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## TWO NEW SPECIES OF *MEGATHYMUS* FROM TEXAS AND MEXICO (LEPIDOPTERA, RHOPALOCERA, MEGATHYMIDAE)

BY H. A. FREEMAN

***Megathymus chisosensis***, new species

Figures 1-4, 8, 13

MALE (UPPER SIDE): Primaries velvety black, base of wing orange fulvous, extending outward along inner margin of the wing to a point just to the edge of the inner side of the discal band of spots; an elongated spot in interspace 1, halfway between the base and the discal band; an irregularly shaped spot near the end of and extending across the cell; the discal band is composed of three spots, the one in interspace 1 is 4 mm. and is broadly columnar in shape, the one in interspace 2 is wider (5 mm.) and tapers outward on each side, the one in interspace 3 is 5 mm. wide and tapers into a point just under the cell spot; two extra-discal spots which connect into the discal band, and the outer edge of all five spots forms a nearly straight line; the three sub-apical spots are broad (3-3.5 mm. wide) and resemble the discal band in general appearance. All these spots are deep orange in color. Fringes alternately black and light orange.

Secondaries velvety black, basal half covered with orange hairs; a slightly angled discal band of six fused spots, which varies in size from 1.5 mm. near apical angle to 4 mm. near anal angle, extends across the wing; an indistinct spot in the middle of the wing about halfway between the discal band and the base. All spots deep orange in color. Fringes alternately checkered black and light orange.

MALE (UNDER SIDE): Primaries black, apical angle overscaled with gray scales. All spots reappear and are only slightly lighter in color.

Secondaries have the ground color black, rather evenly overscaled with gray. Two sordid white spots below the costal margin. The discal band reappears only as an indistinct gray area.

Thorax above dark gray, with some orange hairs present, beneath lighter gray. Abdomen above black, dark gray beneath, some orange hairs at the base on the upper side. Palpi beneath gray. Pectus gray. Legs gray. Antennae black above, beneath with some whitish scales and a white stripe on the club.

Expanse, 53 to 58 mm.

FEMALE (UPPER SIDE): Primaries velvety black, with the base reddish orange; a discal band composed of three broad, fused spots, the one in interspace 1 is 16 mm. wide, the one in interspace 2 is 10 mm. wide, and the one in interspace 3 is 10 mm. wide and fuses into the cell spot, which is 4 mm. wide; two extradiscal spots which are fused into the discal band and the three broad (3.5 mm. wide) subapical spots. All spots are fused together in an irregular manner. All these spots are reddish orange. Fringes alternately checkered black and yellowish orange.

Secondaries velvety black, with some reddish orange hairs near the base. A small reddish orange spot in the center of the wing. The discal spots are fused together into a broad band, extending from the apical angle, where the spots are 3 mm. wide, to the anal angle, where they are 6 mm. wide. All spots reddish orange. Fringes alternately checkered black and yellowish orange.

FEMALE (UNDER SIDE): Primaries deep black, with some grayish overscaling near the apical angle. The spots reappear and are more orange in coloration.

Secondaries grayish black, with the discal band reappearing only as a much lighter area. A white spot just below the costa and another one near the apical angle. A small orange spot in about the center of the wing. Fringes alternately checkered black and yellowish orange.

Thorax above grayish black, with a few reddish orange hairs present, beneath gray. Abdomen above grayish black, with some reddish orange hairs and scales near the base, beneath grayish. Legs gray. Antennae black above, beneath with some whitish scales and a white stripe on the club.

Expanse, allotype, 58 mm., paratype 48 mm. (this specimen did not develop fully).

TYPE MATERIAL: Holotype male, Chisos Basin, Chisos Mountains, Texas, September 22, 1951 (H. A. Freeman); allotype

female, Chisos Mountains, elevation 5400 feet, September 29, 1951 (R. C. Turner, Jr.); one male paratype, September 12, 1951, and one female paratype, September 19, 1951, same locality and collector as holotype. The holotype is in the American Museum of Natural History, the allotype is in the Stallings and Turner collection, and the two paratypes are in the author's collection.

This undescribed species is named both for the locality from which it came and the food plant of the larvae (*Agave chisosensis* Mueller).

In general appearance the males of *Megathymus chisosensis* somewhat resemble *neumoegeni* Edwards, but there are several marked differences. The spots are wider in *chisosensis* and are closer to the outer margin; the discal spot in interspace 3 extends nearer to or against the cell spot, thus somewhat resembling some of the female specimens of *neumoegeni*. The depth of coloration is much darker in *chisosensis* than in *neumoegeni*, as the ground color is velvety black, whereas in *neumoegeni* it is brownish black, and the spots are deep orange in *chisosensis*, whereas they are yellowish orange in *neumoegeni*. The female specimens of *chisosensis* somewhat resemble the Mexican century plant feeder, *Aegiale hesperiaris* (Walker), as all of the spots are more or less fused together into a wide reddish orange area over most of the wings. The deep coloration gives the insect a burnt orange appearance, being darker and also smaller than *hesperiaris*.

The form of the male genitalia places this species in the *neumoegeni* group. The lower flange of the clasper is narrower and shorter than in *neumoegeni* (fig. 7) or *evansi* Freeman (fig. 9), and there are other differences as can be noted in the figures. The vaginal plate of the female is different from that of any of the other species as can also be noted in the figures.

When I found that an endemic species of *Agave* occurred in the Chisos Mountains of Texas (*Agave chisosensis* Mueller) I at once thought that there might be a species of *Megathymus* that fed on this plant in the larval stage. So on August 20, 1951, Louis Moore and I found four pupae in that particular plant in the Chisos Basin, Big Bend National Park, Texas. Three of the pupae were brought home, but the fourth one died because of injuries received when the agave leaf in which it was contained was removed. The general appearance of the pupae when first found was of a light tan color, with the abdomen and part of the thorax very light green, indicating that pupation had occurred very recently. On August 22 the green had disappeared, and

the entire surface was light tan. On August 28 the pupae began to turn darker brown, and it was possible to see faint spots on the primaries. One male pupa turned very dark, nearly black, on September 9 and hatched on the twelfth of that month.

MALE PUPAE: Length, 28–34 mm.; width, 7.8–8.1 mm.

FEMALE PUPA: Length, 36 mm.; width, 8.4 mm.

In general appearance the pupae of this species resembles those of *neumoegeni* except the wing case extends a little farther posteriorly.

TUNNEL AND EXCAVATION: Male, 43 mm. in length, 10 mm. in width at base, 6 mm. at opening under door. Female, 52 mm. in length, 18 mm. wide at base, 8 mm. at opening beneath door. The average length of the tunnel made by *neumoegeni* in *Agave* leaves in Arizona was around 70 mm., whereas those made by *chisosensis* were much shorter, being around 48 mm. in length. The color of the sericin-like door over the entrance to the tunnel was light brown, resembling doors made by *Megathymus mariae* Barnes and Benjamin, more than that of *neumoegeni*, which is of a much darker brown color.

When the American Museum of Natural History obtained the C. C. Hoffmann collection of Mexican Lepidoptera there were four female specimens labeled *Megathymus smithi* Druce in it. At that time there were no authentic females known of that species, and the arrangement by Hoffman was strictly tentative. Since first examining these four specimens I have reared both sexes of *Megathymus smithi* and found that the Hoffmann specimens are not even related to it. Thus from superficial characteristics and also an examination of the vaginal plate I find these specimens to represent an undescribed species.

### ***Megathymus hoffmanni*, new species**

Figures 5, 6, 12

FEMALE (UPPER SIDE): Primaries brownish black, base of wing fulvous, extending outward about one-third of interspace 1 and also along the inner margin of the wing to a point just to the edge of the inner side of the discal band of spots; a nearly square spot, 3 mm. wide, near the end of and extending across the cell, and just above this is a linear spot of about the same length; a discal band composed of three spots, one in interspace 1, sagittate, 5 mm. wide, the center of the spot pointed towards the base of the wing, and the lower side on the outer edge extends as a point towards the inner angle, a spot in interspace 2, 6 mm.

wide, extends inward to the inner side of the cell spot, a spot in interspace 3, broad, fusing into the cell spot; two extradiscal spots which fuse into the discal band and the three subapical spots. All these spots are yellowish fulvous. Fringes alternately checkered dark brown and sordid white.

Secondaries brownish black, basal half covered with fulvous hairs; a slightly angled discal band of six fused spots, all about the same size (2.5 mm. wide) except the uppermost one which is smaller; a spot in the middle of the wing about halfway between the discal band and the base. All spots are yellowish fulvous. Fringes alternately checkered brown and whitish.

FEMALE (UNDER SIDE): Primaries dark brown, basal, apical, and outer marginal areas grayish. All spots reappear and are only slightly lighter in color.

Secondaries of ground color brown, slightly overscaled with grayish scales. A whitish spot below the costal area, and the discal band reappears only as a lighter area.

Thorax above covered with brownish hairs, beneath gray. Tegulae brownish gray. Abdomen above brown, beneath grayish, some brownish hairs appear at the base on the upper side. Top of head, collar, and shoulder covers brown. Palpi beneath grayish. Pectus gray. Legs grayish. Antennae brown above, beneath with some whitish scales and a white stripe on the club.

Expanse, 43 to 51 mm.

TYPE MATERIAL: Holotype female, Valle de Mexico, October, 1916, and three female paratypes, one from Pachuca and the other two from Valle de Mexico, all collected by C. C. Hoffmann, during October, 1909, and 1923. All these specimens are in the American Museum of Natural History.

I take great pleasure in naming this species for the late C. C. Hoffmann, who did so much to increase our knowledge of the Mexican Lepidoptera.

In general appearance *hoffmanni* approaches *polingi* Skinner and *evansi* Freeman on the upper side. From both of these *hoffmanni* differs in having somewhat narrower wings. The discal band of spots on the primaries of *polingi* and *evansi* forms a straight line on its outer side, whereas in *hoffmanni* the spot in interspace 1 extends outward towards the inner angle in a short point. The spot in the middle of the secondaries above in *hoffmanni* is absent in the other two species. The discal spots in interspaces 2 and 3 in *hoffmanni* extend inward towards the base of the wing farther than in either of the other two species. On the under side of the secondaries *hoffmanni* does not resemble

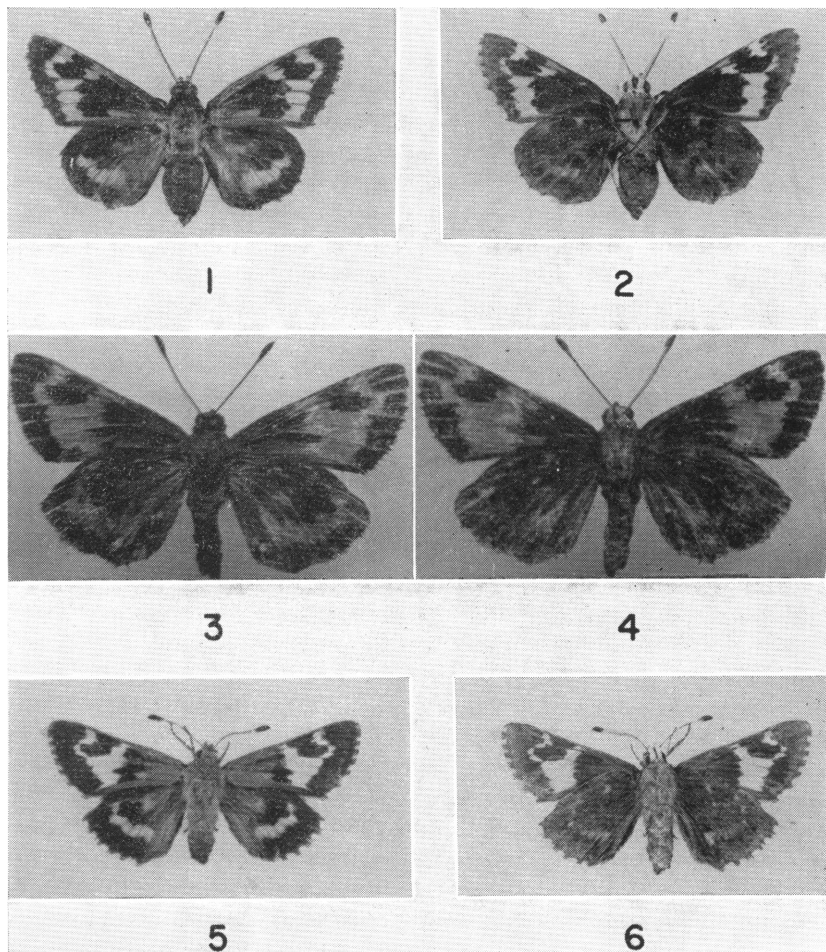
the other two species at all. The uniform coloration, with the indistinct discal band, slightly resembles that of *neumoegeni* Edwards.

The form of the vaginal plate is different from that of any other *Megathymus*. The lateral points flare out into a rather wide plate, and other differences can be noted in figure 12.

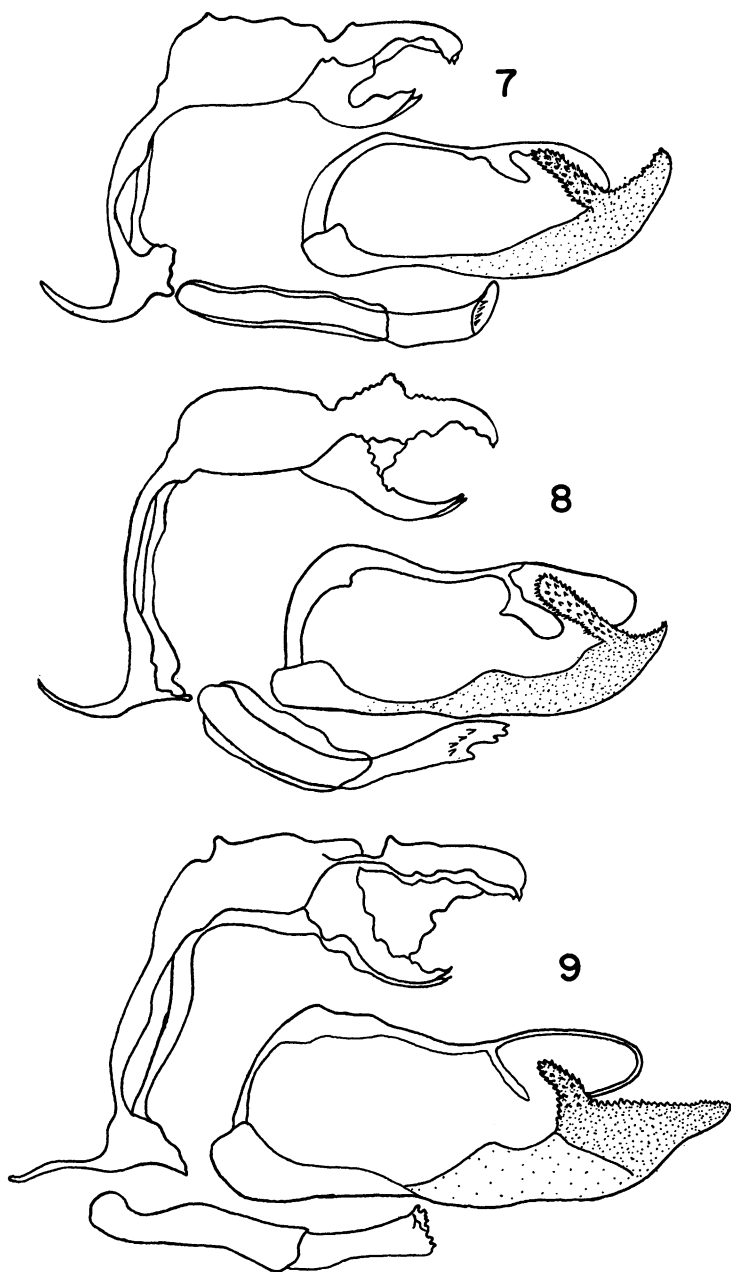
The photographs of the holotypes of *Megathymus chisosensis* and *hoffmanni* were made and furnished me by Mr. Cyril F. dos Passos, and those of the allotype of *chisosensis* were made by Mr. Don B. Stallings.

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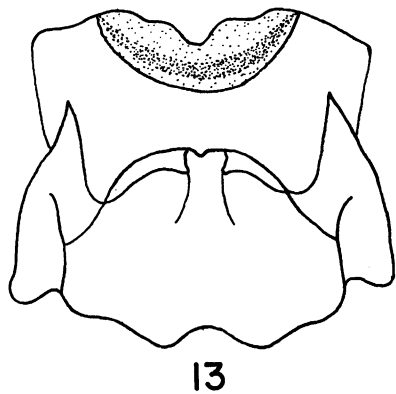
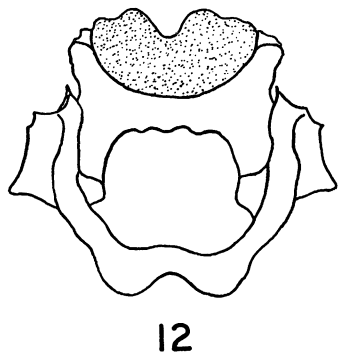
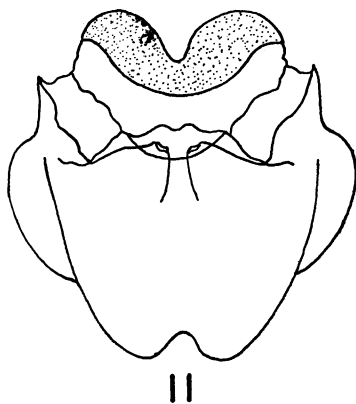
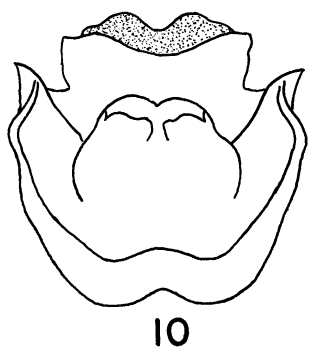


FIGS. 1-6. Adults, upper and under surfaces. 1, 2. *Megathymus chisosensis* Freeman, holotype male. 3, 4. *M. chisosensis* Freeman, allotype female. 5, 6. *M. hoffmanni* Freeman, holotype female.



FIGS. 7-9. Male genitalia. 7. *Megathymus neumoegei* Edwards. 8. *M. chisosensis* Freeman, paratype. 9. *M. evansi* Freeman, paratype.





FIGS. 10-13. Vaginal plates. 10. *Megathymus evansi* Freeman, paratype. 11. *M. neumogeni* Edwards. 12. *M. hoffmanni* Freeman, paratype. 13. *M. chisosensis* Freeman, paratype.

