

APPARENT WILD HYBRIDS AMONG THE MEGATHYMIDÆ

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As our studies of the Megathymidæ have progressed, our belief that a good many of the species are of relatively recent origin has strengthened. If this is the situation, then when two species do meet and fly during the same time we should expect more wild hybrids than would be the case of older and more divergent species meeting, since there would have been less time for the newer species to strengthen and complete the "barrier of sterility or inviability."

The problem of recognizing wild hybrids in the field is much more difficult than is generally realized (see Remington, 1958), and for this reason a lot of natural hybridizing of Lepidoptera has been missed.

Agathymus evansi (H.A. Freeman) and *Agathymus aryxna* (Dyar) both occur in Arizona in Ramsey Canyon with their flight periods overlapping. Both we and H. A. FREEMAN are certain that wild hybrids occur but we have not as yet been able to satisfy ourselves which are the true hybrids and which are merely individual variants.

We are presently working on a situation in Mexico with a large number of variants within a relatively small area in which we have not as yet ruled out the possibility of hybridization and possibly introgression among the species involved.

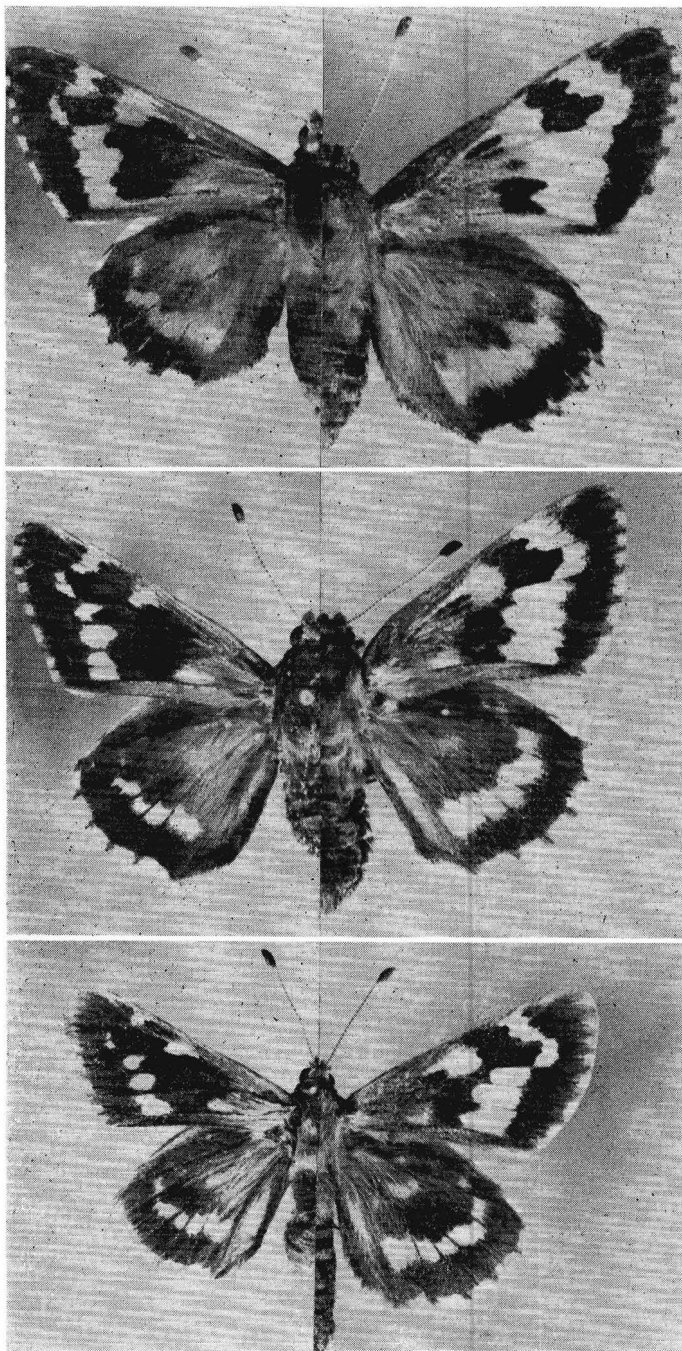
At the time we described *Agathymus carlsbadensis* (Stallings & Turner, 1957), we mentioned that in the Guadeloupe Mts. near Nickle, Texas, we reared a single specimen ex-larva that was not *A. carlsbadensis*. Since then we have secured four more such specimens and now have two males and three females. We are reasonably sure that these specimens are F_1 hybrids of *Agathymus mariæ* ♂ \times *carlsbadensis* ♀. The reason that we feel pretty certain of the sex of each parent is that none of the larvæ or pupæ were secured from *Agave lecheguilla* Torr., which is the food-plant of *A. mariæ*; hence the female had to be *A. carlsbadensis* laying eggs on *Agave parryi* Engelm., the food-plant of *A. carlsbadensis*. Furthermore, this would be the expected cross, as generally *A. mariæ* flies after *A. carlsbadensis* and when the two do interbreed it should be a late female *A. carlsbadensis* and an early male *A. mariæ*. This cross was surprising to us due to the fact that *A. mariæ* is in a rather different species-group from that of *A. carlsbadensis*.

We now feel that *Agave chisosensis* Mueller does not occur in the Guadeloupe Mts. The plants in this area previously referred to as *Agave chisosensis* are, we believe, hybrids of *Agave lecheguilla* and *Agave parryi* (and here too, *Agave lecheguilla* is in a different subgenus from *Agave parryi*). As a matter of fact, wherever we have seen the so-called species *Agave chisosensis* we have found both *Agave lecheguilla* and a *parryi*-like plant. In the Guadeloupe Mts. we find *A. carlsbadensis* and the hybrids (but

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AGATHYMUS HYBRIDS

STALLINGS & TURNER



never *A. mariae*) using the hybrid plant. As noted in the paper describing *A. carlsbadensis*, our observations indicated that the hybrid plant was not as compatible to the larvæ as was true *Agave parryi*, resulting in a larger portion of the larvæ on the hybrid plants not maturing.

An examination of the accompanying plate will indicate how the presumed hybrids seem to have modified characters of both parent species. The color of the spots of the hybrids is lighter than in *A. carlsbadensis*, but darker than in *A. mariae*. We find little variation among the three male presumed hybrids or in the two females. the hatching period of all five specimens falls in the last part of the *A. carlsbadensis* flight and the first part of the *A. mariae* flight.

One of the strange things is that when we have shown these hybrids to lepidopterists not familiar with Megathymidæ they immediately associate them with *A. mariae*, while FREEMAN and we associated them with *A. carlsbadensis*. To us the genitalia seem to have more of the *A. carlsbadensis* characters, although the narrow indentation at the base of the female vaginal plate is certainly a character of *A. mariae*.

The presence of hybrids in this area suggests some interesting possibility. REMINGTON (1958) states: "At least in *Papilio*, and perhaps in *Callosamia*, there is a most perplexing phenomenon: in many interspecific crosses the F_1 hybrids are highly fertile in backcrosses, and completely sterile in $F_1 \times F_1$ pairings." If this same situation exists with these hybrids then we should expect some *A. mariae* genes passing over to the *A. carlsbadensis* population. This in turn suggests that perhaps some of the "specific" characters of *A. carlsbadensis*, used for distinguishing it from *A. neumoegeni* (Edwards), are in fact variations caused by this introgression.

FREEMAN has discovered a similar situation in the Hueco Mts. of Texas in which there appear to be hybrids between *A. mariae* (Barnes & McDunnough) and *A. judithæ* (Stallings & Turner).

References

- Remington, Charles L., 1958. Genetics of lepidopterous populations. *Proc. X. int. congress ent.* 2: 787-805, 13 figs.
Stallings, Don B., & J. R. Turner, 1957. Four new species of *Megathymus*. *Ent. news* 68: 1-17, 4 pls.

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PLATE (p.205): top, *Agathymus carlsbadensis*; middle, wild presumed hybrids; bottom, *A. mariae*. All from near Nickle, Texas (see text). Left side males, right side females.