

ous, gray markings about head and eye cases; scattered reddish setae over head. Entire abdomen covered by these setae, most numerous on last three segments. Cremaster short, bluntly rounded, lacking any distinguishing projections; lateral edges thickly lined with reddish setae; cremaster white, only slightly curved ventrally.

Larvae completing development within one summer followed a concise schedule. Instars one through five requiring eight days each while the final instar, surprisingly, required 18 days. Pupation occurred two days after construction of the cocoon. Imagines emerged in 12 days. Larvae which hibernated in the fourth instar sealed themselves into a small case between two grass blades on the plant. These tents were allowed to remain open until mid-September when they were sealed at both ends in preparation for winter.

ACKNOWLEDGMENT

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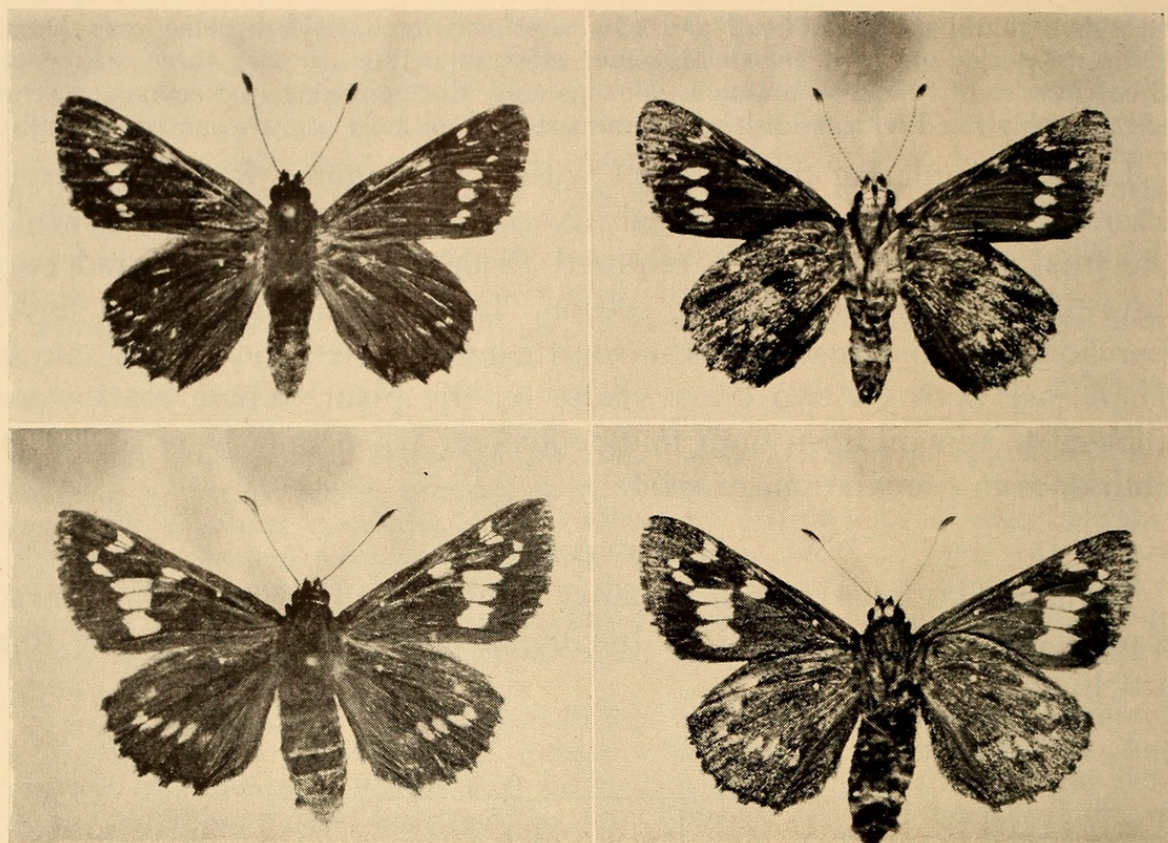
A NEW SPECIES OF *AGATHYMUS* FROM TEXAS (MEGATHYMIDAE)

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In making a study of the various complexes present in the genus *Agathymus* it was discovered that there are a number of species present in the *remingtoni* complex other than *estelleae* (Stallings & Turner) and *comstocki* (Harbison), most of which are found in Mexico. After carefully studying the morphology of specimens collected in the general vicinity of Del Rio, Texas it was found that this population represents an undescribed species in this complex. For several years I have been associating these specimens with *estelleae* from General Bravo, Tamaulipas, Mexico. After collecting rather extensively over Mexico during the past three years in association with the Stallings & Turners, I found that I had been connecting these specimens with another species. Actually, in many respects, they show a closer relationship to the mountain species *remingtoni* (Stallings & Turner) than they do to *estelleae*, which is a plains species. They show less relationship to *comstocki* than to either of the other two species.

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EXPLANATION OF PLATE I

Agathymus valverdiensis Freeman. Top row: Paratype male, 14 mi. N Bracketville, Kinney Co., Texas, 4 October 1962; left, upperside; right, underside. Bottom row: Paratype female, 14 mi. N Bracketville, Texas, 15 October 1962; left, upperside; right, underside.

Agathymus valverdiensis Freeman, new species

FEMALE. Upper surface of primaries: dark brown-black, base overscaled with brownish hairs. Markings dull yellow, as follows: spot 1 (cell spot) often divided by dark vein, appearing as two spots. Spots 2, 3, and 4 elongated between veins. Spot 5 small, triangular. Spot 6 elongated, often pointed at each end. Spot 7 straight on inner surface, pointed on outer surface, broad (4–5 mm), extending under spot 6. Spot 8 same shape as 7, sometimes not as broad. Spot 9 broadly V-shaped, with point directed toward anterior portion of thorax. Fringes checkered brown-black and sordid light yellow.

Upper surface of secondaries: dark brown-black, with some overscaling of brownish hairs near base and toward anal angle. Markings dull yellow: Discal band usually composed of 4 narrow streaks, pointed at outer end, the point directed toward outer margin of wing. At times a spot above outer discal spot, sometimes a phantom, fifth discal spot in the band. All spots in a straight line. Fringes checkered brown and sordid yellowish-white.

Under surface of primaries: dull brown-black, with some light gray overscaling near apex. All spots reappearing, of about the same coloration as above.

Under surface of secondaries: dark brown, heavily overscaled with light gray. Several areas with the overscaling sparse, the darker ground color evident, giving the wing a mottled appearance. Two indistinct subcostal spots, sordid white. Discal spots often well defined, sordid white, outlined dark due to absence of the light gray overscaling.

Abdomen: dull dark brown above and below. Thorax: dull olive brown above, grayish below. Palpi: brown above, white below. Antennae: club brown, except base, white; shaft white, ringed with brown at joints.

Length of primaries 23–26 mm, average 25 mm. Wing measurements; holotype: primaries: base to apex, 25 mm; apex to outer angle, 15 mm; outer angle to base, 19 mm, secondaries: base to end of Cu_1 , 19 mm; costa to anal angle, 15 mm; total expanse 50 mm (average of paratypes 50 mm).

MALE. Upper surface of primaries: dark brown–black, with some overscaling of brownish hairs near base. Spots smaller and lighter in color than those of female, light tan, with spot 7 oval, not reaching inner edge of spot 6. Sometimes spot 9 divided into two by dark scaling of a vein extending through it. Fringes checkered dark brown and sordid white.

Upper surface of secondaries: dark brown–black, with some brownish hairs extending down anal fold. Discal band a straight line of four, small, streak-like, light tan spots, pointed toward outer margin. Fringes checkered brown and sordid white.

Under surface of primaries: dull brown–black, with heavy overscaling of light gray from apex to two-thirds the distance down outer margin. All spots reappear, paler.

Under surface of secondaries: dull, dark brown–black, heavily overscaled with light gray. Ground color showing through in some areas, presenting a rather mottled appearance. Subcostal and discal spots sordid white, discal spots usually edged with dark. Anal fold dark brown–black with practically no overscaling of gray scales.

Abdomen: dull, dark brown above, grayish beneath. Thorax: dull, dark brown above, grayish beneath: Palpi and antennae as in female.

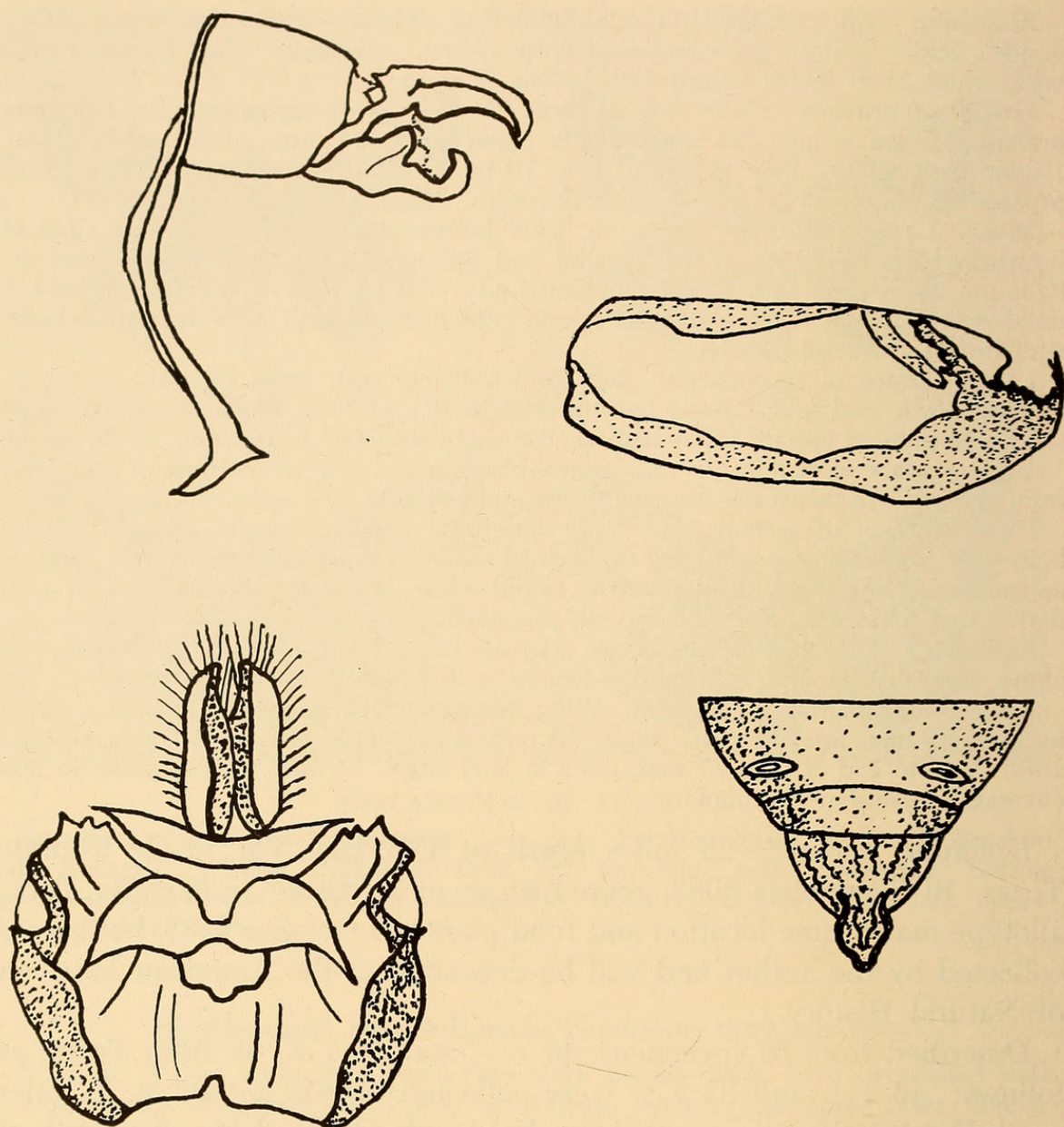
Length of primaries, 21–24 mm. Wing measurements; allotype: Primaries: base to apex, 23 mm; apex to outer angle, 13 mm; outer angle to base, 18 mm; secondaries: base to end of Cu_1 , 17 mm; costa to anal angle, 14 mm; total expanse 46 mm (average of paratypes 46 mm).

Holotype, female: 28 miles north of Del Rio, Val Verde County, Texas, 16 September 1963, reared in atypical *Agave lecheguilla* Torr.; allotype male, same location and food plant, 13 October 1963, both were collected by the author and will be deposited in the American Museum of Natural History.

Described from 86 specimens, 46 ♂♂ and 40 ♀♀, all from Texas, as follows: 42 ♂♂ and 33 ♀♀ were collected by the author at 28 miles north Del Rio, 10 miles south Juno, Val Verde Co., and 14 miles north of Bracketville, Kinney Co.; 4 ♂♂ and 7 ♀♀ were collected by Stallings & Turner at the Del Rio and Bracketville locations. Adults emerged during September and October from 1958 to 1963.

The type locality is a rocky, limestone hill, elevation 1,450 feet, and the pH of the soil at the feeding level of the plants is 7.1. Plant associates are *Nolina*, sotol, catclaw, mesquite, scrub cedars (*Juniperus*), *Yucca reverchoni*, and *Yucca thompsoniana*. The Juno and Bracketville locations are very similar to the type locality. Paratypes will be placed in the following museums: United States National Museum, Yale University, Stallings & Turner, San Diego Natural History Museum, and Los Angeles County Museum. The remaining paratypes are in the collection of the author.

The food plant is a species related to *Agave lecheguilla*, possibly



EXPLANATION OF PLATE II

Agathymus valverdiensis Freeman. Top row: Male genitalia; left, tegumen and uncus, lateral aspect; right, valva, inner aspect. Bottom row: Female; left, external genital structures, ventral aspect; right, pupal cremaster.

undescribed. The larvae are white and seem to prefer the upper surface of the leaf for the usual construction of their trapdoors, however a few make them on the lower surface. When collected, the larvae had their heads directed toward the hole in the leaf, their caudal legs toward the lower surface of the leaf. The trapdoors are somewhat better constructed than those of related species in Mexico, and often the doors are hard to distinguish from those of *Agathymus gilberti* Freeman and *A. rindgei* because they are tan. The frass is ejected out of a hole which the larva

cuts in the leaf. The larvae seldom penetrate into the caudex of the plant but feed primarily at the base of the leaf. Often they feed in the same plant with *A. gilberti*, which feeds in the leaves toward the lower caudex, and *A. rindgei*, which feeds somewhat higher in the leaf and only into the upper caudex. Larvae collected in the summer emerge as adults during September and October of the same year. Roy O. Kendall made an interesting discovery during March, 1965, at the type locality, where he found two pupae of *valverdiensis* which emerged the following April. This presents some interesting questions which cannot be answered at the present.

In comparing *valverdiensis* with other members of the *remingtoni* complex, the following differences are noted: the ground color is darker than that of *remingtoni*, much darker than that of either *estelleae* or *comstocki*; females of *valverdiensis* have spot 7 directed well under spot 6, which occurs rarely in *remingtoni*, never occurring in the other two species; the spots are reduced in the males, especially the discal band of the secondaries, which is made up of small dashes instead of regular spots which occur in the other species; the females show this same general characteristic; one of the most distinguishing differences is the position of the discal band of the secondaries as it is situated higher up on the wing than in any of the other species in this group. There are genitalic differences which can be noted in the figure, as well as differences in the cremaster from the other species in this complex.

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LITERATURE CITED

- COMSTOCK, J. A., 1957. Notes on the metamorphosis of an *Agave* boring butterfly from Baja California, Mexico. Trans. San Diego Soc. Nat. Hist., 12: 263-276, pl. 22.
- FREEMAN, H. A., 1958. A revision of the genera of the Megathymidae, with the description of three new genera. Lepid. News, 12: 81-92, pl. 1.
1960. Notes on *Agathymus* in Texas, and the description of a new species from Mexico. Jour. Lepid. Soc., 14: 58-62, 1 pl.
1964. Four new species of *Agathymus* from Texas. Jour. Lepid. Soc., 18: 171-185, 4 pls.
- HARBISON, C. F., 1957. A new species of *Megathymus* from Baja California, Mexico. Trans. San Diego Soc. Nat. Hist., 13: 16-71, 4 pls.
- STALLINGS, D. B., & J. R. TURNER, 1958. A review of the Megathymidae of Mexico, with a synopsis of the classification of the family. Lepid. News, 11: 113-137, 8 pls.



1966. "A new species of *Agathymus* from Texas (Megathymidae)." *Journal of the Lepidopterists' Society* 20, 181–185.

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