

Each of the materials averaged approximately 90 per cent or more effective over the 5-week period during which the observations were made. There was some indication of significantly greater mortalities in the treated specimens than in the check lot. However, survival was sufficient to make it quite feasible to use these materials in flight dispersion and flight range studies.

Summary

Observations were carried out over a 5-week period to determine the feasibility

of using three fluorochrome dusts, namely, anthracene, rhodamine B, and fluorescein, for marking larvae and adults of *A. quadrimaculatus*. Because of high mortalities and ineffectiveness the materials are not considered suitable for marking larvae. However, all three materials appear to be quite satisfactory for use in marking adult mosquitoes.

Reference

ZUKEL, JOHN W. Marking *Anopheles* Mosquitoes with Fluorescent Compounds. Science, August 10, 1945.

THE IDENTIFICATION OF *ANOPHELES BRADLEYI* LARVAE

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The larva of *Anopheles bradleyi* King was the first North American *Anopheles* larva to be differentiated. This was done by Smith (1) in 1904, in a key by which he separated *crucians* larvae from *punctipennis* and *maculipennis* by the following characters: antennae shorter, brownish; tracheal gills short. His "*maculipennis*" has since been found to be *quadrimaculatus*, and his "*crucians*," reported to be rare in New Jersey except at Cape May, is undoubtedly the brackish water species described 35 years later as *Anopheles crucians bradleyi* King.

Numerous examples of *bradleyi* larvae have been received from Brunswick and Savannah, Georgia, and the antennae are invariably brownish, in striking contrast to all associated species, in which the brown (or yellow in pale larvae) antennae of younger instars become pale, with dark apices and sabres, in the fourth instar.

Two articles have recently been published in which distinguishing characters of *bradleyi* larvae have been proposed. Bickley (2) remarks upon the short anal gills of *bradleyi* and *atropos*, and Miles (3) found, in comparing *bradleyi* with *punctipennis* and *georgianus*, that *bradleyi* has stouter, dark-pigmented antennal spicules, and confirms the fact that the palmate hairs on abdominal segments 3 and 7 are usually reduced in size, with leaflets mostly slender and without notches or serrations on the margins. The brown color of *bradleyi* antennae has not been mentioned in the literature since this species was described, and Headlee (4) erroneously ascribes this character to *crucians* larvae. Since the brown antennae are readily distinguishable at very low magnifications, this character is here suggested as a means of easily recognizing fourth instar *bradleyi* larvae from the larvae of other common species at the time of collection.

* Contribution of the Georgia State Board of Health.

There are four other species occurring within the range of *bradleyi* (the North Atlantic and Gulf coasts, New Jersey to Mexico) in which brown antennae have been observed in fourth instar larvae. They are *barberi*, a tree hole breeder, with antennae dark brown or black; *albimanus* and *pseudopunctipennis*, both common in the lower Rio Grande valley and with antennae varying from pale to brown; and *atropos*, also a coastal species with much the same range as *bradleyi*, but which usually breeds in waters of greater salinity (5). All of these species are easily distinguished from *bradleyi* by morphological characters, notably the reduction or absence of branches of the outer clypeal hairs.

The writer has not been able to confirm Smith's statement that *bradleyi* antennae are relatively short. By actual measurement, no appreciable difference has been found in the proportions of the antennae or heads of *bradleyi* and four other common species. The length of the anal gills is variable with the salinity of the

water. *Bradleyi* gills are not appreciably shorter than the gills of *crucians* or *quadrifasciatus* when those species are associated with *bradleyi*. Very rarely an injured antenna of a larva of another species of *Anopheles* is found to have turned dark.

References

1. SMITH, J. B. 1904. Report of the New Jersey State Agricultural Experiment Station upon the Mosquitoes Occurring within the State, Their Habits, Life Histories, etc. MacCrellish and Quigley, Trenton, N. J.
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3. MILES, V. I. 1945. Differentiating the Larvae of *Anopheles georgianus* King, *A. bradleyi* King, and *A. punctipennis* (Say). Jour. Natl. Malaria Society, Vol. IV, pp. 235-242, illus.
4. HEADLEE, T. J. 1945. The Mosquitoes of New Jersey and Their Control. Rutgers Press, New Brunswick, N. J.
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