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NEW DISTRIBUTION RECORDS FOR TOXORHYNCHITATES AND ORTHOPODOMYIA IN THE NORTHEASTERN UNITED STATES

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On 20 July 1975, a single Toxorhynchites rutilus septentrionalis pupa was discovered among several hundred Aedes triseriatus larvae and pupae collected from a depression in a fallen log in Killingworth, Connecticut. No other T. r. septentrionalis were observed in this treehole when it was examined on 11 occasions in 1975 between 4 May and 27 October; more than 10,000 immature A. triseriatus were collected. On 28 July, the hole was drained in an unsuccessful attempt to find more specimens.

The pupa was reared in the laboratory and the adult male that emerged was pinned and retained in the Yale collection. This is the first published record of Toxorhynchites occurring in New England. A second specimen of T. r. septentrionalis in the Yale collection—also an adult male—was taken at Chappaqua, New York in July 1956 by Dr. L. Whitman. This is the second record of Toxorhynchites in New York state; Klots (1961) reported a single larval T. rutilus (presumably septentrionalis) from New York city.

On 4 November 1959, eight 4th-instar Orthopodomyia signifera larvae were collected from recovered water in a damaged tractor tire in Plainville, Connecticut. These larvae were transported to the Yale laboratory where they were identified and allowed to pupate. The adults that emerged from the pupae did not feed and were pinned for the Yale collection. These specimens represent the first published record of O. signifera in Connecticut since Matheson (1945) reported it in New Canaan on 24 August 1929. More recently, adult females were taken in light trap collections on 7 occasions in Connecticut: Simsbury, 18 ix 1967, 1 Q; 3 ix 1967, 1 Q; 26 viii 1968, 1 Q; 15 ix 1969, 1 Q (Whitman); Madison, vi 1973, 1 Q; viii 1973, 1 Q (Wallis); Westbrook, 16 vii 1975, 1 Q (Sprance).

During this same period, O. signifera were collected on 4 occasions from light traps in Massachusetts: Berkeley, 27 vi 1963, 1 Q; 25 vii 1967, 1 Q; 26 vii 1968, 1 Q (Main); Seekonk, 9 ix 1967, 1 Q (Main). This species was previously reported in Boston (Fort Strong), 5 ix 1924, 7 Q Q by Zavortink (1968) and in Sudbury, 28 vii 1939, 3 larvae by Tulloch (1939).

References Cited


THE FIRST RECORD OF TOXORHYNCHITATES RUTILUS IN SUFFOLK COUNTY, LONG ISLAND, N.Y.

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The genus Toxorhynchites is mainly tropical in distribution. It is represented in North America north of Mexico by one species Toxorhynchites rutilus (Coquillett), with 2 subspecies (Jenkins 1949) and perhaps an additional species, the status of which is uncertain (Zavortink 1969). T. r. rutilus (Coquillett) has been reported only from Florida, Georgia, and South Carolina, while T. r. septentrionalis (Dyar and Knab) occurs in the eastern United States, west to the great plains of Kansas, Oklahoma and Texas and north to New Jersey and New York City (Carpenter and LaCasce 1955, Klots 1961, Hemmerlein and Crans 1968). T. rutilus has never been known to exist in Long Island, N.Y.

On September 15, 1975, 4 car tires were found at the edge of a wooded area in Manorville, Suffolk County, N.Y. They were partly filled with water rich in debris and decaying vegetation and were exposed to little sunlight. In one tire, two 4th-instar T. rutilus larvae were found. The second had 5 more larvae together with a number of Aedes triseriatus (Say) larvae. The other tires were void of larvae.

Trials to collect more T. rutilus larvae or adults from the same area were unsuccessful. A number of tires were checked, but only A. triseriatus and Culex pipiens L. larvae were recovered. A New Jersey light trap was operated for 15 nights but
no *T. rutulus* adults were trapped. This might confirm Michener’s (1947) statement that this species appears to be diurnal.

Five larvae were reared in separate bowls half filled with tap water. They were kept in the insectary at 75 °F, 70 percent RH, and a photoperiod of 14L:10D. Artificial light was used to simulate daylight (sixteen 40-W fluorescent tubes) and twilight following sunset (one 25-W bulb). Larvae were fed on *C. pipiens* larvae from a colony.

Unfortunately, one larva died 5 days later. The other four required 7–9 (av. 8) days for pupation and 6–7 (av. 6.25) days for adult emergence. All adults were females. Since larvae and females of the two subspecies, *rutulus* and *septentrionalis*, appear to be indistinguishable and the former is known only from the southeastern United States, one would suspect that the specimens are *septentrionalis*.

The presence of *T. rutulus* in Suffolk County appears to be of some interest since the larvae are predaceous on other mosquito larvae and the adults do not feed on blood. It is possible that this species has been recently introduced since the collection site is about half a mile south of Long Island Game Farm and 2.5 miles northeast of the National Speedway.

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**CANNIBALISM IN ANOPHELES STEPHENSI LISTON**

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Ray (1931) and more recently Reisen (1975) suggested that cannibalism frequently occurs among *Anopheles stephensi* Liston larvae, although no supporting experimental evidence was presented. High mortality rates with few actual corpses observed in the rearing containers implied that larvae were being consumed either dead or alive. The present experiment was designed to determine if cannibalism actually occurred, and to describe the effects of time and density on the consumption rate of the larvae.

**METHODS AND MATERIALS.** Larvae were reared to 4th instar at densities of 0.5 larvae/cm² (uncrowded) and 3.0 L/cm² (crowded) as described previously by Reisen (1975). Ten and 25, 4th instar larvae were placed into each of 6 styrofoam cups (surface area = 25.0 cm²) yielding densities of 0.4 and 1.0 L/cm². Twenty and 40 1st instar larvae were then added to each of 3 cups per group. Water conditioned during the original 4th instar larval rearing was used in the appropriate cups, and no additional food was added. The number of 1st and 4th instar larvae remaining in the cups and the number of 4th instar larvae pupating were recorded at 24 and 48 hours. The consumption rate of the 1st instar larvae by the 4th instar larvae was calculated by dividing the number of 1st instar larvae removed (number remaining at time t subtracted from the number at t–1) by the number of 4th instar larvae present at time t. A 3-factor analysis of variance was performed to test for significant time and density effects among the consumption rates, using the procedures outlined in Sokal and Rohlf (1969).

**RESULT AND DISCUSSION.** Practically all the 1st instar larvae were consumed during the course of this experiment (Table 1). Fourth instar mortality was low, and no dead 1st instar larvae were observed. Only the 0.5 L/cm² group pupated, thus reducing the density of the feeding population. Since the consumption rate significantly

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