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A REVIEW OF THE HÜBNERIAN GENERA PANTHIADES AND CYCNUS (LYCAENIDAE: EUMAEINI)

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Most of our Neotropical 'hairstreaks' are still carried in the genus *Thecla* with an occasional expression from the author that the species being discussed probably belongs to another genus. The Comstock and Huntington (1958-1962) list of New World Lycaenidae contains a list of all known generic names. J. N. Eliot's (1972) *Higher Classification of the Lycaenidae* contains an up-dated listing of the New World 'hairstreak' genera now placed in the Tribe EUMAEINI. Many of these genera have seldom been used by past authors and I suspect many have been misused; many have been inadequately described and only a small fraction have been given a thorough review to include as many species as were or are known to belong to the genus.

For example, the following is an exact reproduction of the original description of the genus *Panthiades*:

"17. Berein, Coitus 17.

Panthiaden, Panthiadae

Die Flügel unten braun, weiszstreifig; die Senfen mit einem rothen Flecken bemerkt.

794. *Panthiades* Thallus, Cram. 259 C.D.

795. *P. pelion* Cram. 6. E. F."

In 1819, with the above entry in his *Verz. bekannt. Schmett.*, Hübner established, described and placed two species in a new genus, just one of many, including the genus *Cynus*, he described in a similar manner in the same reference. Since that time, although many workers have discussed the species *pelion*, there have been relatively few references to the genus *Panthiades*. However, Samuel H. Scudder (1875) established *pelion* as the sole species in the genus and therefore the type. Hemming (1967) explains the results of Scudder's action... "Hübner placed in this genus the two nominal species, of which *Papilio pelion* Cramer was the second. Scudder took the view that these nominal species represented no more than the female and male respectively of the same taxon and accordingly considered that this genus was monotypical... Scudder went on to say that the type species was *Papilio pelion*. Although Scudder thought that he was merely noting an existing fact, his action constitutes (under Article 69 (a) (iii)) a valid selection of the above species to be the type species".

The purpose of this work is to provide a more complete and detailed description of the genera *Panthiades* and *Cynus*, to separate those species that belong to *Panthiades* and *Cynus* from the all-inclusive *Thecla*, and to remove those species that have been incorrectly placed in these genera in the past.

A recent reference (Brown & Mielke, 1967) to *Panthiades* (*Parrhasius*) *orgia* Hewitson and *Panthiades* (*Parrhasius*) *polibetes* Cramer implies that the two species *orgia* and *polibetes* belong to the genus *Panthiades*. I believe that both species belong to the genus *Parrhasius* Hubner and the two genera are separate and distinct. Clench in Ehrlich & Ehrlich (1961) provided a description of the genus *Panthiades* and in it placed the North American species *m-album* Boisduval & LeConte. Dos Passos also placed *m-album* in *Panthiades* in his partial checklist revision (1970). I have removed *m-album* from *Panthiades* and have tentatively placed it in the genus *Parrhasius* where I believe it more properly belongs. These two genera are similar in some respects, but I believe their differences outweigh their similarities to a degree sufficient to establish both as valid genera.

Panthiades as presently conceived contains seven species, three with additional subspecies. All are Neotropical. The type species, *Panthiades pelion* Cramer, is confined to the South American continent. *Panthiades bitis* Cramer, the most widespread and common species, is found from northern Mexico south throughout Central and South America.

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.; (USNM) Smithsonian Institution, Washington, D. C.; (CM) Carnegie Museum of Natural History, Pittsburgh, Pennsylvania; (GS) Gordon B. Small collection in Balboa, Canal Zone; (KB) Dr. Keith Brown, Jr. collection, Campinas, Sao Paulo, Brazil; (N) the author's collection.

Genus *Panthiades* Hübner, 1819

Type species: *Papilio pelion* Cramer 1775.

Hind wing with two tails, the shorter (at times rudimentary) at the end of Cu_1 , the second longer tail at the end of Cu_2 ; anal angle lobed, partially cleft. Male with a scent spot on the forewing. Abdomen beneath cream colored, above dark brown with some blue scaling. Palpi short, porrect, heavily scaled, terminal segment less than one-half the length of the second. Eyes with sparse, short, obscure bristles; antennae half the length of the costa, the club gradually thickened to twice the diameter of the stalk.

Male genitalia stout, heavily chitinous, without a saccus, the vinculum very broad at base, with no anterior extension, without extraneous lateral processes; valvae of various lengths, rather stout, conjoined one-half or more of their length. Falces angular, stout, flattened dorso-ventrally. Aedeagus stout, curved dorsally, with a single cornutus.

Female bursa copulatrix with a broad, funnel-shaped ostium bursae, the dorsal plate fan-shaped, moderately sclerotized, the ventral portion a semi-membranous pouch; the ductus bursae stout, heavily chitinous, curved dorsally; the cervix bursae only slightly modified with the ductus seminalis entry on the ventro-lateral side; the corpus bursae rather large, equal in length to the complete ductus bursae, constricted about one-quarter of its length beyond entry of the ductus bursae, and with two large, complex, skillet-shaped signa.

The genitalia of all species in *Panthiades* are similar; however, unlike some genera of the Neotropical Eumaeini, most species determinations can be readily validated by reference to the genitalia, should such be necessary. The genus as established herein is related to *Parrhasius* in many respects but, as mentioned previously, is considered sufficiently distinct to stand alone as a natural grouping of species with various specific differences, but closely related in generic similarities.

The male genitalia in *Panthiades* have no saccus, those of *Parrhasius* have, at the very least, the obvious beginning of a saccus; the aedeagus of *Panthiades* has a single cornutus (terminally fragmented in *bitias* and *hebraeus*), that of *Parrhasius* has no cornuti. The female genitalia provide even more obvious differences between the two genera in the simple, small, single-spined signa of the corpus bursae of *Parrhasius* and the large, complex signa of *Panthiades*. The ostium bursae and general structure of the ductus bursae of the two genera are completely different, with the *Panthiades* ostium bursae widely flared, funnel-shaped and ventrally membranous as compared to the relatively small, round ostium bursae and untapered, evenly chitinous composition of *Parrhasius* species. I believe the entry of the ductus seminalis on the ventro-lateral surface of the corpus bursae in *Panthiades* is quite significant. And although this character does appear in the species *Thecla* (*Cycnus*) *phaleros* Linnaeus, I have not found it in any of the numerous species I have examined that most probably belong in *Parrhasius* or in other undescribed genera.

Wing patterns, particularly of the underside of the hindwing in species contained in both genera show such wide diversity of color and pattern, that it is difficult, if not impossible to offer a generalized statement of either. And, although as a general rule the forewing structure of *Panthiades* species is 'squarish' with rather straight outer margins and sharply angular apex and tornus, there are exceptions even to this feature.

Key to the Species of *Panthiades*

1. Wing undersides with white or pale yellow markings 2
 Wing undersides without such pale markings 6
2. White markings broad, parallel or converging *battus*
 Pale markings not in the form of broad stripes 3
3. Pale markings on both wing undersides in the form of a single broad white median band *pelion*
 Pale markings composed of separate short bands or spots 4
4. Pale markings are broad, clear pale yellow on hindwing, small on forewing *boreas*
 Pale markings are sullied, intermittent, small 5
5. Upperside of male forewing dark markings extending from scent spot do not reach beyond vein Cu_1 *paphlagon*
 Upperside of male forewing dark marking extends well beyond Cu_2 *ochus*
6. Underside of fore and hindwing with a single, narrow median dark line *bitias*
 Underside wing markings consist of macular and separate dark bars and spots *hebraeus*

Panthiades pelion (Cramer)

Figs. 1A, 1B, 1C, 1D, 2, 3, 23

Papilio pelion Cramer, 1775, p 154, figs E. F. Fabricius, 1777, p 267. Goeze, 1780, p 53. Fabricius, 1787, p 66. Gmelin, 1790, p 2338. Fabricius, 1798, p 263. Herbst, 1800, p vii, 318, pl 294, figs 6, 7. Hubner, 1819, p 79. Comstock & Huntington, 1962, 70:105.

Papilio simplex Walch, 1775, p 130, tab 6, fig 3a, b.

Polyommatus aeolus Fabricius, 1775, p 522. Godart, 1824, p 628. Westwood, 1852, p 483.

Papilio thallus Cramer, 1782, pl 259, figs C. D.

Thecla thallus, Doubleday, 1847, p 39. Hewitson, 1867, p 100.

Thecla pelion, Herrich-Schaffer, 1869, p 57. Kirby, 1871, p 389. Moschler, 1876,

p 301. Staudinger, 1888, p 286, pl 97, fig c-3. Weymer & Massan 1890, p 82. Weeks, 1911, p xiii. Draudt in Seitz, 1922, 5:779, pl 148e.
Panthiades pelion, Butler, 1870, pp 197-198. Scudder, 1874, p 237. Butler, 1877, p 142. Kaye, 1914, p 46. *ibid.* 1921, p 102. Comstock & Huntington, 1958, 66:113. Hemming, 1967, p 336. Barcant, 1970, p 111, pl 9 fig 26. Lewis, 1973, p 67, fig 22. Smart, 1975, p 172, fig 29.

The documentation of this species in past years has been extensive. It is one of

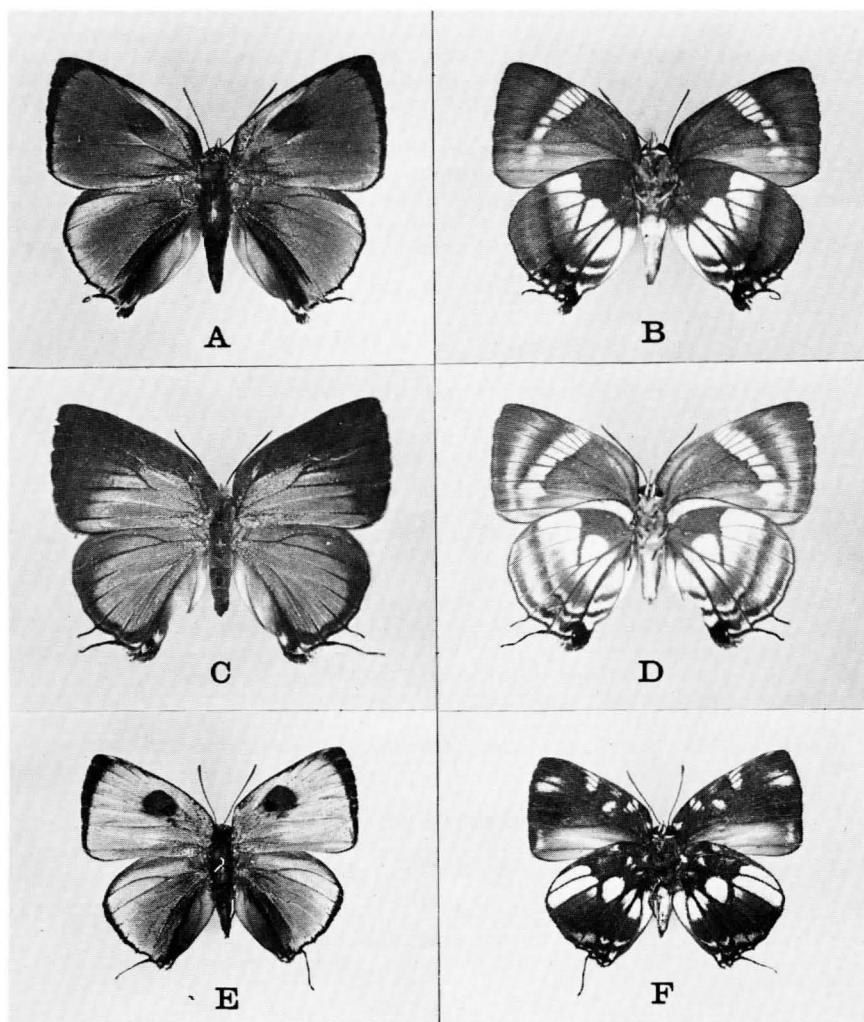


Figure 1. *Panthiades* species: (A) *Panthiades pelion* Cramer) ♂, Obidos (Pará) Brazil, Sept. 1954; (B) underside of (A); (C) *P. pelion* (Cramer) ♀, Belem (Pará) Brazil, Aug. 1960; (D) underside of (C); (E) *P. boreas* (Felder & Felder) ♂ Florida, Putumayo River, Peru, 10 April 1931, 180m.; (F) underside of (E).

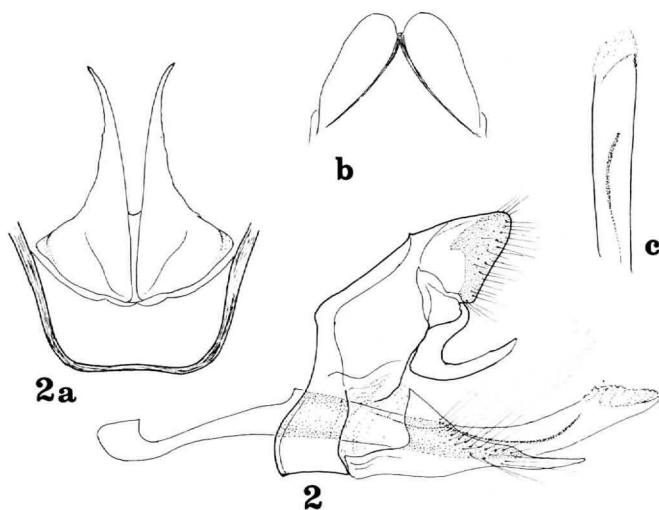


Figure 2. Male genitalia of *P. pelion* (Cramer) lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

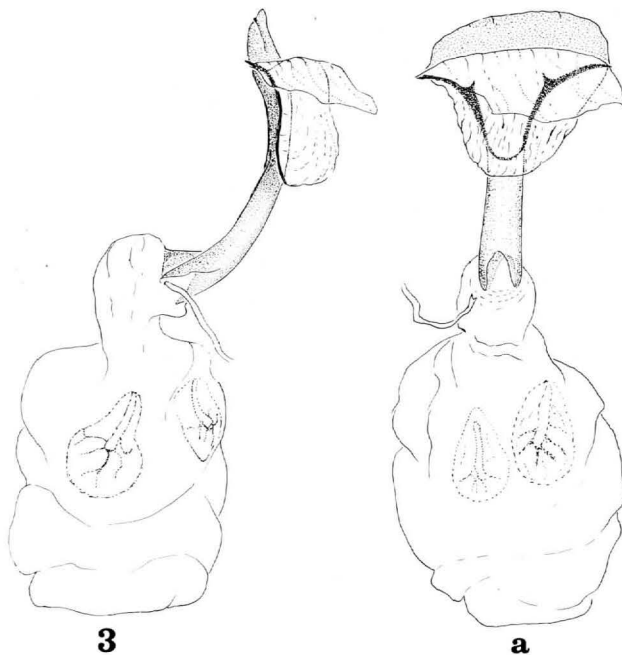


Figure 3. Female genitalia of *P. pelion* (Cramer), lateral view with ovipositor removed; (a) ventral view.

the easily recognized Neotropical hairstreaks and a detailed description here is considered unnecessary. The Seitz (1922) color plates depicting both wing surfaces are excellent and many recent popular works contain excellent color photographs of this beautiful insect. The male scent spot on the forewing is somewhat aberrant for the genus in that it is the only species which does not have the round, ringed scent spot at the cell end; instead the spot is a large, rectangular chocolate brown patch stretching across the cell end. The valvae of the male genitalia are much longer than those of the remaining species in the genus (fig 2a).

Pelion is widely distributed throughout the tropical lowland rainforests of the South American continent. Thus far, it has not been found on or north of the Panamanian Isthmus, although some specimens have been taken in the adjacent lowland valleys in Colombia. The rather extensive series in the Allyn Museum collection contains specimens from Trinidad, the Orinoco River basin of Venezuela and from the entire length of the Brazilian Amazon from the Atlantic to Peru.

Specimens examined: **COLOMBIA**: No data 4♂ (USNM,AM); **ANTIOQUIA** - Casabe, Rio Magdalena 1♀ (AM); **CUNDINIMARCA** - Bogota 1♂ (USNM); **CAQUETA** - Rio Bodoquero 1♂ (N); **AMAZONAS** - Loretoyacu 2♂ 2♀, Macayacu 1♀ (AM). **VENEZUELA**: No data 2♂ 2♀ (CM); Las Quiguas, Esteban Valley 1♂, Mts. of Merida 1♀ (CM); Orinoco Delta 1♀ (N); **DELTA AMACURO** - Rio Acure 3♂ 1♀, Rio Aguiro 1♀ (AME); Pitotán 1♂, Surukum 1♀ (AM). **TRINIDAD**: 8♂ 6♀ (AME, CM, AM). **BRITISH GUIANA**: Georgetown 1♂, Wismar 1♂ 1♀ (CM, AM). **FRENCH GUIANA**: No data 1♀ (AM); Oyapok River 1♂ (CM); Crique Sparouine 1♂ (AME). **BRAZIL**: **PARA** - Belem 15♂ 8♀ (AME, GS, N), Obidos 13♂ 4♀ (AME, AM, N), Igarape Acu 8♂ 8♀ (AME, AM), Santarem 9♂ 1♀, Rio Tapajos 6♂ Benevides 5♂ 2♀ (AME, CM); **AMAZONAS** - No data 2♂ (AM); Manacapuru, Ypiranga, Rio Purus 8♂ 1♀ (AME, CM); Teffe 7♂, Manaus 2♂ 1♀, Maues 2♂, Utinga 1♂ 2♀, S. Paulo de Olivenca 4♂ 1♀ (AME); **MATO GROSSO** - Chapada 1♂ (USNM). **ECUADOR**: Oriente, Sadsayacu 1♀ (AME); **TUNGURAHUA** - Rio Topo, 4500 ft. 1♂ (CM). **PERU**: No data 2♂ (AME, GS); **LORETO** - Sani Beni 840m. 2♂ (CM), Rio Putumayo 3♂ 1♀ (AM), Iquitos 25♂ 2♀ (AM, AME), Pucallpa 2♂ 1♀ (AME); **SAN MARTIN** - Juanjui 1♂ (AM); **HUANUCO** - 1♂ (AME). **BOLIVIA**: **SANTA CRUZ** - Las Juntas, Rio Yapacani 6♂ 2♀ (CM).

Panthiades boreas (Felder & Felder)

Figs. 1E, 1F, 4, 23

Pseudolycaena boreas Felder & Felder, 1864, 2:244, pl 31, fig 12.

Thecla boreas, Hewitson, 1867, p 101. Staudinger, 1888, p 286. Draudt in Seitz, 1922, 5:779, fig 148f. Comstock & Huntington, 1959, 58:166.

A somewhat smaller species than *pelion* with a single forewing span of some 14 mm. *boreas* is of the same dark brilliant blue on the upper wing surface with very narrow black outer wing margins. The forewing male scent spot contains a ringed small black portion within the cell and a larger patch of black specialized scales adjacent to, but outside the cell-end. The wings beneath are dark brown with clearly defined and rather intricate pale yellow markings (fig. 1F). The colored illustration in Seitz (1922) is an excellent reproduction of the underside color and pattern. I have been unable to locate a female of *P. boreas* and believe it remains undescribed.

The distribution pattern of *boreas* is similar to that of *pelion* - the rain forests of the Amazon basin from the Atlantic westward to Peru. It is, I believe, a true rarity, few specimens having been taken at any single locality or time. A specimen in the Allyn Museum collection expands its range into Panama with a male taken in Gamboa, Canal Zone, 16 May 1945. Continuous and thorough collecting in this area of Panama and other promising localities nearby in recent years has failed to turn up additional specimens. I have seen no specimen of *boreas* collected within

the past 20 years. It seems obvious that the species, although widely distributed, must have an extraordinarily thin population density.

The type locality is New Granada (Colombia): Bogota. However, based upon the topography and environmental features of the localities at which known specimens have been collected more recently, the type specimen was most probably taken at a lower altitude tropical rainforest locale in Colombia.

Specimens examined: **PANAMA:** CANAL ZONE - Gamboa 1♂ (AME). **BRAZIL:** PARA - Obidos 1♂ (GS); AMAZONAS - No data 1♂ (USNM); Manaus 1♂, Ypiranga (Rio Purus) 1♂ (AME). **PERU:** LORETO - Florida (Rio Putumayo) 180m. 1♂, Iquitos 1♂ (AM), Rio Seco 1♂ (AME).

Panthiades paphlagon (Felder & Felder)

Figs. 5A, 5B, 5C, 5D, 6, 7, 23

Pseudolycaena paphlagon Felder & Felder, 1865, 2:249-250, pl 31, figs 10, 11.

Thecla paphlagon, Hewitson, 1867, p 100. Herrich-Schaffer, 1868, 2:176. *ibid.* 1870, p 25. Kirby, 1871, p 389. Druce, 1876, p 240. Kirby, 1879, p 156. Weeks, 1905, p 19. Druce, 1907, p 594. *ibid.* 1909, p 434, pl 11, fig 1. Draudt in Seitz, 1922, 5:779, pl 148f. Comstock & Huntington, 1962, 70:102.

In the male the wing upper surface is a brilliant blue with a slight greenish cast, the outer margins are narrowly black. The scent spot on the forewing contains a round, ringed, black portion within the cell end and a rather large patch of black scales surrounding it both within and outside the cell. The female is of a paler blue-green with very broad black-brown margins on both wings. The underwing surface is brownish-grey with all veins black-brown and clearly outlined. There are small pale markings on the forewing costa and at the tornus; the same pale markings are found near the apex and at the base of the inner margin of the hind-

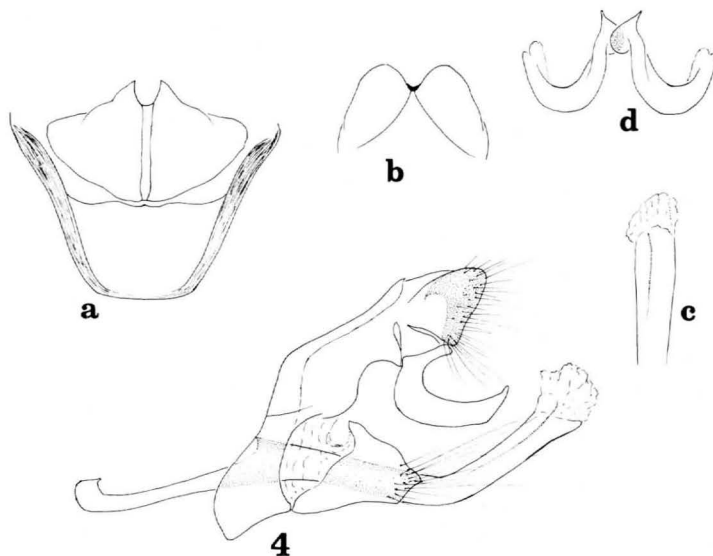


Figure 4. Male genitalia of *P. boreas* (Felder & Felder), lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen; (d) ventral view of falces.

wing. All markings are quite small in the male, and relatively large in the female (figs. 5B & 5D).

Paphlagon is another uncommon species found primarily in the foothills and medium elevations of the Andes from Venezuela to Peru and Bolivia. The type locality is Nova Granada (Colombia): Bogota. It is doubtful that *paphlagon* occurs at the elevation of Bogota's 2,500 meters. The specimen was more likely taken at a somewhat lower elevation in the Amazon or Orinoco River basins in Colombia. Weeks (1905) records the species from Chulumani, Bolivia. I have taken a single male at Puyo, Pastaza, Ecuador, 1,000 meters.

Specimens examined: **VENEZUELA:** MIRANDA - Caracas 1♂ 1♀ (USNM); ARAGUA - Rancho Grande 1♀ (N). **ECUADOR:** PASTAZA - Puyo, 1000m. 1♂ (N). **PERU:** HUANUCO - Tingo Maria 1♀ (AME).

***Panthiades ochus* (Godman & Salvin)**

Figs. 8A, 8B, 8C, 8D, 8E, 8F, 9, 10, 23

Thecla ochus Godman & Salvin, 1887, 2:55, 56, Tab LIV, figs 24-27. Draudt in Seitz, 1922, 5:779, pl 148f. Hoffman, 1940, p 712.

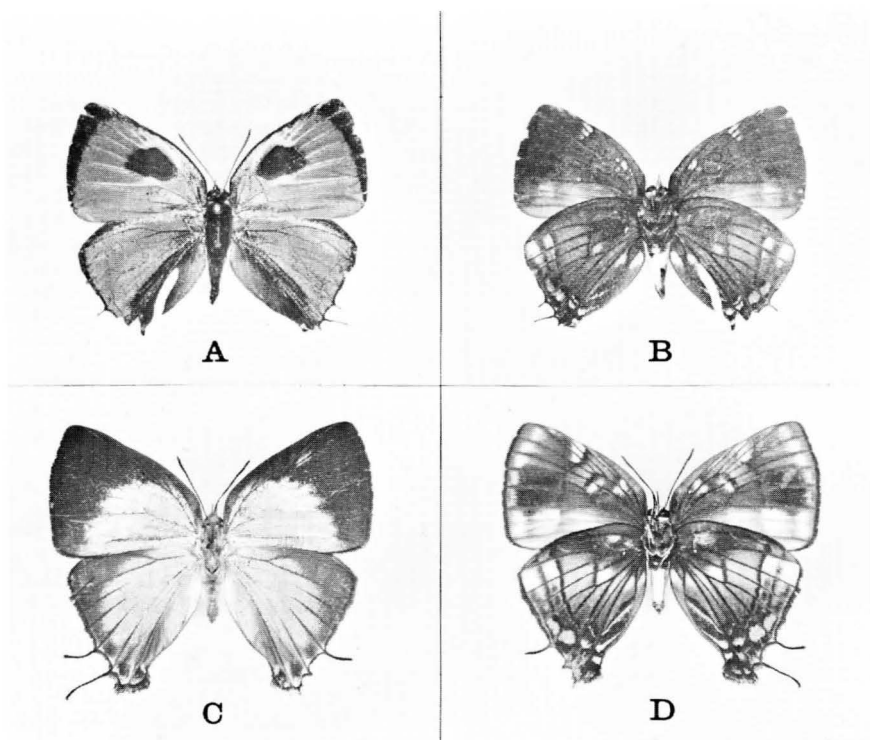


Figure 5. (A) *Panthiades paphlagon* (Felder & Felder) ♂, Puyo, Pastaza, Ecuador, 8 Dec. 1972, 1000m. (S.S. Nicolay); (B) underside of (A); (C) *P. paphlagon* ♀, Rancho Grande, Aragua, Venezuela, 20 Aug. 1955, (F.Y. Yepes); (D) underside of (C).

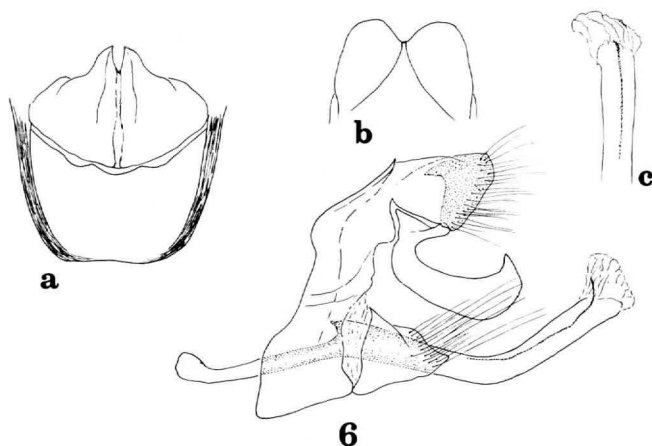


Figure 6. Male genitalia of *P. paphlagon* (Felder & Felder), lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

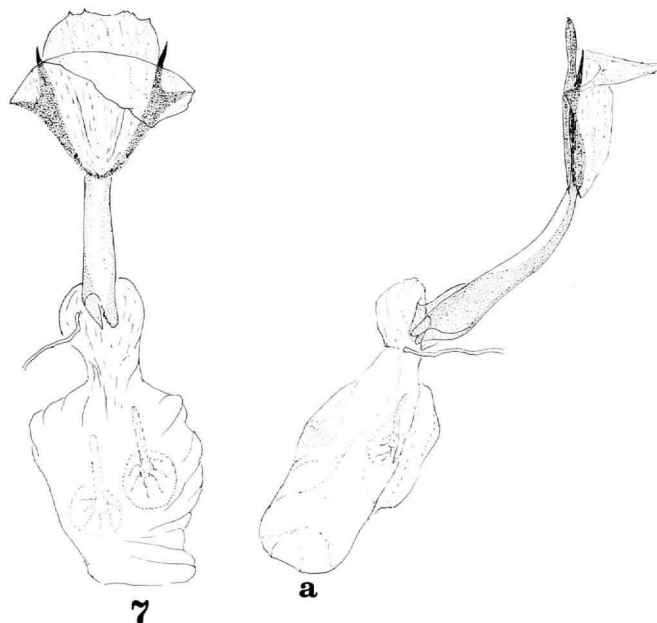


Figure 7. Female genitalia of *P. paphlagon*, ventral view with ovipositor removed; (a) lateral view.

The male upper wing surface of *ochus* is of the same brilliant, dark blue as *pelion* with very narrow black outer wing margins. The scent spot is very large, composed of the grey-ringed, chocolate-brown circle within the cell and an equally large black patch of specialized scales extending beyond the cell from whence a large black patch extends almost to the tornus in a broad arc. The size and extent of the black patch associated with the scent spot in *ochus* is quite variable. Specimens from the north and west coast of Mexico have a smaller black patch extending just beyond vein Cu_2 . Specimens from the southern parts of its range and

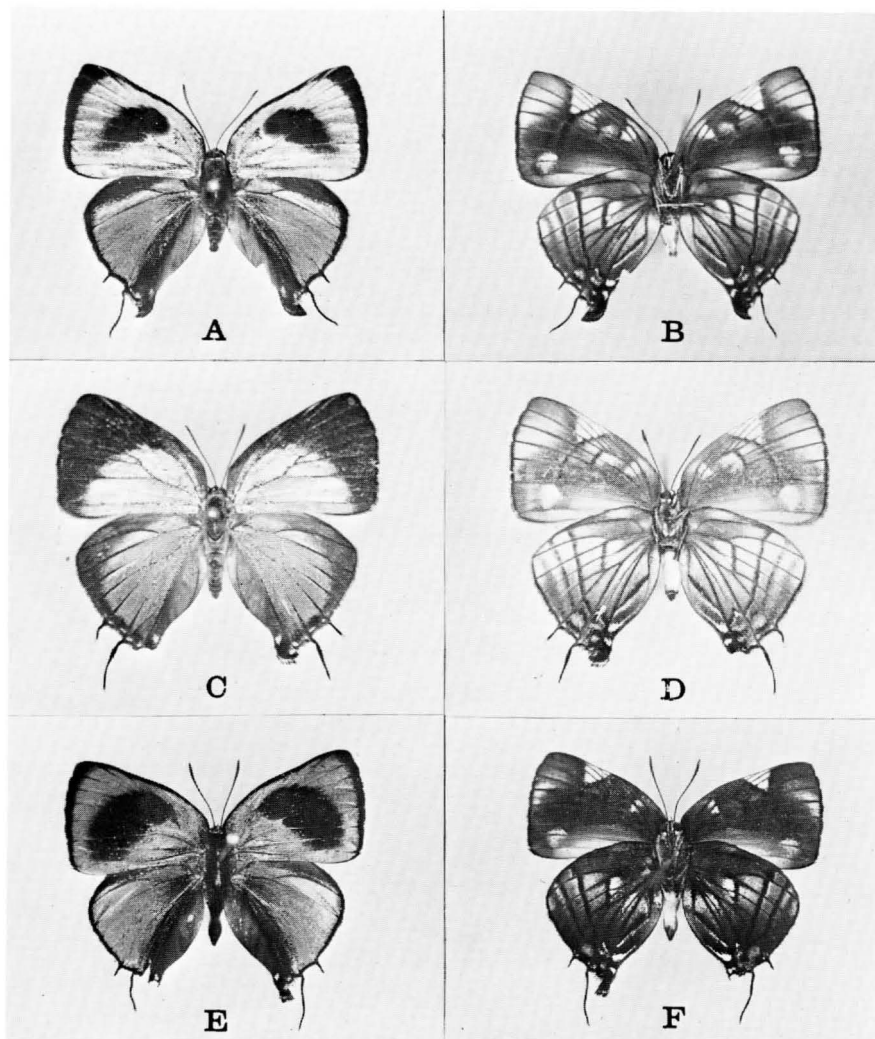


Figure 8. (A) *Panthiades ochus* (Godman & Salvin) ♂, Cerro San Jacinto, El Salvador, 800m. 30 Dec. 1972 (S. & L. Steinhauser); (B) underside of (A); (C) *P. ochus* ♀, same data as male above; (D) underside of (C); (E) *P. ochus* ♂, San-tecomapan, Vera Cruz, Mexico, May 1955 (T. Escalante); (F) underside of (E).

into Panama have a larger black patch that reaches vein 2A (Fig 8A & 8E respectively). This is not a consistent character, but varies in specimens with identical genitalia and in specimens from essentially the same locality.

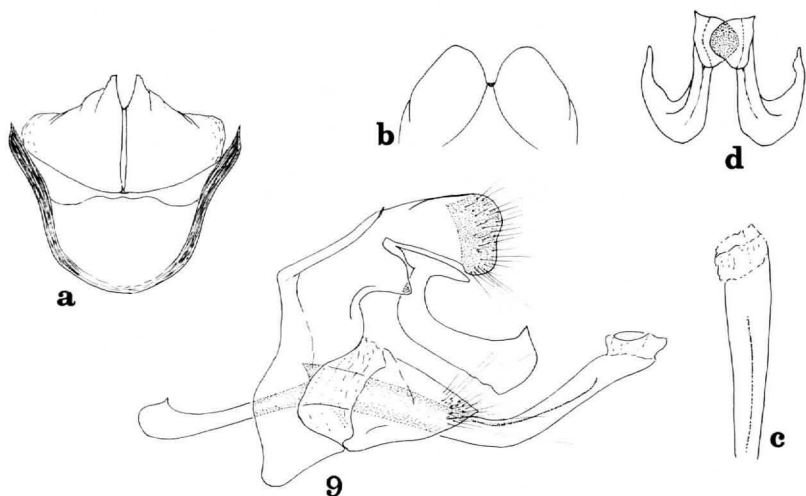


Figure 9. Male genitalia of *P. ochus* (G. & S.) lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen; (d) ventral view of falces.

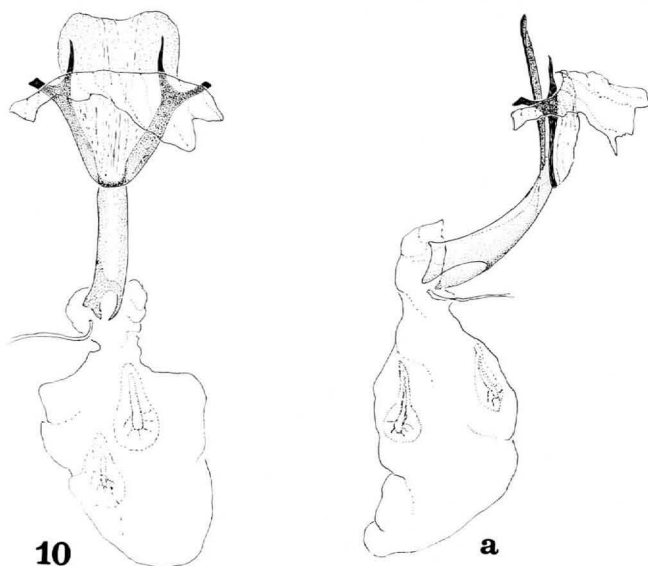


Figure 10. Female genitalia of *P. ochus*, ventral view with ovipositor removed; (a) lateral view.

The underside is black-brown with some darker veining, particularly in the hindwing. The mid-costal spot on the forewing is pure white, those along the outer margin white with cloudy overscaling. The hindwing pattern is extremely variable, the white spots of northern specimens and west coast specimens being far more extensive than those from further south and the east-central area. In some specimens, the spots of the apex, outer margin and median area are blended into a rather broad pale area extending across the entire wing. Again, these differences do not present consistent patterns that can be related to geographical areas for sub-specific designation. Perhaps with additional material, further study may reveal more definitive patterns that can be associated with a positive sub-specific designation.

The female is paler bright blue above with very broad dark margins on both wings (Fig. 8C). Below, the wing pattern is the same as the male but all specimens examined tend to be more profusely marked with pale spots and the pattern of both wings is more similar to that of male specimens from the northern part of the range (Fig. 8B).

The type locality of *P. ochus* is Guatemala and the range extends from northern Mexico to Panama. The Allyn Museum collection contains a good series of 13 males and 6 females from various localities in Mexico and additional specimens from other localities. In Panama it has been taken only at elevations from 700 to 1200 meters.

Specimens examined: **MEXICO:** SINALOA - Loberas Summit 2♂ (AME); GUERRERO - Acahuizolita 2♂ (AME); VERA CRUZ - Presidio 4♂ (AME, AM), Jalapa 1♂ 1♀ (USNM), Misantla 1♂ 1♀, Tuxpango 1♂ (AM), Santecumapan 2♂, Tampico 1♂, Santa Rosa Comitán 1♂, Catemaco 2♀ (AME); **CHIAPAS** - Lagos de Montebello 1♂ (AME). **BRITISH HONDURAS:** Sibun, Cayo Distr., 200m. 2♂ (CM). **GUATEMALA:** Barranca Honda 1♀ (AM), Cayuga 1♂ (USNM), San Cristobal Verapaz 1350m. 1♀ (CM). **NICARAGUA:** San Juan del Norte 1♂ (AM). **EL SALVADOR:** Cerro San Jacinto 800m. 2♂ 1♀, Santa Tecla 900m. 1♂, Tamanique 1000m. 1♀ (AME). **COSTA RICA:** No data 1♀ (USNM); CARTAGO PROV. - Moravia 3500ft. 1♂ (GS), Mt. Poas 1♀ (USNM). **PANAMA:** CHIRIQUI - Potrerillos 3500ft. 1♀; VERAGUAS - Santa Fe 850m. 1♂; PANAMA - Cerro Campana 2500ft. 2♂ 1♀ (GS).

***Panthiades bitias* (Cramer)**

Figs. 11A, 11B, 11C, 11D, 12, 13, 24

Papilio bitias Cramer, 1777, p 12, pl 104, fig E. Goeze, 1780, p 94. Herbst, 1800, vii, 313, pl 293, fig 9. Godart, 1824, p 626. Westwood, 1852, p 484. Comstock & Huntington, 1959, 67:164.

Brangas bitias, Hübner, 1819, p 80.

Thecla bitias, Hewitson, 1867, p 149. Draudt in Seitz, 1922, 5:779. Lewis, 1973, p 67, fig 44. Smart, 1975, p 172, fig 16.

Siderus bitias, Kaye, 1921, p 98. Barcant, 1970, p 111, pl 11, fig 1.

Thecla eribaea Hewitson, 1867, p 108, pl 42, figs 154, 155.

Papilio syncellus Cramer, 1780, 4:86, pl 334, figs A, B. Comstock & Huntington, 1964, 72:64.

Thecla syncellus, Hewitson, 1869, p 109, pl 46, figs 207, 208. *ibid.* 1874, p 183, pl 72, figs 553, 554. Hoffman, 1940, p 712. Draudt in Seitz, 1922, 5:779, pl 151i, k.

In recent years this species has been more commonly known by the name *syncellus*. However, the laws of priority must be observed, and, although Cramer created his own synonym, *bitias* must prevail. It is the most common and widespread species in the genus. Recent popular books that include the Neotropical butterflies such as Barcant (1970), Lewis (1973) and Smart (1975) contain excellent color plates or photographs of this species so a detailed description here is considered

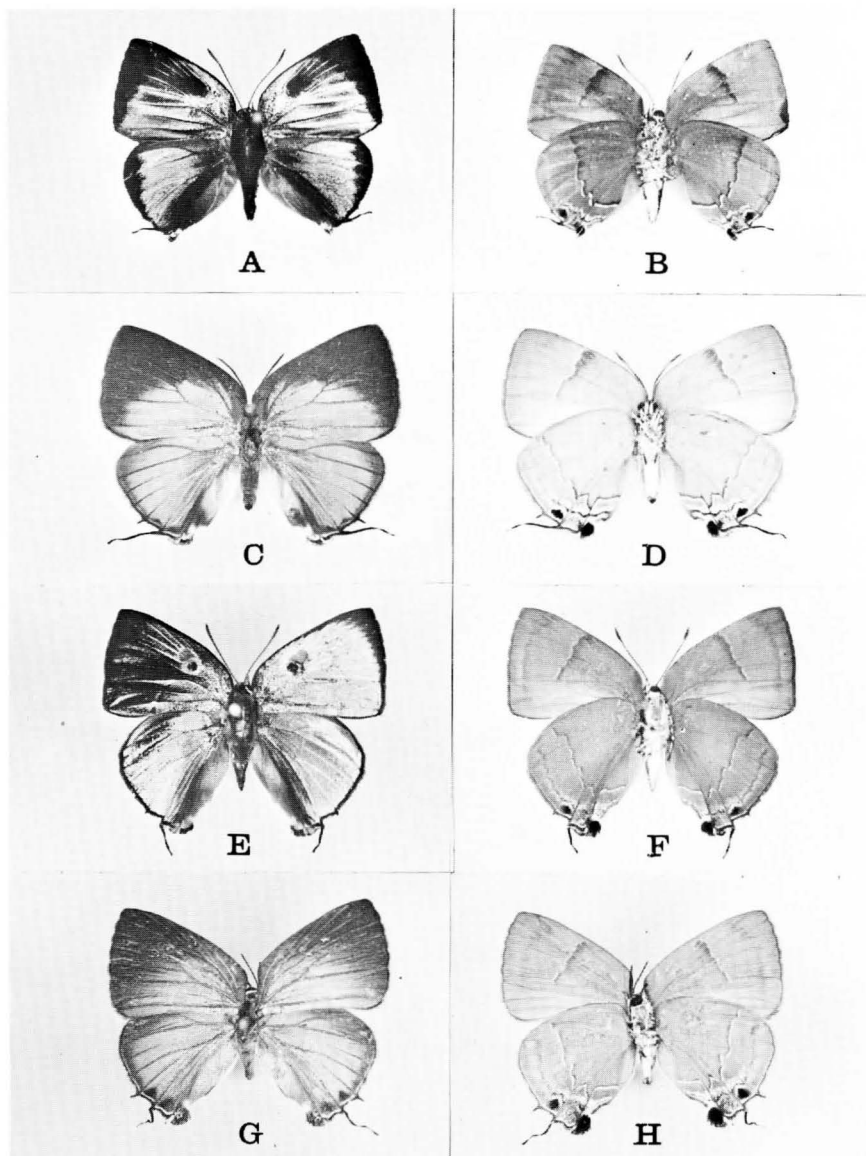


Figure 11. (A) *Panthiades bitias* (Cramer) ♂, Madden Forest, Canal Zone, 7 Feb. 1968 (S.S. Nicolay); (B) underside of (A); (C) *P. bitias* ♀, Belem (Para) Brazil, May 1962; (D) underside of (C); (E) *P. bitias sierrae* (Dyar) ♂, Huajantlan, Moreos, Mexico, July 1955 (T. Escacante); (F) underside of (E); (G) *P. bitias sierrae* ♀ Colima, Colima, Mexico, 1600 ft., 16 Oct. 1967 (R. Wind); (H) underside of (G).

unnecessary.

The male genitalia are somewhat aberrant in that the single cornutus appears fragmented at the very end (Fig 12B). The result is two cornuti if one is to consider the short splinter projecting beyond the long primary cornutus as a separate entity. The character is quite constant in a number of dissections.

I have noted that male specimens collected in the higher altitudes (approximately 1000 meters or more) of Mexico and some Central American countries and in the Planalto region of Brazil are a brighter, somewhat paler blue with narrower black wing margins and less angular wing shape than *bitias* from typical lowland rainforests. *Bitias* is a variable species and much of this variability appears related to a changed altitude environment rather than to the usual geographic or seasonal change.

Bitias is very widely distributed throughout Mexico, Central and South America. It is found most commonly in primary rainforests, but adapts very well to second-growth environments. The type locality is Surinam. The Allyn Museum collection contains an extensive series of both sexes, representing a large portion of its range.

Specimens examined: **MEXICO**: No data 3♂ 4♀ (AME, USNM); **TAMAULIPAS** - Gomez Farias 280-700m. 9♂ 6♀ (AME, CM); **SAN LUIS POTOSI** - El Salto 5♂ 1♀, Cd. Valles 38♂ 7♀ (AME, CM); **VERA CRUZ** - Presidio 6♂ 7♀ (AME, AM, CM), Jalapa 3♂ 2♀ (CM, AM), Santa Rosa, Rinconda, Cordoba, Rio Blanco, Almoloya de Alaquinias, Catamaco 2♂ 5♀ (USNM, AME, AM); **GUERRERO** - Progreso, Acapulco 1♂ 1♀ (AM); **OAXACA** - San Jose Chiltepec 1♂ 1♀ (CM, AM), Tuxtepec, Tapantepec 7♂ 1♀ (AME); **CHIAPAS** - Bombana, Tapachula, San Quintin, El Ocotal, Cd. Cuauhtemoc, Pichucalco 6♂ 5♀ (AME); **YUCATAN** - Pistec, Chichen Itza 2♀ (CM); **QUINTANA ROO** - Xcanha 8♂ 1♀ (CM, AME). **BRITISH HONDURAS**: Middlesex, Stann Cr. Distr., Camp Sibun, Cayo Distr. 2♂ 2♀ (CM). **HONDURAS**: Tela 1♀ (AM). **GUATEMALA**: No data 1♂ (AME); Sayaxche, El Peten 5♂ 4♀ (AM), Cayuga 3♂ 1♀ (USNM, CM), Quigua, Zacapa, San Sebastian Retalhuleu, Gualan 6♀ (CM, USNM). **NICARAGUA**: Sta. Domingo 1♀ (AME). **COSTA RICA**: Guapiles 7♂ 3♀ (USNM, CM); Carillo, Sixola River, Avangares 1♂ 3♀ (AME, CM); Volcan Irazu 8000ft. 1♂, Puntarenas 1♂ (AME). **ELSALVADOR**: La Libertad 6♂ 4♀, Santa Tecla 4♂ 6♀ (AME, N); Cerro San Jacinto 2♂ 1♀, San Salvador, Los Chorrros 3♂ (AME), Rosario Cuzcatlan 3♂ 1♀ (N). **PANAMA**: CHIRIQUI - Potrerillos 1♀ (N), Bugaba 1♀ (USNM); **PANAMA PROV.** - Arraijan

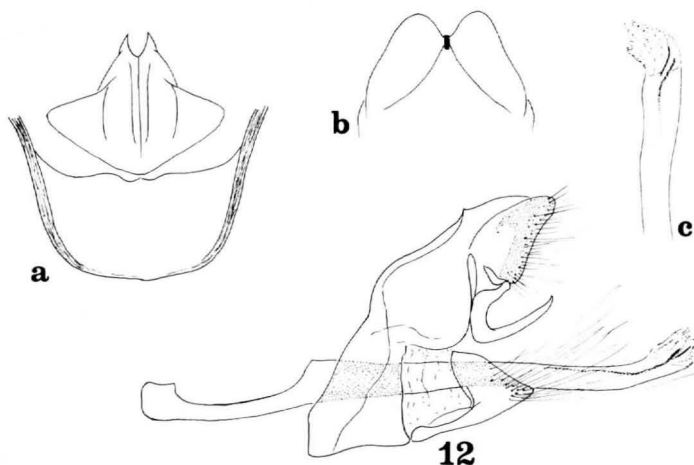


Figure 12. Male genitalia of *P. bitias* (Cramer), lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

1♀, Porto Bello 1♂ (AM); CANAL ZONE - Madden Forest, Madden Dam, Cocoli, Rodman Naval Sta., Farfan, La Pita, Gatun, Summit, Ft. Clayton, Barro Colorado, Cozumel, Empire, La Boca, Pina 40♂ 42♀ (AME, USNM, CM, AM, GS N). **COLOMBIA**: No data 2♂ 3♀ (AM); VALLE DEL CAUCA - Cali 11♂ 2♀ (AME, AM); MAGDALENA VALLEY - Casabe, Barrancabermeja 12♂ 4♀ (AME, AM), Don Diego, Honda, Cacaqualito, Onaca El Centro 16♂ 5♀ (CM, AM); CUNDINIMARCA - Bogota 1♂ 1♀ (USNM, CM); CALDAS - Victoria 1♂ (N); CAQUETA - Rio Bodoquero, Montañita 3♂ 2♀ (N); AMAZONAS - Loretayacu, Rio Cocorna, Macayacu, Rio Opon, Rio Tacana 5♂ 5♀ (AM). **VENEZUELA**: No data 1♂ 2♀ (CM); AMACURO - Rio Acure 5♂ 1♀ (AME); MONOGAS - Barrancas 2♀, Rio Aguiro 1♀ (AME); San Esteban 1♂ (AM); Maturin 1♀ (N); Las Quiguas, Esteban Valley 3♂ 4♀ (CM). **TRINIDAD**: 14♂ 14♀ (AME, AM, CM). **BRITISH GUIANA**: Bartica, Potaro River, Wismar, Kartabo, St. Laurent 8♂ 5♀ (AME, AM, CM). **FRENCH GUIANA**: Crique Sparouine 9♂ (AME); Oyapok River, Mana River, Cayenne, St. Jean Maroni 7♂ 7♀ (USNM, CM). **SURINAM**: Saramacca River 1♂ (AME). **BRAZIL**: PARA - Belem 10♂ 2♀ (N), Obidos 40♂ 10♀ (AME, AM, N), Igarape Acu 3♂ 7♀ (AME, AM), Santarem 3♂ 2♀ (AME); Benevides 16♂ 1♀ (CN); AMAZONAS - Manaus 6♂ 1♀ (AME), S. Paulo de Olivenca 11♂ (AME, CM), Manacapuru 18♂ (CM), Teffe 20♂ 1♀ (AME), Ypiranga 14♂, Manicore 1♂, Maues 1♂ (AME); BAHIA - Utinga 1♂ 1♀ (AME). **ECUADOR**: El Oro 1♂ (CM). **PERU**: No data 3♂ 2♀ (CM, AME); LORETO - Iquitos 12♂ 2♀ (AME, AM), Rio Putumayo 2♂ (AM), Pucallpa 3♂ 1♀ (AME), Rio Santiago, Rio Ucayali, Achinamiza, Ollantaitambe 4♂ (AM); HUANUCO - Tingo Maria 2♂ 1♀ ((AME); JUNIN - Satipo 1♂ (CM). **BOLIVIA**: SANTA CRUZ - 1♂ (AM), Portachuelo 1♂, Rio Surutu 350m. 9♂ 2♀, Quatro Ojos 3♂ 2♀, Las Juntas 200m. 22♂ 4♀, Rio Yapacani 600m. 2♀, Buena Vista 400-450m. 14♂ 9♀ (CM).

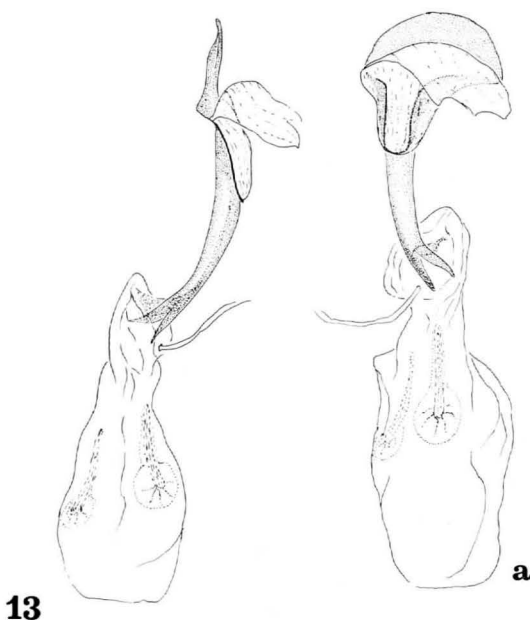


Figure 13. Female genitalia of *P. bitias*, lateral view with ovipositor removed; (a) ventral view.

Panthiades bitias sierrae (Dyar)

Figs. 11E, 11F, 11G, 11H, 24

Thecla syncellus sierrae Dyar, 1919, 51:2. Hoffman, 1940, p 712. Comstock & Huntington 1963, 71:189.

Thecla syncellus deserta Draudt in Seitz, 1922, 5:779, pl 151k. Comstock & Huntington, 1959, 67:205.

Sierrae is a paler, but brighter blue subspecies of *bitias* found as stated so aptly by Hoffman (1920) "Tierras caliente y templada-calidada de la Region costena del Pacifico: Oaxaca, Guerrero, Jalisco, Colima. Cuenca inferior del Rio Balsas."

The black outer margins of both wing upper surfaces of the male are very narrow, the costa of the forewing straighter and the apex less acutely angled than in typical *bitias*. Females of *sierrae* show far less variation from the females of nominate *bitias*, and, in some of the border regions of its rather limited range, it is indeed difficult to be precise in the determination of some specimens.

The type locality is Sierra de Guerrero, Mexico.

Specimens examined: **MEXICO**: No data 1♂ 1♀ (USNM, AME); "Southern Mexico" 1♂ 1♀ (CM); SINALOA - Potrerillos 1820m. 1♀; NAYARIT - No data 1♀ (AM), Compostela 780m. 1♀ (AME); COLIMA - Comala 2100ft. 9♂ 5♀ (AME, CM), Colima 18♂ 15♀ (AME, AM); JALISCO - Guadalajara 1♂ (AM); MICHOACAN-Coahuayana 3♀ (AME); MORELOS - Cocozotla 4♂ 3♀, Cuernavaca 2♂ 3♀, Huejintlan 1♂, Xochicalco 1400m. 1♂ (AME); GUERRERO - Acapulco 1♂, Sierra de Guerrero 3♂, Tierra Colorado 1♂ (USNM), Acahuizolita 3♂ 3♀, Colotlipa 1020m. 1♂, Coyuca 1♂ (AME).

Panthiades hebraeus (Hewitson)

Figs. 14A, 14B, 14C, 14D, 24

Thecla hebraeus Hewitson, 1867, p 104, pl 43, figs 165, 166. Herrich-Schaffer, 1869, p 56. *ibid.* 1870, p 25. Kirby, 1871, p 390. Draudt in Seitz, 1922, 5:779, pl 151k. Comstock & Huntington, 1960, 68:178.

This species is very closely related to *P. bitias* in the form of the male genitalia, the brilliant, iridescent blue and very narrow black margins of the wing upper surfaces. The male of *hebraeus* looks very much like the male of *P. bitias sierrae*. The scent spot is small, and composed of three distinct parts; within the cell, a round dark brown center encircled by a narrow band of silky, grey scales. Outside the cell end but touching the grey band is a small square patch of scales. On the underside the wings are brownish-grey, marked on both wings by dark brown bars and patches of an indefinite pattern. The female upperside blue is much less intense and the outer margins on both wings, but particularly the forewings, are wide and dark brown. The underside wing color is slightly paler in most specimens examined, and the dark markings are like those of the male.

According to Dr. Ebert, typical *hebraeus* is found from southern Bahia northward along the Atlantic coast to Paraiba and inland into the states of Minas Gerais and Goias.

The type locality is the State of Bahia, Brazil.

Specimens examined: **BRAZIL**: PERNAMBUCO - No locality 1♀ (AM); FEDERAL DISTRICT - Brazilia 1♂ 3♀ (KB), Parque do Gama 1♂ 2♀ (KB, N); MINAS GERAIS - Belo Horizonte 4♀ (KB), Leitaõ 1♂ 2♀ (KB, N); RIO DE JANEIRO - Xerem 1♀ (KB), Teresopolis 1♀ (KB); ESPIRITU SANTO - Santa Teresa 1♀ (KB).

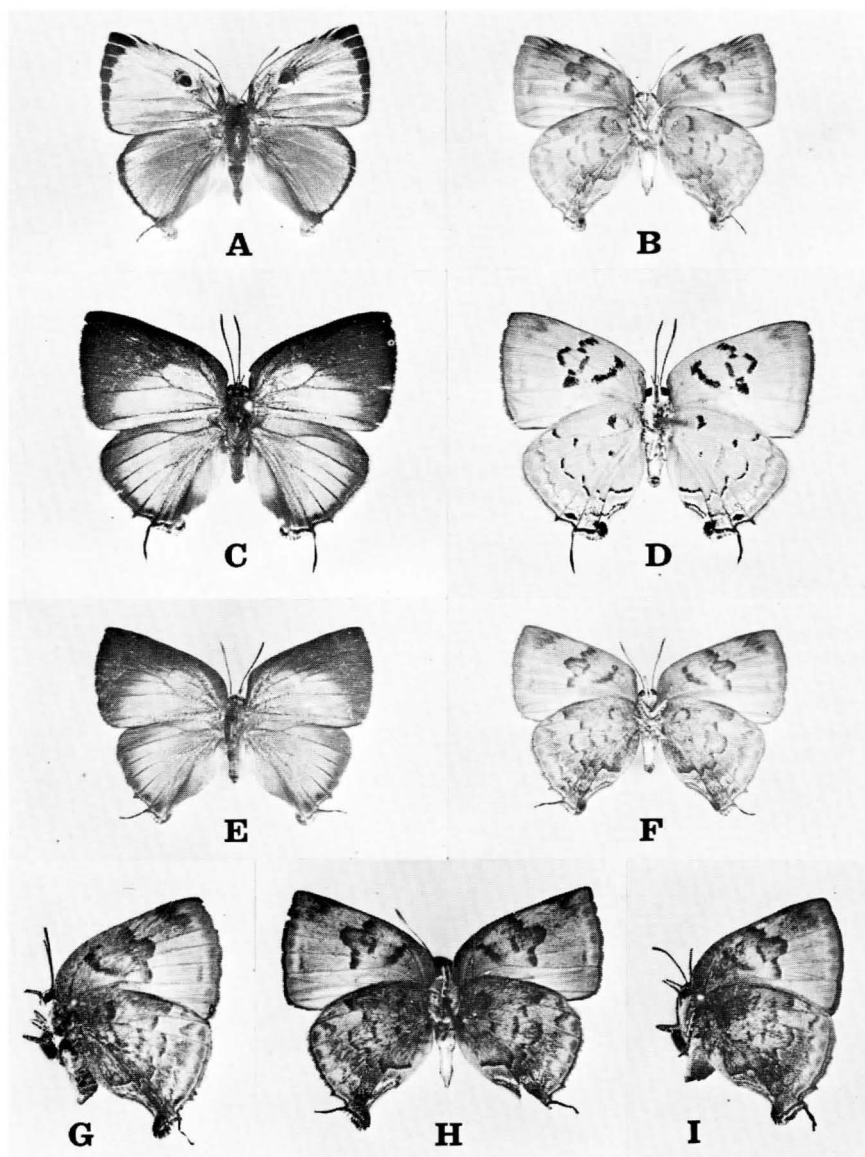


Figure 14. (A) *Panthiades hebraeus* (Hewitson) ♂, Leitao, Minas Gerais, Brazil, 12 May 1969 (S.S. Nicolay); (B) underside of (A); *P. hebraeus* ♀, Pernambuco, Brazil; (D) underside of (C); (E) *Panthiades hebraeus cimelium* (Gosse) ♀, Nova Teutonia, Santa Catarina, Brazil, 3 March 1954 (Fritz Plaumann); (F) underside of (E); (G) underside *P. h. cimelium* ♀ Rio de Janeiro, Brazil, 11 May 1964 (K. Brown); (H) underside *P. h. cimelium* ♂ Nova Teutonia, S.C., Brazil, 3 March 1954 (Fritz Plaumann); (I) underside *P. h. cimelium* ♀, Guapimirim, Rio de Janeiro, Brazil, 15 July (K. Brown).

Panthiades hebraeus cimelium (Gosse)

Figs. 14E, 14F, 14G, 14H, 15, 16, 24

Thecla cimelium Gosse, 1880, vo xiii, 203, pl 2, fig 2. Druce, 1907, pp 593, 594.Draudt in Seitz, 1922, 5:779, pl 151k. Dufrane, 1939, p 290. Hayward, 1951, p 134. *ibid.* 1958, p 19. Comstock & Huntington, 1959, 67:186.*Thecla hebraeus cimelium*, Brown & Mielke, 1967, 21:152. Ebert, 1970, 24:41.

Druce (1907) was somewhat inconclusive in his remarks on the species *cimelium* and its relationship to *hebraeus*. Although he pointed out its obvious differences from *P. bitias* (*syncellus*), it is clear Gosse did not know the existence of *hebraeus* when writing his description of *cimelium*.

In response to my question regarding this subject, Dr. Ebert writes (pers. comm.) "... That *hebraeus* and *cimelium* belong to one species is without any doubt. There are transitional forms." I have examined the genitalia of both male and female specimens of both *hebraeus* and *cimelium* and find no definable differences. I have critically examined the underside wing patterns of a fair series of both species received from Dr. Keith Brown who collected them in various localities both inland and along the mid-Atlantic coastal areas of Brazil in addition to a small series of *cimelium* from further south in the state of Santa Catarina. The few specimens from the above series collected in the outer limits of their respective ranges show rather definitive and recognizable underside wing patterns; a somewhat broken and blurred pattern in *cimelium* and a more clearly defined pattern of bars and spots in *hebraeus*. However, the majority of specimens from what is quite obviously the very large blend zone of east-central Brazil where transitional forms fly together and have pattern characters referable to either or both *hebraeus* and *cimelium*. I can find no consistent definable difference on the upper wing surfaces of either species in males or females.

According to Dr. Ebert, *cimelium* flies from the state of Espirito Santo south along the Atlantic coast states to northern Argentina. The type locality is Paraguay.

Specimens examined: **BRAZIL**: ESPIRITO SANTO - Baixo 1♂ (AME); RIO DE JANEIRO 2♀ (KB, N), Guapimirim 1♀ (KB); SAO PAULO -

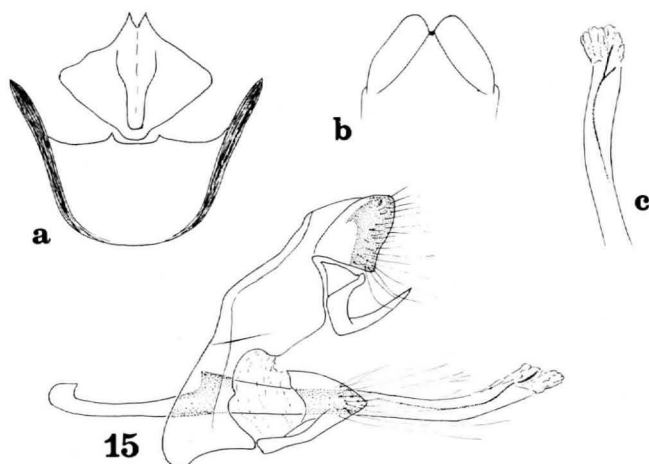


Figure 15. Male genitalia of *P. hebraeus cimelium* (Gosse), lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus; (c) ventral view of aedeagus termen.

Campo Alegre 1♀, Araras 1♀ (N); SANTA CATARINA - Nova Teutonia 2♂ 3♀ (N), Joinville 1♂ (N), Massaranduba-Blumenau 4♂ (AM). PARAGUAY: No data 2♀ (USNM, AM), Sapucay 3♂ (USNM), Villarica 1♂ (AME).

Panhiades battus (Cramer)

Figs. 17A, 17B, 17C, 17D, 18, 19, 25

Papilio battus Cramer, 1775, 1:81, pl 51, figs E. F. Goeze, 1780, p 87. Godart, 1824, p 628.

Papilio bathis Fabricius, 1781, 2:116. Comstock & Huntington, 1959, 67:92.

Thecla battus, Doubleday, 1847, p 38, Westwood, 1852, p 483. Ménétriés, 1855, p 54. Weidemeyer, 1864, p 543. Hewitson, 1867, p 84. Kirby, 1871, p 383. Möschler, 1876, p 300. Kirby, 1879, p 154. Draudt in Seitz, 1922, 5:752, pl 150a. Huntington, 1932, p 210. Talbot, 1932, p 203. Comstock & Huntington, 1959, 67:93.

Panhiades battus, Butler, 1870, p 198.

Cynus battus, Smart, 1975, p 172. fig 11.

On the upper surface, the male looks quite similar to that of *P. hebraeus*, but with the obvious addition of a large orange-yellow anal lobe spot. *Battus* males are of the same intense, bright blue with narrow, black outer margins on both wings. The male scent spot is of the same small tri-partite composition with a small, round dark center, encircled by pale silky-grey scaling with an adjacent and touching small patch of scales outside the cell. The underside is dark charcoal grey-brown patterned with broad, white stripes on both wings. The female looks like that of no other species in the genus. On the upperside the wings are pale, grey-white, faintly overscaled in pale blue with broad, dark brown outer margins. On the underside the pattern is like the male, but with even broader white stripes and an enlarged yellow-orange anal spot extending up the hind wing outer margin to Cu₁.

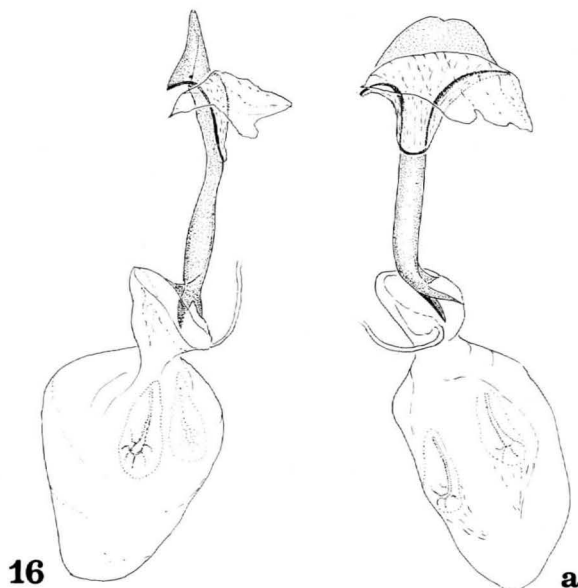


Figure 16. Female genitalia of *P. hebraeus cimelium*, lateral view with ovipositor removed; (a) ventral view.

I have wondered what prompted Butler (1870) to place *battus* in *Panthiades*. Based on wing pattern and other clearly visible external characters, the species seems no more closely related to *pelion* than many other Neotropical hairstreaks. Yet, in addition to features covered in the generic description, the genitalia of both male and female in *battus* and *pelion* are strikingly similar and prove a relationship well within the parameters of this genus. Many past authors and collectors have placed *battus* and *Cynus phaleros* Linnaeus together in literature as well as in collection arrangement. The two are quite similar in overall appearance and share many structural similarities, but do belong to different genera.

Nominate *battus* was described from Surinam and occurs rather sparingly in the northern tier of countries across the South American continent in Venezuela, Colombia, Ecuador and Peru. I have a pair of specimens from Belem, Brazil, but have seen no specimens from south of that point on the Atlantic side of the continent.

Specimens examined: **COLOMBIA**: VALLE DEL CAUCA - Cali 6♂ 6♀ (AME, AM, N); Rio Dagua, Rio El Salado 2♂ (AME); MAGDALENA VALLEY - Casabe, Barancabermeja 3♂ 3♀ (AM); CALDAS - Calidra 2♂ 1♀ (AM); San Fortunato Bonis 2♂ (CM). **VENEZUELA**: Rio Aguiro 1♂ (AME), El Yanque, Sucre 1♂, Mts. of Merida 1♂ (CM); Aroa 4♂ 1♀ (USNM). **TRINIDAD**: No data 1♀ (AME). **BRAZIL**: PARA - Belem 1♂ 1♀ (N). **ECUADOR**: Porto Belo 760m. 1♂ (AM). **PERU**: Upper Rio Marañon 1♂ 1♀ (AM); HUANUCO - Tingo Maria 1♂ (AME). **CHILE** (?): 1♀ (CM).

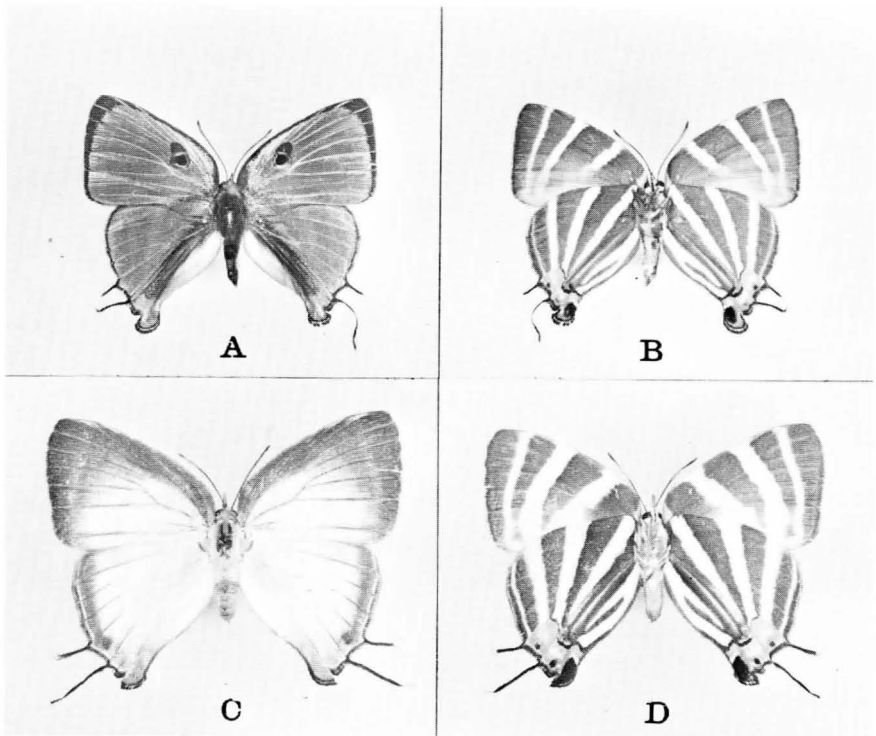


Figure 17. (A) *Panthiades battus jala* (Reakirt) ♂, Cerro Campana, Panama, 18 Feb. 1963, 700m. (S. S. Nicolay); (B) underside of (A); (C) *P. battus jala* ♀ Cerro Campana, Panama, 28 Jan. 1965, 700m. (S. S. Nicolay); (D) underside of (C).

Panthiades battus jalan (Reakirt)

Figs. 17A, 17B, 17C, 17D, 18, 19, 25

Thecla jalan Reakirt, 1866, p 337. Kirby, 1871, p 401. Comstock & Huntington, 1961, 69:54.

Thecla aufidena Hewitson, 1869, 1:117, 2: pl 47, figs 213, 214. Godman & Salvin, 1887, p 22, Tab L, figs 1, 2, 3. Draudt in Seitz, 1922, 5:752. Hoffman, 1940, p 205. Comstock & Huntington, 1959, 67:84.

Cynus battus, Smart, 1975, p 172, fig 12.

The main difference between *jalan* and the nominate species is the deep violet-blue color on the upperside of the male and the more extensive orange-yellow anal spot on the underside of the hindwing in the female. The genitalia are identical.

Jalan is widely distributed from Mexico to the Republic of Panama. Unlike *battus* it is locally quite common and is unchanged in habitus throughout its range. The type locality is Vera Cruz, Mexico.

Specimens examined: **MEXICO**: No data 5♂ 1♀ (USNM, AM); TAMAULIPAS - Victoria 1♂, Gomez Farias 1♂ 5♀, Tampico 1♀ (AME, CM); SAN LUIS POTOSI - San Isidoro 1♂, Capiloloya 1♀, Cordoba 1♀ (AM), Tamazunchale 4♀, Cd. Valles 39♂ 1♀, El Salto 1♂ (AME, CM, AM); VERA CRUZ - Presidio 8♂ 2♀ (AME, AM), Minatitlan 1♂, Jesus Carranza 1♂, Mirador 1♂, Jalapa 3♂ (AM, USNM), Catemaco 2♀, Anton Lizardo 1♀, Alvarado 1♂, Nanchital 1♀ (AME), Jicaltepec 1♀, Cordoba 2♂ 3♀, Motzorongo 1♂, Santa Rosa 2♀, Coatepec 1♂, Santa Lucrecia 2♂ (USNM), Coatzacoalcas 1♂ 2♀, Alvarado 1♂, Cardel 1♂ (CM); SINALOA - Mazatlan 1♂ 9♀ (CM, AM); NAYARIT - No data 2♂ (AM), Madero 1♂, Sta. Maria del Oro 1♀, Zapata 1♀ (AME); JALISCO - No data 1♂ (CM), Ajijic 15♂ 3♀ (CM); MICHOACAN - Coahuayana 1♂ 1♀ (AME); COLIMA - No data 1♂ (CM), Colima 5♂ 1♀ (AME, AM, CM), Comala 5♂ 1♀ (CM), Manzanillo 1♂ (AM); TABASCO - Tepescuintle 6♂ 4♀ (AM), La Venta 3♂ (AME); FEDERAL DISTRICT - S. Angel 1♂ (AM); MORELOS - Canyon de Lobo 1♂ (AME); GUERRERO - Jugu del Obispo 1♀ (AM), Acahuizolta 2♂ (AME); OAXACA - San Jose Chiltepec 9♂ 7♀ (CM), Tuxtepec 9♂ 1♀ (AME); CHIAPAS - Mapastepec 1♂, Palenque 3♀ (CM), San Carlos, Ocotal, Tapachula,

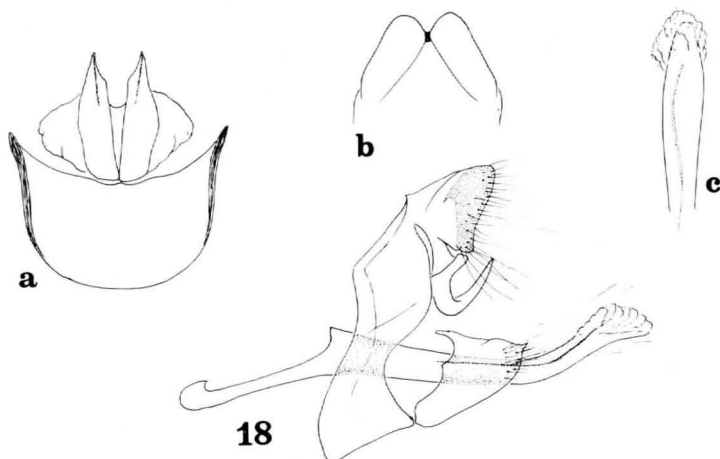


Figure 18. Male genitalia of *P. battus jalan* (Reakirt), lateral view with aedeagus in place; (a) ventral view of vinculum with valvae in place; (b) dorsal view of uncus (c) ventral view of aedeagus termen.

Oxchuc, Bonampak, San Quintin 12♂ 3♀ (AME), Pichucalco 39♂ 21♀ (AME); YUCATAN - Chichen Itza, Pisté 9♂ 2♀ (CM, N); QUINTANA ROO - Xcanha 1♀, Cozumel Isl. 1♂ (CM); "Southern Mexico" 1♂ (CM). **BRITISH HONDURAS:** Middlesex Stann Distr. 1♂ 1♀ (CM), Hummingbird Hwy., Placila 2♂ 1♀ (AME). **HONDURAS:** No data 3♂ 3♀ (USNM, CM); La Ceiba 1♂ 1♀ (AM). **NICARAGUA:** Diriamba 1♀ (AME). **GUATEMALA:** No data 5♂ 4♀ (USNM, CM, AME); Quirigua 2♂ 2♀ (USNM, CM), Sayaaaxche, El Peten 5♂ 3♀ (AM, CM); Beleu, Verapaz, San Cristobal Tamahu 7♂ 3♀ (AME, AM, CM); Esquintla, Cayuga, San Sebastian, Retaluleu, Piedras Negras, Fiscal, Puerto Barrios 6♂ 4♀ (CM, AM, USNM). **EL SALVADOR:** Rosario Cuzcatlan, Santa Tecla 24♂ 9♀ (AME, N), San Salvador 2♂ Candelaria 1♂, La Libertad 1♂ (AME). **COSTA RICA:** Juan Viñas, Carillo, San Mateo, Guapiles 5♂ 3♀ (USNM, CM), Cartago, Hda. El Rodeo, Libano Guanacaste 2♂ 2♀ (AM); Turrialba, Puntarenas, San Antonio 2♂ 1♀ (AME). **PANAMA:** CHIRIQUI - No data 2♂ 2♀ (CM, AM), Potrerillos 1♂ 2♀ (GS, N), Bugaba 1♂ (USNM); PANAMA PROV. - Cerro Campana 8♂ 20♀ (AME, GS, N); CANAL ZONE - La Pita, Farfan, Madden Forest, Madden Dam, Gatun, Los Rios, Pina, Ft. Clayton, Cocoli, Rodman Naval Sta., Coco Solo 37♂ 41♀ (AME, AM, USNM, CM, GS, N); DARIEN - Rio Trinidad 1♂ (AM), La Jaque, Pacora 1♂ (AM).

I have critically examined a substantial number of species that appeared related to or that might possibly be associated with the genus *Cycnus* Hubner. Thus far, the genus remains monotypical, with *phaleros* Linnaeus, the type species, being the only one currently in the genus. Other workers in the Neotropical Lycaenidae may, at some future date, place *phaleros* in the genus *Panthiades* with which it is very closely allied. But until such time as the entire spectrum of species likely to be associated with this group has been thoroughly studied, I prefer to retain the two genera *Panthiades* and *Cycnus* as separate entities. The basis for this decision is contained in the detailed comparison of the genera with one another and with the genus *Parrhasius*.

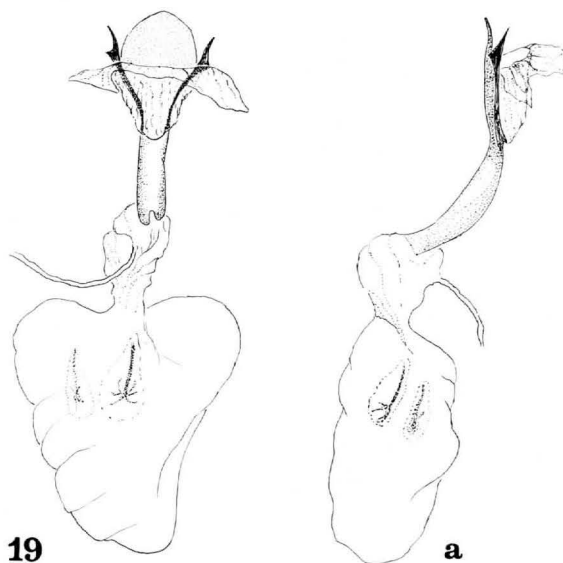


Figure 19. Female genitalia of *P. battus jalan*, ventral view with ovipositor removed; (a) lateral view.

Genus *Cycnus* Hubner, 1819

Type species: *Papilio phaleros* Linnaeus 1767.

Hind wing with two tails, the shorter at the end of vein Cu_1 , the longer at the end of Cu_2 ; anal angle lobed, partially cleft. Male with a scent spot on forewing. Abdomen cream colored beneath, above dark brown. Palpi short, porrect, heavily scaled, terminal segment less than one-half the length of the second. Eyes densely covered with short, erect bristles. Antennae half the length of the costa, the club gradually thickened to twice the diameter of the stalk.

Male genitalia relatively stout, moderately chitinous, with a stout, broad saccus, anteriorly drawn to a rounded point, length two to three times that of the narrowest vinculum width. Valvae short, stout, moderately flared, completely conjoined at the base. Falces rounded, moderately angular with a slightly compressed pointed termen. Aedeagus stout, slightly curved dorsally at the terminal end, with a single slender cornutus.

Female bursa copulatrix with a long funnel-shaped ostium bursae, the dorsal plate fan-shaped, convex, moderately sclerotized, the ventral posterior portion a semi-membraneous pouch; the ductus bursae heavily chitinous on the ventral surface, less so dorsally, moderately stout, opening directly into the corpus bursae. The corpus bursae large, slightly constricted about one-quarter of the length

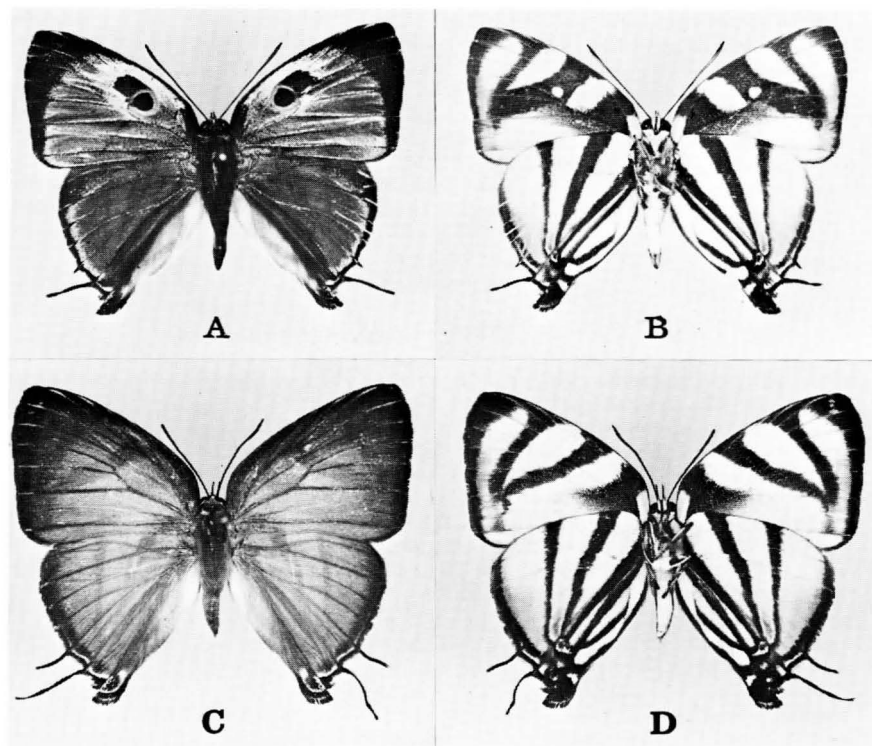


Figure 20. (A) *Cycnus phaleros* (Linnaeus) ♂, Farfan, Canal Zone, Panama, 15 Feb. 1963 (S. S. Nicolay); (B) underside of (A); (C) *C. phaleros* ♀, Cerro Campana, Panama, 1 Feb. 1965 (S. S. Nicolay); (D) underside of (C).

beyond the cervix bursae, adorned with two long, narrow, rectangular, complex signa; the ductus seminalis enters on the ventro-lateral side of the cervix bursae.

It is at once obvious that the two genera *Panthiades* and *Cycnus* are extraordinarily close in the similarity of external wing patterns and the composition of the male scent spot on the forewing in the two species *P. battus* and *C. phaleros*. This similarity is extended as well in the complex of characters that comprise the male and female genitalia of all species in both genera. In the female bursae copulatrix of *Cycnus*, the corpus bursae is less modified and constricted, the signa clearly rectangular and of more positive definition; the corpus bursae of *Panthiades* is more modified, the ductus bursae more heavily chitinous and stout, the signa less clearly defined and more complex than those of *Cycnus*. That the signa of both genera evolved from a single common ancestral form is highly probable. In the male genitalia, *Cycnus* has a relatively well-developed saccus, the vinculum narrow, the falces rounded and less angular than *Panthiades* which has a broad, heavily chitinous vinculum with no developed anterior extension; the falces are flattened, stout and angular.

The features that distinguish *Cycnus* from *Parrhasius* are very obvious, although both genera have some similarities, particularly in the complex of structures that make up the male genitalia. Both have a positive development of the saccus, but *Cycnus* species have a cornutus within the aedeagus and a rather narrow vinculum; *Parrhasius* species have no cornutus within the aedeagus and the vinculum is broad and heavily chitinous. Although somewhat variable in *Parrhasius*, the male scent spot is generally a simple, round patch of specialized scales lying across the transverse vein in the end of the cell; that of *Cycnus* is a complex of scales lying within and outside the cell. The female genitalia are very different — *Cycnus* species with a funnel-shaped ductus bursae having a fan-shaped chitinous dorsal plate, a membranous ventral opening, the corpus bursae large, adorned with two large rectangular signa; those of *Parrhasius* with a completely chitinous, simple round ostium leading into a straight, rounded chitinous ductus bursae opening into a relatively small corpus bursae adorned with two simple small thorn-like signa.

Cycnus phaleros (Linnaeus)

Figs. 20A, 20B, 20C, 20D, 21, 22, 25

Papilio phaleros Linnaeus, 1767, p 796. Goeze, 1780, p . Godart, 1824, p 628.

Polyommata phaleros, Godart, 1824, p 598.

Thecla phaleros, Doubleday, 1847, p 39. Westwood, 1852, p 483. Ménétriés, 1855, p 82. Prittwitz, 1865, p 317. Hewitson, 1867, p 85. Möschler, 1867, p 300. Herrich-Schäffer, 1868, p 174. *ibid.* 1869, p 57. Boisduval, 1870, p 16. Butler, 1870, p 198. Kirby, 1871, p 384. Capronnier, 1874, p 14. Kirby, 1877, p 774. *ibid.* 1879, p 153. Godman & Salvin, 1887, 2:22, Tab L, figs 4, 5 & 6. Staudinger, 1888, p 285, pl 97, fig C-1. Weeks, 1905, pp 19, 28. *ibid.* 1911, p xiii. Dyar, 1914, p 149. Draudt in Seitz, 1922, 5:752, fig 150a,b. Huntington, 1932, p 210. Hoffman, 1940, p 705. Hayward, 1951, p 128. Comstock & Huntington, 1962, 70:110. Lewis, 1973, p 69.

Cycnus phaleros, Hübner, 1819, p 81. Scudder, 1875, p 151. Kaye, 1904, p 197. *ibid.* 1914, p 46. *ibid.* 1921, pp 99,100. Brown & Mielke, 1967, 21:152. Barcant, 1970, p 259, pl 28. Smart, 1975, p 172, fig 13.

Phaleros has been a part of the lepidopterous literature for over 200 years. It has been illustrated frequently in full color, and the rather distinctive and uniquely different underside pattern render a detailed description here unnecessary. Although I have not found it as locally common as the species with which it is most often associated, *P. battus*, its range is far greater, flying in the lower altitude rainforests that cover large areas of tropical North and South America.

Specimens examined: **MEXICO:** VERA CRUZ - Presidio 3♂ 2♀ (AME, AM), San Martin Tuxtla 1♂, Catemaco 3♂ 3♀ (AME); OAXACA - Tuxtepec 1♂ (AME); CHIAPAS - San Quintin 1♂ (AME). **BRITISH HONDURAS:** No data 1♂ (CM). **GUATEMALA:** Cayuga 2♂ 1♀ (CM). **COSTA RICA:** Guapiles 1♀ (CM), Palmar, Puntarenas 2♂ (CM). **PANAMA:** PANAMA PROV. - Cerro Campana 7♀ (GS, N); CANAL ZONE - Ft. Kobbe, Madden Dam, Cocoli, Farfan, Madden Forest 12♂ 11♀ (AME), Barro Colorado, Gatun, Balboa, New Culebra 6♂ 3♀ (AM), Farfan,

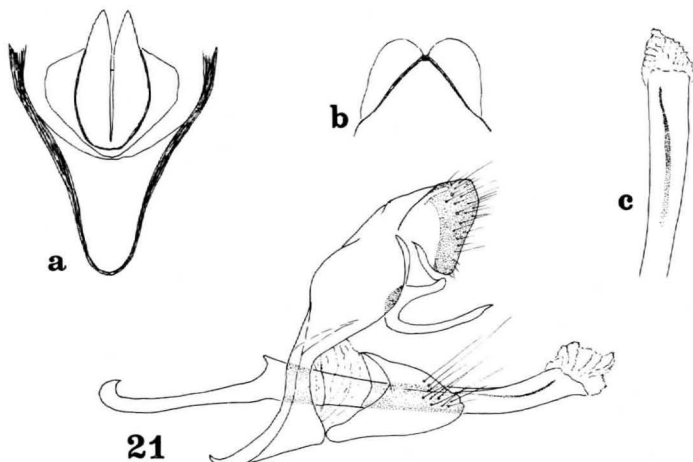


Figure 21. Male genitalia of *Cycnus phaleros* (Linnaeus), lateral view with aedeagus in place; (a) ventral view of saccus with valvae in place; (b) dorsal view of uncus; (C) ventral view of aedeagus termen.

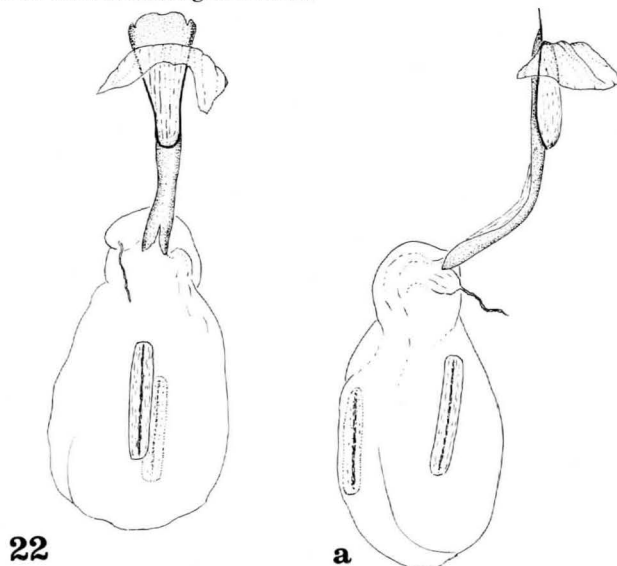


Figure 22. Female genitalia of *Cycnus phaleros*, ventral view with ovipositor removed; (a) lateral view.

Madden Forest, Madden Dam, La Pita, Ft. Clayton, Summit, Piña, 15♂ 13♀ (AME, GS, N). **COLOMBIA**: Sta. Marta 1♂ (AME); CUNDINIMARCA - Bogota 1♀ (CM); DEPT. MAGDALENA - Don Diego 1♀, Cacagualito 1♂ (CM); SANTANDER - Casabe, Barancabermeja 2♂ (AM); ANTIOQUIA - Rio Cocorna 1♂ (AM); CAQUETA - Florencia 1♀ (N). **VENEZUELA**: San Esteban 1♀ (CM); No data 1♂ (AM). **TRINIDAD**: 11♂ 14♀ (AME, CM, AM). **BRITISH GUIANA**: No data 2♂ (AME), Shudihar River 1♂ (AM). **SURINAM**: No data 1♂ (AME). **FRENCH GUIANA**: No data 1♂ 2♀ (AME, AM); Crique Sparouine 1♀ (AME). **BRAZIL**: No data 1♂ (CM); PARA - Igarape Acu 1♂ 7♀ (AME, AM), Belem 1♂ 1♀ (N), Obidos 40♂ 11♀ (AME, AM); PARAIBA - Joa Pessoa 2♂ 1♀ (N); AMAZONAS - Teffe 4♂ (AME, Manaus 5♂ (AME, AM), Maues, Ypiranga, S. Paulo de Olivenca 3♂ (AME); ESPIRITU SANTO - Linhares 2♀ (AME); GUANABARA - Restinga 1♀ (N); GOIAS - Jatai 1♂ (N); FEDERAL DISTRICT - Parque do Gama 1♀ (N); PARANA - Londrina 1♂ 1♀, Massaranduba-Blumenau 1♀ (AM). **ECUADOR**: Santo Domingo 1♂, Palmar, Manabi 1♂ 1♀ (AM). **PERU**: LORETO - Iquitos 1♂, Achinamiza 1♂ (AM), Pucallpa 2♂ 1♀, Moyotta 2♂ 1♀ (AME); JUNIN - Satipo 1♀ (AME). **BOLIVIA**: SANTA CRUZ - 1♂ (AM), Cuatro Ojos 4♂ 1♀, Rio Yapacani 2♂, Rio Surutu 2♂, Buena Vista 1♂, Las Juntas 1♂ (CM).

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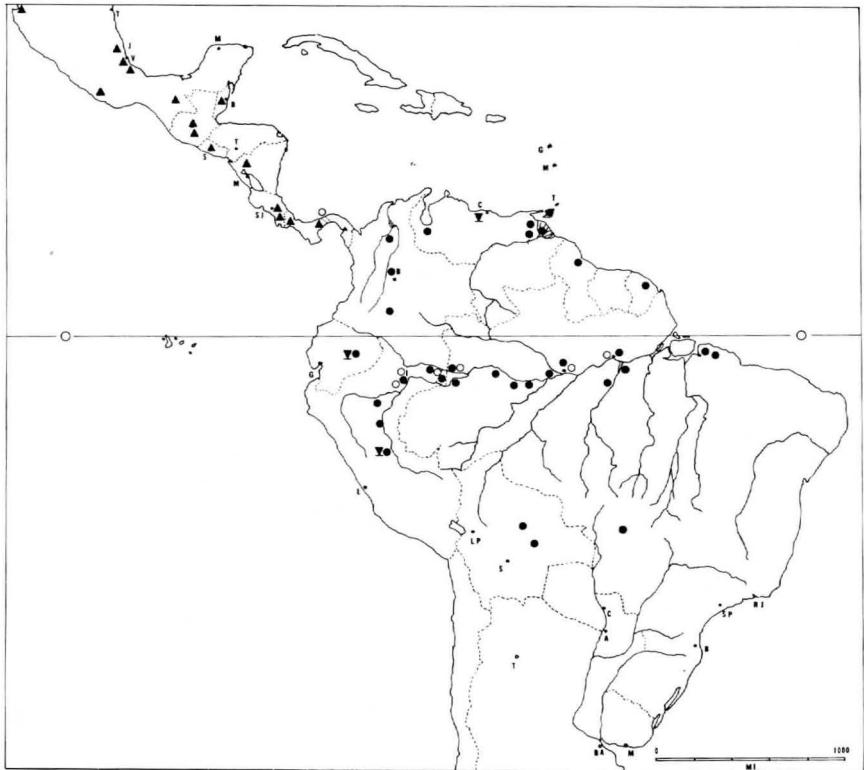


Figure 23. Distribution of *Panthiades pelion* (Cramer), solid circles; *Panthiades boreas* (Felder & Felder), open circles; *Panthiades paphlagon* (Felder & Felder), inverted triangles on bar; *Panthiades ochus* (G. & S.) solid triangles.

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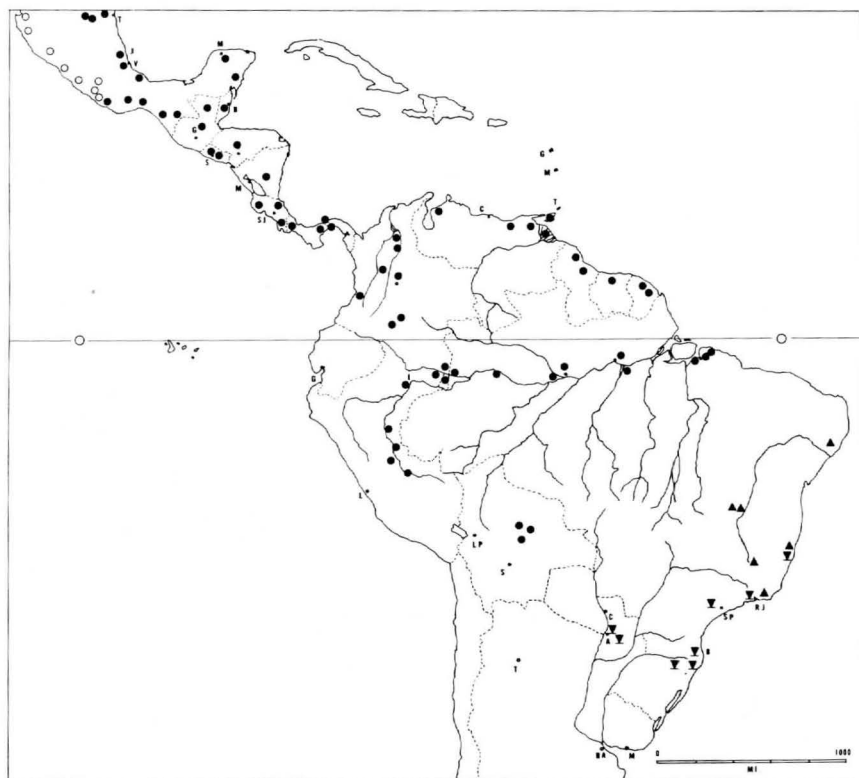


Figure 24. Distribution of *Panthiades bitias* (Cramer), solid circles; *Panthiades bitias sierrae* (Dyar), open circles; *Panthiades hebraeus* (Hewitson), solid triangles; *Panthiades hebraeus cimelium* (Gosse), inverted triangles on bar.

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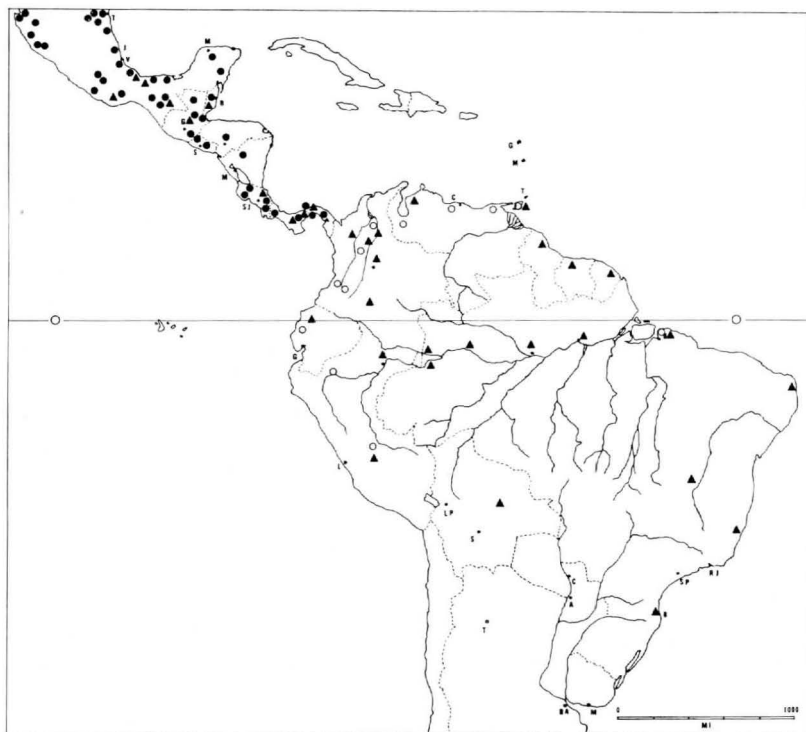


Figure 25. Distribution of *Panthiades battus* (Cramer), solid circles; *Panthiades battus jala* (Reakirt), open circles; *Cynus phaleros* (Linnaeus), solid triangles.

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p. 31, make the following changes in Figure numbers:

Fig. 29 to Fig. 33

Fig. 30 to Fig. 32

Fig. 31 to Fig. 30

Fig. 32 to Fig. 31

Fig. 33 to Fig. 29