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A Review of the Hubnerian Genus Parrhasius and Description of a New Genus Michaelus (Lycaenidae: Eumaeini)

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Much of the introductory material used in the research effort on the Hübnerian genera *Panthiades* and *Cycnus* (Nicolay, 1976) is applicable to the genus *Parrhasius*. Indeed, *Parrhasius* was established by Hübner in the same manner and in the same document, his *Verz. bekannt. Schmett.* in 1819. Scudder in 1875 fixed the generic type of *Parrhasius* as *Papilio polibetes* Cramer. One year later Scudder (1876) described the genus *Eupsyche* in considerable detail in the Bull. Buffalo Soc. Nat. Science. He established the generic type as *Thecla m-album* Boisduval & LeConte. A thorough analysis of all external structures and features such as color, wing pattern, composition and position of the male scent spot, plus the general and detailed structures of the male and female genitalia, indicates that the generic types of *Parrhasius* and *Eupsyche* are congeneric. With the Hübner name *Parrhasius* having some 57 years priority, it therefore becomes necessary to place Scudder's *Eupsyche* into synonymy.

The purpose of this work is to provide a more complete and detailed description of the genus *Parrhasius*, to describe a new genus *Michaelus* and to separate and define those species belonging to these two genera from the all-inclusive *Thecla*, and to remove those species that have been incorrectly placed in *Parrhasius* in the past.

Parrhasius as presently conceived, contains five species, one with five subspecies and another with three subspecies. *Michaelus* as described herein contains five species, one with two subspecies. All species in the two genera are essentially tropical, although one, *Parrhasius m-album*, is found rather widely distributed over much of the eastern United States, but is most common in the southeast (Florida).

That the two genera considered in this work are very closely related is at once apparent from the overall general wing pattern and other external features. An analysis of the genitalia of both sexes reveals characters common to all of the species discussed. Yet, there are characters within each genus that provide ample basis for separation of the two into distinct genera. *Parrhasius polibetes* (Cramer), in addition to being the type species of the genus, by virtue of characters found in both male and female genitalia, occupies a position closely akin to that of a transitional species, bridging the narrow gap between the two genera, *Parrhasius* and *Michaelus*.

The genera *Parrhasius* and *Panthiades*, so long confused and/or ignored in previous literature were rather thoroughly discussed and compared by this writer (1976) and there is little in detail to be added here. However, my original concept of the genus *Parrhasius* has been altered considerably since the beginning of this study. Some species

have been added, but many more, originally thought to be included in the genus, have been removed and placed in other genera, some yet to be reviewed and described.

The following abbreviations are used to indicate the collections from which specimens have been examined and data recorded in the course of this study: (**AME**) Allyn Museum of Entomology, Sarasota, Florida; (**AM**) American Museum of Natural History, New York, N.Y.; (**BM**) British Museum (Natural History), London, England; (**USNM**) Smithsonian Institution (National Museum), Washington, D.C.; (**CM**) Carnegie Museum of Natural History, Pittsburgh, Pa.; (**MCZ**) Museum of Comparative Zoology, Harvard University, Cambridge, Mass.; (**MN**) Museu Nacional, Rio de Janeiro, Brazil; (**GBS**) Gordon B. Small collection, Balboa, Canal Zone; (**RAA**) Richard A. Anderson collection, Virginia Beach, Va.; (**RR**) Robert Robbins collection, Tufts University, Medford, Mass.; (**N**) the author's collection.

Genus **Parrhasius** Hubner, 1819

Type species: *Papilio polibetes* Cramer, 1781.

Hindwing with two tails, the shorter (at times, rudimentary) at the end of vein Cu_1, the second longer tail at the end of Cu_2; anal angle lobed. Male forewing with a small round or ovate scent spot bisecting the anterior portion of the discocellular (cell-end). Underside of the hindwing with a small linear or round spot on or just below the mid-costal margin. Abdomen pale yellow or cream colored below, dark brown with blue scaling above. Palpi short, slightly porrect, lightly scaled, terminal segment one-half or less the length of the second. Eyes densely covered with short, pale bristles. Antennae less than one-half the length of the forewing costa, the club gradually thickened to twice the diameter of the stalk. On the underside of the forewing, a median macular line or series of spots placed nearly at right angles to the costal margin.

Male genitalia stout, heavily chitinous, with a short, broad saccus; the vinculum broad at the base, with no anterior extensions and without lateral processes; valvae moderately long, completely separate, rather stout with or without ventro-lateral processes. Aedeagus stout, straight or slightly curved dorsad, equal to or longer than the length of the complete genital ring, and without cornuti.

Female bursa copulatrix with a smooth, unadorned round or broadly oval ostium bursae, the dorsal plate moderately sclerotized, the ventral plate thinly chitinous or membranous; the ductus bursae a long, round or oval chitinous tube, straight or curved slightly dorsad; the cervix bursae only slightly modified and constricted, the ductus seminalis entering on the dorsal side; the corpus bursae rather large, equal to or somewhat longer than the complete ductus bursae, and with two small, simple thorn-like signa.

The species of *Parrhasius* are rather widely distributed over much of the mainland Western Hemisphere tropics. The generic type, *polibetes*, is the most widespread of all the species in the genus; it is found throughout all of tropical America. Some species are uncommon to rare, even within their known habitat, and the life histories of most remain unknown.

Key to the species of *Parrhasius*

1. Underside of forewing, discal band irregular, composed of individual black spots and short bands, broken outward just below vein M_3 ..... *polibetes*
   Underside of forewing with a macular (almost solid) discal band nearly straight or only slightly curved 2
2. Underside of forewing, discal band dark brown, macular, widest at the costal margin ..... *orgia*
   Underside of forewing discal band pure white 3
3. Underside of forewing with a narrow, uneven, white post-basal line ..... *appula*
   Underside of forewing without a post-basal line 4
4. Underside of forewing with a broad, ill-defined postdiscal band, wider than

the white discal band, the latter without a dark inner margin ..... *selika*
Underside of forewing with the white postdiscal band no wider than the discal band, the latter with a dark inner margin of equal width ..... *m-album*

Parrhasius polibetes (Cramer)

Figs. 1A, 1B, 1C, 1D, 2, 3, 41.

Papilio Polibetes Cramer, 1781, 4:98, pl 341, figs B. C. Herbst, 1800: 624, pl 287, figs 3. 4. Comstock & Huntington, 1962, 60:117.
Polyommatus polibetes, Godart, 1824: 597.
Thecla polibetes, Ménétriés, 1855: 54. Hewitson, 1867: 99, fig 47. Kirby, 1871: 381. Möschler, 1876: 300. Kirby, 1877: 781. ibid. 1879: 156. Godman & Salvin, 1887: 41, 716. Draudt *in* Seitz, 1922: 766 pl 152c. Hoffman, 1940: 708. Hayward, 1951: 133. Zikán, 1956: 140. Munroe, Ross & Williams, 1967: 196. Silva, 1968: 337. Ebert, 1970: 42. Barcant, 1970: 265 pl 28 fig 45. Lewis, 1973 pl 69 fig 10. Smart, 1975
Thecla zoe Reakirt, 1866: 333. Draudt *in* Seitz, 1922: 766. Comstock & Huntington, 1964, 72: 192.
Parrhasius polibetes, Scudder, 1875: 242.
Panthiades (Parrhasius) polibetes, Brown & Mielke, 1967: 152.

I have examined a substantial series of both sexes of *polibetes* taken from throughout most of its known range. There are slight differences in the intensity of the ground color on the underside of the wings and even in the size and shape of the male

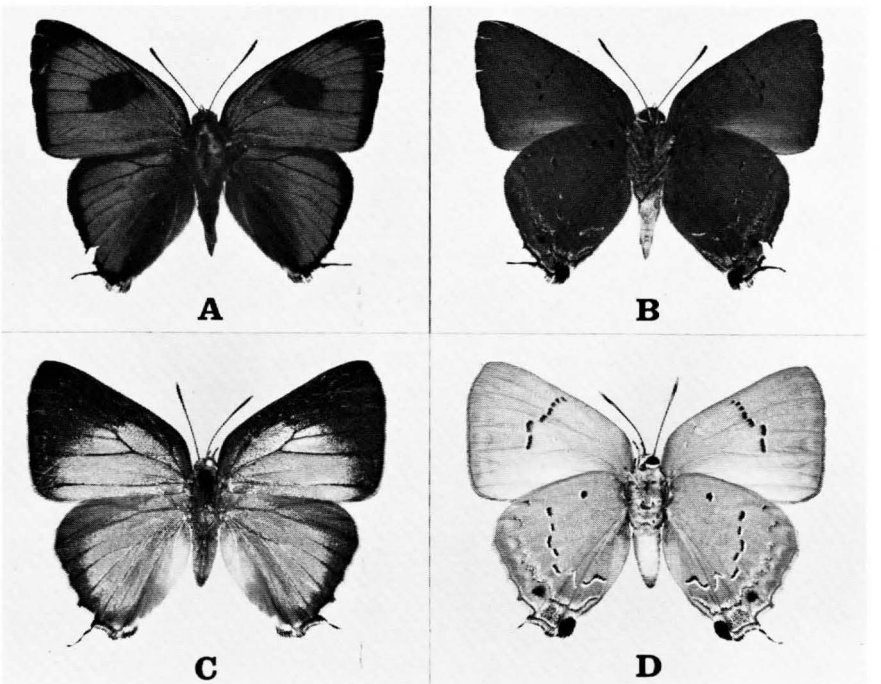

Figure 1. (A) *Parrhasius polibetes* (Cramer) ♂, Parque do Gama, (D. F.) Brazil, 16 May 1969 (S. S. Nicolay); (B) underside of (A); (C) *P. polibetes* ♀, Joinville (Santa Catarina) Brazil, May 1970; (D) underside of (C).

scent spot, but these appear to be seasonal and individual in nature rather than of any subspecific origin. Minor differences occur in the size and arrangement of the spots on the underside of both wings; none of the differences found is consistent or substantial to the degree required for subspecific status. Examination of the genitalia of both sexes from the extremes of its range reveals a constant form with only minor variation.

There are numerous color illustrations of varying quality of both sexes in recent publications as well as in the older references.

The range of *polibetes* covers most of the tropical and subtropical hemisphere mainland from the Mexican state of Tamaulipas in the north to Paraguay and the state of Rio Grande do Sul in southern Brazil.

Specimens examined: MEXICO: *Tamaulipas*- Galeana Canyon 1♂ (AME), Villa Gomez Farias, 500m, 1♂ 2♀ (N), Tampico 1♂ (BM); *San Luis Potosi*- Cd. Valles 9♂ (AME), 38♂ 11♀ (CM), El Salto Falls 2♂ 2♀ (AME), Tamazunchale 1♂ (AM), El Bonito Valles 7♂ (AM); *Sinaloa*-Loberas Summit 1♂ 2♀ (AME); *Guerrero*-Acahuizolta 2♂ (AME); *Colima*- Comala 2♂ 2♀ (CM); *Vera Cruz*- 1♂ 3♀ (AME), Presidio 3♂ 1♀ (CM), 8♂ 10♀ (AME), Jalapa 3♂ 2♀ (BM), 4♂ 3♀ (AM), Misantla 5♂ (BM), 1♂ (AM), Cordoba 1♂ (BM), 3♂ (AM), Atoyac 2♂ (BM), Orizaba 1♂ (BM), Coatepec 1♂ (BM), Tuxpango 2♂ (AM); *Tabasco*- Teapa 1♂ (BM); *Chiapas*- 2♂ 1♀ (AME); *Yucatan*- Chichen-Itza 1♂ (CM), Piste 8♂ 1♀ (CM), 1♂ (BM), Milpas 1♂ (BM), Valladolid 2♂ (BM); "Mexico" No data 4♂ 2♀ (AM), 2♂ (BM). BELIZE: Sibun Cayo Dist. 1♀ (CM). GUATEMALA: 1♂ (no data) (AME), Polochic Valley 3♂ 4♀ (BM), Forests of N. Vera Paz 3♂ 1♀ (BM). HONDURAS: San Pedro Sula 2♀ (BM). NICARAGUA: San Juan del Norte 1♀ (AM), Managua 13♂ 12♀ (RAA). EL SALVADOR: Cerro San Jacinto 4♂ 2♀ (AME), Santa Tecla 1♀ (AME). COSTA RICA: *Guanacaste*- Canas 8♀ 9♂ (USNM), Sta. Elena 1♂ (USNM); Turrialba 1♂ 1♀ (AME), San Jose 1♀ (AM), 1♂ (BM), Cartago 1♀ (AM), No data 4♂ 3♀ (BM). PANAMA: Bugaba 1♂ (BM), *Canal Zone*- Summit, Cocoli, Los Rios, Gatun, Madden Dam, Farfan, Paraiso; *Colon*- Sta. Rita; *Panama* Prov.- Cerro Campana, Rio Bayano, El Llano; *Veraguas*- Santa Fe; *Los Santas*- Cerro Canajagua 17♂ 16♀ (GBS, N). VENEZUELA: Rancho Grande 2♀ (N), 1♂ 1♀ Valencia (BM), 1♂ Merida (BM), Escugue 1♂ (AME), Maipures 1♂ (BM), Las Quiguas, Esteban Valley 1♀ (BM). COLOMBIA: No data 2♂ (BM); *Dept. Magdalena*-

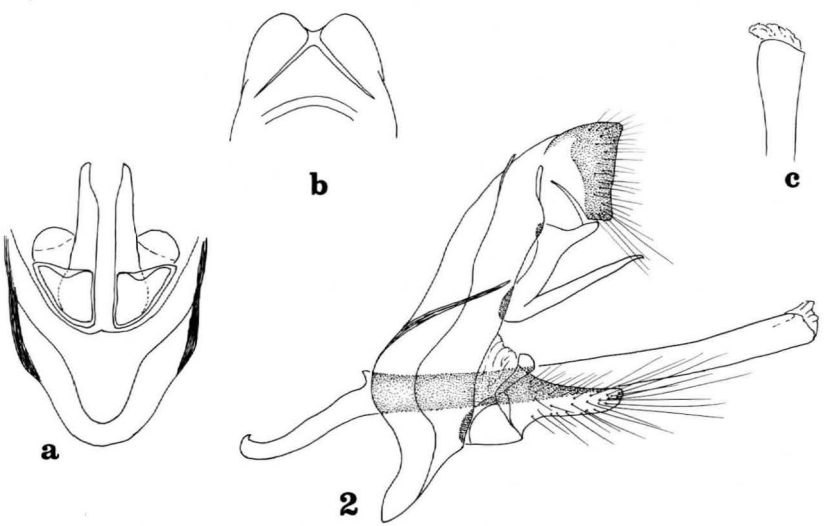

Figure 2. Male genitalia of *P. polibetes* (Cramer) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Onaca, Sta. Marta 1 ♀ (BM), 1 ♂ 1 ♀ (CM); *Valle del Cauca*- Cali, 1000m 1 ♀, Rio Cauca 1 ♂ (AME); *Caqueta*- Rio Bodoquero 1 ♀ (N), *Cundinimarca*-Bogota 4 ♂ 2 ♀ (BM), Cananche 3 ♂ 1 ♀ (BM). TRINIDAD: 2 ♂ 1 ♀ (AME). BRITISH GUIANA: 2 ♂ 2 ♀ (BM). SURINAM: Park Dist. 1 ♂ (BM). FRENCH GUIANA: 2 ♂ (BM), Cayenne 3 ♂ (BM), Maroni 1 ♂ (BM), Fort George 1 ♀ (BM). ECUADOR: La Chima 1 ♂ (BM), *Loja*-Vilcabamba, 1600m 2 ♂ 1 ♀ (AME); *Napo*- Rio Napo 1 ♀ (AME). PERU: 1 ♂ (BM), *Loreto*- Iquitos 1 ♂ (BM), Rio Putumayo 1 ♂ (AM); *San Martin*- San Antonio de Cumbaza 2 ♂ (AM), Rio Tabaconas, 6000' 1 ♀ (BM). BOLIVIA: *Santa Cruz*-Castro Ojo 1 ♂, Las Juntas 1 ♂ (CM), Buena Vista 1 ♂ (BM), S. Cruz de la Sierra 1 ♂ 1 ♀ (BM). BRAZIL: *Amazonas*- Ega 2 ♂ (BM), Tonantins 1 ♂ (BM), Teffe 1 ♀ (AME), 'Amazons' 1 ♀ (BM); *Para*- 2 ♀ (BM), Igarape Acu 1 ♂ 1 ♀ (AM); *Ceara*- 1 ♂ (BM); *Espiritu Santo*- 1 ♂ 1 ♀ (BM); *Rio de Janeiro*- 2 ♂ 1 ♀ (N), 2 ♂ 3 ♀ (BM), Tjuco 1 ♀ (BM); *Mato Grosso*- Cuyaba, Chapada 2 ♂ 1 ♀ (BM), *Goias*- Jatai 1 ♀ (N); *Minas Gerais*- Belo Horizonte 1 ♂ (BM); *Federal District*- Parque do Gama 3 ♂ 1 ♀ (N); *Guanabara*-Restinga 1 ♀ (N); *Parana*- Caviuna 1 ♀ (AM), Castro 1 ♂ 1 ♀ (BM), Iguassu 1 ♀ (BM); *Sao Paulo*-Araras 1 ♀, Itirapina 1 ♀, Campinas 1 ♀ (N); *Santa Catarina*- Joinville 2 ♂ 1 ♀, Nova Teutonia 1 ♂ 1 ♀ (AME, N), Massaranduba-Blumenau 2 ♂ 2 ♀ (AM); *Rio Grande do Sul*-Sao Leopoldo 1 ♀ (AME). PARAGUAY: 1 ♂ 3 ♀, Villa Rica- Sapucay 5 ♂ 1 ♀ (BM).

Parrhasius orgia orgia (Hewitson)

Figs. 4A, 4B, 4C, 4D, 5, 6, 42

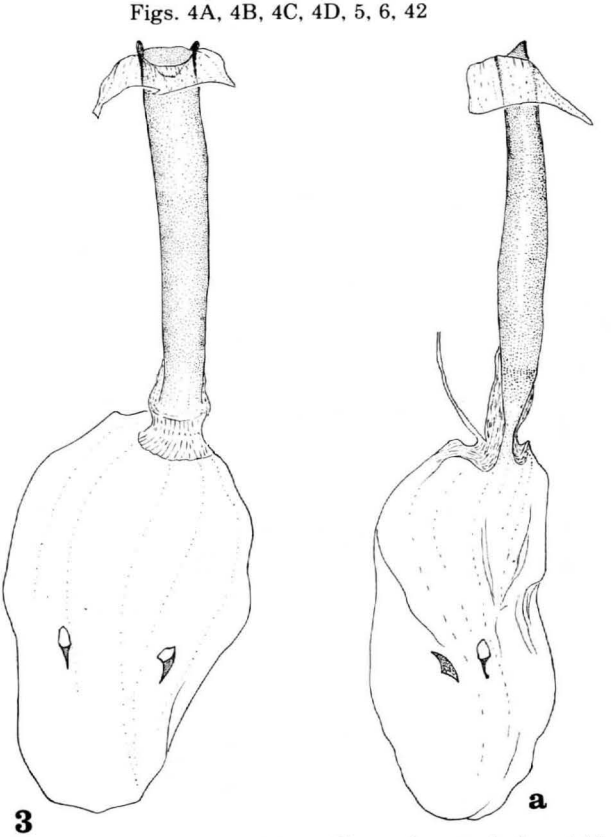

Figure 3. Female genitalia of *P. polibetes* (Cramer) ventral view; (a) lateral view.

Thecla orgia Hewitson, 1867: 102, pl 43, fig 176, pl 41, figs 148 and 149. Herrich-Schaffer, 1869: 58. Kirby, 1871: 389. Draudt *in* Seitz, 1922: 767, fig 152e. Hayward, 1951: 133. Comstock & Huntington, 1962, 70:43.
Panthiades (Parrhasius) orgia, Brown & Mielke, 1967: 152.

Original description:

"Upperside. Male. — Brilliant blue: the outer margins of both wings dark brown. Anterior wing with a small pale discoidal spot. Posterior wing with one tail.

"Underside rufous. Anterior wing with a broad dark brown band at the middle bordered outwardly with white and a submarginal brown line. Posterior wing with a black spot near the base and a central zigzag brown band, both bordered below with white; a submarginal brown band and a spot at the anal angle irrorated with white: anal angle with a spot and the lobe black, each crowned with scarlet: a submarginal white line near the tail.

"Female like the male, except that it is cerulean blue above, with the margins broadly dark brown.

"Exp. 1½ inch.

"In the collections of the British Museum and Dr. Boisduval, from Venezuela and Cayenne."

There has been and still exists to some extent, considerable confusion between *orgia* and *polibetes*, generated primarily I believe by the Godman and Salvin (1887) illustration on plate 52, figs. 24, 25 and 26 titled as '*Thecla orgia*'. It can be easily seen from Hewitson's original description and illustrations of the type that *orgia* males do not have the large, squarish patch of black scaling on the discal portion of the forewing adjacent to the scent pad. The illustrations of both upper and lower wing surfaces in Seitz (1922) fig 152e are quite correct and accurate. On the underside of the forewings, the median line is a solid dark brown band, outwardly bordered in white, rather wide at the costal margin, tapering in a relatively straight line toward the inner angle (tornus). In *polibetes*, this band is curved, uneven and composed of individual dark spots.

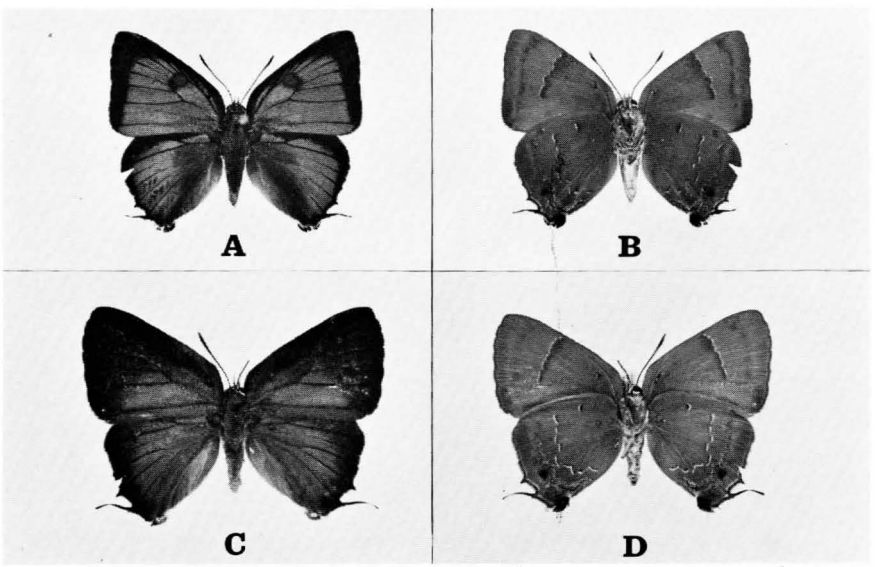

Figure 4. *Parrhasius orgia orgia* (Hewitson) ♂, Sumare (Guanabara) Brazil, 30 April 1969 (S. S. Nicolay); (B) underside of (A); (C) *P. orgia orgia* ♀, Nova Teutonia (Santa Catarina) Brazil, March 1954; (D) underside of (C).

After a careful study and analysis of the male and female genitalia and the upper and underside wing patterns of both sexes, I have reached the conclusion that *orgia, teleontes, melissa=(sedecia* Hewitson) and two new subspecies, *amazonis* and *orgiophantes,* represent a single, widespread and variable polytypic species found from southern Brazil and Argentina northward throughout the South American continent, Central America and into Mexico. Nominate *orgia* is a South American insect. Although Hewitson mentions Venezuela and Cayenne (French Guiana) in the original description, I have seen no specimens of the subspecies *orgia* from either country. The Hewitson type carries the label 'Brazil'. The primary habitat of *orgia* appears to be the east-central and south-eastern coastal states of Brazil, extending into Argentina and Paraguay. Those few specimens I have found from north and west of this area begin to show traces of the characters found in the subspecies *amazonis.*

Specimens examined: BRAZIL: *Federal District-* 2♂ 1♀ (N); *Goias-* Jatai 1♀ (N); *Mato Grosso-* Chapada Guimaraes 1♀ (N); *Rio de Janeiro-* 1♂ 1♀ (MN, N), Canto Gallo 1♂ (MCZ); *Sao Paulo-* Borhumil 1♂ 1♀ (BM); *Parana-* Castro 2♂ 5♀ (BM), 1♂ 1♀ (USNM), Caviuna 1♂, Londrina 1♂ 2♀ (AM), Iguassu 5♂ 3♀ (BM), Fernandes Pinhiero 1♂ (BM), Ponta Grossa 1♂ (MCZ); *Santa Catarina-* Massaranduba-Blumenau 6♂ 4♀ (AM, MCZ), 1♂ (BM), Nova Teutonia 11♂ 5♀ (AME, N); *Rio Grande do Sul-*7♂ (BM), Guarani 1♂ Pelotas 10♂ 8♀ (MCZ), 4♂ (AM, AME), 2♂ 3♀ (CM); 'Brazil' 1♂ 1♀ (BM). ARGENTINA: *Misiones-* Iguassu 1♂ (AM). PARAGUAY: 6♂ 1♀ (USNM, CM, AME, N), Sapucay 3♂ (BM), Central Paraguay 1♂ (BM).

Parrhasius orgia teleontes (Druce)

Figs. 7A, 7B, 7C, 7D, 8, 9, 42.

Thecla teleontes Druce, 1890, 1: 152. Comstock & Huntington, 1964, 72: 123.

Original description:

" . Allied to T. Orgia, Hew. The ground colour of the wings beneath dark smoky-brown, with purplish reflections. The black spot on the secondaries much larger, and the outer (marginal) green line wanting, except near the anal angle.

"Hab.: Interior of Colombia. Mus. Druce.

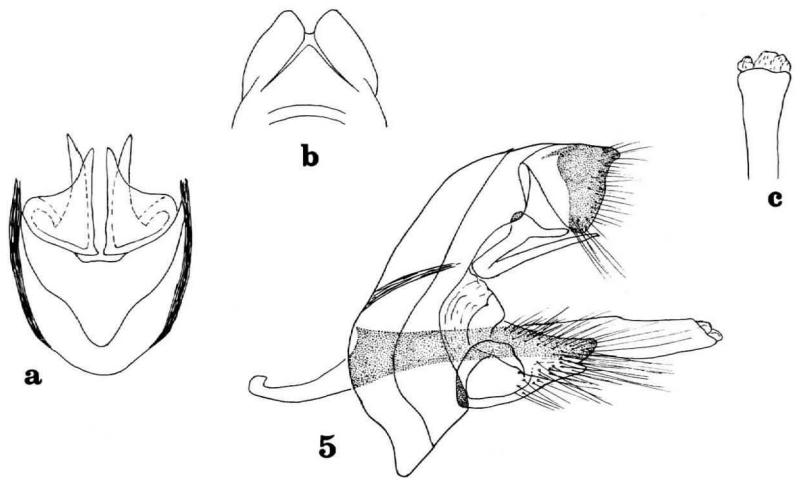

Figure 5. Male genitalia of *P. orgia orgia* (Hewitson) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

"This species is also in the collection of Messrs. Godman and Salvin from the same locality."

This rather brief description and the taxon it represents have apparently been overlooked by nearly all workers on the Neotropical Lycaenidae since Druce's description was published. Yet, the Druce type, a male in very good condition, is in the British Museum (Natural History) type collection even today.

Druce's comparison of *teleontes* to *orgia* concerns the wing pattern found on the underside. To this I would add that all dark linear markings are heavier than in *orgia*, the white edging standing out in sharp contrast against the darker ground color. These bold, heavier markings may be accentuated in the female. The male, on the upperside of the forewing, has a large discal patch of heavy black scaling adjacent to and touching the pale brown scent spot. This heavy black scaling, totally absent in *o. orgia* and not much larger than the scent spot in the subspecies *amazonis*, is in *teleontes*, expanded outward toward the wing margin and reaches basad to vein Cu_2. In the female, the dark margins on both wings are somewhat wider than in nominate *orgia*, but essentially, the two are the same on the upper wing surfaces.

Based on specimens collected from the west slope of the Cordillera in Ecuador and specimens from Panama, I would estimate that the type from "the Interior of Colombia" was taken somewhere north and west of the Cordillera Central. The known range

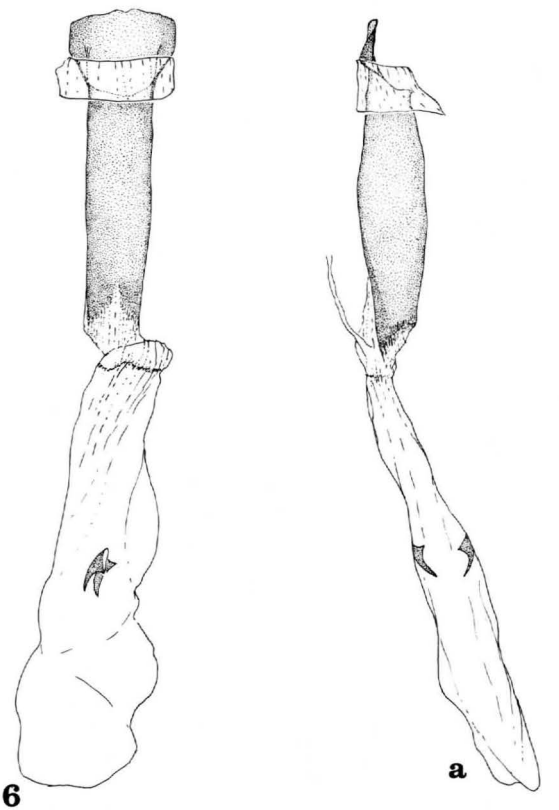

Figure 6. Female genitalia of *P. orgia orgia* (Hewitson) ventral view; (a) lateral view.

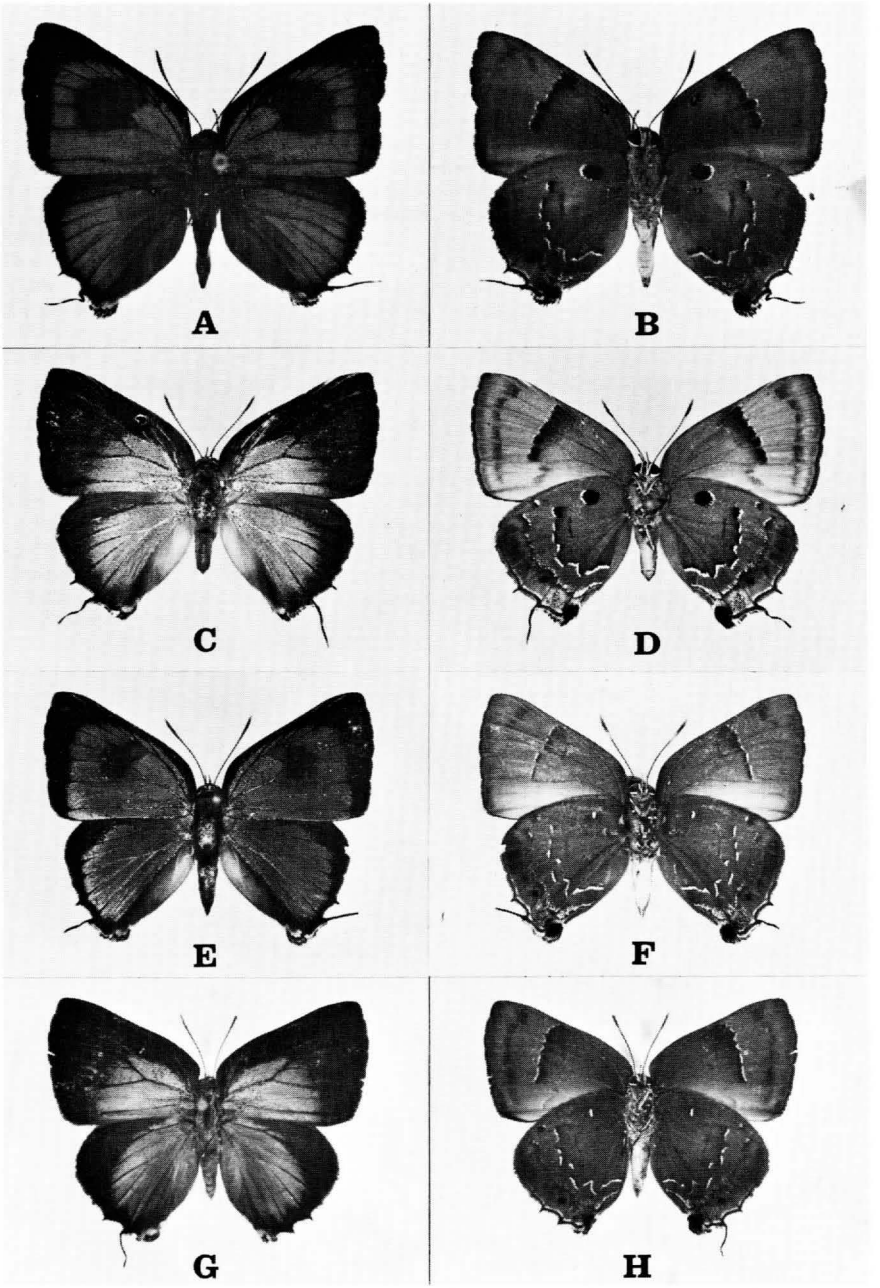

Figure 7. *Parrhasius orgia* subspecies: (A) *P. orgia teleontes* (Druce) ♂, Rodman Canal Zone, 4 Feb. 1975 (Joe Melton, III); (B) underside of (A); (C) *P. orgia teleontes* ♀, Cocoli, Canal Zone, 22 June 1963 (G. B. Small); (D) underside of (C); (E) *P. orgia melissa* Nicolay ♂, Tamazunchale (S. L. Potosi) Mexico, 2 Aug. 1954 (D. L. Bauer); (F) underside of (E); (G) *P. orgia melissa* ♀, Catemaco (Vera Cruz) Mexico, July 1960; (H) underside of (G).

of *teleontes* begins in northern Peru, then through Ecuador, central and northern Colombia into Panama and as far north as Guatemala. Yet, I have examined specimens taken within the boundaries of this area, as well as beyond its borders that carry a blend of characters referable to both the subspecies *amazonis* and *teleontes* in South America and *teleontes* and *melissa* in Central America. Specimens from the upper Amazon drainage carry the smaller patch of black scaling adjacent to the male scent pad of *amazonis* and the heavier, bold markings of *teleontes* on the underside. Some specimens in both the northern and southern 'blend zones' carry the heavier bold markings of *teleontes* against a paler, smokey ground color rather than the dark brown of typical *teleontes*. This latter color combination occasionally appears in specimens within the range of *teleontes* and may be the manifestation of a seasonal 'form' although such a judgment is impossible to confirm at this point because very few specimens in older collections carry complete data that includes date of capture. Specimens from northern Panama and northward into Guatemala are particularly variable in this respect.

Specimens examined: PERU: Tarapoto 6 ♂ (BM); ECUADOR: *Zamora*- Rio Zamora 1 ♂ (AM), *Los Rios*- 3 ♂ 1 ♀ (BM); *Pichincha*- Sto. Domingo de los Colorados 1 ♂ (AM); COLOMBIA: 2 ♂ (AM), *Cundinamarca*- 'Bogota' 1 ♀ (USNM), 2 ♂ 2 ♀ (BM), Env. de Bogota, Muzo 2 ♂ 6 ♀ (BM), Rio Minero, Muzo 1 ♂ (BM); *Meta*- Villavicencio 1 ♂ (RR); *Santander*- Barrancabermeja 1 ♀ (AM); *Magdalena*- El Banco 1 ♂ (BM). VENEZUELA: 1 ♀ (BM). PANAMA: *Canal Zone*- Cocoli 1 ♀ (N), Piña 1 ♀ (AME), Rodman 1 ♂ (N), Los Rios, Madden Forest, Madden Dam 10 ♂ 9 ♀ (GBS), Madden Dam 1 ♀ (RR); *Panama Prov.*- Cerro Campana, Rio Bayano, El Llano 3 ♂ 3 ♀ (GBS); Colon- 1 ♂ 2 ♀ (GBS); *Chiriqui*- 1 ♂ (AME), 3 ♂ (BM); *Veraguas*- 1 ♂ (BM), Bugaba 1 ♀ (BM). COSTA RICA: Guapiles 1 ♂ Carillo 1 ♂ 2 ♀ (USNM). EL SALVADOR: *El Salvador*- Cerro San Jacinto 1 ♂ (AME), Santa Tecla 1 ♂ 1 ♀ (AME). GUATEMALA: Cayuga 1 ♂ (USNM).

In addition to the above material, two males in the BM collection from outside the

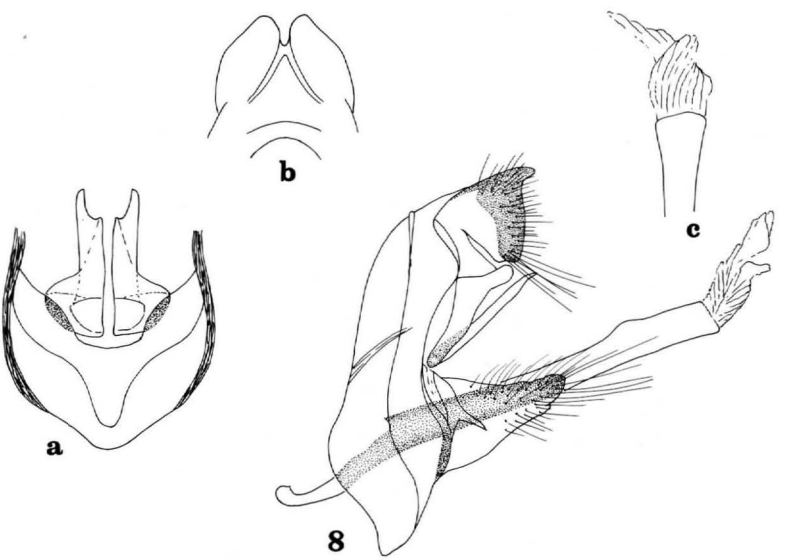

Figure 8. Male genitalia of *P. orgia teleontes* (Druce) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

so-called range of *teleontes* certainly are of this subspecies. One from Sao Paulo de Olivenca, Brazil the other from the 'Amazon' extend the 'blend zone' much further to the east than the bulk of the material examined would indicate. It is highly probable that the blend zone of *teleontes* and *amazonis* takes in much of the upper Amazon drainage from northern Peru to Colombia, extending eastward to the western border of Brazil.

Parrhasius orgia melissa new name

Figs. 7E, 7F, 7G, 7H, 10, 11, 42.

Thecla polibetes, var. sedecia Hewitson, 1874: 182, pl 72, figs 548, 549 (preoccupied by Thecla sedecia Hewitson 1874).
Thecla sedecia, Kirby, 1877: 781. Weeks, 1905: 19, 28. Draudt *in* Seitz, 1922: 767, pl 152i. Comstock & Huntington, 1963, 71: 116.
Thecla orgia, Godman & Salvin, 1887, 2: 40, pl 70, figs 24, 25 and 26. Hoffman, 1940: 708. Barcant, 1970: 264, pl 28, fig 42.
Eupsyche polibetes sedecia, Field, 1940: 346.

Original description:
"341 Thecla Polibetes, var.

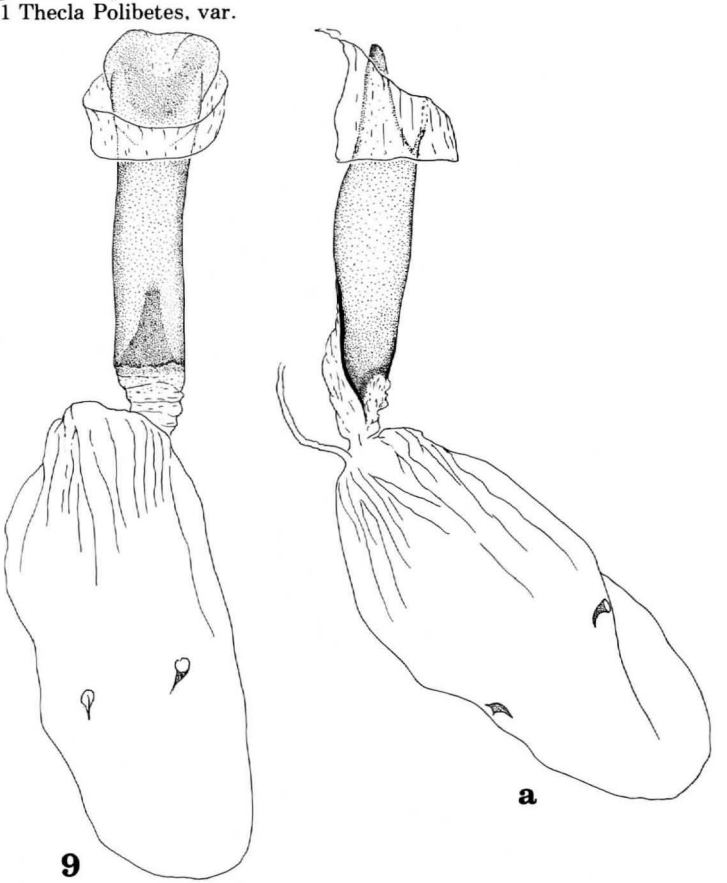

Figure 9. Female genitalia of *P. orgia teleontes* (Druce) ventral view; (a) lateral view.

"Thecla Sedecia, Hewitson. Plate LXXII. figs 548, 549.

"Upperside. Male.— Violet-blue: the margins dark brown. Anterior wing with a large central discal black spot and a small pale brown spot within the cell. Posterior wing with two tails: the lobe slightly irrorated with white.

"Underside brown. Anterior wing crossed a little beyond the middle by a *nearly straight unbroken* band of black bordered outwardly with blue-white. Posterior wing with a black and white spot near the base: crossed beyond the middle by a band of linear black spots bordered outwardly with pale blue: a submarginal band of pale blue spots chiefly above the tails, and a line of white on the outer margin at the base of the tails: the lobe black, a black subcaudal spot crowned with carmine.

"This is a much more beautiful thing than the ordinary *Polibetes*. It has the band on the underside of the anterior wing unbroken and the bands of the posterior wing distinctly bordered with pale blue. I prefer, however, to consider it a variety of *T. Polibetes*."

The relatively short bibliography listed above appears rather strange and a bit confusing at first glance; but it is hardly a measure of the incredible taxonomic confusion and mistaken identity that has surrounded this species. The initial confusion was begun by Hewitson who had just previously given the name *sedecia* to a hairstreak that had no relationship to the species here under discussion, thus creating two '*Thecla sedecia's*'. *Thecla (Strymon) sedecia* Hewitson, 1874, Ent. Mo. Mag., Vol. 11, p 105 has priority. Clench (1967) places *sedecia* as a subspecies of *Thecla (Strymon) albata* Felder & Felder, thus making *Thecla (Parrhasius) sedecia* a homonym. I therefore propose the new name *melissa* to replace the junior homonym *Thecla sedecia;* the name is after my lovely daughter-in-law, Mrs. Stephen C. Nicolay.

As discussed previously under the nominate form of *orgia*, the Godman and Salvin (1887) plate 70 figures illustrate this subspecies and not the subspecies *orgia*. I have little doubt that the Hoffman (1940) reference is also to this subspecies, *melissa*. Hewitson, as noted in the original description, considered *melissa*, not as a separate species, but as a variety of *polibetes*. Seitz (1922) and Field (1940) followed this arrangement. The genitalia of both sexes, as evidenced by the figures **10** and **11**, indicate beyond doubt that *melissa* is not a subspecies or variety of *polibetes*, but is a subspecies of *orgia*.

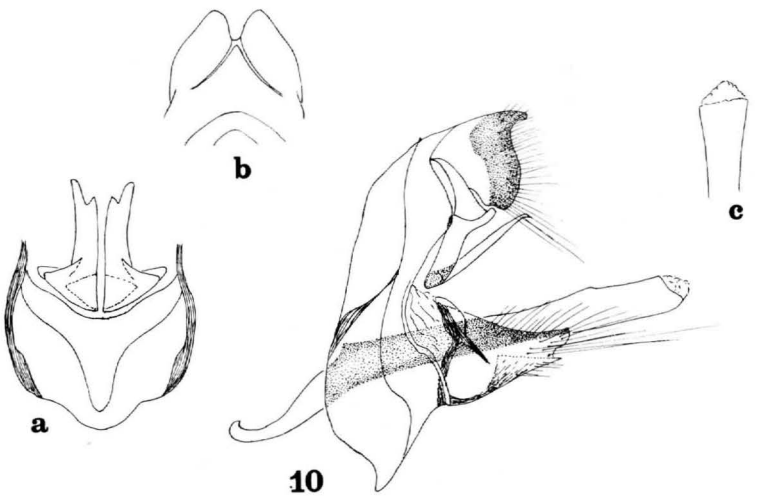

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Figure 10. Male genitalia of *P. orgia melissa* Nicolay lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

The range of *melissa* is rather curious and apparently disjunct. The original description provides no clues to the distribution nor type locality, but the label on the Hewitson type of *'Thecla sedecia'* is Cayenne (French Guiana). This may be in error and in any case represents what appears to be the southernmost limits of its range, a range which occupies the northern part of the South American continent and then again into and throughout most of southern and east-central Mexico. The geographical region between these two areas is occupied by the subspecies *teleontes* with a blend zone of the two subspecies occupying a substantial portion of the area lying between Costa Rica and Guatemala. Here the species is extremely variable and some specimens display a mix of characters attributable to both *orgia* subspecies, *melissa* and *teleontes*.

Specimens examined: MEXICO: No data 1♂ (MCZ); *San Luis Potosi*- Cd. Valles 1♂ (CM), Tamazunchale 2♂ (N), Palitla 1♂ (AM); *Vera Cruz*- Santa Lucrezia 1♂, Motzorongo 1♂, Coatepec 1♀ (USNM), Misantla 2♂ (BM), Jalapa 2♂ (AM), 1♂ 1♀ (BM), Tuxpango 2♂ (AM), Presidio 10♂ 3♀ (AME, AM, CM), Catemaco 2♀ (AME), Santecomapan 1♂ (AME), Orizaba 1♂ (RR), Cordova 1♂ (BM); *Oaxaca*- Chimalapa 1♂ (AME), San Jose Chiltopec 1♂, Yelta 1♂ (CM). BELIZE: Sibun Cayo Distr. 1♂ (CM). GUATEMALA: 1♂ (BM), Polochic Valley 2♂, Teleman, Vera Paz 1♂ San Geronimo

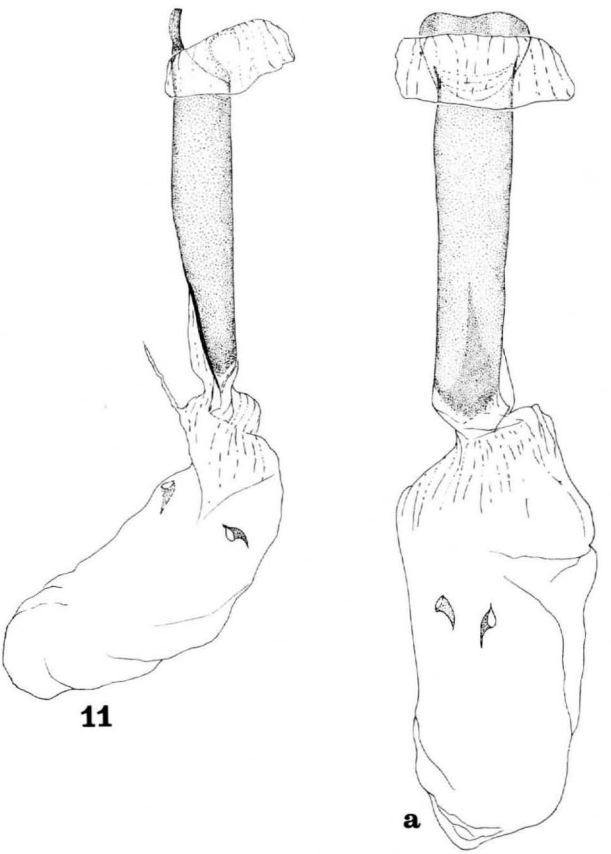

Figure 11. Female genitalia of *P. orgia melissa* Nicolay, ventral view; (a) lateral view.

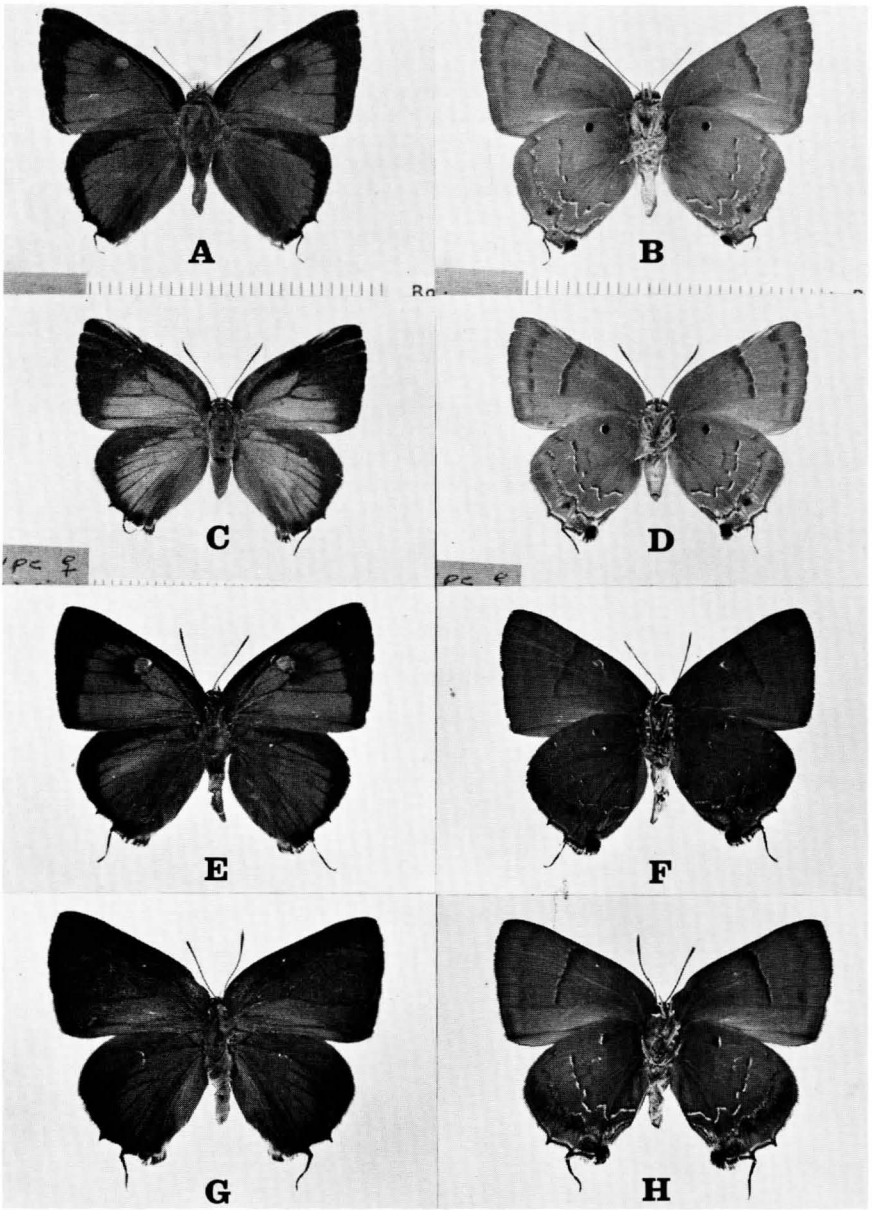

Figure 12. *Parrhasius orgia* subspecies: (A) *P. orgia amazonis* Nicolay ♂ Holotype, Ceara, Brazil, Rothschild Bequest B. M. 1939-1; (B) underside of (A); (C) *P. orgia amazonis* ♀ Allotype, Ceara, Brazil, Rothschild Bequest 1939-1; (D) underside of (C); (E) *P. orgia orgiophantes* Clench ♂ Holotype, Rio Surutu, 350 m. (Santa Cruz), Bolivia; (F) underside of (E); (G) *P. orgia orgiophantes* ♀, Rio Surutu, 350 m. (Santa Cruz) Bolivia; (H) underside of (G).

1 ♀ (BM). HONDURAS: San Pedro Sula 3 ♂ (BM). VENEZUELA: Las Quiguas, Esteban Valley 1 ♀ (CM).

Parrhasius orgia amazonis, new subspecies

Figs. 12A, 12B, 12C, 12D, 13, 14, 42.

Male: Length of forewing, 17 mm. Upperside dark, shining blue with a relatively narrow black outer wing margin, a very narrow black costal margin becoming wider at the apex. Scent pad on the forewing pale grayish-brown, round, bisecting the discocellular vein and with a small patch of diffused black scaling touching the lower outer margin of the scent pad and extending beyond vein M_3. Hindwing the same dark blue as the forewing with a very narrow black outer margin, wider at the apex and along the costal margin. Underside of both wings pale gray-brown with a faint lavender tinge. The discal line of the forewing composed of broad, dark brown conjoined crescents with a white outer margin; the submarginal line paler brown, diffused crescents forming a narrow macular band; at the margin a macular band of wide, diffused, pale brown crescents. Hindwing with a boldly marked black post-basal spot with a white outer margin located just below the costal margin; a dark cell-end streak and a discal line of isolated dark brown crescents with pale green outer margins, forming a broad, open "W" terminating at the inner margin; a pale green post-discal line begins at the apex, is continuous and macular to the inner margin. The cubital spot small, orange-red with a round black spot centered on the lower margin, is outlined by the post-discal band and is dusted in bluish green scaling below Cu_1. A large black anal lobe spot with faint red scaling dorsad, a tiny dark spot lightly dusted with bluish-white scaling at interspace between Cu_2 and the anal lobe with a white sub-terminal line beginning just above Cu_1, ending at the anal lobe. All fringes concolorous brown.

Female: Lenth of forewing, 17 mm. Upperside forewing pale shining blue with a wide dark brown apical border in a curved slant toward tornus but continued along the costal margin at 2 mm width following Sc + R_1. Hindwing disc of the same pale blue, the costal margin and apex dark brown, widest at the apex and narrowing to 1 mm at

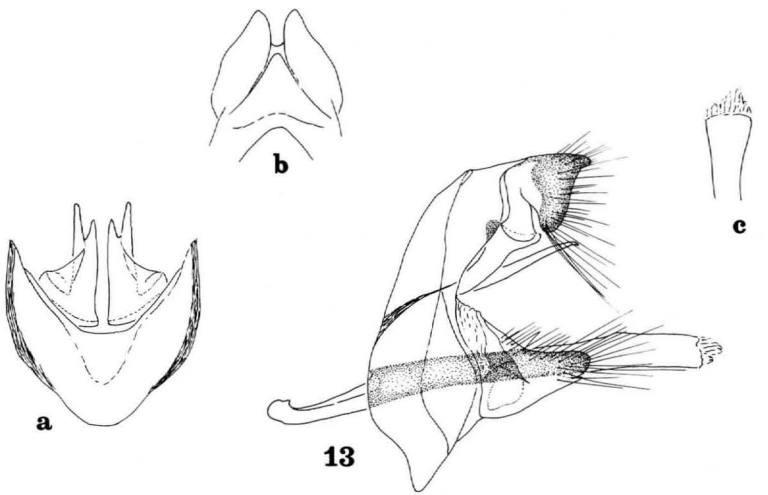

Figure 13. Male genitalia of *P. orgia amazonis* Nicolay, lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Cu_2 and enclosing two dark spots in the interspaces between Cu_1 and 2A. Fringes on the hindwing and at tornus on the forewing, pale gray, tipped with orange. Underside brown, with markings identical to those of the male.

Holotype, male, Ceará, Brazil, Rothschild Bequest B.M. 1939-1. Allotype female, same data. The holotype male and allotype female are in the British Museum (Natural History), London. The type series contains 15 male paratypes and 9 female paratypes, all with the same data carried by the holotype. One male and one female paratype are deposited in the Allyn Museum of Entomology, Sarasota, Florida, the remainder in the British Museum (Natural History).

Specimens examined (in addition to the above): BRAZIL: *Maranhao*- 1 ♂ (MN); *Para*'- 'Amazons' (Bates)- 1 ♂ (BM); *Amazonas*- Manicore 1 ♂ (AME). FRENCH GUIANA: 1 ♂ (BM).

As may be noted in the appropriate figures and descriptions, the differences between *amazonis* and *orgia*, although consistent and obvious, are clearly referrable to the nominate species. It becomes apparent when studying a series of these two subspecies that *amazonis* provides the link between *orgia* and the populations of this taxon to the north. *Amazonis* apparently occupies the vast area of the immediate Amazon River basin drainage from the borders of the western Brazilian states to the northeastern tip of Brazil and the Guianas. Ceará, the type locality is a small state located on the very northeastern coast of Brazil, centered at 5° latitude south. Almost midway between this area of the Amazon drainage and the southeastern coastal states of Brazil, I have taken specimens of *orgia* in the Brazilian Planalto of Goias and Mato

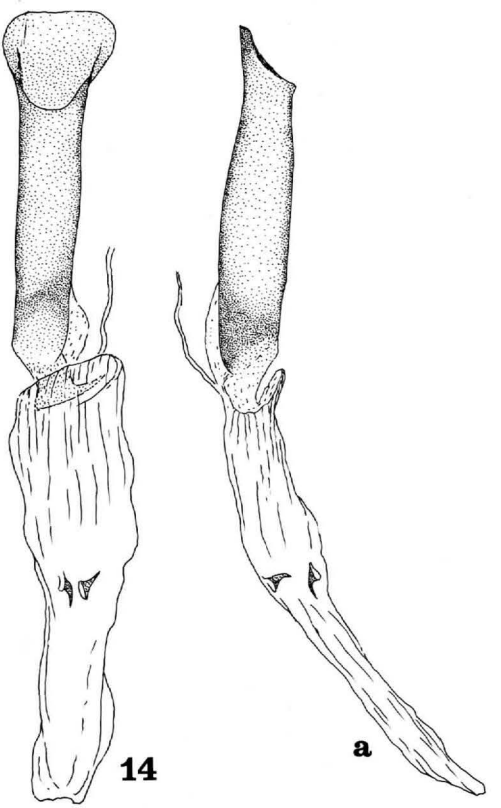

Figure 14. Female genitalia of *P. orgia amazonis* Nicolay, ventral view; (a) lateral view.

Grosso that begin to show the grayer and more boldly marked underside features of *orgia amazonis*, yet are indistinguishable from true *orgia* on the upper side.

Specimens of the subspecies *teleontes* from eastern Ecuador, on the underside carry all of the characters of *teleontes*, yet on the upperside are clearly associated with *amazonis*. The Upper Amazon drainage apparently provides a very large blend zone for the two subspecies *amazonis* and *teleontes*. Further study of much additional material from many 'unreported' localities will be necessary before a more positive delineation of the range of each subspecies can be made and limits of the blend zones of all can be more accurately defined.

Parrhasius orgia orgiophantes Clench, new subspecies

Figs. 12E, 12F, 12G, 12H, 15, 16, 42.

Male. Upperside as in *polibetes* or *melissa* Nicolay, with these differences: on the forewing the black patch posterior to the scent pad is smaller and generally fails to extend as far as vein Cu_2 (it touches the vein in 5 out of 18 males, in 2 of the 5 about as broadly as in either of those species); the terminal black border is thicker, posteriorly about twice as thick as in *polibetes*, and in M_3-Cu_1 is distinctly wider than the apical breadth of that interspace. On the hindwing the terminal black border is also thicker, interspace Rs-M_1 usually having blue only in the extreme base. Underside: ground light grayish brown, paler and grayer than in *melissa*, less gray than in *polibetes*. On the forewing the pm line is continuous, regularly, lightly convex, and distally white-edged, much as in *melissa*, but variable in its thickness: in some specimens slender, in others quite broad, and broadening progressively costad. The subterminal line is present, but variable in its distinctness. On the hind wing the usual pattern of the group is present; the subcostal spot in base of Sc-Rs is extremely variable; it may be large or small, but is always jet black and edged distally by a thin white line.

Female. Upperside fuscous with basal blue, bluer, paler, and duller than that of the male; forewing with the blue restricted to the basal half of Cu_2-2A, not entering cell; on the hindwing with its distal edge intersecting M_2 just beyond cell-end.

Length of forewing: male, 15.0 - 19.0 mm, mean (of 18) 17.47 mm; of female, 15.5 -19.0 mm, mean (of 4), 16.88 mm.

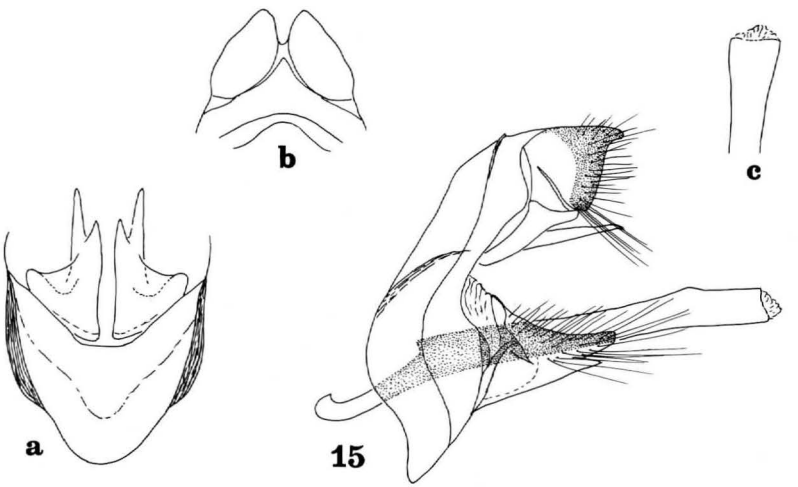

Figure 15. Male genitalia of *P. orgia orgiophantes* Clench, lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Holotype ♂, Rio Surutu, 350 m, eastern Bolivia, iii.1915, *leg*. J. Steinbach, C. M. Acc. 5570.

Paratypes, 17 ♂ 3 ♀, as follows: 3 ♂, same data as holotype; 3 ♂ 2 ♀, same locality and collector, no date or Acc. no., *ex coll.* W. J. Holland; 7 ♂ Las Juntas, eastern Bolivia, xii.1913, *leg* J. Steinbach, C. M. Acc. 5045; 1 ♂ Rio Yapacani, 600 m, eastern Bolivia, iii.1915, *leg*. J. Steinbach, C. M. Acc. 5570; 2 ♂ Cuatro Ojos, eastern Bolivia, xi. 1913, *leg*. J. Steinbach, C. M. Acc. 5046; 1 ♂ 1 ♀, Buena Vista, Prov. del Sara, Bolivia, *leg*. J. Steinbach, C. M. Acc. 5044, the ♂ x.1913, the ♀ undated.

Note: Buena Vista is roughly at 17°26'S, 63°40'W; the other localities are within a radius of about 80 km.

Holotype and all partypes, C. M. Ent. type series.*

The pm line of the forewing below is essentially as in *orgia* and *melissa*. From the former this species is readily told in the male by the somewhat darker blue above, the

* In addition to the specimens listed in the type series, there are in the British Museum (Natural History) collection 2 ♂ from Buenavista, E. Bolivia, 750m, and 1 ♂ from S. Cruz de la Sierra, E. Bolivia, all collected by Steinbach.

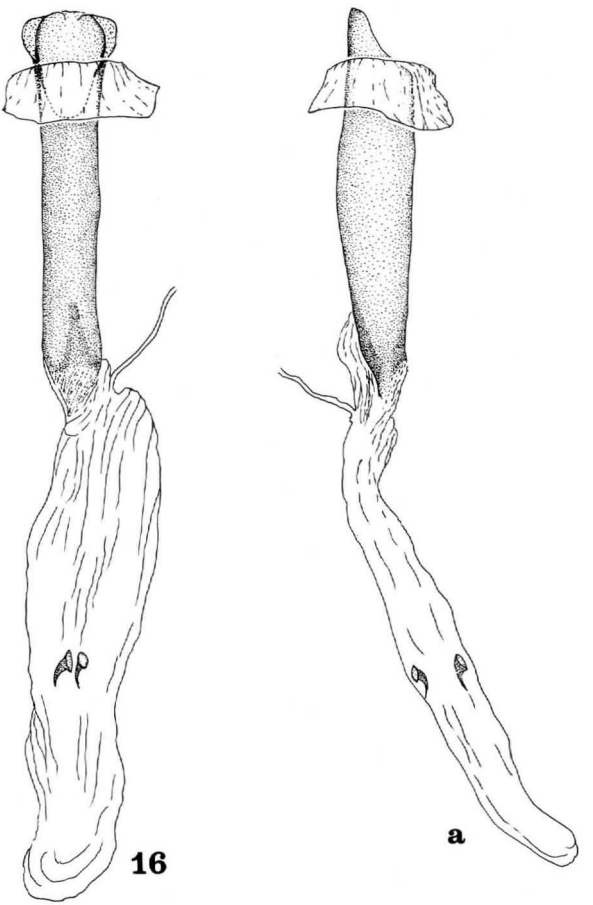

Figure 16. Female genitalia of *P. orgia orgiophantes* Clench, ventral view; (a) lateral view.

more tapering black terminal border on the forewing; the presence of a black patch posteriorly adjoining the scent pad; and in the female by the much reduced extent of the blue above. From *melissa* it is distinguished by the thicker borders and smaller black patch of the male. (I have seen no females of *melissa*. If the figure of Godman & Salvin, pl. 52 fig. 26, is correct, the blue in *orgiophantes* ♀ is more restricted.)

The variability of the type series of *orgiophantes* is of some interest. The 18 males range from 15.0 to 19.0 mm in forewing length, strongly skewed (long tail to the low values), with a mean of 17.47 mm, a standard deviation (s) of 1.27, and a coeffecient of variation (V) of 7.25. Compare this with a series of 38 ♂ *polibetes* from Cd. Valles, San Luis Potosi, Mexico: range 16.5 - 20.0 mm; mean 18.33; s 0.52; V 2.84.

In addition to forewing length, the series also varies unusually in the size of the black patch on the forewing above in the male, and in the size of the subcostal spot on the hindwing below, both of which are characters that should have some taxonomic significance. This variability is not correlated, and each trait seems to vary independently of the others. Such a situation could be true if this population were in a zone of secondary intergradation between two different (still unknown) subspecies. There is some — still slight — evidence that this may be true: in the series of 7 ♂ from Las Juntas the subcostal spot on the hindwing underside is large in one, small in the rest; in the series of 7 ♂ from Rio Surutu, 4 have this spot large, 3 small.

Interestingly, one of the male paratypes from Rio Surutu bears a beak mark of a bird. The mark occurs symmetrically on both forewings, and the apex of each hindwing is torn away, suggesting that the bird snapped at it while it was perched. The mark is quite distinctive: almost a perfect parabola, about 5 mm across at its base, bluntly rounded and with a dot at the apex suggesting a small hook on the upper mandible of the attacking bird. My wife, Dr. Mary H. Clench, Associate Curator of Birds at the Museum, was kind enough to examine the mark and she believes that it may have been made by a tyrannid flycatcher, most probably a Spadebill *(Platyrinchus* sp.), whose beaks the mark closely resembles.

Parrhasius m-album m-album (Boisduval & Le Conte)

Figs. 17A, 17B, 17C, 17D, 18, 19, 43.

Thecla m-album Boisduval & Le Conte, 1833: 86, pl 261. Westwood, 1852: 486. Lucas, 1857: 603-604. Morris, 1862: 92-93. Weidemeyer, 1864: 535. Boisduval, 1869: 44. Edwards, 1871, 1873, 1879: 28. Herrich-Schaffer, 1865. ibid. 1869: 57. Edwards, 1877: 38. Kirby, 1871: 390. Gerhard, 1878: 19. Strecker, 1878: 86. Kirby, 1879: 157. Snow, 1881: 102. Pilate, 1882: 66. Aaron, 1884: 22. Edwards, 1884: 295. Godman & Salvin, 1887, 2: 40. Edwards, 1889: 31. Blatchley, 1891: 392. Maynard, 1891: 131. French, 1896: 256-257. Holland, 1898: 240. Skinner, 1898: 44. ibid. 1903: 6. ibid. 1905: 16. Wright, 1905: 61. Druce, 1907: 568. Holland, 1914: 148-149, pl 80, fig 1. Draudt *in* Seitz, 1922: 767. pl 152d. Holland, 1931: 229-230, pl 29 fig 10. Davenport & Dethier, 1938: 171. Comstock & Huntington, 1943: 59. Freeman, 1951: 36-37. dos Passos, 1958: 122. Forbes, 1960: 137. Comstock & Huntington, 1961, 69: 159.

Eupsyche m-album, Scudder, 1876: 112. ibid. 1889: 1824-1826. Dyar, 1903: 36. Comstock, J. H., 1904: 221-222, pl 33, figs 5, 6. Field, 1940: 141. Clark, 1951: 78, pl 12, figs e, f. Mather, 1952: 75. Shapiro, 1963: 199. dos Passos, 1964: 53. Mitchell & Zim, 1964: 154, fig p 64. Downey, 1966: 135.

Strymon m-album, Barnes & McDonough, 1917: 14. Barnes & Benjamin, 1926: 17. Harris, 1931: 18. Clark, 1932: 140, pl 23 figs 1, 2. ibid. 1938: 3. McDonough, 1938: 24. Clark, 1939: 180. Comstock, 1940: 61-62. Macy & Shepard, 1941: 147-148. Cook, 1948: 22. Harris, 1950: 13. Freeman, 1951: 36-37. Klotz, 1951: 133 pl 18, fig 3. Tietz, 1952: 13. Austin & Austin, 1956: 55. Young, 1956: 207. Meiners, 1957: 163. Mather & Mather, 1958: 81. Clench, 1959: 2. ibid. 1960: 3. Ziegler, 1960: 21. Miller, 1962: 97-98. Kimball, 1965: 47, pl 1, figs 37, 38. Nielson, 1970: 44.

Panthiades m-album, Clench, 1961: 214, fig 409. ibid. 1962: 226-232. Lambremont,

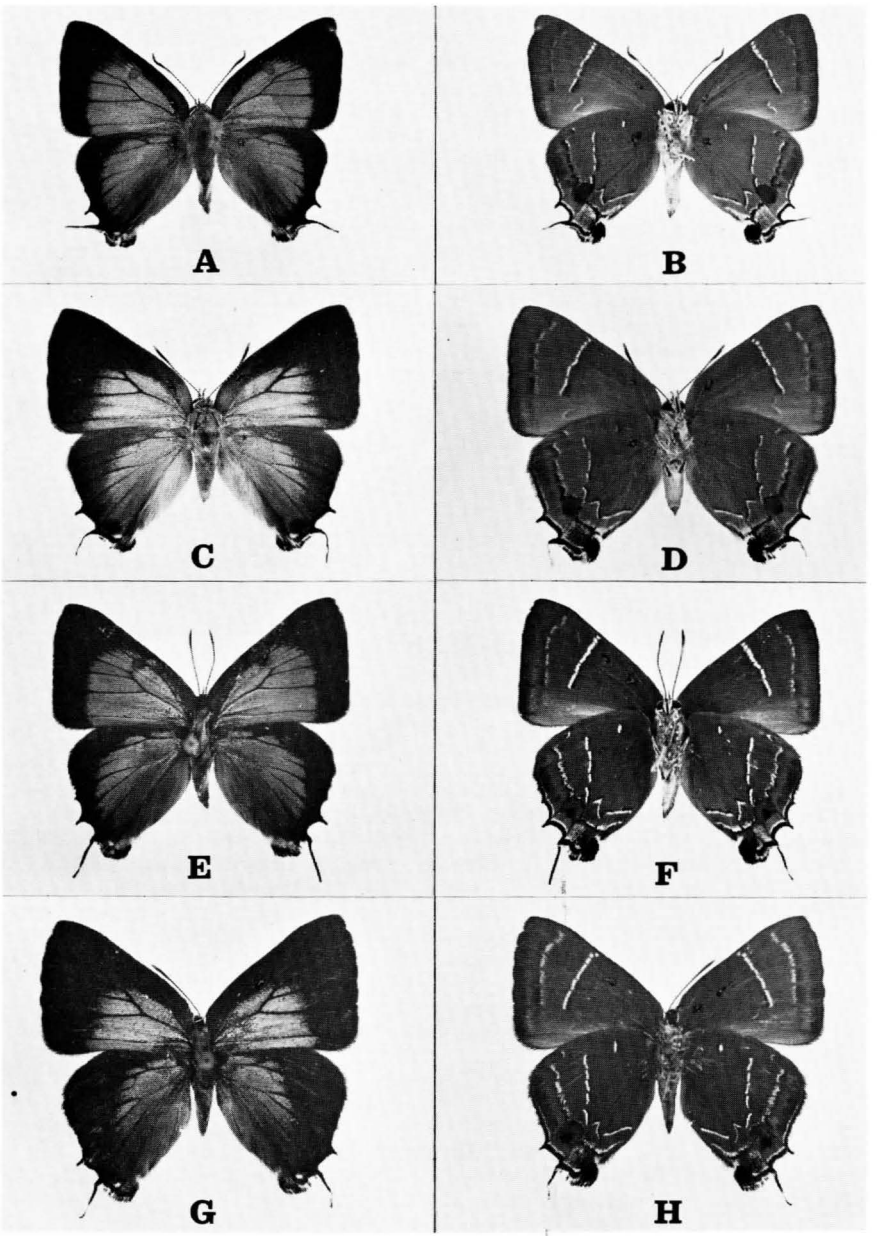

Figure 17. *Parrhasius m-album* (Boisduval & Le Conte) ♂, Va. Beach, Va. (ex-pupa) 7 Oct. 1962. (S. S. Nicolay); (B) underside of (A); (C) *P. m-album* ♀, Savannah, Ga. 30 May 1960 (S. S. Nicolay); (D) underside of (C); (E) *P. m-album moctezuma* (Clench) ♂, Ochuc (Chiapas) Mexico, 20 Aug. 1972 (R. Wind); (F) underside of (E); (G) *P. m-album moctezuma* ♀, Ochuc (Chiapas) Mexico, 5 Aug. 1972 (R. Wind); (H) underside of (G).

1965: 50. Shapiro, 1966: 29, fig 3, p 68. dos Passos, 1970: 34. Harris, 1972: 221-222, pl 117, figs 25, 26. Irwin and Downey, 1973: 21. Emmel *in* Howe, 1975: 302, pl 49 figs 6, 7.

Thecla psyche Boisduval & Le Conte, 1833: 88, pl 27. dos Passos, 1958: 122. Comstock & Huntington, 1963, 61: 46.

There has been little difficulty in recognizing this species from the earliest days; its relatively large size (for a hairstreak), the brilliant blue on the upperside of the wings and the distinctive "W" pattern on the underside of the hindwings sets it quite apart from most temperate zone hairstreaks. One of the very few truly 'tropical' hairstreaks to have established itself in the north temperate zone of the hemisphere, it has long been sought by collectors as a prized catch. Currently, its northern limits appear to be Connecticut, Michigan and Wisconsin. From these points south, particularly in the Atlantic coastal states, *m-album* becomes increasingly numerous, although not at all common except in southern Florida. Mather (1958) reports it fairly common at times in certain areas in Mississippi. Few have been recorded from adjacent Louisiana and it is reported as being rare in Texas. A single word to describe its distribution and occurrence would be 'sporadic'. A number of accounts of its life history have appeared in past literature; Clench (1962) provides an interesting account of its larval and pupal behavior and a detailed record of *m-album* captures in Pennsylvania. This writer has raised *m-album* on Live Oak (Quercus virginiana Mill) in Virginia.

I have examined extensive series of *m-album* in various collections both private and institutional. I can find no useful or valid reason to place such a voluminous statistical record of these observations in this work. Records of its capture are very well documented in the vast literature represented by the bibliography appended hereto.

Parrhasius m-album moctezuma (Clench)

Figs. 17E, 17F, 17G, 17H, 20a, 20b, 43.

Thecla m-album, Hewitson, 1867: 105. Godman & Salvin, 1887, 2: 40. Hoffman, 1940, 11: 708.

Panthiades m-album moctezuma Clench, 1971, 3: 4.

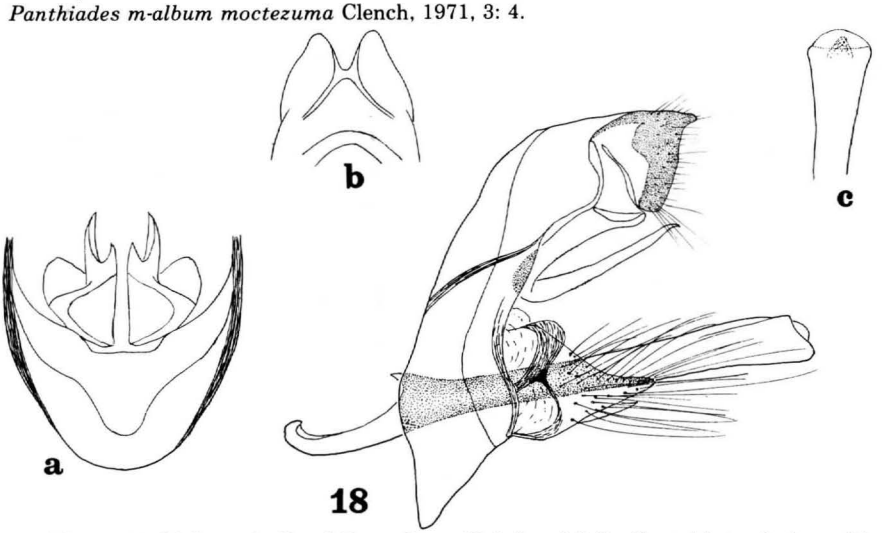

Figure 18. Male genitalia of *P. m-album* (Boisduval & Le Conte) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Clench (1971) has described the differences in this subspecies from nominate *m-album* in great detail, thus rendering further elaboration here unnecessary. The genitalia of both sexes are figured herein and reveal no substantial differences from *m-album*.

Clench and previous authors (in reference to *m-album*) cite the range of *moctezuma* to be from Mexico southward to include Costa Rica. I have examined a single female of this taxon from Costa Rica and believe it belongs to a different subspecies, to be described next.

Specimens examined: MEXICO: No additional data 2 ♂ 3 ♀ (BM); Ciudad, Mex. 2 ♀ (BM); *Nyarit*- No locality data 4 ♂ 1 ♀ (AM); *Nuevo Leon*-Cola de Caballo 1 ♀ (AME); *Hidalgo*- Zimapan 1 ♀ (AME), 5 mi. n. Zimapan 1 ♂ 1 ♀ (Holotype & Allotype, CM); *Sinaloa*- 19 mi. E. Concordia 10 ♂ 11 ♀ (CM), Loberas Summit 3 ♂ (AME); *Michoacan*-Cerro Tancitaro 11,000' 1 ♀ (AM), *Morelos*- 7,000' 2 ♂ (AM, USNM); *Vera Cruz*- Jalapa 2 ♀, Coatepec 1 ♀ (AM, USNM), Santacomitan 1 ♂ 1 ♀ (AME); *Puebla*- San Juan Apulco 1 ♀ (AME); *Guerrero*- 1 ♂ (BM), Rincon 1 ♂ 4 ♀ (BM), Chilpancingo 2 ♀ (AME), Savana Grande 1 ♂ (BM), *Oaxaca*- 2 ♂ (BM), Rio Hondo 1 ♀ (CM), San Jose Pacifico 3 ♀ (AME); *Chiapas*- Oxchuc, 4500', 10 ♂ 17 ♀ (AME), 1 ♂ (CM). GUATEMALA: San Geronimo 2 ♂ (BM), Quisache, Chimaltennango, 1750m 1 ♂ (CM), Verapaz-Baleu 1 ♀ (AME), Choctum 1 ♂ (BM). HONDURAS: La Cambre 3 ♀ (BM). NICARAGUA: Matagalpa, 4000' 1 ♂ (RAA). EL SALVADOR: Metapan, 1300m 1 ♀ (AME).

Parrhasius m-album urraca, new subspecies

Figs. 21A, 21B, 21C, 21D, 20c, 20d 43.

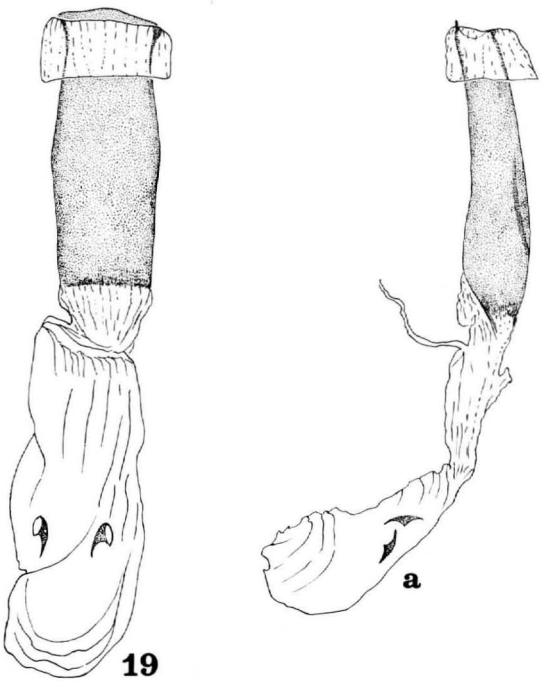

Figure 19. Female genitalia of *P. m-album* (Boisduval & Le Conte), ventral view; (a) lateral view.

Male: Length of forewing, 15 mm. Upperside: Forewing with the base and discal half deep, bright blue with a faint greenish cast; the black border extremely broad, at the apex reaching the cell-end and is 5mm wide mid-wing at Cu_1, encroaching into the blue color to the same extent as in the female. Costal margin with a relatively broad black border extending to the wing base. The male scent spot tiny, pale, is located within the edge of the dark costal border. Hindwing with an equally broad dark margin at the wing apex and is 5 mm wide at midwing M_3. Fringes on both wings, pale orange.

Female: Length of forewing, 16 mm. Upperside the same as in the subspecies

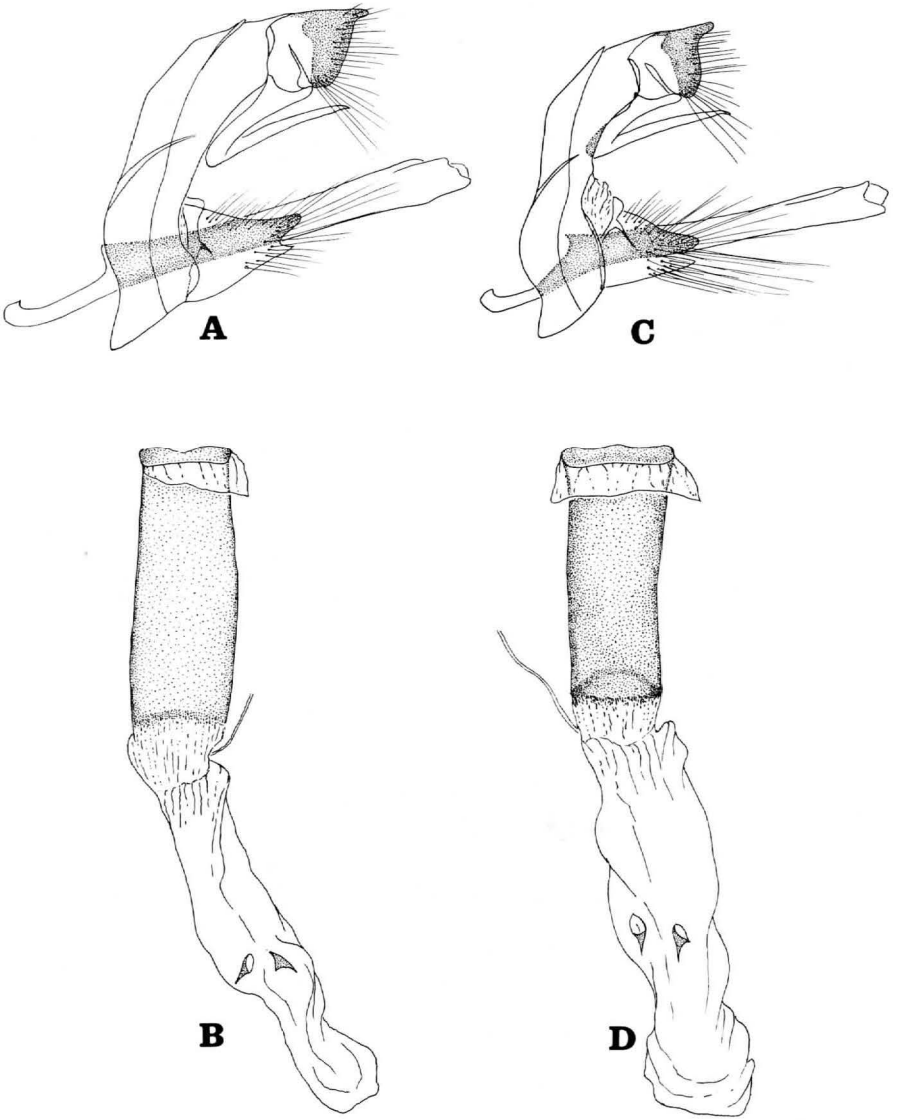

Figure 20. Genitalia of *P. m-album* subspecies: (A & B), male and female genitalia of *P. m-album moctezuma* (Clench); (C & D) male and female genitalia of *P. m-album urraca* Nicolay.

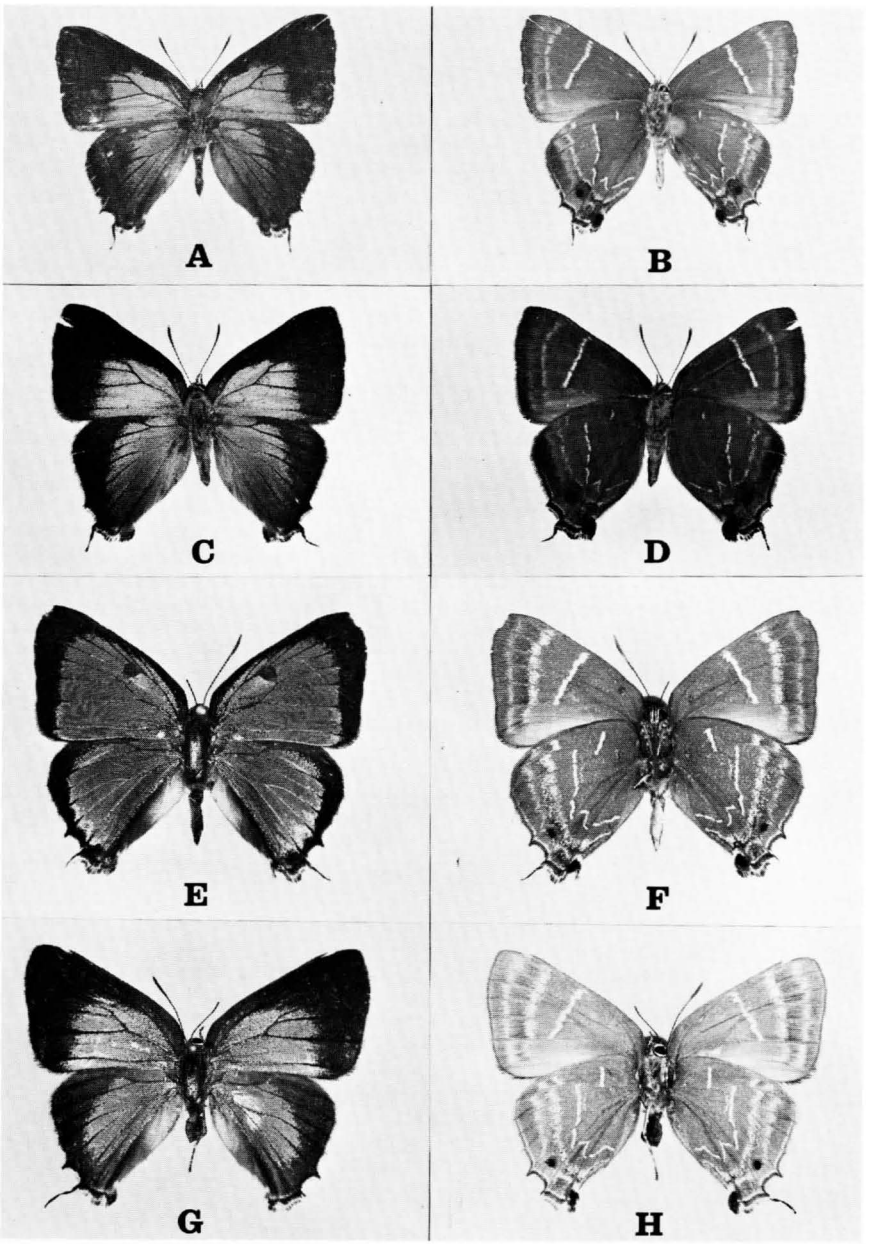

Figure 21. *Parrhasius* species: (A) *Parrhasius m-album urraca* Nicolay ♂, Holotype, Alto Quiel (Chiriqui Prov.) Panama, 1800 m., 20 Feb. 1977 (G. B. Small); (B) underside of (A); (C) *P. m-album urraca* ♀, allotype, Volcan Baru (Chiriqui Prov.) Panama, 1800 m. 22 Feb. 1976 (G. B. Small); (D) underside of (C); (E) *Parrhasius selika* (Hewitson) ♂, Guarapuava (Parana) Brazil, Jan. 1963; (F) underside of (E); (G) *P. selika* ♀, Joinville (Santa Catarina) Brazil, 24 April 1971 (O. H. H. Mielke); (H) underside of (G).

moctezuma, but the dark margin of the hindwing is slightly narrower.

The wing underside of both sexes is light brown, very similar to nominate *m-album* but with a faint purple or lavender sheen on both fore and hindwing. The cubital spot between Cu_1 and Cu_2 large, black, capped with red, the cap narrow and with an inner black line edged in white. The adjacent spot between Cu_2 and 2A is brown with no blue scaling. The tip of the "W" in the post-median line just touches the inner edge of the cubital spot.

Holotype male, Alto Quiel (Volcan Baru), Chiriqui Province, Panama, 1800m., 20 February 1977, G. B. Small, Collector. Allotype female, Volcan Baru, Chiriqui Province, Panama 1800m., 22 February 1976. There are 5 male and 6 female paratypes from the holotype locality, with altitude ranging between 1700 - 1800 meters and dates from January thru March, 1976 and 1977. Additional paratypes are as follows: 2 ♂ 1 ♀ Cerro Campana, Panama Province, 450m, 22-23 Feb. 1964; 1 ♂ Potrerillos, Chiriqui Province, 1100m., 29 January 1966. The holotype is deposited in the Allyn Museum of Entomology, Sarasota, Florida, the allotype female in the collection of the author. All remaining paratypes are located in the collection of Mr. G. B. Small, Jr.

Specimens examined (in addition to the above): COSTA RICA: Prov. San Jose-Cerro de La Muerte, 7 March 1977 1 ♀, Phil DeVries, collector. 2 ♂ 3 ♀ (BM). VENEZUELA: 2 ♀ (BM).

The genitalia of both sexes clearly indicate the subspecific relationship of *urraca* and *moctezuma* to *m-album*, as does the similarity of color and wing pattern on both upper and underside. Geographically, *moctezuma* and *urraca* occupy essentially adjacent regions. On the underside, the ground color is darker in *moctezuma* than in *urraca* and the latter is somewhat smaller in size. Females on the upperside are very similar. However, in the male of *urraca* the extrordinarily broad black margin on the upper side of both wings, but particularly the forewing costal and outer margins will serve at once to separate the two subspecies. My initial reaction upon seeing a small series of *urraca* for the first time was that it contained only females. But a more careful and closer inspection revealed the tiny male scent pad, almost invisible within the edge of the wide, contiguous black border of the costal margin and the apex.

This beautiful and interesting subspecies is named after the indomitable Panamanian Indian warrior Urraca, who successfully defied all attempts of the Spanish Conquistadores to subdue him.

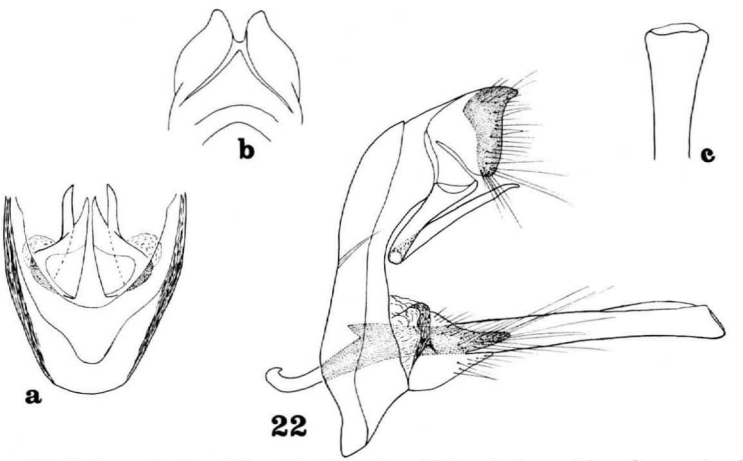

Figure 22. Male genitalia of *P. selika* (Hewitson) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Parrhasius selika (Hewitson)

Figs. 21E, 21F, 21G, 21H, 22, 23, 43.

Thecla selika Hewitson, 1874: 170, pl 67, figs 484, 485. Kirby, 1897: 156. Druce, 1907: 584. Comstock & Huntington, 1963, 71: 116.
Thecla selica, Draudt *in* Seitz, 1922: 768, pl 152c. Comstock & Huntington, 1963, 71: 116. Silva, 1968: 337.
Panthiades selica, Lewis, 1973: 172, fig 28. Smart, 1975: 172, fig 28.

Original description:

"Upperside. Male. — Brilliant ultramine blue: the costal margin of the anterior wing and the outer margins and nervures near them of both wings black. Anterior wing with a small round brown discal spot in the cell. Posterior wing with two tails.

"Underside rufous-brown. Both wings crossed near the middle by a band of white, both crossed beyond the middle by a less defined band of white and by a submarginal band irrorated with white: the outer margins and fringe rufous. Posterior wing with a linear white spot near the costal margin before the middle. The lobe black crowned with white, the black spot between the tails crowned with scarlet.

"Female like the male, except that it is of cerulean blue above, with the outer margins much broader.

"Exp. 1 $^{4}/_{10}$ inch.

"In the Collection of W. C. Hewitson, from Brazil (Rogers)."

Not much needs to be added to the admittedly brief description above. The pure white median bands on the underside of both wings are quite distinctive, for the bands are without a dark border on either side. Previous authors have remarked about its close relationship to *m-album*. Wing color and pattern and the genitalia of both sexes

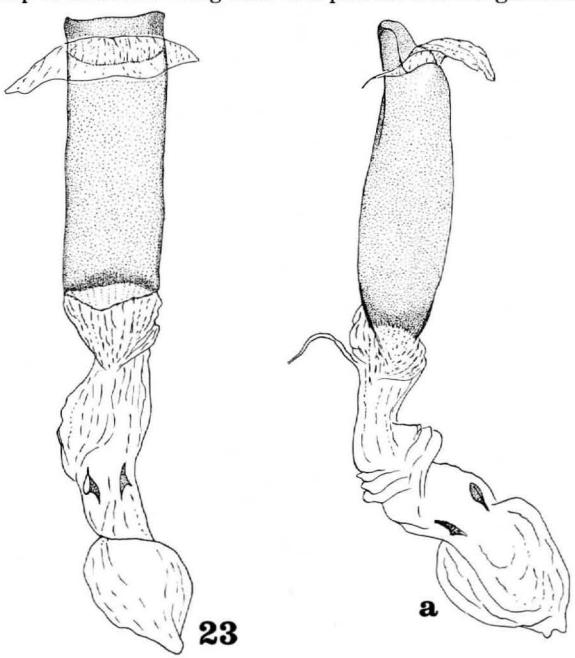

Figure 23. Female genitalia of *P. selika* (Hewitson), ventral view; (a) lateral view.

clearly substantiate this. However, *selika* has a broad dusting of white scaling inserted as a band between the median and submarginal bands of both wings on the underside that is lacking in *m-album*.

Selika is a very uncommon species in all collections I have had the opportunity to examine in the course of this study. Draudt (1922) gives its range as Colombia, Bolivia and Brazil. All specimens I have examined and seen came from the states of southeastern Brazil.

Specimens examined: BRAZIL: No data 1 ♀ (BM), Therosopolis 1 ♀ (BM), *Parana*'-Guarapuava 1 ♂ (N), Castro 1 ♂ (USNM), 1 ♂ 2 ♀ (BM), Fernandes Pinjero 1 ♀ (BM); *Santa Catarina*- Jaragua do Sul 1 ♂ (USNM), Annanburg 1 ♀ (AM), Masaranduba-Blumenau 2 ♂ 2 ♀ (AM), Nova Teutonia 2 ♂ (AME, N), Joinville 3 ♂ 2 ♀ (MN, N), Sao Bento do Sul, Rio Vermelho 2 ♀ (RR), 'Sta. Catarina' 1 ♀ (BM).

Parrhasius appula (Hewitson)

Figs. 24A, 24B, 24C, 24D, 25, 25A, 43.

Thecla appula Hewitson, 1874: 163-164, pl 64, figs 447, 448. Kirby, 1877: 777. ibid. 1879: 156. Weeks, 1905: 19, 28. Draudt *in* Seitz, 1922: 753, pl 149c. Comstock & Huntington, 1959, 67: 74.

Original description:

"Upperside. Male. — Brilliant green-blue, the nervures black: the costal margin and the apex and outer margin which are broad, black. Posterior wing with two tails, the apex and outer margin dark brown: the lobe brick-red.

"Underside stone-colour. Anterior wing crossed at the middle by a linear continuous band of white, crossed beyond the middle by two bands irrorated with white. Posterior wing with a line of white near the costal margin and the base: crossed at the middle by a band of linear spots, and beyond this by a band irrorated with white: the lobe and the spot between the tails each crowned with scarlet: the outer margin broadly brown: a marginal line of white.

"Exp. 1½ inch.

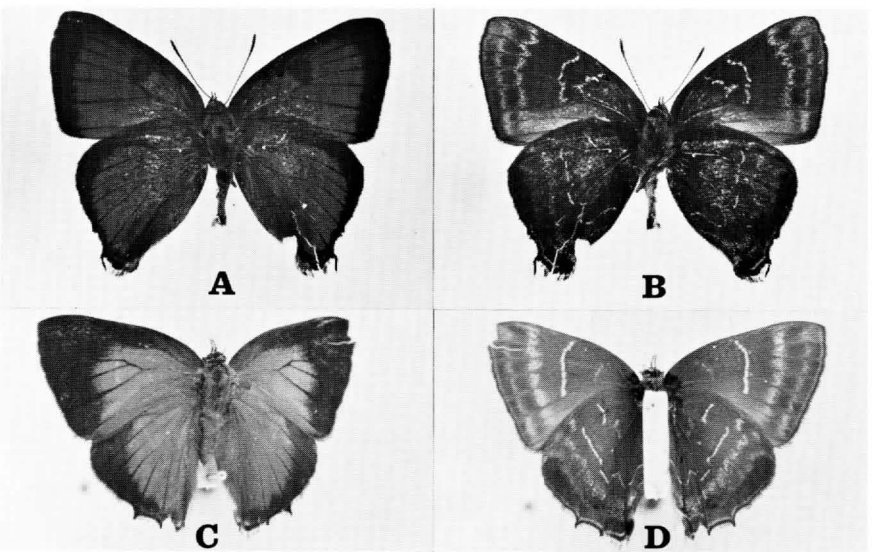

Figure 24. (A) *Parrhasius appula* (Hewitson) ♂, Huigra, Ecuador; (B) underside of (A); (C) *P. appula* ♀, type, Bolivia; (D) underside of (C).

"In the Collections of W. C. Hewitson and Herbert Druce, from Bolivia and Venezuela.

"Near to *T. Danaus* of Felder, from which, however, it is quite distinct."

Hewitson erred in thinking that his type of *appula* was a male. The type is a female, one of a short series of 3 specimens, all females, from Bolivia. A description of a male in the Carnegie Museum collected in Huigra, Ecuador follows:

Male: Length of forewing 20 mm. Upperside brilliant dark blue; on the forewing the brown scent pad round or slightly elongate, extended ventrally to the lower edge of the cell. The apical and outer margins black, extended evenly in width to tornus. Hindwing costal and outer margins black, 2 mm wide, tapering to a narrow line at the anal lobe: anal lobe faintly orange-red. All veins dark against the blue ground color. Underside: forewing brown, paler along the inner margin; a narrow, uneven, post-basal white line slanted toward the lower end of an equally narrow, curved, uneven white median line extending from the costa to vein Cu_2. An uneven, macular post-discal band of white scaling extends from the costa to Cu_2 and is followed by a submarginal line of pale macular crescents extending from the apex to tornus; scattered pale scaling along the outer margin from the apex to Cu_1. Fringes brown. Hindwing brown with a faint, tiny white subbasal spot just below the costal margin and a tiny white spot mid-cell just above vein M_3; a thin, uneven white median line from the costal margin through the disc forms an open, flat "W" as it curves to the inner margin. A faint narrow band of post-discal white scaling extends from the pre-apical margin to the inner margin and a faint pale macular band extends from the apex to Cu_1, followed by a pale marginal line from Cu_1 to the anal lobe. Anal lobe black, capped with pale scaling. Fringes pale from Cu_2 to the anal lobe; all of the remainder brown.

The pattern of narrow, pale markings on the underside of the fore and hindwings in *appula* is similar to that of many montane species of the genus *Micandra* Schatz found at the higher elevations along the Andean chain. The main difference is the round, brown, male scent pad in this species which is lacking in most other montane species from this region. It was this feature that prompted a closer examination and study of *appula;* the genitalia of both sexes indicates a very close relationship to *selika.* And

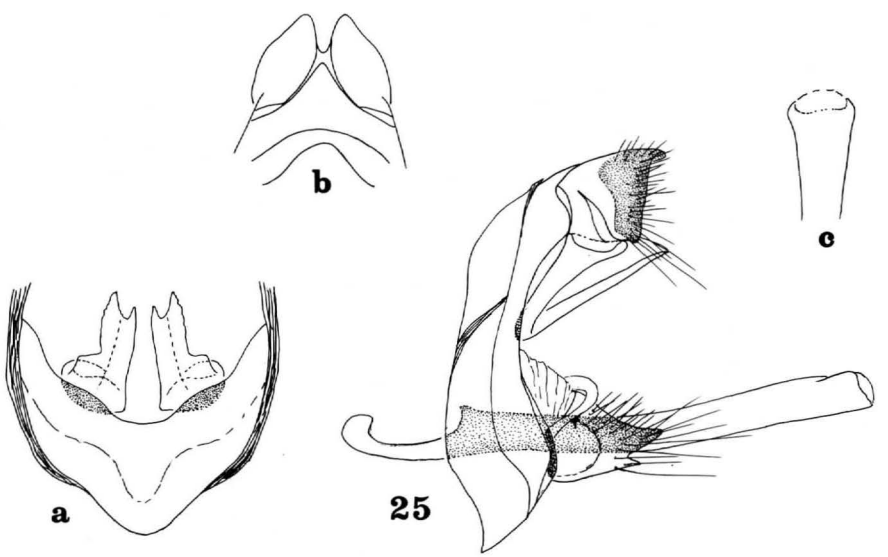

Figure 25. Male genitalia of *P. appula* (Hewitson) lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

although Hewitson's (1874) original figure does not show a post-basal line, nor is one mentioned in the original description, the female type clearly has it, as do all 3 specimens of the type series. However, I have found this to be an extremely variable feature, partially formed in some specimens, and absent in others.

Almost identical to *selika* on the upperside, *appula* differs in but few details on the underside. *Appula* is a larger insect than *selika*, the blue on the upperside of the wings is brighter, particularly in the female. All linear markings on the underside of both wings are more narrow, uneven and sparse in *appula*. The range of *appula* appears to be restricted to the higher elevations of the Andean Cordillera from Bolivia through Ecuador, Colombia and into Venezuela. Seitz (1922) mentions that it is "apparently very rare". It surely must be, for I have examined a total of 8 specimens, representing the total number available for study in the major collections listed in this study.

Specimens examined: BOLIVIA: 3 ♀ (type series, BM). ECUADOR: Tungerahua-Banos, Rio Pastaza (5-7000') 1 ♂ (BM), Banos (1800m) 1 ♂ (AME); Chimborazo- Huigra 1 ♂ (CM). COLOMBIA: Villa Gomez 1 ♀ (GBS). VENEZUELA: 1 ♀ (BM).

Michaelus, New genus

Type species: *Thecla vibidia* Hewitson, 1869

Hindwing with one tail at the end of vein Cu_2 and a rudimentary spur at the end of vein Cu_1. Anal angle lobed. Male forewing with a small round or ovate scent spot bisec-

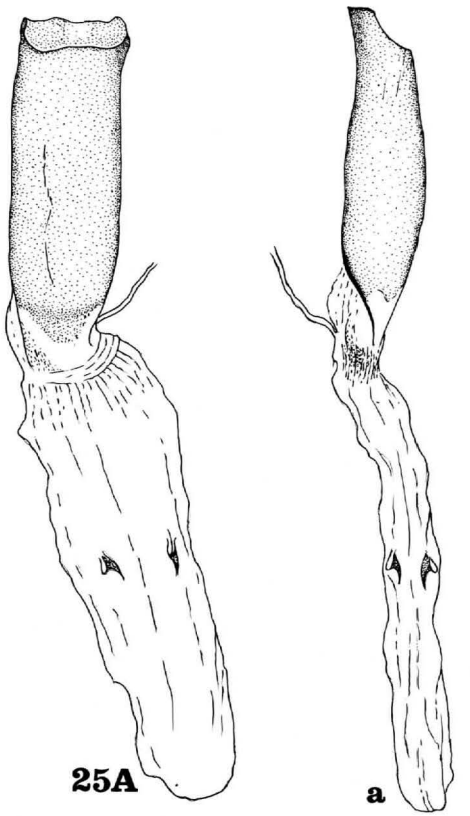

Figure 25A. Female genitalia of *P. appula* (Hewitson), ventral view; (a) lateral view.

ting the anterior portion of the discocellular (cell-end). Underside of forewing with a postdiscal line of conjoined dark crescents with white outer margins; there is no discal line. Underside of hindwing with a pale, linear or crescent-shaped mark on or just below the mid-costal margin; a postdiscal dark macular line edged outwardly in white. Abdomen cream colored below, above pale yellow without blue scaling. Palpi short, porrect, scaled with the terminal segment one-half or less the length of the second. Eyes densely covered with short bristles. Antennae less than one-half the length of the forewing costa, the club gradually thickened to more than twice the diameter of the stalk.

Male genitalia stout, chitinous with a short saccus, the vinculum moderately wide throughout its length; the uncus rounded, dorsal cleft shallow, broad; the valvae moderately long, separate, relatively slender. Aedeagus long, slender, straight or slightly curved at the terminal end, and without cornuti.

Female bursa copulatrix with a smooth, unadorned round ostium bursae, the dorsal and ventral plates, equally sclerotized; the ductus bursae a long, slender chitinous tube, straight or curved slightly dorsad; the cervix bursae with little or no modification or constriction, the ductus seminalis entry on the dorsal side; the corpus bursae a slender sac, somewhat longer than the ductus bursae and with two simple, thorn-like signa.

The species in this complex are closely related to those in *Parrhasius* in the position, size, shape and structure of the male scent pad, the thorn-like signa of the female corpus bursae, the basic structure of the vinculum and falces, and lack of cornuti in the male genitalia. The uncus in the male *Parrhasius* is sharply angular, and deeply cleft dorsally; that of *Michaelus*, rounded and the dorsal cleft shallow and broad. The female genitalia of *Parrhasius* are broader and somewhat heavier than those of *Michaelus*. The differences in the two genera are also found in the color of the wings on the upperside; the color of *Parrhasius* males is a brilliant, dark blue with a faint purple cast; that of *Michaelus* species a shining steel blue, somewhat paler and less intense. In *Parrhasius* females the discal area of both wings is a bright, shining blue, similar although somewhat paler than the males, while those of *Michaelus* are light grayish white with a faint blue tinge or wash of pale bright blue scaling. On the underside of both wings, there is a discal or median line or band in the center of the wings in *Parrhasius;* there is no discal line or band in *Michaelus*, but rather a postdiscal series of conjoined dark crescents outwardly edged in white.

This new genus is named for my oldest son, Michael Darrel Nicolay who loved natures' creatures, large and small, but particularly those that were sometimes misunderstood and maligned by others.

Key to the species of *Michaelus*

1. Underside of hindwing with a complete marbled pattern of brown, grey and white ..... *jebus*
   Underside of hindwing without a marbled pattern 2
2. Underside of hindwing without cell-end streaks 4
   Underside of hindwing with cell-end streaks 3
3. Underside of hindwing with 2 pale, parallel cell-end streaks; wing color, pale brown ..... *hecate*
   Underside of hindwing with many pale, narrow striations, the cell-end streaks lost as part of this complex, striated discal pattern ..... *thordesa*
4. Upperside of wings dusky, violet-blue; underside blackish brown ..... *ira*
   Upperside of wings bright blue; underside grey brown ..... *vibidia*

Michaelus vibidia (Hewitson)

Figs. 26A, 26B, 26C, 26D, 27, 28, 44.

Thecla vibidia Hewitson, 1869: 119. Herrich-Schaffer, 1869: 58. Kirby, 1871: 392.

ibid. 1879: 156. Godman & Salvin, 1887, 2: 44, pl 53, figs 13, 14. Druce, 1907: 584. Weeks, 1911: xiii. Draudt *in* Seitz, 1922: 767, pl 152c. Talbot, 1929: 217.

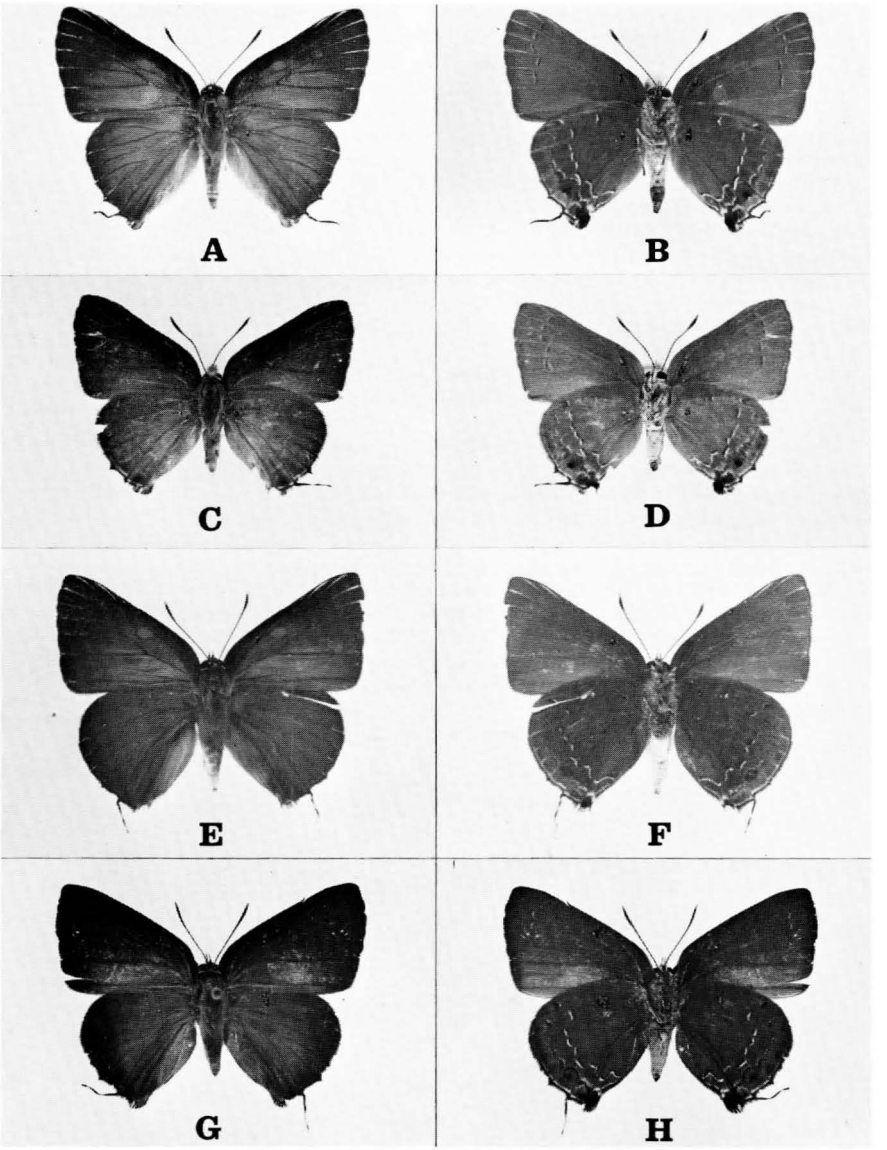

Figure 26. *Michaelus* species: (A) *Michaelus vibidia* (Hewitson) ♂, Cerro Campana (Panama Prov.) Panama, 28 Jan. 1965 (S. S. Nicolay); (B) underside of (A); (C) *Michaelus vibidia* ♀, Cerro Campana (Panama Prov.) Panama, 12 Feb. 1963 (G. B. Small); (D) underside of (C); (E) *Michaelus ira* (Hewitson) ♂, Madden Forest, Canal Zone, 15 Aug. 1968 (G. B. Small); (F) underside of (E); (G) *Michaelus ira* ♀, Canas (Guanacaste) Costa Rica, 20 July 1973 (P. Opler); (H) underside of (G).

Huntington, 1932: 211. Hoffman, 1940: 709. Comstock & Huntington, 1964, 72:182. Barcant, 1970: 266, pl 24(3).

Thecla socigena Hewitson, 1877: 205, pl 82, figs 681, 682. Druce, 1907: 584. Comstock & Huntington, 71:193. Kirby, 1877: 857.

Original description:

"Upperside. Male. — Blue. Anterior wing with the costal and outer margins broadly brown: the discal spot which is within the cell, rufous, oval. Posterior wing with two tails: the outer margin dark brown.

"Underside rufous-brown, darker on the posterior wing. Anterior wing crossed near the apex by a band of very indistinct brown spots bordered with paler colour. Posterior wing crossed beyond the middle by a band of white spots bordered inwardly with white, commencing on the costal margin by a round spot lower down than the rest: a submarginal band of white spots bordered outwardly with brown: the lobe black, bordered above with scarlet and white: a small orange spot marked with black between the tails, at a distance from the outer margin: a submarginal line of white above the tails.

"Exp. 1 $^{4}/_{10}$ inch.

"In the collection of W. C. Hewitson, from Amazon.

"Near to *T. punctum*, but of different form and colour."

Very little in the way of obvious external features distinguish *vibidia* from many Neotropical hairstreaks. Hewitson compares it to *'Thecla punctum'*, from which it differs in considerable detail, and, eight years later, created a synonym, *socigena*. In this and most species in the genus *Michaelus*, the basic shining blue color is less intense and lighter in shade than the dark, almost purplish cast of the *Parrhasius* complex. In *vibidia*, the wing upper surfaces have very broad and vaguely defined borders, blending smoothly into the blue color of the discal portion. There is always (albeit sometimes difficult to find) a small white or pale spot or dash on the underside of the hindwing at or basad of the mid-costal margin. The ground color on the underside is quite variable, particularly in the male. Specimens from Mexico and Central America tend to be paler, particularly on the hindwing; those from southeastern Brazil are considerably darker, some with a violet cast.

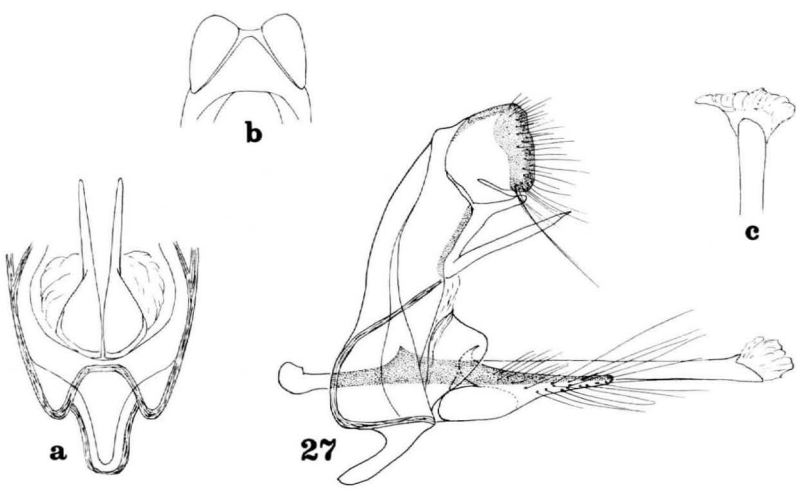

Figure 27. Male genitalia of *Michaelus vibidia* (Hewitson), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus (c) ventral view of aedeagus termen.

The Seitz (1922) figures of both upper and under surfaces are reasonably good as are the Godman & Salvin (1887) illustrations. Unfortunately, the Barcant (1970) illustration is in black and white, and only of the upper side; it does however, give an indication of the wide dark borders. And although Lewis (1973) lists '*Strymon vibidia*' in the index, I can find no illustration that fits the species *vibidia*.

Vibidia is widespread throughout the Neotropics from Mexico through Central America and throughout much of tropical South America.

Specimens examined: No data 1 ♂ (AME), 1 ♀ (BM), 'Southern Mexico' 3 ♀ (CM); Ciudad, Mex., 8100' 1 ♂ 2 ♀ (BM); *Sinaloa*- Loberas Summit, 1820m. 1 ♂ (AME); *Jalisco*- Guadelajara 2 ♂ (USNM), 1 ♂ (BM); *Colima* 1 ♂ (AM); *Vera Cruz*- Santa Rosa Comitan 1 ♂, Catemaco 1 ♂, Presidio 3 ♂ (AME), Coatepec 1 ♀ (USNM); *Yucatan*- Chichen Itza 1 ♂ (N), Piste 1 ♂ (BM). GUATEMALA: 1 ♂ 1 ♀ (BM), Polochic Valley 4 ♂ (BM), San Geronimo 2 ♂ (BM). HONDURAS: San Pedro Sula 4 ♂ (BM). NICARAGUA: Pochomil 1 ♂, Managua 12 ♂ 4 ♀ (RAA). COSTA RICA: *Guanacaste*- Canas 10 ♂ 1 ♀ (USNM); La Florida 1 ♀ (USNM). PANAMA: *Canal Zone*- Barro Colorado Isl. 1 ♂ 1 ♀ (AM), Summit, Los Rios, Cocoli 8 ♂ 4 ♀ (GBS, N); *Panama Prov.*- Cerro Campana 4 ♂ 2 ♀ (GBS). VENEZUELA: 1 ♂ (BM). COLOMBIA: Sta. Marta 1 ♂ (BM), Santa Rita, Cauca River 1 ♂ (BM). BRAZIL: *Mato Grosso*- 1 ♂ (BM), Corumba 1 ♂ (BM); *Minas Gerais*- Caraca 1 ♀ (N); *Parana*- Castro 2 ♀ (BM); *Guanabara*- Sumare 4 ♂ 2 ♀ (N, RR); *Espiritu Santo*- Guaruja 1 ♀ (BM). ARGENTINA: *Salta*- Pichanal 1 ♂ (N). BOLIVIA: *Santa Cruz*- Rio Surutu 2 ♂, Quatro Ojos 1 ♂, Sta. Cruz de la Sierra 1 ♂ (CM).

Michaelus ira (Hewitson)

Figs. 26E, 26F, 26G, 26H, 29, 30, 44.

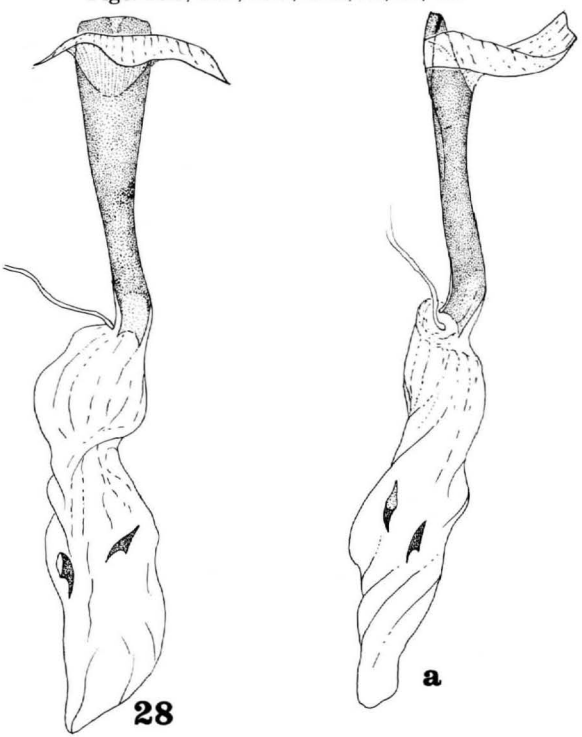

Figure 28. Female genitalia of *Michaelus vibidia* (Hewitson), ventral view; (a) lateral view.

Thecla ira Hewitson, 1867: 89-90, pl 35, figs 81, 82. Herrich-Schaffer, 1869: 57. ibid. 1870: 26. Comstock & Huntington, 1961, 68: 238.
Thecla hewitsoni Kirby, 1871: 386. Draudt *in* Seitz, 1922: 767, fig 152d (as *ira*). Hoffman, 1940: 709. Comstock & Huntington, 1960, 68: 182.

Original description:

"Upperside. Male. — Dull steel blue. Anterior wing with the apical half brown: the discoidal spot small, pale brown. Posterior wing with the margin broadly pale brown: anal angle with one tail.

"Underside grey-brown, rufous towards the outer margins. Posterior wing with, beyond the middle, a curved band of brown spots bordered outwardly with white: anal angle with two spots of brick-red.

"Exp. 1 $^{11}/_{20}$ inch.

"In the Collection of W. W. Saunders, from Mexico."

As may be noted, the original description is very brief and hardly serves to distinguish this species from many others similarly marked. Although Draudt (1922) compares it with *'Thecla ostia'*, it is more easily compared to, and at times may be easily confused with *vibidia* with which it is closely related. Some male specimens may be particularly difficult to separate. Generally somewhat larger, male *ira* is a deeper, dusky steel-blue, the hindwing more rounded and full, with a very narrow, dark outer margin. Beneath, the ground color in *ira* is a darker, dusky brown and the post discal band of uneven white-edged linear spots and cresents generally follows the curve of the wing outer margin, rather than being almost straight as in *vibidia*. Females are more easily distinguished by the bright blue wash in the discal area of both fore and hindwings on the upperside; it is a shining blue, not the pale bluish-white of *vibidia*. The outer margins on both wings are wider and darker in *ira*.

The rather confused bibliography composed of two distinct and different names is the result of Kirby's (1871) act of placing the name *ira* in synonymy. Kirby erred in presuming that *'Thecla ira'* was a homonym of Godart's *Polyommatus irus* (1882). Brown (1956) lists the two words as follows: *ira*, 1. anger, fury, rage, wrath.

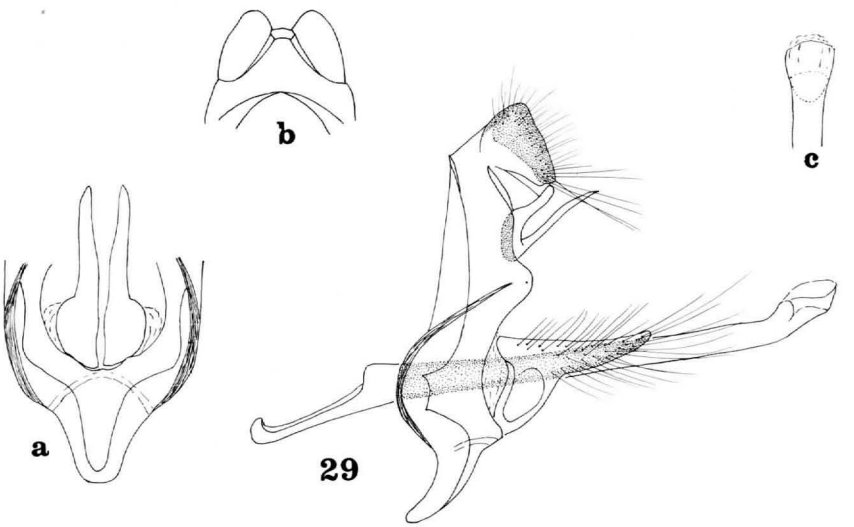

Figure 29. Male genitalia of *Michaelus ira* (Hewitson), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

irus, L. (Gr. Iros), proverbial name for a beggar, poor man.

Neither is an adjective. *Ira* could also have been from the male proper name. Currently, neither species is to be found in the genus *Thecla*, nor is either in the same genus in which originally described. In any case, the two names are not homonyms and the name *ira* Hewitson should be used rather than Kirby's *hewitsoni*.

Described from specimens collected in Mexico, *ira* ranges southward in Central America and into the South American continent. However, its appearance is very sporadic and it is very uncommon in collections. Its currently known range is from Mexico southward into the lower and upper Amazon Basin, into Peru and south into eastern Bolivia.

Specimens examined: BELIZE: Cayo Distr.- Camp Sibun 1 ♂ (CM). COSTA RICA: *Guanacaste*- Canas 10 ♂ 6 ♀ (USNM - leg. Opler). PANAMA: *Canal Zone*- Madden Forest, Gatun 3 ♂ (GBS), Barro Colorado Isl. 1 ♂ 1 ♀ (AM); *Panama Prov.*- Rio Bayano 1 ♂ (GBS). VENEZUELA: Suapure 1 ♂ (MCZ). COLOMBIA: 'Bogota' 1 ♂ (BM); *Dept. Magdalena*- Cacagualito, 1500m. 1 ♂ (CM). PERU: *Loreto*- Iquitos 1 ♂ (AM). BRAZIL: *Amazonas*- Sao Paulo 1 ♂ (BM), Monte Cristo 1 ♂ (BM), Teffe (Ega) 3 ♂ (BM); *Para*- Tapajos 1 ♂ (BM). BOLIVIA: *Santa Cruz*- Buenavista 1 ♂ (BM), 1 ♂ (CM), Santiago del Estero 1 ♂ (BM).

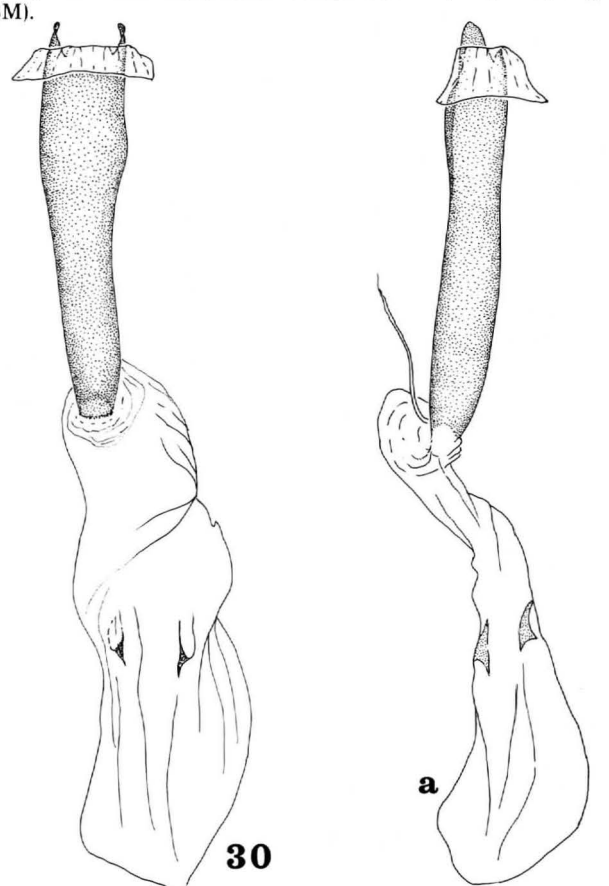

Figure 30. Female genitalia of *Michaelus ira* (Hewitson), ventral view; (a) lateral view.

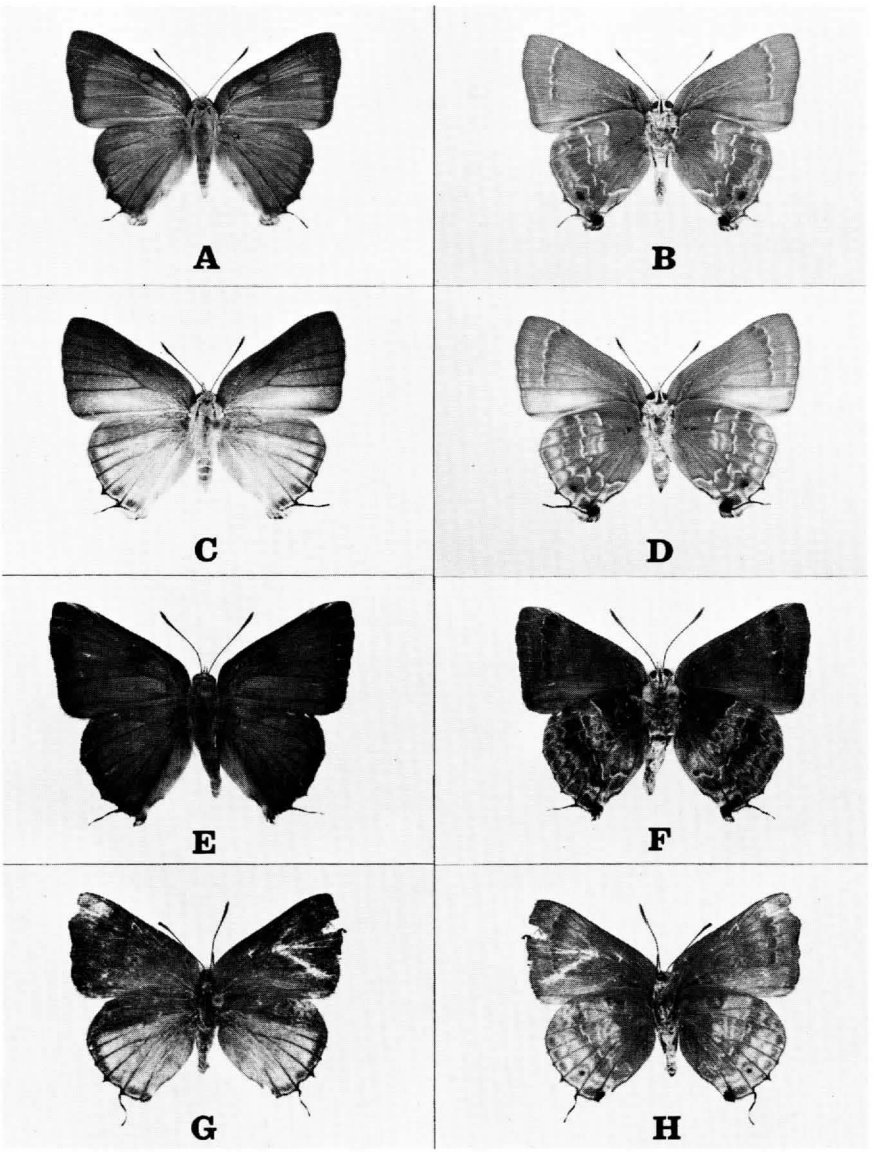

Figure 31. *Michaelus* species: (A) *Michaelus hecate* (Godman & Salvin) ♂, Santa Tecla, El Salvador, 21 Jan. 1954; (B) underside of (A); (C) *Michaelus hecate* ♀, same data as male; (D) underside of (C); (E) *Michaelus thordesa* (Hewitson) ♂, Sumare (Guanabara) Brazil, 29 April 1969 (S. S. Nicolay); (F) underside of (E); (G) *Michaelus thordesa* ♀, Lagoas (Minas Gerais) Brazil, 24 July 1972 (C. Callaghan); (H) underside of (G).

Michaelus hecate (Godman & Salvin)

Figs. 31A, 31B, 31C, 31D, 32, 33, 44.

Thecla hecate Godman & Salvin, 1887: 98. ibid. 1901: 722. Draudt *in* Seitz, 1922: 767, pl 154d. Hoffman, 1940: 709. Comstock & Huntington, 1960, 68: 178 (misspelled *hecale*).

Thecla hecale Godman & Salvin, 1887, Pl 58, figs 15, 16 and 17. Comstock & Huntington, 1960, 68: 178.

Although there has been some past confusion about the spelling of this taxon, I have taken the position in this work that the intended and correct name is as indicated above-*hecate*. This spelling occurs as the title of the original description and Plate 58, figs. 15, 16 and 17 are designated as this species in the text. The plate legend has been incorrectly labelled, *hecale*.

Hecate is, as the authors point out, closely related to *vibidia;* the male and female genitalia indicate an even closer relationship to *thordesa*. The blue color on the upperside of the wings in the male is brighter than in *vibidia*, and is somewhat more extensive because the dark borders are not as wide as in *vibidia*, nor as narrow as in *thordesa*. They are as sharply defined as in the latter species, and the male scent spot is pale brown and much smaller than that of *thordesa*. The anal lobe spot is pale blue, almost white.

The underside of the wings is pale brown, but somewhat variable, and generally paler than in *vibidia*, with a narrow, dark brown, macular sub-marginal band on the forewing outwardly edged in white. Basad of the mid-costal margin of the hindwing there is a short, dark brown line, outwardly edged in white, and two prominent, white, parallel cell-end streaks. An uneven, dark brown, macular post-discal line, outwardly edged in white, runs from the costal to the inner margin. The pale submarginal markings are similar to *thordesa*, but less distinct. There are orange capped black cubital and anal lobe spots.

In the female, the underside wing pattern and color are the same as in the male. The upperside differs in the broad, ill-defined wide, brown borders on the forewings and the very pale, bluish-white discal wash on the ventral two-thirds of the hindwing and in the disc above the inner margin on the forewing.

Hecate was described from Mexico, type locality, Jalapa, and ranges south into El Salvador. I know of and have seen no specimens taken south of this point.

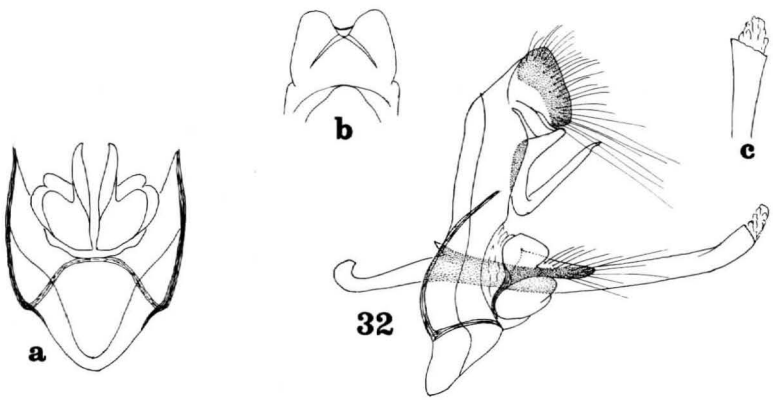

Figure 32. Male genitalia of *Michaelus hecate* (Godman & Salvin), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus); (c) ventral view of aedeagus termen.

Specimens examined: MEXICO: *Sinaloa*- Loberas Summit 1 ♀ (AME); *Colima*-(600') 1 ♂ 1 ♀ (CM); *Guererro*- Acahuizolta 1 ♂ (AME); *Michoacan*- Coahuayana 1 ♀ (AME); *Jalisco*- Guadalajara 1 ♂ 1 ♀ (USNM); *Vera Cruz*- Santecomapan 4 ♂ 1 ♀ (AME), Coatepec 1 ♀ (USNM); Presidio 1 ♀ (USNM); *Chiapas*- La Delicicias 1 ♂ (AME); *Yucatan*- Piste 17 ♂ 2 ♀ (CM), Chichen Itza 2 ♂ 2 ♀ (CM). EL SALVADOR: Santa Tecla 4 ♂ 4 ♀ (AME, N), La Libertad 1 ♂ 1 ♀ (AME, N). No data 1 ♂ (USNM).

Michaelus thordesa thordesa (Hewitson)

Figs. 31E, 31F, 31G, 31H, 34, 35, 45.

Thecla thordesa Hewitson, 1867: 89, pl 35, fig 80. Herrrich-Schäffer, 1869: 57. Kirby, 1879: 155. Draudt *in* Seitz, 1922: 800, pl 1591. Comstock & Huntington, 1964, 72: 129. Ebert, 1970: 42.

Original description:

"Upperside. Male. — Glossy blue, the margins brown. Anterior wing with the discoidal spot oblong, rufous. Posterior wing with one tail.

"Underside. Anterior wing rufous, tinted with pale blue towards its inner margin: crossed beyond the middle by a rufous-brown band bordered outwardly with white. Posterior wing rufous-brown, crossed at the middle by a broad band variegated and bordered with white: the outer margin broadly white traversed by a band of brown and marked by some indistinct lunular spots: anal angle with the lobe and a small spot outside the tail black, crowned with scarlet.

"Exp. 1 $^{9}/_{20}$ inch.

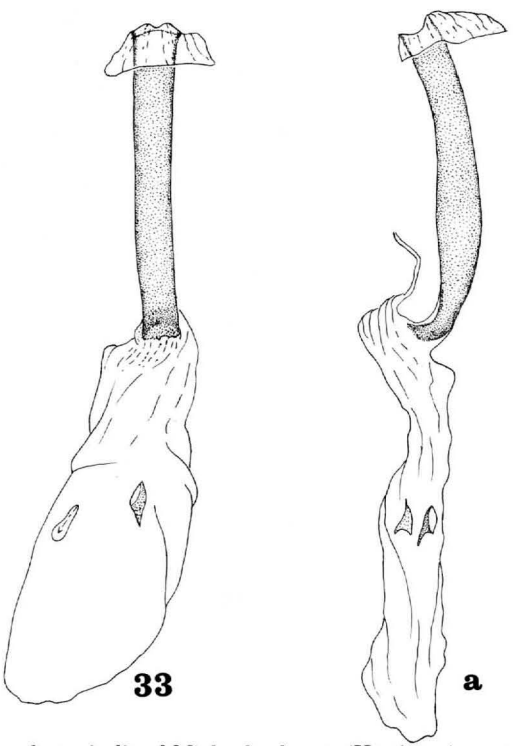

Figure 33. Female genitalia of *Michaelus hecate* (Hewitson), ventral view; (a) lateral view.

"In the Collection of W. C. Hewitson, from Venezuela."

The male upperside of both wings is the same glossy blue as in *vibidia*, but appears to be of a deeper shade, primarily because the black borders of both wings, particularly the forewings, are narrow and rather sharply defined, especially at the apex. The brown scent spot is slightly oblong rather than round, is of the same light brown color, but is isolated within the blue color, therefore more noticeable than in *vibidia*.

Female *thordesa* has a broad, dark brown, sharply delineated costal margin on the upperside of the hindwing, with the ventral two-thirds of the hindwing a pale bluish-white with a very narrow dark outer margin. The base of the forewing is only faintly dusted with the same pale color.

The underside of the wings in both sexes is the same; it is variable, but unmistakeably distinctive. The forewings have a wide, dark brown macular submarginal band, outwardly edged in white, extending from the costal margin to Cu_2. The hindwing ground color is the same dark brown of the forewing submarginal band, with a postdiscal line of white, macular crescents, two white linear spots at the mid and basal costal margin, two white, parallel cell-end streaks and a wavy, submarginal line of pale crescents. All combine to give the underside of the hindwings a distinctive, striated appearance. The Seitz (1922) illustration is very poor and in the text, *thordesa* is compared with *"Thecla" (Strymon) mulucha* Hewitson, a distinctly different species in a different genus.

Described from Venezuela, nominate *thordesa* is a very uncommon species with a rather restricted range in the tropics of South America. Most specimens I have studied or seen came from the south-central and south-eastern states of Brazil. There are apparently many large gaps in the range of this species from which there are no records of its having been taken.

Specimens examined: VENEZUELA: 1 ♂ (the type, BM), Cuenta 1 ♀ (BM). BRAZIL: 1 ♂ (BM), *Mato Grosso*- 1 ♂ (BM), Chapada Campo 1 ♂ 1 ♀ (BM); *Federal District*- Brazilia Country Club 1 ♀ (N); *Minas Gerais*- Lagoa 1 ♀ (AME), Rio Doce 1 ♀ (N); *Guanabara*- Sumare 1 ♂ (N), *Parana*- Londrina 1 ♂, Caviuna 1 ♂ (AM); *Santa Catarina*- Nova Teutonia 1 ♀ (MCZ), Joinville 1 ♀ (MN); *Rio Grande do Sul*- 1 ♀ (BM). BOLIVIA: Santa Cruz de la Sierra 1 ♂ (BM). 4 ♂ 1 ♀ (No data, MN).

Michaelus thordesa zenaida (Dyar)

Figs. 36A, 36B, 36C, 36D, 37, 38, 45.

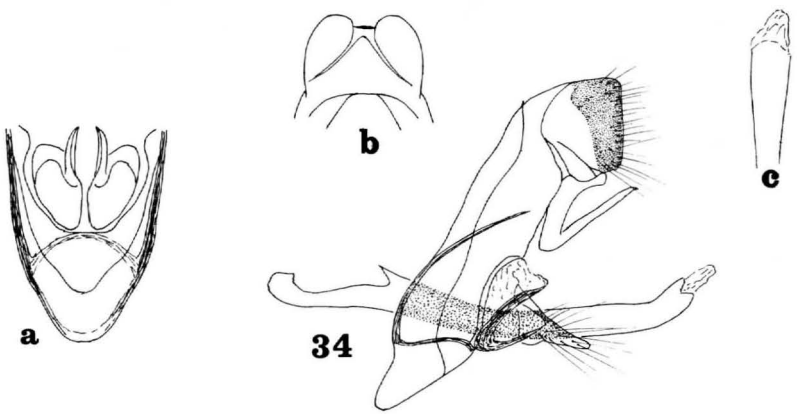

Figure 34. Male genitalia of *Michaelus thordesa* (Hewitson), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Thecla zenaida Dyar, 1912: 42. Draudt in Seitz, 1922: 771. Hoffman, 1940: 720. Comstock & Huntington, 1964, 72: 129.
Thecla thordesca Schaus, 1920: 176. Comstock & Huntington, 1964 72: 129.

Original description:

"Black, the male overspread with metallic blue except the margins of the wings; an elliptical brown sex mark occupying the outer half of the cell; female with pale blue at base of forewing and overspreading most of hindwing except the costal area. Beneath dark brown-grey; forewing with a fine white submarginal lunulated line, terminating at vein 2, preceded by a broad dark gray shade; hindwing with a dark gray shade at base and subterminally; an inner lunulated white line which forms a number of irregular marks at the end of the cell an outer irregularly lunulated line across the wing; a submarginal wavy dark line in a whitish field, with a black dot preceded by red, above vein 2; edge white, with a black line at base of fringe; long tail tipped with white. Expanse, 29-31 mm.

"Cotypes. — One male, one female, No. 14278, U.S.N.M., Santa Rosa, State of Vera Cruz, Mexico, August, 1906 (W. Schaus)."

Schaus (1920) placed Dyar's species in synonymy and Seitz (1922) did not know the species. There is little doubt that its relationship to *thordesa* is a close one and I am not at all certain at this point that the name should be retained. On the other hand, I have not enough evidence that it should not, and have therefore treated it as a subspecies.

As may be noted in the appropriate figures, the scent pad in the male is much larger (almost double in size) than that of *thordesa*, the wing shape is less angular and the basic color above, a much darker blue. The underside ground color of *zenaida* is darker and the white striations appear more isolated and sharply delineated. Females do not have the sharp division of color on the upperside of the hindwing, the color of the discal area is somewhat darker and the wing shape less angular and more rounded. In both

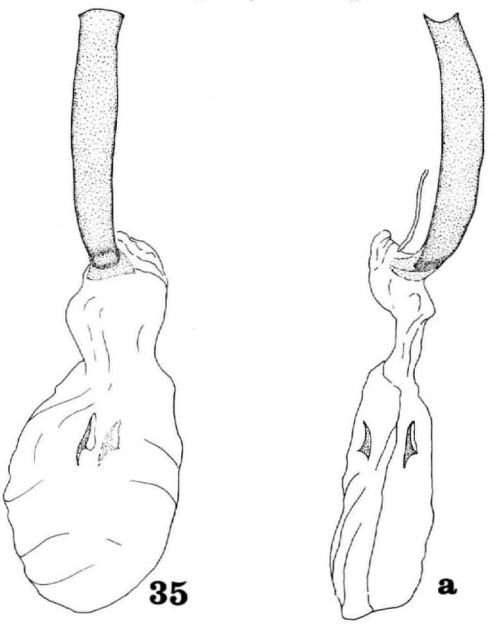

Figure 35. Female genitalia of *Michaelus thordesa* (Hewitson), ventral view; (a) lateral view.

sexes, the genitalic differences between *thordesa* and *zenaida* are minor. Much more material from what is obviously the vast range of this species complex is needed before a clearer understanding of the relationship between *thordesa* and *zenaida* may be reached.

The known range of *zenaida* appears to be from the southeastern states of Mexico south to the Republic of Panama.

Specimens examined: MEXICO: *Vera Cruz*- Santa Rosa 1♂ 1♀ (Co-types of *zenaida* in the USNM), Zumpango 1♂, Tezomara 1♂ (AM), Catemaco 2♂ 1♀ (AME). HONDURAS: San Pedro Sula 1♂ (BM). PANAMA: *Canal Zone*- Madden Forest 2♂ (GBS, AME); *Panama Prov.*- Rio Bayano 1♂ (GBS).

Michaelus jebus (Godart)

Figs. 36E, 36F, 39, 40, 45.

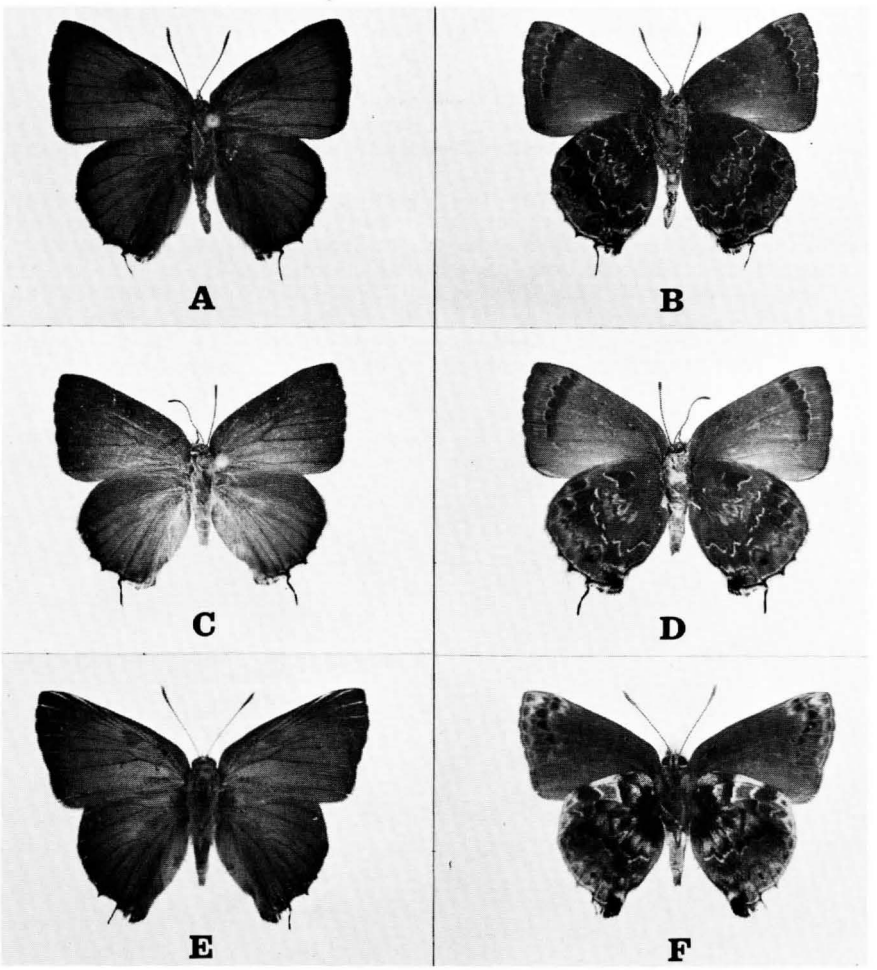

Figure 36. *Michaelus* species: (A) *Michhaelus thordesa zenaida* (Dyar) ♂, Catemaco (Vera Cruz) Mexico, July 1957; (B) underside of (A); (C) *Michaelus thordesa zenaida* ♀, (Same data as male); (D) underside of (C); (E) *Michaelus jebus* (Godart) ♂, Sumare (Guanabara) Brazil, 29 April 1969 (S. S. Nicolay); (F) underside of (E).

Polyommatus jebus Godart, 1822, 9: 639. Comstock & Huntington, 1961, 69: 55.
Sithon jebus, Geyer, 1835, vol 3, pl 19.
Thecla jebus, Westwood, 1852: 486. Hewitson, 1867: 89. Herrich-Schäffer, 1896: 57. Kirby, 1871: 385. ibid. 1879: 154. Godman & Salvin, 1901: 42, pl 53, figs 5, 6 & 7. Salvin *in* Godman & Salvin, 1901: 717. Weeks, 1905: 28. Draudt *in* Seitz, 1922: 768, pl 152b. Costa Lima, 1936: 212. Hoffman, 1940: 709. Forster, 1948: 112. Silva, 1968: 336. Lewis, 1973: 68, pl 28.
Chalybs jebus, Kaye, 1921: 104. Brown & Mielke, 1967: 152. Barcant, 1970: 251.

At first glance, the color and pattern of the upperside of the wings in *jebus* is almost indistinguishable from *hecate* with one very marked exception - the anal lobe spot is orange in *jebus* and pale (almost indistinguishable) blue in *hecate.* The male scent spots are positioned in the same place and are equally small in size and pale brown in color. Females of both species are very similar, but both are somewhat variable in the extent of the pale bluish-white wash on the discal and basal areas of both fore and hindwings, and the vaguely defined broad dark borders. As a general rule, specimens of *hecate* are smaller than those of *jebus.*

The pattern on the underside of the hindwing is difficult to describe, but is so distinctive and different from any other neotropical hairstreak species that I shall let the illustrations provide the definitive differences; it would be difficult to confuse *jebus* with any other.

Jebus is found from Mexico southward throughout Central and South America. Draudt (1922) states that it is common. I have not found it so, nor have I found many extensive series of *jebus* taken from any single locality at a specific time and date in any private or institutional collections I have studied.

Specimens examined: MEXICO: *San Luis Potosi-* Cd. Valles 1♂ (AME), 13♂ 1♀ (CM); *Vera Cruz-* Presidio 9♂ 7♀ (AME, AM), Rio Blanco (2200') 1♂, Misantla 1♀ (AM), 2♂ (BM), Catemaco 2♀ (AME); *Guererro-* Acaguizolta 1♂ (BM); *Oaxaca-* Tuxtepec 2♂ (AME); *Puebla-* Xicotepec Juarez 1♀ (CM); *Chiapas-* Oxchuc (4500') 1♂ 4♀ (AME), San Cristobal de las Casas 1♂ (AME). GUATEMALA: Verapaz (1300m) 1♂ (CM), San Geronimo 1♀ (BM), Chisoy Valley 1♀ (BM). NICARAGUA: Managua 4♂ 3♀ (RAA). EL SALVADOR: Cerro San Jacinto (800m) 1♂ Tamanique (1000m) 1♂ (AME). COSTA RICA: 1♂ 1♀ (BM), San Jose 1♂ (BM). PANAMA: *Canal Zone-* Far-

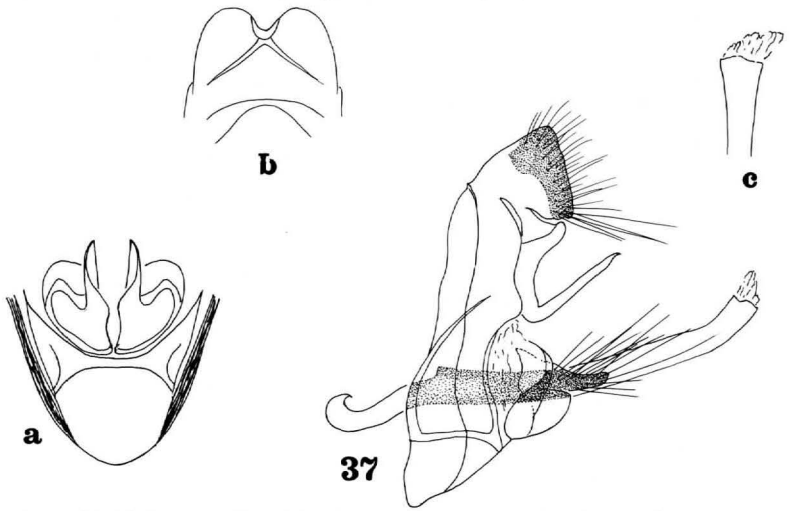

Figure 37. Male genitalia of *Michaelus thordesa zenaida* (Dyar), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

fan, Madden Dam, Madden Forest, Gatun, Summit, La Boca 8♂ 8♀ (GBS, N, AM, AME); *Panama Prov.*- Cerro Campana 2♂ 3♀ (GBS, N); *Chiriqui Prov.*- Alto Lino 1♀ (N). COLOMBIA: 1♀ (BM), 2♀ (AM); *Valle del Cauca*- Loboquerro 1♀, Cali (1000m) 1♂ (AME). ECUADOR: *Loja*- Vilcabamba 2♀ (AME). PERU: *Loreto*- Balzapamba, Rio Paranapura 1♂ (AM), La Merced 1♀ (BM), Payta (W. Peru) 4♀ (BM). VENEZUELA: San Estevan 2♀ (BM). TRINIDAD: 1♀ (USNM), 1♂ (AM), 1♂ 1♀ (AME). FRENCH GUIANA: Cayenne 1♂ (USNM), 4♂ 2♀ (BM), St. Jeanne Maroni 1♀ (USNM). BRAZIL: 1♂ (No data BM), *Para*-Igarapi Assu 1♂ 1♀ (AM), Tapajos 1♂ 1♀ (BM), *Para*- 1♂ 1♀ (BM), Santarem 1♀ (BM); *Amazonas*- 1♀ (BM), Sto Paulo 2♂ BM), Teffe 1♂ (AME), 1♂ (BM); *Paraiba*- Joao Pessoa 1♂ (N); *Mato Grosso*- Chapada 1♂ (BM); *Minas Gerais*- 1♂ (BM), Barbacena 1♂ (N), Belo Horizonte 1♂ (N), Parque Rio Doces 1♀ (N); *Bahia*- 1♂ (BM) Itabuna 1♂ (AME), Bem Firm 1♂ (CM); *Espiritu Santo*- 1♀ (BM), Linhares 1♀ (AME); *Rio de Janeiro*- 1♂ 4♀ (BM); *Guanabara*- Sumare' 6♂ (N); *Parana*- Caviuna 8♂ 3♀ (AM); *Sao Paulo*- Rinceicaba 3♂ 1♀ (BM), Araras 1♂ 1♀ (N), Campinas 1♂ 1♀ (USNM), Itaquaquecetuba 1♀ (BM). BOLIVIA: Cusilluni 1♀ (MCZ), Chulumani 4♂ 1♀ (MCZ), Reyes 1♂ (BM).

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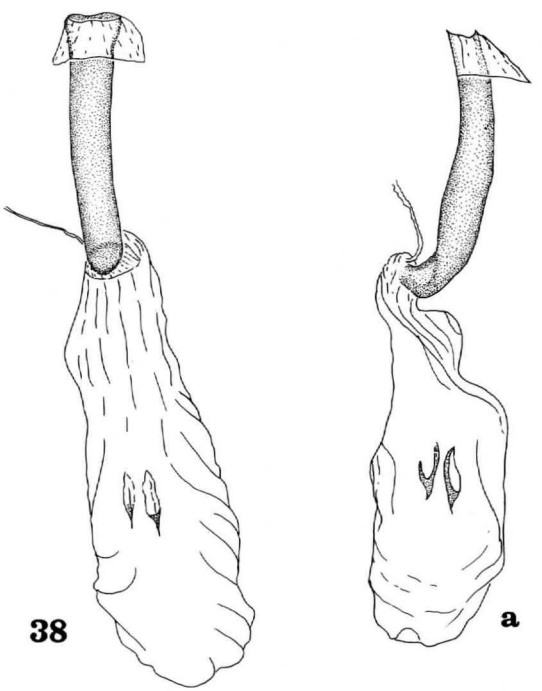

Figure 38. Female genitalia of *Michaelus thordesa zenaida* (Dyar), ventral view; (a) lateral view.

valuable assistance during my recent two weeks' working visit to that institution; a visit that proved invaluable in the preparation of this work. Gordon B. Small provided continuous distributional data and specimens for study as well as the invaluable logistical support for my own collecting efforts and field work.

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The Allyn Museum of Entomology under curators Dr. Lee D. Miller and his wife Jacqueline made its excellent collection available for study and full use of its unmatched scientific facilities in addition to providing much-needed technical help. Mr. Arthur C. Allyn provided the photographs with his usual skill and technical competence. The line drawings were made by the author.

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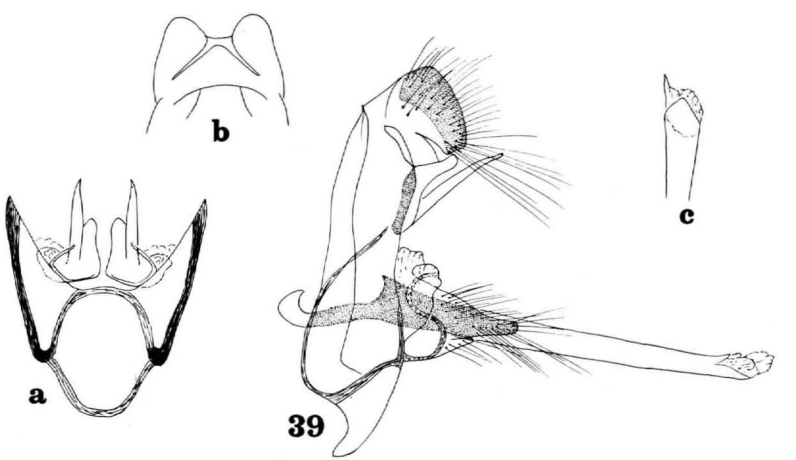

Figure 39. Male genitalia of *Michaelus jebus* (Godart), lateral view with aedeagus in place; (a) ventral view of vinculum and saccus with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

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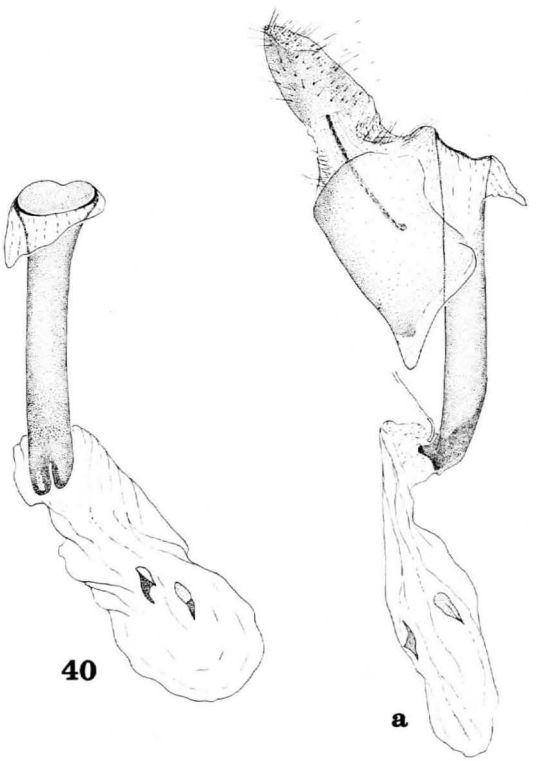

Figure 40. Female genitalia of *Michaelus jebus* (Godart), ventral view; (a) lateral view.

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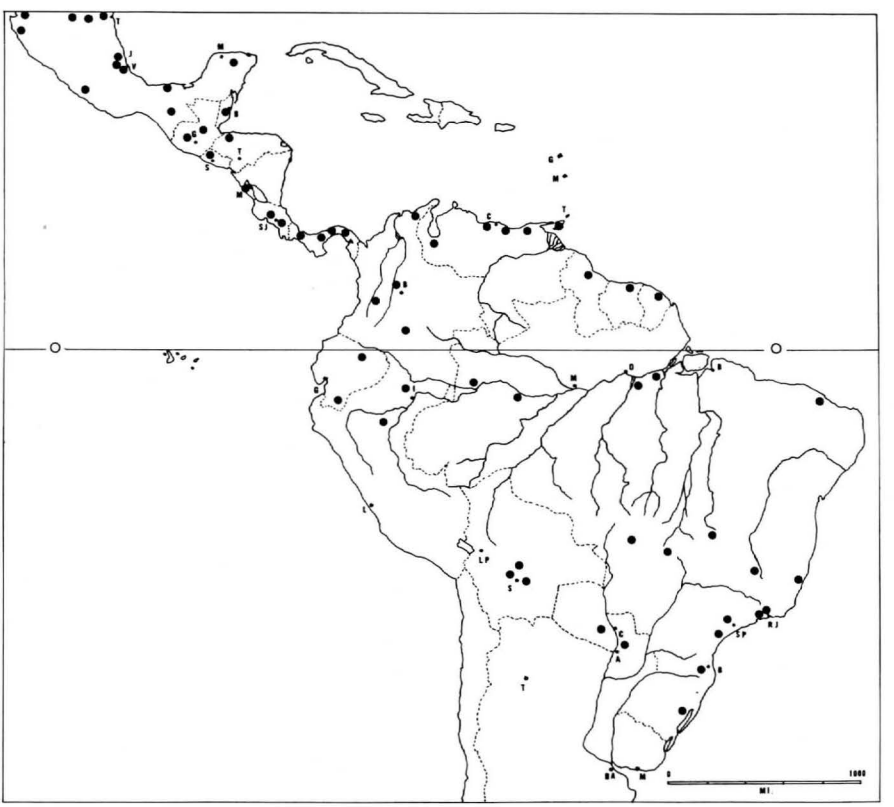

Figure 41. Distribution of *Parrhasius polibetes* (Cramer), solid circle.

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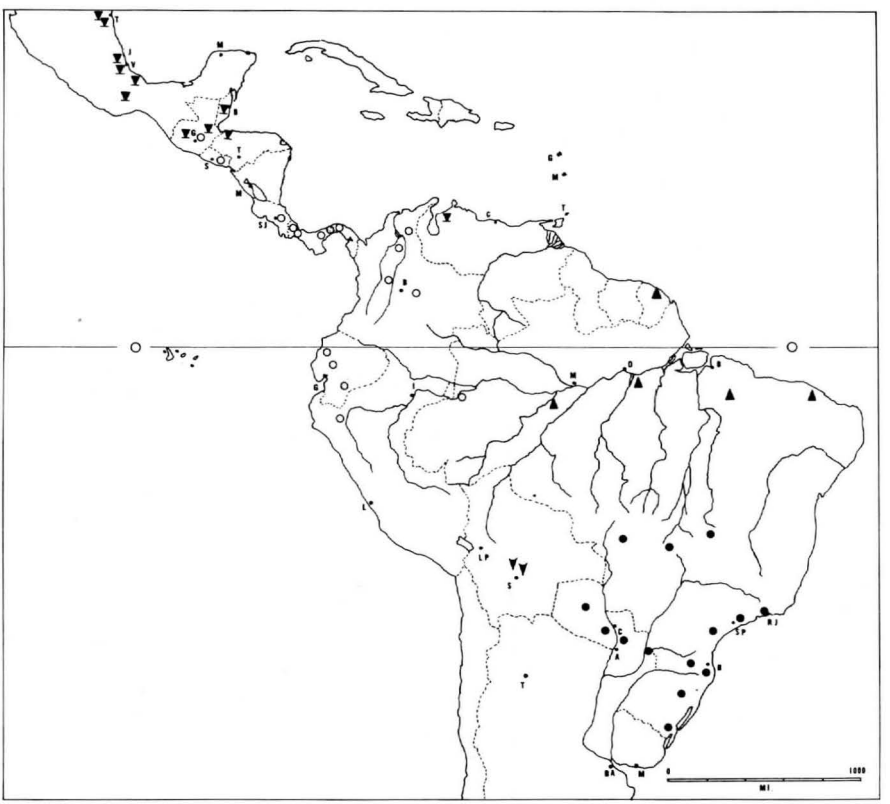

Figure 42. Distribution of *Parrhasius orgia* and subspecies: *P. orgia orgia* (Hewitson), solid circle; *P. orgia orgiophantes* Clench, inverted arrowhead; *P. orgia amazonis* Nicolay, solid triangle; *P. orgia teleontes* (Druce), open circle; *P. orgia melissa* Nicolay, inverted triangle on bar.

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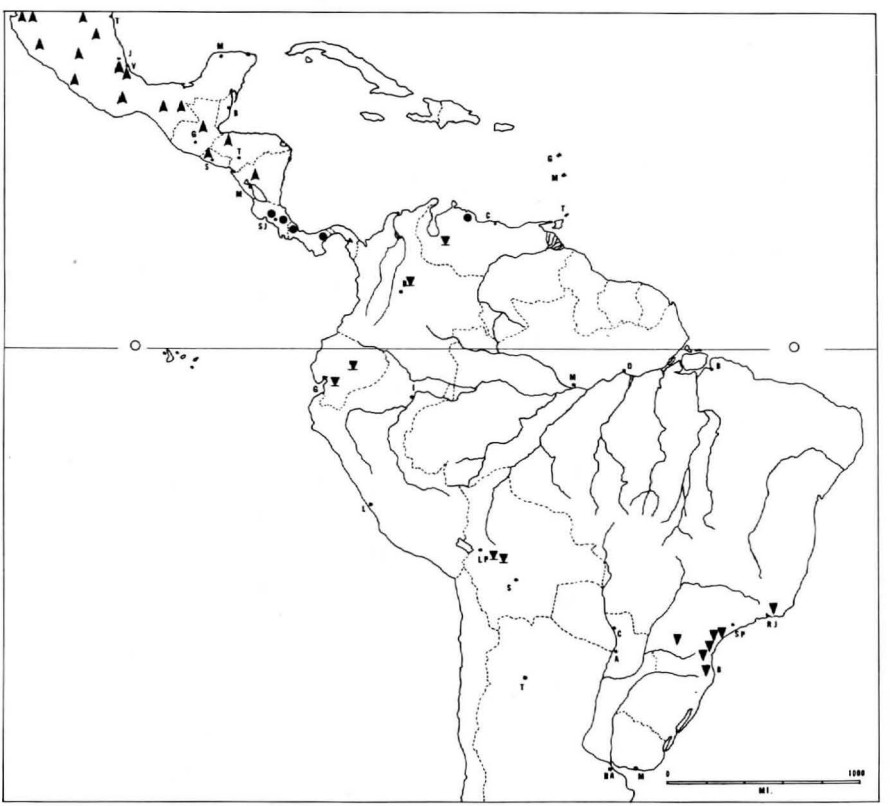

Figure 43. Distribution of *Parrhasius m-album moctezuma* (Clench), solid arrowhead; *P. m-album urraca* Nicolay, solid circle; *Parrhasius selika* (Hewitson), inverted triangle; *Parrhasius appula* (Hewitson), inverted solid triangle on bar.

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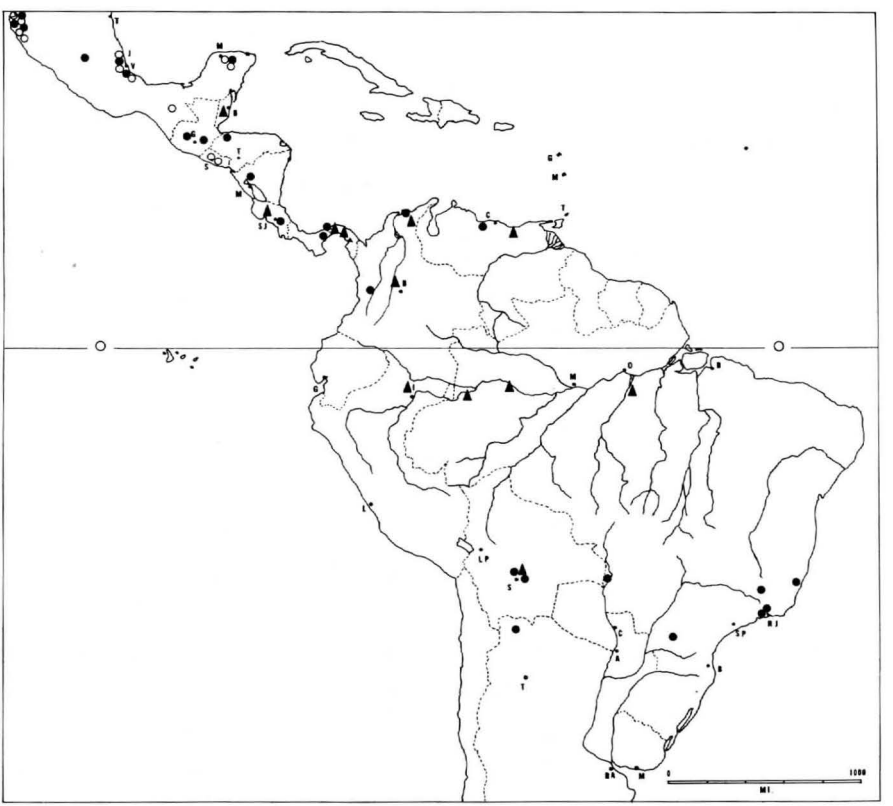

Figure 44. Distribution of *Michaelus vibidia* (Hewitson), solid circle; *Michaelus ira* (Hewitson), solid triangle; *Michaelus hecate* (Godman & Salvin), open circle.

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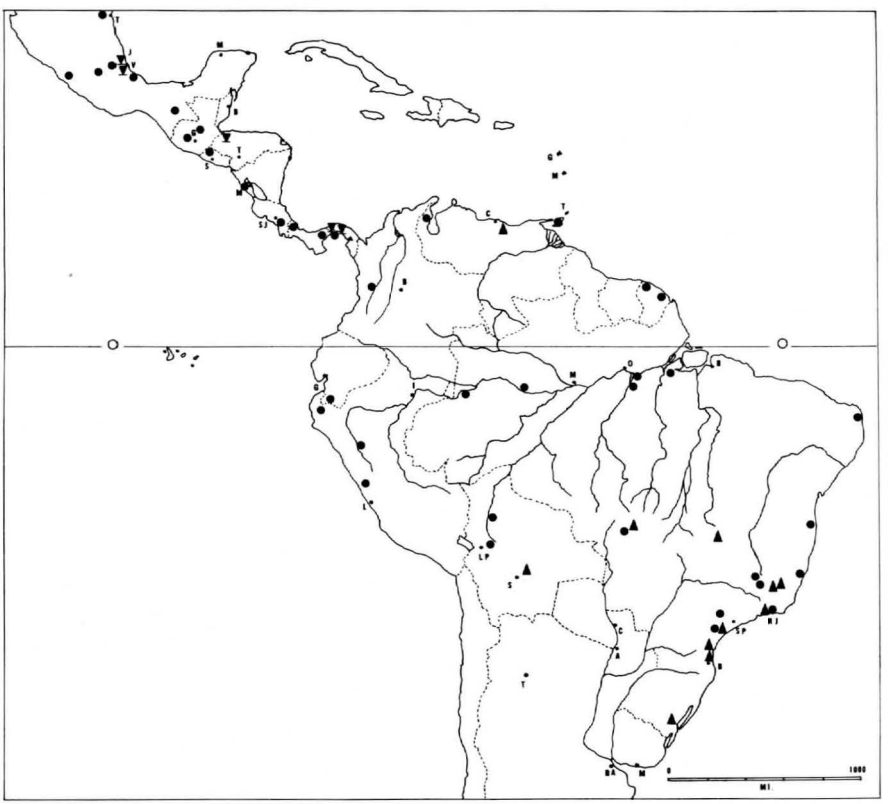

Figure 45. Distribution of *Michaelus thordesa* (Hewitson), solid triange; *Michaelus thordesa zenaida* (Dyar), inverted triangle on bar; *Michaelus jebus* (Godart), solid circle.

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ERRATA: No. 35

p. 19, line 4, change Panhiades to Panthiades.
p. 28, line 2, after Boisduval, to read J.B.A.D.
p. 28, Figure 25 to read as follows: Distribution of *Panthiades battus* (Cramer), open circles, *Panthiades battus jalan* (Reakirt), solid circles; *Cycnus phaleros* (Linnaeus), solid triangles.
p. 29, line 10, change Dyer to read, Dyar, H.G.