the bottom very rapidly and pupae almost certainly swim away as the trap is being lowered. Also, because of the uneven nature of the substrate, large gaps are left around the bottom of the trap. Morgan *et al.* (1963), in their comparison of emergence traps, explain the poor performance of certain surface traps by suggesting that aquatic insect pupae are generally highly phototactic prior to adult emergence and are more likely to avoid traps than concentrate under them. Therefore we believe that the higher capture for the traps at the surface is the more realistic.

This is supported by the 2nd test made of the traps, which was designed to identify any effect of shade provided by the traps on mosquito emergence. Nine traps were laid out in a 3 × 3 Latin Square design prior to emergence in a population of *Culiseta inornata* (Williston). The traps were covered by 1, 2, or 3 net bags to give different amounts of shade, and they were emptied every day between September 14 and 30, 1979. Light readings inside and outside the cages were taken each time the traps were emptied. The results (Table 2) show that shade provided by the traps had no influence on the number of mosquitoes that emerged into them. Furthermore, extrapolation to the open water situation suggests that mosquitoes will not be attracted to the shade provided by the traps, because light readings in open water fall next within the sequence of those under the emergence traps.

Table 2. The numbers of emerging *Culiseta inornata* adults trapped in emergence cages with different shade values.

No. net covers	Mean relative light reading (ohms)	Number of mosquitoes trapped*			
		Trap 1	Trap 2	Trap 3	Total
3	3.73	37	41	31	109
2	3.33	42	39	37	118
1	2.83	21	34	49	104
0	2.43				

* 3 × 3 Latin square design: $F_{2,2} < 1$.

We conclude, therefore, that this design provides a simple, accurate and convenient trap for quantitative estimates of emerging adult mosquitoes from small, shallow ponds.

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References Cited

Corbet, P. S. 1965. An insect emergence trap for quantitative studies in shallow ponds. Can. Ent. 97: 845–848.

Enfield, M. A. and G. Pritchard. 1977. Methods for sampling immature stages of *Aedes* spp. (Diptera: Culicidae) in temporary ponds. Can. Ent. 109: 1435–1444.

Morgan, N. C., A. B. Waddell and W. B. Hall. 1963. A comparison of catches of emerging aquatic insects in floating box and submerged funnel traps. J. Anim. Ecol. 32: 203–219.

Mundie, J. H. 1956. Emergence traps for aquatic insects. Mitt. Int. Verein. Theor. Angew. Limnol. 7: 1–13.

Service, M. W. 1976. Mosquito Ecology. Field Sampling Methods. John Wiley and Sons, Inc. New York.

THE OCCURRENCE OF *AEDES TRIVITTATUS* IN ALABAMA[1]

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Aedes (Ochlerotatus) trivittatus (Coquillert) has been reported from 38 states and the District of Columbia in the continental United States (Carpenter and La Casse 1955, Carpenter 1968, 1970). King et al. (1966) noted that *Ae. trivittatus* had been recorded in all the southeastern states except Florida, Alabama, and Mississippi. The general range of this mosquito extends through all the northern states and southern Canada to the Rocky Mountains.

Abdel-Malek (1948) stated that in Ohio this species breeds in temporary pools in open sites and in shallow ditches covered with vegetation. Carpenter and La Casse (1955) noted that larvae of this species may be found any time during the summer following rains, in flood water pools, in meadows, swamps, and woodlands throughout its range.

Additional notes on the bionomics of this species have been presented by Horsfall et al. 1958; Breeland et al. 1961; Wright and Knight 1966; Pinger and Rowley 1972 and 1975; and Arnell, 1976.

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During the course of an arbovirus surveillance project in Macon County, Alabama, conducted by the authors, 72 females of *Ae. trivittatus* were initially collected on October 10, 1979 at the edge of a wooded area near the Tuskegee Institute campus. These specimens were collected in a miniature CDC light trap baited with CO_2. A second collection of 47 female *Ae. trivittatus* was recorded from the same location on October 12, 1979 using the same collection method. An intense search of the area was conducted in an attempt to collect larvae, however, none was collected. Rainfall records indicated that the last significant rainfall was 3 weeks prior to these collections.

The authors' identification of the species was verified by Dr. K. L. Knight of the Entomology Department, North Carolina State University and Mr. E. L. Peyton, Research Entomologist, Medical Entomology Project-NHB-15, to whom we are deeply grateful. Six specimens have been deposited with the Smithsonian Institution, United States National Museum.

King et al. (1960) listed a total of 51 species of mosquitoes in the State of Alabama. O'Meara and Craig (1970) added *Aedes atropalpus* to the list. This initial collection of *Ae. trivittatus* brings the total known species of mosquitoes for the State of Alabama to 53.

Literature Cited

Abdel-Malek, A. 1948. The biology of *Aedes trivittatus*. J. Econ. Entomol. 41:951–954.

Arnell, J. H. 1976. Mosquito Studies (Diptera: Culicidae) XXX111. A revision of the Scapularis Group of *Aedes (Ochlerotatus)*. Am. Entomol. Inst. Contrib. 13 (3):1–144.

Breeland, S. G., W. E. Snow and E. Pickard. 1961. Mosquitoes of the Tennessee Valley. Tenn. Acad. Sci. J. 36:249–319.

Carpenter, S. J. 1968. Review of recent literature on mosquitoes of North America. California Vector Views 15:71–98.

Carpenter, S. J. 1970. Review of recent literature on mosquitoes of North America. Supplement I. California Vector Views 17:39–65.

Carpenter, S. J. and W. J. La Casse. 1955. Mosquitoes of North America. University of California Press, Berkeley, Calif. 360 pp.

Horsfall, W. R., P. T. M. Lum and L. M. Henderson. 1958. Eggs of floodwater mosquitoes (Diptera: Culicidae). V. Effects of oxygen on hatching of intact eggs. Ann. Entomol. Soc. Am. 51:209–213.

King, W. V., G. H. Bradley, C. N. Smith and W. C. McDuffie. 1960. A Handbook of the Mosquitoes of the Southeastern United States. U.S.D.A. Agriculture Handbook No. 173.

O'Meara, G. F. and G. B. Craig, Jr. 1970. Geographical variation in *Aedes atropalpus* (Diptera: Culicidae). Ann. Entomol. Soc. Amer. 63(5):1392–1400.

Pinger, R. R., Jr. and W. A. Rowley. 1972. Occurrence and seasonal distribution of Iowa mosquitoes. Mosquito News 32:234–241.

Pinger, R. R. and W. A. Rowley. 1975. Host preferences of *Aedes trivittatus* (Diptera: Culicidae) in central Iowa. Am. J. Trop. Med. Hyg. 24:889–893.

Wright, R. E. and K. L. Knight. 1966. Effect of environmental factors on biting activity of *Aedes vexans* (Meigen) and *Aedes trivittatus* (Coquillett). Mosquito News 26:465–478.

A NOTE ON THE OCCURRENCE OF HYDRODROMID MITES ON THE MOSQUITO POPULATION OF SARATOGA COUNTY, N.Y.

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Over a 4-month period, May 1, to August 30, 1979 adult mosquitoes were collected in Saratoga County, N.Y. The collections were carried out, in part, as a yearly survey for assessing arboviral populations, and subsequent control efforts.

Most of the mosquitoes collected in 1979 were identified to species and pooled for virus isolation. From the 9,551 mosquitoes pooled (199 pools), roughly 1.08% of the specimens were found to host parasitic mites of the family Hydrodromidae. All of the mites that were observed and recorded were found only on those mosquitoes which were collected and pooled (168 pools) in June and July of 1979.

The total number of mites found on any one mosquito were from 1 (on all species) to 26 mites found on *Aedes canadensis*. Positioning of mites on mosquitoes was generally restricted to the thorax, abdomen and head regions respectively, although one mite (probably due to crowding) was found attached to the femur of an *Ae. canadensis* specimen.

Although more specimens of *Ae. canadensis* (27.19% of the total mosquitoes with mites) were found to host hydrodromids, specimens