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NEOTROPICAL NYMPHALIDAE. V. REVISION OF EPIPHILE

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A. INTRODUCTION

Epiphile is a genus of medium-sized neotropical nymphalid butterflies. Most of the species have conspicuous colors and usually an orange diagonal cross band on the forewings. The genus is characterized by a contrasting light-colored triangular macula on the median costal area of the ventral surface of the hindwing. Most of the species are dimorphic sexually. The hypandrium or subgenital plate is distinctively elongate and rod-shaped with two rami with chitinated teeth.

This distinct genus is most closely related to the small *Bulboneura* from México and to *Catonephele* and *Temenis*. The wing venation (Fig. 1) is very similar to that of *Catonephele*.

Epiphile occurs from southern Texas to Argentina and most species are found on the slopes of the Andes mountains of South America and in the mountain ranges of Central America and México. The genus is absent from the Amazon basin, the Guyana highland area and the West Indies.

Most species are relatively uncommon or rare and are montane or submontane. Some species are confined to limited localities in mountain areas up to 2,500 m suggesting relict distribution. The females of many of the species or subspecies are known from only a few specimens and some are unknown. Three species, *E. adrasta*, *E. oreia*, and *E. hubneri*, also occur at lower altitudes, are widespread, and are relatively more common.

Twelve species and twelve subspecies have been recognized in this revision. The taxonomy of the *dinora*, *chrysis*, and *epicaste* complex of species is difficult and they are frequently misidentified. In Röber, in Seitz, 1914, *E. fassli* (which is *E. dinora*) is illustrated in 97f as very large, but is said (p. 479) to be smaller than *E. epicaste latifasciata*. The figure of *negrina* is *E. oreia iblis*, the figure of *oreas* [sic] is *E. oreia negrina*, and the figure of *E. grandis* ♂ is *E. hermosa*.

The adults fly very fast in an erratic fashion, flashing their bright colors, and then alight with the bright dorsal colors hidden by the dull brownish color of the ventral hind wings. They frequently return to a resting place so that capture is more possible. They feed on fermenting and rotten fruit, fermenting sap on tree trunks, and on animal excrement. Males were observed in Honduras around a small sugar cane mill. No adults have been observed feeding on flowers.

The larvae feed on vines of the family *Sapindaceae*. The host plants of the genera *Paullinia* and *Serjania* have narcotic poisonous properties and are employed as "barbasco"

for stupefying fish (Muysshondt, 1973). This may provide chemical protection from predators in later larval instars and adults.

B. MATERIALS AND METHODS

Epiphile were collected and studied in the field in 12 neotropical countries by the author. Thirty-one museum and private collections were examined and the *Epiphile* were identified. Type specimens were studied in the British Museum of Natural History, London, the Museum of Paris, the Museo de Historia Natural de Ciudad de México, and the Museu Nacional, Rio de Janeiro, Brazil.

The characters used for identification of species and subspecies include wing patterns, wing coloration, wing venation, sexual dimorphism, male genitalia, hypandria and rami, and female genitalia. Series of adult specimens were collected in the field to study the range of variation in single localities especially in intergrade areas. Keys are presented for identification of species based on wing coloration and pattern of both males and females, and for male genitalia, hypandria and rami. Keys were made for differentiating subspecies using wing pattern and coloration.

Data have been compiled for each specimen examined including sex, date, geographic locality, altitude and museum in which it is found. Full data are presented only for rare or new species or subspecies. The exact localities are presented but other data on sex, dates, and altitude are summarized for more common taxa. These details are available from the author.

The nomenclature of wing veins follows Miller (1970). The venation and nomenclature of *Epiphile* is shown in Fig. 1. The terminology for the male and female genitalia follows Klots (1970) and the hypandrium or subgenital plate including the lateral appendages or rami follows Tuxen (1970). Hypandrium is the oldest (1861) and most widely used term for the male subgenital plate in various insect orders. There are over 20 synonyms or other terms for this or similar related structures including velum, navicula, mappa, and octavel. The term gonostatumen was introduced by Dillon (1958) who was unaware of the plethora of terms. He presented it as a new name for a new structure, and stated, "It lies on the floor of the abdomen, in part exposed posteriorly, and appears to act as a prop for the usual genital organs, hence the proposed name." It is possible that the hypandrium is used as a brace or support during copulation. The rami extend outward and could be used to brace or hold mating individuals together. In *Epiphile* this is further supported by finding a sinus in the female bordered by a heavily chitinized lip at the posterior edge of sternite VI. (It should be pointed out that the sinus vaginalis or genital chamber occurs mid-ventrally caudad of sternite VII.) It is possible that in some genera the rami of the hypandrium could be inserted between the lamella antevaginalis and lamella postvaginalis. These female structures are being studied in various genera which have males with hypandria.

Male genitalia and hypandria were dissected in 34 male specimens, and the genitalia in 12 female specimens. They were preserved in small glycerine vials that were numbered and deposited with their corresponding specimens.

The distribution maps (Figs. 112-119) are based on specimens determined by the author. Combined circles, triangles or squares indicate intergrades between subspecies at intergrade or tension zones. An "X" after a locality name indicates intergrades.

Most species of *Epiphile* are rare or relatively rare. About 1,720 specimens were identified in museums or private collections or were collected in the field. There were nearly 1,500 males and only 220 females studied and identified. Seventeen different types were studied and compared with other specimens. Color photographs were made of the types and other critical specimens and the negatives and prints are deposited in the Allyn Museum.

The holotypes of two new subspecies described are in the Smithsonian Institution and in the Universidad Central, Maracay, Venezuela. Twenty four taxa are assigned to the genus including 12 species. Nine taxa have been synonymized in this revision.

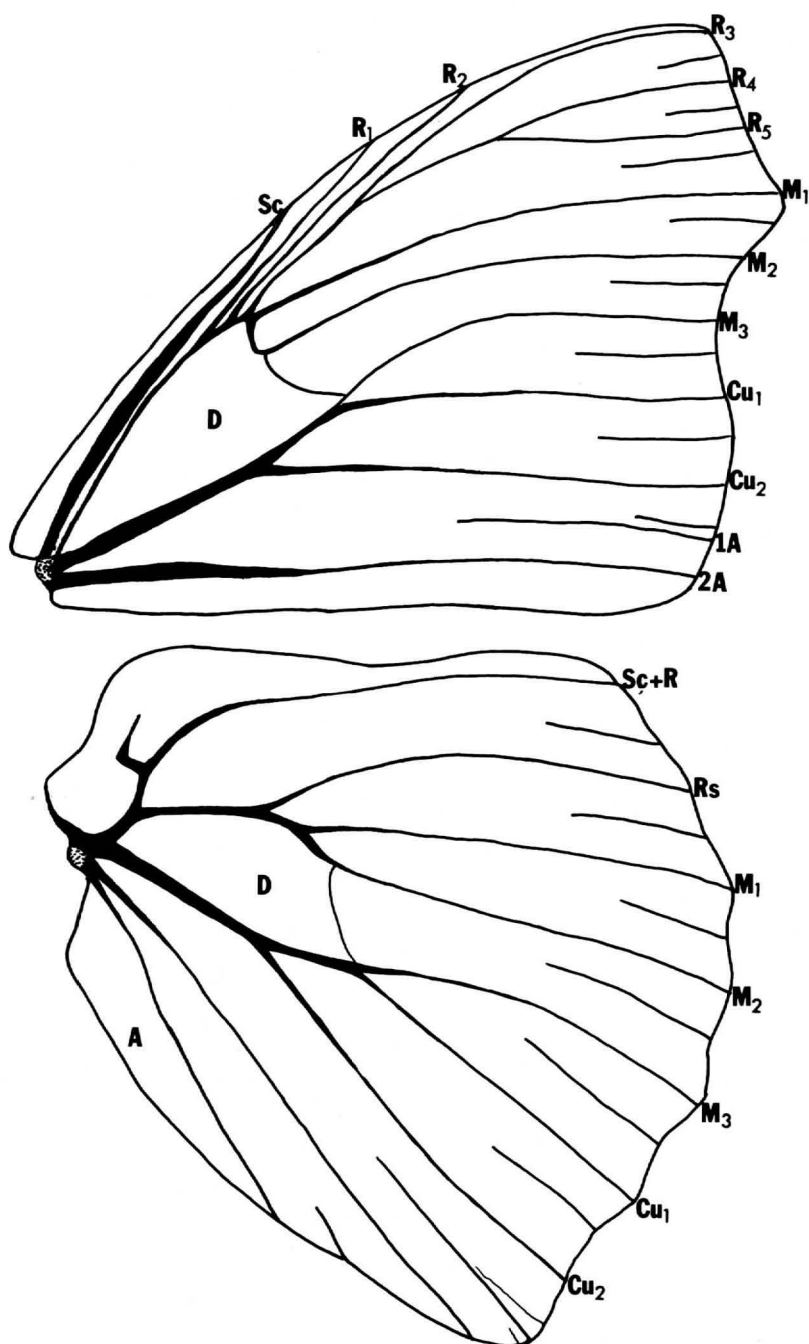


Figure 1. Venation of *Epiphile* showing nomenclature of veins.

COLLECTIONS EXAMINED

- AA - Allyn Museum of Entomology, Florida State Museum, Sarasota, FL (L.D. Miller)
- AD - Alberto Díaz Francés Collection, México City, México
- AK - Andrew King Collection, Turrialba, Costa Rica
- AM - American Museum of Natural History, New York City, NY (F.H. Rindge).
- BM - British Museum (Natural History), London, England (R.I. Vane-Wright, P. Ackery)
- CA - California Academy of Science, San Francisco, CA (P.H. Arnaud)
- CB - California Insect Survey, University of California, Berkeley, CA (J. Powell)
- CM - Carnegie Museum of Natural History, Pittsburgh, PA (G. Ekis & C. Young)
- DM - De la Maza Collection, México City, México
- FC - Museo de Zoología Facultad de Ciencias, UNAM, México City, México (J. Llorente)
- FL - Division of Plant Industry, Florida Dept. Agriculture, Gainesville, FL
- GS - Gordon B. Small Collection, Balboa, Panamá (now in SI)
- HD - Henri Descimon Collection, Marseille, France
- JC - Dale and Joanne Jenkins Collection, Sarasota, FL
- KB - Keith S. Brown Collection, Campinas, Brazil
- LA - Los Angeles Co. Museum Natural History, Los Angeles, CA (J.P. Donahue)
- MH - Museo de Historia Natural de Ciudad de México, México City, México
- MM - Milwaukee Public Museum, Milwaukee, WI (A.M. Young & S.S. Borkin)
- MN - Museu Nacional, Rio de Janeiro, Brazil (J. Cândido de Mello Carvalho)
- MP - Museum d'Histoire Naturelle de Paris, Paris, France (G. Bernardi)
- MZ - Museum of Comparative Zoology, Harvard University, Boston, MA (J. Weintraub and M.D. Bowers)
- NC - James Neidhofer Collection, Milwaukee, WI (in MM)
- PA - Philadelphia Academy of Sciences (in CM)
- SI - National Museum of Natural History, Smithsonian Institution, Washington, D.C. (J.F. Gates Clarke and R. Robbins)
- SH - Sergio Hernández Collection, Colima, México
- ST - Herman Strecker Collection (at Allyn Museum of Entomology), Sarasota, FL (in AA, Property of Field Museum of Natural History, Chicago, IL)
- TE - Thomas Emmel Collection, Gainesville, FL
- UC - Universidad Facultad de Agronomía Central, Maracay, Venezuela (F. Fernández)
- UN - Universidad Nacional Mayor de San Marcos, Museo de Historia Natural, Lima, Perú (G. Lamas)
- UP - Universidade Federal do Paraná, Curitiba, Brazil (O. Mielke)
- VK - Harold L. King Collection, Sarasota, FL (in FL)

C. BIONOMICS

The genus *Epiphile* is restricted to the neotropical region. The species occur from southern Texas and México south through the Sierra Madre and other ranges and south in the Andes mountains to southern Brazil and northern Argentina. The genus is completely absent from the Amazon river basin, the Guyana highlands and the West Indies.

This distribution reflects the restriction of most species of the genus to higher elevations usually over 400 m and up to 2,500 m. In México, *E. adrasta escalantei* is found from 700 to 1,600 m and *E. adrasta adrasta* from 500 to 1,600 m in México to Costa Rica. *E. plutonia* occurs in México from 1,200 to 1,500 m in summer and at 800 m in winter (J. de la Maza, pers. comm.). *E. hermosa* is found at 1,300 to 1,700 m in México, and *E. grandis* from 1,450 to 2,200 m in Costa Rica and Panamá. *E. oreo oreo* is found in Brazil from somewhat above sea level to 1800 m, and *E. oreo iblis* from 1,000 to 2,400 m on the slopes of the Cordilleras in Colombia. *E. plusios* occurs at 1,000 to 2,000 m in Costa Rica. *E. dinora* is found from 2,000 to 2,500 m in Colombia.

The adults occur in cloud forests at higher altitude, in submontane forest areas, and

also in evergreen tropical forest and semideciduous tropical forest. I have also collected them in a partially cut over parana pine forest, *Araucaria brasiliensis*, in southern Brazil. They are found in forest openings, roads and trails and at the edges of forests. They occur in partially cut-over and reforested or second-growth areas. In Central America they inhabit coffee plantations from about 500-1,500 m elevation. They often occur in forested ravines, near waterways or lakes. They are frequently seen sipping water in roadside drainage ditches and stream banks, mostly in unpopulated areas.

E. a. adrasta was collected 27 October 1973 in southern Texas. A food plant *Serjania brachycarpa* is abundant there and Kendall (1984) states that *adrasta* may breed there temporarily, or a partial brood may be produced.

The adults fly very fast, often in erratic flights and flash their bright colors and then alight with wings together and are hidden by their dull brownish ventral hindwings. The adults alight on leaves, tree trunks, soil, and especially at food and moist places. The males may fly upwards in the tree canopies especially in the afternoon. They also fly into open areas.

The adults are attracted to fermented or rotting fruits such as banana and are also attracted to animal excrement. They are found feeding on fermenting sap on tree trunks and fermenting material at small sugar cane mills near forest areas. The fast flying adults are easier to collect when they are feeding or when imbibing moisture at streams and along roads, especially earlier in the mornings. No adults have been seen feeding on flowers.

Eggs are laid on leaves of vines of the *Sapindaceae* and one egg is laid on the underside of a mature leaf (Muyshondt, 1973). Egg laying occurs from late morning to early afternoon mostly from August to February in El Salvador.

The species and genera of *Sapindaceae* used as host plants are shown in Table 1. Most vines of this family, in particular *Paullinia* and *Serjania*, are reputed to possess narcotic poisonous properties and some known as "barbasco" are used for stupefying fish.

According to Muyshondt (1973) the newly hatched larvae eat the egg shell, make frass chains and have excreta pellets stuck to their bodies and remain close to a leaf vein. In the fourth and fifth instars the larvae wander about on the upper surface of leaves. The larvae are not brightly colored nor do they have the protection from long forked spines like *Catonephele* larvae. Muyshondt proposes that larvae have chemical protection against predators in later instars and in the pupal stage (which has silvery markings). The larval stage lasts about 28 days and the pupal stage 8-9 days.

D. PHYLOGENY

The "center of distribution" and perhaps the "center of origin" is in the Andes mountains of Colombia. Presently eight of the 12 known species of *Epiphile* occur in this area. Five species also extend south in the Andes mountains through Ecuador and Perú to Bolivia.

Two widespread species extend into Central America and three isolated species also occur there. The widespread *E. orea* occurs as subspecies *E. orea orea* in south Brazil, *E. o. negrina* in Ecuador to N. Argentina, *E. o. iblis* in Colombia and Venezuela and the isolated *E. o. plusios* in Panamá and Costa Rica. *E. plutonia* which is isolated in mountains in Guatemala and México is obviously derived from *E. o. plusios* and together they form a transformation series (Fig. 2). On the dorsal forewing (DFW) there is a reduction in the orange in the median diagonal cross band and in the basal cross band, loss of a basal orange spot in the discal cell, and loss of subapical orange maculae. There is a reduction in the number of chitinated teeth in the rami of the hypandrium. This series could support a hypothesis that the "center of origin" could have been southern Brazil.

Another widespread species *E. adrasta* occurs from northern Perú to Texas, with *E. a. bandusia* from northern Perú to Panamá, *E. a. adrasta* from Costa Rica to southern Texas and northeastern México, and *E. a. escalantei* isolated in western México. This latter subspecies is rather closely related to the separated *E. hubneri* found in southern Brazil, Paraguay, and northern Argentina. Both of these taxa have the dorsal hindwing (DHW) orange except for dark brown or black in the apical marginal area. Both *E. a. bandusia* and *E. a. adrasta* have an orange longitudinal median stripe. There is a

Table 1. Host Plants of *Epiphile*

Sapindaceae

Paullinia seminuda Rod.*Epiphile oreia oreia*

S. Brazil

Müller (1886)
d'Araújo et al.
(1968)*Paullinia fuscescens* H.B.K. "Barbasco"*Epiphile adrasta adrasta*

El Salvador

Muysshondt (1973)

Paullinia tomentosa Jacq.*Epiphile adrasta adrasta*

N. México

Kendall (1984)

Paullinia sp.*Epiphile oreia plusios*

Costa Rica

DeVries (pers. comm.)

Serjania racemosa Schumacher*Epiphile adrasta adrasta*

N. México

Kendall (1984)

Serjania meridionalis Cambes*Epiphile oreia oreia*

S. Brazil

Müller (1886)
d'Araújo et al.
(1968)*Serjania brachycarpa* Grey*Epiphile adrasta adrasta*

N. México

Kendall (1984)

Serjania sp. "Barbasco"*Epiphile adrasta adrasta*

El Salvador

Muysshondt (1973)

Epiphile oreia plusios

Costa Rica

DeVries (pers. comm.)

Urvillia sp.*Epiphile adrasta adrasta*

El Salvador

Muysshondt (1973)

Cardiospermum sp. "Balloon vine"*Epiphile adrasta adrasta*

El Salvador

Muysshondt (1973)

transformation series from narrow orange median bands on the DFW and a narrow longitudinal median stripe on the DHW to broad bands and stripes in *E. a. adrasta* to a broad orange area on the DHW of *E. a. escalantei*.

The females of *E. oreia*, *E. plutonia*, *E. adrasta*, and *E. hubneri* all have a median orange cross band on the DFW (also in females of *E. grandis* and *E. hermosa*). Another series of related species have females with a white cross band on the DFW, *E. epimenes*, *E. dinora* and *E. eriopis*. *E. epicaste* is unique in having a blue median crossband on the DFW which may be mimicry related.

After completing revisions of sister genera and other closely related genera, it will be possible to accurately determine more "primitive" (plesiomorphic) vs. more "advanced" (apomorphic) character states. Presently some characters are tentatively considered plesiomorphic based mostly on transformation series that extend into Central America and México and which are thought to be more apomorphic or more recent. Some other characters are listed which should be considered as preliminary. Those character states presently thought to be "primitive" are:

1. Basal part of DFW in male dark brown or black.
2. Orange median cross band of DFW in male entire.
3. Submedian cross band of DFW of male entire.
4. DFW of male with orange subapical maculae.
5. Rami of hypandrium with many teeth.
6. Valva of male genitalia with fewer (5-13) spines.
7. Female with orange median cross band on DFW.

Those character states thought to be "advanced" are:

1. Basal part of DFW in male orange.
2. Orange median cross band of DFW in male broken into maculae.
3. Submedian cross band of male DFW reduced or absent.
4. DFW of male with only one subapical white spot or absent.
5. Rami of hypandrium with few teeth.

6. Valva of male genitalia with many (14-21) teeth.

7. Female with white or blue median cross band on DFW.

The polarization of character states can be changed with additional study of sister group genera and a cladistic evaluation is being held for revision until completion of study of all related genera.

E. SYSTEMATICS

Epiphile is tentatively considered to be a member of the predominantly neotropical tribe *Epicalini*. This tribe includes about nine genera whose larvae feed on *Sapindaceae*, and another group on *Euphorbiaceae*. The sapindaceous feeders are *Epiphile*, *Asterope* (= *Callithea*), *Callidula*, *Catagramma*, *Cyclogramma*, *Diaethria*, *Nica*, *Pyrrogogyra*, and *Temenis*. There is much confusion concerning the tribes of the family *Nymphalidae*, especially the subfamily *Limenitidinae* and closely related subfamilies. The tribal relationships are being carefully studied as more genera are being revised. Special consideration is being given to the hypandrium of the male, larval and other character states, as well as host plant relationships.

As stated previously, *Epiphile* appears to be most closely related to *Bulboneura* a small butterfly from México, and also to *Temenis* and *Catonephele*.

The genus *Epiphile* is relatively homogeneous and cannot be divided into subgenera. There is little value in dividing it into species groups as there are no consistently distinctive

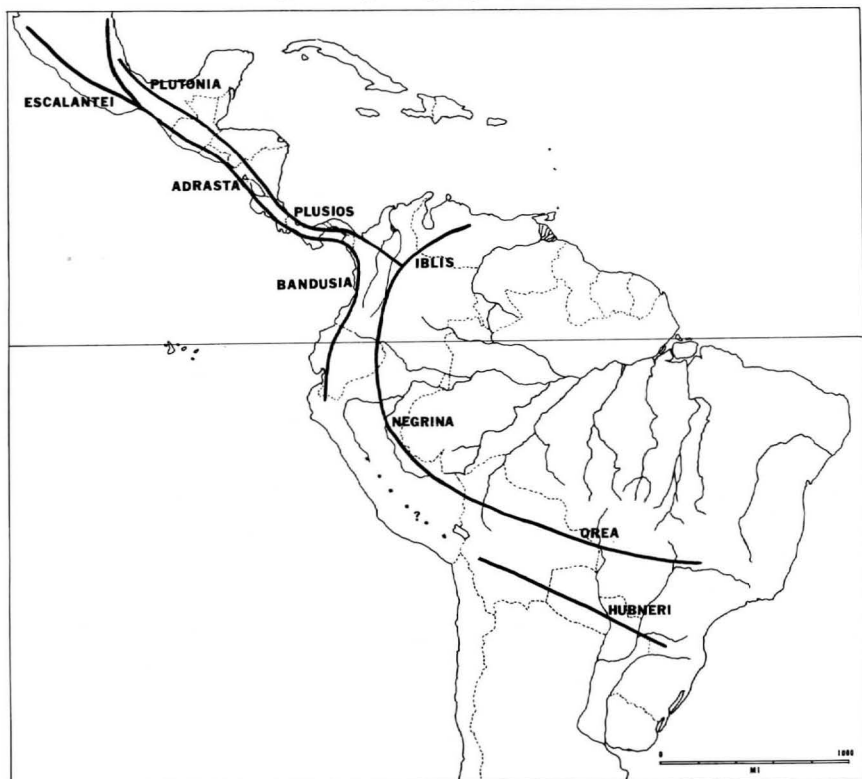


Figure 2. Phylogenetic evolution and geographic spread of *Epiphile oreia* and *E. plutonia*, and of *E. adrasta* and *E. hubneri*.

characters which divide the genus. There are no marked differences in wing venation. The unique and distinct triangular macula on the ventral hind wing (VHW) which is so characteristic of all members of the genus also confirms its cohesiveness.

Description:

Adult. The eyes are hairy. The palpi are slightly hairy, the terminal joint long and not swollen. The antennae have 37 segments, the terminal 12 form a club. The forelegs of the male are hairy. The tibia is equal in size to the femur. The tarsus is single jointed. The middle and posterior legs are moderately spined; the claws are short and heavily curved. The DFW has a falcate projection at M_1 . The subcostal, the base of the cubitus and the second anal veins are swollen. The R_1 and R_2 veins branch before the end of the discal cell. The r_5-m_1 is short, m_1-m_2 curved, and m_2-m_3 is very thin and closes the discal cell where it joins at the juncture of M_3 and Cu_1 . The hindwing is usually somewhat extended in the area Cu_2 and 1A. The $Sc+R_1$, M_1 and Cu_2 are swollen in the basal third. The discal cell is closed by m_2-m_3 vein which is thin and terminates at the juncture of M_3 and Cu_1 . The humeral vein extends anteriorly and usually has a single branch extending distally. The hindwing margins are usually sinuate.

There is a marked sexual dimorphism in most of the species (less in *adrasta lampethusa* and *hubneri*). The wing patterns of all species except *lampethusa* have median or postmedian diagonal orange or white cross bands in both sexes. This is blue in the female of *epicaste*. The ventral hindwing has a unique and conspicuous triangular yellowish or tan triangular macula in the center of the costal area. The rest of the wing may be plain or with a pattern with submarginal ocelli. There are no androconial patches in any males.

The male genitalia and hypandria of *Epiphile* are quite similar and there are no differences that merit division into subgenera or even species groups. This confirms the similarities in wing venation.

The male genitalia have the gnathos arm usually attached posteriorly but anteriorly in *adrasta*, in the middle of the arm in *hubneri* and *lampethusa*, but posteriorly in all other species. The vinculum is quite long, widely separating the uncus from the saccus. The saccus is prominent and usually curved. The valva is elongated and narrow posteriorly. There are six to 21 flat chitinous spines ventrally and there may be two to four spines posteriorly. While somewhat variable in number in the same species, they are of some value taxonomically.

The male hypandrium is very narrow and elongate. It is divided into two rami which have from one to eight chitinized teeth. Most of the species have five to eight teeth on the rami. However, *E. hermosa* has only one long chitinized tooth and is quite distinctive. *E. plutonia* has three or four teeth. *E. lampethusa* has eight to ten teeth and *E. eriopis* nine to eleven teeth. The valvae in the male genitalia are quite similar in shape, but there is a difference in the number of spines. Examination of series of specimens from the same species shows some variation, however, there is an increase in the number of spines from the more "primitive" *orea* to more "advanced" *adrasta*, *lampethusa* and *eriopis*.

The female genitalia are also quite similar. There are some differences in the sterigma and the lamella antevaginalis and lamella postvaginalis but all fit a distinctive pattern characteristic of the genus. All species studied have a more or less spherical or flattened round corpus bursa with a pair of elongate signa. There are also minor specific differences in the papilla anale.

Larva: The larva of *Epiphile adrasta adrasta* (Fig. 3) is green with a yellow longitudinal stripe on the thoracic segments, with thin yellow lines dorsally. Laterally there is an irregular pattern of yellow lines, with slanting whitish green lateral markings. The head has two epicranial reddish horns each with four whorls of spines with two, four, four and six spines in each whorl. There are no dorsal spines except on A-7 and A-8. The subdorsal spines are larger and darker in the 3rd and 4th instars. There is a reduction in size and number of spines and scoli in the 5th instar.

Larvae of *E. orea orea* are very similar to *E. adrasta* in color and markings according to Müller (1886), and summarized by Röber, in Seitz (1914).

Table 2. Setal Spines on Larvae of *Epiphile*

Ant. Dorsalia												Post Dorsalia		
<i>E. adrasta</i> 5TH INSTAR	T1	T2	T3	A1	A2	A3	A4	A5	A6	A7	A8	A7	A8	Jenkins
Dorsal	--	--	--	--	--	--	--	--	--	--	--	1	4	
Sub Dorsal	1	3	6	3	3	3	2	2	2	1	1	--	--	
3 & 4 INSTAR														Jenkins
Dorsal	--	--	--	--	--	--	--	--	--	--	--	3	6	
Sub Dorsal	1	4	6	3	3	3	2	2	2	2	2	--	--	
<i>E. oreo</i> 4TH INSTAR														Müller (1886)
Dorsal	--	--	--	--	--	--	--	--	--	--	--	3	5	
Sub Dorsal*	4 4			2	2	2	2	2	2	2	2	--	--	

*(A2-A8 may have a third small spine.)

Larvae of *E. adrasta adrasta* from Tamaulipas, México were kindly loaned by Roy Kendall. The fifth instar is shown in Fig. 3. The setal counts of the dorsal and subdorsal row of setae for 3, 4 and 5th instar larvae are shown in Table 2. These setal counts are compared with data from Müller (1886) for 4th instar larvae of *E. oreo oreo* from Santa Catarina, Brazil.

The pupa of *E. adrasta* (Fig. 3) widens from the cremaster to the dark green wing cases where it is widest, and tapers to a bifid head. There is a thoracic projection which is strongly keeled. The abdomen is light green with small yellow spiracles. There are silvery or "bright mother-of-pearl" maculae near the middle of each wing case and on the head.

The first *Epiphile* species was described as *Nymphalis chrysites* by Latreille [1809]. *Temenis oreo* Hübner [1823] was described, and then the genus *Epiphile* Doubleday (1844) was established.

There has been much confusion and many misidentifications in the group of species

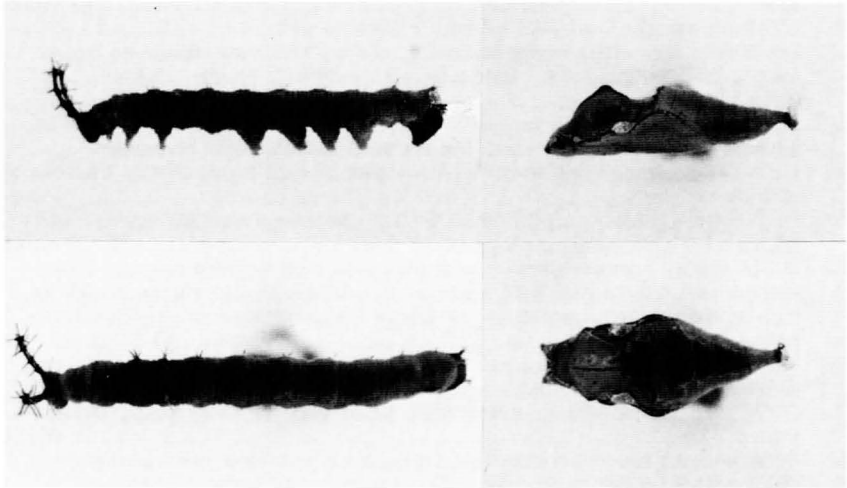


Figure 3. Larva and pupa of *Epiphile adrasta adrasta*, Tamaulipas, México.

E. dinora, *E. chrysites*, and *E. epicaste*. These have similar dorsal wing patterns and the figures and characters presented by Röber, in Seitz (1914) are of little value in distinguishing them. In addition, occasional large forms or individuals occur throughout the range of the species, especially in *E. dinora*. A series of male genitalia and hypandria have been dissected, drawn and compared throughout the ranges of these three species and included subspecies. The large individuals were studied intensively and no morphological or other differences were found. It is not known whether these are seasonal forms. They should be studied more. The best characters for separating these species are on the VHW. All three species have very similar geographic distribution patterns extending through the Andes mountains from Venezuela through Colombia, Ecuador and Perú to Bolivia.

KEY TO MALE EPIPHILE

- 1a. Blue iridescent area on DHW 2
- 1b. No blue iridescent area on DHW 6
- 2a. Blue or bluish-purple iridescent area on DFW 4
- 2b. No blue or bluish-purple iridescent area on DFW 3
- 3a. DFW with thin submedian orange cross bar only in discal cell; a single white subapical spot (México & Guatemala) *plutonia*
- 3b. DFW with submedian cross bar extending to 2A; one to three orange subapical maculae (except *plusios*) *orea*
- 4a. DHW without orange outer postmedian longitudinal stripe (or with a thin stripe); DHW with extensive iridescent blue *epimenes*
- 4b. DHW with a prominent orange postmedian longitudinal stripe, bordered by some purplish blue 5
- 5a. VHW with four large prominent orange submarginal ocelli with contrasting orangish and brown markings *dilecta*
- 5b. VHW with two small submarginal ocelli and two inconspicuous small maculae, with dull brown background *dinora*
- 6a. DFW with basal half orange, outer half black with one or more white subapical maculae *lampethusa*
- 6b. DFW without basal half orange 7
- 7a. DFW mostly black with a postmedian diagonal white band and apical white area *eripis*
- 7b. DFW not mostly black and without a white band 8
- 8a. DHW very dark with anterior and marginal areas yellowish orange, no median longitudinal stripe; DFW with subapical yellowish orange diagonal band (Panamá to México) 9
- 8b. DHW not very dark with anterior and marginal areas yellowish orange; DFW without subapical orange band, but a row of maculae may be present 10
- 9a. DFW basal $\frac{1}{2}$ orange-yellow with a narrow dark median diagonal band (Panamá and Costa Rica) *grandis*
- 9b. DFW basal $\frac{1}{2}$ mostly purplish-black with a wide orange median diagonal band (México & Guatemala) *hermosa*
- 10a. DHW mostly orange-yellow or orange-brown, with a broad median orange longitudinal band (over $\frac{1}{2}$ of width of wing); basal area mostly orange or with a single dark projection in discal area; distal area or falcate tip orange-brown 11
- 10b. DHW with an orange longitudinal stripe less than $\frac{1}{2}$ width of wing; basal area dark; no separate distal or falcate orange brown areas 13
- 11a. DFW with reddish-orange apical area, basal third of wing mostly orange-yellow *adrasta*
- 11b. DFW without reddish-orange apical area, basal area with dark markings 12
- 12a. DHW with inner half dark, outer half orange except submarginal dark marking; DFW with subapical row of orange maculae extending into falcate area; basal

- area with diffuse dark color *epicaste venezuelensis*
- 12b. DHW with inner area orange-brown shading to orange over most of wing; DFW with a subapical white spot, and a red-brown falcate area; basal area with a well-defined dark projection into the discal cell *hubneri*
- 13a. VHW relatively dull brown without very prominent submarginal ocelli; a dark brown smooth-edged basal triangle extending narrowly to near outer margin in M_1-M_2 ; rest of wing dull brown *dinora*
- 13b. VHW with prominent markings especially the circular ocelli in submarginal area; no smooth-edged basal dark brown triangle extending to near outer margin in M_1-M_2 14
- 14a. Ventral forewing (VFW) apical area distal to subapical ocelli light buff-tan; two white subapical maculae present with a light blue line extending from the anterior macula into the black outer postmedian diagonal band; black ocellus not outlined in brown *chrysites chrysites*
- 14b. VFW apical area not all buff-tan but mottled; black subapical ocellus prominently surrounded by a buff circle 15
- 15a. DFW with three separate subapical maculae, the central one white and the others small reddish-brown; DHW with a relatively narrow longitudinal stripe not tapering *chrysites dilecta*
- 15b. DFW with three prominent diffuse maculae, the central one lighter white in color, the most distal reddish orange; basal area dark with two black maculae extending into the discal cell *epicaste*

KEY TO FEMALE EPIPHILE

- 1a. DFW with median blue diagonal cross band *epicaste*
- 1b. DFW without median blue diagonal cross band 2
- 2a. DFW with basal half light orange, DHW black with blue submarginal maculae *lampethusa*
- 2b. DFW without basal half light orange 3
- 3a. DFW with a postmedian diagonal white cross band or row of white maculae ... 4
- 3b. DFW with a postmedian diagonal yellow crossband 7
- 4a. DFW with one white subapical spot *eripis*
- 4b. DFW with two white subapical spots 5
- 5a. DFW with reddish-brown marking in falcate projection at M_1 ; VHW relatively dull brown without prominent markings 6
- 5b. DFW without reddish-brown markings in falcate projection at M_1 ; VHW with prominent markings and orange-ringed ocelli *chrysites*
- 6a. DHW with median diffused orange area *dinora*
- 6b. DHW without median diffused orange area *epimenes*
- 7a. DHW with yellow-orange and orange-brown in discus area with dark brown distally 8
- 7b. DHW dark brown or reddish-brown over entire wing or with orange distally in marginal area 9
- 8a. DFW with red falcate area at M_1 with white and orange subapical spots; proximal margin of postmedian orange band with a dark indentation $\frac{1}{2}$ width of band at M_3-Cu_1 ; DHW with orange marginal area anterior to M_2 ; VHW without white median line (S. Brazil and E. Argentina) *hubneri*
- 8b. DFW with falcate area dark, with a single white macula; DHW without orange marginal area anterior to M_2 *adrasta*
- 9a. DHW all red-brown with a submarginal dark line; DFW with narrow yellow submedian cross band and a single large white subapical macula (México and Guatemala) *hermosa*
- 9b. DHW brown with orange marginal area 10
- 10a. DFW with falcate orange area (Costa Rica) *grandis*
- 10b. DFW with falcate area dark brown 11

- 11a. DFW subapical area with a single white spot with no orange spot; submedian black cross band relatively broad; with proximal narrow band of reddish in discal cell (México & Guatemala) *plutonia*
 11b. DFW subapical area with a subapical white spot and an orange spot; submedian black cross band relatively narrower, with ochre-brown throughout rest of discal cell *orea*

KEY TO *EPIPHILE* MALE GENITALIA AND HYPANDRIA

- 1a. Rami or hypandrium with a single tooth *hermosa*
 1b. Rami with three or more teeth 2
 2a. Rami of hypandrium with three or four teeth *plutonia*
 2b. Rami with five or more teeth 3
 3a. Gnathos arm articulated to gnathos anteriorly so that gnathos arm extends posteriorly; valva with about 15 ventral spines *adrasta*
 3b. Gnathos arm articulated to gnathos posteriorly or in middle of arm 4
 4a. Gnathos arm articulated to gnathos in middle of arm so that gnathos arm extends posteriorly and anteriorly from gnathos 5
 4b. Gnathos arm articulated to gnathos posteriorly 6
 5a. Valva with 6-8 ventral spines and 2 posterior *hubneri*
 5b. Valva with 16 ventral spines and 2 posterior *lampethusa*
 6a. Rami of hypandrium with 9-11 teeth; valva with about 18 ventral and 4 posterior spines *eripios*
 6b. Rami with 5-8 teeth, valva with 6-21 ventral spines and 0-3 posterior spines 7
 7a. Valva with about 21 ventral spines *grandis*
 7b. Valva with about 8-13 ventral spines .. *orea*, *epimenes*, *dinora*, *chrysites*, *epicaste*

Epiphile Doubleday, 1844

Epiphile Doubleday, 1844. List. Spec. Lepid. Ins. Brit. Mus. 1:90. Type species by selection by Scudder, 1875. Proc. Amer. Acad. Arts. Boston 10:165. *Temenis oreo*, Hübner [1823]. Samml. Exot. Schmett 2:Pl. 20.

Epiphile Boisduval, 1870 (*nec* Doubleday). Consid. Lepid. Guatemala:40. Type species *Epiphile epicaste* Hewitson [1857]. Ill. Exot. Butt. 2:[47] pl. 24. (Hemming 1943:27) (Junior homonym and subjective synonym).

Epiphile oreo (Hübner), [1823]

E. oreo is the most common species of the genus. It is composed of four subspecies and has a broad distribution from Costa Rica to Argentina. It is found at lower altitudes in southern Brazil in comparison with higher elevations northward to Central America where it is limited to higher elevations. There is a gradual transition of subspecies, from *orea* in southern South America to *iblis* in Colombia and Venezuela. However, there is more divergence in *plusios* in Central America with a white subapical spot, reduction of orange subapical spots and reduction of the width of the orange submedian diagonal cross bar. There is a small difference in the male hypandrium with a transition to fewer teeth on the rami. Since there is a good transition series in the character states in the subspecies they are not divided into species. There is little known intergradation between the subspecies.

Description: Male. Black or blackish-purple base color of wings. DFW blackish-purple with a postmedian orange cross band or row of maculae, a submedian orange cross band, and a basal orange spot may or may not be present. One or two subapical orange maculae and a whitish central subapical macula are present. VFW with orange postmedian and submedian cross bars. Subapical area with a white spot and a black ocellus surrounded

by an orange ring. DHW black with an iridescent blue discus. VHW with costal median triangular tan macula, and with irregular brownish wavy bands. Four postmedian ocelli and one or two additional maculae may be present. Rami of hypandrium with five to eight teeth; valva with seven to 14 flat spines.

Female. Base color brown. DFW with a broad orange postmedian cross band and a subapical white macula and an orange macula. VFW with basal third orange-ochre, a black submedian cross band and a broad postmedian orange cross band bordered distally by black. Subapical markings as in male. DHW brown with distal margin orange. VHW similar to male.

Key to Subspecies of *E. oreia*

Males.

- 1a. DFW with a white subapical macula and a small orange spot. Submedian orange cross band narrow and broken at M_3 ; postmedian diagonal orange cross band narrower and broken into more distinct maculae (Panamá and Costa Rica) *plusios*
- 1b. DFW with a subapical diagonal row of two or three orange or orange and whitish maculae. Submedian orange cross band wider and prominent 2
- 2a. DFW without round orange macula in basal part of discal cell; orange postmedian cross band relatively narrow, broken into separate maculae especially posterior to M_1 ; usually a row of three subapical brownish elongate maculae; DHW with deep bluish iridescent area; VFW median black band without light blue macula in cell (Venezuela and Colombia) *iblis*
- 2b. DFW with round orange macula in basal part of discal cell; two subapical maculae; VFW median black band usually with a light blue macula in cell area 3
- 3a. DFW with broad orange postmedian cross band not broken into distinct maculae especially in M_3 - Cu_1 ; DHW with light blue area without purplish iridescence (Ecuador to Bolivia and N.W. Argentina) *negrina*
- 3b. DFW with narrow orange postmedian cross band broken into distinct maculae, especially in M_3 - Cu_1 ; DHW with deep azure blue area with purplish iridescence (Paraguay, S.E. Brazil, Argentina) *oreia*

Females.

- 1a. DFW with a prominent white spot and a faint orange spot; VFW with a broad postmedian diagonal orange band and more extensive reddish basally in discal cell *plusios*
- 1b. DFW with a white spot and prominent orange spot; VFW with narrower submedian black band and basal area mostly ochre-orange 2
- 2a. DFW with broad orange diagonal cross band without deep dark indentation on inner margin at M_3 ; VFW with submedian black band without blue macula in discal cell (Colombia and Venezuela) *iblis*
- 2b. DFW with narrower orange diagonal cross band with a deep dark indentation on inner margin at M_3 ; VFW with submedian black band usually containing a small blue macula in discal cell (Ecuador to Bolivia) *negrina*
(Paraguay, S.E. Brazil, Argentina) *oreia*

Epiphile oreia oreia (Hübner), [1823]

Figs. 4, 5, 6, 7, 90, 102, 112

Temenis oreia Hübner, [1823]. Samml. Exot. Schmett. 2: tab. [30], f. 1, 2, [nec 3 & 4], TL: "Brazil." Syntypes: Vienna?

Epiphile oreia (Hübner) Hewitson, 1861. Exot. Butt. 2: Epiphile 2: f. 7 & 8. ♀ (illustrated ♀ specimen examined).

Description:

As in *E. oreia* except for differences for *E. oreia oreia* listed in the key to subspecies. Average wing length ♂ (24-28)26 mm, ♀ (24-28)26 mm.

Distribution:

Occurs from Bahia and western Mato Grosso south to Rio Grande do Sul, Brazil, eastern Paraguay and northeastern Argentina.

Taxonomy and Variation:

Hübner [1823] described this species from the males of two species. The male of *oreia* is fig. 1 & 2. Hewitson (1861) showed that Hübner's fig. 3 & 4 was the male of a new species which he named *Epiphile hubneri*. Hewitson (1861) illustrated the female of *E. oreia* in figs. 7 & 8. The subspecies is rather constant in markings and the only obvious variation appears to be the size of the orange macula in the basal part of the discal cell in the DFW of the male. The size of the maculae varies in series of specimens from the same localities.

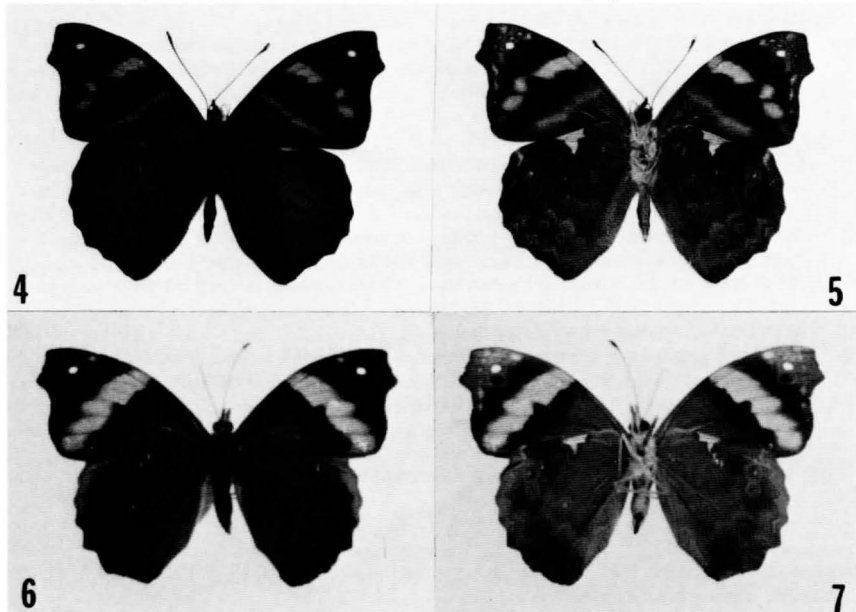
Biology:

The adults occur in evergreen and semi-deciduous tropical forests in partially cut-over areas. They are commonly found in roads and trails and openings in the forests. I have also collected them in a forest of Parana pine, *Araucaria braziliensis*, in São Bento do Sul, Santa Catarina, Brazil.

The adults rest on leaves and fly readily when disturbed. They are active from about 0900-1400 hours. They occur from lower altitudes to 1,800 m elevation and are more common above several hundred m. Adults have been collected every month of the year but are most common in February to May.

Immature Stages:

Müller (1886) described the five instars of larvae and the pupa. Röber, in Seitz (1914)



Figures 4-7. *Epiphile oreia oreia* (Hübner) ♂ dorsal (4), ventral (5) surfaces. BRAZIL, Santa Catarina, São Bento do Sul (JC). ♀ dorsal (6), ventral (7) surfaces (BM).

and Hayward (1964) both quote this study.

Food Plants:

<i>Paullinia seminuda</i> Radlk.	<i>Sapindaceae</i>	
S. Brazil		Müller (1886)
<i>Serjania meridionalis</i> Camb.	<i>Sapindaceae</i>	
S. Brazil		Müller (1886)

Specimens Examined: 227 ♂ 45 ♀

BRAZIL: Bahia, Salvador; Brejo; *Espírito Santo*, Santa Leopoldina; Santa Teresa; Goiás, Anápolis, Chapada dos Veadeiros; Minas Gerais, Cantogalo; Caxambú; Passa Quatro; Poços de Caldas; Caracá; Belo Horizonte; Mato Grosso, Cáceres; Rio de Janeiro, Corcovado; Penedo Resende; Petrópolis; Itatiaia; Rio de Janeiro, Teresópolis; Paineiras; Andaraí; Gávea; Santo Antônio dos Brotos; São Paulo, Amparo; Loreto; Lavinia, Bocaina; São Paulo; Campos do Jordão; Serra de Cantareira; Itaici; Distrito Federal, Brasília; Sobradinho; Cabeça do Veado; Parque do Gama; Paraná, Iguaçu; Castro; Lapa; Fernández Pinheiro; Terra Boa; Guarapuava; Morretes; Ortigueira; Ponta Grossa; Tibaji; Curitiba; Santa Catarina, Blumenau, Brusque; Joinville; Cauna; Nova Teutonia; Porto União; Corupa; Rio Grande do Sul, Santa Maria; PARAGUAY: Guairá, Colonia Independencia; Caaguazu, Caaguazú; ARGENTINA: Misiones; Corrientes; Entre Rios.

Epiphile oreo negrina C. & R. Felder, 1862 [Stat. rev.]

Figs. 8, 9, 10, 11, 70, 102, 112

Epiphile negrina C. & R. Felder, 1862. Wien. Ent. Monat. 6:111, n. 87. TL: [Perú] "Brazil, Rio Negro" [Error]. Syntypes: ♂ (not found in BM).
 = *Epiphile negrina* Röber, in Seitz, 1914. Macrolep. World 5: pl. 97e (nec C. & R. Felder, is (*E. oreo iblis*) (misidentification).
 = *Epiphile oreas* [sic] Röber, in Seitz, 1914. Macrolep. World 5. pl. 97e (nec Hübner), (is *E. oreo negrina*) (misidentification).

Description:

As in *E. oreo* except for differences for *E. oreo negrina* listed in the key to subspecies. Average wing length ♂ (24-29)27 mm, ♀ 25 mm.

Distribution:

Occurs in the Andes mountains and slopes from Ecuador through Perú and Bolivia to Salta, Argentina.

Taxonomy and Variation:

Felder (1862) described *negrina* as a taxon between *oreo* from Brazil and *iblis* from Colombia. Unfortunately, Röber, in Seitz (1914) considered *negrina* as a separate species from Colombia and Rio Negro and confused it with *iblis*. The figure is plate 97e *oreas* [sic] is actually *negrina* ♂ and 97e *negrina* is actually *iblis* ♂. This has caused much confusion and misidentifications. *E. o. negrina* is a well-marked subspecies intermediate between *oreo* and *iblis*. No intergrades have been observed except a few between *negrina* and *oreo* in Salta, Argentina. There is some variation in the size of the orange macula in the basal part of the discal cell in the DFW of the male.

Biology:

The adults occur in submontane and semideciduous tropical forest and cut-over areas. They fly in forest openings and roads and areas near forests. They occur at higher altitude than *E. o. oreo* being found from about 400-1,800 m elevation.

Adults have been collected every month of the year, especially April to July.

Immature Stages and Host Plants:

Nothing is known to have been published on the immature stages of this subspecies.

Specimens Examined 203 ♂ 6 ♀

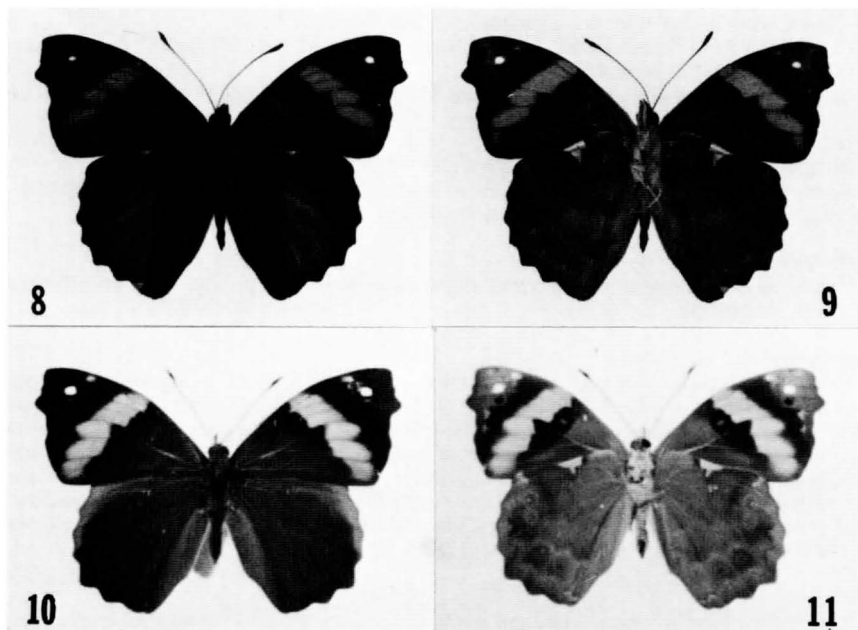
ECUADOR: *Santiago-Zamora*, Zumbi 800 m; *Tungurahua*, Topo; *Pastaza*, Huagra-Yacu; Puyo 1,000 m; *Bolívar*, Balzapamba; *Chimborazo*; Riobamba; Chimbo; Dos Puentes; *Morona-Santiago*, Macas; PERÚ: *Loreto*, Urubamba; *Amazonas*, Chachapoyas; *Huánuco*, Tingo María 680 m; Pozuzo; Chinchao; *San Martín*, Pulcache; Moyobamba; Rioja; *Pasco*, La Salud 800 m; *Cuzco*, Illapani Viejo; Rio Cosñipati 1,200 m; Oxapampa; *Junín*, La Merced; Chanchamayo; Satipo; San Ramon; Rio Colorado; Pampa Hermosa; Rio Perené; *Puno*, Inca Mines; *Cajamarca*, Chaúpe; Charapi; BOLIVIA: *La Paz*, Rio Mapiri 1,700 m; San Agustín; Guanay; *Santa Cruz*, Santa Cruz; Bueyes, Prov. Sara; Rio Yapacani; Rio Surutu; Buenavista; *Cochabamba*, Chapare; Alto Palmar 1,100 m; Charapaya; Yungas del Palmar; El Palmar 1,600 m; Cristal Mayo 600 m; ARGENTINA: *Salta*, Snía del Divisadero 500 m; Agua Blanca, Quebrada del Remanso 450 m; *Jujuy*, Jujuy, El Palmar 850 m.

***Epiphile oreia iblis* C. & R. Felder, 1861**

Figs. 12, 13, 14, 15, 90, 102, 112

Epiphile iblis C. & R. Felder, 1861. Wien. Ent. Monat. 5:105-106, n. 86. TL: Venezuela, Caracas, "Nova Granada". Syntypes: BM 1 ♂ Rh. 9357, & 1 ♀ Rh. 9358 (both ♂ and ♀ examined). (Figs. 12, 13, 14, 15).

Epiphile iblis fa. ♀ *albifasciata* Röber, in Seitz, 1914. Macrolep. World 5:478. TL: "Colombia." Syntypes: ♀ ZMHU [Syn. nov.]



Figures 8-11. *Epiphile oreia negrina* C. & R. Felder. ♂ dorsal (8), ventral (9) surfaces. PERÚ, *Huánuco*, Tingo María (JC); ♀ dorsal (10), ventral (11) surfaces. COLOMBIA, "Cauca" (BM).

Description:

As in *E. oreia* except for differences for *E. o. iblis* listed in the key to subspecies. Average wing length ♂ (25-29)27 mm, ♀ 26 mm.

Distribution:

This subspecies occurs from Caracas, Venezuela and in the Andes mountains to southern Colombia.

Taxonomy and Variation:

Röber, in Seitz (1914) confused *iblis* and *negrina*. In plate 97e, a male *iblis* is misidentified as *negrina*. The ♂ type in the BM shows the narrow median orange band broken into separate maculae and the absence of the orange macula on the basal area of the discal cell of the DFW of the male which is distinctive. No intergrades have been observed in this less common subspecies. There is some variation in the width of the submedian diagonal orange cross band on the DFW of the male.

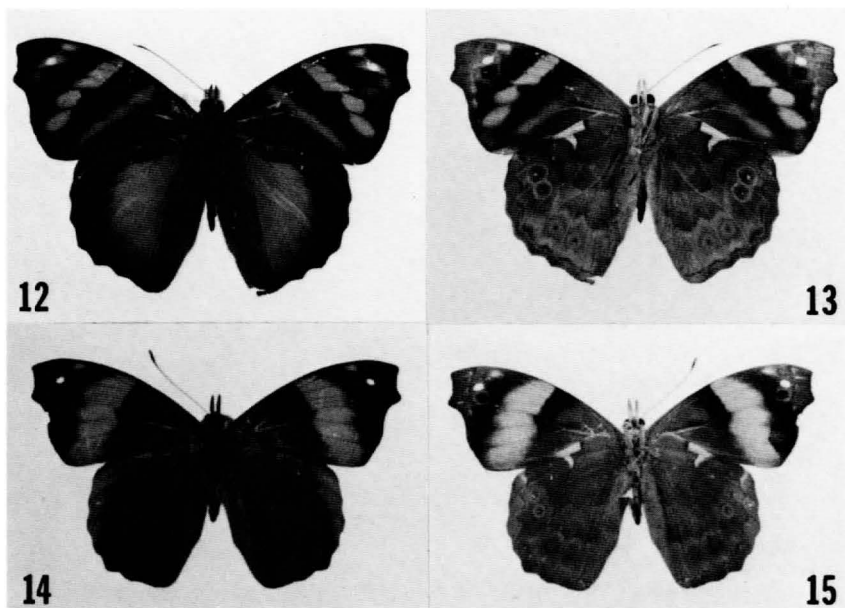
Biology:

Occurs in about the same habitat as *E. o. negrina* and into submontane forest. It is found at altitudes from 1,000-2,400 m on the western slopes and 1,000-2,300 m on the eastern slopes of the Cordillera in Colombia. It is relatively uncommon in collections.

Immature Stages and Host Plants:

Nothing is known to have been published on the immature stages of this subspecies.

Specimens Examined: 66 ♂ 3 ♀



Figures 12-15. *Epiphile oreia iblis* C. & R. Felder. ♂ dorsal (12), ventral (13) surfaces. VENEZUELA [Distrito Federal], Caracas. Syntype *Epiphile iblis* C. & R. Felder (BM). ♀ dorsal (14), ventral (15) surfaces. "VENEZUELA," Syntype, *Epiphile iblis* C. & R. Felder (BM).

VENEZUELA: *Aragua*, Rancho Grande 1 ♀ UC; Colonia Tovar 1 ♂ UC; *Lara*, Terepaima 1 ♂ UC; Cabudare 1 ♂ UC; Humocara 1 ♂ UC; Sanare 1 ♂ UC; *Distrito Federal*, Caracas 1 ♂ Type BM; 1 ♂ AA; *Mérida*, Mts. of Mérida 1 ♂ CM; No specific locality 1 ♀ "type" BM; 1 ♂ MZ; COLOMBIA: *Cundinamarca*, Bogotá 2 ♂ CM; 5 ♂ SI; 2 ♂ BM; 10 ♂ MP; Carmen de Yacopí Apr. 1 ♂ CM; *Tolima*, La Marina 1,400 m May 1 ♂ AM; Jun. 1 ♂ AA; El Santuario 1 ♂ BM; Rio Chile 1 ♂ BM; *Valle*, Cali 1,000 m Sep. 1 ♂ AA; Oct. 1 ♂ JC; Aug. 1 ♂ MM; 1,000 m May, Oct. 2 ♂ UN; Aug. Dec. 2 ♂ SI; Corinto 1 ♂ BM; *Magdalena*, Cacagualito 600 m 1 ♂ CM; *Caldas*, Manizales 1 ♂ BM; *Meta*, Villavicencio 1 ♂ MZ; 1 ♂ BM; *Antioquia*, Frontino 1 ♂ BM; No specific locality 3 ♂ 1 ♀ ST; 14 ♂ AM; 2 ♂ SI; ECUADOR: 2°S 78°W, 875 m. Nov. 1 ♂ AM.

***Epiphile oreá plusios* Godman & Salvin, 1883 [Stat. rev.]**

Figs. 16, 17, 18, 19, 90, 102, 112

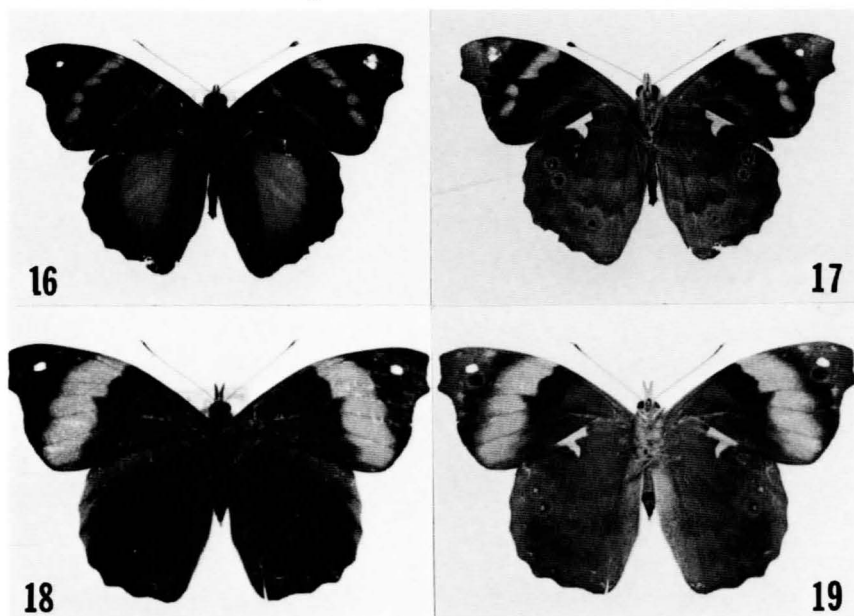
Epiphile plusios Godman & Salvin, 1883. *Biologia Centrali Americana* 1:236. TL: Costa Rica [Cartago] Cachí & Irazú 1 ♂ & 1 ♀ and Panamá, [Chiriquí] Volcán de Chiriquí, 1 ♂. Syntypes: BM Rh. 9360, 1 ♂, BM Rh. 9361, 1 ♀ (Examined). (Figs. 16, 17, 18, 19).

Description:

As in *E. oreá* except for differences for *E. o. plusios* listed in the key to subspecies. Average wing length ♂ (25-26)25.5 mm, ♀ 29 mm.

Distribution:

Occurs in the Cordilleran mountain range from central Costa Rica to Chiriquí and Darién, Panamá. It is found on both slopes of the Cordillera de Talamanca and volcanoes in the



Figures 16-19. *Epiphile oreá plusios* Godman & Salvin. ♂ dorsal (16), ventral (17) surfaces. COSTA RICA, Cartago, Cachí. Syntype, *Epiphile plusios* Godman & Salvin (BM). ♀ dorsal (18), ventral (19) surfaces. COSTA RICA, Cartago, Irazú. Syntype, *Epiphile plusios* Godman & Salvin (BM).

Carrillo Belt from 1,000 m in Chiriquí.

Taxonomy and Variation:

This subspecies is well defined and could be considered as a separate species. Since there was no significant difference in the male genitalia and hypandrium from the South American *orea* subspecies, it was included in *E. orea*. The male and female syntypes in the BM were examined and they are typical of the other specimens studied. There was a slight variation observed in the width of the narrow submedian diagonal orange cross band on the DFW of the male.

Biology:

According to DeVries (pers. comm.) adults are most common in rainshadows and in semi-dry mountain passes where both sexes fly at canopy level. The males perch in the canopy along forest edges or lightgaps and chase other butterflies, returning to the same perch day after day. The females are active in the canopy during the mornings and then at ground level in lightgaps during mid-day. Both sexes are extremely erratic, flitting from leaf to leaf in rapid succession. The males appear to feed only on fresh mammal feces or carrion, whereas the females are occasionally attracted to rotting fruits. This species is uncommon and local. It has been collected from January until June in Costa Rica.

The adults are found in cloud forest habitats from 1,000-2,000 m.

Immature Stages:

DeVries (pers. comm.) states: "Mature larva: body dark emerald green; ten pairs of orange-yellow warts on either side of the dorsum, each with a pair of short black spines; penultimate segments with one wart centrally located with a rosette of spines; a fine wavy yellow lateral line just above the legs; head capsule broad and flat at the face; frontal half dark blue with two turquoise crescents on the face; clypeus white; posterior half of head brown; sides of head with short spines being densest at the mandibles; a pair of prominent head horns with four whorls of spines on shaft; venter of body waxy white. Pupa: Same as *E. adrasta*. Note: The larvae in Costa Rica appear to be different than those described by Müller (1886) from Brazil"

Specimens Examined: 31 ♂ 13 ♀

COSTA RICA: *Cartago*, Cachí 1 ♂ HT, 1 ♀ BM; Irazú syntype (labelled "Type HT") 1 ♀ BM; Moravia de Chirripó 1,100 m Apr. 1 ♂ (Hesterberg); *San José*, Parque Carrillo 1,050 m Jun. 1 ♂ GS in SI; *Puntarenas*, San Vito 1,150 m Apr. 1 ♂ JC; Sep. 10 ♂ GS in SI; Río Cotón, 1,500 m Feb. 1 ♂ GS in SI; No specific locality 1 ♂ BM; Los Bajos 1 ♀ SI; "both slopes of Cordillera de Talamanca" 1,000-1800m, "Volcanoes in the Carrillo Belt," De Vries (pers. comm.); PANAMÁ: *Chiriquí*, Volcán de Chiriquí, 1,300-2,000 m Feb. Mar. 2 ♂ BM; "Chiriquí" 2 ♂ 9 ♀ BM; 1 ♂ MP; 1 ♂ MZ; 1 ♂ CM; 2 ♂ SI; 4 ♂ MN; 1,200 m Jun. 1 ♀ GS in SI; Santa Clara 1,400 m 1 ♂ GS in SI; *Darién*, Cana 1,100 m. Jul. 1 ♂ GS in SI.

***Epiphile plutonia* Bates, 1864**
Figs. 20, 21, 22, 23, 91, 103, 112

Epiphile plutonia Bates, 1864. Ent. Mon. Mag. 1:113. TL: Guatemala (Alta Verapaz, Polochic Valley). Type: Holotype 1 ♂ BM Rh. 9359 (Examined). (Figs. 20, 21).

Description:

Male. Black or purplish-black base color of wings. DFW blackish-purple with an orange submedian dash across discal cell only. Subapical area with a single white macula. VFW with a diffuse submedian orange cross band, a black median and an orange postmedian cross band. Subapical area with black and white maculae surrounded by a ring of orange. DHW black with an iridescent blue discus. VHW with a costal median tan triangular area. Wavy diffuse brownish bands are present and four postmedian ocelli. Rami of

hypandrium with three to four teeth, valva with six to seven spines.

Female. Base color brown. DFW with a broad orange postmedian cross band and a single white macula. DHW brown with distal margin orange. VHW similar to male.

Average wing length ♂ (25-29)27 mm, ♀ (27-31)29 mm.

Distribution:

Restricted in range to isolated mountains from 800-1,800 m from near Jalapa, Vera Cruz to Chiapas, México and in Guatemala.

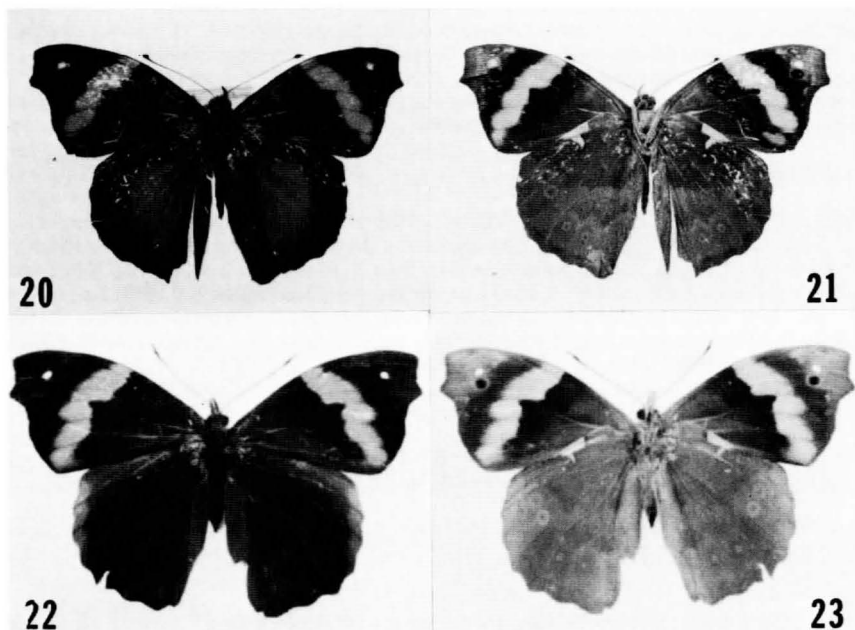
Taxonomy and Variation:

The holotype male examined in the BM is typical of the other specimens studied. The main variation noted in the males was the length of the submedian diagonal orange cross bar which normally extends to M_3 . A few specimens have a very thin orange extension to Cu_2 . The female shows a slight variation in the width of the yellowish postmedian diagonal cross band of the DFW.

Biology:

Adults occur in the cloud forest area of east central México from 1,100 to 1,800 m and at El Triunfo from 1,400 m to 2,200 m. According to J. de la Maza (pers. comm.) *E. plutonia* has been collected in May and Aug.-Sept. from 1,200 to 1,500 m. and in Dec.-Jan. from about 800 m.

This species is very local and uncommon. On the upper slopes of Volcán Santa Marta it is found only in the montane thicket. The adults chase each other and rest on leaves about 3-6 m above the ground in patches of sunlight. The flight is very rapid and erratic (Ross, 1976).



Figures 20-23. *Epiphile plutonia* Bates. ♂ dorsal (20), ventral (21) surfaces. GUATEMALA, Alta Verapaz, Polochic Valley. Holotype, *Epiphile plutonia* Bates (BM). ♀ dorsal (22), ventral (23) surfaces. GUATEMALA, Alta Verapaz, Paraiso, 3,000 ft. Paralectotype, *Epicalia plutonia* Bates (BM).

Immature Stages and Host Plants:

Nothing is known of the immature stages or host plants of *E. plutonia*.

Specimens Examined: 33 ♂ 10 ♀

MÉXICO: Veracruz, Jalapa 1 ♂ SI; Mirador 1,400 m, May 1 ♂ (coll. R. Müller) MH; Dos Amates; Catemaco Jun. 1 ♂ FC; Volcán Santa Marta 1,200-1,600 m, Mar. Jun. Jul. 5 ♂ (Ross, 1976); Puebla, Apulco 1 ♂ (Escalante); Oaxaca, Sierra Juárez, La Esperanza, Sep. 1 ♂ 1 ♀ DM; Metates Feb.-Apr. 7 ♂ DM; Chiapas, Santa Rosa, Comitán, Mar., May, Jun. 6 ♂ 5 ♀ AA; May 1 ♂ JC; May 1 ♂ Aug. 2 ♀ DM; Lago Montebello Sep. 1 ♀ AA; Las Delicias Jul. 1 ♂ AA; No specific locality 1 ♂ AM; 1 ♂ MZ; El Triunfo 1,200-1,800 m May, Aug. Sep. 1 ♂ DM; GUATEMALA: Alta Verapaz, Polochic Valley 1 ♂ BM; Baleu 1 ♂ AM; Baja Verapaz, Purulá 1 ♂ BM; Retalhuleu, Paraíso 1 ♀ BM; Quetzaltenango, Volcán Santa María May 2 ♂ SI.

Epiphile epimenes

E. epimenes is restricted to the Andean mountainous area of Colombia and Venezuela. The adult males have beautiful iridescent blue on both fore and hind wings which may extend into the DFW orange bands giving an iridescent pinkish blue color. The males are relatively uncommon, the females very rare. I have identified 123 ♂ and 8 ♀.

The species is divided into three subspecies. *E. e. electra* is isolated and found only in the Cordilleras in Venezuela. *E. e. epimenes* is found in Colombia in the Cordillera Central and the Cordillera Oriental. It also extends into the Cordillera Occidental which is in the range of *E. e. kalbreyeri* to which it is very closely related and intergrades in some localities.

The male genitalia and hypandria of the three taxa are almost identical. The male iridescent bluish coloration is most extensive in *electra* extending through and beyond the postmedian diagonal orange cross band of the DFW, and reduced to the basal $\frac{1}{2}$ in *kalbreyeri*. The blue covers nearly all of the DHW in *electra* and *epimenes* but is limited to the basal $\frac{1}{2}$ (more extensive viewed at an angle) in *kalbreyeri*. There is much intergradation between *epimenes* and *kalbreyeri*.

Description:

Male. The base color of wings is blackish but there is much iridescent blue. DFW with iridescent blue extending to basal third or extending into postmedian cross band. A submedian orange-blue cross band may be present. The postmedian cross band is composed of orange or orange-blue maculae. There is a white and two orange subapical maculae. VFW basal third orange-ochre, a dark brown median cross band containing a light blue macula, a postmedian orange cross band with brown distal margin; subapical area with white and black maculae in an orange ring. DHW with blue discus and a postmedian orange-blue stripe may be present. VHW with a whitish costal median triangular patch. A large dark brown triangular area extends distally at M_2 , surrounded by lighter brown, and usually four postmedian ocelli. Rami of hypandrium with five to six teeth; valva with nine to twelve spines.

Female. Base color of wings brown. DFW with postmedian row of white maculae forming a cross band surrounded by blackish-brown. Subapical area with two whitish maculae and a brownish area at M_1 . VFW with basal ochre area, a black median band, an irregular white postmedian cross band with black distally and black and white subapical maculae in an orange ring. VHW as in male but with lighter brown color and less prominent ocelli.

Key to Subspecies of *Epiphile epimenes*

Males.

- 1a. DHW with pinkish postmedian band; blue iridescence extending to outer margin;
DFW usually with a pinkish submedian crossband (Venezuela) *electra*
- 1b. DHW without a pinkish postmedian band; blue iridescence not extending to

- outer margin (except in reflected light); DFW without a pinkish submedian crossband 2
- 2a. DFW with a postmedian cross band of wide pinkish maculae, blue iridescence extending about half the length of the wing *epimenes*
- 2b. DFW with a postmedian cross band of narrower orange maculae; blue iridescence not extending to cross band of maculae; DHW with blue iridescence only in basal third, except in reflected light (Western slope of Andes in Colombia) *kalbreyeri*

***Epiphile epimenes epimenes* Hewitson, 1857 [Stat. rev.]**

Figs. 24, 25, 26, 27, 92, 104, 113

Epiphile epimenes Hewitson, 1857. Exot. Butt. 2: *Epiphile* [47], part [21], pl. [24], t. 1, f. 1 & 2. TL: "N. Granada", Colombia [*Cundinamarca*], Bogotá. Syntypes: 1 ♂ Rh. 9363, BM 15-193. (Examined). (Figs. 24, 25).

Description:

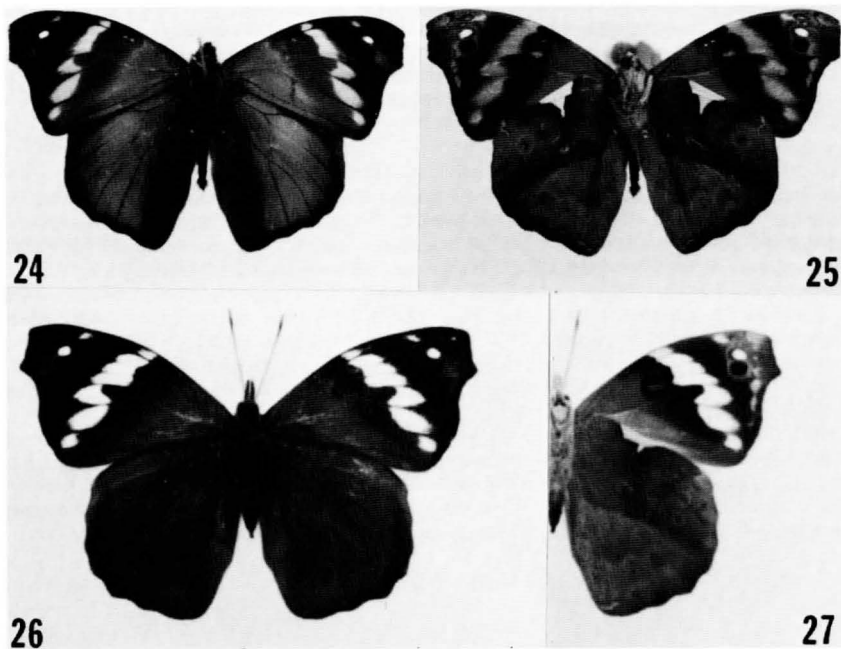
As in *E. epimenes* except for differences for *E. e. epimenes* listed in the key to subspecies. Average wing length ♂ (27-31)/29 mm, ♀ (29-31)/30 mm.

Distribution:

Occurs in central and northern Colombia, especially in the Cordillera Central and the Cordillera Oriente. Intergrades are found with *E. e. kalbreyeri* in the Cordillera Occidental.

Taxonomy and Variation:

The ♂ "type" in the BM was examined and it is typical of the other males studied.



Figures 24-27. *Epiphile epimenes epimenes* Hewitson. ♂ dorsal (24) ventral (25) surfaces. "N. Grenada" COLOMBIA, [*Cundinamarca*], Bogotá. Syntype *Epiphile epimenes*. Hewitson (BM). ♀ dorsal (26) ventral (27) surfaces. "COLOMBIA, Villa Elvira" (BM).

The amount of iridescent blue varies on the DFW. In the intergrade males with *kalbreyeri* the blue is reduced in the postmedian diagonal crossband. One intergrade of *epimenes* from "Colombia" in a Staudinger specimen (CM) shows a small amount of orange-pink postmedian longitudinal stripe on the DHW. The figure in Röber, in Seitz (1914) pl. 97e is exactly the same.

Biology:

Fassl (1918) reports *epimenes* at altitudes from 1,800 to 2,400 m in the western slopes of the Cordillera Central and from 1,700 to 2,300 m on the eastern slopes of the Cordillera Oriente in Colombia. Males of this subspecies were collected by Steinhauser (AA Coll.) in a trail near the Rio Ambeima, Colombia, by a forest at 1,400-1,700 m. Adults have been collected in June, October, and December.

Immature Stages:

Nothing is known to have been published on the immature stages and host plants of this species.

Specimens Examined: 72 ♂ 5 ♀

COLOMBIA: *Cundinamarca*, Bogotá 25 ♂ 1 ♀ BM; 1 ♂ SI; 8 ♂ MP; Pacho 2,000 m 1 ♂ BM; 1 ♀ (Fassl) SI; 2 ♂ AA; *Meta*, San Martín, Rio Meta 1 ♂ BM; *Boyacá*, Muzo 1 ♂ ST; 2,800 m Oct 1 ♂ AA; *Valle*, Cali 1,000 m Dec. 1 ♂ SI; *Caldas*, Manizales Oct. 1 ♂ AA; Guamocó 1 ♂ AM; *Tolima*, La Marina, Rio Ambeima, 1,400-1,700 m, Jun. 5 ♂ AA; Honda 1 ♂ BM; *Antioquia*, Frontino 1 ♂ BM; No specific locality 10 ♂ AM; 10 ♂ 2 ♀ BM; 1 ♂ AA; 1 ♂ MM; "Villa Elvira" 1 ♀ BM.

Epiphile epimenes electra Staudinger, [1885] [Stat. rev.]

Figs. 28, 29, 30, 31, 92, 104, 113

Epiphile electra Staudinger, [1885]. Exot. Tagfelt 1:111, Pl. 41, fig. [2]. TL: Venezuela, Mérida. Syntypes: Mus. Zool. Berlin.

Description:

As in *E. epimenes* except for differences for *E. e. electra* listed in the key to subspecies. Average wing length ♂ (27-30)28 mm, ♀ (29-30)29 mm.

Distribution:

The known distribution is limited to central Venezuela in the Cordillera de Mérida and in the Sierra de Perijá on the Colombia border.

Taxonomy and Variation:

There is a female specimen of *electra* in the BM from Venezuela, Druce Coll., Godman & Salvin coll. labeled *Epiphile epimenes*. It also has a green label "empara Bd." This is probably a manuscript name by Boisduval and would be *nomen nudum*.

There is some variation in the length and coloring of the pinkish-orange postmedian stripe on the DHW. A specimen from the Staudinger coll. (CM) labeled *E. epimenes* from Colombia is an intergrade with a relatively short stripe.

Biology:

Specimens have been collected from elevations of about 1,000 to 2,000 m, but this is based on very little data since this is a rare and localized subspecies. Adults have been collected in February, June and September.

Immature Stages:

Nothing is known about the immature stages or host plants.

Specimens Examined: 31 ♂ 3 ♀

VENEZUELA: Mérida, Mérida 6 ♂ 1 ♀ BM; Monte Sierra 2 ♂ 1 ♀ BM; 1 ♂ AA; La Culata 2 ♂ BM; Pedregosa 2 ♂ BM; La Chosiera 1 ♂ UC; San Jacinto 1 ♂ BM; Trujillo, Trujillo Sep. 1 ♂ UC; Táchira, La Grita 1 ♂ UC; Barinas, La Chimenea Jun 1 ♂ UC; Lara, Humocaro Alto Feb. 1 ♂ UC; COLOMBIA: (?) Cundinamarca, Bogotá (?) 2 ♂ SI; 1 ♂ BM; 2 ♂ CM; César, San José 1 ♂ BM; No specific locality 1 ♂ CM; 4 ♂ MZ; 1 ♀ BM.

***Epiphile epimenes kalbreyeri* Fassl, 1912 [Stat. rev.]**
Figs. 32, 33, 92, 104, 113

Epiphile epimenes form *kalbreyeri* Fassl, 1912. Ent. Rundsch. 29(19):121-123. TL: "Kolumbischen West-Cordillere in Höhen von 1800 bis 2200 m." Syntypes: ♂ ♀ ZMHU?

Description:

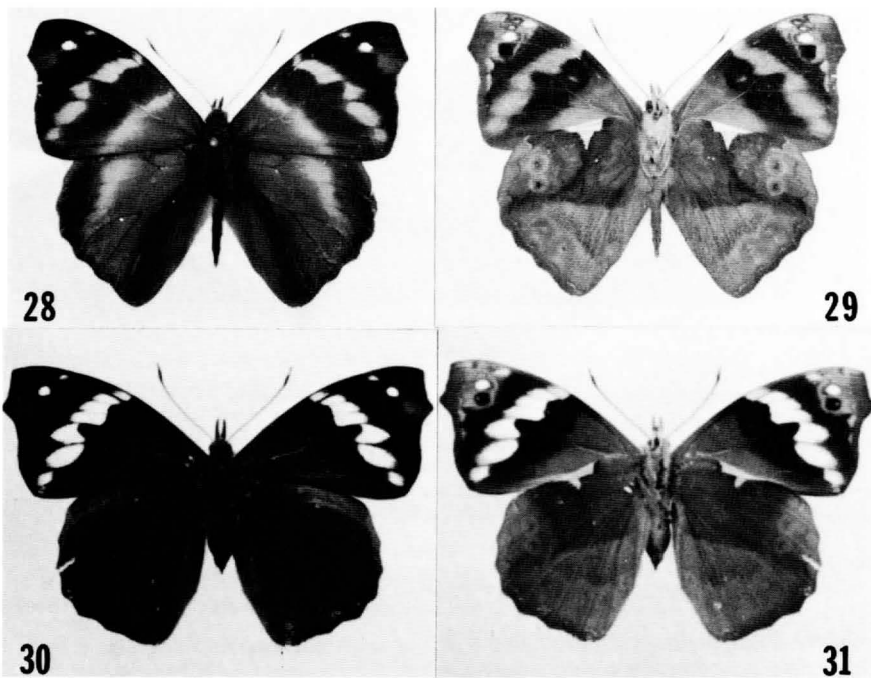
As in *E. epimenes* except for differences listed for *E. e. kalbreyeri* listed in the key to subspecies. Average wing length ♂ (26-29)28 mm. ♀ unknown.

Distribution:

Occurs only in western Colombia in the Cordillera Occidental. Intergrades occur at Cali, Muzo and on the eastern slope of the Cordillera Occidental.

Taxonomy and Variation:

There is variation in the amount of iridescent blue on the DFW of the male which extends to the orange postmedian diagonal cross band in intergrades. This is apparently a valid subspecies which has a restricted range and is relatively uncommon.



Figures 28-31. *Epiphile epimenes electra* Staudinger. ♂ dorsal (28), ventral (29) surfaces. VENEZUELA, Mérida, Mérida (BM). ♀ dorsal (30), ventral (31) surfaces. VENEZUELA, No specific locality. (Syntype of *Epiphile empara* Boisduval (*nomen nudum*) (BM).

Biology:

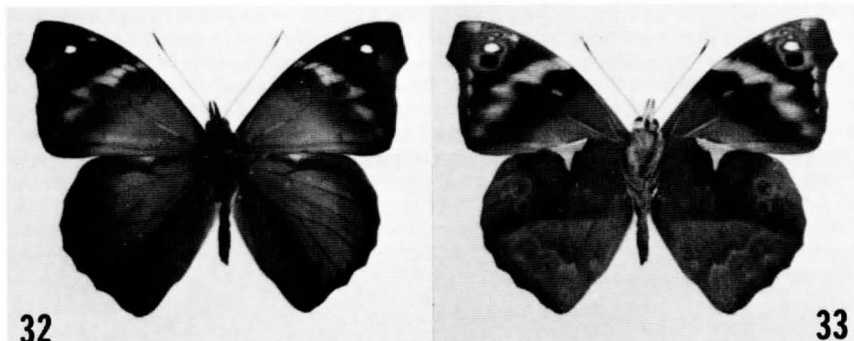
Adults have been collected from 1,000 to 2,200 m according to data on specimens in collections. They have been found in February, April, September and October.

Immature Stages:

Nothing is known about the immature stages or host plants of this subspecies.

Specimens Examined: 20 ♂

COLOMBIA: *Valle del Cauca*, Cali X 1,000 m 1 ♂ JC; Oct. 1 ♂ UN; Sep. 1 ♂ MM; Rio Aguacatal 2,000 m 1 ♂ SI; 1 ♂ BM; 1 ♂ MZ; Tornel 1 ♂ BM; Rio San Juan de Micay, Apr. 1 ♂ AM; Queremal 1,300 m. Feb. 1 ♂ AM; *Cauca*, No specific locality. 1 ♂ CM; 1 ♂ MP; *Risaralda*, Pereira 1 ♂ BM; *Caldas*, Manizales 7 ♂ BM; *Boyacá*, Muzo X 1 ♂ BM.



Figures 32-33. *Epiphile epimenes kalbreyeri* Fassl. ♂ dorsal (32) ventral (33) surfaces. COLOMBIA, *Boyacá*, Muzo (BM).

Epiphile dinora Fassl, 1912 Figs. 34, 35, 36, 37, 93, 105, 114

Epiphile dinora (Staudinger, i. l.) Fassl, 1912. Ent. Rundsch. 29(19):121-123. TL: Western Colombia (Aguaca Valley, 2,000 m). Syntypes: Location unknown.

Epiphile chrysites var. *major* Fassl, 1914. Ent. Rundsch. 31:44 (p. 13 in separate (Published 25 Apr. 1914). TL: "Bolivia". Syntype: Location unknown. [Syn. nov.]

Epiphile fassli (Weymer, MS.) Fassl, 1914. Ent. Rundsch. 31:44 (13 in separate. (Published 25 Apr. 1914)). TL: Syntypes: [Syn. nov.].

Epiphile dinora "Fassli", Röber, in Seitz, 1914. Macrolep. World 5:479.

Epiphile fassli (Weymer i.l.) Röber, in Seitz, 1914. Macrolep. World. 5:479 (published 28 July 1914, date rcd. at BM library; signature is "19 June, 1914). Pl. 97 f. figs. [5+6].

TL: Perú, [Pasco], Pozuzo. Syntypes: ♂ ♀ MHU [Syn. nov.]

Description:

Male. Base color of wings black. DFW with dark grey basal area, a broad orange submedian cross band, a blackish-purple median crossband, an irregular orange postmedian crossband with black distally. Subapical area with two orange and one whitish maculae. VFW similar to above but median black band contains a light blue macula, and subapical area has a white and a black macula partially enclosed in a brownish ring. DHW with brown basal color with a longitudinal postmedian orange stripe and an orange distal margin. VHW with a costal median whitish triangular macula, a dark brown triangular area extending distally to M_2 , surrounded by lighter brown with three or four postmedian ocelli. Rami of hypandrium with five to eight teeth; valvae with 12-15 ventral spines.

Female. Base color of wings brown. DFW with a postmedian crossband of white maculae,

and two white subapical maculae. VFW with ochre basal area, a brown median cross band, a postmedian irregular white cross band followed distally by dark brown. Subapical area with white and black maculae partially enclosed by a brown ring. VHW similar to male but lighter brown.

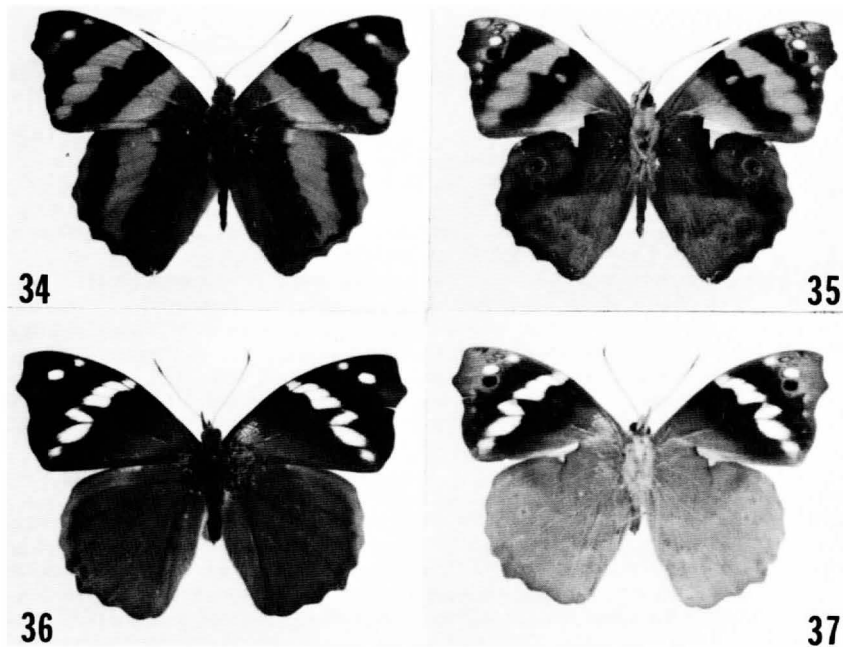
Average wing length ♂ (24-33)28 mm, ♀ (27-28)28 mm.

Distribution:

Occurs in the Andes mountains in northern Colombia, Ecuador, Perú and Bolivia. It is mostly limited to higher areas from about 1,000 to 2,500 m.

Taxonomy and Variation:

This and related species are difficult to identify and many specimens in museums and collections are incorrectly identified. *E. dinora* is very similar to *E. epicaste* and *E. chrysites* on the dorsal surface of the ♂, however, on the VHW it is distinctive due to its plain brown color with a somewhat triangular darker brown basal area extending distally in M_1 - M_2 . Röber, in Seitz (1914) and others attempted to use dark spots at the base of the DFW for identification. Small series from the same locality show this to be of little or no value. The size of specimens varies greatly (♂ 24-33 mm). Larger specimens (30-33 mm) have a lighter brown and less triangular area on the VHW and occur in Colombia, Perú and Bolivia with no separate geographic range. The male genitalia and hypandria of these large specimens are the same as *E. dinora*. *E. fassli* and *E. chrysites major* are considered to be synonyms based on their similarity of wing patterns and male genitalia. However, the types of *dinora*, *fassli*, and *chrysites major* were not found. Many specimens by Fassl with older determinations from topotypical areas were studied in several museums. Until the types are located (if they still exist) there could be some doubt about



Figures 34-37. *Epiphile dinora* Fassl. ♂ dorsal (34) ventral (35) surfaces. BOLIVIA, Cochabamba, Cochabamba (BM). ♀ dorsal (36) ventral (37) surfaces. ECUADOR, "San Ignacino" (BM).

the exact identity of these taxa. The ♀ of *dinora* was described and illustrated by Biedermann (1927) (after erroneous descriptions by others).

Biology:

Occurs at higher altitudes from 1,000 m to 2,500 m. The species is relatively uncommon, only 40 ♂ and 3 ♀ were found in all museums and collections studied. Adults have been collected in March, April and August to October.

Immature Stages:

Nothing is known of the immature stages and food plants.

Specimens Examined: 40 ♂ 3 ♀

VENEZUELA: *Aragua*, Choroni 1 ♂ UC; COLOMBIA: *Antioquia*, Mesopotamia 1,600 m 1 ♂ CM; Frontino 2 ♂ CM; 2 ♂ BM; *Meta*, Villavicencio 1 ♂ BM; *Valle*, Rio Aquacatal 2,000 m ("fassli") Fassl SI; Corinto 1 ♂ BM; Cali 1,000 m 1 ♂ Jul UN; NL 1 ♂ MN; ECUADOR: *Tungurahua*, La Merced, Rio Pastaza 1,300 m 2 ♂ CM; Baños 1,300 m 1 ♂ CM; *Manabí*, Venado 1 ♂ BM; *Bolívar*, Balzapamba 1 ♀ SI; *Putumayo*, San Francisco 1 ♀ BM; *Zamora-Chinchipe*, Zamora 1 ♂ BM, "San Ignacino" 1 ♀ BM; PERÚ: *Huánuco*, Cushi 1 ♀ BM; *Puno*, Chirimayo 1 ♂ BM; Inca Mines Oct. 1 ♂ BM; *Cuzco*, Marcapata 1 ♂ BM; Inambari 1 ♂ BM; *Junín*, La Merced 850 m 1 ♂ Jul. AA; Chanchamayo 4 ♂ BM; 1 ♂ BM; Pampa Hermosa 1 ♂ BM; *Cajamarca*, Huancabamba 1,600 m 1 ♂ BM; 1 ♂ MN; Rio Tabaconas 2,000 m 1 ♂ BM; BOLIVIA: *La Paz*, La Paz 1 ♂ MN; Coroico 1 ♂ LA; *Santa Cruz*, Bueyes 1 ♂ BM; *Cochabamba*, Chapare, Palmar 1,600 m Mar. 4 ♂ AA; Sep. 2 ♂ MM; Jun. 1 ♂ JC; Yungas del Palmar 1,000 m Aug. Sep. 1 ♂ 1 ♀ UP; San Jacinto 1 ♂ BM; *Cochabamba* 1 ♂ BM.

***Epiphile chrysites* (Latreille), [1809]**

This is the earliest described species of the genus and it has been confused with *E. epicaste*, *E. dinora* and *E. fassli*. It occurs in the Andes mountains from Venezuela to Bolivia. In the southern part of its range it is brightly colored in the subspecies *dilecta*. A new subspecies is described from Venezuela with the male orange median longitudinal stripe of the DHW of *chrysites* changed so that the outer half of the wing is orange.

Description:

Male. DFW with basal area dark brown (or bluish-purple) with irregular distal margin, a submedian orange cross band, a blackish (or blue) median cross band, an orange postmedian cross band with black distally. Subapical area with a row of three orange or two orange and a whitish maculae. VFW with a grey-brown basal area, an orange submedian cross band, a brown median band with a light blue macula, and an irregular orange postmedian band. The subapical area may have a light blue narrow stripe and white and black maculae. DHW brownish or purplish with a subapical ocellus; a postmedian orange longitudinal stripe and orange distal margin, or distal half orange with a black submarginal band. VHW with a large costal median triangular golden macula; inner area with a dark brown triangular area, with four orange circular ocelli and submarginal "V" shaped markings. Rami of hypandrium with six to eight teeth; valvae with 12 to 15 ventral flat spines.

Female. Basal color of wing brown. DFW with a postmedian white cross band and two white subapical maculae. VFW with ochre basally with diffuse dark grey distally, with a broad white postmedian cross band, and with a small and a large white and a black macula surrounded by brown. VHW similar to male but lighter brown.

Key to Subspecies of *Epiphile chrysites*

Males.

- 1a. DFW with submedian dark cross band narrow (3.5 mm at widest); DHW with outer half bright orange except a very narrow submarginal dark band (Venezuela) *venezuelensis*
- 1b. DFW with submedian dark or purple cross band broader (5 mm at widest); DHW with a postmedian orange or pink-orange longitudinal stripe extending from median anterior edge to distal submarginal area 2
- 2a. DFW with basal and medial areas bright purple; submedian and postmedian cross bands pinkish-orange with light purple shadow; subapical area with one white and two ochre maculae; DHW basal and medial area proximal to postmedian stripe purple; postmedian longitudinal stripe pink-orange (Bolivia, S. Perú) *dilecta*
- 2b. DFW with basal and medial areas brown-black with little purple; submedian and postmedian cross bands orange; subapical area with three orange to ochre maculae (Panamá to Bolivia) *chrysites*

Females.

- 1a. DHW with median diffuse orange area; VHW with diffuse brown markings; ocelli not very prominent; submarginal wavy line dull brown *chrysites*
- 1b. DHW without median diffuse orange area; VHW with prominent markings especially circular orange ocelli; submarginal wavy line black with thin outer white line *dilecta*

***Epiphile chrysites chrysites* (Latreille), [1809] [Stat. rev.]**

Figs. 38, 39, 40, 41, 94, 111, 115

Nymphalis chrysites Latreille, [1809]. Humb. Bonpl. Obs. Zool. 1:245, 390, t. 25, f. 1 & 2. ♀ TL: Perú [Piura]. "pres de Guacabamba" (=Huacabamba); Syntypes: Not found in BM.

Description:

As in *E. chrysites* except for differences listed for *E. c. chrysites* in the key to subspecies. Average wing length ♂ (25-30)28 mm, ♀ (27-31)29 mm.

Distribution:

In the Andes mountains from Venezuela through Colombia, Ecuador, Perú and Bolivia.

Taxonomy and Variation:

E. chrysites is highly variable even from the same locality. There is much variability in the darkness and maculation of the basal area of the DFW of the ♂, in the width and indentation of the postmedian orange diagonal cross band, and in the DHW in the width and tapering of the postmedian orange stripe. The postmedian circular ocellus in Cu₁-Cu₂ on the DHW may be a large black macula to a small dot surrounded by an orange circle, totally absent, or a dark macula in the orange stripe in M₃-Cu₁. There is also variation in the pattern and intensity of coloring of the VHW. Some specimens approach the markings of *E. epicaste*. There is no significant difference in the ♂ genitalia between these very close species. There is an intergrade between *E. c. chrysites* and *E. c. dilecta* from Oxapampa, Pasco, Perú with a white subapical spot on the ♂ DFW, with almost no purple coloring typical of *dilecta*. A ♂ specimen labelled "México" in MP is an obvious error in locality.

Biology:

Occurs in higher elevation tropical and submontane forest from over 800 m to 2,500 m, more commonly over 1,100 m. In La Marina area in Colombia a male with deep purple coloring was collected at 1,600-1,900 m in a road near a river at the edge of a tropical forest. Fassl (1918) reports *E. chrysites* occurs from altitudes from 1,800 to 2,400 m in

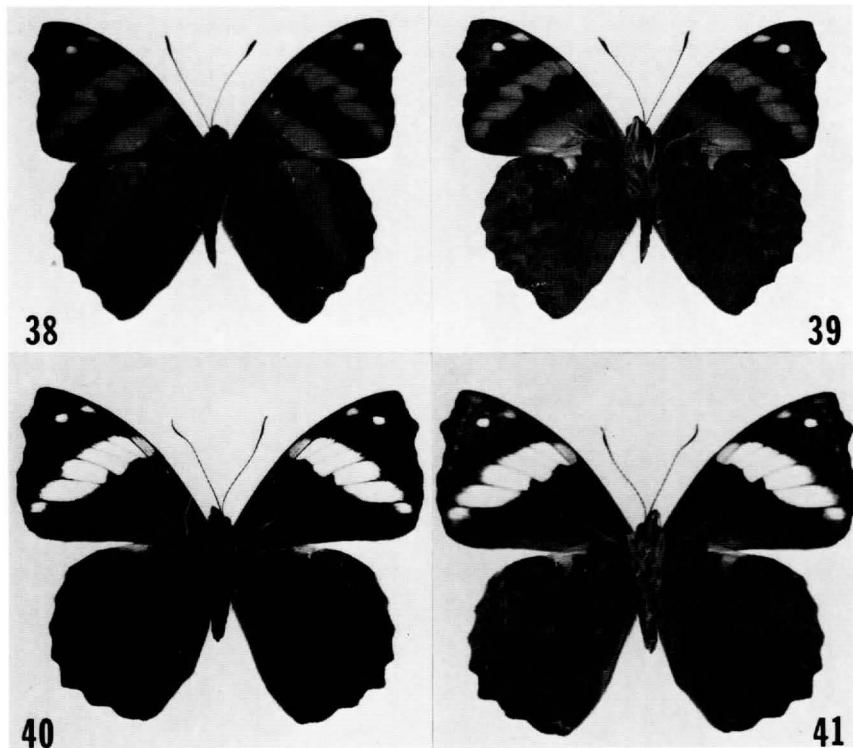
the western slopes of the Cordillera Central and from 1,700 to 2,300 m on the eastern slopes of the Cordillera Oriente in Colombia. Adults have been collected during every month of the year with perhaps more in February to June.

Immature Stages:

Nothing is known of the immature stages or food plants.

Specimens Examined: 90 ♂ 12 ♀

PANAMÁ: *Chiriquí*, Chiriquí (?) 1 ♀ BM; VENEZUELA: *Aragua*, Maracay 2 ♂ UC; COLOMBIA: *Antioquia*, Valdivia 1 ♂ BM; Frontino 1 ♂ BM; *Caldas*, Manizales 3 ♂ BM; Guamocó 2 ♂ AM; *Tolima*, Cañón del Tolima 1 ♀ BM; La Marina 1,900 m 2 ♂ 1 ♀ AA; *Cundinamarca* Fusagasugá 1 ♂ BM; Q. Tasajeras 2,000 m Feb. 1 ♀ AA; Bogotá 19 ♂ BM; 2 ♂ CM; 2 ♂ ST; Pacho 2,200 m (Fassl) 1 ♂ SI; *Risaralda*, Pereira 1 ♀ BM; *Valle*, Rio Aguacatal 2,000 m 1 ♂ AA; 1 ♀ MZ; 1 ♀ MN; 1 ♀ SI; 2 ♀ BM; Rio Dagua 1 ♀ BM; Cali 1,000 m Jul. 1 ♂ UN; Jul. Sep. 2 ♂ MM; *Cauca*, Colima Dam Nov. 1 ♂ AA; No specific locality 1 ♂ BM; 3 ♂ CM; 1 ♂ MN; 5 ♂ AM; 10 ♂ MZ; 6 ♂ SI; 8 ♂ MP; "Villa Elvira" 1,800 m 1 ♀ MP; ECUADOR: No specific locality 1 ♂ BM; 1 ♀ BM; PERÚ: *Cajamarca*, Hacienda Taulis 1 ♂ UN; Hacienda Montesecco 1,200 m May 1 ♂ UN; Tambillo 1700 m 1 ♂ UN; *Pasco*, Oxapampa X 1 ♂ UN; Junín, La Merced 800 m 1 ♂ UN; Chanchamayo 1 ♂ MN; *Huánuco*, Tingo María 1 ♂ UC; *Cuzco*, Rio Cosñipata



Figures 38-41. *Epiphile chrysites chrysites* (Latrielle). ♂ dorsal (38), ventral (39) surfaces. COLOMBIA, *Tolima*, La Marina (AA). ♀ dorsal (40) ventral (41) surfaces. COLOMBIA, *Tolima*, La Marina (AA).

Yanamayo 2,000 m 1 ♂; Buenos Aires 2,000 m Dec. 2 ♂ UN; Cuzco Apr. 1 ♂ MZ; No specific locality 1 ♂ SI; BOLIVIA: *Cochabamba*, Chapare 2 ♂ UC; Alto Palmar 1,100 m 2 ♂ UN.

***Epiphile chrysites dilecta* Röber, in Seitz, 1914 [Stat. rev.]**

Figs. 42, 43, 44, 45, 94, 111, 115

Epiphile dilecta Röber, in Seitz, 1914. Macrolep. World 5:478. Illus. Röber, in Seitz, [1916], pl. 97, f. 4. TL: "Bolivia". Syntypes: ♂ ZMHU; (♀ syntype in Coll. Biederman, Museum Paris).

Description:

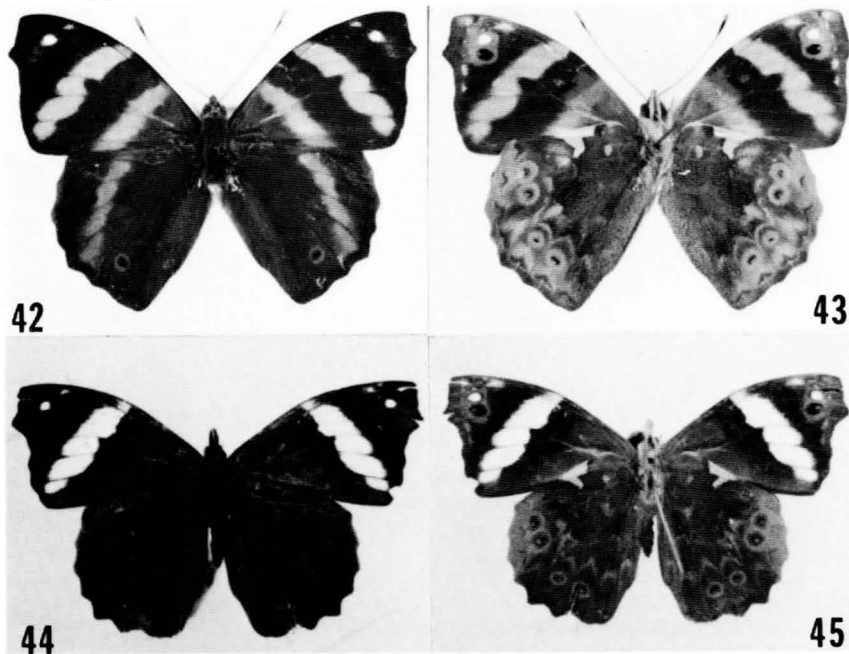
As in *E. chrysites* except for differences listed for *E. c. dilecta* in the key to subspecies. Average wing length ♂ (26-28)27 mm, ♀ 28 mm.

Distribution:

This subspecies is limited in occurrence to the Andes mountains in Bolivia and probably southern Perú. There is an intergrade from Oxapampa, Perú.

Taxonomy and Variation:

This beautiful and rare subspecies has iridescent purplish blue extending into the orange postmedian diagonal cross band on the DFW of the ♂. This results in a pale purplish orange with pink (similar to *E. epimenides electra* from Venezuela). This subspecies is known only from the southern Andes in Bolivia and probably southern Perú. The white subapical spot of the DFW of the ♂ is more characteristic of *E. epicaste*, but the pattern of the VHW is typical *E. chrysites*. The only significant variation observed is the straight or



Figures 42-45. *Epiphile chrysites dilecta* Röber. ♂ dorsal (42), ventral (43) surfaces. BOLIVIA, No specific locality (BM). ♀ dorsal (44) ventral (45) surfaces. ECUADOR (?) (BM).

tapering orange postmedian longitudinal stripe on the DHW.

Biology:

Occurs at higher altitudes from 900 to 1,600 m in or near tropical forest areas. Adults have been collected in March, June and November.

Immature Stages:

Nothing is known of the immature stages or food plants.

Specimens Examined: 21 ♂, 1 ♀

BOLIVIA: *La Paz*, Coroico 1 ♂ BM; (1 ♀ coll. Biederman) *La Paz* 2 ♂ MP; *Santa Cruz*, Bueyes 1 ♂ BM; *Cochabamba*, Cochabamba 3 ♂ BM; *San Jacinto* 2 ♂ BM; *Chapare*, El Palmar 1,600 m, Mar. 1 ♂ AA; *Alto Palmar Jun.* 2 ♂ JC; 2 ♂ UC; 1 ♂ HD; No specific locality 1 ♂ CM; 3 ♂ BM; 1 ♂ SI; PERÚ: *Pasco*, Oxapampa X 1 ♂ UN.

***Epiphile chrysites venezuelensis* Ssp. nov.**

Figs. 46, 47, 94, 111, 115

Description:

Male. DFW with small grey basal area with most of basal half orange, a postmedian black cross band, a postmedian orange band followed distally by black. In the subapical area there is a diagonal band of orange and anteriorly an orange macula. VFW with basal area mostly orange, a black median cross band, an orange postmedian cross band, followed distally by black. The subapical area has white and black maculae partially ringed by a tan circle. There is a row of small blue submarginal spots. DHW with proximal half black with an orange subapical ocellus, distal half orange with a narrow submarginal black band extending anteriorly to M_1 . VHW with a costal median orange triangular macula, basal half dark brown, distal half lighter brown with four tan postmedian ocelli and "V" shaped submarginal markings.

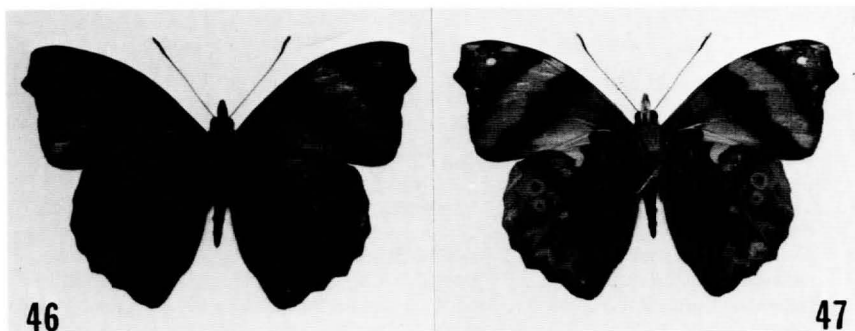
Female. Unknown.

Wing length ♂ 27 mm.

HOLOTYPE: VENEZUELA: Lara, Km 20 on road from Humocaro Alto to Campo Elias 1700 m, 8-12 Feb. 1980. Known only from the holotype deposited in the collection of the Universidad Central, Facultad de Agronomía, Maracay, Venezuela.

Distribution:

The type locality is in the Cordillera de Mérida at 1,700 m.



Figures 46-47. *Epiphile chrysites venezuelensis* Jenkins. ♂ dorsal (46), ventral (47) surfaces. VENEZUELA, Lara, Humocara Alta. Holotype (UC).

Taxonomy and Variation:

This new subspecies is described from one male. However, the major character of loss of the DHW median longitudinal stripe of *E. c. chrysites* to a broad orange distal half is of important taxonomic significance in this genus. The basal area of the DFW has only a small dark area and the basal third is bright orange. The submedian purple-black cross band is narrower (3.5 mm at widest vs. 5.0 mm in *E. c. chrysites*).

Biology:

The only information known is that it was collected at 1,700 m in February. Nothing is known of its habits or immature stages or food plants.

Epiphile epicaste Hewitson, 1857

E. epicaste occurs in Cordilleran and Andes mountains from Venezuela to Bolivia. It is difficult to distinguish from some *E. chrysites* and *E. dinora* and has been misidentified due to lack of reliable separation characters. Much study was required on male genitalia and hypandria in this group and a large number were drawn and compared.

The female of *E. epicaste* is different from all other *Epiphile* with a greenish-blue cross band on the DFW. It may be mimicry related, but is so rare that nothing is known of its relationships. I have seen only two female specimens of *E. e. epicaste* and no females of *E. e. boliviana*.

Description:

Male. DFW with basal area with basal black maculae or "V" shaped markings, with a submedian orange band, a broad black median cross band, an irregular orange postmedian cross band with the rest of wing black. The subapical area has a row of one orange, a reddish, and a white maculae. VFW with ochre basal area, a black median band, an orange postmedian cross band, and a black subapical band containing a light blue stripe. There are two subapical white maculae and a black spot. The apical area is solid grey or buff. DHW dark brown with an orange postmedian longitudinal stripe. VHW with large median costal triangular golden patch, basal 2/3 or 1/2 diffuse grey-brown, with postmedian triangles and four ocelli, submarginal row of dark triangles. Rami of hypandrium with six or eight teeth; valva with about 15 ventral spines.

Female. Base color black. DFW with a blue postmedian cross band and two white subapical maculae. VFW with ochre basal area, with wing mostly black except a light blue postmedian band extending to M_2 vein. Subapical area with two white and one black maculae, with distal area buff. DHW black with diffuse blue in apical 1/3. VHW with a median costal triangular golden patch, the rest of the wing is diffuse buff/yellowish or grey with four postmedian dark spots.

Key to Subspecies of *Epiphile epicaste*

Male.

- 1a. Dorsal surface dark purple, DHW with relatively broad postmedian stripe usually not extending posterior to Cu_1 ; VFW apical area distal to white subapical ocelli all buff orange; postmedian dark diagonal band with a prominent light blue stripe extending to M_2 ; VHW with enlarged anterior buff triangular area with yellowish distally *boliviana*
- 1b. Dorsal surface dark purple-black, DHW with relatively narrow postmedian stripe extending to submargin; VFW apical distal area flat grey-buff usually with darker shading or maculae, postmedian dark diagonal band without light blue stripe or short to R_5 ; VHW with smaller anterior buff triangular area, surrounded by darker coloration *epicaste*

***Epiphile epicaste epicaste* Hewitson, 1857 [Stat. rev.]**
 Figs. 48, 49, 50, 51, 95, 106, 116

Epiphile epicaste Hewitson, 1857. Exot. Butt. 2. *Epiphile* [47], part [21], pl. [24], t. 1, f. 3 & 4. TL: COLOMBIA, "New Granada." Syntypes: BM Rh. 9364 ♂ (Hewitson Coll.) (Examined.) (Figs. 48, 49).

= *Epiphile epicaste* ♀ ab. *bonplandioides* Fassl. 1912. Ent. Rundsch. 29(19): 121-123. TL: Colombia. Syntypes: Unknown, Zoologisches Museum Berlin? [Syn. nov.]

Description:

As in *E. epicaste* except for the differences listed for *E. e. epicaste* in the key to subspecies. Average wing length ♂ (26-30)28 mm, ♀ (25-28)27 mm.

Distribution:

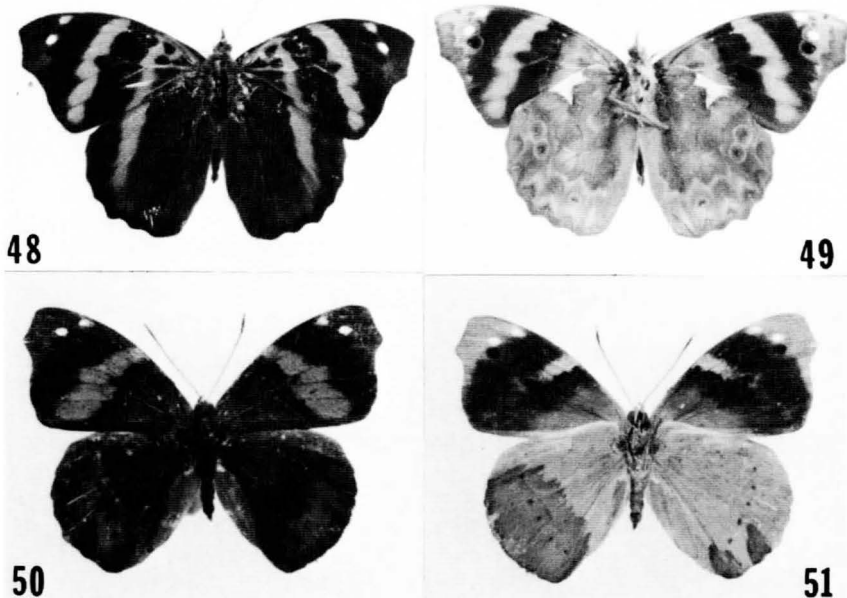
Occurs in the Cordillera ranges of the Andes mountains in Venezuela and Colombia.

Taxonomy and Variation:

The ♂ "type" of *E. epicaste* I examined in the BM is typical of the subspecies with perhaps more brownish than grey in the VHW of the ♂. There is some variation in the submarginal ocellus in M_3 -Cu₁ of the DHW of the ♂. There may be an orange spot, a black spot, or none. The female is unique in *Epiphile* with a greenish blue postmedian diagonal cross band. Two Fassl specimens, one in the BM and one in SI from Rio Aguacatal 2,000 m were examined. The SI specimen has a plain grey VHW and the BM specimen has plain yellowish color (ab. *bonplandioides*) which is synonymized.

Biology:

E. epicaste has been reported by Fassl (1918) to occur at altitudes from 1,800 to 2,400



Figures 48-51. *Epiphile epicaste epicaste* Hewitson. ♂ dorsal (48), ventral (49) surfaces. "New Grenada". Syntype *Epiphile epicaste* Hewitson (BM). ♀ dorsal (50) ventral (51) surfaces. COLOMBIA, Valle, Rio Aguacatal (BM).

m in the western slopes of the Cordillera Central and from 1,700 to 2,300 m on the eastern slopes of the Cordillera Oriente in Colombia. It has been collected in February, April, June and September to November.

Immature Stages:

Nothing is known of the immature stages or host plants.

Specimens Examined 86 ♂ 2 ♀

VENEZUELA: *Lara*, Humocaró Feb. 1 ♂ UC; *Táchira*, 1 ♂ UN; COLOMBIA: *Antioquia*, Frontino 1 ♂ BM; *Cundinamarca*, Bogotá 10 ♂ BM; 15 ♂ SI; 26 ♂ MP; 1 ♂ AA; Fusagasugá 1 ♂ BM; Rio Meta, San Martín 1 ♂ BM; Bella Vista Oct. 2 ♂ CM; Carmen del Yacopí Apr. 5 ♂ CM; Choachí Nov. 1 ♂ CM; *Meta*, Villavicencio 1 ♂ BM; *Caldas*, Manizales 1 ♂ BM; Guamocó 1 ♂ CM; *Valle*, Rio Aguacatal 2,000 m 1 ♀ (Fassl) BM; 1 ♂ 1 ♀ SI; Cartago Sep. Oct. 2 ♂ AA; Cali 1,000 m Sep. 1 ♂ MM; *Tolima*, La Marina area 1,800 m Jun. 1 ♂ AA; No specific locality 10 ♂ MZ; 3 ♂ SI; 2 ♂ ST; ECUADOR: No specific locality 1 ♂ BM.

Epiphile epicaste boliviana Röber, in Seitz, 1914 [Stat. rev.]

Figs. 52, 53, 95, 106, 116

Epiphile dinora f. *boliviana* Röber, in Seitz, 1914. Macrolep. World 5:478. TL: Bolivia [La Paz], Coroico, 1,200 m. Syntypes: Zoologisches Museum Berlin?

=*Epiphile epicaste* form *latifasciata* Röber, in Seitz, 1914. Macrolep. World 5:478. TL: Bolivia [La Paz], Coroico, 1,200 m, Syntypes: Zoologisches Museum Berlin? [Syn. nov.]

Description:

As in *E. epicaste* except for the differences listed for *E. e. boliviana* listed in the key to subspecies. Average wing length ♂ (28-32)30 mm, ♀ unknown.

Distribution:

Occurs in the Andes mountains from southern Colombia to Perú and Bolivia.

Taxonomy and Variation:

E. e. boliviana is quite distinctive with wider orange bands on the DFW and DHW. The rather smeared yellowish-tan and light brown on the VHW of the ♂ is also characteristic. It has all other characters typical of *E. epicaste* and is unrelated to *E. dinora* to which Röber assigned it (except for superficial appearance only). Series of



Figures 52-53. *Epiphile epicaste boliviana* Röber. ♂ dorsal (52), ventral (53) surfaces. BOLIVIA, Cochabamba, San Jacinto (BM).

dissections of male genitalia of *boliviana* show no difference from the *epicaste*, *chrysites*, *dinora* complex. Male specimens from S. Colombia and Bolivia are indistinguishable. I have seen no females of *boliviana*. *E. epicaste* form *latifasciata* was described from the same type locality as *E. e. boliviana* at Coroico, Bolivia. The type description fits *boliviana* exactly and specimens identified as *latifasciata* in several museums are *boliviana*. The male genitalia and hypandria were also the same as *boliviana*. The location of the type of form *latifasciata* is unknown but may be in the Berlin museum and should be checked.

Biology:

Occurs in the Andes mountains at altitudes from about 330-2,300 m. It has been collected in January, February and June to September.

Immature Stages:

Nothing is known of the immature stages or food plants.

Specimens Examined: 43 ♂ 0 ♀

COLOMBIA: Valle, Cartago Sep. Jan. 2 ♂ AA; ECUADOR: Chimborazo, Riobamba Dec. 1 ♂ JC; PERÚ: Cajamarca, Huancabamba 1,000 m 5 ♂ BM; Junín, Chanchamayo 1 ♂ AM; 1 ♂ BM; La Merced Jan. 1 ♂ BM; Pasco, Camino al Pichis 1 ♂ BM; Cuzco, Marcapata 1 ♂ BM; Rio Cosñipata, Yanamayo 2,000 m Feb. 1 ♂ UN; Puno, Chirimayo 330 m Jul-Sep. 3 ♂ BM; Oroya, Maniburi 1 ♂ BM; BOLIVIA: La Paz, Farinas 1 ♂ BM; Cochabamba, Cochabamba 1 ♂ BM; San Jacinto 2,300 m 2 ♂ BM; Palmar 1,100 m 1 ♂ UN; Alto Palmar Jun. 1 ♂; HD; Jul. 1 ♂ JC; No specific locality 10 ♂ BM; 2 ♂ SI; 1 ♂ CM; 7 ♂ MP.

Epiphile adrasta Hewitson, 1861

E. adrasta and *E. oreia* are the most common species of this genus composed mostly of uncommon or rare species. They are found at relatively lower altitudes compared to the rarer ones at higher elevations.

This species has been well studied and much is known of its natural history. It occurs from southern Texas to Ecuador and northwestern Perú in three distinct subspecies with the nominate form from southern Texas to northern Panamá. It is very closely related to *E. hubneri* which occurs in southern Brazil, Paraguay and northern Argentina. Records of *E. hubneri* from Perú may be erroneous data or possibly relicts of a former more widespread distribution closer to *E. adrasta*.

Description:

Male. DFW with orange basal area, with a broad blackish-purple submedian cross band, an orange postmedian band with the distal part black. There may be a white subapical spot, with the apical area black or reddish brown. VFW with basal area yellow, a black median band containing a small blue macula, and a postmedian yellow cross band. The subapical area is dark brown with white and black maculae partially ringed by a buff circle. DHW with the inner 2/3 orange with a black subapical area or with a blackish inner purplish-black area and a broad median orange longitudinal stripe incurving in the anal area with a dark distal area. VHW with a median costal triangular white macula, basal area dark brown, with lighter brown markings in distal half; four variable postmedian ocelli are present. Rami of hypandrium with 7-8 teeth; valva with 17-20 ventral spines. Gnathos arm articulated to gnathos posteriorly.

Female. DFW with orange-ochre basal area, a black median band, and a whitish yellow to light orange postmedian cross band. The subapical area is black with a white spot. VFW as above but basal area yellowish. Subapical area with white and black maculae partially surrounded by a tan ring. DHW anal area dark ochre, a broad diffuse orange or ochre median longitudinal stripe with a dark distal area. VHW similar to male but more diffuse markings. A whitish line parallel with costa is usually present in median area.

Key to Subspecies *Epiphile adrasta*

Males.

- 1a. DHW fuscous orange except narrow black apical area; basal area and area distal to Cu₂ diffuse brownish; orange area over 1 cm in diameter (W. México) *escalantei*
- 1b. DHW fuscous orange in a band 4-8 mm in diameter with blackish-purple apical area and basal area 2
- 2a. DHW fuscous orange in a well-defined band 4-6 mm in diameter; DFW with outer postmedian orange diagonal band narrow (2-3 mm) and sharply defined (Panamá to Perú) *bandusia*
- 2b. DHW fuscous orange in a broad band with diffuse edges 6-8 mm in diameter; DFW with outer postmedian orange diagonal band wider 4-6 mm in diameter (E. México to Panamá) *adrasta*

Females.

- 1a. DFW with basal 1/4th of wing with yellowish-orange especially in distal part adjacent to median black band; DHW with apical area blackish with a postmedian yellowish-orange vertical "band" diffused proximally to fuscous area; DFW with postmedian diagonal orange band *escalantei*
- 1b. DFW with basal area ochre-brown; DHW ochre-brown except blackish apical area; DFW with postmedian yellow to nearly white diagonal band *adrasta & bandusia*

***Epiphile adrasta adrasta* Hewitson, 1861**

Figs. 2, 54, 55, 56, 57, 96, 107, 117

Epiphile adrasta Hewitson, 1861. Exot. Butt. *Epiphile* 2:[50], part [40], pl. [25] figs. 9-11. TL: "México". Syntypes: BM 15-196, Rh. 9365 1 ♂ (coll. Saunders) (Examined). (Figs. 54, 55).

Description:

As in *E. adrasta* except for differences for *E. a. adrasta* listed in the key to subspecies. Average wing length ♂ (25-30)28 mm, ♀ (22-30)28 mm.

Distribution:

Occurs from southern Texas through eastern México and Central America with intergrades in Panamá with *E. a. bandusia*.

Taxonomy and Variation:

The "type" of *E. adrasta* from México in the Hewitson collection in the BM was studied and it is typical of the general population. Hewitson (1861) stated in his original description, "I have adopted the name by which this species stands in the collection of Dr. Boisdual, at the same time I enter my protest against the custom (so prevalent on the Continent) of giving manuscript names to insects."

The most significant variation noted is the presence or absence of a white subapical spot of variable size on the ♂ DFW. This may or may not be present in specimens from a single locality and does not appear to be seasonal. In females, the yellow median diagonal cross band is brighter yellow in fresh specimens and may appear faded white in old worn specimens.

Biology:

Occurs in both forested, cut-over and second growth areas. It is found in river valleys and ravines in drier areas and in tropical evergreen and semi-deciduous forest as well as lower cloud forest areas. Adults are also found in "milpa" or slash-burn habitats and especially in coffee plantations. Muyschondt (1973) states that they are found in wooded ravines and creeks where second-growth plant communities are found, usually in the

proximity of coffee plantations.

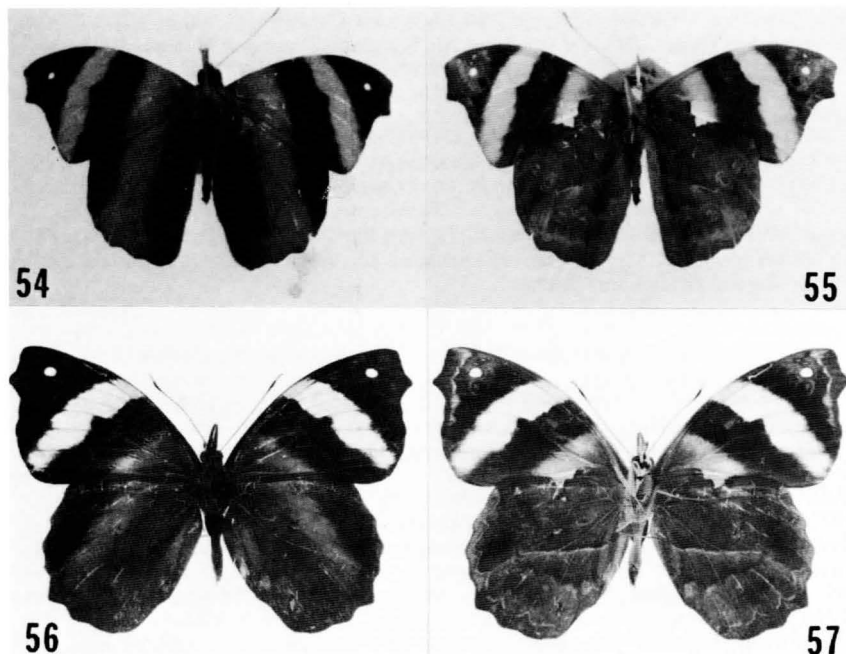
The adult males fly very fast and often in erratic flights and are difficult to catch except when feeding. The bright orange color flashing during flight suddenly disappears when the male alights and the dull brown color of the VHW covers all bright color. The female flies slower and is more often seen flying around its host plants and ovipositing. The adults feed on a variety of fermenting fruit and tree sap and are attracted to aged banana baits. They are also attracted to and feed on animal feces. They are attracted to small sugar cane mills and feed on fermented sugar cane. I have never seen them attracted to flowers.

Adults have been collected from about 500 m to 1,600 m from México to Costa Rica. They have been collected every month of the year with more collected from June to January.

Immature Stages:

The egg and five instars have been described in detail by Muysshondt (1973), who has collected eggs and larvae mostly from August to February. In northern México, Kendall (1984) has found eggs and larvae from November to February.

The larvae feed on vines of the family *Sapindaceae* which contain "barbasco" which is a narcotic poison used for stupefying fish. The larvae during the first two instars remain motionless on bared leaf veins, but in the third instar (Muysshondt, 1973) wander about the plant, usually on the upper surface of the leaves. They do not have warning coloration, but wave their epicranial horns and are conspicuous. The pupae make a creaking sound when molested. Single eggs are laid on the underside of the vine leaves from late in the morning to early afternoon.



Figures 54-57. *Epiphile adrasta adrasta* Hewitson. ♂ dorsal (54) ventral (55) surfaces. "MÉXICO". Syntype, *Epiphile adrasta* Hewitson (BM). ♀ dorsal (56), ventral (57) surfaces. MÉXICO, Chiapas, San Quintin (JC).

Host Plants:

Sapindaceae

<i>Paullinia fuscens</i> HBK "Barbasco"	El Salvador	Muyshondt (1973)
<i>Paullinia tomentosa</i> Jacq.	N. México	Kendall (1984)
<i>Serjania racemosa</i> Schumaker	N. México	Kendall (1984)
<i>Serjania brachycarpa</i> Grey	N. México	Kendall (1984)
<i>Serjania</i> sp. "Barbasco"	El Salvador	Muyshondt (1973)
<i>Urvillia</i> sp. "Barbasco"	El Salvador	Muyshondt (1973)
<i>Cardiospermum</i> sp. "Balloon vine"	El Salvador	Muyshondt (1973)

Specimens Examined: 161 ♂ 65 ♀

UNITED STATES: *Texas*, Hidalgo Co., Santa Ana Refuge; *MÉXICO*: *Tamaulipas*, Ciudad Mante, Gómez Farías; Rancho Rico de Oro, Quintero; Paso del Abra; Galeana Cañón; *Nuevo León*, Laguna de Sánchez, Cola de Caballo; *San Luis Potosí*, Ciudad Valles; El Salto; Tamazunchale; El Sol; El Banito; Quinta Chilla 1,100 m; El Naranjo; *Veracruz*, Los Tuxtlas, Peñuelas, Popocatepetl; Jalapa; Córdoba; Presidio; Misantla; Fortín de las Flores; Tezonapa; Catemaco; Tuxtepec; Dos Amates; Teocelo; Atoyac; Orizaba; El Vigía; Río Seco; *Oaxaca*, Chiltepec; Puerto Eligio; *Chiapas*, Cuauhtémoc; Comitán; Santa Rosa; Lagos de Montebello 1,300 m; San Carlos; San Quintín; Tapachula; Chicoasén; El Triunfo; Ocozocautla; San Jerónimo; Ocosingo; Musté; Santa Helena 600 m; Rancho Santa Ana; *Tabasco*, No specific locality; *GUATEMALA*: *Alta Verapaz*, Tamahú; Cobán, Baleu 1,350 m; San Cristóbal; Valle Polochic; *Izabal*, Ysabal; *Baja Verapaz*, Rabinal; San Gerónimo; *Santa Rosa*, Guazacapan; *El Petén*, Sayaxché, Escuintla, Escuintla; *El Progreso*, Valle Motagua; *San Marcos*, El Tumbador; *EL SALVADOR*: *San Salvador*, Santa Tecla, Ilopango; San Salvador; *Usulután*, San Agustín; *Sonsonate*, Cerro Chinito 1,200 m; *La Libertad*, Los Chorrros 1,000 m; *Santa Ana*, Metapán; *HONDURAS*: *Cortés*, San Pedro Sula; Lago Yojoa; *Choluteca*, Copán; Río Chuleteca; Cantarrenos 700 m; *NICARAGUA*: *Managua*, El Crucero; *Jinotega*, Jinotega; *Rio San Juan*, Chontales; *Matagalpa*, *Matagalpa*; *COSTA RICA*: *San José*, Patarra 1,300 m; Puriscal; Escazú; *Alajuela*, *Alajuela*; San José; Cartago, Juan Viñas; Turrialba; Cartago; Cachí; *Limón*, Guápiles; *PANAMÁ*: *Chiriquí*, Chiriquí; Santa Clara 1,200 m X; Bugaba X.

***Epiphile adrasta bandusia* Fruhstorfer, 1912**

Figs. 58, 59, 60, 61, 96, 107, 117

Epiphile adrasta bandusia Fruhstorfer, 1912. Ent. Rundsch. 29:14. TL: "Guatemala [error]; Vulkan Chiriquí; E. México," [error]. Syntypes: Not in BM. Probably in Staudinger Coll. in Zoologisches Museum Berlin.

Description:

As in *E. adrasta* except for differences for *E. a. bandusia* listed in the key to subspecies. Average wing length ♂ (25-27)26 mm, ♀ 29 mm.

Distribution:

Occurs from Panamá through Colombia and Ecuador to northwestern Perú.

Taxonomy and Variation:

The type of *bandusia* has not been found, however, it was described from an intergrade from Volcán Chiriquí, Panamá by Fruhstorfer, who unfortunately included specimens from Guatemala and eastern México by error. Typical *bandusia* from Darién, Panamá have narrow postmedian diagonal orange cross bands on the ♂ DFW and a wide purplish-black median band, the area distal to the orange band is black with no reddish apical area as in *E. a. adrasta*. The DHW has a narrower orange median stripe surrounded by purplish-black and the orange does not curve toward the anal area as in *E. a. adrasta*. Descimon and Mast de Maeght (1979) studied *E. a. bandusia* based on intergrades from northern Panamá and came to the conclusion that *E. a. bandusia* "separates from *adrasta*

s. str. by weak and inconstant characters." There is intergradation in Panamá and some in Costa Rica. However, the extensions of range of typical *bandusia* to Ecuador and Perú, added in this revision, validate recognition of this subspecies. It is interesting that the ♂ specimen from N. Perú also shows intergrade characters with *E. a. adrasta* especially the reddish-brown apical area of the DFW. The male genitalia of an intergrade from the Canal Zone, Panamá is the same as specimens from Mexico.

The female of *bandusia* was described by Fruhstorfer to have a more reddish-brown basal part than *adrasta*. This was confirmed, but it is subject to variation.

Biology:

This subspecies was collected at 100 m in N. Perú, 1,000 m in S. Ecuador, 900-1,300 m in Darién, Panamá, and intergrades from near sea level at Gatun, Panamá to 1,200 m in Chiriquí, Panamá. It has been collected in February, March, June to August and December. However, only 22 specimens are known to have been collected.

Specimens Examined: 18 ♂ 4 ♀

PANAMÁ: *Chiriquí*, Chiriquí, Santa Clara X 1,200 m 1 ♂ JC; 2 ♂ MN; 1 ♂ SI; (series from Chiriquí in Stoffel Coll. (Descimon & Mast de Maeght, 1979); Bugaba X 3 ♂ BM; 1 ♂ AA; 1 ♀ SI; Cerro Hornito 1,200 m Jul. 1 ♀ SI; Potrerillos 1,200 m Feb. Jun. 2 ♂ SI, *Coclé*, El Valle Mar. 1 ♀ JC.; *Canal Zone*, Madden Forest, Aug. 2 ♂ SI; Gatun 1 ♂ CM; *Darién*, Cana 900 m Jul. 1 ♂ GS in SI; California 1,300 m Dec. 1 ♂ VK; No specific locality 1 ♂ AA; COLOMBIA: "Colombia, Parzudacki" no specific locality, Museum de Paris 1 ♂ (Descimon & Mast De Maeght, 1979); ECUADOR: El Oro, Portovelo 1,000 m, Jul. 1 ♀ (coll. B. B. Ladday) AA; PERÚ: *Tumbes*, La Totorá, Matapalo 100



Figures 58-61. *Epiphile adrasta bandusia* Fruhstorfer. ♂ dorsal (58), ventral (59) surfaces. PANAMÁ, *Darién*, Cana (SI). ♀ dorsal (60), ventral (61) surfaces. PANAMÁ, *Coclé*, El Valle (JC).

m Jun. 1 ♂ (G. Lamas), UN.

***Epiphile adrasta escalantei* Descimon & Mast de Maeght, 1979**

Figs. 62, 63, 64, 65, 96, 107, 117

Epiphile adrasta escalantei Descimon & Mast de Maeght, 1979. Rev. Soc. Mex. Lepid. 5(1): 39-46, figs. 5 & 6. TL: México, Guerrero, Acahuizotla. Holotype: 1 ♂ BM, Paratypes 20 ♂ & 9 ♀ (Examined).

Description:

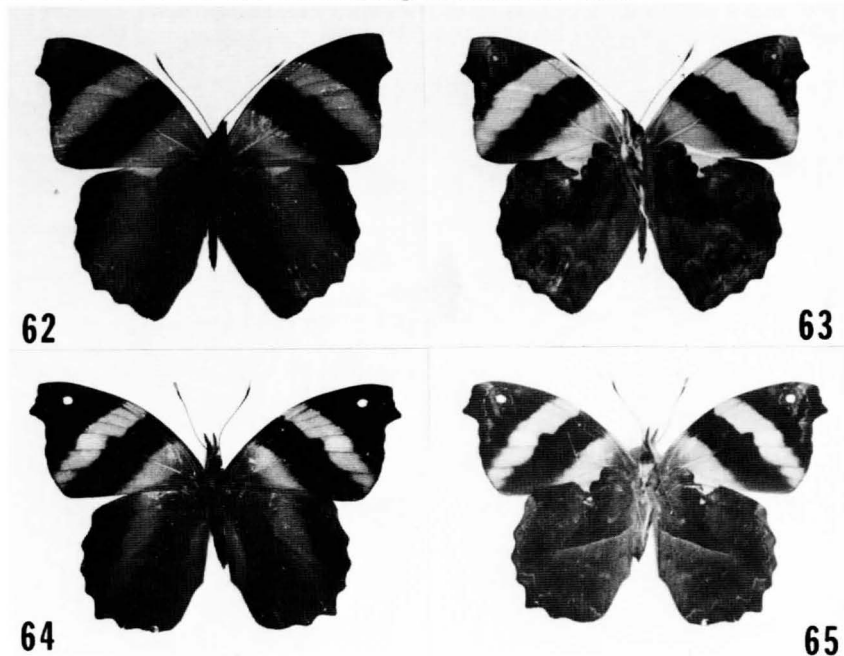
As in *E. adrasta* except for differences for *E. a. escalantei* listed in the key to subspecies. Average wing length ♂ (24-29)27 mm, ♀ (26-30)28 mm.

Distribution:

Occurs only in western México above 700 m elevation from Sinaloa south to Oaxaca on the Pacific slope.

Taxonomy and Variation:

This subspecies is another example of the extensive indigenous fauna of the Pacific coast of México. I have examined the holotype in the BM and it is typical of the general population of the subspecies. There is some variation in the extent of reddish-brown coloration of the anal area of the DHW of the ♂. Male specimens have a large, small, or no dark subapical ocellus on the DHW. This subspecies is better defined from *E. a. adrasta* than *E. a. bandusia* and no intergrades have been seen.



Figures 62-65. *Epiphile adrasta escalantei* Descimon & Mast de Maeght. ♂ dorsal (62), ventral (63) surfaces. MÉXICO, Oaxaca, Candelaria-Loxicha (JC). ♀ dorsal (64) ventral (65) surfaces. MÉXICO, Guerrero, Acahuizotla. Paratype *Epiphile adrasta escalantei* Descimon & Mast de Maeght (AA).

Biology:

The adults are found in semi-deciduous tropical forest and submontane forest areas. They are found in forest paths, along streams and roads and have been collected at stream edges where they were observed drinking from wet soil. They occur at altitudes of 700 to 1,200 m in Nayarit (Llorente, pers. comm.) and 900-1,600 m in Guerrero and in Oaxaca (De la Maza, pers. comm.). I have collected adults at 1,200 m in Colima and at 1,200 to 1,600 m in Guerrero, México. The adults have been found in April and June to December.

Immature Stages:

Nothing is known of the immature stages or food plants.

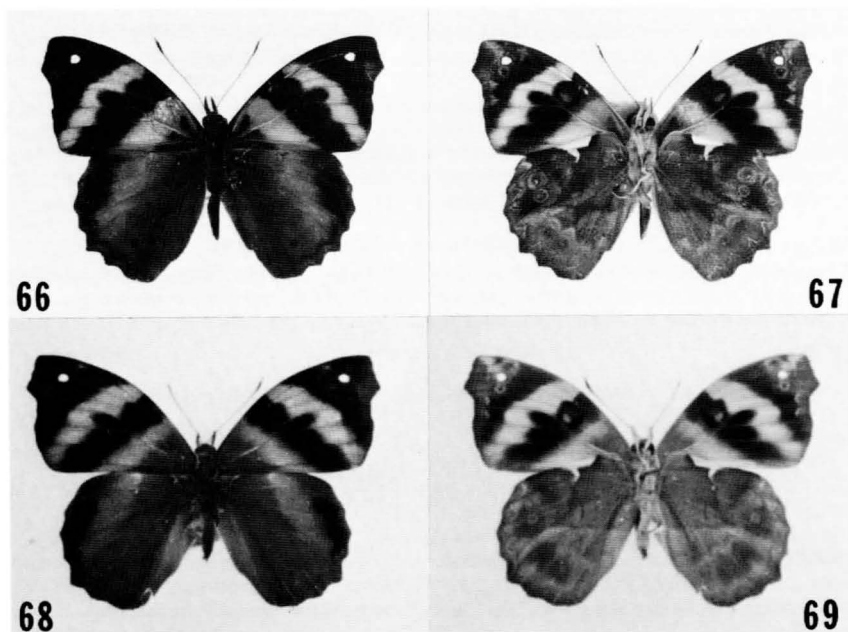
Specimens Examined: 38 ♂ 12 ♀

MÉXICO; Sinaloa, Sinaloa Apr. 1 ♂ AM; Nayarit, Palapita, Jalcocotán 700 m 1 ♂ FC; Venustiano Carranza 1,200 m 1 ♂ FC; San Blas, FC; Colima, Colima 1,200 m Nov. 1 ♂ JC; Cofradia Nov. Dec. 2 ♂ SH; Guerrero, Acahuizotla Jul. Oct. Nov. 7 ♂, 4 ♀ AA; 3 ♂ 2 ♀ AD; 5 ♂ 2 ♀ DM; 3 ♂ 1 ♀ HD; Taxco Dec. 1 ♂ JC; Agua de Obispo 1 ♂ AD; Nueva Delhi Nov. 1 ♂ JC; Xaltianguis AD; El Faisanal DM; Jalisco, La Cumbre de Autlán 1,100 m 1 ♂ AM; Morelos, Yautepec Aug. 1 ♂ AA; Tepoztlán DM; Rancho Viejo DM; Cuernavaca Aug. 1 ♂ FC; México, San Nicolás, Tolentino DM; Chalma Jul. 1 ♂ AA; Malinalco Jul. 1 ♂ AA; Oaxaca, Portillo del Rayo 1 ♂ AD; 1 ♂ DM; Candelaria-Loxicha Aug. 1 ♂ JC; San Gabriel de Mixtepec Dec. 1 ♂.

Epiphile hubneri Hewitson, 1861

Figs. 66, 67, 68, 69, 97, 108, 117

=*Temenis orea* Hübner, [1823]. Samml. Exot. Schmett. 2 tab. [30] (♂ fig. 3 & 4, nec ♂



Figures 66-69. *Epiphile hubneri* Hewitson. ♂ dorsal (66) ventral (67) surfaces. BRAZIL, Paraná, Fernández Pinheiro (AA). ♀ dorsal (68), ventral (69) surfaces. BRAZIL, Rio Grande do Sul (BM).

fig. 1 & 2). TL: "Brazil". Syntypes: Vienna?
Epiphile hubneri Hewitson, 1861. Exot. Butt. 2: *Epiphile* 2 [50], part [40], t. 2. (*Nomen novum* for Hübner [1823] ♂ figs. 3 & 4.)

Description:

Male. DFW basal area orange with one or two blackish-purple finger-like projections, a blackish-purple submedian cross band, a postmedian orange band, distally black, a subapical white macula and an apical reddish area are present. VFW with orange basally, a submedian black band containing a light blue macula, a postmedian orange cross band, and white and black maculae ringed by brown. DHW anal area ochre, with a diffuse orange longitudinal stripe and a dark distal area. There is a submarginal dark line and a single dark ocellus. The rami on the hypandrium have six to seven teeth; the valva has eight to nine ventral spines.

Female. DFW basal area ochre-orange, a black submedian band, an orange postmedian cross band, and distal area black. There is a white subapical spot and a reddish apical area. VFW same as above except there are white and black maculae ringed with tan in a buff area. DHW basal half orange ochre with a diffuse orange longitudinal stripe, and a dark distal area. VHW same as male but more diffuse and lighter brown markings.

Average wing length ♂ (22-27)25 mm, ♀ (24-27)25 mm.

Distribution:

Occurs in southeastern Brazil, Paraguay and northern Argentina. Records from Perú and especially Obidos, Brazil, are probably errors.

Taxonomy and Variation:

Hewitson (1861) described *hubneri* with the following comments: "...Hübner has figured the males of two species as the sexes of *orea*. I have here figured the female of his figs. 1 and 2 and for the butterfly given by him at figs. 3 & 4 of the same plate as the female of *Orea*. [Samml. Exot. Schmett. II, tab. [30], I propose the name of *Epiphile hubneri* as a tribute to the memory of a man whose exquisite figures of butterflies give me pleasure every time I see them."

E. hubneri is intermediate between *E. adrasta* and *E. dinora* and all have a similar pattern on the VHW of the male. There is some variation in the size and darkness of the basal dark triangular mark on the ♂ DFW. The subapical dark ocellus on the ♂ DHW may be large and dark, small or nearly missing and the submarginal dark wavy band may be prominent and extend to the anal angle or may be thin and faint at the anal angle.

Biology:

This species is found at altitudes from about 100 m to 1,000 m. There is little published on its biology. Adults have been collected every month of the year but the main population occurs in September to April with most in the summer from November to January.

Immature Stages:

Nothing is known to have been published on the immature stages or food plants.

Specimens Examined 188 ♂ 32 ♀

PERÚ: Huánuco, Tingo María Mar. 1 ♂ AA (Error!); Junín, Chanchamayo 1 ♂ AM (Error!); ECUADOR: No specific locality. 1 ♀ Felder Coll. BM (Error!); PARAGUAY: Central, Asunción; Caaguazú, Yhu; Guairá, Colonia Independencia; Paraguarí, Sapucay; ARGENTINA: Misiones, San Ignacio; Loreto; Chaco; Salta; Corrientes; Campo Grande 250 m; BRAZIL: Pará, Obidos 1 ♂ AA (Error!); Minas Gerais, Cantagalo; Caxambú; Belo Horizonte; Morro Velho; São Paulo, São Paulo; Araras; Rio Preto; Loreto; Amparo, Bauru; Mogi-Guaçu; Itaiç; Rio de Janeiro, Petrópolis; Santo Antônio dos Brotos; Nova Friburgo; Paraná, Rio Negro; Terra Boa; Ponta Grossa; Fernández Pinheiro, Porto União; Guarapuava; Foz do Iguaçu; Ortigueira; Castro; Rolândia; Santa Catarina, Trombudo

Mo; Cauna; Nova Teutonia; *Rio Grande do Sul*; Pelotas; Passo Fundo; Santa Maria; São Lourenço; Guaraní.

***Epiphile grandis* Butler, 1872**
Figs. 70, 71, 72, 73, 99, 109, 114

Epiphile grandis Butler, 1872. Cist. Ent. 1:76-77. TL: Cartago, Costa Rica. Holotype: BM:15-194, Rh. 9362, 1 ♀ HT (Examined) (Figs. 72, 73).

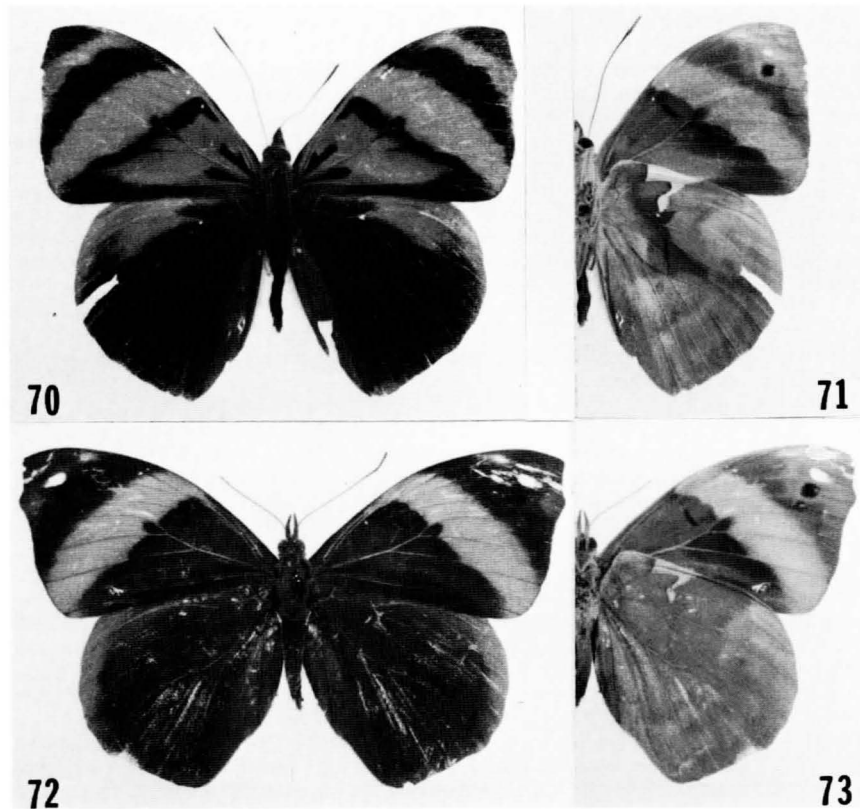
Epiphile grandis Godman & Salvin 1883: (*nec* Butler, 1872), Biologia Centrali Americana 1:235, pl. 24, figs. 5, 6, & 7. ♂ from Purulá, Verapaz, Guatemala (is ♂ *E. hermosa*) [Misdet.].

Epiphile grandis Röber, in Seitz, 1914. (*nec* Butler) Macrolep. World 5:474-9, fig. 98a (is ♂ *E. hermosa*) [Misdet.].

Epiphile grandis Beutelspacher, 1976 (*nec* Butler), Rev. Soc. Mex. Lepid. 2(1):56. (is ♂ *E. hermosa*) [Misdet.].

Description:

Male. DFW with two black basal finger-like projections. Base color yellowish-orange extending to a narrow submedian blackish cross band, a broad yellow-orange postmedian



Figures 70-73. *Epiphile grandis* Butler. ♂ dorsal (70), ventral (71) surfaces. COSTA RICA, Puntarenas, Las Alturas (BM). ♀ dorsal (72), ventral (73) surfaces. COSTA RICA, [Cartago], Cartago. Holotype *Epiphile grandis* Butler (BM).

cross band, subapical blackish band and yellow-orange apical band with a dark tip. VFW with yellow-orange divided by a brown median cross band and a subapical brown band. There is a black ocellus and a white macula. DHW brownish-purple except costal area orange to M_1 . VHW with white median bar in $Sc+R_1$ with a white extension posteriorly. There is a basal brown triangular area extending distally in M_2 . The remainder of the wing is buff with postmedian ocelli barely visible. Male genitalia with large saccus, valva with 21 ventral spines. Rami of hypandrium with five to six chitinated teeth.

Female. DFW brown except an orange postmedian cross band and a white and an orange subapical maculae and ochre in the falcate projection at M_1 . VFW same as above but lighter brown and a black subapical ocellus and a white macula. DHW brown with orange marginal area distally from $Sc+R_1$ to M_2 . VHW similar to male but paler brown.

Average wing length ♂ 35 mm, ♀ (30-38)34 mm.

Distribution:

Known presently only from the higher elevations of the Cordillera de Talamanca in south central Costa Rica, from the Panamanian border north to Cachi.

Taxonomy and Variation:

This very local and relatively rare species was described from a single female by Butler (1872). Godman & Salvin (1883) stated "Quite recently Mr. Champion has sent us from Purulá, in Guatemala, a male of a large and beautiful species previously unknown to us, but which we feel confident is the male of the Costa Rican insect." Röber, in Seitz (1914) illustrated this ♂ specimen. Beutelspacher (1976) determined a male of the undescribed *E. hermosa* from Sierra de Juárez, Oaxaca, México as *E. grandis*. J. De la Maza and Díaz Francés (1978) correctly determined that this is another species and described *E. hermosa*. De la Maza and Small (1979) finally determined the correct male of *E. grandis* from Costa Rica.

With only 5 ♂ specimens known there was no variation except rubbing in worn specimens. However, in comparing the two known females, the ♀ from Cachi, Costa Rica has a much more extended subapical point at M_1 on the DFW, is darker and has a heavily indented wavy posterior margin on the DHW while the holotype has a smooth appearing margin.

Biology:

DeVries (pers. comm.) has studied *E. grandis* in the mountains of Costa Rica and his notes on the species follow:

"Occurs very locally from 1,600 m to 2,200 m on the Pacific slope in association with cloud forest habitats in the Talamanca centered around Cerro Echandi-Volcán Chiriquí. This area is geologically and climatologically distinct from the surrounding habitats and classified as a transition zone between various forest types. The males perch during the early morning on tree trunks and branches that intrude into lightgaps from 5-15 meters above ground. By mid-day the males are found only in the high forest canopy. The same perches are used day after day, which can be demonstrated by removing a succession of males through the course of a week. Until quite recently, the male of this species was unknown, and the female, on which basis the species was described, is still only known from the holotype. Although still very rare in collections, the males can be quite abundant in the canopy. I have observed over twenty individuals in one day, but capture is another matter. Shooting them out of the canopy with bird shot can result in the very tedious task of finding the insect after a fall of twenty meters to the forest understory and the method is not recommended. During the mornings males are attracted to fresh mammal dung. I have observed only one female perched high in the canopy during mid-day with its wings held open against the trunk of a tree. From the history of this insect it seems clear that this Costa Rican-Panamanian endemic species is dependent upon the special forest type found in the Talamanca and it seems unlikely that it would survive such deforestation."

Males have been collected in February, March, April and June, and a female was collected

in August.

Immature Stages:

There is no known information on the immature stages or host plants.

Specimens Examined: 5 ♂, 2 ♀

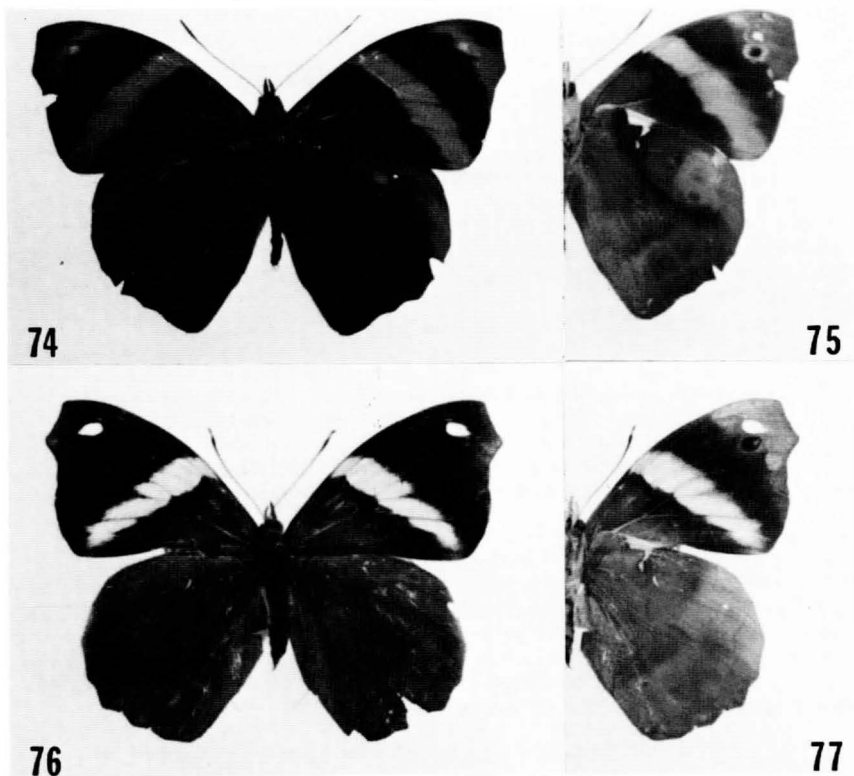
COSTA RICA: *Puntarenas*, above Taho Buenavista de las Alturas, Talamanca cloud forest 1,900 m, 18 June 1979 1 ♂; 3 April 1979 1 ♂, Coll. DeVries (BM); Cerro Pittier, Río Cotón, Cordillera de Talamanca 10 km NE Las Mellizas, 1,500 m, 25 Feb. 1975, 1 ♂ (GS now in SI); 10 Mar. 1979 1 ♂ A. Thurman; *Cartago*, Cachi, 15 Aug. 1 ♀, Coll. D. E. Harrower (CM); *Cartago*; 1 ♀ HT Van Patten Coll. (BM); No specific locality 1 ♂ AM.

***Epiphile hermosa* de la Maza & Díaz, 1978**

Figs. 74, 75, 76, 77, 98, 114

Epiphile hermosa de la Maza and Díaz, 1978. Rev. Soc. Mex. Lepid. 4(1):15-22. TL: México, Oaxaca, Sierra de Juárez, 1,700 m. Sep. Holotype: 1 ♂ HT, Museo de Historia Natural, Cd. de México (Examined).

=*Epiphile grandis* ♂ Godman & Salvin, 1883. (*nec* Butler, 1872) *Biologia Centrali Americana*, Lep. Rhop:1-235, Tab. 24, figs. 5, 6, 7 (Male from Purulá, Guatemala)



Figures 74-77. *Epiphile hermosa* de la Maza & Díaz Francés. ♂ dorsal (74), ventral (75) surfaces. GUATEMALA, *Verapaz*, Purulá. Paratype *Epiphile hermosa* de la Maza & Díaz Francés (BM). ♀ dorsal (76), ventral (77) surfaces. MÉXICO, *Oaxaca*, Sierra Juárez (BM).

=*Epiphile grandis* ♂ Röber, in Seitz 1914. (nec Butler, 1872). Macrolep. World 5:474-479, fig. 98.

=*Epiphile grandis* ♂ Beutelspacher, 1976 (nec Butler, 1872), Rev. Soc. Mex. Lepid. 2(1):56.

Description:

Male. DFW with small basal area dark orange, with a purple-black submedian band, a median orange cross band and a purple-black postmedian band. There is a subapical orange-ochre cross band extending into the falcate area at M_3 . The DFW has a similar pattern as above but dark bands are brownish purple. There are black and white subapical maculae circled by orange with brown extending to falcate area. The DHW is purplish-black except the marginal and submarginal area and costal area anterior to M_1 . The VHW has an elongate gold median costal macula with a silvery extension posteriorly and there is a triangular dark brown area extending outward at M_2 and four postmedian ocelli. The saccus of the male genitalia is large; the valva has 13 ventral spines. The rami of the hypandrium is unique in having a single large chitinated tooth.

Female. DFW basal area dark brown, with a yellowish median crossband, the remainder of the wing blackish-brown, with a single large white subapical macula. The VFW is similar but with a black ocellus and a white macula. DHW ochre-colored with a submarginal black line. VHW similar to male but more diffuse and lighter brown.

Average wing length ♂ (31-32)31 mm, ♀ 33 mm.

Distribution:

Presently known only from higher altitudes in Sierra de Juárez, Oaxaca and Santa Rosa, Chiapas in México and from Purulá, Baja Verapaz, Guatemala.

Taxonomy and Variation:

This species was collected and the male was illustrated by Godman & Salvin (1883) as (*E. grandis*) from Purulá, Guatemala. The male was also figured by Röber, in Seitz (1914) and also by Beutelspacher (1976) (as *E. grandis*). Finally it was recognized as a separate species by J. de la Maza and A. Díaz Francés (1978) and properly described.

I have examined the holotype in the (MH) and 4 ♂ and 4 ♀ paratypes and an additional ♂ from Chiapas in the AD collection. This small series does not show any significant variation even though the series come from isolated areas in Oaxaca, Chiapas, and Guatemala.

Biology:

E. hermosa is an extremely rare and distinct species found only in cloud forest in higher mountains in southern México and Guatemala. In the Sierra de Juárez, México, cloud forest occurs from 1,100 to 1,800 m. *E. hermosa* has been collected from 1,300 to 1,700 m.

A male was collected while resting on a wet muddy area of a steep hillside of a road by J. de la Maza (pers. comm.). Adults have been collected in January, July, September and November. Nothing is known about the immature stages or host plants.

Specimens Examined: 7 ♂ 4 ♀

MÉXICO: Oaxaca, La Esperanza 1,700 m Nov.; 1 HT ♂ coll. J. de la Maza (MH); Nov. 3 ♀ (paratypes), coll. A. Díaz Francés (AD); Sep. 1 ♀ (paratype) R. de la Maza R. (BM); Vista Hermosa 1,300 m Sep. 1 ♂ (paratype) coll. A. Díaz Francés (AD); Jan. Sep. 2 ♂ (paratypes) coll. R. de la Maza R. (DM); Nov. 1 ♂ (paratype) donated by J. de la Maza to (AA); Chiapas, Santa Rosa, Montebello 1 ♂ coll. A. Díaz Francés (AD); GUATEMALA: Baja Verapaz, Purulá 1 ♂ (paratype) coll. Champion (BM).

Epiphile eriopis Hewitson, 1857

E. eriopis is the only species of *Epiphile* with a white cross band on the DFW of the male. This is usually restricted to the females. It is found from Colombia to Nicaragua. In the BM I found a distinctive male from Chontales, Nicaragua. Further study showed

it to be a new subspecies which has a presently known range from Nicaragua to Colombia. This had been identified as *E. eriopis* by Godman & Salvin (1883).

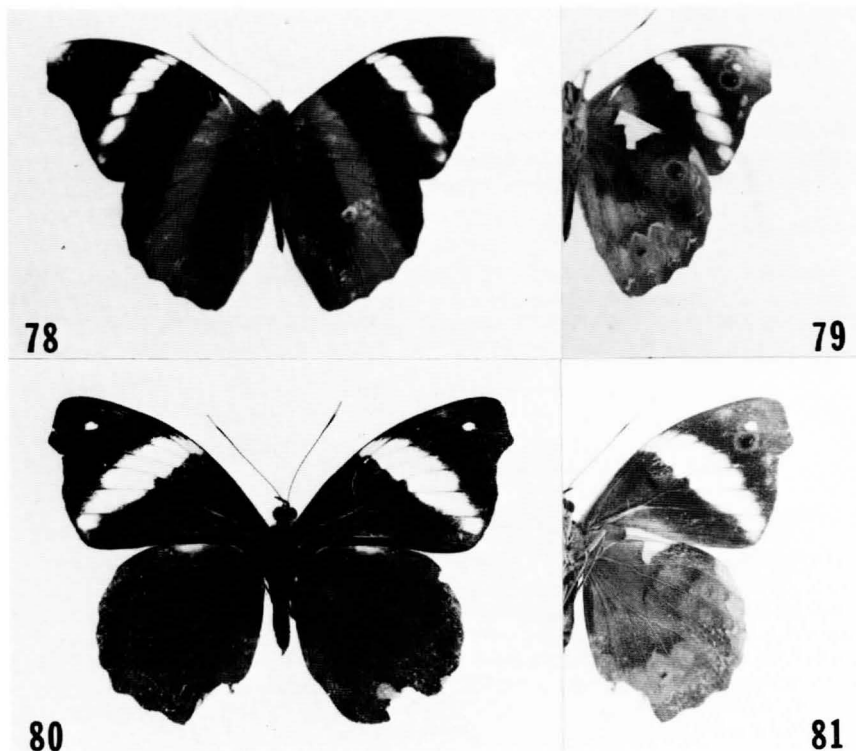
Key to Subspecies of *E. eriopis*

Males.

- 1a. DHW with postmedian orange longitudinal stripe broader 5-7 mm in diameter, broadly expanded posteriorly on the inner margin, curving inward to anal angle. DFW with postmedian white band broader with larger more rounded maculae especially in M_3 - Cu_1 (Colombia)..... *eriopis*
- 1b. DHW with postmedian orange longitudinal stripe nearly straight on inner margin, not broadly expanded posteriorly and not curving to anal angle. Orange band narrower 4-5.5 mm in diameter. DFW usually with a white thin postmedian band of separate white maculae (Nicaragua to Panamá and W. Colombia)..... *devriesi*

Females.

- 1a. DFW with white postmedian cross band narrower (5 mm). VFW with a prominent submedian thin black band across discal cell in a pale grey area which diffuses into a pale grey-brown basal area *eriopis*
- 1b. DFW with white postmedian cross band broader (6 mm). VFW with a submedian



Figures 78-81. *Epiphile eriopis eriopis* Hewitson. ♂ dorsal (78), ventral (79) surfaces. "COLOMBIA". Syntype *Epiphile eriopis* Hewitson (BM). ♀ dorsal (80), ventral (81) surfaces. COLOMBIA, Valle del Cauca, Cali (MM).

thin black line barely visible in a dark charcoal grey-dark brown band which sharply changes to basal light brown area *devriesi*

***Epiphile eriopis eriopis* Hewitson, 1857 [Stat. rev.]**

Figs. 78, 79, 80, 81, 100, 110, 118

Epiphile eriopis Hewitson, 1857. Exot. Butt. 2:[48], part [21], pl. [24], figs. 5-6. TL: "New Granada", Colombia. Syntypes: BM 15-196, Rh. 9366. 1 ♂ (Examined). (Figs. 78, 79). Two ♂ from "N. Granada" in the Strecker Coll. state "Type from Hewitson."

Description:

As in *E. eriopis devriesi* except for differences for *E. e. eriopis* listed in the key to subspecies. Average wing length ♂ (30-33)31 mm, ♀ 35 mm.

Distribution:

Occurs in Colombia in the Andes mountains and slopes.

Taxonomy and Variation:

This species is so distinctive that it has not been confused or renamed. There is little variation except in the coloration of the VHW. There is some difference in the amount of yellow surrounding the submarginal ocelli and the presence or absence of a submarginal white undulating line. More female specimens should be studied to differentiate the nominate subspecies accurately from *E. e. devriesi*.

Biology:

Occurs in the Andes mountains at altitudes from 650 to 1,500 m. Fassl (1918) reports *E. eriopis* at altitudes of 300-900 m on the western slopes of the Cordillera Central in Colombia. It is relatively uncommon, only 65 ♂ and 2 ♀ having been examined in collections. Adults have been collected in November, December, February and July.

Nothing in known of the immature stages or host plants.

Specimens Examined: 65 ♂ 2 ♀

COLOMBIA: *Cundinamarca*, Bogotá 1 ♂ AA; 1 ♂ CM; 24 ♂ BM; Cananche 6 ♂ BM; Apolo 2 ♂ BM; *Boyacá*, Rio Opón, Tunja, 650-1,500 m 1 ♂ Dec. AM; La Lechera 850 m Feb. 1 ♂ AM; Muzo 1 ♂ BM; 1 ♂ MN; *Caldas*, Guamocó 3 ♂ AM; *Putumayo*, Mocoa Nov. 1 ♂ AM; *Valle*, Cali 1,000 m Jul. 1 ♂ UC; *Tolima*, Rio Chile 1 ♂ BM; No specific locality 8 ♂ 2 ♀ BM; 2 ♂ AM; 1 ♂ AA; 5 ♂ MZ; 1 ♂ SI; 3 ♂ MP; "Sagarra de Norte" 1 ♂ SI.

***Epiphile eriopis devriesi* Ssp. nov.**

Figs. 82, 83, 84, 85, 100, 110, 118

Epiphile eriopis Godman & Salvin (1883) *nec* Hewitson (1857).

Description:

Male. DFW jet black except a basal orange band, a postmedian white cross band or row of white maculae, and an apical white tip. VFW with a submedian diffuse orange band, the remainder of wing grey black with a postmedian cross band or row of whitish maculae. There are subapical black and white maculae ringed by brown and a brown apical area. DHW purple-black with a postmedian orange longitudinal stripe, and with a narrow marginal red border in anal area. VHW with large golden triangular macula in costal median area surrounded by red-brown basally extending in a larger dark triangle distally to M₂. Three or four postmedian ocelli are surrounded by orange-ochre. Valva with about 21 ventral spines; rami of hypandrium with nine to ten chitinized teeth.

Female. DFW dark grey-brown with a broad white postmedian cross band and a white subapical macula. VFW grey-black with a white postmedian cross band, black and white

subapical maculae ringed by brown, and a light brown apical area. DHW brownish-black. VHW with costal median golden triangle, the remainder of wing light brown with four postmedian orange-brown ocelli.

Average wing length ♂ (29-32)30 mm, ♀ 30 mm.

HOLOTYPE ♂: PANAMÁ: *Darién*, Cana, Coll. G.B. Small (SI). PARATYPES: 10 ♂ 2 ♀ (see exact data under Specimens Examined).

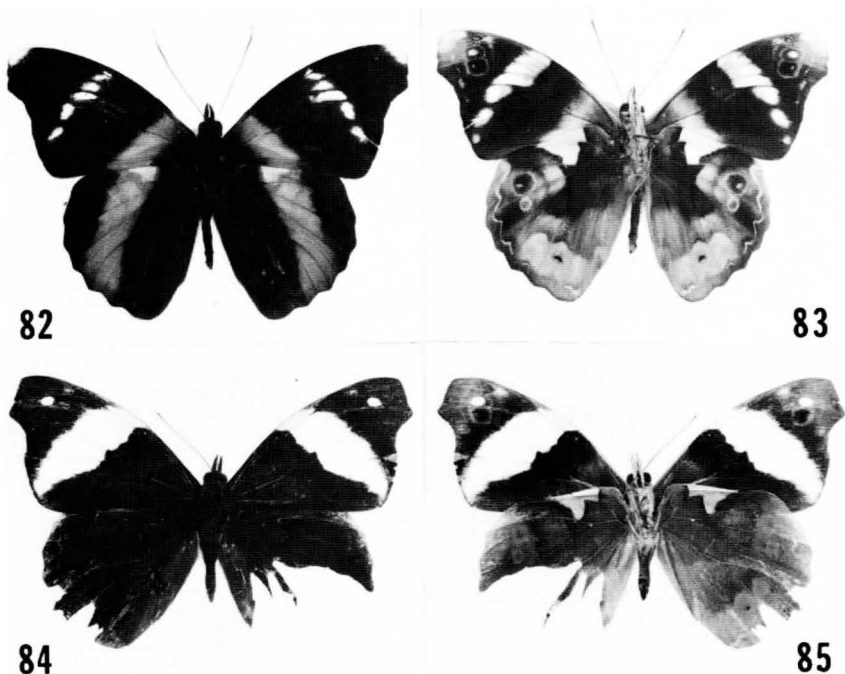
Deposition of type material: Holotype ♂ and 3 ♂ paratypes in Smithsonian Institution; 2 ♂ in British Museum; 3 ♂ and 1 ♀ Museum of Paris, 1 ♂ Allyn Museum and 1 ♂ 1 ♀ DeVries Collection.

Distribution:

Presently known from southern Nicaragua, Costa Rica, southern Panama, and western Colombia at altitudes from 600-1,400 m.

Taxonomy and Variation:

Eleven ♂ specimens have been carefully studied. The ♂ from Chontales, Nicaragua and four ♂ from Cana, Panamá have a narrow postmedian row of white maculae on the DFW and a postmedian orange longitudinal stripe not expanded distally to the anal angle of the DHW which is typical of *devriesi*. Four ♂ from western Colombia have the narrow separate white maculae on the DFW, but the DHW orange stripe expands somewhat distally showing slight intergradation. Two ♂ from Costa Rica at Moravia and La Montura have a typical *devriesi* DHW orange stripe, but the DFW postmedian white band is broader, more typical of *E. e. eriopis*.



Figures 82-85. *Epiphile eriopis devriesi* Jenkins. ♂ dorsal (82) ventral (83) surfaces. NICARAGUA, *Rio San Juan*, Chontales. Paratype *Epiphile eriopis devriesi* Jenkins (BM). ♀ dorsal (84) ventral (85) surfaces. COSTA RICA, *San José*, San José. Paratype *Epiphile eriopis devriesi* Jenkins (AA).

Biology:

This subspecies occurs in the mountains at elevations of 900 to 1,100 m in southern Panamá and from 600-1,400 m in Costa Rica on the Atlantic slope in association with the Carrillo Belt.

The males are attracted to fresh mammal feces in the forest interior. The female flies like *Eunica norica* according to DeVries (pers. comm.).

Specimens Examined: 11 ♂ 2 ♀

NICARAGUA: *Rio San Juan*, Chontales 1 ♂ Paratype (BM); COSTA RICA: *San José*, Atlantic Slope, Carrillo Belt, Parque B. Camillo, La Montura 1,000 m 25 Apr. 1 ♂ 1 ♀ (DeVries); *Cartago*, Moravia 1,100 m Aug. 1 ♂ (DeVries); PANAMÁ: *Darién*, Cana 900 m 23 June 1 ♂ G.B. Small (SI); 1,100 m 30 July '81 1 ♂ G.B. Small (SI); 900-1,100 m July 2 ♂ G.B. Small (SI); COLOMBIA: *Cauca*, Rio Micay 1 ♂ (BM); Boyacá, Muzo X 1 ♂ (MP); No specific locality 2 ♂ 1 ♀ X (MP).

***Epiphile lampethusa* Doubleday, [1848]**

This species is quite distinctive from other *Epiphile*, with an orange yellow basal half of the DFW with the outer half nearly black. This appears to fit in a mimicry ring including *Asterope davisii*, *Agrias* and *Catagramma sinamara* and *C. astarte*. There is very little sexual dimorphism which is unusual in *Epiphile*.

There is considerable variation which has resulted in four taxa being described for *E. lampethusa*. Study of all available specimens indicates that there are two weakly differentiated populations, the nominate subspecies in Perú and Bolivia, and *E. l. zipa* from Colombia to Ecuador. These is some intergradation especially in the central part of the range of the species.

Description:

Male. DFW basal half orange extending to median costal area and tornus, the area 2 A to margin may be black. The remainder of wing is black except a large white subapical macula and there may be one or two additional white dashes or spots. VFW similar to above but there is a large black subapical ocellus in an orange ring and a white macula. The DHW is black with one or two submarginal anal blue triangular maculae; there may be a blue line in anal area; orange may or may not be present in costal area to R_s . VHW with golden triangle in costal median area, the base color is dark brown with four postmedian ocelli. The valva has about 19 ventral spines. The rami of the hypandrium has eight to ten chitinous teeth.

Female. "The ♀ discovered by Mr. A. H. Fassl has a duller colouring and 2 sphenoidal subanal blue spots on the hind wing." Röber, in Seitz, 1914, p. 479. In plate 98a the ♀ of *lampethusa* is illustrated. The DFW has a pattern similar to the ♂ but the basal area is more yellowish-orange and does not extend completely to the tornus. The DHW is similar to the male but the base color is grey-brown instead of black.

Key to Subspecies of *Epiphile lampethusa*

- 1a. Male DFW with area from 2A to posterior margin all black; with one large white subapical macula and usually one narrow white spot; DHW with area anterior to R_s blackish, or with some orange only in basal half (Colombia to N. Perú) *zipa*
- 1b. Male DFW with area from 2A to posterior margin with some orange color; with one large subapical white macula and usually two smaller white spots anteriorly; DHW with extensive orange in nearly all of area anterior to R_s especially distal half. In S. Perú and Bolivia often one instead of two blue submarginal triangular maculae *lampethusa*

***Epiphile lampethusa lampethusa* Doubleday, [1848] [Stat. rev.]**
Figs. 86, 87, 101, 119

Epiphile lampethusa Doubleday, [1848] Gen. Diurn. Lepid. pl. 27, f. 3 and 1849:226. TL: "Bolivia". Syntypes: BM 15-197, Rh. 9367, 1 ♂ (Examined) (Figs. 86, 87).

=*Epiphile lampethusa inca* LeCerf, 1927. Lepidoptera 2: fasc. 1, 47, pl. 4, f. 6, TL: Perú [Junín], Rio Perené. Type: 1 ♂ Probable holotype. ex. Dr. Vergne, Museum de Paris (Examined.) [Syn. nov.]

=*Epiphile lampethusa egena* "forme indiv. (an ssp.)" Biedermann, 1928. Enc. Ent. Lepid. Ser. 3, Tome 3:96-97. TL: "Buena-Vista, 70 km N.O. de Santa Cruz, Bolivie." Type: 1 ♂ Holotype in Coll. Biedermann. [Syn. nov.]

=*Epiphile lampethusa* f. n. *zernyi* Neustetter 1928. Int. Ent. Zeit. 22:248. TL: "Amazonas" Syntypes: Unknown. [Syn. nov.]

Description:

As in *E. lampethusa* except for differences listed for *E. l. lampethusa* in the key to subspecies. Average wing length ♂ (27-30)28 mm.

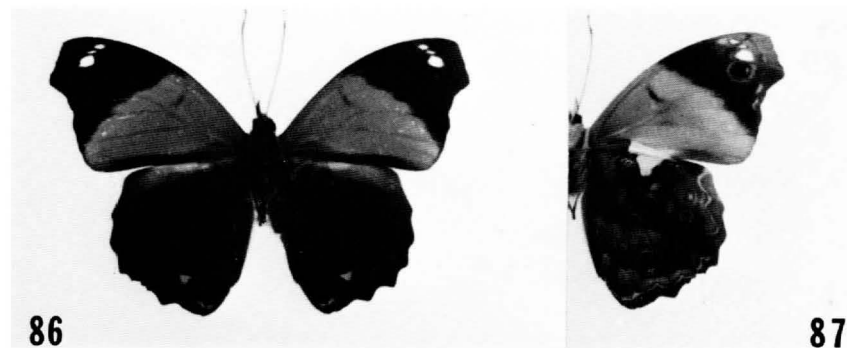
Distribution:

Occurs in the Andes mountains and slopes from northern Perú to central Bolivia and also in the Alto Juruá in Acre, Brazil. A single specimen labelled "Ocoyoacac, Mexique" from the LeMoult Coll. in AA is typical *E. l. lampethusa* and probably is from Bolivia.

Taxonomy and Variation:

E. lampethusa was described by Doubleday [1848] from Bolivia. It has a single submarginal triangular blue macula on the DHW typical of most Bolivian specimens. "*E. lampethusa* Dbd. forme indiv. (as ssp.) *egenova*" Biedermann (1928) from Buenavista, Bolivia with one blue macula, is a definite synonym. The unmarked but probable type of *E. lampethusa inca* Le Cerf (1927) from Rio Perené, Perú, in MP, has two blue maculae on the DHW which is typical of most Peruvian specimens. However, in Satipo and other areas, specimens may have one or two blue triangular maculae. A specimen of *E. l. zipa* from Bogotá, Colombia also have one blue macula so that this character was not considered to merit subspecific status and *E. l. inca* is considered to be a synonym. The other characters listed for *inca* were found to be variable. *E. lampethusa* f. n. *zernyi* Neustatter 1928 from "Amazons" has not been seen and this form is tentatively included as a synonym of *E. l. lampethusa*.

This species is so variable that a number of forms and subspecies have been described. Examination of 105 ♂ specimens resulted in the recognition of only the nominate and one poorly defined subspecies, since most of the characters appear to be somewhat clinal,



Figures 86-87. *Epiphile lampethusa lampethusa* Doubleday. ♂ dorsal (86) ventral (87) surfaces. "Bolivia." Syntype *Epiphile lampethusa* Doubleday (BM).

or populations with broad intergradation.

A ♂ specimen labeled "Ocoyoacac, Mexique" (AA) is typical *E. l. lampethusa* (probably from Bolivia) with all characters of the key to subspecies. The one submarginal blue macula on the DHW is composed of two very small blue dots.

Biology:

E. l. lampethusa occurs in tropical evergreen forest and semideciduous tropical forest from about 400-1,200 m elevation, mostly from 400-800 m.

Adults have been collected in nearly every month of the year.

Specimens Examined: 79 ♂

PERÚ: Loreto, Rio Ucayali 1 ♂ BM; Puno, Inambari 1 ♂ BM; Tirapata 1 ♂ BM; Chaquimayo 1 ♂ BM; San Martín, Jepelacio Nov. 1 ♂ BM; 1 ♂ AM; Moyobomba 3 ♂ BM; Rio Huallaga Jan. 1 ♂ AM; 1 ♂ MN; Junín, Chanchamayo 5 ♂ BM; 1 ♂ MN; Satipo 3 ♂ AM; 1 ♂ SI; Aug. 1 ♂ UN; Jul. 3 ♂ CM; Jul. Sep. Oct. 3 ♂ AA; La Merced 800 m 2 ♂ UN; Rio Ipoki, Ipokiari May 1 ♂ UN; Rio Perené 1 ♂ MP; Cuzco, Valle de Casñipata 2 ♂ BM; Illapani Viejo 3 ♂ BM; Huánuco, Tingo María 670 m Apr. 1 ♂ UN; Jun. Oct. 2 ♂ HD; Oct. 1 ♂ JC; Rio Rondós May 1 ♂ UN; Pasco, Rio Pachitea 2 ♂ AA; No specific locality 2 ♂ BM; 1 ♂ MP; BOLIVIA: La Paz, Yungas, Rio Zongo 2 ♂ BM; Guanay, Rio Mapiri 2 ♂ BM; Coroico 1,200 m 1 ♂ SI; Cochabamba, Cochabamba, 1 ♂ BM; Chapare 400 m Oct. 1 ♂ UP; 1 ♂ UC; Alto Palmar 1100 m Jun. Jul. 4 ♂ JC; Santa Cruz, Prov. Sara 1 ♂ BM; 450 m 1 ♂ CM; Rio Yapacani 600 m Aug. Sep. 2 ♂ CM; Buenavista 400 m. May 1 ♂ CM; Feb. Dec. 2 ♂ MM; 4 ♂ HD; Peperital to Buenavista 2 ♂ BM; 400 m 1 ♂ UN; Ichilo 1 ♂ UC; No specific locality 3 ♂ BM; 1 ♂ AM; 1 ♂ MZ; 1 ♂ "HT" BM; BRAZIL: Acre, Alto Jurúa 1 ♂ MN.

***Epiphile lampethusa zipa* Mengel, 1899 [Stat. rev.]**

Figs. 88, 89, 101, 119,

Epiphile zipa Mengel, 1899. Ent. News 10:166 & pl. 5. TL: Colombia, Tolima, Huila, Neiva.

Type: Reading Public Museum and Art Gallery. 1 ♂ HT. Type Series No. 2. Type bears label "Original type, *zipa* Mengel."

=*Epiphile lampetusa* [sic] Hew., Fassl. (1912). Ent. Rundsch. 29(19):6. (nec Doubleday).

Is only description of ♀ (illustrated in Röber, in Seitz, 1914, pl. 98a). [*Lapsus calami*].

Description:

As in *E. lampethusa* except for differences listed for *E. l. zipa* in the key to subspecies. Average wing length ♂ (23-30)27 mm.



Figures 88-89. *Epiphile lampethusa zipa* Mengel. ♂ dorsal (88) ventral (89) surfaces. ECUADOR, Napo, Rio Pano (JC).

Distribution:

Presently known from Central Colombia and Ecuador.

Taxonomy and Variation:

This subspecies was described as a species by Mengel (1899) who apparently did not know of *E. lampethusa*. The original description does not distinguish it from *lampethusa*, but the black and white picture Pl. 5 shows a dorsal and ventral view that allows differentiation of subspecific characters typical of the population of Colombia.

There is some variation in the ♂ DHW; the basal half of space anterior to Rs may be all black or with some orange. There are usually two subapical blue triangular maculae (rarely one) on the ♂ DHW. I have not seen the ♀ which was described by Fassl (1912).

Biology:

This subspecies is rare in collections, only 26 were identified. I have collected it at Rio Pano near Tena in central Ecuador in an area near evergreen tropical forest.

Adults have been collected at altitudes from 450 to 600 m. Fassl (1918) reports *E. lampetusa* [sic] at altitudes from 400-1,000 m on the eastern slopes of the Cordillera Oriente in Colombia. A female was collected at Villavicencio in April at 450 m. The only reported dates of collection are in April and September.

Immature Stages:

Nothing is known to be published on the immature stages or food plants.

Specimens Examined: 26 ♂

COLOMBIA: *Cundinamarca*, Bogotá 3 ♂ BM; 1 ♂ SI; *Susumuco* 1 ♂ MP; *Meta*, Villavicencio 450 m; Apr. 1 ♀ (Fassl, 1912); 5 ♂ BM; 1 ♂ MP; *Rio Guatiguiá* 1 ♂ BM; *Huila*, Neiva 1 ♂ HT (Mengel, 1899); *Boyacá*, Muzo, 1 ♂ MP; No specific locality 6 ♂ AM; 2 ♂ BM; 1 ♂ SI; ECUADOR: *Napo*, Rio Pano, Sep. 1 ♂ JC; *Rio Napo* 2 ♂ BM.

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Many museum curators have been very helpful in permitting study of their collections and photographing and borrowing specimens. I am especially grateful to Dr. Henri Descimon for making available certain specimens, and to Roy O. Kendall for loan of larvae and a pupa of *E. a. adrasta* shown in Fig. 3. I am also indebted to Jacqueline Y. Miller for photographic assistance.

I would like to express appreciation to my wife Joanne F. Jenkins for help in field collecting *Epiphile* in various countries, for helping curate specimens, for providing excellent secretarial assistance, and for inking all drawings.

Nomen Nudum

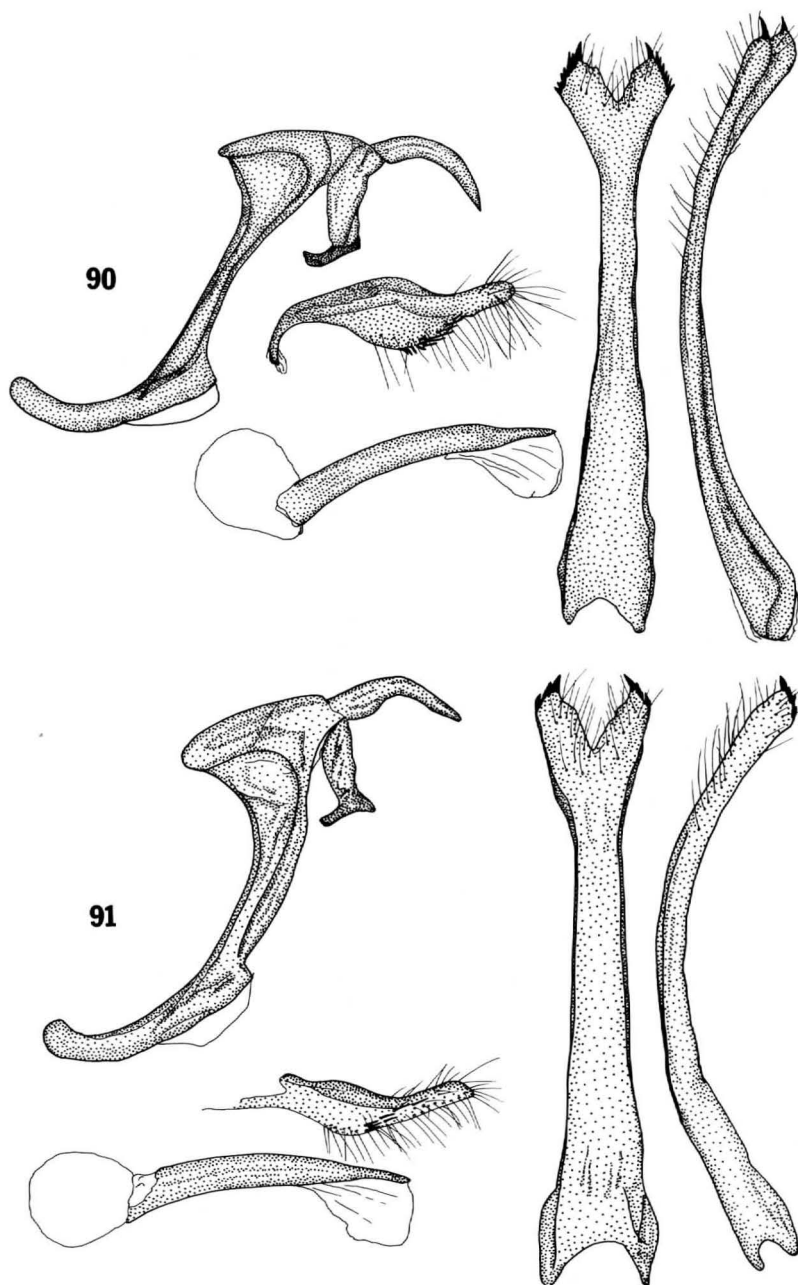
Epiphile albifascia Herrich-Schäffer, 1865:92.

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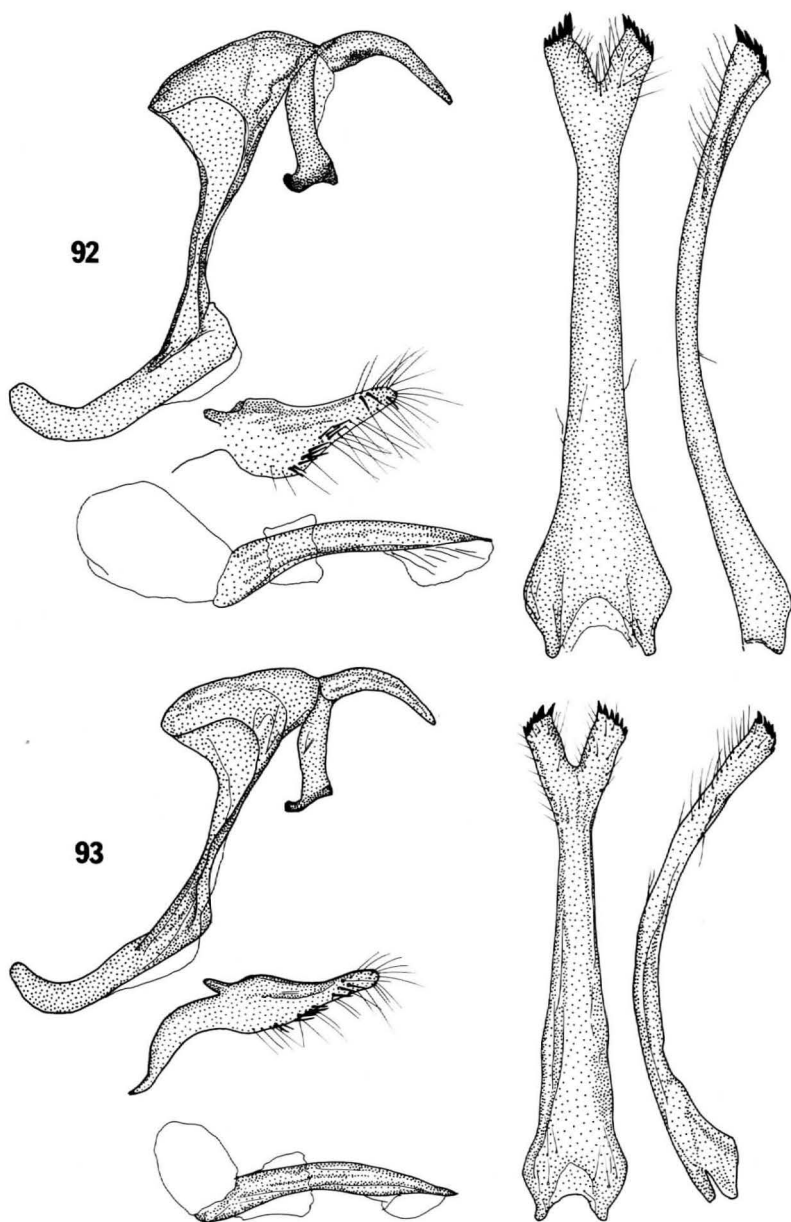
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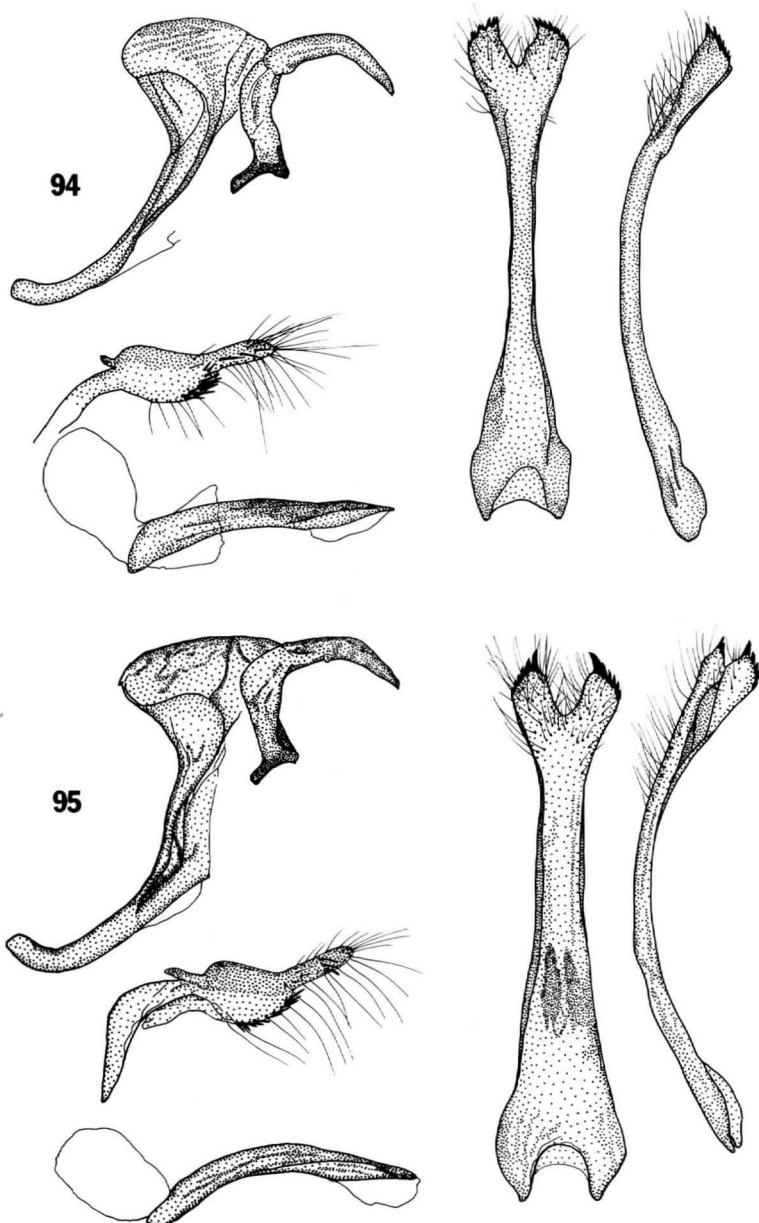
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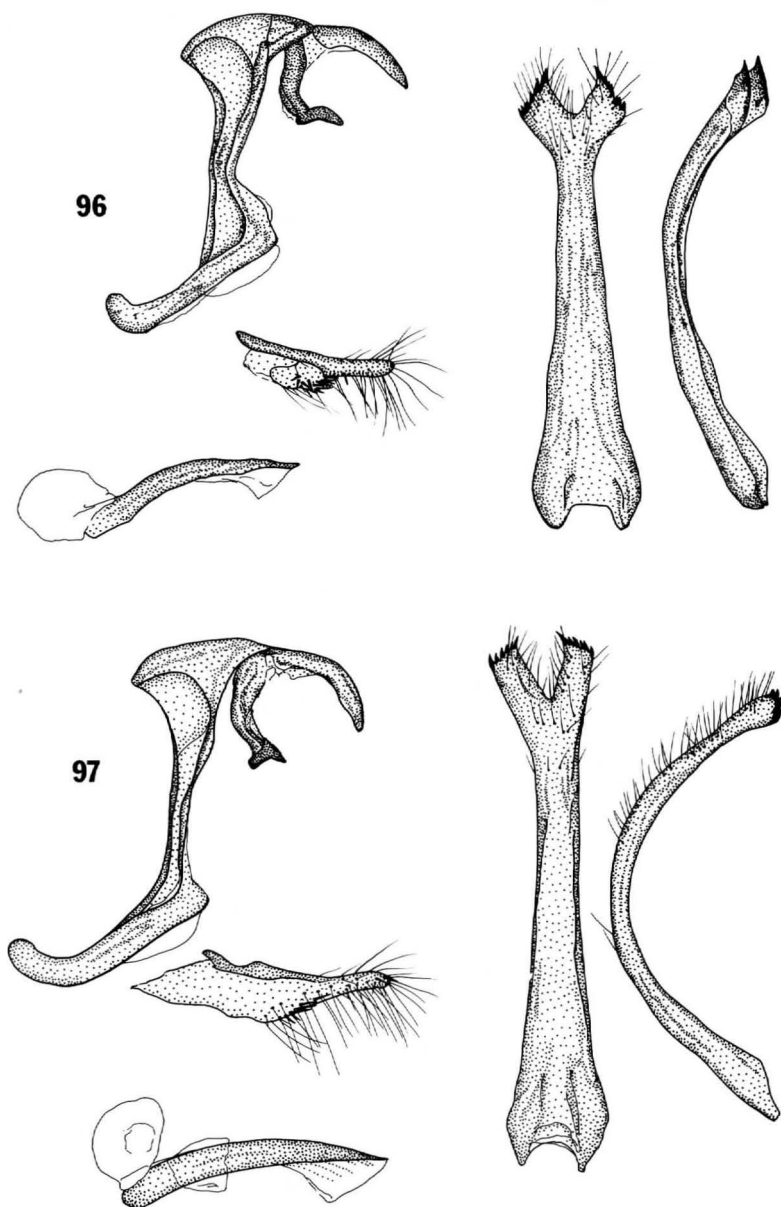
Figures 90-91. ♂ genitalia and hypandria of *Epiphile*. 90, *Epiphile orea*. 91, *Epiphile plutonia*.



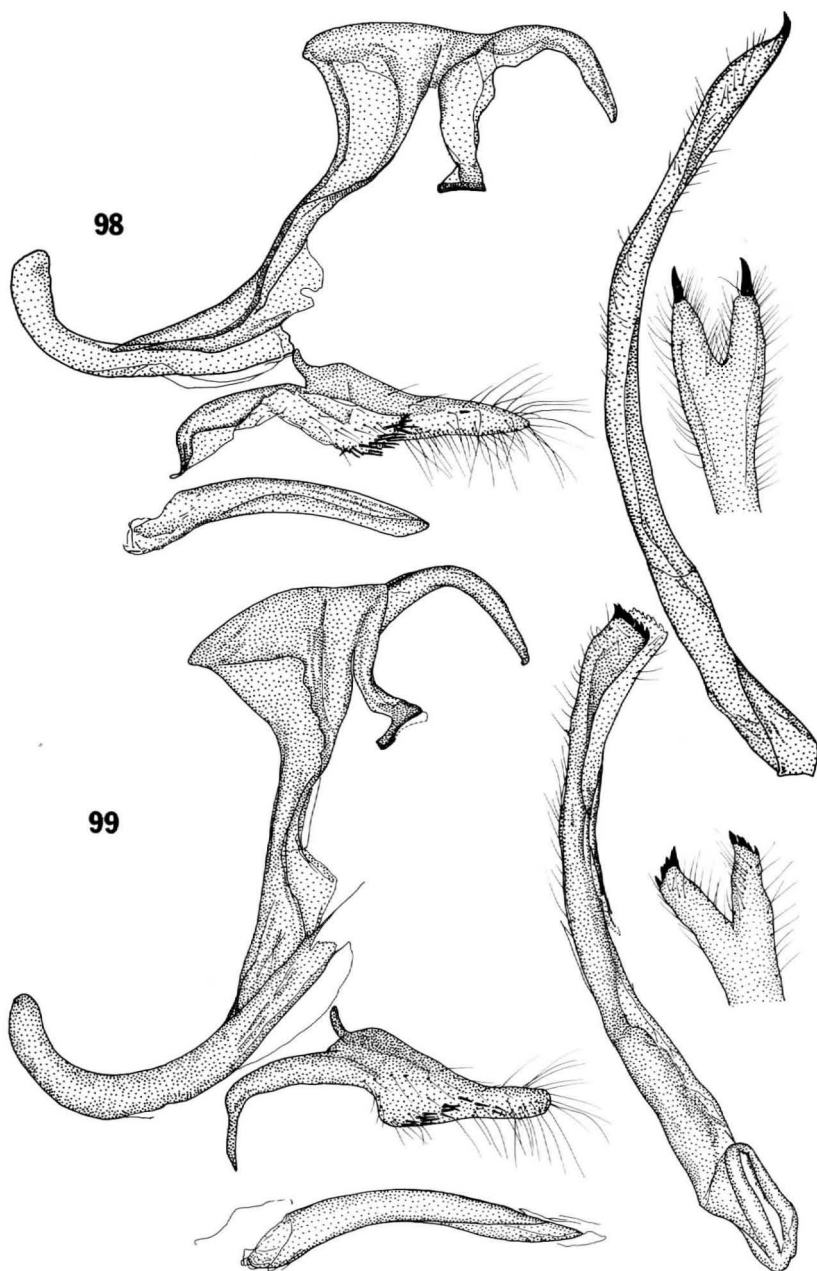
Figures 92-93. ♂ genitalia and hypandria of *Epiphile*. 92, *Epiphile epimenes*. 93, *Epiphile dinora*.



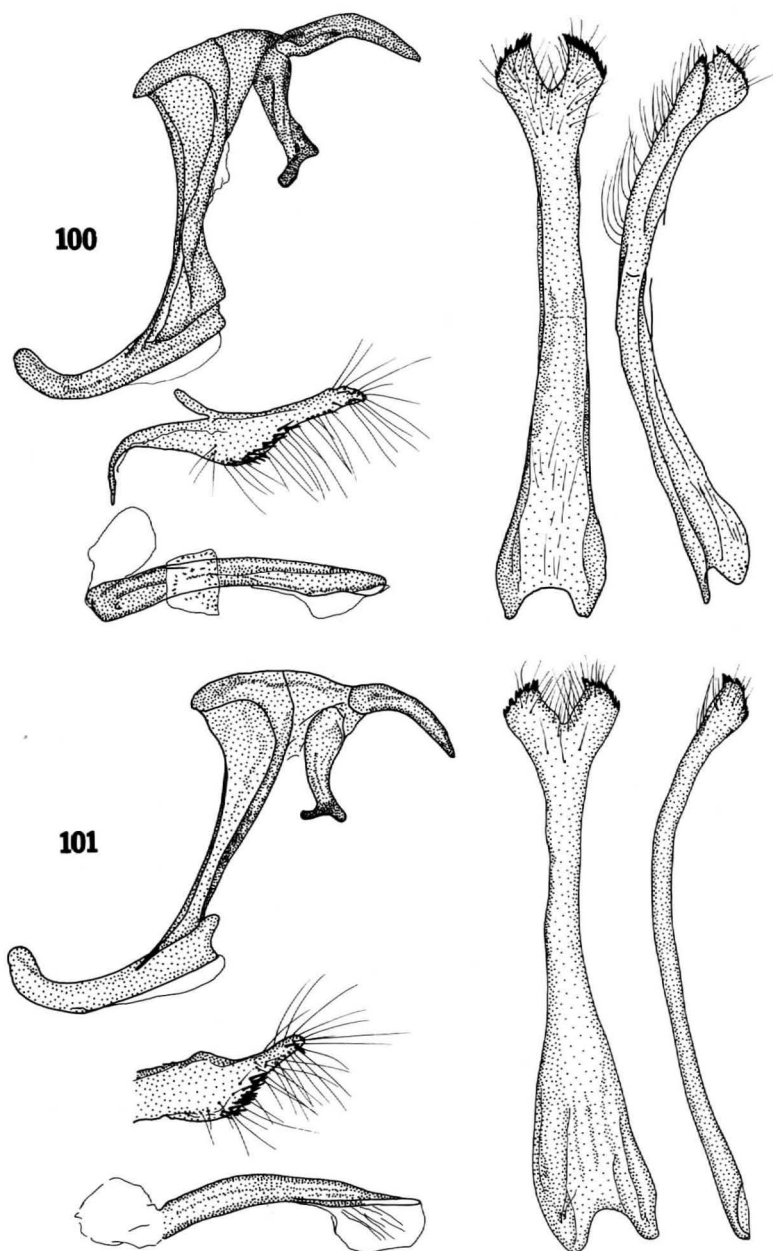
Figures 94-95. ♂ genitalia and hypandria of *Epiphile*. 94, *Epiphile chrysites*. 95, *Epiphile epicaste*.



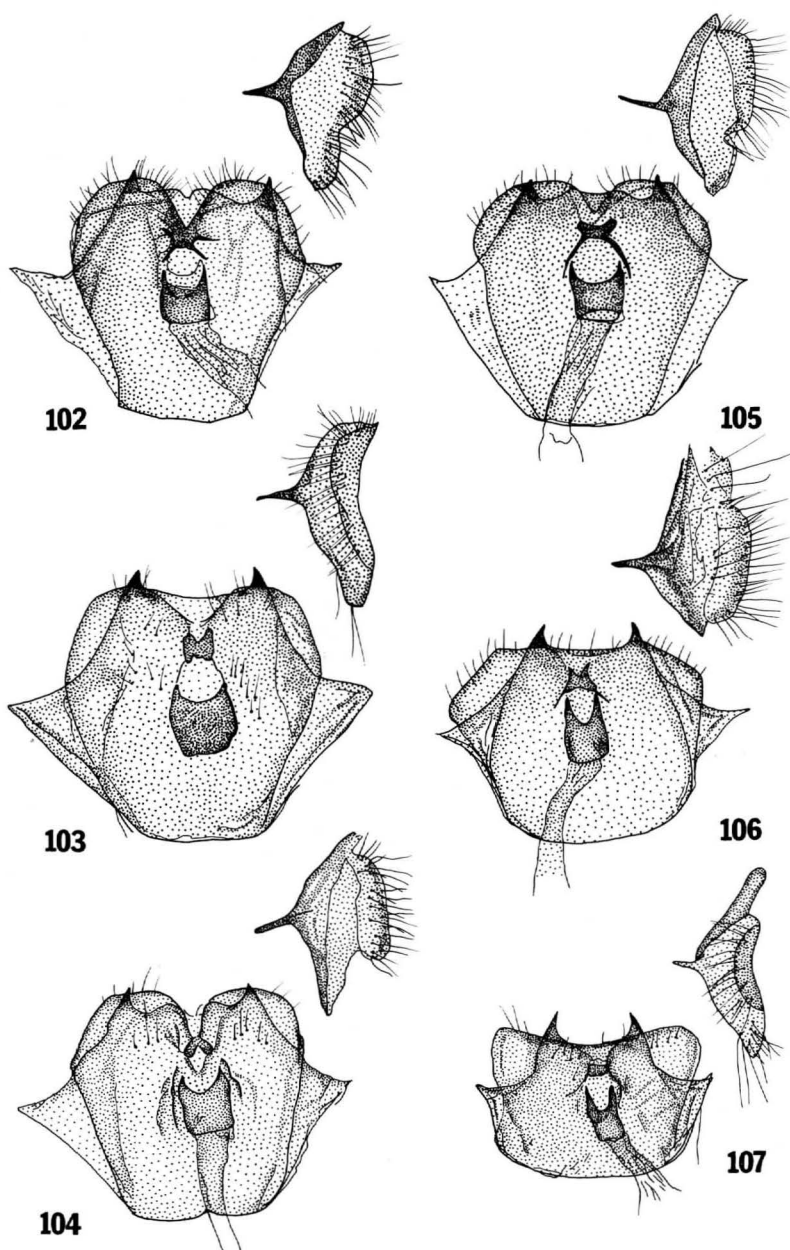
Figures 96-97. ♂ genitalia and hypandria of *Epiphile*. 96, *Epiphile adrasta*. 97, *Epiphile hubneri*.



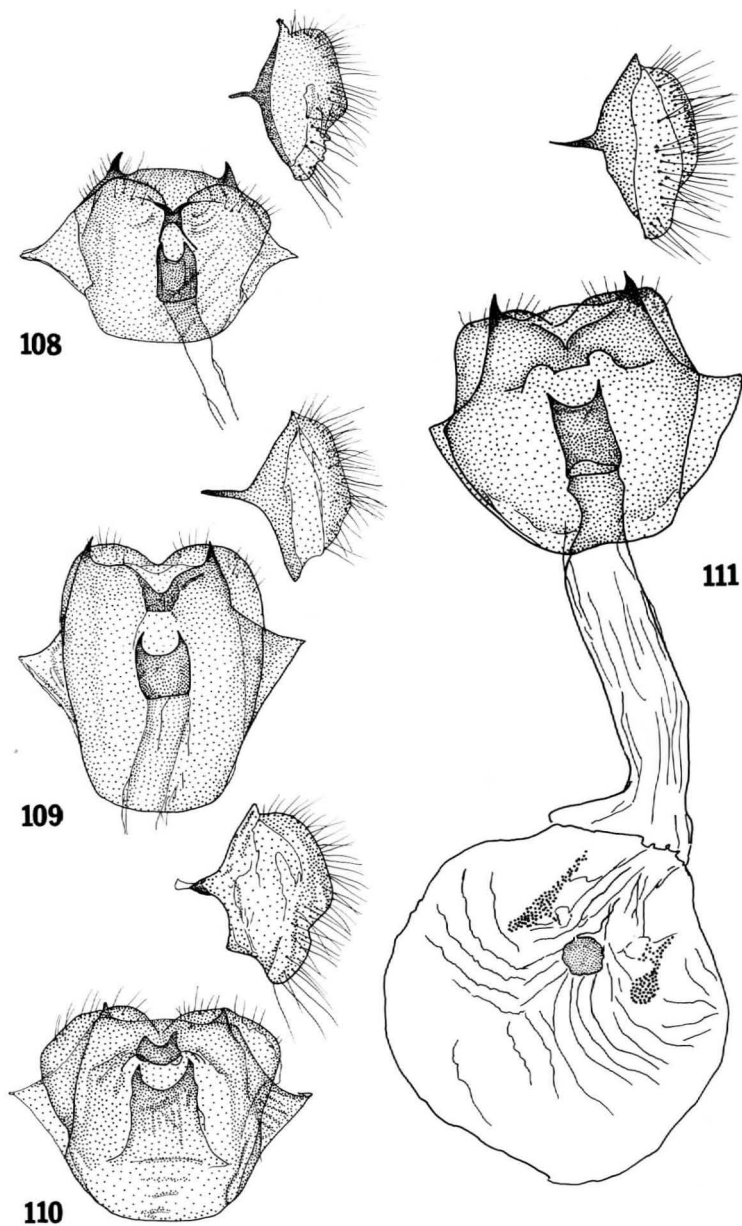
Figures 98-99. ♂ genitalia and hypandria of *Epiphile*. 98, *Epiphile hermosa*. 99, *Epiphile grandis*.



Figures 100-101. ♂ genitalia and hypandria of *Epiphile*. 100, *Epiphile eriopis*. 101, *Epiphile lampethusa*.



Figures 102-107. Sterigma and associated structures of ♀ genitalia of *Epiphile*. 102, *Epiphile oreia*. 103, *Epiphile plutonia*. 104, *Epiphile epimenes*. 105, *Epiphile dinora*. 106, *Epiphile epicaste*. 107, *Epiphile adrasta*.



Figures 108-111. Sterigma and associated structures of ♀ genitalia of *Epiphile*. 108, *Epiphile hubneri*. 109, *Epiphile grandis*. 110, *Epiphile eriopis*. 111, *Epiphile chrysites* (also shows papilla anale and corpus bursa with signa).

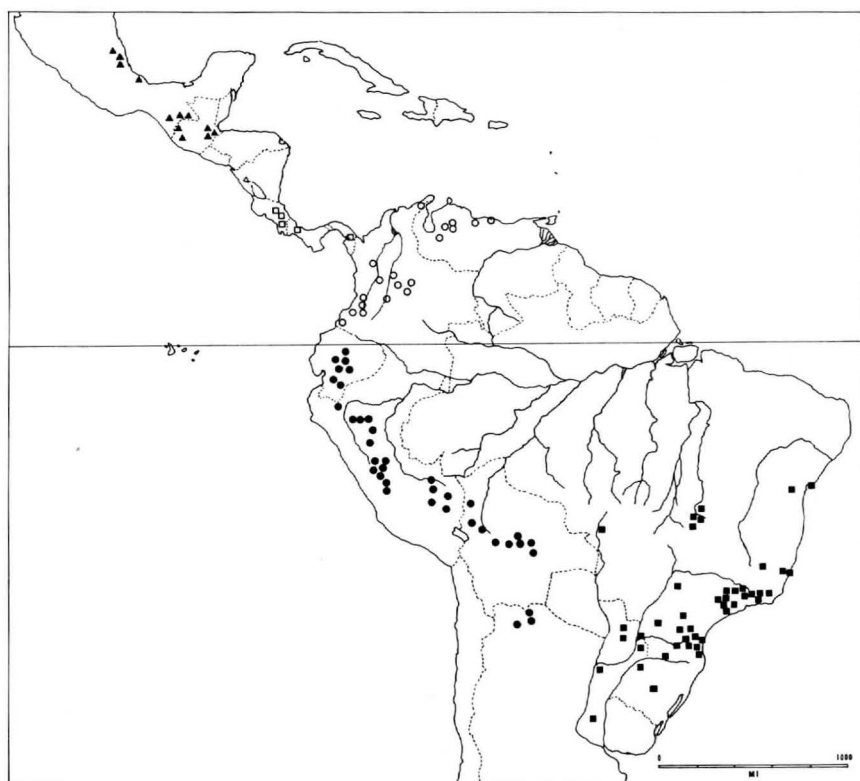


Figure 112. Distribution of *Epiphile plutonia* and subspecies of *Epiphile oreia*. ■ = *o. oreia*; ● = *o. negrina*; ○ = *o. iblis*; □ = *o. plusios*; ▲ = *plutonia*.



Figure 113. Distribution of subspecies of *Epiphile epimenes*, ● = *e. epimenes*; ▲ = *e. electra*; ■ = *e. kalbreyeri*.



Figure 114. Distribution of *Epiphile dinora* o; *Epiphile grandis* ▲ ; and *Epiphile hermosa* ■ .

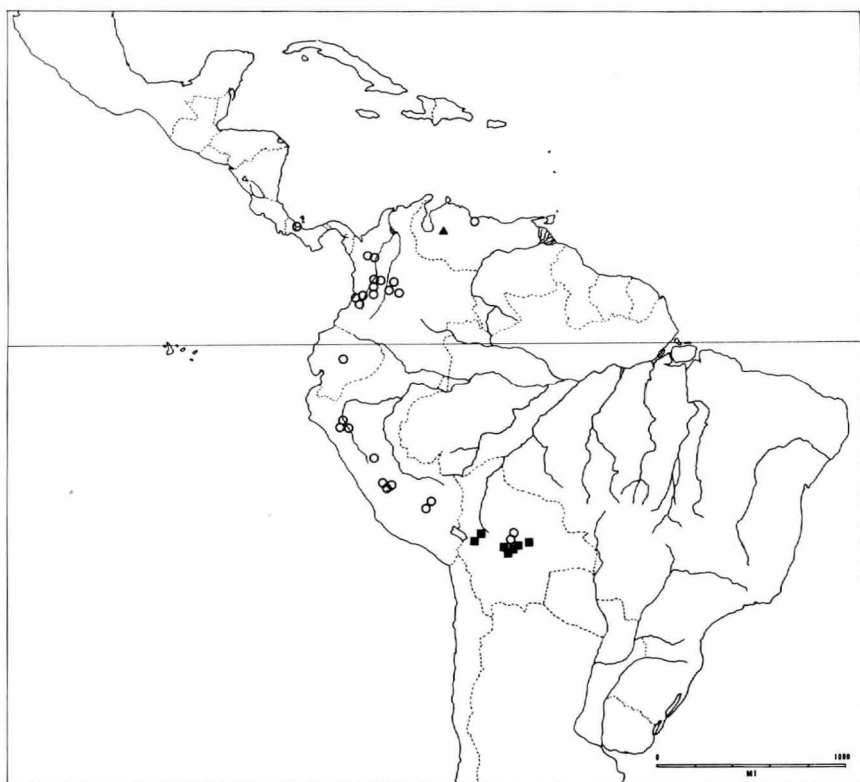


Figure 115. Distribution of subspecies of *Epiphile chrysites*, ○ = *c. chrysites*; ■ = *c. dilecta*; ▲ = *c. venezuelensis*.

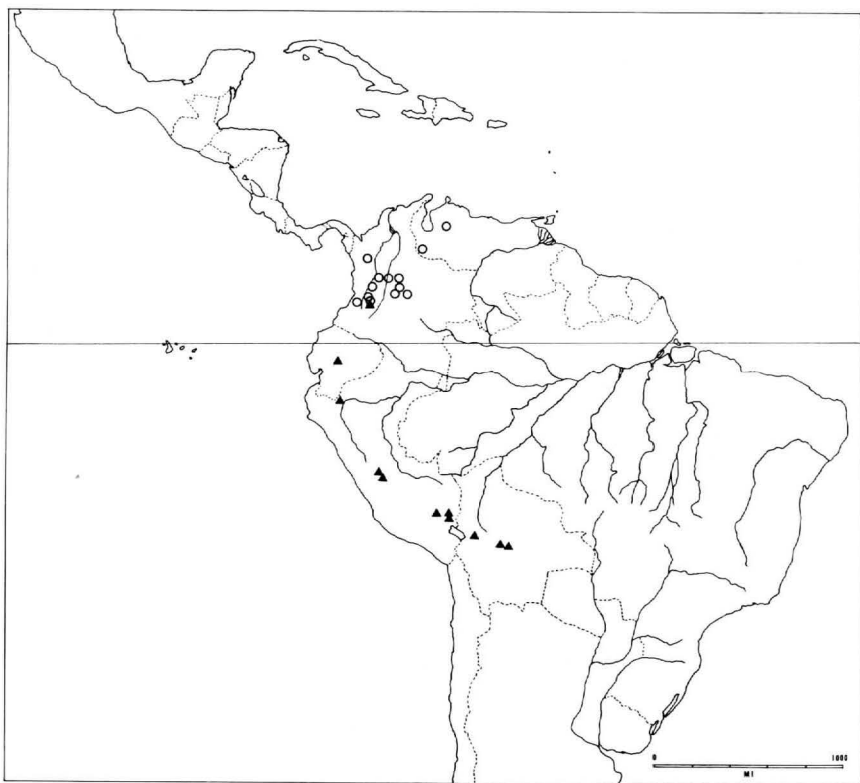


Figure 116. Distribution of subspecies of *Epiphile epicaste*, ○ = *e. epicaste*; ▲ = *e. boliviana*.

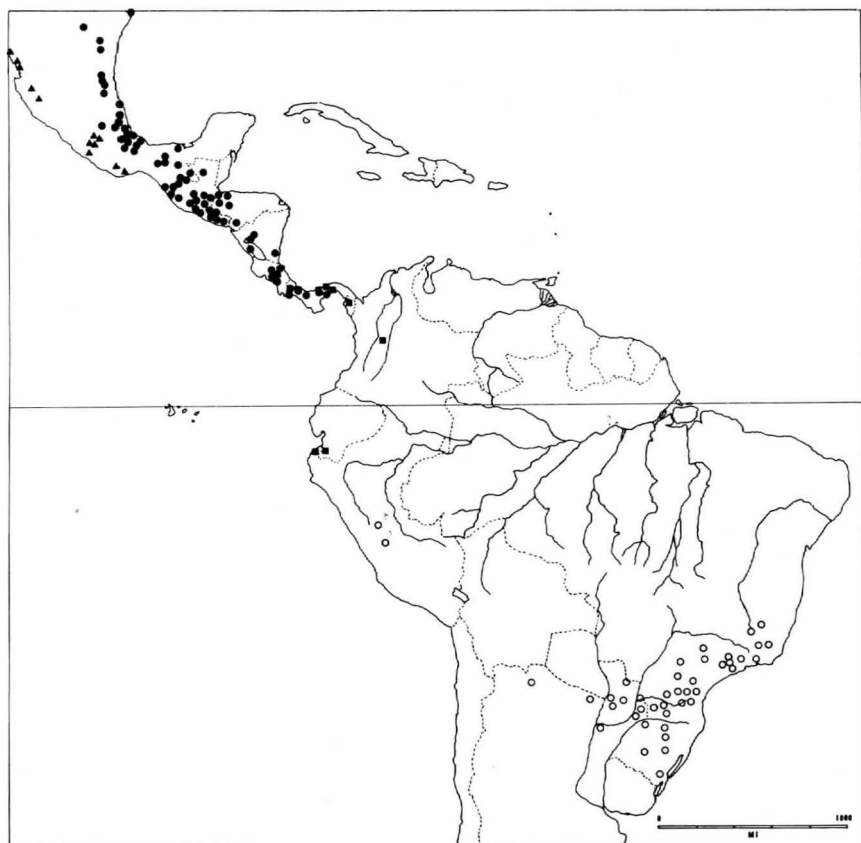


Figure 117. Distribution of *Epiphile hubneri* and subspecies of *Epiphile adrasta*, ● = *a. adrasta*; ■ = *a. bandusia*; ▲ = *a. escalantei*; ○ = *hubneri*.

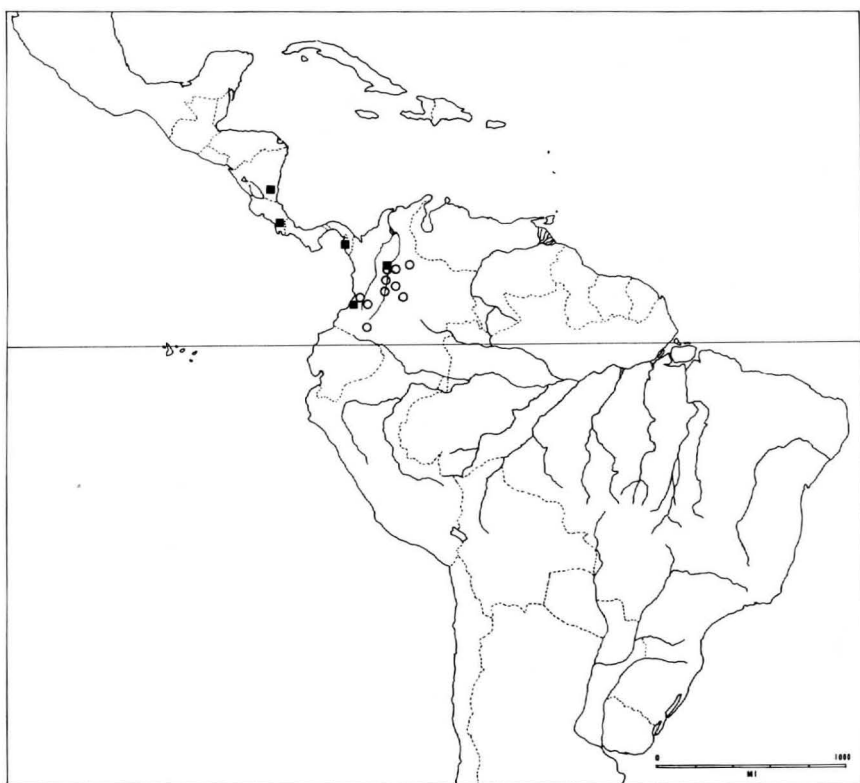


Figure 118. Distribution of subspecies of *Epiphile eriopis*, ○ = *e. eriopis*; ■ = *e. devriesi*.



Figure 119. Distribution of subspecies of *Epiphile lampethusa*, ○ = *l. lampethusa*; ▲ = *l. zipa*.

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