

DESCRIPTIONS OF TWO NEW *CHLOSYNE* (NYMPHALIDÆ)
FROM MEXICO, WITH A DISCUSSION OF RELATED FORMS

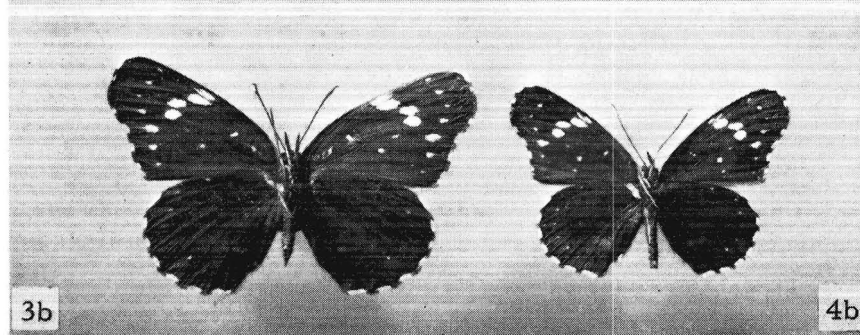
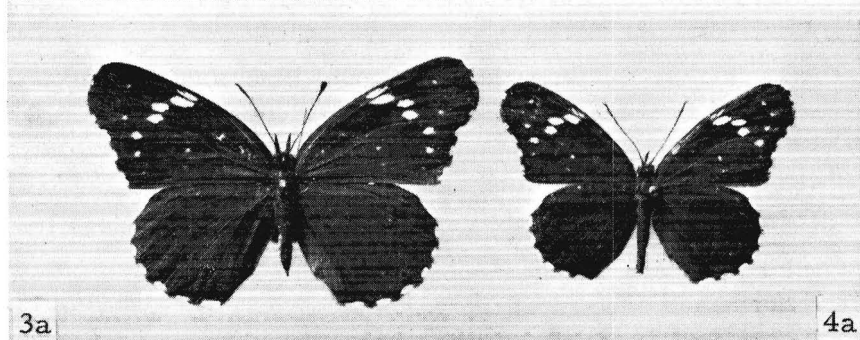
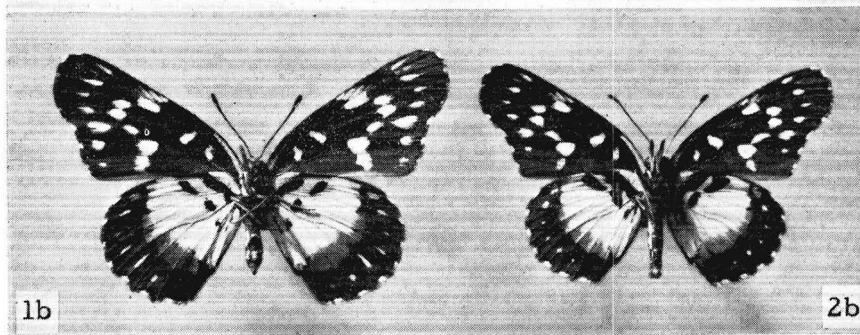
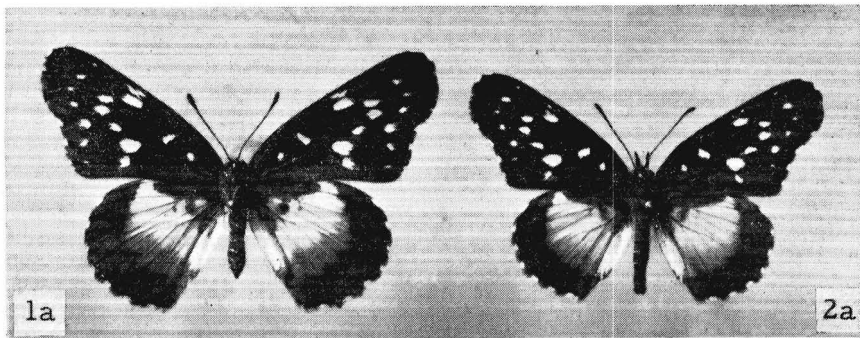
by DAVID L. BAUER

Some years ago while examining the series of *Chlosyne lacinia* Geyer in the collection of F. M. BROWN, I noticed five specimens without marginal or submarginal spots on the wings. These specimens were all from northeastern Mexico and this along with their other peculiarities interested me, so I set them aside and continued to examine the series. Later among the specimens of *Chlosyne lacinia quehtala* Reakirt, I found five more specimens which also did not have a trace of the marginal or submarginal spots on their wings. These last specimens were from southwestern Mexico. As soon as possible I examined the genitalia of these two insects to see if they were just another variation of the protean *C. lacinia*, of which I had already checked many forms, or something new. I was both surprised and delighted to find the genitalia were definitely not like those of true *lacinia*. Comparison with the genitalia of other species of *Chlosyne* showed them to be most like those of *C. janais* Drury.

The next summer, 1954, a trip was taken to Mexico and several colonies of the first insect were found, its habits were observed, and a good series was collected, but only one specimen of the second insect was captured. However, that same year, and also two years later, KENT H. WILSON was collecting *Papilio* in Mexico, and knowing of my interest in the *Chlosyne* he collected as many as he could and sent them to me for study. In the lot was a good series of the second insect, collected by him in the state of Guerrero. In the meantime a search through the *Zoological Record* and the extensive entomological literature at the University of Washington Library brought to light HALL's (1924) description of two *Chlosyne* which also lacked the submarginal spots on the wings. He named these two insects *C. rosita*, from western Guatemala, and *C. montana*, from Mexico, and gave excellent figures of the types. In his description of *C. rosita* he wrote: "I first met with this interesting species nearly twenty years ago, but hesitated to describe it owing to its similarity to certain forms of *C. lacinia*. Mr. Talbot, however, has now been good enough to dissect a specimen, and informs me that it is quite clear that it is distinct, and that it seems to come nearer to *C. janais* Drury than to *C. lacinia*." I now had adequate series and information for a serious study of these insects.

This past year M. SPELMAN sent me specimens of *C. rosita* from Cata-maca, Vera Cruz, Mexico, and Tuxtla Gutierrez, Chiapas, Mexico, and also San Salvador, El Salvador. Comparison of my specimens from northeastern Mexico with HALL's description and figures and with the specimens from Mr. SPELMAN, showed that they are a northern subspecies of *C. rosita*.

I take pleasure in naming this hitherto unnamed insect for F. MARTIN BROWN of Colorado Springs, Colorado, in whose collection the first specimens were discovered.



CHLOSYPNE ROSITA BROWNI Bauer, NEW SUBSPECIES

HOLOTYPE male. Upper surface of the primaries, jet black; two small white spots in discal cell; median series of spots large, prominent, and white in color, not confluent; postmedian series composed of seven small white dots, which are variable in size and shape; no trace of marginal or submarginal spots.

Under surface of the primaries glossy charcoal black in color; markings of upper surface repeated below, but all spots are larger and pale yellow in color; basal quarter of costa yellow tinged with rufous.

Upper surface of the secondaries with large orange-yellow discal patch shaded or margined with rufous along its edges; one deep rufous or black spot in discal cell; base and costa black; one yellow spot along costa and confluent with discal patch; area between vein 2A and inner margin pale yellow; a broad black band along outer margin, through center of which runs a partial series of white dots; no marginal or submarginal spots.

Under surface of secondaries predominantly pale yellow, with broad outer margin of glossy charcoal black in which is central row of white spots, these spots largest near costa and becoming smaller near anal angle; in basal area is diagonal black band from costa to inner margin; narrow row of black spots across postbasal area; series of five deep rufous spots included along outer edge of yellow area; no marginal or submarginal spots.

Fringes: alternately black and white.

Head: black marked with white middorsally.

Palpus: black above and white beneath.

Antenna: black banded with white at juncture of segments; club black, shading to white ventrolaterally.

Thorax: black marked with white ventrally.

Legs: femur largely black but with some pale orange scaling along inner side; tarsus and tibia of forelegs white, those of other legs pale orange.

Abdomen: charcoal black with each segment edged with white; a pale yellow ventral stripe along each side.

ALLOTYPE female. On upper surface pattern and coloring are as in male Holotype, but discal patch on secondaries paler; under surface same in pattern and coloring, but all white spots larger and the postmedian spots elongated into dashes.

HOLOTYPE male: El Salto, 1,600 feet elevation, San Luis Potosi, Mexico, 29 July 1954, *leg.* DAVID L. BAUER. Length of forewing base to apex 23 mm., apex to outer angle 15 mm., outer angle to base 15 mm.; range in type series: base to apex 20-24 mm., apex to outer angle 12-15 mm., outer angle to base 13-15 mm. Length of hindwing base to outer margin 15 mm.; range of type series 13-16 mm.

ALLOTYPE female: same locality as Holotype, 27 July 1954, *leg.* D. L. BAUER. Length of forewing base to apex 28 mm., apex to outer angle 19 mm., outer angle to base 17 mm.; range in type series: base to apex 24-28 mm., apex to outer angle 14-17 mm., base to outer angle 16-19. Length of hind wing base to outer margin 20 mm.; range in type series 18-20 mm.

PARATYPES: 26 ♂♂ and 10 ♀♀, all from Mexico, as follows: 7 ♂♂ and 1 ♀, same data as Holotype; 3 ♂♂ and 2 ♀♀, same data as Allo-

Fig. 1a — *Chlosyne rosita browni*, Allotype ♀, upperside; fig. 1b — same, underside; fig. 2a — *C. rosita browni*, Holotype ♂, upperside; fig. 2b — same, underside; fig. 3a — *C. riobalsensis*, Allotype ♀, upperside; fig. 3b — same, underside; fig. 4a — *C. riobalsensis*, Holotype ♂, upperside; fig. 4b — same, underside.

type; 6 ♂♂ and 1 ♀, same locality and collector as Holotype, 26 July 1954; 6 ♂♂ and 2 ♀♀, same locality and collector as Holotype, 28 July 1954; 1 ♂, same locality as Holotype, 25 August 1954, *leg.* P. R. EHRLICH; 1 ♀, Rio Purification, Tamps., 26 July 1954, *leg.* D. L. BAUER; 1 ♂ and 1 ♀, El Bonito Valles, S. L. Potosi, 28 June 1940, *leg.* HOOGSTRAAL & KNIGHT; 1 ♂ and 1 ♀, 60 mi. S. of Ciudad Victoria, Tamps., 6 July 1936, *leg.* H. D. THOMAS; 1 ♂, Galena, Nuevo Leon, 29 April 1941, *leg.* J. & R. POTTS; 1 ♀, 24 mi. S. of Montemorelos, Nuevo Leon, 19 July 1954, *leg.* P. R. EHRLICH.

The Holotype and Allotype are deposited in the Peabody Museum of Natural History, Yale University. One paratype is deposited at the Instituto de Biologia, Mexico City; one at the American Museum of Natural History, New York; five (3 ♂♂, 2 ♀♀) to be returned to F. M. BROWN; two (1 ♂, 1 ♀) to PAUL R. EHRLICH; the rest remain in the author's collection for the present.

This northern subspecies is remarkably constant in coloring and pattern. Its main differences from *C. r. rosita* are shown in the following list.

1. Upper surface of the forewing (the pattern is the same in both):
 - r. rosita* - all white spots small;
 - rosita browni* - median series of white spots larger than other spots.
2. Upper surface of the hindwing (the pattern is similar):
 - a. *r. rosita* - discal patch occupies basal half of wing;
 - rosita browni* - discal patch occupies basal two-thirds of wing.
 - b. *r. rosita* - area from vein 2A to inner margin black;
 - rosita browni* - area from vein 2A to inner margin pale yellow.
3. Under surface of the primaries (the pattern is similar):
 - a. *r. rosita* - base of costa black;
 - rosita browni* - base of the costa yellow tinged with orange.
 - b. *r. rosita* - all white spots small;
 - rosita browni* - all white spots larger, particularly the median series.
4. Under surface of the secondaries (the pattern is similar):
 - a. *r. rosita* - area from vein 2A to inner margin black with small yellow spot in middle;
 - rosita browni* - area from vein 2A to inner margin yellow except at anal angle.
 - b. *r. rosita* - series of rufous spots separated from discal patch by black scaling;
 - rosita browni* - series of rufous spots not definitely separated by black from discal yellow patch, at most a few black scales along inner edge.

Both *C. r. rosita* and *rosita browni* may easily be separated from all other *Chlosyne* which may have similar color patterns, by the complete absence of marginal and submarginal spots. For separation of *C. rosita browni* from *C. montana* I believe quoting from HALL's description concerning the discal patch will enable easy recognition of *montana*: "Hindwings with the

red area of a pale pinkish tone, not reaching the base, but taking the form of a broad transverse band crossing the wing and becoming whitish at the inner margin."

As already mentioned, the *quehtala*-like *Chlosyne* from the state of Guerrero does not have marginal or submarginal spots on the wings, and the male genitalia are nearer those of *C. janais* than *C. lacinia*. The genitalia of this insect were found to be almost identical with those of *C. rosita*. However, it is impossible with our present information to know whether this insect is a very distinct subspecies of *rosita* or a closely related full species. But because of the different shape of the primaries, the considerably different ratio of the length of the primaries to the length of the secondaries, and the very different maculation and coloration of the wings, it is described below as a separate species. The name is taken from that of the river in whose basin most of the specimens have been collected.

CHLOSYPNE RIOBALSSENSIS Bauer, NEW SPECIES

HOLOTYPE male. Upper surface of the primaries jet black; the most prominent markings on this surface are the four large median white spots from costa to vein M_3 ; rest of median series to inner margin much smaller or obsolete; postmedian white dots small and becoming obsolete toward costa and inner margin.

Under surface of the primaries glossy charcoal black; maculation same as on upper surface with addition of a small white spot at end of discal cell; costa pale orange at base.

Upper surface of the secondaries jet black, with only a trace of the postmedian white dots.

Under surface of the secondaries glossy charcoal black; a dash of yellow at base of costa; small postmedian red spots in cells Cu_1 and Cu_2 ; postmedian series of white dots mere points of white and in almost submarginal position.

Fringes: white interrupted by black at ends of veins.

Palpus: black dorsally and white ventrally.

Antenna: black with each segment narrowly edged with white; club black above and white beneath.

Head: black with dash of white between eyes.

Thorax: entirely black.

Legs: femur black; tibia and tarsus of foreleg white, those of other legs pale orange.

Abdomen: black with ventral whitish stripes.

ALLOTYPE female. Upper and under surfaces of the wings marked as in male, as are all other markings.

HOLOTYPE male: Mexcala, 2,000 feet elevation, Guerrero, Mexico, 17 July 1956, *leg.* KENT H. WILSON. Length of forewing base to apex 20 mm.; variation in length of forewing in type series 18.5-22 mm. Expanse of forewings 36 mm. Length of hindwing base to outer margin 15 mm.; variation of length of hindwing in type series 13-15 mm.

ALLOTYPE female: Milpillas, 2,300 feet elevation, Guerrero, Mexico, 4 July 1956, *leg.* KENT H. WILSON. Length of forewing base to apex 25 mm.; variation in length of forewing in type series 22-25 mm. Expanse of forewings 48 mm. Length of hindwing base to outer margin 19 mm.; variation in length of hindwing in type series 17 - 19 mm.

PARATYPES: 19 ♂♂ and 4 ♀♀ all from Mexico as follows: 2 ♂♂, same data as Holotype; 1 ♂, same data as Allotype; 4 ♂♂, same locality and collector as Holotype, 13-15 July 1956; 6 ♂♂ and 1 ♀, same locality and collector as Holotype, 29-30 July 1954; 3 ♂♂, same locality and collector as Allotype, 5-6 July 1956; 1 ♂, Alpuyecá, Morelos, Mexico, 10 August 1954, *leg.* D. L. BAUER; 2 ♂♂ and 3 ♀♀, Rio de las Balsas, 2,400 feet elevation, Guerrero, Mexico, 26 June 1941, *leg.* J. & R. POTTS.

The Holotype and Allotype are deposited in the Peabody Museum of Natural History, Yale University. One paratype is at the Instituto de Biología, Mexico City; one at the American Museum of Natural History, New York; four will be returned to F. M. BROWN; the remainder will be distributed between the collections of KENT H. WILSON and the author.

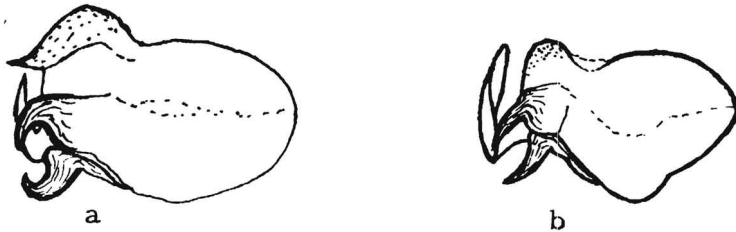


Fig. 5. Male claspers: a) *Chlosyne lacinia*; b) *C. riobalsensis*.

The naming of this insect adds to the genus *Chlosyne* one more member with a strictly black-and-white upper surface of the wings. *C. riobalsensis* need not be confused with any of the previously described members of the genus, for it may be separated from all of them by the complete absence of marginal and submarginal spots on both surfaces of all the wings. If there is ever any doubt as to the specimens being *C. riobalsensis* or *C. lacinia quehtala* (with which *C. riobalsensis* flies), a check of the male genitalia will unquestionably decide the matter - see figure 5b.

SUMMARY

It may be helpful to review the various named species and subspecies, which have been described to date, as not having any trace of the marginal or submarginal spots on the wings, and give the references to original descriptions and type localities.

HALL (1924) named two members of this group. The first in order of pages was *Chlosyne rosita*, described from a series of specimens collected at Moran, Palin, and Escuintla in western Guatemala during the months of August, September, and October. The second, named as *lacinia montana*, was described from a series of twenty specimens collected on Mount Popocatepetl at 10,000 feet elevation. Although HALL placed this insect as a member

of *lacinia*, a careful study of his description and his excellent figures of the type shows that there is no trace of the submarginal or marginal spots. This, together with its general appearance, places it in the *rosita* group.

Two more members of the group are now described: *C. rosita browni* and *C. riobalsensis*. At present the systematics of the group is as follows:

Chlosyne rosita rosita Hall — El Salvador to Gulf coast of Mexico

Chlosyne rosita browni Bauer — northeastern Mexico; possibly southern Texas

Chlosyne montana Hall — Mt. Popocatepetl, Mexico

Chlosyne riobalsensis Bauer — southwestern Mexico.

HALL noted that the two he described were fairly constant, not variable as are the populations of *C. lacinia*. He also stated that the forewings are elongated, "narrower and more produced" than in the forms of *lacinia*, and "almost as in *gaudialis* Bates". This more elongated forewing is very characteristic of *C. rosita rosita* and *C. rosita browni*, but it is not prominent in HALL's figure of *C. montana* nor is it mentioned in the description. In *C. riobalsensis* the wings are of typical *Chlosyne* shape with only a few specimens showing a slight tendency to be produced at the apex. *C. riobalsensis* is the only member of the group which shows some variation in the pattern. This variation takes the form of remnants of the discal patch appearing on the under surface of the secondaries.

I have in my possession two more Mexican specimens of this group, which differ from any of the named members. But since I have only one specimen of each I am hoping to get more before describing or discussing them. One is from the state of Guerrero and the other from Lake Chapala, in the state of Jalisco. I would be interested in examining any *Chlosyne* which do not have marginal or submarginal spots on the wings, but their possessors should write before sending specimens.

ACKNOWLEDGEMENTS

Thanks are expressed to Mr. KENT H. WILSON and Mr. M. SPELMAN for making material available for study. I am much indebted to Dr. C. L. REMINGTON and Mr. F. M. BROWN for reading the manuscript and making helpful suggestions, and also for the loan of specimens.

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General Delivery, Heppner, Oreg., U. S. A.