

SCIENTIFIC NOTES

Aedes sticticus (MEIGEN) IN THE TWIN CITIES,
MINNESOTA AREABARTON, W. I.,¹ BODINE, M. M.,² AND
BAUER, G. I.³Metropolitan Mosquito Control District,
St. Paul, Minnesota 55114

Aedes sticticus in this area is essentially a single brooded spring species whose breeding sites are associated with flood plains of rivers and streams. It is an avid human biter and a strong flier, rivaling *A. vexans* in this regard. During the past several years, the incidence of this species has been rising, particularly in Anoka County, the northernmost of the six counties in the Metropolitan Mosquito Control District.

The following table summarizes the frequency of occurrence of *A. sticticus* larvae and adults expressed as percent of the total mosquitoes collected in Anoka County, Minnesota for the past six years.

	1960	1961	1962	1963	1964	1965
Larval collections	0	0.96	0.93	0.73	1.04	3.62
Daytime bite collections	0.04	7.57	6.75	19.70	27.55	17.37
Evening bite collections	0	5.81	2.28	4.75	30.83	10.54

Comparable figures for *Aedes vexans* for 1965 are 43.49 percent of larval collections, 47.61 percent of daytime bite collections and 62.38 percent of evening bite collections. In three New Jersey type light traps operated in Anoka County in 1965, *A. vexans* accounted for 75.92 percent and *A. sticticus* 0.28 percent of the total females captured. The latter negligible catch compared to the relatively high bite catches indicates that the light trap is a very poor measuring device for assessing *A. sticticus* populations. This confirms our previous observations.

Beginning in 1962, the Director asked the field staff to intensify the search for and treatment of *sticticus* larvae in their breeding sites. The Rum River traverses Anoka County north to south and 115 *sticticus* sites were found in this river valley. Near 14 other streams and creeks, an additional 61 sites were located. During 1965 these sites totaled 1642 acres which were treated when they were found breeding. DDT dust or granules at 0.2 lb. per acre actual gave complete larval control and was used only in sites where there was no direct connection with the rivers, streams, or ditches. Where larvae were found in grassy backwaters and cutoffs of the water courses, a small amount of #2 fuel oil was used to destroy

the larvae. Applications were made with fixed wing aircraft, helicopter, and several types of hand-operated equipment, whichever was appropriate for a particular site. Extreme care was taken to avoid contamination of the rivers, streams, and ditches with DDT.

Identifiable *A. sticticus* larvae (3rd instar) were first picked up on April 30, 1965 and up to May 15, 1965, 150 sites were found breeding this species. An additional 26 sites were found breeding between May 15 and July 10, 1965. In 90 sites, *A. sticticus* was found in pure culture and in the remaining 86 sites, admixed with *Aedes abserratus*, *canadensis*, *cinereus*, *dorsalis*, *excrucians*, *fitchi*, *flavescens*, *riparius*, *vexans*, and *Culiseta inornata* and *morsitans*. The most common combination was with *A. vexans*. Larval densities ranged from one in 20 dips to 500 per dip, averaging 25 per dip.

Adult *A. sticticus* in Anoka County were very annoying during the early summer of 1965 in

spite of intensification of larval control. This was due to a combination of factors, such as possible misses of sites within the control area, inability because of manpower limitations to cover all sites within the county, and relatively long range flight from uncontrolled areas into populated areas. It is planned to utilize fixed wing and helicopter reconnaissance to assist in finding new sites and to intensify soil sampling to determine the presence of *sticticus* eggs. More men will be assigned to this problem at the crucial time in the future.

ACKNOWLEDGMENT

A. W. Buzicky, Director, assisted in the preparation of this paper.

INLAND RECORDS FOR SALT MARSH MOSQUITOES IN
PENNSYLVANIA

WILLIAM WILLS, AND DEAN STEINHART
Division of Sanitation, Pennsylvania Department
of Health

Inland records of salt-marsh mosquitoes in the United States are not unusual. Carpenter (1941) lists *Aedes sollicitans* and *Aedes taeniorhynchus* from Union and Onachita Counties, Arkansas; Carpenter and Middlekauf (1944) gave inland records for *A. sollicitans* and *A. taeniorhynchus*

¹ Field supervisor.

² Anoka County supervisor.

³ Foreman Anoka County.

from Georgia, South Florida and Arkansas; Rozeboom (1942) indicates *A. sollicitans* as far inland as the Great Salt Plain in Oklahoma; Christensen and Harmston (1942) report *A. sollicitans* from Evansville, Indiana. Venard and Mead (1953) gave records of salt marsh mosquitoes inland in the northeast from Lake County, Ohio where *A. sollicitans* is reported as a severe pest. Barnes *et al* (1950) give the only other inland record from the northeast, reporting *A. sollicitans* from Onondago County around Syracuse and *A. cantator* from Ithaca and Syracuse, New York where they were found breeding in salt water.

According to Dufor and Anderson (1963), in northwestern Pennsylvania, brine mixed with petroleum is pumped from deep wells, which in some locations yield brine that is $7\frac{1}{2}$ times as concentrated as ocean water. Abandoned oil wells also allow upward migration of salt water, which spreads on the ground and into surface water. Operators of gas wells in Crawford and Erie Counties occasionally get large amounts of brine from their wells which they in turn sell to the counties in northwestern Pennsylvania for use in the summer months on dry secondary roads to keep down dust and in the winter to melt snow, usually in the rural parts of the various counties involved. In the summertime, the runoff forms pools of salt water in roadside ditches thus providing breeding areas for salt marsh mosquitoes.

The records of *A. sollicitans* are in the northeastern part of the State where there are no known sources for brine or salt water. Since the record consists of five *A. sollicitans* females taken in one night, it seems unlikely there was actual breeding in the area. The closest salt marshes to this area are in New Jersey which is approximately 90 miles east. No larval specimens of either *A. taeniorhynchus* or *A. sollicitans* were collected.

These records for salt marsh mosquitoes were

collected during a four-year survey of Pennsylvania mosquitoes, from 1961 through 1965:

Aedes sollicitans (Walker)—five adult females collected in a light trap at Stroudsburg, Monroe County, Pennsylvania, July 9, 1962.

Aedes taeniorhynchus (Wiedemann)—43 adult females collected in 11 light trap nights from June 13 to July 6, 1962 and one adult female on July 20, 1962 from Western Reserve area outside of Sharon, Mercer County, Pennsylvania.

Two adult females collected resting inside a cabin on June 30, 1965 at Camp Lend-A-Hand, a crippled children's camp, $1\frac{1}{2}$ miles south of Conneaut Lake, Crawford County.

References Cited

BARNES, RALPH C., FELLTON, HERMON L., and WILSON, CLIFTON A. 1950. "An annotated list of the mosquitoes of New York." Mosquito News, Vol. 10, No. 2.

CARPENTER, S. J. 1941. "The mosquitoes of Arkansas." Arkansas State Board of Health, Little Rock, 87 pp., Rev. Ed.

———, and MIDDLEKAUF, W. W. 1944. "Inland records of salt marsh mosquitoes." Journal of Econ. Ent. 37:108.

CHRISTENSEN, G. R., and HARMSTON, F. C. 1943. "A preliminary list of the mosquitoes of Indiana." Journal of Econ. Ent. 37:110.

DUFOR, CHARLES N., and ANDERSON, PETER W. 1963. "Chemical quality of surface waters in Pennsylvania." Geol. Survey Water—Supply Paper 1619-W.

ROZEBOOM, L. E. 1942. "The mosquitoes of Oklahoma." Oklahoma Agri. Exp. Station, Tech. Bull. T-16.

VENARD, CARL E., and MEAD, FRANK W. 1953. "An annotated list of Ohio mosquitoes." The Ohio Journal of Science 53(6)327-331.

VIRGINIA MOSQUITO CONTROL ASSN.

5721 Sellger Drive, P. O. Box 12418

Norfolk, Virginia 23502

J. C. Kesler, President, Virginia Beach

Roy Tolbert, First Vice President, Chincoteague

Harold Atkinson, Second Vice President, Franklin

W. H. Andrews, Third Vice President, Newport News

R. E. Dorer, Secretary-Treasurer, Norfolk