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THREE NEW SPECIES OF ADELPHA (NYMPHALIDAE) FROM MEXICO AND COLOMBIA

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INTRODUCTION

While arranging the Allyn Museum *Adelpha* from Mexico, we found two species similar to, but distinct from, *A. milleri* Beutelspacher (1976). A series of *Adelpha* from western Colombia collected by the senior author and his wife, as well as by Curtis Callaghan although very similar to *A. rothschildi* Fruhstorfer (1915: 528) was consistently different and specifically distinct. A single aberrant ♂ of *A. eponina* Staudinger (1888: 143) is also briefly discussed and illustrated, but not named.

ACKNOWLEDGMENTS

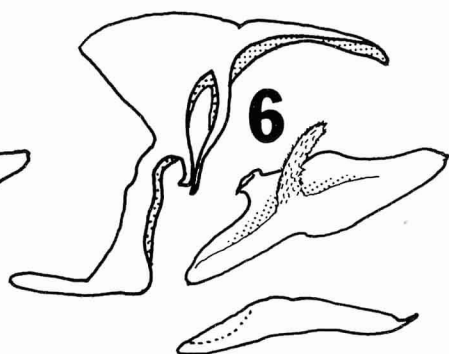
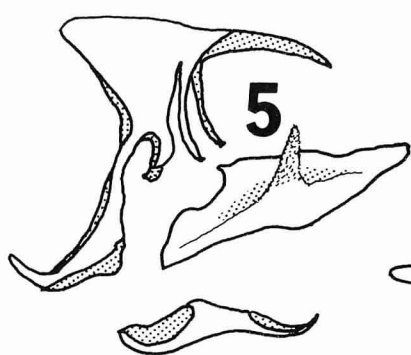
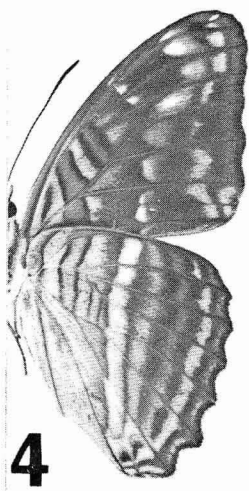
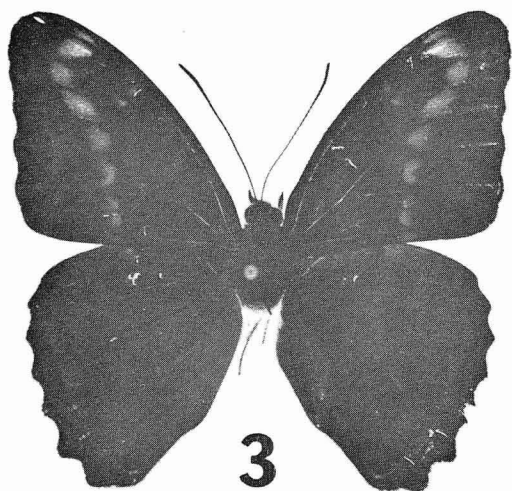
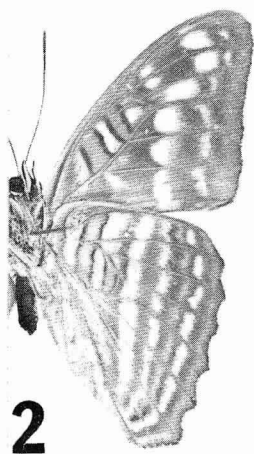
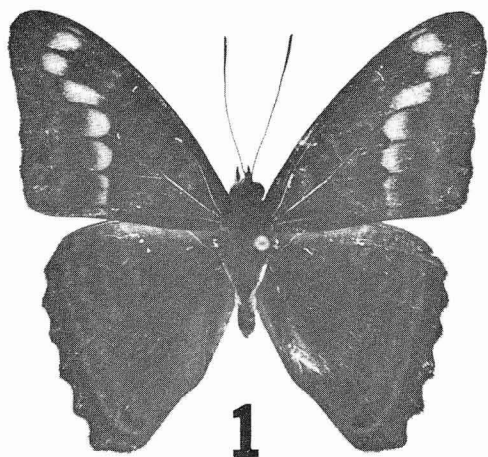
We wish to thank R. I. Vane-Wright of the British Museum (Natural History) for the loan of a specimen of *A. rothschildi*; Jacqueline Y. Miller aided the study by the preparation of specimens when we needed them, in the preparation of some genitalic slides and for reading the manuscript; and A. C. Allyn took care of the photographic chores and also read the finished manuscript.

Adelpha levona, new species

Figures 1, 2 (♂), 5 (♂ genitalia)

Male: Head, thorax and abdomen black above, pale gray below. Palpi black above, remainder white, but with a black lateral stripe. Eyes densely hairy. Antennae black. Legs clothed with tan outer and whitish inner hairs.

Upper surface of forewing dark brown with darker brownish-black transverse bands in a typical *Adelpha* pattern, as illustrated; a postdiscal band of orange spots running from midway out inner margin and curving around (but well outside) cell to costa, as illustrated, those posteriad of Cu_2 and in R_3-R_4 the most poorly developed; two faint (occasionally orange tinted) pale spots just outside cell in $Rs-M_1$ and M_1-M_2 have their proximal edges in line with the proximal edge of the postdiscal spot in M_2-M_3 . Margin even, slightly concave; fringes gray-brown, narrowly white at apex.



1 mm

Hindwing above also dark brown with transverse blackish-brown bands; basal two-fifths of wing anterior of 2A blackish-brown; outwardly discal band obscure, postdiscal band more prominent and macular, submarginal band narrow and prominent; anal area slightly paler than rest of wing. Margin crenulate; fringes gray-brown.

Under surface with a faded appearance compared with *A. rothschildi*. Ground color of forewing ochreous to fulvous with dark markings corresponding to those of upper surface; pale gray-white markings as shown in cell (three), just outside cell in $Rs-M_1$ and M_1-M_2 and a submarginal series from inner margin to $Rs-M_1$. Fringes darker than ground color, gray-brown, narrowly white at apex.

Hindwing below ochreous to fulvous with light gray bands and areas as illustrated and with narrow red-brown lines separating the ochreous and gray areas, especially in distal half and near base of wing. Fringes dark brown.

Length of forewing of Holotype ♂ 32.0 mm., those of the eleven ♂ Paratypes range from 30.5 to 33.0 mm., averaging 32.0 mm.

Male genitalia as illustrated, showing a close relationship with *A. rothschildi* (Fig. 6). The sacculus bears a prominent toothed dorsal appendage (the "clunacula" of Fruhstorfer, 1915) that is straighter than that of *rothschildi*, the valva in the present species is narrower and *levona* has a slightly more hooked uncus.

Female: Unknown.

Described from 12 male specimens from the Department of Valle del Cauca, Colombia.

HOLOTYPE ♂: COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá, 1000 m., 2.ii.1975 (S. R. & L. M. Steinhauser).

PARATYPES: all COLOMBIA: VALLE DEL CAUCA: same locality and collectors as Holotype, 5♂, 26.x.1974, 11.i.1975, 18.i.1975, 2.ii.1975, 15.ii.1975; same locality and collectors as Holotype, but 1150 m. elevation, 4♂, 23.xii.1973, 5.i.1974, 24.xii.1975, 31.xii.1975; 2♂ Calima Dam, 30.xi.1973 (C. Callaghan).

Disposition of type-series: For the present all of the type-series is in the Allyn Museum of Entomology collection.

We take great pleasure in naming this beautiful species for the senior author's wife, Levona, who collected many of the types.

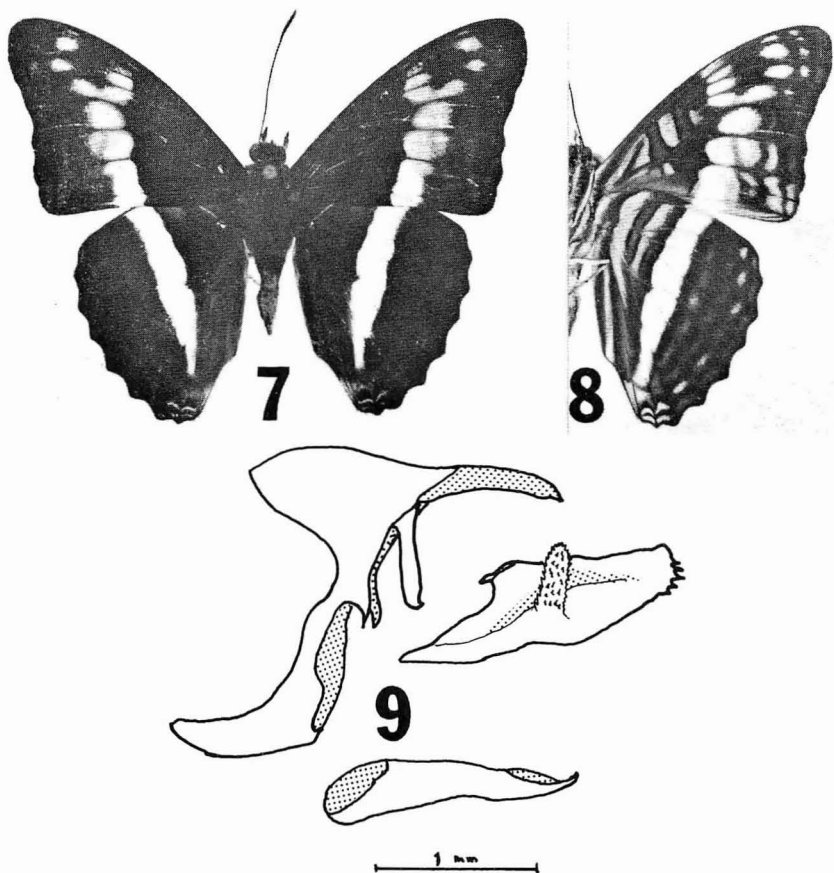
Discussion: *A. levona* is very closely related to *A. rothschildi* (Figs. 3, 4, ♂), from which the present species differs in the following particulars: 1) *rothschildi* is a larger insect, averaging slightly over 33 mm. in forewing length, as against an average of 32.0 for *levona*; 2) the forewing margin is quite even in *levona* and crenulate in *rothschildi*; 3) *rothschildi* is much darker, especially on the under surface; 4) the outer band of the upper surface forewing orange band is smoothly sinuate in *rothschildi*, staggered in *levona*; 5) the orange spots just outside the cell in $Rs-M_1$ and M_1-M_2 are well-marked and proximally well separated from the spot in M_2-M_3 in *rothschildi*, but generally diffuse, rarely orange-tinted and contiguous to the spot in M_2-M_3 in *levona*; 6) the postdiscal dark band on the upper hindwing is continuous and much heavier in *rothschildi*, but less pronounced and macular in *levona*; 7) on the under forewing there is a conjoined, double tornal gray spot distad of the gray band in *rothschildi* that is not present in *levona* (but this double spot was not mentioned in Fruhstorfer's original description); 8) in *rothschildi* there are two conjoined gray spots at the end of the cell, the upper one of which is

Figures 1-6: *Adelpha*. 1-2, *A. levona*, new species, Holotype ♂, upper (1, photo no. 071377-17) and under (2, photo no. 071377-18) surfaces; COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá. 3-4, *A. rothschildi* Fruhstorfer, ♂ upper (3, photo no. 071377-17) and under (4, photo no. 071377-18) surfaces; COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá. 3-4, *A. rothschildi* Fruhstorfer, ♂ upper (3, photo no. 071377-17) and under (4, photo no. 071377-18) surfaces; COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá. 5, *A. levona*, new species, ♂ genitalia of Paratype; same data as Holotype; slide M-3696 (Lee D. Miller). 6, *A. rothschildi* Fruhstorfer, ♂ genitalia of specimen in Figs. 3-4; slide M-3705 (Lee D. Miller). All specimens figured are in the Allyn Museum collection.

at most weakly developed in *levona*; 9) on the under hindwing of *levona* there are a few weakly developed tornal gray streaks, whereas *rothschildi* has a more or less complete series; 10) in *levona* the white fringe scales are at the forewing apex only, whereas in *rothschildi* they are present between the veins on both wings; 11) the valva of *levona* is narrower than that of *rothschildi* and the angle between the costa and the base of the valva is more obtuse; the clunacula of *rothschildi* is more curved caudad and the uncus of *levona* is slightly more hooked at the tip.

Biological Notes: *Adelpha levona* has been found in a restricted area of Valle del Cauca between 1000 and 1500 m. along the western slope of the western cordillera from October through February. It has been observed flying in patches of remnant rain forest in an area that has been largely cleared for agriculture. Males (the only specimens known) visit seeps in rock and on concrete faces and are also attracted to human or animal urine. They may sun themselves on bare rock and flat gravel surfaces.

A. levona has been taken at the same place on the same date with *A. rothschildi*, strongly suggesting the non-conspecificity of the two insects.



Figures 7-9, *Adelpha escalantei*, new species; Holotype ♂, upper (7, photo no. 071377-5) and under (8, photo no. 071377-6) surfaces; MEXICO: OAXACA: Chi-malapa; 9, ♂ genitalia of Paratype; MEXICO: CHIAPAS: Santa Rosa Comitán; slide M-3701 (Lee D. Miller).

***Adelpha escalantei*, new species**

Figures 7, 8 (♂), 9 (♂ genitalia)

Male: Head, thorax and abdomen dark brown above, whitish below with lateral brown stripes. Palpi dark brown above, white below and with a dark brown lateral stripe. Eyes densely hairy, Antennae dark brown. Legs clothed with dorsal brown and ventral white hairs.

Forewing above as illustrated, dark brown, with a transverse orange postdiscal (white near inner margin behind Cu_2) band that is broadest in M_2-M_3 above which it is bifurcate, the distal arm being discontinuous and the proximal one continuous, neither reaching the costal margin; some brown shading in band in Cu_1-Cu_2 . Fringes black-brown, narrowly white at apex and a few white scales at tornus.

Hindwing above also dark brown with obscure darker banding and a white discal band beginning at mid-costa and tapering toward tornus in Cu_2-2A where it approaches, but does not meet, a dark orange tornal area bounded by a double black spot with white outer scaling nearest margin. Fringes dark brown with a few white scales at tornus and apex. The outer margin is evenly rounded and somewhat crenulate.

Ground color of forewing below brownish-maroon with a dark, uneven maroon band around the end of the cell, shining pale gray markings within the cell and dull tan-maroon areas corresponding to orange band of upper surface; a broken submarginal band of gray spots runs from the costa to M_2-M_3 and from Cu_1-Cu_2 to near the tornus. Fringe dark brown, whitish at apex and tornus.

Hindwing below as illustrated, ground color brownish-maroon, basal pale markings grayish, central band white and submarginal light markings gray; postdiscal area crossed by irregular, more or less macular dark maroon bands; tornal area marked gray and dark maroon. Fringes whitish proximad, dark brown narrowly cut with white distad, tornus and apex whitish.

Length of forewing of Holotype ♂ 29.5 mm., those of the three ♂ Paratypes are 28.0, 29.0 and 30.0 mm.

♂ genitalia as illustrated and characterized by the curved and hooked uncus, the broad, well-toothed valvae that are quite long and the general appearance.

Female: Unknown.

Described from four male specimens from Oaxaca and Chiapas, Mexico.

HOLOTYPE ♂: MEXICO: OAXACA: Chimalapa, ix.1965 (T. Escalante).

PARATYPES: all MEXICO: CHIAPAS: 1♂, Ocozingo, viii.1974; Santa Rosa Comitán (properly Santa Rosa de las Margaritas), 1♂, iii.1958, 1♂, ix.1961 (all T. Escalante).

Disposition of type-series: The entire type-series is in the collection of the Allyn Museum of Entomology.

We take great pleasure in naming this *Adelpha* for its discoverer, Dr. Tarsicio Escalante, of Mexico, D. F. who has contributed so much to our understanding of the Mexican fauna.

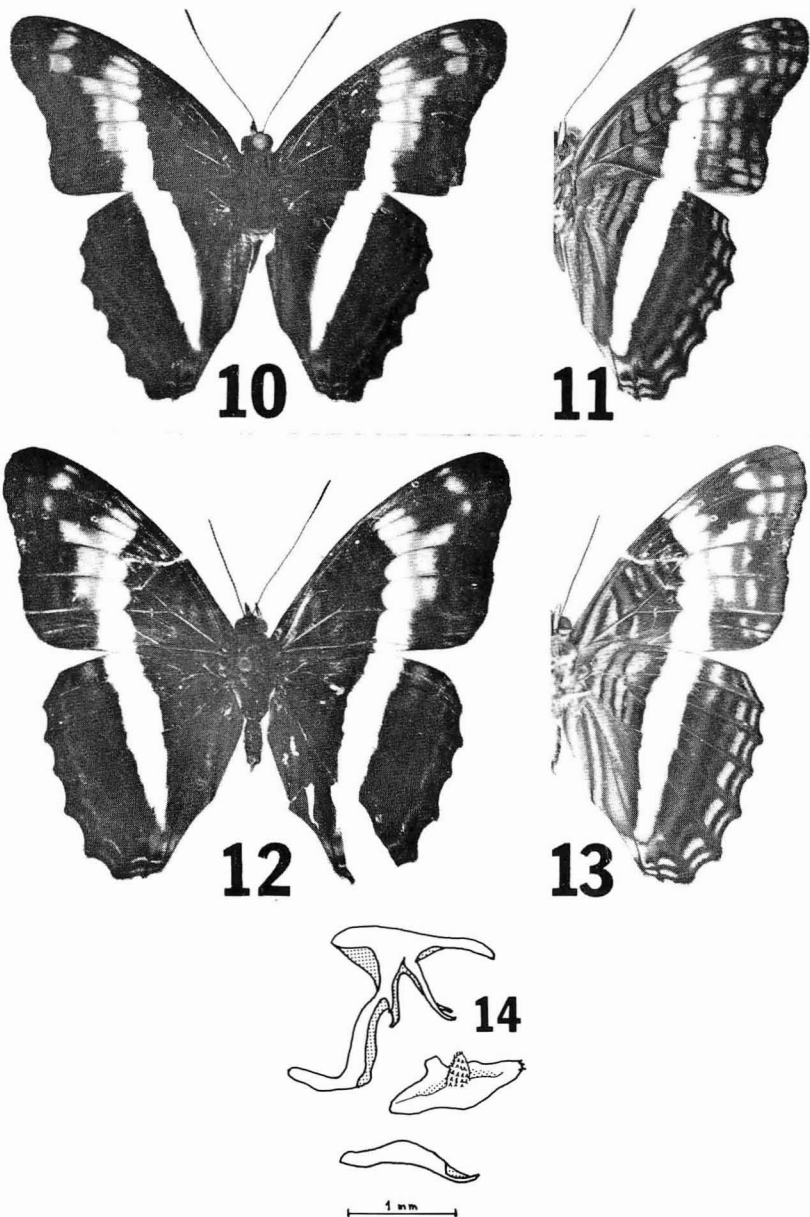
A discussion of the members of the *A. milleri* complex follows the description of the next species.

***Adelpha jacquelineae*, new species**

Figures 10, 11 (♂), 12, 13 (♀), 14 (♂ genitalia)

Male: Head, thorax and abdomen dark brown above, whitish below with brown lateral stripes. Palpi dark brown above, white below with a dark brown lateral stripe. Antennae dark brown. Eyes densely hairy. Legs dorsally brown, ventrally white.

Forewing above as illustrated, dark grayish-brown with darker transverse markings in typical *Adelpha* pattern; orange postdiscal band (shaded to white



Figures 10-14, *Adelpha jacquelinae*, new species. 10-11, Holotype ♂, upper (10, photo no. 071377-7) and under (11, photo no. 071377-8) surfaces; MEXICO: OAXACA: Chimalapa. 12-13, Paratype ♀, upper (12, photo no. 071377-9) and under (13, photo no. 071377-10) surfaces; MEXICO: OAXACA: Puerto Eligio. 14, ♂ genitalia of Holotype, slide M-3703 (Lee D. Miller).

from Cu_2 -2A to inner margin) widest in M_2 - M_3 above which it is bifurcate, the distal arm being composed of three discontinuous spots and the proximal arm more or less continuous, neither reaching the costa; white area posteriad of Cu_2 much narrowed and only about 2/3 width of contiguous orange part of band; inner edge of band fairly straight, slightly convex in M_3 - Cu_1 . Fringes dark brown, narrowly white at apex and tornus and a few white scales between the veins.

Upper surface of hindwing likewise dark grayish-brown with darker transverse bands typical of the genus; central white band beginning at mid-costa, thickest in middle and terminating in a point near tornus; some orange tornal scales in Cu_2 -2A just inside two black spots with white distal edges. Fringes checkered, black brown along veins, white between them.

Under surface brownish-maroon with darker brown transverse lines as shown in illustration; central band of forewing pale pinkish-brown, that of hindwing pure white; other pale markings on both wings dull bluish-gray; tornus of hindwing with two prominent black spots edged inwardly with fulvous and white scales. Fringes of forewing dark grayish with white scales tornally and apically; those of hindwing checkered with brownish-black and white between the veins.

Length of forewing of Holotype ♂ 28.0 mm., those of ten ♂ Paratypes range from 26.0 to 29.0 mm., averaging 27.5 mm.

The ♂ genitalia are as illustrated and characterized by the slightly hooked uncus, the broad terminus of the valva and the one to three stout teeth at the tip of the valva.

Female: Upper surface similar to the ♂, but the orange forewing band is more sharply bent at vein M_3 . The under surface ground color brown, rather than maroon, the central band brown band more centrally placed than in the ♂, and the hindwing pale band not as well defined and straighter than in the ♂.

Length of forewing of the single ♀ Paratype 31.5 mm.

Described from twelve specimens, eleven ♂ and one ♀, from the states of Oaxaca and Chiapas, Mexico.

HOLOTYPE ♂: MEXICO: OAXACA: Chimalapa, viii.1965 (T. Escalante); ♂ genitalia slide M-3703 (Lee D. Miller).

PARATYPES: all MEXICO. OAXACA: same locality and collector as Holotype, 1♂, viii.1964, 2♂ ix.1965; Rio Sarabia, 1♂, ix.1958; Puerto Eligio, 1♀, 1.x.1961. CHIAPAS: Ocozingo, 1♂, vii.1972; Petalcingo, 1♂, vi.1946 (all the preceding collected by T. Escalante); San Quintin, 3♂, 1-5.x.1971, 1♂, 8-12.viii.1971 (all R. Wind).

Disposition of type-series: The entire type series is in the collection of the Allyn Museum of Entomology, but may be subdivided later.

We are very pleased to name this lovely *Adelpha* for the wife of the junior author, Jacqueline, who is also the Assistant Curator of the Museum.

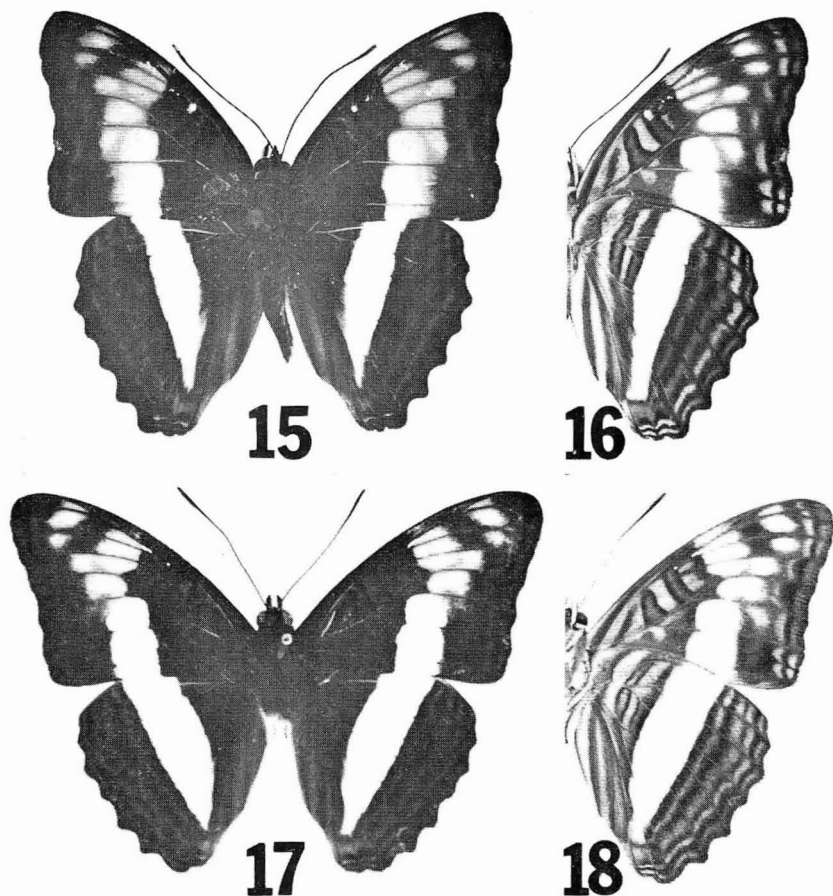
Discussion of the Mexican *Adelpha phylaca* complex

Adelpha escalantei and *jacquelineae* are part of a closely related complex that includes *A. milleri* Beutelspacher, *A. baeotia oberthueri* (Boisduval) and *A. phylaca phylaca* (Bates), all known from Mexico, and several other species from South America. Of the Mexican species we have figured here *oberthueri* (Figs. 15, 16, ♂) and *phylaca* (Figs. 17, 18♂) since neither was figured in "Seitz"; *A. milleri* is figured by Beutelspacher (1976) and is not figured here. *A. b. oberthueri* may be immediately separated from the other species by its very broad discal bands, and by that of the upper forewing being entirely orange with the exception of a small amount of white suffusion in Cu_2 -2A and the anal cell. *A. p. phylaca* is separable from *milleri*, *escalantei* and *jacquelineae* by the forewing discal spot in Cu_1 - Cu_2 on the upper surface being white in at least the proximal half in *phylaca*, but in less than half in the other species. This same spot in *phylaca* is offset proximad by at least 2 mm.; in the others it is approximately in line.

There are many characters that separate *milleri*, *escalantei* and *jacquelineae*,

as follows:

1. There are two apical orange spots in *milleri*, three in the other species.
2. The upper forewing discal band spot in M_2 - M_3 is quadrate, entire in *milleri* with the outer edge straight and offset distad from the other spots, resulting in a pronounced indentation of the discal band; in *escalantei* this spot is rounded, centrally indented distad, rounded proximad; that of *jacquelinae* is quadrate, generally entire and with the outer edge straight.
3. The upper hindwing of *milleri* has no tornal orange shading; the other two species do.
4. The upper hindwing inner submarginal band is more or less solid in *escalantei*, macular in the other species.
5. The under forewing pale apical spots are round and white in *escalantei*, gray and elongate normal to veins in the other two species.



Figures 15-18: *Adelpha*. 15-16, *A. baeotia oberthueri* (Boisduval), ♂ upper (15, photo no. 071377-1) and under (16, photo no. 071377-2) surfaces; MEXICO: CHIAPAS: Pichucalco. 17-18, *A. phylaca phylaca* (Bates), ♂ upper (17, photo no. 071377-3) and under (18, photo no. 071377-4) surfaces; MEXICO: GUERRERO: Acahuizotla.

6. The subapical pale spots on the under hindwing are white and ovoid in *escalantei*, whitish, but divided by brown streaks in *jacquelinae* and obscure, diffuse and ochreous in *milleri* (spot in M_1-M_2 may be divided by a brown streak).

7. The under forewing brown streak within the pale discal band of *milleri* is centrally located in M_3-Cu_1 (the band is white proximad and dirty white distad); streak is proximad of center of M_3-Cu_1 in *escalantei* and distad of the center in *jacquelinae*.

8. Both edges of the white discal band spot on the under forewing are rounded in *escalantei*; in the other two species the proximal edge is straight and the distal edge blurred.

9. Spot in Cu_1-Cu_2 of the upper forewing discal band is entirely orange in the ♂, sprinkled with some white in the ♀, spot in Cu_2-2A is white in *milleri*; in *escalantei* the Cu_1-Cu_2 spot is all orange and that in Cu_2-2A has an orange distal half; in *jacquelinae* the proximal part of the spot in Cu_1-Cu_2 is white, and the one in Cu_2-2A may have minor distal orange scaling.

10. Of the three submarginal bands of spots on the under hindwing, the outer band is tan and the inner two blue-gray in *milleri*, the inner and outer bands are tan and the central whitish in *escalantei* and the inner band is tan with the outer two blue-gray in *jacquelinae*.

11. The submarginal and postdiscal bands of the under hindwing are strongly offset proximad in M_2-M_3 in *milleri*, slightly offset distad in M_1-M_2 in *jacquelinae* and the postdiscal band only is slightly offset distad in M_1-M_2 in *escalantei*.

12. The pale markings of the under surface proximad of the pale central bands are pale gray on the forewing, white on the hindwing of *escalantei*, bluish-gray on both wings in the other two species.

13. Upper surface ground color is darkest in *escalantei*.

14. The under surface ground color is rich maroon-brown in *escalantei*, browner in *jacquelinae* and paler in *milleri*.

15. The uncus is fairly straight, but slightly hooked in *milleri*; is somewhat hooked and slightly curved in *jacquelinae* and is curved and rather strongly hooked in *escalantei*.

16. The valva distad of the clunícula is narrow in *milleri* with the sides nearly parallel, terminally rounded and bearing no teeth or only poorly developed ones; that of *escalantei* is broad, sides slightly convergent, somewhat squared terminally and bearing numerous well-developed teeth; in *jacquelinae* it is broad, sides convergent, terminally rounded and bearing one to three teeth.

17. The lengths of the valvae are about equivalent in *milleri* and *jacquelinae*; in *escalantei* the valvae are about 1.4 times as long.

18. The length of the valvae from the extreme base to the costal apodeme is very short in *jacquelinae*, short in *milleri* and long in *escalantei*.

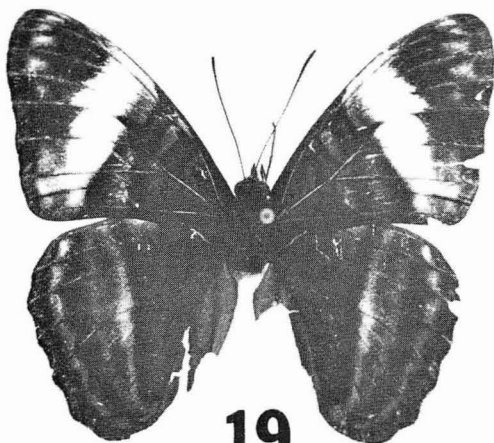
Adelpha eponina Staudinger, ab.

Figures 19, 20 (♂)

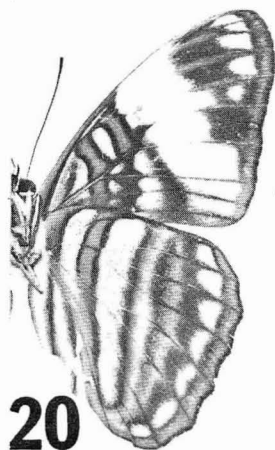
A single aberrant ♂ of this species was taken by S. R. and L. M. Steinhäuser (COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá, 1000 m., 15.ii.1975). Normal *eponina* (Figs. 21, 22 ♂) is not uncommon in this locality where remnants of rain forest still exist on slopes of the Anchicayá valley too steep for cultivation. This aberrant form has pale ochreous scaling in the tornal part of the upper forewing discal band and a pale ochreous discal band on the upper hindwing, neither of which is shown in typical *eponina*. Normal *eponina* has two ochreous discal bands on the hindwing beneath separated by a broad brownish-black band; in the aberrant specimen the ochreous bands are expanded and the intervening dark band greatly reduced. The genitalia are identical in both forms. We here illustrate both forms from the same locality, but not their genitalia.

LITERATURE CITED

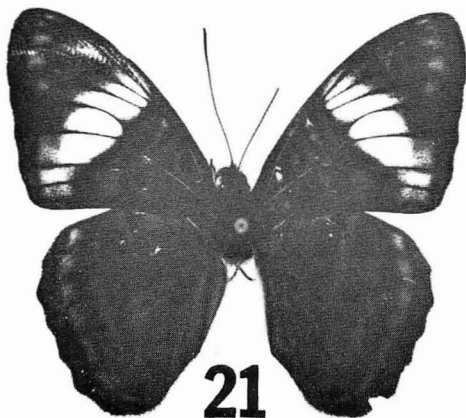
- Beutelspacher, C. R., 1976. Estudios sobre el genero *Adelpha* Hübner en Mexico (Lepidoptera: Nymphalidae). Rev. Soc. Mexicana Lepid., 2: 8-14; 6 figs.
 Fruhstorfer, H., 1915. *Adelpha*, in Seitz, A., Die Grossschmetterlinge der Erde, 5: 510-533.
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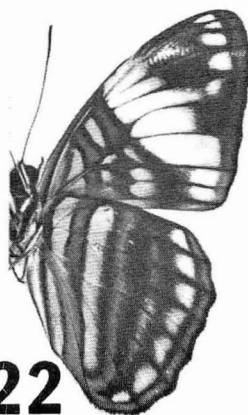
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Figures 19-22, *Adelpha eponina* Staudinger. 19-20, aberrant ♂, upper (19, photo no. 071377-13) and under (20, photo no. 071377-14) surfaces; COLOMBIA: VALLE DEL CAUCA: Rio Anchicayá. 21-22, normal ♂, upper (21, photo no. 072377-11) and under (22, photo no. 071377-12) surfaces; COLOMBIA: VALLE DEL CAUCA: rio Anchicayá.