Island Animal Disease Center and to Dr. Jerry Walker, Safety Director, for their many courtesies and assistance in this project.

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## OCCURRENCE OF TOXORHYNCHITES RUTILUS SEPTENTRIONALIS IN TIRES IN OHIO

Scott W. Gordon and Ellen D. Peterson Vector-borne Disease Unit, Ohio Department of Health, P.O. Box 2568, Columbus, Ohio 43216

The mosquito genus *Toxorhynchites* is represented in the eastern United States by a single species *Toxorhynchites rutilus*, which consists of 2 subspecies *rutilus* (Coquillett) and *septentrionalis* (Dyar and Knab). The subspecies are differentiated on the basis of morphological characters of the adult male and by geographic distribution (Jenkins 1949). *Tx. r. rutilus* is reported as being restricted to Florida, southern

and coastal Georgia, and South Carolina (Jenkins and Carpenter 1946). Recent efforts to establish Tx. r. rutilus in Louisiana (Carmichael 1978) as a biological control agent, may serve to extend the range of this subspecies. Tx. r. septentrionalis is more widely distributed throughout the eastern U.S., ranging northward to New England (Main et al. 1976) and Ontario, Canada (Parker 1977), and westward to Kansas, Oklahoma, and Texas (Focks et al. 1977). Intergrades of the two subspecies are known to occur in northern Florida (Jenkins 1949).

The first reported occurrence of Tx. r. septentrionalis in Ohio was by Burgess (1906) from Hamilton and Scioto Counties. Other published records include Franklin and Hamilton Counties (Jenkins and Carpenter 1946) and Cuvahoga County (Masters 1949). In an unpublished thesis, Mead (1949) listed collection records from Hocking, Licking, and Ross Counties. The most recent report of the subspecies in Ohio is that of Williams et al. (1961) from a study area in Hocking County. Despite frequent container sampling, Tx. r. septentrionalis has not been collected by field staff of the Vector-borne Disease Unit (VBDU), Ohio Department of Health, in the years 1965 to 1978 (M. A. Parsons, VBDU, personal communication). An additional county distribution record from Darke County is presented in this report, bringing the currently known distribution of Tx. r. septentrionalis in Ohio to 8 of the 88 counties (Figure 1). Although this subspecies probably occurs throughout Ohio, no additional records were encountered.

During September and October of 1979, immature stages of Tx. r. septentrionalis were collected from discarded tires in 2 Ohio counties. All specimens collected at the 2 sites were returned to the VBDU Laboratory where they were successfully reared to the adult stage. Identification to subspecies was based on tarsal scale patterns of the adult males. A laboratory colony was established according to the method of Slaff et al. (1975).

None of the previously mentioned records indicate the use of tires by Tx. r. septentrionalis as a breeding habitat. This phenomenon, however, has been reported in New Jersey by Lake (1953), Hemmerlein and Crans (1968), and Slaff et al. (1975). In Florida, Basham et al. (1947) collected Tx. r. rutilus from a number of artificial containers, including tires. On September 18, 1979, two 4th instar Tx. r. septentrionalis larvae were collected in Greenville, Darke County, at a tire sales and repair company specializing in "giant" tires for heavy con-

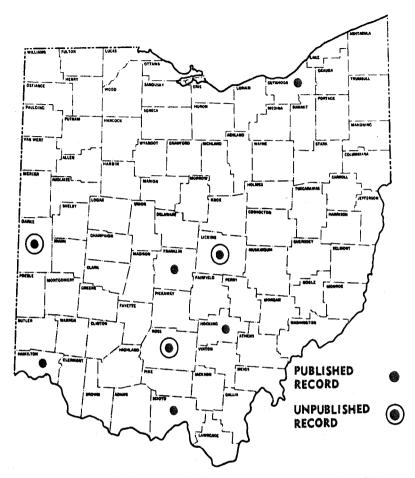


Figure 1. Current distribution records of Toxorhynchites rutilus septentrionalis in Ohio.

struction and mining vehicles. Both specimens were recovered from the same tire which contained a small amount of water, debris, and dead leaves. No other mosquito larvae were found as cohabitants. An additional collection made at the Greenville site on October 2, 1979, yielded two 3rd instar larvae. No specific collection data were recorded on this date, as samples from many tires were combined. Other mosquito species encountered on October 2 included Aedes atropalpus (Coquillett), Anopheles punctipennis (Say), and Culex pipiens Linneaus. The tire yard is bordered by a swampy area and woods on one side and several residences on the other. It is uncertain whether the Greenville population is native or

imported, since the company receives tires for repair from a 15-state area.

On September 27, 1979, 12 specimens of Tx. r. septentrionalis, ranging from 3rd instar to pupae, were collected in a rural area of southern Ross County from an automobile tire and a tractor tire. There were no cohabitant mosquitoes in either tire, although chironomid midge larvae were present. The tractor tire was in a shaded pile of about 30 auto and tractor tires at the edge of a woods. This pile was used as a disposal site by the landowner. The auto tire was located in partial shade approximately 100m from the tractor tire. The tires were of local origin and appeared to have been accumulating for a number of years. The remote

rural setting of this collection site strongly suggests that this population was native to the area.

The use of discarded tires as breeding sites by vector mosquitoes (primarily Aedes triseriatus (Say) and Culex pipiens Linneaus) is a serious and increasing problem in Ohio. During 1979, 12 of 20 California encephalitis cases investigated by the VBDU were found to be associated with Ae. triseriatus breeding in tires discarded in woodlots. Physical removal or chemical treatment of tires could alleviate mosquito breeding in some instances. However, these methods are simply not feasible in many areas due to the tremendous quantity of tires that have accumulated. In light of recent studies by Gerberg and Visser (1978) and Focks et al. (1979), the periodic release of laboratory mass reared Toxorhynchites mosquitoes may be a practical alternative to conventional control methods and certainly deserves further investigation.

ACKNOWLEDGMENTS. The authors wish to acknowledge Mr. Ron Bailey of Shrader's Tire Service for permitting us to make collections at the Greenville site, and Joseph A. Kertesz, Robert A. Restifo, and P. J. Woodford for assistance in making field collections and establishing the laboratory colony. In addition, we thank Margaret A. Parsons and R. L. Berry for reviewing the manuscript.

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## A GYNANDROMORPH OF AEDES VEXANS IN 1979

DONALD A. OEMICK AND PETER J. JOYCE Northwest Mosquito Abatement District, 147 West Hintz Road, Wheeling, Illinois 60090

Minson (1969) and Oemick (1976) reported bipolar gynandromorphs of Aedes vexans (Meigen). In 1979 we identified another bipolar form of Ae. vexans (Fig. 1). It has the same anatomical description and was collected at the