

A NOTE ON THE BIONOMICS OF *Aedes atropalpus* (COQUILLET)¹

L. G. STROM,² H. A. TREVINO³ AND E. G. CAMPOS³

Aedes atropalpus is a widely-distributed mosquito, recorded from the eastern United States west to New Mexico and from Southern Canada to Central America by Carpenter and La Casse (1955). It has long been characterized as a species breeding primarily in rock holes filled with water from overflowing streams or rainfall. This mosquito attacks man freely and is a persistent biter. However, it has generally been considered to be a minor pest, as a consequence of its specialized larval habitat and relatively short flight range.

There have been recorded exceptions to *Ae. atropalpus* breeding in rock holes. Kumm, *et al.* (1940) collected the species from cemetery urns and vases in Costa Rica. Hedeem (1953) recovered *Ae. atropalpus* from tree holes in Pecos County, Texas, on two occasions and once from an artificial container in association with *Ae. aegypti* in Medina County, Texas. Hedeem (*loc. cit.*) has shown that *atropalpus* requires no unusual aquatic media or food for normal development under laboratory conditions.

As pointed out by Bates (1954), it is often difficult to demonstrate physiological or structural adaptations which would limit certain mosquito larvae to the highly restricted habitats in which they are found. Many of these larvae from widely diverse ecological situations will develop in a common medium in the laboratory. Thus adult oviposition selectivity would appear chiefly responsible for the sometimes bizarre larval developmental habitats.

Observations concerning the bionomics of this species made by personnel of the

Medical Entomology Laboratory, Foreign Quarantine Station, Public Health Service, Brownsville, Texas, are considered of sufficient interest to report. *Ae. atropalpus* larvae and pupae have been collected for 3 consecutive years from discarded airplane tires containing water, during *Ae. aegypti* surveys of the San Antonio, Texas, International Airport and vicinity. *Ae. aegypti* surveillance is maintained at international traffic points in the southern United States by entomologists of the Foreign Quarantine Division, Public Health Service.

Aedes larvae, subsequently shown microscopically to be *atropalpus*, were first recovered from 10 airplane tires at the San Antonio Airport Aug. 14, 1958, in association with *Culex quinquefasciatus* larvae. The large tires held from 5 to 10 gallons of water and both *Aedes* and *Culex* larvae were present in large numbers. A second trip was made to the San Antonio Airport Oct. 15, 1958, and 35 tires were discovered holding water, all of which contained large numbers of *Ae. atropalpus* and *C. quinquefasciatus* larvae.

Numerous premises were inspected in San Antonio in cooperation with Mr. C. R. Mason, Sanitarian, City Health Department, but it was not until May 12, 1959, that *Ae. atropalpus* was found in a second location, an aircraft tire company, some 15 miles south of the Airport. This mosquito was taken in numbers from used aircraft tires, in association with one or more of the following species: *Ae. aegypti*, *A. crucians*, and *C. quinquefasciatus*. One tire contained all 4 species.

Ae. atropalpus has been collected from used aircraft tires in San Antonio, Texas, from the 2 original locations on 8 different occasions: Aug. 14, 1958; Oct. 15, 1958; March 11, 1959; May 11, 1959; May 12, 1959; Aug. 17, 1959; Aug. 19, 1959 and Aug. 2, 1960. Breeding was extensive,

¹ A contribution from the Medical Entomology Laboratory, Quarantine Station, Public Health Service, U. S. Department of Health, Education and Welfare, Brownsville, Texas.

² Deceased; formerly Station Entomologist.

³ Biologists, Entomology Program.

with larvae frequently being found in 10 or more tires. Adult annoyance was encountered only once. May 12, 1959, *Ae. atropalpus* and *Ae. aegypti* were attacking in numbers at 6:00 p.m., when one of the sites from which *atropalpus* larvae were recovered was visited.

The collection of *Ae. atropalpus* from water-filled aircraft tires gives further indication that microscopic appraisal should be given all mosquitoes collected during *Ae. aegypti* surveys. Still another *Aedes*, the tree-hole-breeding *triseriatus*, has been commonly taken from tin cans and other artificial containers in San Antonio and elsewhere in Texas (Texas State Department of Health unpublished records). Personnel conducting *Ae. aegypti* surveys should be thoroughly cognizant of the fact that *Aedes* other than *aegypti* are not infrequently found in artificial containers. This should be especially stressed when temporary summer employees are utilized in *Ae. aegypti* surveys.

This demonstration of urban breeding of *Ae. atropalpus* in artificial containers indicates that its disease transmission potential is much greater than formerly believed. A species limited to rock holes

in rural areas for larval development, and with a limited flight range, would be of little concern as a primary vector. Its presence in water-filled tires is additional justification for the elimination of these larval developmental sites in mosquito control programs.

SUMMARY

Ae. atropalpus, a species commonly utilizing rock holes of temporary water for larval development, has been discovered in San Antonio, Texas, in water-filled, used, aircraft tires. Eight findings over a 3-year period have shown extensive adaption to this habitat.

References

- BATES, M. 1954. The natural history of mosquitoes. The Macmillan Co., New York, N. Y. 375 pp.
- CARPENTER, S. J., and LA CASSE, W. J. 1955. Mosquitoes of North America. Univ. of California Press, Berkeley, Calif. 360 pp.
- HEDEEN, R. A. 1953. The biology of the mosquito *Aedes atropalpus* Coquillett. Jour. Kans. Ent. Soc. 26(1):1-10.
- HORSFALL, W. R. 1955. Mosquitoes. Ronald Press Co., New York, N. Y. 723 pp.
- KUMM, H. W., KOMP, W. H. W., and RUIZ, H. 1940. Am. Jour. Trop. Med. 20:385-422.