

ACENTROPUS NIVEUS IN MASSACHUSETTS, REMOTE FROM WATER

by ASHER E. TREAT

The schœnobiine moth, *Acentropus niveus* (Olivier), long known and intensively studied in Europe, was first reported in North America by FORBES in 1938. JUDD (1950) has summarized the North American records and has mapped the eight localities in which this species has now been taken. He concludes, with MUNROE (1947), that the insect is probably native and widely distributed. First described as a phryganeid, in 1791, the moth has often been the object of special interest because of its aquatic habits and because of the dimorphism of the females, some of which possess only vestigial wings and are water-dwelling throughout life, while others have wings appreciably longer than those of the males. BERG (1941) and others have made careful biological and ecological studies indicating that there is a single brood per season, adults being in evidence (in Denmark) from late June until early September. Copulation occurs at the water surface. Eggs are laid on the submerged leaves of the food plants, which include *Elodea*, *Ceratophyllum*, and *Potamogeton*. THORPE (1950) regards the flightless female as perhaps the only insect among either the Lepidoptera or the Trichoptera exhibiting true "plastron respiration", in which a thin film of air, renewable by diffusion from the water is maintained in contact with open spiracles by a system of hydrofuge hairs. The proboscis is vestigial in both sexes, although BERG believes that the males, at least, may use it for the ingestion of water. While occasional specimens have been taken at light, the moths as a rule have been found only in, on, or very near water. The eight localities previously recorded for this species in North America are all in the St. Lawrence drainage basin between the northern shore of Lake Erie and the eastern portion of Quebec, with two records from central New York. The present record is believed to be the first outside that area.

During the summers of 1952 and 1953, moths were collected almost nightly on the southeastern slope of a cobble a half mile southeastward from the village of Tyringham, in southern Berkshire County, Massachusetts, at an elevation of about 1050 feet. During this period, two collections of *Acentropus niveus* were made, one on 25 August, the other on 1 September, 1953. On both occasions the moths appeared in numbers of 100 or more in short grass at the foot of a sheet lighted by a 100-watt "daylight" bulb. The nearest pond, stream, or marsh was approximately half a mile away and accessible to the collecting station only indirectly and by way of rough, strongly sloping, and sparsely wooded land. Both collecting dates came near the end of a prolonged local drought which dried up most of the usually dependable springs in the neighborhood. The night of the first collection was hazy and windless; the temperature was 23° C. and the humidity 48%. The second night was clear and windless with a temperature of 26° C. and humidity of 33%.

The arrival of the moths at the lighted sheet was not observed. It occurred early in the evening, between 9 and 10 P.M. On each occasion, when first seen the insects were either buzzing about in the grass or at rest upon the apron of the sheet, close to the ground. They were never seen in the air nor outside the immediate vicinity of the light, although the area was carefully and repeatedly searched. Active specimens released in midair fell straight to the ground and continued to buzz about as before. Many were collected with forceps; a spoon would have done almost as well. Several vigorously active specimens were placed in a dry, open petri dish; none escaped, although the dish was left uncovered for more than half an hour. In dry dishes the moths would gather in close clusters, clinging together and climbing over each other in an incessant scramble. It was at first supposed that copulation was occurring in these clusters, but close inspection showed no specimens in copula. Each cluster was found to contain one or more ovipositing females, laying their yellowish eggs either singly or in short strings on the only surfaces available other than that of the dish itself — namely the wings, legs, and bodies of other moths. Because it was not realized until later that these were aquatic or semi-aquatic insects, the eggs were not placed in water. They soon became dry and shriveled, so that it was impossible to tell whether or not they had been fertile. Moths left overnight in the laboratory were dead the next morning.

About forty specimens were taken, of which 5 were spread while fresh, the others being papered, put into alcohol, or dissected. Dr. A. B. KLOTS, who kindly identified the pinned specimens, later reported that the papered insects had proved virtually impossible to spread. A pair of the pinned specimens was sent to HAHN W. CAPPS of the U. S. National Museum. The others are in the American Museum of Natural History. Males and females were represented in about equal numbers, all being of the "sharp-winged" form referred to by FORBES and by BERG. VON KENNEL and EGGERS (1933) figure the tympanic organ of the male, which is well developed, and state that in the flightless females this organ is smaller. In the winged females here reported the "Tympanalkessel" did not differ appreciably in size from that of the males, its longest dimension measuring about 400 microns in both sexes.

The occurrence of these insects during dry weather, so far from inhabitable water presents something of a puzzle, especially since none of the moths appeared to be capable of flight at the time of capture. The most likely explanation, in view of the relative inaccessibility of the collecting station and its remoteness from water, would seem to be that the insects were attracted by the light while in flight at a considerable elevation and that by the time of their arrival they had been weakened by fatigue or by desiccation.

The thanks of the author are extended to Dr. KLOTS for identifying the specimens, to Dr. BRYAN P. BEIRNE and to Mr. CAPPS for references to some of the earlier records.

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NEW RECORDS OF RHOPALOCERA FROM
SOUTHEASTERN ARIZONA

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In the course of several years' collecting in and around Tucson, Arizona, the writer and her parents, Mr. and Mrs. C. D. CHENEY, were fortunate in securing several species of butterflies heretofore unrecorded for Arizona. All specimens listed are in the collection of RALPH L. CHERMOCK.

Phoebis agarithe agarithe (Bois.). Single males were taken at Tucson, on August 20, 1943, September 19, 1943, and August 10, 1946. Of two females, one was collected at Sonoita, Santa Cruz County, Arizona, on August 10, 1943, the other at Tucson on September 3, 1943. As all the specimens were in good condition, a small population of this species is very probably established in this region.

Danaus eresimus montezuma (Talbot). One male was taken at Tucson on November 7, 1944.

Euptoieta hegesia hoffmanni (Comstock). One female was collected at Tucson on August 2, 1944.

Eunica monima (Cramer). One male was collected at Tucson on July 28, 1941.

Chiomara asychis (Cramer). One male was taken on the Mount Lemmon Road, Santa Catalina Mts., Pima County, Arizona, on September 29, 1947, at an altitude of 3750 feet. Another male was collected in Madera Canyon, Santa Rita Mts., Santa Cruz County, Arizona, on September 20, 1950, at an altitude of 5800 feet. A female was taken in Tucson, Arizona, on November 11, 1943. Since all specimens were in good condition, the writer feels that this species is probably native, although rare.

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