

A NEW SUBSPECIES OF *AGATHYMUS MARIÆ*
FROM MEXICO (MEGATHYIMIDÆ)

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In Mexico, particularly in the state of Coahuila, we find a number of populations of the *Agathymus mariæ* (Barnes & Benjamin) complex, with each population having some characters of its own that separates it from other populations. Each population appears to be isolated to a certain degree, with the isolating medium not always being of a geographical nature. There is, or has been until recently, some exchange of genes between these populations as revealed by certain rather unique characters that may be carried by more than one population.

This has been one of the most exciting problems that we have found among the Megathymidæ. We describe in this paper one of the populations from Mexico that has more characters differing from typical *Agathymus mariæ* than any of the other populations. It will become evident, on study of the description, that this population has a number of characters that indicate that it has reached full speciation, and it well may be that our final conclusions will determine it to be a full species. There are, however, a number of indications that point to its being a subspecies, and we so designate it in this paper with the thought that if a change should become necessary it would be better to raise the name, rather than demote it.

In the area south of Allende, Coahuila, Mexico, we find these populations in direct competition with populations of the *Agathymus estelleæ* (Stallings & Turner) complex—both populations using the same food plant. We have repeatedly found larvæ of both in the same plant. The drama of this battle for survival we will present in a subsequent paper.

AGATHYMUS MARIÆ MICHENERI

Stallings, Turner, & Stallings, NEW SUBSPECIES

Female. Upper surface of primaries: deep brownish-black with some orange-brown hairs and scales at base; spot 1 (cell spot) roughly square, with upper part projected inward a short distance; spots 2, 3, & 4 (subapical spots) rectangular and of even size, spots 2 and 3 being set inward a little more than spot 4; spots 5 & 6 (submarginal spots) about square and set just outside outer edge (extended) of discal band; spots 7, 8, & 9 (discal band) forming a straight line on their outer margin; spot 7 extending inward to a point, being triangular in shape; spot 8 rectangular, extending inward as far as spot 7; spot 9 toothed inwardly with tip of tooth in line with inner margin of

spots 7 and 8; spots 7 and 8 extending inward to confluence with cell spot; all 9 spots bright pale orange; fringes checkered brownish-black and smoke.

Under surface of primaries: dull brownish-black with apex and outer margin lightly overscaled with white; all spots of upper surface represented but much lighter, with spots 2, 3, & 4 being almost white; outer edge of spots 7 and 8 set inward from outer edge of spot 9.

Upper surface of secondaries: deep brownish-black with orange-brown hairs and scales at base; a well defined discal band of spots the same color as spots on upper surface of primaries; fringes light yellow-white, faintly checkered with brownish-black.

Under surface of secondaries: dull brownish-black, completely overscaled with white; discal band faintly represented as slight increase in white over-scaling.

Abdomen brownish to black above and brownish-black beneath, overscaled beneath with white. Thorax brownish-black with orange-brown over-scaling above and heavy white over-scaling beneath. Palpus white with some gray intermixed. Antenna black, with very narrow white rings.

Length of forewing: 26 mm. to 21mm.; average 24.5 mm. Measurements of Holotype: forewing, apex to base 25 mm., apex to outer angle 15.5 mm., outer angle to base 18 mm.; hindwing, base to end of vein Cu_1 19 mm.

Male. Upper surface of primaries: deep brownish-black with some orange-brown hairs and scales at base; spot 1, a dot of color with a streak extending inward; spots 2, 3, & 4, minute, with spot 4 out of line, outwardly, with spots 2 and 3; spots 5 & 6 minute, and well outside outer margin (extended) of discal band; spots 7 & 8 usually rounded, spot 9 twice as wide as 7 and 8 with the added width extending inward so that the three spots appear to form an "L"; all spots same color as in female; fringes a bit lighter than in female; distinct yellow-orange scales along entire costal margin.

Under surface of primaries: dull brownish-black with apex and outer margin overscaled with white; all spots, of upper surface except 5, represented but smaller and lighter, with spot 5 usually absent, and spots 2, 3, & 4 usually white.

Upper surface of secondaries: similar to female, with spots smaller and fringes more yellow.

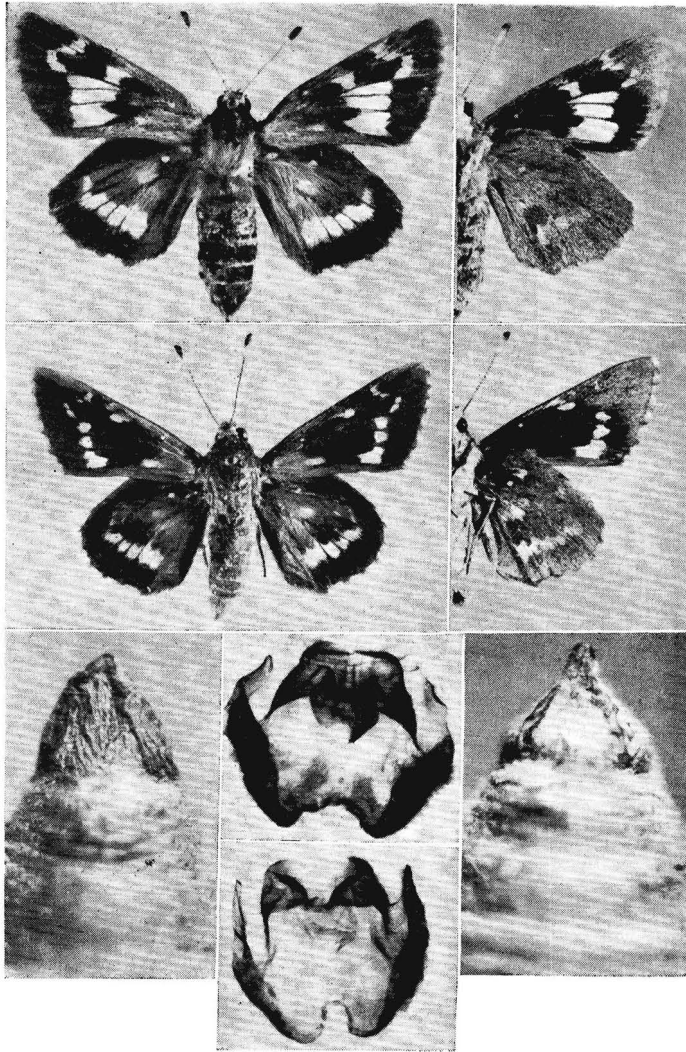
Under surface of secondaries: similar to female with discal band more clearly defined by white over-scaling.

Abdomen, thorax, palpus, and antenna similar to those of female.

Length of forewing: 24 mm. to 19mm., average 23 mm. Measurements of Allotype: forewing, apex to base 24 mm., apex to outer angle 14.5 mm., outer angle to base 18 mm.; hindwing, base to end of vein Cu_1 17.5 mm.

Described from 29 specimens (17 males and 12 females) collected 15 to 20 miles south of Allende, Coahuila, Mexico, on Highway 57 (formerly Hwy. 75) at Klm. 89 at an elevation of 1300 feet, emerging from pupæ Sept. 26 to Oct. 16, 1957, 1958, and 1959. Collected by Dr. & Mrs. R. C. TURNER, Dr. J. R. TURNER, DEE, JACK, VIOLA N. and DON B. STALLINGS. Five specimens from Monclova, Coahuila (el. 2400 ft.), examined and found typical but not made a part of the type series. Larvæ were collected and preserved for study in 1959 by C. L., P. SHELDON, and ERIC REMINGTON, along with the clan of the authors.

HOLOTYPE: female, Oct. 6, 1957, and ALLOTYPE, male, Oct. 9, 1958, are in the collection of the authors.



Top row: *Agathymus maria micheneri*, HOLOTYPE, upper side to left; under side to right. 2nd row: ALLOTYPE, upper side to left; under side to right. 3rd row: cremaster of *A. m. micheneri* to left; ♀ genitalia of *A. m. micheneri* upper center; ♀ genitalia of *A. m. maria* (El Paso, Texas) lower center; cremaster of *A. m. maria* (El Paso, Texas) to right.

Food plant: *Agave lecheguilla* Torr. The type locality is an area of low hills in the Coahuila desert. The eggs are hemispherical in shape, 1.8 mm. in diameter at the base and 1.5 mm. high. They are bright green in color, with just a hint of blue, and have a minute micropylar dimple in the apex. Larvæ in the last instar are a bright blue, similar to typical *A. mariæ*. The larvæ feed in the leaf and caudex of the plant. Their exit hole is usually on the upper side of the leaf, with the trap door being round, 7 mm. in diameter, and light tan (almost white) in color. The larval cavity has an overall length of 74 to 85 mm., with 30 to 50 mm. of this length in the caudex.

A. m. micheneri is distinguished from typical *A. m. mariæ* by the following characters:

1. All spots are bright pale orange; *mariæ* spots are pale yellow and dull.

2. The ground color is almost black; *mariæ* ground color is much paler, with much more brown.

3. The overscaling appears as a dark pearl gray, due to the white lying over the almost black ground color; *mariæ* overscaling appears as a pale tan due to the white lying over a more brownish ground color.

4. Spots 1 & 7 join in the female; *mariæ* usually has these spots separated.

5. Spots 7, 8, & 9 form an "L" in the male; *mariæ* does not show the "L" effect.

6. In the female on the under surface of the primaries the outer edge of spots 7 & 8 are set inward from the outer edge of spot 9; *mariæ* has the outer edge of 7, 8, & 8 in line.

7. The egg is bright green with a hint of blue; the *mariæ* egg (Hueco Mts., Texas) is green with a tint of brown, 2 mm. in diameter and 1.5 mm. high, with a more definite dimple at the apex.

8. The female genitalia have a broad shallow indentation at the base; *mariæ* (El Paso, Texas) has a narrow, deep indentation at the base.

9. The female genitalia have the upper center part long and well developed; *mariæ* has the upper center part short and less developed.

10. The cremaster of the pupa case is broad and relatively blunt; in *mariæ* (El Paso, Texas) it is narrow and pointed.

This insect is named in honor of Dr. CHARLES D. MICHENER of the University of Kansas, who has given us much valuable help in our studies of the Megathymidæ.