple Key probably allows identification to genus of 80-90% of the relevant species. As is well known, there will always be "autapomorphic taxa" in speciose groups which defy one or another general characterization. Workers with enough knowledge of diversity will automatically "remedy" this problem by their wider knowledge of groups. In any event, since the morphologies of all genera are illustrated (and differ greatly) any serious worker can use dissections to confirm identifications. It is important to note that certain taxa herein are *precisely* those that defied easy diagnosis and proved "different" upon dissection. These examples should prove additionally helpful in undertanding the genera and species treated.

KEY
to Genera of Neotropical "Green Hairstreaks"

Introductory Note. In preparing this Key, we have asked ourselves what is the simplest way to distinguish taxa of the included groups. Since all have green under surfaces, blue (but some brown) upper surfaces, distinctive sexual dimorphism in dorsal color, *and* vary between sexes or species in presence or absence of tails, we found that *"size"* [a simple factor, incredible as it may seem] was extremely useful. Thus, we use some size criteria below. It is a method not always foolproof but which allows some significant and easy steps.

Despite these efforts, apparent facts have complicated the Key. For instance, in common usage the *"badeta"* and *"nana"* groups of *"Thecla"* have been considered distinct, based on a view of generally greener (versus blue-green) ventral colors and generalizations about pre-

sence or absence of tails. However, structurally these groups are homogenious except for species with dorsal HW androconia. Also, as had been suspected by some earlier workers, differential occurrence of tails occurs between species and sexes within species. Thus, in a Key, one needs an approach using colors and tails only as rather secondary characters.

WINGS (irrespective of sex)

"DFW,DHW/ VFW,VHW" refer respectively to dorsal fore- and hindwings, ventral fore- and hindwings

Specimen must be from Neotropical Realm

1a. Length straight across VHW band (from anal angle through costal band element) "easily*" less than 10 mm.....2.
b. Length straight across VHW band (from anal angle through costal band element) "easily" more than 10 mm.....3.

2a. DHW with notable androconial brand (usually near base).....*Androcona*
b. DHW without notable andronial brand.....4.

3a. VHW with broad (.5-1mm at widest) continuous silver-white band.....*Chlorostrymon* (*simaethis* Species Group).
b. VHW bands narrower or either dashed, spotted, blotched, or variously disjunct or comprised.....5.

4a. VHW band comprised of minute white and black elements, lineal or dashed, and with or without some bright orange edging on elements near anal angle.....*Sarracenota*
b. VHW band tripartite, comprised of dark orange to red-brown (basal), white and black (distal) elements, lineal or dashed), band color combination being as bold near costa as anal angle...*Necmitoura*

5a. VHW,VFW ground brilliant "grainy" iridescent green [if you see it you'll know it].....*Chalybs*
b. VFW,VHW ground flat green [of various hues, green, yellow-green, green mottled with brown or gray, and usually lighter or faded on FW posterior].....6.

6a. DFW,DHW concolorous warm brown [this does not include violaceous gray or mottled brown or fuscous].....*Antephrys* males
b. DFW,DHW any other color(s).....7.

7a. VHW submargin with one, two or three deep magenta crescents along limbal area ("points" of crescents oriented outwards*).....*Antephrys* females
b. VHW submargin with any other pattern (including mottled green).....8.

8a. VHW limbal area with suffusive red, red-brown, silverish, or any other colors, extending completely between band marginal markings.....9.
b. VHW limbal area with markings disjunct from band or not occuring at all.....10.

9a. Length straight across VHW band (from anal angle through costal band elements) "easily" less than 10 mm.....*Chlorostrymon* (*telea* Species Group)
b. Length straight across VHW band (from anal angle through costal band element "easily" more than 10 mm.....*Cyanophrys* (*crethona* Species Group)

10a. VHW with band of simple white spots .....11.
b. VHW with any other kind of band (dashed white, lineal white, blotched white, white with any other colors, band of any other color).....12.

11a. VHW without tails [or with only thick stub].....*Plesiocyanophrys*
b. VHW with one or two hairlike tails.....*Cyanophrys*

12a. VHW limbal area marked darkly only at Thecla-spot and anal lobe.....13.
b. VHW limbal area with any other markings in addition to dark Thecla-spot and anal lobe.....*Cyanophrys*

13a. VHW without tails [or with only thick stub].....*Plesiocyanophrys*
b. VHW with one or two hairlike tails.....*Cyanophrys* [generally *herodotus* Species Group].

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* by "easily" we mean readily falling into this category; we recognize that some (respectively oversized or dwarf) specimens may belie the usual size of groups and, thus, the key. A worker may remedy this problem by comparing any specimen of "borderline" size with others of similar collection data and/or wing markings.

** "crescents" is meant precisely (see Photoplate IX, M-0) not blotches, spots or suffusions.

TAXONOMIC TREATMENTS

CYANOPHRYS Clench (1961) *sensu lato*
Photoplate IX,1 (K); Fig. 1.

Since some species are Nearctic, various treatments of the group abound in the literature. For purposes of this paper, distinction is necessary from only two subgroups (or sister groups), resulting in the following nomenclature (depending on preference)—

Cyanophrys Clench 1961
Plesiocyanophrys new genus
Antephrys new genus ***OR***

Cyanophrys (Cyanophrys)
Cyanophrys (Plesiocyanophrys)
Cyanophrys (Antephrys)

The latter does not have great utility cladistically but will, realistically, be preferred by those desiring to preserve "*Cyanophrys*" as a grade. *Antephrys* is distinguished here to allow more available names in the cladistic tree including all the "*Cyanophrys*" of common usage and related Callophryina (here used as defined in Johnson 1990). As noted by Johnson (1981, 1992) an unfortunate result of not having additional names is that *Sandia* Clench 1961 becomes all that is available for many very different looking butterflies. Part of this problem was alleviated by Johnson (1992) making *Deciduphagus* available for deciduous-feeding Nearctic "elfins".

As noted in Key, these groups almost always fall into the "larger" size category with FW's usually 11.5-15.5 mm. (HW band exceeding 10 mm.).

PLESIOCYANOPHRYS,
NEW GENUS
Fig. 1.

DIAGNOSIS. Structurally differing from *Cyanophrys* and *Antephrys* by the unipartite and robust female genitalia (other genera bipartite and sculptured) and by robust male genitalia with elongate saccus (other genera variously sculptured). In wings differing from *Cyanophrys* and *Antephrys* by VHW showing a band of simple white spots, other markings restricted to coloring of the Thecla-spot and anal lobe; all species but one without tails [exceptional species with a tail stub].

Significance: appears to represent a primitive stem including type species (*Thecla goodsoni* Clench), *T. argentinensis* Clench and numerous undescribed relatives noted by Johnson (1981).

DESCRIPTION. DFW,DHW with restricted to complete iridescent structural color— silvery blue to concolorous blue. VFW,VHW flat green, FW with white, lineal or spotted, band from costa to cell CuA2; HW with lineal, dashed or spotted band (most often latter) across postmedial area and Thecla-spot and anal lobe colored black, orange, or red-brown). Without HW tails or with short thick tail stub. ***Male Genitalia.*** Fig. 1. Typical Callophyrina, distinctly with vinculum showing elliptic ventrum sloping to elongate elliptic saccus; valvae robust and tapered either contiguously or in stepwise fashion to rounded ends. ***Female Genitalia.*** Fig. 1. Female genitalia a robust tube (elongate in one subgroup more stout in another) width of tube dominating habitus compared to small, terminally-lipped, lamellae. This simple habitus (of robust tube and small hemispherical lamellae) contrasts the highly sculptured facies of sister genera (in which sculptured terminal elements are separated from variously narrow and sculptured ductae by a transparent neck).

TYPE SPECIES. *Thecla goodsoni* Clench 1946.

ETYMOLOGY. The names refers to the primitive habitus of the genus and is considered masculine.

REMARKS. For those familiar with the unpublished nomenclature of Johnson (1981) this genus unites the two primitive groups therein. This was done at the request of the AMNH review committee of that paper subsequent to rewriting after use as a PhD dissertation. Original splitting was due to a criterion of "equal rank"; however, AMNH reviewers opined that monophyly was a sufficient criterion. Remaining species of this genus will be elaborated in a published version of the original treatment (which adds considerable Material Examined to that listed in Johnson 1981). Along with the morphology of this group being considered generally primitive, so is the restriction or lack of structural color apparent in some species.

ANTEPHRYS,
NEW GENUS
Photoplate IX,1 (M-O); Fig. 2.

DIAGNOSIS. Males' DFW,DHW unicolorous warm brown, lacking structural blue color of sister groups; VHW of females showing unique scallop-shaped and magenta-colored limbal elements. Structurally, male genitalia greatly sculptured in vinculum and with valvae steeply sloped terminad (either in very narrow or very robust fashion); female genitalia with terminal lamellae of bipartite genital habitus comprising more of genital length

than in sister groups and with ductal tube protuding somewhat through the base of the lamellae.

Significance: provides a name, other than *Sandia*, for the brown "*fusius*" group of *Cyanophrys* if it is considered that these taxa (clearly a clade but a "clade of what?") are part of a larger assemblage including not only Neotropical elements of *Cyanophrys sens. lat.* but also the many green *Sandia* and *Xamia* species of the Nearctic and their sisters in the deciduous-feeling "elfins" (see Remarks). If *Antephrys* is closer structurally to *Sandia/Xamia*, the available name is important.

DESCRIPTION. DFW,DHW concolorous warm brown in males, basally violaceous gray to distal brown in females. VFW,VHW flat green, FW concolorous green; HW with dashed or spotted band (more continuous near anal angle in some species) and with dark Thecla-spot and anal lobe. Females with limbal area showing crisp crescent-shaped magenta elements, points of the crescents pointing outward. HW with two hairlike tails. ***Male Genitalia***. Fig. 2. Typical of Callophyrina, distinctly with vinculum very sculptured particularly prior to angulate saccus; valvae with robust based abruptly tapered either in a robust (*A. marialis* Clench) or very narrow (*A. fusius*, *A. prestoni*) fashion to blunt ends. ***Female Genitalia***. Fig. 2. Habitus bipartite, posterior element a robust superior and inferior plate divided from robust anterior ductus bursae by a transparent neck. Terminal element comprising two-fifths or more of entire genital length and with terminus of ductus bursae protruding somewhat through the juncture of the terminal lamellae.

TYPE SPECIES. *Antephrys prestoni*, new species.

ETYMOLOGY. Using Latin root for "before" combined with a root from the "blue" *Cyanophrys* [Clench's "cyano"-phrys], denoting the concolorous brown (an probably primitive) wing dorsum in males of the new genus.

REMARKS. The "brown" *Cyanophrys* form a clade of uncertain and fascinating relationship among the many Neotropical *Cyanophrys sens. lat.* and the ventrally green Nearctic taxa of *Sandia* and *Xamia* which (along with *Deciduphagus* Johnson) show a very similar morphology in the females. Hitherto, any recognition of this left only *Sandia* as an available name, a situation very unpalatable to workers wanting associate *Sandia* only with its peculiar type species, *macfarlandi* Ehrlich and Clench [AMNH reads Code to require "mac"]. The fact that *macfarlandi* (and *S. xami*) are so unique in wing pattern is worth mention because this uniqueness is obviated by overall morphological similarity to *Antephrys* and *Deciduphagus*. Morphological features tend to get little attention among many Lepidopterists. However, the fact that there is an overall structural homogeneity beneath the diverse wing characters of *Sandia*, *Xamia*, *Deciduphagus* and *Antephrys* is only further testimony that the latter clade is a "major player", and necessary separate piece of the puzzle, in working out overally cladistic relations within the Callophryina. That is why we segregate the brown "*fusius*-Group" as a separate genus (see below).

Description of Type Species

Genitalia of a small brown entity from Mexico differ distinctly from previously named *fusius* Godman and Salvin and *marialis* Clench. The wings of this new entity also show a simple, completely spotted, VHW band (contrasting the continuous anal elements in the bands of *fusius* and *marialis*). This suggests the presence of more than one species in the Central American *fusius*-Group (as originally suggested by Johnson 1981). Accordingly, we illustrate the morphology of all three apparent Mexican entities and fix the lectotype for *fusius*. Considering diversity in similar-looking Mexican *Angulopis* (Johnson and Kroenlein 1993a,1993b) suggestion of additional species in the *fusius*-Group does not seem so surprising. There is either incredible latitude in the structural facies of a single brown species (*fusius*) or three distinctive Central American members of this group.

***Antephrys prestoni*,**
NEW SPECIES
Photoplate IX,1(O); Fig. 2.

DIAGNOSIS. ***Wings***. Small (FW alar 12.0-14.0 mm.), differing from congeners by simple band of discrete white spots across VHW over kelly green in rather "arc"-shape (not becoming continuous toward anal margin and not with elements variously jagged across the wing). Female VHW showing crescents typical of genus limited to CuA1 and CuA2.

Morphology with male genitalia differing completely from robust valvae of *marialis* and yet again from the truncate shape in *fusius*; rather with "ampule"-shaped valvae comprised of a rounded base and narrow elongate caudal extensions; female genitalia with robust and anteriorly recurvate lamella antevaginalis.

DESCRIPTION. ***Male***. DFW,DHW concolorous warm brown; VFW, VHW kelly green, HW with arc-shaped band of six discrete white spots apparent over the

thick ground; limbal area with small magenta Thecla-spot and magenta-black anal lobe. FW length: 12.0 mm. (holotype). ***Female***. DFW,DHW ground violaceous gray; VFW,VHW kelly green (allotype less fresh), VHW as on male but with magenta crescents in submargin at CuA1 and CuA2 before the magenta-black anal lobe. ***Male Genitalia***. Fig. 2. Vinculum only slightly angulate along broad triangulate saccus; valvae with ovate base, tapered abruptly to elongate narrow caudal extensions. ***Female Genitalia***. Fig. 2. Anterior element about equal in length to posterior, with swollen antrum beneath and terminal lamallae showing robust lamella antevaginalis recurvate anteriorly.

TYPES. Holotype male, Cordoba, Rio Cazones, Veracruz State, "I.95" (January 1895?), allotype female same data but date "July 9". Both deposited AMNH.

ETYMOLOGY. Named to honor lepidopterist Floyd Preston who has been the most recent President of the international Lepidopterists' Society.

REMARKS. For comparative purposes, Fig. 2 shows the genitalia of the two other Mexican entities appearing as good species. Clench had not dissected his types, or other specimens, when he proposed the synonymy of *marialis* and *fusius* in 1946. As noted in Johnson 1981, all specimens listed by Godman and Salvin for *Thecla fusius* are syntypes and some of these syntypes of representatives of *Thecla marialis* (holotype male MCZ, Harvard). Accordingly, consistent with Johnson's (1981) treatment, we designate the single male labelled "Jalapa" as lectotype. In addition, two paralectotype males (Chiriqui, Panama) are noted, the remaining syntypes being typical of *T. marialis* and showing no intermediates.

Although not relevant to the Latin names and the ICZN Code, we are aware that the common name construed for the new species will be "Preston's Antephrys". Since Floyd has found this more amusing than not (R. Kendall, pers. comm. to Johnson), we do not alter the aribitrary combination to avoid it.

The "*nana*" and "*badeta*" Groups of Thecla

Draudt (1919) treated various taxa divided into these two "species groups" based on differentiation of green versus blue-green ventral coloration and differential occurrence of HW tails. When studied morphologically, indeed more than one group is present but these do not divide along the lines of wing color or occurrence of HW tails. Rather, taxa with distinctive androconial brands on the dorsal hindwing, and those without, show different morphologies and various taxa from both the "*nana*" and "*badeta*" groups of Draudt show a common morphology. Thus, it is not possible to fully elaborate two groups (genera) of these small green hairstreaks without examination of the type specimens for each previously described taxon. Indeed, based on the taxa we *have* examined, it is clear that is not possible to "guess" the generic placement of various taxa from wing color, conditions of tails, or habitus of hindwing band in photographs of the type specimens. Accordingly, in the present paper we define the two structural groups apparent in known taxa as two new genera. As workers have previously suspected, there *is* a third structural group within the "*badeta*"-like complex itself. However, it is not presently known from a previously described taxon. We define it below from a new species. Thus, the small green hairstreaks can be placed in three structural groups—

***Androcona*, new genus**— small green hairstreaks with dorsal HW brands;

***Sarracenota*, new genus**— small green hairstreaks without dorsal HW brands and with bipartite black/white VHW bands.

***Necmitoura*, new genus**—small green hairstreak (s?) with tripartite red-brown/black and white bands.

All three of these genera show male structures with a complete vinculum and saccus, and females with a complete terminal apparatus (*e.g.* genital plate). These conditions contrast ***Chalybs*** Hübner which shows a membranous vinculum and no saccus (Fig. 4) and female ductus bursae without terminal plate (only a membranous tip) (Fig. 4). Such structural facies further reinforce the wing characters that readily separate these hairstreaks in the Key. ***Chalybs*** will be reviewed subsequently.

ANDROCONA, NEW GENUS

Photoplate IX,1(A,B); Fig. 4.

DIAGNOSIS. Mostly blue above in males (small to moderate size [12-14.0 mm.]), often tailless, HW showing notable (grainy, grizzled, flat, etc.) androconial brand at base of HW. Females unknown to authors at present. Structurally with males showing contiguously tapered valvae caudal extension (*Sarracenota* terminus sculptured to anterior and posterior elements), vinculum in robust anterior taper to parabolic or pointed saccus, aedeagus shaft with generally even to slightly fluted terminal contour

Figures 1-3

Morphology of *Cyanophrys*, *Plesiocyanophrys* and *Antephrys*

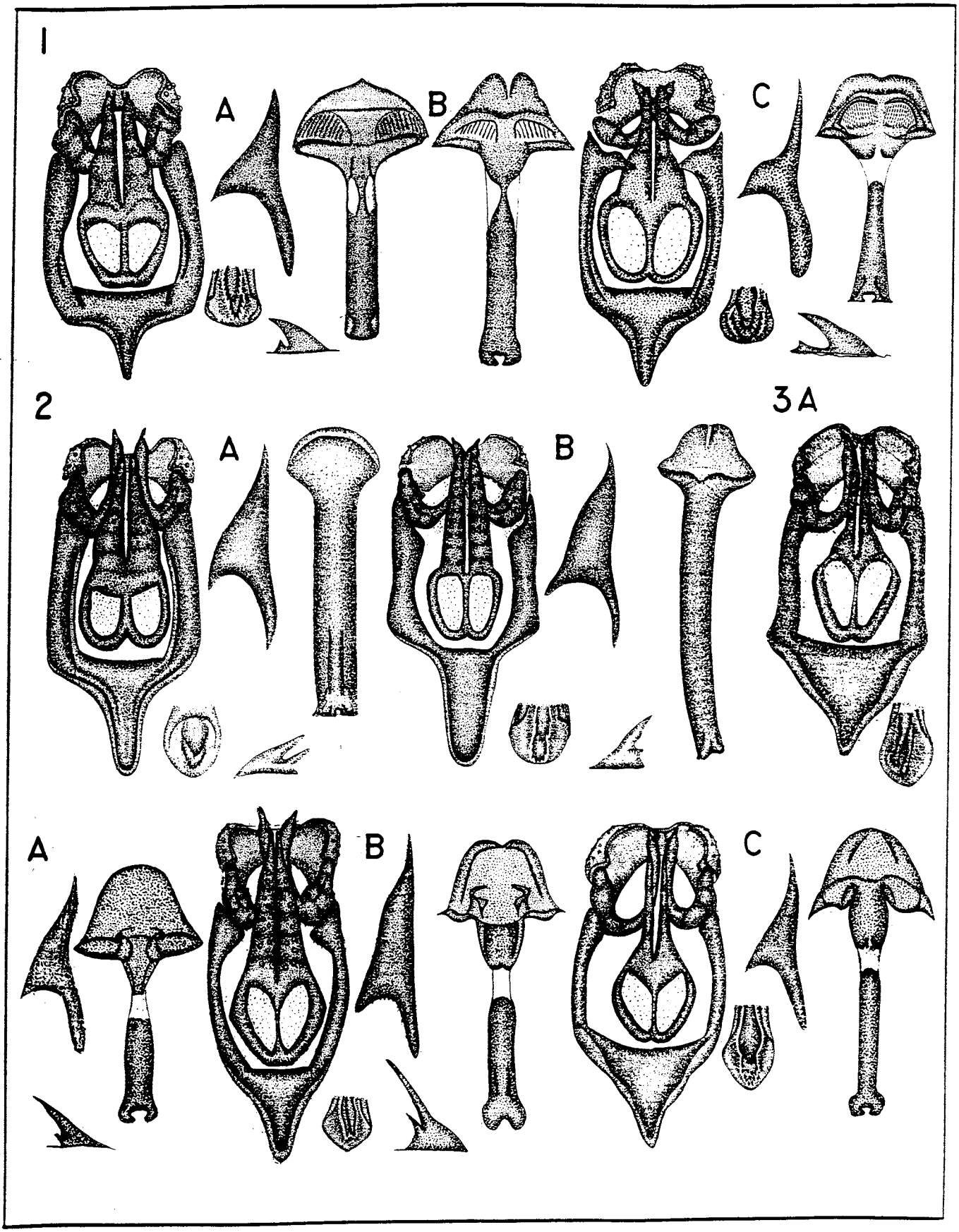
Format: Male left, genitalia with aedeagus removed, ventral view (left), valvae in lateral view (immediate right), aedeagus terminus (in between below); female right, genitalia from superior plate (above) through transparent area and anterior of ductus bursae (beneath); corpus bursae signa in lateral view (immediate left).

Figure 1. *Morphology of Cyanophrys from type and selected species.* **A.** Type species *C. agricolor* (Butler and H. Druce) types (BMNH), male left, female right; **B.** South American counterpart (sister species?) *C. banosensis* (Clench) type (AMNH); aggregate a rather autapomorphic habitus for genus. More typically *Cyanophrys* resemble C., *C. herodotus*.

Figure 2. *Morphology of Plesiocyanophrys, aggregating plesiotypic genera of Johnson (1981) and showing a species of each subgroup.* **A.** *Plesiocyanophrys goodsoni* (Clench), holotype male, allotype female (BMNH), showing contiguous robust female genitalia and male with stepwise terminus on valvae; **B.** *Plesiocyanophrys argentinensis* (Clench), holotype male, allotype female (BMNH), showing robust female genitalia differing little from other subgroup but male with contiguously tapered valvae typical of this subgroup. As an example of diversity in this genus (numerous species undescribed, see Johnson 1981). Johnson (1981) originallly separated *argentinensis* (TL Tucuman) from another Tucuman Province congener. Then, under pressure from reviewers to lump in a revised (also unpublished) version, lumped all Tucuman Province congeners. Eisele (to be documented [in prep.], but demonstated to Johnson from long series in 1991) later showed the large congener of the Province to be distinct as Johnson originally stated. Johnson had noted the small size and concolorous dull blue of the types of *Thecla argentinensis* (undated from BMNH Adams Bequest but early 1900's) and that these did not correspond to modern series of a Tucuman population showing much larger individuals, brighter blue with wider fuscous margins.

Figure 3. *Morphology of Antephrys including three distinctive Central American entities.* **A.** Lectotype male *A. fusius* (Godman and Salvin) (BMNH), female, Presidio, Mexico (AMNH). **B.** Holotype and allotype of *A. marialis* (Clench) (MCZ). **C.** Holotype and allotype of *A. prestoni* (AMNH). Given the homogeneity of characters seen in other *Cyanophrys sensu lato* species, it is doubtful only one species is represented in this brown Central American assemblage. Specimens are known from central Mexico to Panama.

Comparative Morphology of Sandia and Xamia, see **Fig. 5.** *Antephrys*, *Sandia* and *Xamia* clearly show, in females, the robust bipartite habitus of spatulate superior plate, transparent neck and robust anterior ductus bursae; males show the large triangulate saccus and robust tapered valvae (latter as seen in *A. marialis*).


1
A
B
C
2
A
B
3A
A
B
C

(*Sarracenota* distinctly angled and compressed terminally in the posterior one-third to one-half).

DESCRIPTION. *Male*. DFW,DHW variously iridescent blue (in suffusive to grainy fashion) across basal to postmedial areas contrasting dark brown to blackish margins and apices. DHW with basal one-half (or less) dominated by fuscous, gray or brown androconial patch. VFW, VHW green to aquamarine, FW with thin lineal white band, costa to CuA1 or CuA2, HW with one (postmedial) or two (submedial, postmedial) thin lineal band either continuous or broken into meandering dashed elements somewhat black along basal margins; limbal area generally green except for small black-centered white to orangish Thecla-spot and black elements at anal angle. *Female*. Unknown to authors at present. ***Male Tergal Morphology and Genitalia***. Fig. 4. Eighth tergite normal. Gentalia with vinculum ventrally elliptic, robust in anterior taper to parabolic or pointed saccus; labides normally crowned (not greatly angulate terminad as in *Sarracenota*). Valvae with contiguously tapered caudal extension after robust parabolic bilobes. Aedeagus shaft with generally even to slightly fluted terminal contour and presently studied species suggesting that two cornuti may be typical (second seen well within shaft, other often everted). Aedeagus length exceeding rest of genitalia by only part of caecum length; caecum comprising between one-half to one-third of aedeagal length and generally bowed.

TYPE SPECIES. *Thecla muridosca* Dyar 19-18.

DIVERSITY. We have studied *A. muridosca* (from topotypical specimens identified by Comstock and Huntington), *A. facuna* Hewitson (from BMNH type material (Fig. 4) but not used here as type species because the genitalic drawings are old) and new species *A. lecromi* described below. Ronald Hernandez (Arima, Trinidad) has reported another species we have not seen firsthand.

DISTRIBUTION. Central and South American congeners are known.

ETYMOLOGY. An arbitrary usage referring to the androconial brands that mark this group; considered feminine.

***Androcona lecromi*,**
NEW SPECIES
Photoplate IX,1(B).

DIAGNOSIS. *Wings*. DFW,DHW silvery-blue against black margins and apices; DHW brand elliptic over the basal one-half (nearly reminiscent of *T. circinata* Hewitson). VHW, VFW green to aquamarine, HW with rather entire narrow white lineal bands submedial and postmedial and obscure white/black dot submarginal at CuA2. This contrasts the single bands of congeners or the scalloped to serrate medial, postmedial and submarginal white bands traversing brown to green-hued brown grounds in *T. circinata* (see Type and Remarks).

DESCRIPTION. *Male*. DFW,DHW silvery blue across HW to margin, FW with black submargins and apices; basal one-half HW covered by grainy gray elliptic scent brand. VFW,VHW ground green to aquamarine, FW with narrow lineal postmedial band, costa to CuA2, HW with similar, smooth and continuous submedial and postmedial bands; submargin of CuA2 with small white/black spot. HW without tails.

TYPE. Holotype male, COLOMBIA, Cerro Aguacatal, Quinchia, Riseralda, 1600 m. (see Remarks), 15 May 1993, leg. J. Salazar, hilltopping in primary forest [comparative *T. circinata* also taken], deposited Instituto de ciencias Naturales- Museo de ciencias Naturales, Universidad Nacional Bogotá, Colombia (MCNB).

REMARKS. The type locality appears to one with numerous insular taxa or at least one from which new taxa are being discovered (see *Paralustrus salazari* Le Crom and Johnson 1993). The latter particularly suggests insularity because, hitherto, *Paralustrus* has been comprised mostly of several widely distributed and rather well-known hairstreaks with just two outlying endemics both of which are poorly known.

ETYMOLOGY. Named for Jean Francois Le Crom (Bogota, Colombia) who has contributed a wealth of interesting hairstreaks, including many new species, to recent research efforts in Colombia.

Another complex occurs within the "*nana*" and "*badeta*" groups of Draudt (1919) with males lacking a DHW scent brand and including numerous species of very small size and generally a simple spotted or lineal white HW band over green ground. Traditionally, common usage has suspected two groups within this complex and separated them by more green versus more blue-green ventral ground colors, irrespective of the differential occurrence of brands. However, when morphology is consulted the second group includes all the taxa without HW brands, with the exception of a new species we have discovered which appears to represent a third structural group. We first describe the large assemblage immediately below. We then describe a seminal monotypic genus from the new species and discuss some of the problems with this identification.

***SARRACENOTA*,**
NEW GENUS

Photoplate IX,1(F-I); Fig. 4.

DIAGNOSIS. Small species (FW alar 8-12.0 mm.) with many unique characters, all included here for convenience of superficial and structural diagnosis.

Males often without tails, females often with single tail, both showing rounded wing shape, dull iridescent blue DFW,DHW and green to blue-green VFW,VHW latter crossed by lineal, spotted or dashed white band thinly bordered basally with black, often more prominent anally and here sometimes bordered with brilliant orange. Small Thecla-spot, black-centered orange, dominating limbal area (occasional with adjacent cell orangish.

Structurally very distinct: females with diminutive genital apparatus found within a sclerotized tergal *sipc*, latter comprised of heavily sclerotized dorsal plate (broadly elliptic to rectangulate) and a comparable modification of the sternites along border of segments eight and seven. Female genitalia with an easily recognized "pitcher-plant"-shaped habitus comprised of "spade"-like to triangulate superior plate sitting atop a short ductus bursae. Males with labides pointed to conical, vinculum distinctly narrowing anteriorly to short (usually broad short) saccus, valvae showing caudal extensions sculptured into respective posterior and anterior elements. In additional the aedeagus is bent and compressed in the terminal one-third to one-half of the shaft length. The structures in both sexes do not approximate

DESCRIPTION. ***Male.*** DFW,DHW usually with azure to silvery-blue strewn over wings fading to brown to fuscous margins and apices; HW usually without tails. VFW,VHW ground green to blue green, FW with vague white postmedial line from costa to cells CuA1 or CuA2; HW with medial white band, bordered narrowly black at base, occurring either lineal, dashed or spotted, most often more prominent anally and occasionally bordered there with additional basal bright orange. Limbal area green except for Thecla-spot which, if prominent, can be brightly orange with such oranges extending into the cells toward the anal lobe. FW length 8.0 - 11.5 mm. (usually toward smaller). ***Female.*** DFW,DHW violaceaous gray where males are blue; HW very often with single elongate tail; VFW,VHW similar to male but often with band elements bolder, particularly as to degree of continuity in band of anal area and in adjacent orange markings. ***Male Tergal Morphology and Genitalia.*** Fig. 4. Eighth tergite normal. Genitalia with elliptic vincular ventrum marked by notably narrow anterior taper to short and usually broad saccus and by labides pointed to rather conical in lateral view; falces arched but robust, termini "nipple"-like. Valvae stout, with generally elliptic bilobes; caudal extensions broken by ventral sculpturing into an anterior and posterior element, later either pointed, flat or bevelled. Aedeagus robust, exceeding rest of genitalia by one-fourth to two-fifths and with shaft terminus bent abruptly 30-60 degrees in terminal one-half to one-third and with contour in this regional also compressed; terminus with single pencilate cornutus. ***Female Tergal Morphology and Genitalia.*** Fig. 4. Tergite eight with broad *sipc* including a rather flat, dorsally elliptic to rectangulate plate extending beneath the seventh tergite and attached strongly with membranous material at anterior to to a specialization of the anterior of sternite eight, this apparatus containing the rather diminutive genital parts. Genitalia shaped much like a "pitcher plant" with a "spade"- or "triangulate"-shaped superior plate terminating a stout ductus bursae, latter often slightly fluted to anterior. Superior plate, in shape noted just above, often "wrapping" around to create an inner mouth or pocket in the overall three-dimensional shape, lateral areas wrapped around forming or intervening with elements of an inferior plate. Ductus fluted anteriorly to swollen cervix bursae and corpus bursae sac, latter with broad platelike base, inwardly directed keel and dendritic sclerotizations along the posterior.

TYPE SPECIES. *Thecla opisena* H. H. Druce 1912.

DIVERSITY. This is a speciose genus but it is difficult to place all possible "*Thecla*" taxa immediately because of the need to verify by dissection. As an example, a tailed specimen identified as "*gabina*" at the AMNH and certainly with a green undersurface (but not like the brilliant grainy green of *Chalybs*) and with a reduced but lineal white wing band much like "*gabina*" proved to be an undescribed male of *Chalybs*. Likewise, a specimen identified as "gabina ?" proved to represent a genus hitherto unknown and of particular interest (see subsequent entry). However, to date we have examined *S. gabina* (Godman and Salvin) (Fig. 4), *A. myron* (Godman and Salvin), *A. oleris*, H. H. Druce, all **New Combinations** and all with types BMNH. It is probable that most "*Thecla*" species with wing patterns similar to those described herein will belong in *Serracenota*.

DISTRIBUTION. Central and South America.

ETYMOLOGY. Adds the Latin suffix "*nota*" (meaning "marks") to the genus for the Pitcher Plants, referring to the latters' likeness to shapes of female genitalia in this butterfly genus; considered feminine.

A Neotropical Near Look-alike Nearctic of *Mitoura*—

Study of the "*nana*" and "*badeta*" Groups of *Thecla* included a specimen labelled "gabina ?" by Comstock and Huntington. Contrary to the markings of *Thecla gabina* (Photoplate IX,1(G) [the most profusely marked VHW of genus *Sarracenota*] this specimen more resembled a Nearctic *Mitoura* (perhaps most like blue *M. dospassosi*) with a jagged, tripartite band (basally red-brown, distally black and white) and lavish limbal orange and red-brown. Compared to *Sarracenota*, wings were angulate and DFW,DHW color dark iridescent blue like *M. dospassosi*. Dissection showed a tergal morphology and genitalia differing completely from both *Mitoura* and *Sarracenota*. We described this species below in a new genus, thus far monotypic, but with the hope that additional congeners, and congener males, will be eventually discovered (see Remarks concerning Hewitson's *Thecla badeta*).

***NECMITOURA*,**
NEW GENUS
Photoplate XI,1(J); Fig. 3.

DIAGNOSIS. Wing habitus most generally similar to Nearctic *Mitoura* (known species most like *M. dospassosi* with without postbasal stripes)— wings angulate, DFW, DHW dark iridescent blue with black borders; VFW, VHW kelly green marked by tripartite red-brown (basal) black/white (distal) bands jagged in HW anal area, with limbal Thecla-spot and adjacent cells red-orange to red-brown, and one elongate tail and tail stub (see Remarks).

Morphology of known female robust and not contained in a terminal *sipc*; rather, with tergite eight short and normal except for slightly elaborated lips abutting the female genital plate. Genitalia, if anything, resembling Angulopine configuration with bilobate plate terminating robust and elongate robust ductus bursae (see Species Entry below). For generic purposes, it is anticipated from type species that generic characters include (i) condition of tergite eight, (ii) bold laterally flapped superior plate protruding from prominent antrum and (iii) robust ductus bursae separated from plate by transparent neck and with anterior juncture to cervix bursae severely *declined* (rare in Eumaeini).

TYPE SPECIES. *Necmitoura marcusa* new species.

DISTRIBUTION. Currently known only from a Colombian type species.

REMARKS. Without *Mitoura* as a point of comparison, the type species here might be seen as a boldly marked *Sarracenota gabina* or *Thecla badeta* Hewitson (one might assume this species probably belongs in *Sarracenota*). Draudt (1919, p. 799) already discussed the confusion about "*badeta*" and the possibility that specimens identified as it might represent several entities. One of the problems with the present study is that we could not anticipate the need to check the type of *Thecla badeta* at the BMNH. However, noone has mentioned broad basal red-brown in the band of *badeta*. The preoccupation by authors with white and black bands, continuous in this latter species, may indicate why Comstock and Huntington did not label the type species described here as "badeta ?". Indeed other specimens at the AMNH were identified by them as "*badeta*". Rather, it is *gabina* which has the broadly broken band— as it appears here in the anal area of the specimen questioned by Comstock and Huntington. Specimens the senior author has seen and identified as "*badeta*" have all been much smaller than the type species here and with a bright white and black band. However, one must note the two tails in Draudt's (1919) figure of "*badeta*". If by chance the type of *badeta* proves the same structurally as the entity described below, it would show that this entity still represents a separate generic group compared to *Sarracenota*. Historical workers always suspected two groups in this complex ("nana" and "badeta" Groups); in the non-branded small green hairstreaks, we also anticipated two. However, we found only one until the species described below came to light.

ETYMOLOGY. Considered feminine; adds the prefix "*nec*" [not] to Mitoura, recalling the superficialy resmemblance of the two genera.

Description of Type Species

***Necmitoura marcusa*,**
NEW SPECIES
Photoplate IX,1J; Fig. 4.

DIAGNOSIS. *Wings*. Distinguished initially from *Thecla badeta* by size (*marcusa* 12.0 mm., *badeta* 8-11.5 mm.), then nonvariant characters of the red-brown basal edge to white and black VHW band and limbal area red-brown from anal lobe to cell M3 (CuA1 Thecla-spot black circumferenced orange) all over a dark brownish-green, not bright green. VHW jagged in anal area, white elements of band becoming broken by darker band color elements in this region.

Morphology of known female showing tergite eight normal except for lateral production along female genital plate (*Sarracenota sipc* extending near entire length of genitalia). Genitalia with prominent lobate superior plate terminating a distinctive antrum, then a transparent neck followed by robust anterior of ductus bursae, latter declined in the anterior one-fourth.

DESCRIPTION. ***Male.*** Unkwown. ***Female.*** DFW,DHW dark azure blue with black borders and apices. HW with short tail stub at CuA1, elongate tails at CuA2; HW quite angulate. VFW,VHW ground kelly green with red-brown overhue; FW with continuous postmedial band of red-brown (basal), black and white (distal) (but with white elements nearly broken into dashes); HW with continuous medial band of similar color and composition extending across HW and jagged in the anal area as a "W" shape. Limbal area with bright orange Thecla-spot centered with black and bordered, in adjacent cell costad and internveing cells to anal lobe, with profuse red-brown suffusion. FW length: 12.0 mm. (holotype). ***Female Tergal Morphology and Genitalia.*** Fig. 4. Terminal tergite nearly normal except for slight lateral extension to abut lateral edges of superior genital plate; length of terminal tergite not exceeding overall length of genital superior plate, rest of genital apparatus extending well into the abdominal cavity. Genitalia bipartite, posterior element with swollen antrum and lobate superior plate, anterior element (after broad transparent neck) a robust tube, appearing sculptured in the dorsal or ventral view, declined in the lateral view in the anterior one-fourth. Cervix bursae with slight disjunctive ventral flap; corpus bursae of about same expanse as anterior genital element, two signa each with ovate base and inwardly directed spine.

TYPE. Holotype female, COLOMBIA, Tomegul, December 1913, from Hy. Edwards Collection, deposited AMNH.

REMARKS. Remarks under the generic entry pertain.

ETYMOLOGY. From the Latin "to mark", meaning this species marks or delimits the generic entity and particularly its structural characters.

A "major player" in the green hairstreaks of the neotropics has always been the bright green "*Chalybs*" group. The Hübnerian name has been a source of some confusion, however, since as an available taxon it often became used for many disparate taxa that were green beneath. The group is restricted here to those species having the superficial and structural features of the types species, *Papilio janias* Cramer [=misspelling "*janais*" of Hewitson, in *Thecla*, which is here not considered a valid taxon or description]. Elaboration of *Chalybs* becomes even more important in the present work because we found amoung AMNH samples group of male and female specimens not as green as normal *Chalybs* and which had been identified by Comstock and Huntington as "*Thecla gabina*". The FW scent band on the males of this series and its bold dorsal blue belied this identification and dissection showed a typical *Chalybs* habitus. Thus, we define *Chalybs* below and also describe this new Colombian entity.

***CHALYBS* Hübner**

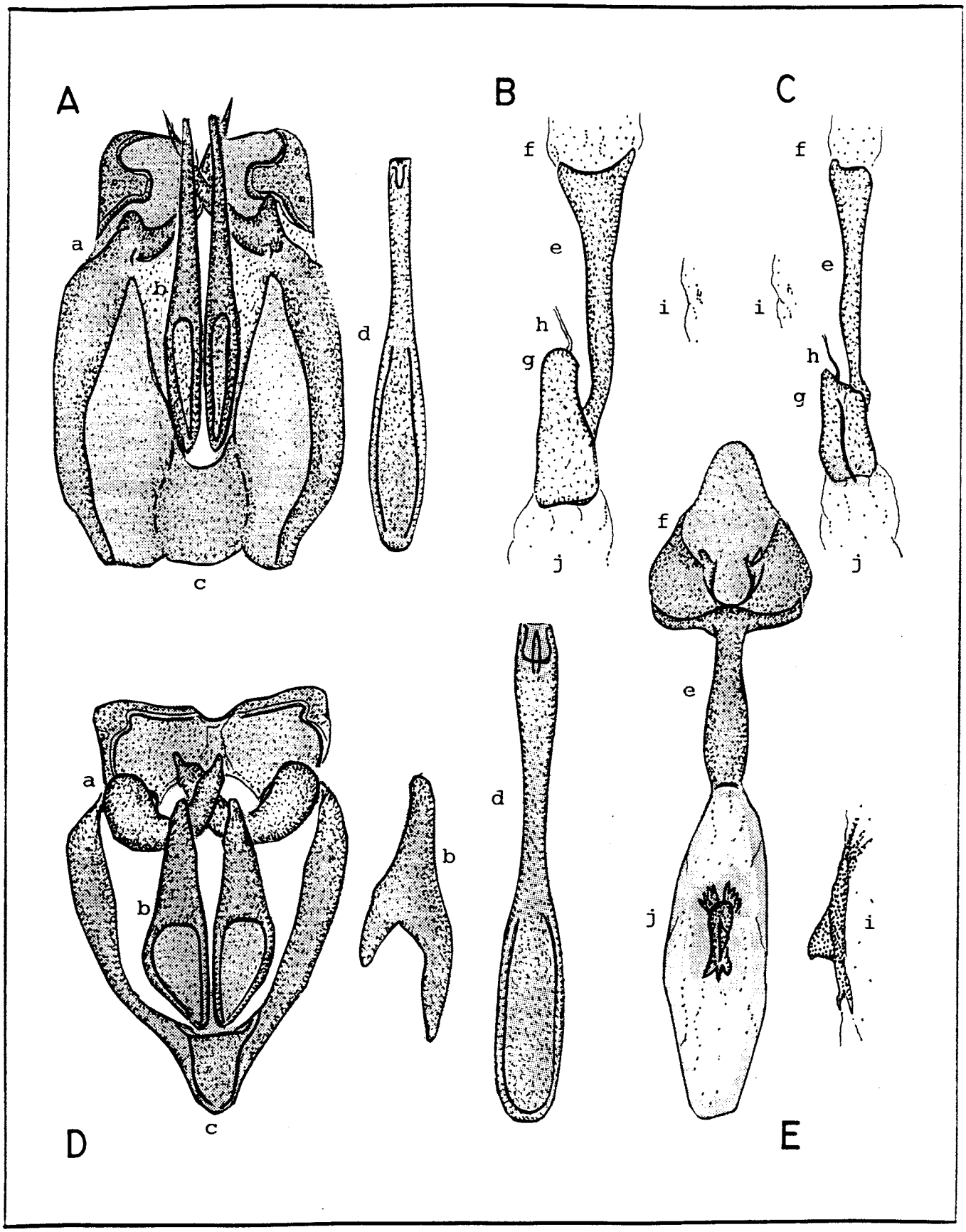
Photoplate IX,1(C-E); Fig. 4.

Chalybs Hübner 1819, Verz. bekannt. Schmett. (5): 76. Type-species by selection of Scudder (1875, Proc. Amer. Acad. Sci., 10: 139, as *Papilio janias* Cramer 1779, Uitl. Kapellen 3(18): 36.

DIAGNOSIS. Wings unmistakable on males, DFW, DHW by bold grainy bright blue iridescence confined in blocks of the cell interspaces between blackish veins, FW with small ovate to elliptic (usually tan) scent brand. VFW, VHW ground usually unmistakable by brilliant grainy lustrous green grounds overwhich most species show only HW pattern elements limited to black Thecla-spot and adjacent submarginal black scallops or lines variously expansive to the M-cells (an exception shows a flatter green with black [distally slightly white] dotted postmedial band extending to costa).

Structurally unmistakable, male lacking normal eumaeine vinculum and saccus, showing instead a membranous sheath enclosing elliptic, often elongate, valvae; aedeagus show and trunctate with spatulate caecum and short shaft of about equal length. Females lacking normal eumaeine terminal genital plate, showing instead simple tubular ductus slightly flared to membranous posterior; anterior with readily noted broad sclerotized "cap" over the cervix bursae from which emanates the ductus seminalis.

DESCRIPTION. ***Male.*** DFW,DHW with bold grainy bright blue iridescence usually confined in blocks in the cell interspaces between blackish veins and other black suffusion, FW with small ovate to elliptic (usually tan) scent brand. HW with elongate tail at CuA2, shorter tail or stub at CuA1; angle lobe black and often protruding. VFW,VHW ground brilliant grainy lustrous green, usually without any FW pattern elements, HW elements usually limited to black Thecla-spot and adjacent black scallops or suffusive lines variously extending to the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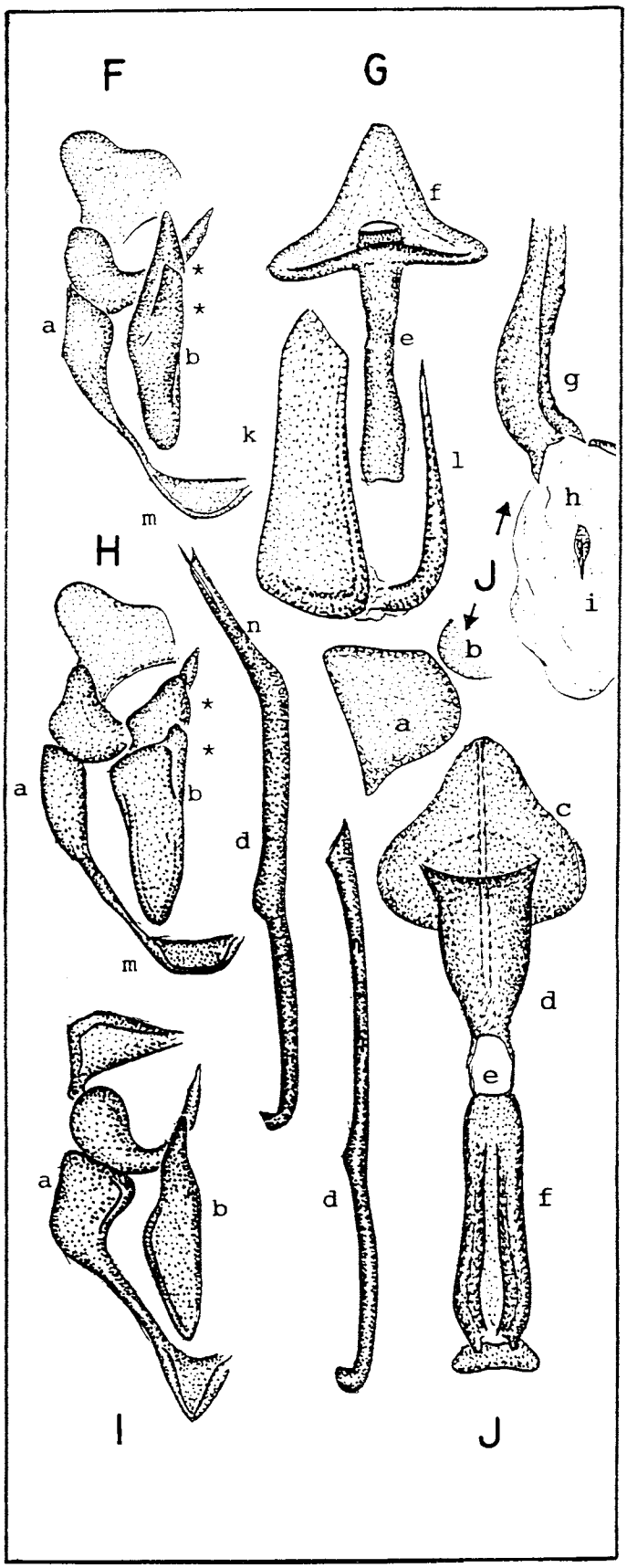

FIG. 4

Morphology of *Chaylbs*, *Sarracenota*, *Androcona* and *Necmitoura*

A. Male *Chalybs janias*, (**B**) female. a, vincular sheath, ventral view, b, valvae, c, area where saccus would occur in other Eumaeini, d, aedeagus, dorsal view; for B, e, ductus bursae, f, membranous terminus, g, cap over distal end of corpus bursae, h, ductus seminalis, i, corpus bursae signa, j. corpus bursae. **C.** *C. esmeralda*, type female (BMNH).

D. Male *Androcona muridosca* (Jalapa, Mexico, AMNH). Same views as above except "b" also show in lateral view at right.

E. Female *Sarracenota opisena* (Cali District, Colombia, AMNH). Views same as in **B** (enumerated above) except with full occurrence of superior plate (f).

F,G. Male and Female *Sarracenota gabina* (Canal Zone, Panama, AMNH). Views as in **A,B** but male noting (*) two sculptured elements of valvae caudal extension, and female including lateral view of large *sipc* with k, dorsal element, l, sternal element and female genitalia as pulled slightly out and rotated to ventral view (*in situ* most of apparatus except corpus bursae well within elaborate *sipc*).

H. Male *Sarracenota opisena* (Cali District, Colombia, AMNH). Views same as in **A** but emphasizing, * two elements of valval caudal extension, m, small broad saccus, n, compressed and bent aedeagus terminus.

I. Male *Androcona facuna*, from old drawing of BMNH type. Views as in **A.**

J. Female *Necmitoura marcusa* (holotype) with elements denoted as follows. a, lateral view, terminal tergite (b, lateral edge of superior plate); c, superior plate, d, antrum, e, transparent area, f, anterior ductus bursae, ventral view, g, same lateral view showing ventral declination, h, corpus bursae, i, signum.

For comparative morphologies of *Mitoura*, *Xamia* and *Sandia*, see **Fig. 5**

M-cells; in at least one congener a black (and slightly distally white) dotted postmedial band with slight orange around the Thecla-spot. FW length: usually 12.0-14.0 mm. (noted spotted species at 10.0 mm.). ***Female***. Similar to males but with dorsal color duller silvery to violaceous blue and without FW brand. FW length: usually 12.0-14.0 mm. (noted spotted species at 10.0 mm.). ***Male Tergal Morphology and Genitalia***. Fig. 4. Eighth tergite normal. Genitalia distinctive in lacking usually sclerotized vinculum and saccus of most Eumaeini and showing, instead, a membranous and bulbous-shaped sheath (anterior of the labides and arched, pointed, falces) enclosing elongate elliptic valvae otherwise typical of tribe. Aedeagus short and truncate with spatulate caecum and short shaft of about equal length; aedeagus shaft terminating in a small slightly sclerotized hood enclosing cornutus. ***Female Tergal Morphology and Genitalia***. Fig. 4. Tergite eight normal. Genitalia lacking normal eumaeine terminal genital plate and showing, instead, a simple tubular ductus bursae flaring slightly to membranous posterior; anterior of ductus bursae a straight tube joining a swollen cervix bursae overwhich is a broad sclerotized "cap" covering the distal and dorsal surfaces of the cervix bursae and from which emanates the ductus seminalis; corpus bursae beneath hood with signa absent or as only slight nodules.

TYPE SPECIES. *Papilio janias* Cramer (see above).

DIVERSITY. There are a number of well known species. Addition of the variant species below expands the superficial habitus associable with the genus. We have examined *C. janias* [from type of "*C. janais*" Hewitson and other material, BMNH, Fig. 4], *C. esmeralda* (Jones) [from type and other BMNH material, Fig. 4], and *C. hassan* from BMNH material. The broad geographic distribution of populations taking these names needs a thorough review to determine how many actual biological entities may be involved. The senior author also recollects having dissected the type of *Thecla chloris* Hewitson (BMNH) in the course of his PhD dissertation study of *Cyanophrys* and that its morphology was typical of *Chalybs*. However, the documentation of this has not been located among many stored files and this will need to be checked.

DISTRIBUTION. Mexico through tropical South America.

REMARKS. The following species, structurally typical of *Chalybs* but differing in overall wing habitus, serves to expand the diversity of the genus.

Chalybs schmidtmummi,
NEW SPECIES
Photoplate IX,1(E).

DIAGNOSIS. Because of small size, flat green ground, and dotted VHW band, confusable with *Sarracenota gabina*. Within *Chalybs* needing separation from *C. hassan* (latter known for orange at Thecla-spot and often in adjacent cells) which shows a meandering lineal black VHW submarginal line. *C. schmidtmummi* is typical of *Chalybs* on DFW,DHW but this is mostly noticeable in the male; otherwise, VFW,VHW of both sexes appears much more like *S. gabina* (including its small Thecla-spot and because of HW tails in females).

Morphology typical *Chalybs*, female notably with less posterior terminal flaring of ductus bursae before membranous terminus.

DESCRIPTION. *Male*. DFW,DHW light iridescent azure confined between brown to blackish veins and wider apical area than most congeners; FW with small elliptic tan scent brand; HW with short tail at CuA2. VFW,VHW with flat warm green ground; FW without marks, HW with a complete postmedial spot-band comprised of black spots edged thinly with white (extending from costa to anal angle and with elements jagged in anal area and slightly continuous near anal margin). Limbal area concolorous green ground except for very small Thecla-spot comprised of a black dot with the slightest hint of orange scales basad. FW length: 10.0 mm. (holotype), 10.0 mm. (paratypes). ***Female***. DFW,DHW dull violaceous gray where male is blue; no FW scent brand; VFW,VHW as on male. FW length: 10.0 mm. (allotype), 10.0-10.5 mm. (paratypes). ***Male Genitalia***. Typical of genus (Fig. 4), effort not made to study in detail relative to congeners. ***Female Genitalia***. Typical of genus (Fig. 4) differing from figured taxa by lack of significant posterior fluting in the ductus bursae.

TYPES. Holotype male, allotype female, **COLOMBIA**, Cali District, Cauca Valley, 3260 ft., 2 February 1035, ex. coll. E. I. Huntington, deposited AMNH. ***Paratypes***. AMNH: one male, one female, data as primary types.

REMARKS. I have compared these specimens to *C. hassan* at the BMNH and AMNH (recently as far north as Costa Rica) and find external confusion only between *C. schmidtmummi* and *S. gabina*, as aforementioned. Huntington identified the specimens as the later taxon.

ETYMOLOGY. Patronym for Dr. Ernesto Schmidt-Mumm (Bogota, Colombia) who has assembled one of the most unique collections of South American butterflies, including many interesting Theclinae.

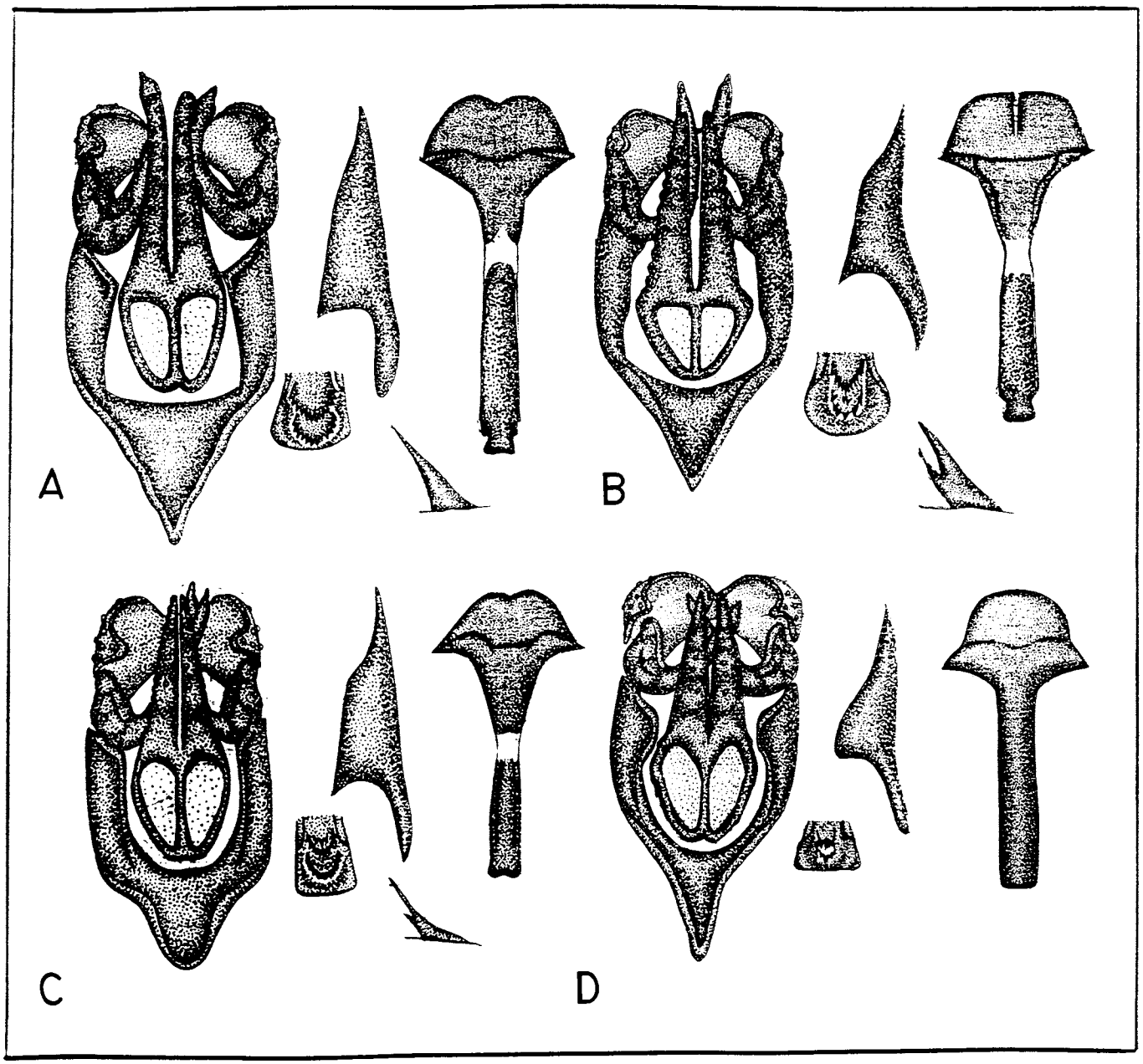

Figure 5

Comparative Morphology of *Xamia*, *Sandia* and *Mitoura* (Format as in Figs. 1-3).

A. *Morphology of **Xamia** from original type species **xami**.* (Regarding *Antephrys*, note saccus of male, bipartite genital habitus and pronged signa of female. The species is now often put in *Sandia* to avoid monotypy).

B,C. *Morphology of **Sandia** from type species **macfarlandi** and Central American **scaphia** Clench.* (Regarding *Antephrys*, note saccus and valvae of *macfarlandi* and in both taxa the bipartite habitus of female genitalia and shapes of signa).

C. *Morphology of **Mitoura** for overall comparison to **Necmitoura** and **Sarracenota**.* (Note contiguously sclerotized female genitalia of *Mitoura*).

SUMMARY

Our initial effort to enumerate selective taxa from Argentina, for which several new generic names were needed, resulted here in the eventual effort to enumerate a basic taxonomy for the neotropics' small green hairstreaks. Each of the above groups still requires individual study as to the status of type material in known taxa and the number of undescribed entities still to be elaborated. However, the available names should facilitate a more rapid approach to these groups than has been available in the past.

Acknowledgements

The senior author took most of the reponsibility for altering the original regional manuscript to treat the above genera. Previously, the second author had reviewed draft copies of the regional study including the projected generic appendices after initial work by the co-authors. For access to material ultimately included we thank the following curators and personnel, Dr. F. H. Rindge (AMNH) and Messrs. P. Ackery and C. Smith (BMNH). Regarding Colombian material we thank Messrs. Jean Francois Le Crom, Julián Salazar and Ernesto Schmidt-Mumm for overall access to and comment about interesting Theclinae in their collections.

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PHOTOGRAPHIC FIGURES

Plate IX,1 includes photographic figures relevant to Neotropical "Green Hairstreaks". These are as follows:

IX,1A. *Androcona muridosca*, male, Jalapa, Mexico (AMNH).
IX,1B. *Androcona lecromi*, holotype male (MCNB).
IX,1C. *Chalybs janias*, male, Cali District, Colombia (AMNH).
IX,1D. *Chalybs esmeralda*, Castro, Brazil (AMNH).
IX,1E. *Chalybs schmidtmummi*, holotype male (AMNH).
IX,1F. *Sarracenota opesina*, male, Cali District, Colombia (AMNH).
IX,1G. *Sarracenota gabina*, Panama Canal Zone (AMNH).
IX,1H. *Sarracenota oleris*, female, Santissima-Trinidad, Paraguay (AMNH).
IX,1I. *Sarracenota myron*, female, Alturas, Costa Rica (AMNH).
IX,1J. *Necmitoura marcusa*, holotype female (AMNH).
IX,1K. *Cyanophrys agricolor*, Alturas, Costa Rica (AMNH).
IX,1M. *Antephrys fusius*, Jalapa, Mexico (AMNH).
IX,1N. *Antephrys marialis*, Turrialba, Costa Rica (AMNH).
IX,1O. *Antephrys prestoni*, primary types (AMNH).

A New Neotropical Genus of Branded Angulopine-like Hairstreak Butterflies (Lepidoptera, Lycaenidae, Theclinae)

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ABSTRACT

A new genus, *Rindgea*, is described from two widely disjunct new congeners (*R. umuarama*, SE Brazil; *R. pyxis*, Colombia) differentiated from the large Thereusina subgroup of Eumaeini. Genera of latter infratribe (or "section") of Eumaeini have complex male forewing brands (usually paired per forewing near the discal cell apex). *Rindgea* species, although superficially similar to Thereusina in overall wing pattern and color, show singular elliptic brands and structural characters typical of the Angulopina, a different eumaeine section. *R. umuarama*, represented by numerous specimens in Gagarin's collection from SE Brazil, was previously considered an isolated species of uncertain affinity in the Eumaeini. Discovery of the *R. pyxis* was a surprise, hidden by "look-alike" phenomena among Neotropical Eumaeini. *Rindgea pyxis* looks uncannily like familiar *Thecla gargophia* Hewitson (sympatric with *R. umuarama* in SE Brazil) and, among northern South American "*Thecla*" with paired brands, various members of Draudt's (1919) "*thyesta*"-Group (including the brilliant blue abdomen). However, *R. pyxis* (like *R. umuarama*) betrays its identity by the lack of paired forewing brands and the slightly more jagged undersurface hindwing band, also typical of Angulopina. Among Angulopina, *Rindgea* genitalia are most similar to *Ziegleria* (*Thecla* "*hesperitis*"-Group) in general ground plan. However, males show a unique bulbous terminus to the valvae and females a ductus bursae limited to a simple fluted tube. This latter habitus departs from the complex terminal struts and greatly produced superior genital plate occurring in other Angulopina (particularly, *Ziegleria*, *Angulopis* and *Gigantorubra*).

INTRODUCTION

One of the many odd species of "*Thecla*" provided me by Allen Young at the Milwaukee Public Museum (MPM) was represented by numerous specimens from Umuarama, Paraná State, Brazil in the Gagarin Collection. Originally, I described this species in a manuscript Appendix to the overall study of Angulopina (Johnson 1993a). This Appendix treated some "isolated species" (*sensu* Draudt 1919) which suggested affinity to genera of the Angulopina but showed characters too variant for an unequivocal generic assignment. I speculated that the distinctive morphological features of these "isolated species" suggested each was the "tip of an iceberg", that is, one of a number of sister species still "lost in the clutter" of undiscovered or unelucidated Neotropical "*Thecla*". With this in mind, I presented morphological drawings so that other workers could immediately recognize such "congeners" if there were discovered. A reviewer of the initial paper suggested it would be worthwhile to review as much material as possible, particularly on my most recent trip to the Natural History Museum (London) and in the unincorporated materials at the American Museum of Natural History (AMNH), to locate any specimens which might suggest a generic worth to such "isolated species". As he noted (anonymous, in litt.) "isolated species" either suggest a poor delineation of generic characters or in fact represent an "iceberg tip" of an as yet uneludicated species clade.

In reviewing previously unmounted material collected on AMNH expeditions to Colombia in the 1940's I noted a specimen labelled "*Thecla gargophia*" by E. I. Huntington. Although by upper surface color clearly a male, this specimen lacked the disjunct paired forewing brands which characterize *gargophia* and the various members of Draudt's (1919) "*thyesta*"-Group. I was very familiar with double-branded "*Thecla*" because I had published a numerical cladistic analysis including them and their non-branded sisters (Johnson 1989, 1990). I had also shown that if curatorial work could not positively "identify to species" a particular double-branded specimen, it could at least indicate the "species group" or genus as treated within these studies (Johnson 1992). All the more exciting to have a specimen of this complex with single forewing brands, the blue dorsal color of *gargophia* and a brilliant blue abdomen! Dissection of the Colombian specimen confirmed the structural affinity to Gagarin's Umuarama specimens, the species pair sharing the bulbous valvae terminus, angulate vincular structure with thick brush organs, and sculptured aedeagus terminating in a sclerotized hood showing two cornuti. With these specimens in hand, I strongly suggest the following new genus of Angulopina as a guide to eventual location of more congeners of this remarkable assemblage.

In addition, Robbins (1991) suggested a "Thereus"-section of the Eumaeini (herein "Thereusina"), comprised of numerous taxa often showing, among other characters, double brands on each forewing. Since most of such taxa are also black on the dorsum with blue wing patches (and sometimes blue abdomens), it is important to remove the Umuarama and Colombian specimens from *ad hoc* curatorial inclusion in the Thereusina. As is documented hereafter, the structural features of such specimens clearly fall within the Angulopina subgroup and form a unique assemblage within that larger infratribe of the Eumaeini.

TAXONOMIC DESCRIPTIONS

Taxonomic entries use the format and terminology of previous work on the Angulopina (Johnson 19-93a, Johnson and Kroenlein 1993) particularly employing the abbreviations "DFW,DHW", "VFW,VHW" for dorsal fore- and hindwings, ventral fore- and hindwings, respectively.

Tribe **Eumaeini**
Infratribe **Angulopina**

RINDGEA, NEW GENUS

Photoplate IX2,A-C, Fig. 1.

DIAGNOSIS. ***Wings.*** Tailed and "hairstreak"-like, DFW,DHW blackish with blue iridescence across HW medial-limbal areas and often on abdomen dorsum. Most similar to taxa of the *Thecla* "*thyesta*"- and "*spurina*"- groups of Draudt (1919) (infratribe Thereusina) but superficially differing from these most strikingly in the male forewing brands which are singular on each wing (fuscous colored and elliptic) not paired on each wing (often one fuscous, one black).

VFW,VHW much like typical Angulopina, especially *Ziegleria* (*Thecla* "*hesperitis*"-Group), with gray to beige-brown ground crossed on HW by gently jagged tripartite band (basally brown to red-brown, centrally thin and black, distally white) forming only a slight but continuous "W"-shape near the anal area (cells CuA1,2) with M3 element not detached as in Calycopina or greatly angulate as in some other Angulopina.

Morphology. Males generally typical of Angulopina except for unique features including bulbous valvae termini, tapered hooklike falces termini, robust vinculum and slightly asymmetrical saccus with short stout adjacent brush organs, and greatly sculptured aedeagus terminus forming a shouldered hood over the cornuti. Females departing greatly from other Angulopina, showing only the fluted ductus bursae tube of other groups, this tube terminating in simple hemispherical lamellae, not with complex sclerotized struts and a greatly produced superior genital plate.

DESCRIPTION. ***Adult.*** Head, thorax and abdomen typical eumaeine; head with frons fuscous to black, eye-lining white, antennae length alar to FW scent brand and finely striped with white; thorax fuscous to black, abdomen black to brilliantly iridescent blue on dorsum. DFW,DHW blackish with blue iridescence in HW medial-limbal areas; HW with elongate tail at veins CuA2, shorter one at CuA1; anal lobe only slightly produced and colored black to brown. FW with androconial brands singular and of elliptic shape near apex of discal cell, colored fuscous to more blackish. VFW, VHW with gray to beige-brown grounds, HW with gently jagged tripartite band (basally brown to red-brown, central thin and black, distally white) crossing wing and, in anal area, forming only a slight and continuous "W"-shaped element in the anal area (cells CuA1,2); M3 element continuous with rest of band and appearing as a solid dash (not tapered and detached as in Calycopina or greatly angulate as in many other Angulopina); limbal area with red-brown to orangish "Thecla-spot", red-brown or orange repeated at base of anal lobe. ***Male Tergal Morphology and Genitalia.*** Fig. 1. Eighth tergite normal (not showing additional sclerotal development or components forming a "subchordate incised posterior cavity" ["*sipc*"] as noted in some Eumaeini (see Johnson 1991, 1992)). Genitalia with vinculum and saccus robust, former with short stout brush organs abutting along dorsum, latter elongate and slightly asymmetrical; falces curvate and terminating in tapered hooklike fashion; valvae robust with bulbous termini to caudal extensions and robust, parabolic to shouldered, bilobes; aedeagus elongate, exceeding rest of genitalic length by at least caecum length in spite of elongate saccus and with marked sclerotized and sculptured terminus forming a stout hood over two terminal cornuti. ***Female Tergal Morphology and Genitalia.*** Fig. 1. Eighth tergite normal (not showing additional sclerotal development or components forming an *sipc* noted in some female Eumaeini (see Johnson 1991, 1992)). Genitalia departing from Angulopina in simplicity, basically formed by the fluted tube seen in other infratribe members but not terminating in complex sclerotized struts and a produced superior plate. Rather, with simple, hemispherical, lamellal lips at terminus and (in known species) only slight additional lateral sclerotization distally along the lips (where struts otherwise occur in genera like *Angulopis*, *Ziegleria* and *Gigantorubra*). Cervix bursae simple, without elaborate sclerotal elements; corpus bursae with signa (in known species) occurring as elongate, inwardly directed, spines.

TYPE SPECIES. *Rindgea umuarama*, new species.

DISTRIBUTION. Currently known from two widely disjunctive areas of South America— SE Brazil and Colombia (see Remarks).

REMARKS. I suspect that this genus has many more congeners, some perhaps amid named *Thecla*, where

lack of examination of type specimens has impeded recognition of unique taxa. As I have noted heretofore (Johnson 1993a,b; Johnson and Kroenlein 1993) there is wide discrepancy in the Eumaeini between common taxonomic usage, putative characters assumed from photos or painted figures in the early literature, and actual features enumerated by examination and dissection of type specimens and additional samples identified from the types. In regard to *Rindgea*, the matter is made even more complex because of the "look-alike" phenomenon between known congeners of this new genus and species of other diverse groups of the Eumaeini (particularly Thereusina). Indeed, while specimens of *R. umuarama* can readily be noted as distinctive and needing a generic placement, the uncanny similarity of *R. pyxis* to *Thecla gargophia* (sympatric with *R. umuarama* and a well-known SE Brazilian species) totally masks its identification until the singular scent brands are recognized.

It is worth noting here that I described another "isolated" species in the Appendix to Angulopina genera (Johnson 1993a). I suspect that this taxon is also one of a larger clade of undescribed species. Like *Rindgea*, this other taxon shows a structural ground plan and wing markings generally like Angulopina but, among unique characters, exhibits an elaborate abdominal *sipc* in males. Additional sister taxa may also show the *sipc* and, when females are known, perhaps unique characters in these individuals as well. *R. umuarama* was originally described in the same Appendix but within one year a congener had been located.

An additional factor suggesting *Rindgea* is a larger clade than represented here is the disjunctive distribution of the two seminal congeners. With distinctive taxa from both sides of the Amazon basin, a huge area of South America (indeed tropical South America) is still left to search for congeners. In a similar case among the Eumaeini, I recently submitted for review a paper documenting the third member of the genus *Gigantofalca* Johnson (1991). The two seminal species of this genus, with a truly bizarre morphology, were originally discovered during random dissection of tropical forest male Calycopina misidentified as females. Although the known congeners came from Amazon basin tropical forest, the third species of *Gigantofalca* was found in northern Argentina, again leaving a vast geographic hiatus still to be searched for additional congeners.

ETYMOLOGY. Patronym for Frederick H. Rindge, AMNH curator emeritus, who has concertedly (but not uncritically) supported my long and sometimes controversial "journey" into forming a seminal taxonomy for Neotropical hairstreak butterflies. In my experience, Dr. Rindge first noted what many lepidopterists appeared to overlook— that, in contrast to the extensive alpha taxonomic studies published on moths [his won the Jordan Medal], fundamental taxonomic work on many of the supposedly "more well-known" butterflies had simply not been done. It always amazed both of us how many workers appeared to have shut the door on Neotropical Theclinae after Draudt's early list (1919).

Species

Rindgea umuarama,
NEW SPECIES
Photoplate IX2,AB, Fig. 1AB.

DIAGNOSIS. *Wings*. Separated from superficially similar non-congeners (particularly thereusine *Thecla gargophia*) by single elliptic brands on the male FW; female FW unicolorous blackish brown. DHW of both sexes with fine-grained shiny deep blue iridescence across HW medial-limbal from top of discal cell to margins (here differing from many Thereusina with more confined HW blue), CuA2 tail much longer than counterpart at CuA1 and anal lobes diminutive and colored only slightly orange-brown. VFW,VHW with beige-brown ground and markings reminiscent of *Thecla "hesperitis"* group (*e.g. Ziegleria*)— HW band with a gentle jagged habitus forming only a slight "W" in the anal area.

Contrasting *R. umuarama*, congener *R. pyxis* has less pronounced FW brands and HW blue which, although more restricted toward the submargin, is far more brilliant and brightly covers the dorsum of the abdomen.

Male genitalia. Separable from Thereusina by the generic characters; differing from *R. pyxis* by more robust ("nozzle"-like) valvae termini, vinculum more diminutive to greatly produced saccus, and triangulate hood at aedeagus terminus (*pyxis*'s is multiangular).

Female genitalia. Definitive for genus at present as the only congener with known females (see above).

DESCRIPTION. *Male*. DFW blackish-brown with fuscous elliptic brand; DHW medial-limbal area (from top of discal cell to HW margin) covered with fine-grained deep blue iridescence (not repeated, in known specimens, across the dorsum of abdomen). VFW,VHW with beige-brown ground, HW with gently jagged tripartite band (basally brown to red-brown, centrally thin and black, distally white) crossing wing and, in anal area, forming only a slight and continuous "W"-shaped element in cells CuA1 and CuA2); M3 element continuous with

Figure 1

Morphological Features of *Rindgea* Species

Format: *Males* (A,C) with genitalia shown in ventral view. Immediate right of A and C, bilateral one-half of genitalia, aedeagus removed, from labides (above), around vincular arc (dark line and carot indicating expanse and point of abutment, respectively, of adjacent brush organs) to saccus (below, shown in full); ; **a**, bilateral one-half of valve ventrum (elongate "caudal extension" above, elliptic "bilobed area" below), shown in lateral view, **b**; **c**, aedeagus in lateral view; **d**, sculptured aedeagus terminus with paired cornuti.

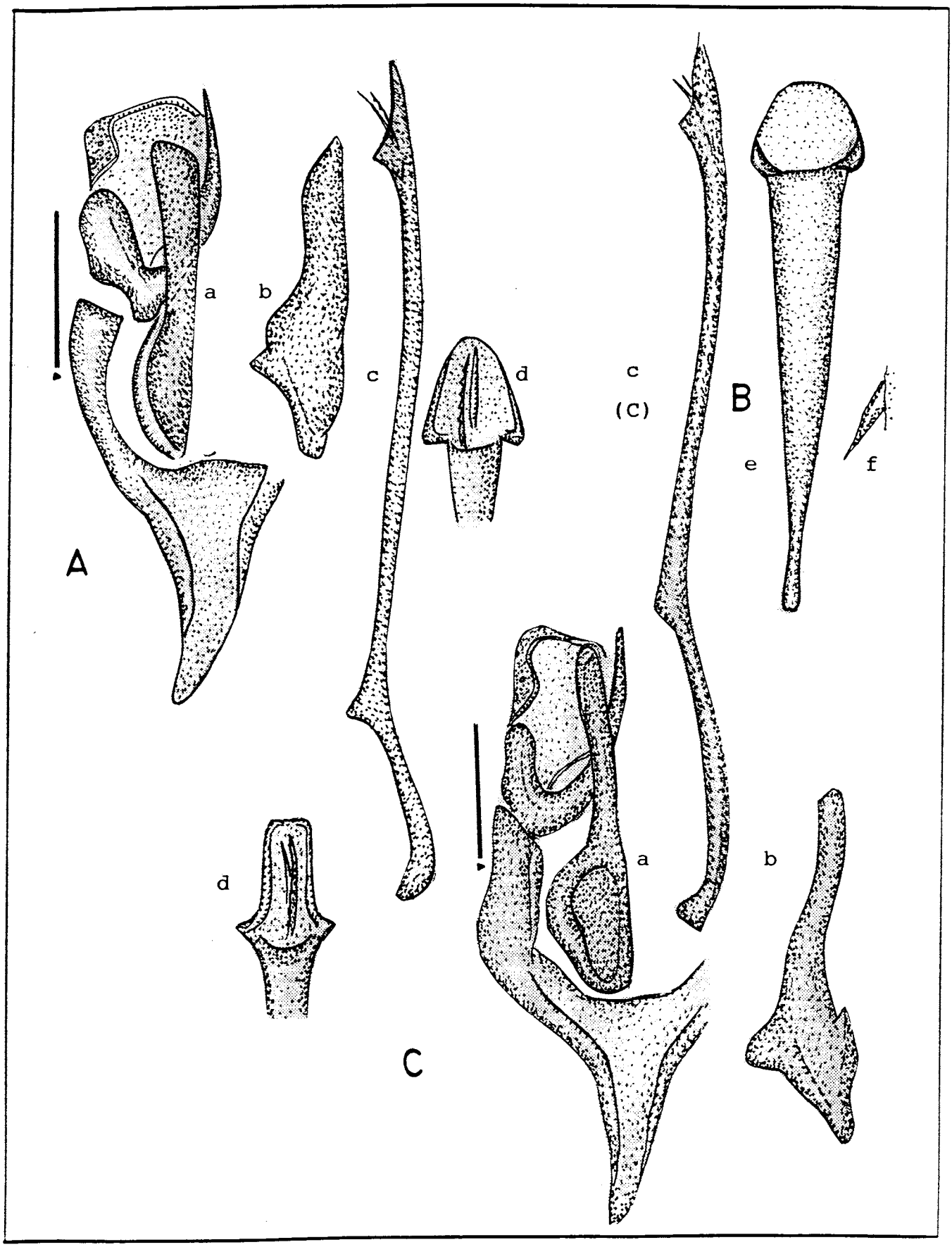
Female **(B)** with genitalia shown in ventral view, **e**, from simple terminal lamellae (top), along fluted and tubular ductus bursae to diminutive cervix bursae (bottom); **f**, signum of corpus bursae, lateral view.

Generic Characters: **A,C**— curvate falces terminating in evenly tapered fashion, not with "nipple"-like terminus or serrations along margins as in various other Angulopina; vincular arc robust terminating in robust saccus slightly asymmetrical at tip (latter seen in Angulopina only in one isolated species of *Angulopis* and in this species not particularly robust); **a,b** valvae with bulbous terminus of caudal extensions and robust, often sculptured, bilobed area; **d**, caudal end of aedeagus with heavily sclerotized and sculptured "hood" terminating, in known species, after a pronglike lateral shoulder. **B**— ductus bursae a simple fluted tube lacking sclerotized terminal struts and the produced and sculptured superior plate noted inother Angulopina (*e.g. Ziegleria, Angulopis, Gigantorubra*); signum simple and spinelike, not showing broad base and dendritic marginal sclerotizations noted in various other Angulopina.

Seminal Species

A,B *Rindgea umuarama*, holotype male, allotype female

C *Rindgea pyxis*, holotype male


A
a
b
c
d
B
c
(C)
e
f
C
a
b
d

rest of band and appearing as a solid dash (not tapered and detached as in Calycopina or greatly angulate as in many other Angulopina); limbal area with red-brown to orangish "Thecla-spot", red-brown or orange repeated at base of anal lobe. ***Male Genitalia***. Fig. 1A. Genitalia with short stout brush organs abutting along vincular dorsum; vinculum rounded and diminutive relative to robust saccus, latter quite asymmetrical at tip; falces curvate and terminating in tapered hooklike fashion as typical of genus; valvae robust, showing wide ("nozzle"-like) caudal extensions from robust parabolic bilobes; aedeagus with shaft elongate compared to caecum, latter comprising about one-fourth of aedeagus length and angled some 45 degrees from plane of aedeagal shaft; terminus of aedeagus with heavily sclerotized triangulate hood. ***Female Genitalia***. Fig. 1B. Genitalia with simple ground plan comprised of a fluted tube in the ductus bursae terminating with simple, hemispherical, lamellal lips. Lamellal area with only slight lateral sclerotization in the area where other angulopine genera show prominent struts and a produced superior plate (see *Angulopis*, *Ziegleria* and *Gigantorubra*). Cervix bursae simple, without elaborate sclerotal elements; two corpus bursae signa, each occurring as an elongate, inwardly directed, spine.

TYPES. Holotype male, allotype female, one paratype male, one paratype female, BRAZIL, Umuarama, 1800 m., "Est. de S. Paulo", 3-15 [day], 2-4 [month] 1937, leg. Gagarin, deposited MPM; one paratype male and female deposited AMNH (see Remarks).

DISTRIBUTION. Currently known from the type series from Paraná State, Brazil, collected over fifty years ago.

REMARKS. It is quite possible that additional specimens of this species are at the MPM since loan material from this institution was taken by me on an "example" basis. As noted hitherto (Johnson 1989, 1990) numerous areas collected by Gargarin in SE Brazil in the early twentieth century have since undergone significant environmental degradation. It appears that Gargarin's collection may be the best early collection (outside of South American) representing the early faunas of the Brazilian coastal forests. Brazilian collections that might be searched for this species include the Instituto Oswaldo Cruz (Guanabara), which holds the historical collections of J. F. and W. Zikán, and the Federal University collections at Curitibá.

ETYMOLOGY. A noun, in apposition, taken from the type locality.

Rindgea pyxis,
NEW SPECIES
Photoplate IX2,C, Fig. 1C.

DIAGNOSIS. ***Wings***. From Colombia but uncannily like *Thecla gargophia*, a thereusine sympatric with *R. umuarama* in SE Brazil. *T. gargophia*, numerous other species of the Thecla "*thyesta*"- and "*spurina*"- groups of Draudt (1919), and *R. pyxis* show a brilliant blue abdominal dorsum matching the brilliant medial blue of the DHW's. From these, *R. pyxis* differs by it singular elliptic DFW brands in males, the other species showing paired brands on each DFW. *R. pyxis* differs from *R. umuarana* by the blue abdomen and more brilliant, although more medially restricted, blue on the DHW.

Male genitalia. Separable from Thereusina by the generic characters; differing from *R. uruarama* by centrally slimmer, terminally more bulbous-ended, valvae, more robust vinculum and diminutive saccus, and multiangular sclerotized hood at aedeagus terminus (showing lateral prongs proxad the cornuti).

DESCRIPTION. ***Male***. DFW blackish-brown with dark fuscous elliptic brand; DHW medial-limbal area (from top of discal cell to HW submargin) covered with brilliant grainy blue iridescence which is repeated across the abdomen dorsum . HW with short tail at vein CuA1, longer tail at vein CuA2. VFW,VHW with dark brown ground, HW with gently jagged tripartite band (basally dark brown, centrally black, distally thinly white) crossing wing and, in anal area, forming a slight but continuous "W"-shaped element in cells CuA1 and CuA2; M3 band element continuous with rest of band and appearing as a solid dash (not tapered and detached as in Calycopina or greatly angulate as in many other Angulopina); limbal area with red-brown "Thecla-spot" and with red-brown also occurring at base of anal lobe. ***Female***. Unknown. ***Male Genitalia***. Fig. 1C. Genitalia with short stout brush organs abutting vincular dorsum; vinculum robust and saccus more diminutive, latter only slightly asymmetrical at tip; falces curvate and terminating in tapered hooklike fashion as typical of genus; valvae with caudal extensions more centrally constricted and bulbously terminated than in congener; valval bilobes greatly shouldered; aedeagus elongate, exceeding rest of genitalic length by length of caecum, latter bowed, comprising about two-fifths of aedeagal length and not much displaced out of the plane of the aedeagal shaft; aedeagus terminus with multiangular hood, shape sculptured by lateral prongs proxad the paired cornuti.

TYPE. Holotype male, COLOMBIA, "Cacauyá, Rio Cocorná, 13 November 1945, collection E. I. Huntington, deposited AMNH.

DISTRIBUTION. Currently known only from the holotype.

REMARKS. Comments in the Introduction pertain. As noted, *R. umuarama* was considered an "isolated species" until the holotype of *R. pyxis* was discovered among a series of specimens identified as "*Thecla gargophia*". Of these specimens, the eventual holotype of *R. pyxis*, though matching *gargophia* in almost every other way (including the brilliant blue abdomen), lacked the paired FW brands of this species and showed, instead, single elliptic brands. Dissection readily indicated the affinity of the eventual *R. pyxis* holotype to that of *R. umuarama*, and the wide departure of these species' morphologies from structures typifying the various double-branded thereusines (illustrated and cladistically analyzed by Johnson, 1989, figs. 7-9). The presence of singular FW brands, along with recognizable angulopine morphological and ventral pattern features, suggested strongly the presence a previously unrecognized angulopine lineage. In my experience, one can be quite confident of describing such a new group once more than a single putative congener has been discovered. Subsequently, it usually takes only a year or two of correspondence with Latin American collectors, or an additional trip to the European museums with large historical backlogs, to locate the relevant undescribed congeners.

ETYMOLOGY. A Latin noun, used in apposition, referring to a popular style of "jewel box" in Roman times. It refers here to the brilliant HW patches and abdomen dorsum of the species.

Acknowledgements

A. Young and S. Borkin provided specimens from the invaluable Gagarin Collection at MPM; D. Matusik (Field Museum, Chicago) made a large backlog of AMNH material available for study through a concerted preparatory effort. Initial comments I received from two reviewers concerning my treatments of various Angulopina helped with the subsequent evaluation of taxa described here.

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PHOTOGRAPHIC FIGURES

Photoplate IX, Section 2, as follows:

IX,2A. Dorsal surface, left; ventral surface, right. *Rindgea umuarama*, holotype male (FW alar 12.0 mm., paratype males 12.0 - 13.0 mm.)

IX,2B. Dorsal surface, left; ventral surface, right. *Rindgea umuarama*, allotype female (FW alar 13.0 mm., paratype females 13.0 - 13.5 mm.)

IX,2C. Dorsal surface, left; ventral surface, right. *Rindgea pyxis*, holotype male (FW alar 12.5 mm.)

Theorema sapho (Staudinger) and Two Unusual New Species of Theclinae from Colombia (Lepidoptera, Lycaenidae, Theclinae)

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ABSTRACT

Male and female *Theorema sapho* (Staudinger) are illustrated and a look-alike noncongeneric new species (possibly a mimic) from western Colombia described as *Denivia saphonota*, **n. sp.** Also described is an unusual new upland tropical forest species of *Atlides*, *A. browni*, **n. sp.**, sister species of *A. carpasia* of Mexico and Guatemala.

INTRODUCTION

Theorema sapho (Staudinger), though an exquisitely beautiful tropical thecline, has remained poorly known. Staudinger (1884) described the female of *sapho* and associated it with his genus *Micandra*. However, as Johnson (1992) noted, because the name *sapho* was associated with *Micandra* "incertae sedis", *Pseudolycaena platyptera* is rightly the type species of *Micandra*. To complicate matters, the morphology of *M. platyptera* (Johnson 1992) indicates *sapho* does not actually belong in the genus but, instead, probably should be associated with *Theorema* Hewitson (at least until a first reviser indicates otherwise).

Prior to a recent publication by the second author (Salazar 1993), prepared simultaneous with this work, the male of *T. sapho* had never been illustrated. Salazar and Constantino recently collected both sexes of *T. sapho* in Colombia (Photoplate I, 1-4) at various locations which we report below (Appendix 1). The male (Fig. 1A) appears much like the female on the undersurface, except for lacking the female's distinctive white forewing band and reflecting more of an iridescent blue undersurface on the wings. Males, which are more difficult to locate in the field than females, show a forewing length in known specimens of 26.0 mm. while females evidence a wider range of size, from 25.0 - 28.0 mm. The species is colloquially considered part of a Muellerian mimicry complex and is sympatric and synchronic with *Heliconius sapho chocoensis, H. cydno zelinde* and *H. eleusinus* (latter following status preferred by K. S. Brown, pers. comm. to senior authors).

The environments where *T. sapho* have been recently collected are on the west side (Pacific slope) in lowland rain forest. All habitats represent the "Choco" area of endemism ("quaternary refuge" *sensu* Brown 1976). The flight behavior is very similar to species of *Eumaeus* which, like *T. sapho*, are large butterflies. By contrast, *M. platyptera* is a small butterfly (FW 10-15 mm.) and found in upland montane rain forest. The second author treats *T. sapho* in more detail in his separate paper (Salazar 1993). We report *T. sapho* here because collected with it was a remarkable, and possibly mimetic, hairsteak which can be placed in the genus *Denivia* (Johnson 1992). This interesting new species, although it dorsally resembles two other "*Thecla*" species most likely belonging to *Denivia* (*T. theocritus* Fabricius [Mexico to Colombia], *T. augustula* Kirby [Mexico to Panama]) departs radically from these species and all other sympatric and synchronic Eumaeini by showing a vivid wide white ventral forewing band like that marking species of the above-noted mimicry ring. Previously, Johnson (1986) noted a number of Neotropical Eumaeini showing a prominent ventral (but not dorsal) pattern element corresponding to that marking a recognized Muellerian mimicry group. He speculated that in Theclinae the ventral mark might be as active in mimicry as the dorsal markings generally acknowledged by lepidopterists in groups of larger, slow-flying or gliding butterflies. As is well known, many Theclinae rest with wings "folded up" and rub their hindwings together; also they fly sporadically and with a rapid wing beat. This idea met with considerable skepticism from other workers (various workers in litt. to third author, kept anonymous here). Thus, we do not make any claim about the mimetic function of the white band co-occurring in the new *Denivia* species and sympatric and synchronic members of the white-banded mimicry group which includes *T. sapho*. We simply point out the possibility since the band not only distinguishes the new *Denivia* species from congeners, the new species has also been found flying with other white-winged butterflies. Eventually the idea may either be more palatable to workers, or supported or denied by field investigations. We describe this species below in *Denivia*, although noting some apparent apomorphies in which the new taxon differs from known members of that genus.

Denivia saphonota, NEW SPECIES

Photoplate I, 5-6; Fig. 2AB

DIAGNOSIS. On the upper surface appearing like congeners or other Eumaeini marked by basal to medial blue-green iridescence and elongate hindwing tails. On under surface resembling only female *Theorema sapho* with broad white band extending across the forewing medial area, bordered by blue green hue apical and basal. Hindwing under surface of wings more typical of *Denivia* (tails discrete as in *D. hemon* (Cramer)) with concentric bands of emerald green iridescence occurring postbasal /medial, postmedial and submarginal as noted in original generic description (Johnson 1992: 203).

Alas: Cara dorsal de color azul claro iridisente en ambas alas con areas marginales anchas de color cafe oscuro y de colas en las alas posteriores de color café. Cara ventral cafe oscuro con una banda transversal archa de color blanco en las alas anteriores. Las alas posteriores presentan marcas y lineas color azul claro.

DESCRIPTION. ***Male***. Unknown. ***Female***. *Upper surface of wings*: appearing like congeners or other Eumaeini marked by basal to medial blue-green iridescence and elongate hindwing tails. *Under surface of wings*: forewing with broad white band extending across the forewing medial area, bordered by blackish ground with blue-green hue basally and to apex; hindwing ground blackish marked with concentric rings of dashed emerald-green elements occurring as follows: postbasal (3), medial (6 [dashes 4-5 distended anally as typical of genus, dash 6 elongate along anal margin]), postmedial (7, initial dashes from costa dull, 5-6 distended anally and also elongate, 7 elongate); submarginal (each cell interspace, elongate anad of cell M3, suffusive at anal lobe). Hindwing tails discrete as in *D. hemon*, tipped white. Forewing length: 24.0 mm. ***Female Tergal Morphology and Genitalia***. Fig. 2. Generally agreeing with the generic characters but differing in some aspects which may be autapomorphic or suggest the present generic placement is tentative. Fig. 2 shows elements typifying genus marked with arrows. Eighth tergite (Fig. 2a) showing *sipc* (*sensu* Johnson 1992) typical of *Denivia* with elongate habitus not greatly expansive laterally (and with sculpturing in the anterior one-third) and lacking a ventral component typical of other large hairstreak genera (*Macusia*, etc.). However, area adjacent lamellae of genitalia with a strong membranous flap covered with prominent microtrichia (2b2) forming a tubular opening with the strongly toothed lamellae (2b1). Genitalia with elongate tubular ductus bursae typical of *Denivia* and other Eumaeini, antrumal area (2b4) not emphatic as in most congeners and lamellae antevaginalis with unique ventral tooth (2b1) obscuring the usually wide opening at this location in most Eumaeini. Lamellae postvaginalis, usually dominant in the Tribe, reduced. Cervix bursae typical of genus, dorsal hood on cervix bursae (2d) bipartite with some additional heavily sclerotized elements, and, as in congeners, spiked signa alligned very close to the "front" of the corpus bursae.

TYPE. Holotype female, COLOMBIA, Valle, Alto Anchicayá, 700 m., 3 August 1983, leg. L. M. Constantino, deposited Museo de Historia Natural—Universidad de Caldas, Manizales, Colombia.

REMARKS. *Superficial Resemblances*. The holotype was collected along a stream bottom in lowland rain forest on the western side (Pacific Slope) flying with other white-banded species noted in the Introduction above as comprising a Muellerian mimicry ring long-recognized for *Theorema sapho*.

Generic Placement. The placement of ventral hindwing pattern elements is typical of *Denivia* (though as noted in the original description these can take many "forms" because of variance between discrete and suffusive marks). Contrasting more elfinlike "anal tails" (*sensu* Johnson 1992) tails on this species are more like *D. hemon* with the CuA2 tail not greatly conjoined to the anal lobe. The morphology does not contravene placement in *Denivia* although some characters are divergent and possibly suggest this assignment is tentative until more revisionary work has been done on larger "showy" Eumaeini. As Johnson (1992) noted, structural characters of many of these larger hairstreaks often show a distinctive interspecific hyatis, obscuring generic relations and suggesting the presence of many long-isolated lineages. Particularly of note in *D. saphonota* is the terminal tooth on the female genitalia which occurs on the ventrum, not the dorsum ("lamella postvaginalis", where all other such structures reported in the literature are known to occur). This ventral tooth is bordered distally by setate membranous lobes which, together with the tooth, comprise a discrete terminal opening. The third author has not observed such a structure in any other eumaeine, similar configurations occurring either with a dorsal plate or tooth on the eighth tergite terminus (see *Nesiostrymon*, Johnson 1991). As aforementioned, many larger Eumaeini are yet ungrouped at the generic level but greatest attention here was made to distinguish *saphonota* from members of *Macusia* Kaye (which show an extremely produced apparatus at the cervix bursae not present in *saphonota*) and *Cryptaenota* Johnson (which show a distinct ventral element on the *sipc* not present in *saphonota*). These considerations, others mentioned above, and the close alignment of the corpus bursae signa near the cervix bursae hood in *saphonota* and all *Denivia* species led us to conclude that *Denivia* was a valid initial placement of this new species.

ETYMOLOGY. The name combines the Latin suffix "*nota*" ("marks") with the species name *sapho* indicating the superficial resemblance of this species to *Theorema sapho*.

In 1989, Keith Brown collected an unusual species of *Atlides* Hübner in tropical montane forest at near 2000 m. altitude. This specimen, a male, is peculiar in that its unusual characters mirror those of four previously known

species of the genus but also show unique characters. The upper surface of the specimen shows forewing androconial brands similar to the pan-Neotropical *A. polybe* Linnaeus. The undersurface, however, is much closer to Mexican/ Guatemalan *A. carpasia* Hewitson except for markings along the basal hindwing marks which appear more like *A. atys* Cramer (Panama and Colombia). The genitalia show a distinctive sister species relation to *A. carpasia*. We describe this species below as:

Atlides browni,
NEW SPECIES
Photoplate I, 6-7; Figs. 1A,3AB

DIAGNOSIS. ***Wings***. Most like *A. carpasia* and *A. halesus* Cramer but differing in a constellation of characters variously resembling other congeners as follows.

Upper surface wing color bright dark blue like *A. carpasia* and *A. halesus* but black forewing margin less distinctive and hindwing margin emerald green limited to cell CuA2 and anal lobe; forewing androconial brand broken near center as in *A. polybe* and concolorous black (*A. polybe, A. atys* bicolorous, *A. carpasia* broken in distal one-third). Under surface ground unicolorous blackish brown as in *A. carpasia* and *A. halesus* (not with intercellular areas streaked or suffused lighter gray, golden or orange as in *A. polybe* or *A. atys*). Pattern most resembling *A. carpasia* with emerald green arching across anal angle from anal margin to limbal area.

Departing from all congeners by showing occurrence of under surface hindwing red limited to (i) enlarged lunule at base of hindwing above vein Sc+R1 like *A. atys* (*A. carpasia* with two small red slashes [second posterior in cell Sc+R1]) and (i) slight suffusion basad along vein 2A (*A. carpasia* marked with prominent streak to postmedial area)(see congener figures, Photoplate I, 7-9).

Alas: Cara dorsal azul oscuro metalico con bordes marginales de color negro. Dos bandas de androconia color negro en las AA. Las alas posteriores presentan una marcha verde esmeralda en el margen anal y una cola de color negro. Cara ventral color cafe oscuro. Abdomen color naranja, manchas verde esmeralda en el margen anal y distal y puntos rojos (♂) cerca del torax.

Male genitalia. Among the species cluster *A. halesus*, *A. atys*, *A. polybe*, *A. carpesia* (Fig. 1B-D), resembling the latter species in only semi-disjunct nature of valvae lobes and rather lobate caudal extensions based with a rounded rim. Differing from *A. carpasia* in showing much more elongate caudal extensions and reduced and anteriorly more angulate bases.

DESCRIPTION. ***Male***. Body blackish flecked heavily with blue iridescence of wings, ventrum of abdomen red-orange. *Upper surface of wings*: forewing with ground from base to medial areas of both wings bright metallic dark blue, indiscriminately meeting black marginal band; hindwing with emerald green along margin in cell CuA2 and at anal lobe. Forewing with unicolorous black brand broken posterior of center along the cellend. *Under surface of wings*: ground uncolorous blackish, hued uniformly brownish and with veins black; forewing devoid of pattern except for prominent red lunule at base of costa; hindwing devoid of pattern except for (a) emerald green slashes and spots arching about anal margin from anal area to cell CuA1; (b) enlarged red lunule (diameter 1+ mm.) at wing base above vein Sc+R1 surrounded by black and repeated with slight red suffusion near wing base (much at in *A. atys*); (c) red suffusion along vein 2A basad of the medial area. Forewing length: 24.0 mm.

Male Genitalia. Fig. 1A. Extant genitalic parts from base of saccus (Fig. 1A,**) dorsad with vincular dorsum showing prominent cluster of brush organs; vincular ventrum rounded, falces arched with somewhat bulbous tips, labides rounded and setate. Valvae diagnostic, showing paired lobes not completely disjunct along ventrum (1A horizontal arrow, as in *A. carpasia*) but compared to latter species caudal extension protruding from rounded basal rim elongate (1A, vertical arrow to terminus); valval base (1b, bilobes *sensu* Johnson 1992) far less shouldered than all figured congeners and also angulate along anterior compared to *A. carpasia*.

TYPE. Holotype male, COLOMBIA, Valle, San Antonio, km. 14, 2000 m., 16 August 1989, leg. K. S. Brown, from Collection L. Constantino deposited in Museo de Historia Natural- Universidad del Caldas, Manizales, Colombia.

REMARKS. *Intrageneric Affinities*. *A. browni* clearly appears to be a South American disjunct of the ancestral population which produced it and *A. carpasia*. Based on wing facies, these species and *A. halesus* form a species cluster in *Atlides*; however, the variance in structural characters (note similarities of *A. halesus* and *A. polybe* versus *A. carpasia* and *A. browni*) suggests the complexity of this clade within the larger *Atlides* genus.

Biogeography. Johnson (1992) and Johnson and Adams (1993) have noted Colombia/ Mexico-Guatemala disjunctions in other Eumaeini genera (including *Arases* Johnson and *Radissima* Johnson) in a Colombian (or a

Colombian/Venezuelan) disjunct occurs in a group showing most of its diversity far north of the Panamanian isthmus. Quite the opposite, some generally Andean genera (including *Thecloxurina* Johnson, *Abloxurina* Johnson and *Rhamma* Johnson) show an outlying disjunct in montane Costa Rica (Johnson 1992). Thus, we expect that additional collecting in Colombia may increase the number of upland Colombian disjuncts of clades primarily occurring in Central America. Since *A. carpasia* has a rather limited (primarily Mexican/Guatemalan) distribution, the occurrence and facies of *A. browni* come as somewhat a surprise.

ETYMOLOGY. Named for Keith Brown, who collected the holotype and deposited it in the collection of the senior author.

Acknowledgements

We thank Messrs. Francois Le Crom and Ernesto Schmidt-Mumm (Bogota, Colombia) for access to their collections regarding similar specimens. Comments by Le Crom led to discovery of a second undescribed Colombian *Atlides* which can hopefully be described promptly. One anonymous reviewer made some helpful comments about species in *Atlides*, helping us limit our morphological comments within the larger clade of "*Thecla*" taxa possibly assignable to this genus. The authors also thank the native people of Tatabro (river), especially Juan de Dios Ramos and Antonio Ienis, for their aid in fieldwork.

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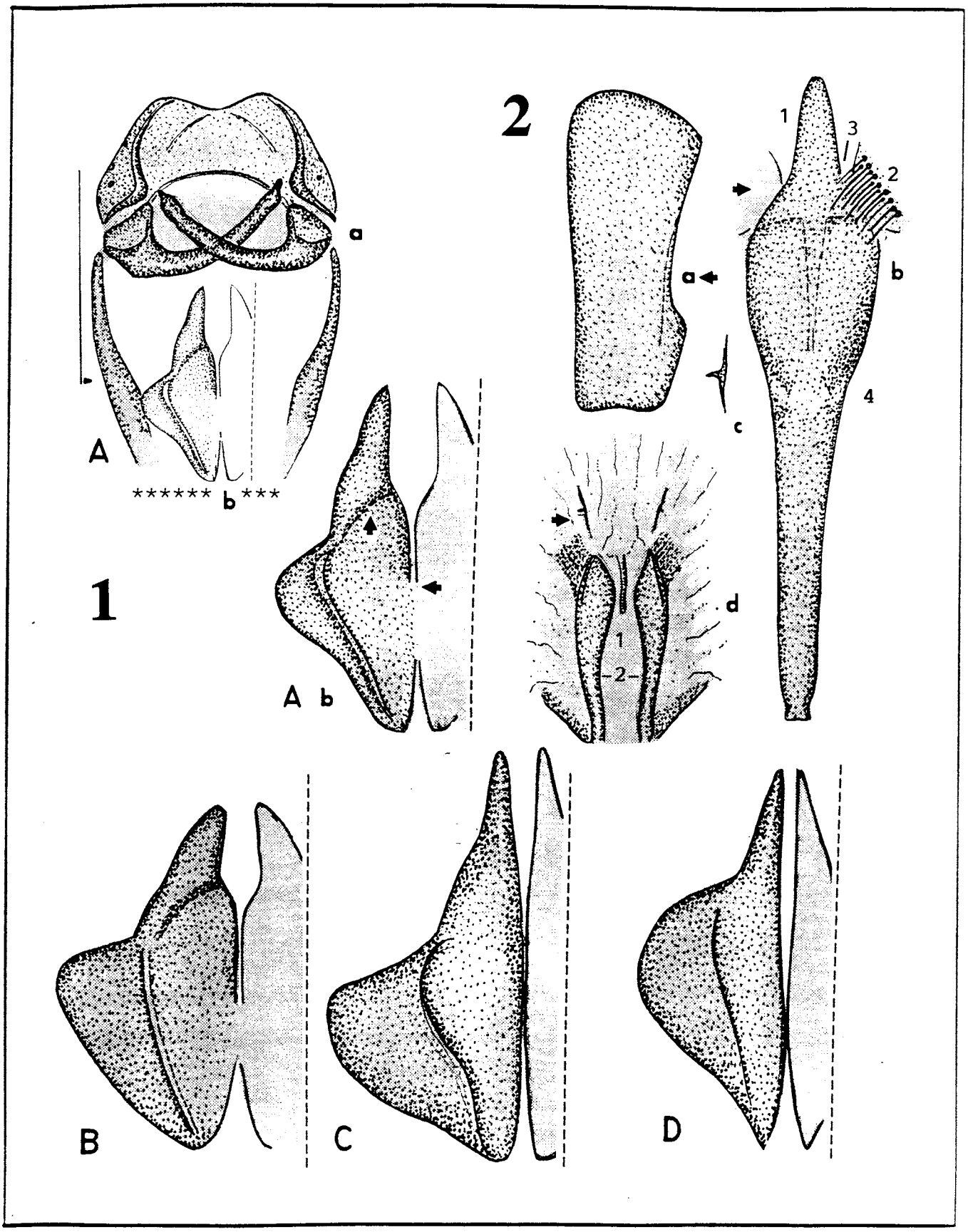
PHOTOGRAPHIC FIGURES

Photoplate I, 1-4. *Theorema sapho*: 1(A), ventral surface of male compared to 2(A), ventral surface of female; dorsal surfaces (B) of male and female shown respectively in photos 3 and 4. **5,6.** Dorsal (D) and ventral (V) surfaces of *Denivia saphonota*. **6,7.** Dorsal (D) and ventral (V) surfaces of *Atlides browni*. **7.** Dorsal (D) and ventral (V) surfaces of *A. carpasia* (Rabinal, Guatemala, AMNH). **8.** Dorsal (D) and ventral (V) surfaces of *A. halesus* (Brownsville, Texas, AMNH). **9.** Dorsal (D) and venral (V) surfaces of *A. polybe* (San Javier, Tucumán, Argentina, AMNH).

MORPHOLOGICAL FIGURES

Fig. 1. Morphology of *Atlides browni* holotype: **A.** Ventral view of male genitalia (aedeagus removed), shown from labides (top) to asterisks at top of saccus indicating damaged area of abdomen. Features: a, genitalia, dark line and carot at left indicating length and area of abutment of brush organs, respectively; b, valvae in place, showing ventral view enlarged immediately below, right, for comparative purposes to congeners at bottom (B-D). Vertical arrow indicates ridge at juncture of caudal extension (above, elongate in *A. browni*) and bilobed area (below, laterally concave in *A. browni*) similar to *A. carpasia*, horizontal arrow indicates similar abutment of paired valvae as in *A. carpasia*. **B-D.** Ventral view of valvae in congeners of photoplate, **A**, *A. carpasia*, **B**, *A. halesus*, **C**, *A. polybe*.

Fig. 2. Morphology of *Denivia saphonota* holotype: **a.** lateral view of eighth tergite (*sipc*), arrows left and right indicating microtrichia-covered ventral abutment of tergite with genitalic terminus (b). **b**, genitalia shown from lamellae (top) to cervix bursae (bottom); features: 1, terminal tooth formed by lamella antevaginalis, 2, microtrichia-covered ventrum of *sipc*, 3, area of rounded terminal opening formed by juncture of 1,2 and lamellae postvaginalis (dashed line). **c**, signum of corpus bursae, lateral view. d, cervix bursae "hood", terminal view; features: 1, tip of ductus seminalis, 2, paired lateral sclerotized area of hood, arrow, close proximity of top of hood and corpus bursae signa typical of genus *Denivia*.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Comments and Additions Concerning the Recent "Catalogue" of Neotropical Polyommatine Lycaenidae

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ABSTRACT

Comments and additions are made concerning the following taxa of the original Catalogue: *Lycaena titicaca* Weymer; *Itylos pnin* Bálint, *Polytheclus cincinnatus* Bálint and Johnson [*Eldoradina cyanea* Balletto], *Itylos luzhin* Bálint, *Echinargus martha* (Dognin), *Lycaena collina* Philippi, *Lycaena lyrnessa* Hewitson, *Madeleinea lolita* Bálint, *Madeleinea mashenka* Bálint, *Madeleinea ludica sensu* Bálint, *Lycaena faga* Dognin. The status of some names recently proposed by E. Balletto for neotropical Polyommatinae is discussed. Certain provisions of the ICZN Code appear to support usage hereafter of *Eldoradina* Balletto and *Madeleinea* Bálint.

INTRODUCTION

Some unfortunate technical circumstances occurred in connection with the recent publication of "A Catalogue of Polyommatine Lycaenidae (Lepidoptera) of the Xeromontane Oreal Biome in the Neotropics, As Represented in European Collections" (Bálint 1993). As noted therein by the editors (p. 42), my final galley proof (forwarded by express mail from Hungary to the United States) was long-delayed and publication of the volume had to proceed without my final corrections and additions. An addended "paste-in", circulated with the publication, noted some of the problems but the entirety of my corrections and additions were added only to the reprints of the paper. Fortunately, most of the substantial changes suggested in my proofs were additions or clarifications to the original text and corrections *per se* included mostly regularization of various figure citations and some other editorial problems. As a result the reprints (being circulated by me upon reprint request) do not differ in substance from the original paper but clarify some of the entries in the way I originally intended.

In spite of these aggravating problems at press time, some positive developments followed. Dr. Gerardo Lamas (Museo Nacional de Historia Natural de la Universidad Nacional Mayor de San Marcos [MUSM], Lima, Peru) forwarded me a number of comments based on his examination of the original text. Some of these were identical with those on my "unlucky proofs" but others, and additional collecting records, are important to add for the overall accuracy and completeness of the catalogue. In addition, various materials reported in the catalogue as requested by me for examination, but not received, were subsequently obtained. Comment on these removes the tentative nature of certain taxonomic opinion printed in the catalogue. Finally, I learned that Dr. Emilio Balletto (University of Torino, Italy) had published a short paper concerning some Neotropical Polyommatinae only a month before my catalogue (Balletto 1993) and some of his names clearly take priority over their counterparts in my catalogue.

The following entries summarize Dr. Lamas' comments, discuss some materials examined subsequent to the catalogue, and (as appropriate to enumerated taxa) introduce names from Dr. Balletto's simultaneous work.

CATALOGUE ADDITIONS

The Identity of *Lycaena titicaca* Weymer 1890.

Shortly before publication of the catalogue I was able to examine the type specimen of *Lycaena titicaca* (cf. note under *Madeleinea ludicra* in Bálint 1993: 26). This type verified that *titicaca* is identical with Staudinger's (1894) *Cupido speciosa* and the latter therefore a junior synonym. This taxonomic change will be documented in a forthcoming revision of the *Itylos* assemblage (Bálint and Johnson, in press). However, due to the late (1994) publication date for this revision, I make the report here for purposes of L.Peña's forthcoming Chilean butterfly guide. Peña (1971: 275, figs. 6-9) properly anticipated this synonymy in recording "*Parachilades titicaca*" from Chile and subsequently allowed me to study local variation in this species from long collection series.

About Moss' "Chosica", the Type Locality of *Itylos pnin* Bálint 1993 and *Polytheclus cincinnatus* Bálint and Johnson 1993.

According to Dr. Lamas, the recorded type localities of these two taxa are incorrect. Chosica is situated some 40 km. east of Lima, Peru, at an elevation of 800 m. Lamas reports he has never found *P. cincinnatus* at such a low elevation (cf. Lamas and Pérez 1983: 36). Lamas suggests that Moss collected his material somewhere above Chosica. Other polyommatine specimens of Moss also show this elevation discrepancy (see subsequent entry concerning *Echinargus martha*). Balletto's 1993 binomen *Eldoradina cyanea* takes priority over *P. cincinnatus*.

Notes on the Type Locality of *Itylos luzhin* Balint, 1993 and *Ityloides fumosus* Balletto, 1993.

The description of both taxa is based on the same specimens from historical Peruvian material collected by Simons; therefore the taxa are synonyms (Bálint and

Johnson, in prep.). The original specimens (cited as 2 males, Balletto 1993: 234; 3 males, Bálint 1993: 13) have labels noting collection on "30.XI.". However, handwritten data has resulted in the misspelling of the type locality for both taxa. According to Gerardo Lamas (in litt. referring to Chubb's 1919 gazetteer [not available to me in Hungary]) Simon's collecting place for 30.XI. was Huamachuco and Angasmarca in the La Libertad department. However, this additional data does not help explain the handwritten labels because the labels use shorter names (consisting of seven letters, Balletto: "Paramo Barages", or eight letters, Bálint: "Paramo Careques"). According to Dr. Lamas, "Coruges Paramo" is given by Chubb for 4.XII.1899. This site is actually the paramo above Corongo, Ancash, and would appear to be an acceptable interpretation of the handwritten names on the labels. If so, Corongo is the exact type locality of the these taxa.

Dr. Johnson has called to my attention (in litt. from pers. comm. with contemporaneous BMNH staff) that initial placement of "permanent" labels on BMNH material has been a source of some historical error. Early BMNH workers prepared "permanent" labels by copying older labels (both in print and in longhand) and then discarding the latter. Present BMNH policy is that no historical label (however erroneous) should be removed (P. Ackery to K. Johnson, in litt.). Dr. Johnson mentioned that Eric Quinter (AMNH), in a review of specific moth type specimens at the BMNH, had discovered (upon comparison to original descriptions) clearcut tranpositions of original type data between type specimens of similar-looking sister species. Consulting a third source (when possible) and considering pin-hole numbers in the labels, suggested that, however well-meaning, early rewritten labels had been mixed up. In other cases, however, where a third source was unavailable, it appeared just as possible that the labels were correct but the original literature in error. Thus, there is some latitude involved in trying to construe the meaning of certain old BMNH label data.

Additional Collection Records for *Eldoradina [cyanea]* Balletto 1993 [note *cyanea* was described as *Nabokovia (Eldoradina) cyanea*].

The following records from the collection of MUSM were provided by Dr. Lamas: 1 male: Cajamarca, Río Chotén 1800, 8.X.'74 (G. Lamas); 2 males: Ancash, Parque Nacional Huascarán, Bosque Polylepis, 3450-3850 m., 2.IX.'80 (E. Pérez); 1 male: Ancash, Parque Nacional Huascarán, Camino al Portachuelo, 3875-4500 m., 22.I.'81 (E. Pérez); 1 male: Lima, Huarochirí, 3150 m., 29.IV.'81 (P. Hocking); 2 females; Ancash, Cerro Amancaes, near Santo Toribio, 3000 m., 22.v.'80 (G. Lamas); 1 female: Lima, Río Blanco, 3350 m. 21,IX,'69 (G. Lamas); 1 female: Lima, Churín, 2000 m. 29 vii. '75 (G. Lamas); 1 male: Lima, Huarochirí, 3200 m., 2 May 1981 (P. Hocking).

Note on "Lima" Data for *Echinargus martha* (Dognin 1887).

Dr. Lamas reported that the male specimen collected by Moss in "Lima" (Bálint 1993: 16) is incorrectly labelled. The species flies in habitats at much higher elevations (cf. Lamas and Pérez 1983: 36).

The Type Material of *Lycaena collina* Philippi 1859.

Bálint and Johnson (1993: 5-7) distinguished a new species *Pseudolucia zembla* from *Pseudolucia collina* based on unequivocal characters of the male and female genitalia. In fact, the bifurcate female genitalia attributed to *collina* was one of the most striking discoveries of the work on austral Polyommatinae. *P. collina* and *P. zembla* were also distinguished by several wing pattern details. Dr. Lamas reports the type material of the taxon *collina* is most probably lost. His search for the original specimen of Philippi at the Museo Nacional de Historia Natural in Santiago, Chile (MNHNS) was unsuccessful. The same appears true for *Lycaena bicolor*, a taxon described by Philippi in the same paper (see Johnson et al., 1992: 116). Without the type material of *collina* one must rely totally on inference from the original description concerning the wing pattern of *collina*. Dr. Johnson and I believe that our diagnosis of *collina* is as consistent as practicable with the original description. However, Dr. Lamas' comments suggest it may be advisable to fix a neotype of *Lycaena collina* during the course of our revision of *Pseudolucia*. Comments below concerning *P. zembla* further pertain to this matter.

The Identity of *Lycaena lyrnessa* Hewitson 1874.

This taxon has historically been considered a subjective synonym of *Lycaena collina* (Elwes 1903: 288; Draudt [1921]: 822; Bridges 1988: I.205). Unfortunately I had originally studied the type of *lyrnessa* (BMNH) before Dr. Johnson called my attention to the eventual *P. zembla* (which he had discovered by dissection of recently collected series of Chilean polyommatines). As circum-

stance had it, Dr. Johnson's 1992 visit to the BMNH had predated our collaboration on *zembla* and I was unable to recheck the type until my subsequent visit. I therefore followed convention in my catalogue in giving the designation of the *lyrnessa* lectotype. However, after more thorough examination of the *lyrnessa* type with regard to the 1993 treatment of *zembla* and *collina*, I must report that *lyrnessa* and *zembla* appear identical and *zembla* is a junior synonym. Documentation of this synonymy will be published in the revision of *Pseudolucia* (in preparation). However, the synonymy is here noted for purposes of the forthcoming Chilean butterfly guide by Mr. Peña.

Additional Peruvian Records for *Madeleinea lolita* Bálint 1993.

Dr. Lamas reported two additional specimens of *M. lolita* in the collection of MUSM with the following data: Perú, San Martín, Parque Nacional Rio Abíseo, Huicungo, Puerta del Monte, 3190-2150 m., 16 July 1990 (M. Medina).

Additional Peruvian Record for *Madeleinea mashenka* Bálint 1993.

Dr. Lamas reports a male specimen in the MUSM with data Perú, Lima, Río Rímac, Bellavista, 4000 m., 7 July 1974 (G. Lamas). He comments that the VW ground color of the specimen is silvery-blue. The VW color of the holotype (metallic green) may result from age or a chemical stain (both phenomena are well known in old polyommatine material).

The Identity of *Madeleinea ludicra sensu* Bálint 1993.

I received the neotropical polyommatine types of Weymer (including *Lycaena ludicra* Weymer 1890) from the Museum für Naturkunde der Humboldt-Universität in Berlin, Germany, subsequent to publication of the catalogue. In the meantime, Dr. Lamas had reported to me the results of his recent examination of the type. According to Dr. Lamas, the Ancash specimens previously reported by him (cf. Lamas and Pérez, 1983: 36, as "*Itylos*, sp.n.") and subsequently discussed by me under *ludicra* (1993: 26-27) are not the same as Weymer's type. In addition, having consulted Weymer's type, it also appears that "*Itylos koa*" *sensu* Nabokov (1945: 42) is identical with *ludicra*.

As I noted in the catalogue, my identification of *ludicra* was tentative (pending examination of the type) and the material available for me historically identified as *ludicra* was clearly polytypic (Balint 1993: 26-27). Thus, it appears that the "*ludicra*" material discussed in my catalogue consists of several undescribed taxa. Dr. Lamas writes that are still about two or three undescribed *Madeleinea* species in the MUSM collection. Dr. Johnson writes that L. Peña has recently sent a unidentifiable *Madeleinea* specimen from Bolivia to the AMNH. I hope to be able to compare all this material first hand in the near future.

Balletto (1993) described a genus, *Nivalis*, for the assemblage I named *Madeleinea* in my catalogue. There is controversy concerning the validity of Balletto's name *Nivalis*. Dr. Lamas, who is helping prepare the Neotropical Lycaenidae list for *Atlas of Neotropical Lepidoptera*, opined first (in litt. to me and Dr. Johnson) that because *Nivalis* was explicitly proposed as an adjective it is invalid under Article 11g of the ICZN Code. Dr. Balletto, in a subsequent letter to Dr. Johnson (forwarded to Dr. Lamas and me) stated that this attribution "..., adjective" (Balletto 1993: 242) was inadvertant in the English text and meant only that the name was "derived from an adjective". According to Dr. Balletto, this is the case with many other generic names (he mentions *Erebia*, *Procerus*, etc.) which are, he says "substantivate adjectives, to be treated as nouns". This aside, Dr. Johnson has suggested that *Nivalis* may not be available because it is proposed as a replacement name for a "homonym" attributed by Balletto to Nabokov. Johnson points out that Nabokov's usage could be construed not as a homonym but simply as a misidentification (in which case, no replacement name was required).

Dr. Lamas (in litt. subsequent to all the above) reports he considers *Nivalis* a new scientific name, not a replacement name, and not available due to the face value language of the original description *vis-a-vis* Art. 11g. Dr. Lamas (certainly neutral personally regarding the issue) says his reading of the Code requires him to use *Madeleinea* in the checklist. Thus, until this opinion is reversed by some other authority, I conform to it and continue to use *Madeleinea*.

The Validity of the Lectotype Designation of *Lycaena faga* Dognin 1895.

The original description of *faga* states clearly: "Un exemplaire, Loja." (Dognin 1895: 106). Consequently, the original specimen of Dognin examined by me was

a holotype and the lectotype designation given in Bálint and Johnson (1993b) is unecessary and invalid.

Questionable Neotropical Polyommatine Records.

The material of *Zizina oxleyi* (Felder and Felder 1865), described from New Zealand, was determined by me from specimens housed in the BMNH collection. Confusingly, I have since also located additional historical material from the BMNH, MHNP and AMNH reputedly from the Neotropical Realm. The AMNH samples were determined by Nabokov as "*Scolitantides plumbea*" (cf. my note under *Pseudolucia plumbea* in Bálint 1993: 19-20). Because all these specimens are labelled poorly (BMNH, AMNH, no exact locality (only country); MHNP, locality totally missing; all, undated) their overall veracity may be questionable. A more thorough investigation (and location of new material, if available) appears necessary to deterine whether *Z. oxleyi* actually occurs in the Neotropical Realm. Dr. Lamas (in. litt.) comments on this issue that any *Zizina oxleyi* attributed to the Neotropical Realm is most certainly erroneous.

According to Dr. Lamas there should be no question that the Brazilian and Honduran specimens of *Pseudolucia chilensis* (Blanchard 1852) are mislabelled. As Dr. Lamas notes, the whole genus is restricted to the Neotropical temperate zone (although among *Pseudolucia* the *chilensis*- group does show the widest range).

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