

normal; tarsi, male, normal, the claws on fore and middle legs elongate and toothed, the claws on hind tarsi plain. The gynandromorph apparently was enough of a female to be attracted into a bait trap (in which males are almost unknown).

The specimen has been cleared, mounted on a slide, and is in the collection of the Disease Ecology Section, Communicable Disease Center, Public Health Service, Greeley, Colorado.

Literature Cited

BATES, MARSTON. 1954. The Natural History of Mosquitoes. New York: Macmillan, 379 pp.

KEH, BENJAMIN. 1955. A mosquito gynandromorph. Calif. Vector Views, 2(4):18.

RIGBY, P. T., and BLAKESLEE, T. E. 1964. Gynandromorphism in *Culex tarsalis* Coquillett. Mosquito News, 24(4):460.

ROTH, LOUIS M. 1948. Mosquito gynandromorphs. Mosquito News, 8(4):168-174.

Culex territans WALKER BITING MAN IN NATURE

ROBERT G. MEANS

N. Y. State Museum and Science Service
Albany, N. Y.

Culex territans (*C. saxatilis* Grossbeck, *C. frickii* Ludlow, *C. apicalis* Adams, *C. pyrenaicus* Brolemann; see Stone, Knight, and Starcke 1959) is thought to feed primarily on cold-blooded vertebrates (Barr 1958, Carpenter & La Casse 1955). It has been reported feeding on frogs (Horsfall 1955, Matheson 1944, Shannon 1915, Stage, Gjullin, and Yates 1952, Steward and McWade 1961) and snakes (Dyar 1928). Smith (1904) stated that he thought previous reports of *territans* biting man had actually been *C. pipiens*. Although it has been shown to feed on beef blood (Edman and Downe 1964) and has been reported biting man in Ontario (West and Hudson 1960), mammals are not normal hosts for this mosquito.

On August 9, 1965, while making a routine collection of mosquitoes to be tested for the presence of arboviruses,¹ I observed what appeared to be a *territans* land on my arm. It immediately inserted its proboscis and began ingesting blood. After less than a minute the mosquito had become partially engorged. I removed it with an aspirator and deposited it in a container separate from the rest of the mosquitoes. The collecting site was a cement culvert, about 5 feet in diameter and about 25 feet long, located in Massena, N. Y. A brook passing through the

culvert was about 6 inches deep and produced numerous *Culex pipiens*, *territans* and *restuans* as well as *Anopheles punctipennis* and *carlei*. The alleged *territans* was positively identified as such under microscopic examination in the laboratory. It was then sent, along with the rest of the day's collection, for arbovirus testing.

Literature Cited

BARR, A. R. 1958. The mosquitoes of Minnesota. University of Minn. Agric. Exp. Sta. Bull. 228. 154 p.

CARPENTER, S. J., and W. J. LA CASSE. 1955. Mosquitoes of North America (north of Mexico). Univ. of Calif. Press, Berkeley and Los Angeles. 360 p. and 126 pl.

DYAR, H. G. 1928. The mosquitoes of the Americas. Carnegie Inst. Wash. publ. 387. 616 p.

EDMAN, J. D., and A. E. R. DOWNE. 1964. Host blood sources and multiple feeding habits of mosquitoes in Kansas. Mosq. News 24(2):154-160.

HORSFALL, W. R. 1955. Mosquitoes: their bionomics and relation to disease. Ronald Press, New York. 723 p.

MATHESON, R. 1944. Handbook of the mosquitoes of North America. Comstock, Ithaca. 314 p.

SHANNON, R. C. 1915. Mosquitoes attacking a frog. Proc. Entom. Soc. Wash. 17:99.

SMITH, J. B. 1904. Report upon the mosquitoes. N. J. Agric. Exp. Sta. Bull. 482 p.

STAGE, H. H., C. M. GJULLIN, and W. W. YATES. 1952. Mosquitoes of the northwestern states. USDA Agric. Handbook 46. 95 p.

STEWART, C. C., and J. W. McWADE. 1961. The mosquitoes of Ontario (Diptera: Culicidae) with keys to the species and notes on distribution. Proc. Entom. Soc. Ont. 91:121-188.

STONE, A., K. L. KNIGHT, and H. STARCKE. 1959. A synoptic catalog of the mosquitoes of the world. Ent. Soc. Amer., Washington. 358 p.

WEST, A. S., and A. HUDSON. 1960. Notes on the mosquitoes of eastern Ontario. Proc. N. J. Mosq. Exter. Assn. 47:68-73.

THE *Culex pipiens* COMPLEX IN SOUTHERN INDIANA

VERNE F. NEWHOUSE¹ AND R. E. SIVERLY²

During an investigation of the recent outbreak of St. Louis encephalitis in southwestern Indiana, male specimens of *Culex* spp. associated with females in resting sites were collected, cleared, and

¹ A project sponsored jointly by the New York State Museum and Science Service and Health Research Inc., the latter administered through the New York State Department of Health.

¹ Arbovirus Unit, Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Atlanta, Georgia.

² Department of Physiology and Health Science, Ball State University, Muncie, Indiana 47306.

their terminalia examined microscopically to determine the composition of the *Culex pipiens* complex in the area. The results are summarized in Table 1.

TABLE 1.—Subspecies composition of male *Culex pipiens* collected in Evansville, Indiana and vicinity in October, 1964, as determined by examination of male terminalia.

Collection site	No. of typical <i>Culex p. pipiens</i>	No. of apparent intergrades	No. of typical <i>Culex p. quinquefasciatus</i>
1	13	0	1
2	47	2	1
3	66	1	1
4	54	1	1
Totals	180	4	4

The presence of *C. pipiens quinquefasciatus* was not unexpected. Evansville lies between 36 and 39 degrees North latitude, the zone found by Barr¹ to contain both *C. p. pipiens* and *C. p. quinquefasciatus*. The subspecies was reported, as *Culex quinquefasciatus*, by Dyar² from Cincinnati, Ohio on the east, and by Ross³ from an area in Illinois to the west.

Literature Cited

1. BARR, A. R. 1957. The distribution of *Culex p. pipiens* and *C. p. quinquefasciatus* in North America. Amer. Jour. Trop. Med. Hyg. 6:153-165.
2. DYAR, H. G. 1922. The mosquitoes of the United States. Proc. U. S. Nat. Mus. 62(1):1-119.
3. ROSS, H. H. 1947. The mosquitoes of Illinois. Bull. Illinois Nat. Hist. Survey 24(1): 49.

BLOOD VOLUMES INGESTED BY VARIOUS PEST MOSQUITOES

D. B. WOODARD AND H. C. CHAPMAN

Entomology Research Division, ARS, U.S.D.A.,¹
Lake Charles, Louisiana

Mosquitoes have been a periodical scourge to both men and cattle along the extensive gulf coast of Louisiana throughout the historical period of human habitation. Severe outbreaks, principally of *Aedes sollicitans* (Walker) and *Psorophora*

confinis (Lynch-Arribalzaga), as in 1962, resulted in the death of many cattle and severe weight losses in the survivors (Hoffman and McDuffie, 1963). The effect on cattle of the blood loss due to mosquito bites is not known but is

TABLE 1.—Average weights of unfed and engorged female mosquitoes of several species.

Species	Unfed		Engorged		Ratio of wt. of unfed adult to wt. of blood meal
	Number of adults	Average wt. (mg.)	Number of adults	Average wt. (mg.)	
<i>Psorophora ciliata</i>	50	13.1	50	38.1	1.91
<i>P. confinis</i>	60	3.1	60	9.1	1.94
<i>P. cyanoescens</i>	100	4.2	86	13.4	2.19
<i>P. ferox</i> (Humboldt)	30	3.1	42	8.2	1.65
<i>Aedes atlanticus-tormentor</i> ^a	137	1.9	85	6.7	2.53
<i>A. sollicitans</i>	75	3.1	90	7.0	1.26
<i>A. taeniorhynchus</i> (Wiedemann)	50	1.9	41	5.1	1.68
<i>A. infirmatus</i> (Dyar & Knab)	50	3.0	50	7.9	1.63
<i>A. vexans</i> (Meigen)	50	3.0	49	7.7	1.57
<i>Culex salinarius</i>	100	2.0	85	4.1	1.05
<i>Mansonia perturbans</i> (Walker)	49	4.0	51	8.3	1.08
<i>Anopheles quadrimaculatus</i>	50	2.6	50	8.1	2.12

^a Adult females of *A. atlanticus* Dyar and Knab and *A. tormentor* Dyar and Knab are inseparable.

¹ In cooperation with McNeese State College, Lake Charles, Louisiana.

possibly less important than the pain arising from the actual piercing of the skin by mosquito hordes.