

ARTHROPOD MONITORING:

Survey for treehole-breeding mosquitoes

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Two species of treehole mosquitoes, *Ochlerotatus triseriatus* (Say) and *Ochlerotatus hendersoni* (Cockerell), are commonly encountered in our area. The former species has been collected on the Upper Site, at Rum Hill and at Greenwoods Conservancy. The latter has been collected at Greenwoods and the Upper Site. (Butts, 1992, 2001). Adult females may appear as early as late May and are present throughout the summer with population peaks generally occurring in late August (Means, 1979). A third treehole species, *Ochleoatatus japonicus* (Theobald), has been introduced recently into our eastern seaboard and has been spreading outward.

Both *O. triseriatus* and *O. japonicus* have been implicated as secondary “Bridge” vectors for West Nile Virus. (A bridge vector is a species which will feed readily on both birds and mammals and is more likely to transmit the virus from the avian reservoir to humans than are those species which feed almost exclusively on birds and tend to maintain and amplify the level of the pathogen in bird populations) (Turell, *et al. in* White and Morse, 2001). Although they are normally confined to water filled rot holes under natural conditions, they appear to adapt well to various small man-made containers and are particularly well-adjusted to water collected in discarded rubber tires.

MATERIALS AND METHODS

During the summer of 2002, several series of sampling sites were established at Greenwoods and at the Thayer Property to further clarify presence and distribution of *O. triseriatus*, *O. hendersoni* and *O. japonicus*.

Series of sampling sites were established at Greenwoods as follows:

Two sites downhill (west) from Cranberry Bog Road just beyond its northward curve toward Route 80; site 1 ca. 200 yards below the road and site 2 ca. 100 yards farther downhill.

Two sites uphill (east) of Cranberry Bog Road from a point 0.3 mile from its intersection with Route 80; site 1 ca. 100 yds. uphill from the road and site 2 ca. 60 yards farther uphill just inside the adjoining boundary.

Three sites on Jenny Pratt Hill; site 1 across from the point of access to the upper bog dam and site 2 ca. 75 yards uphill (south), and site 3 ca. 75 yards east of site 2 along an old logging road.

Series of sampling sites were established at the Thayer Property as follows:

Four sampling sites at ca. 80 yds intervals along an internal fence line above the Interpretive Center.

Three sites in the approximate midline of the Sugar Bush north of the road at ca. 80 yd intervals from the road and parallel to the adjoining boundary.

Two sites in the woods south of the road (Sugar Bush, south) at ca. 80 yd intervals from the road, the second adjacent to the adjoining boundary.

Three sites in a Pine Plantation above the northernmost loop of the yellow trail above a steep ravine; site 1 just below the trail at the edge of the ravine, site 2 and 3 uphill (southwest) at ca. 60 yd intervals.

Three sites uphill (south by east) from the upper (northern) intersection of orange and yellow trails at intervals of ca. 75 yards on said bearing.

Mosquitoes were collected as they alighted on a seated collector with one forearm exposed. Collection was made by inverting small vials charged with ethyl acetate over resting individuals. Collections were made for 20 minutes per site (Butts, 1974). Specimens were returned to the laboratory, mounted and retained in the permanent collection at the Biological Field Station, Cooperstown, NY.

Collections were made in the early morning, generally beginning at 7:00AM (\pm 15 minutes) and in late afternoon and early evening. Table 1 summarizes the findings.

Table 1. Locations, dates, times of sampling and mosquitoes collected. Multiple specimens collected indicated parenthetically.

<u>Site</u>	<u>Date</u>	<u>Time</u>	<u>Mosquito Collected</u>
Greenwoods			
Below Bog Rd.	June 17	AM	_____
	July 1	PM	<i>Ochlerotatus triseriatus</i> (Say) (2)
	Aug 9	AM	_____
	Sept 30	PM	_____
Above Bog Rd.	June 17	AM	_____
	Aug 21	PM	<i>Ochlerotatus triseriatus</i> (Say)
Jenny Pratt Hill	June 27	AM	_____
	Aug 16	AM	_____
	Sept 9	PM	_____

Table 1 (cont.). Locations, dates, times of sampling and mosquitoes collected. Multiple specimens collected indicated parenthetically.

<u>Site</u>	<u>Date</u>	<u>Time</u>	<u>Mosquitoes collected</u>
Thayer Property Above Interpretive Center	June 13	AM	<i>Ochlerotatus triseriatus</i> (Say)
	July 12	AM	<i>Ochlerotatus triseriatus</i> (Say) <i>Ochlerotatus japonicus</i> (Theobald)
	Aug 26	PM	_____
Pine Plantation	June 27	PM	<i>Ochlerotatus triseriatus</i> (Say) <i>Ochlerotatus trivittatus</i> (Coquillett)(2) <i>Ochlerotatus japonicus</i> (Theobald)
	July 17	AM	_____
Orange/Yellow	June 27	PM	<i>Ochlerotatus triseriatus</i> (Say)
	July 31	AM	_____
Sugar Bush North	June 26	PM	<i>Ochlerotatus triseriatus</i> (Say)
	July 10	AM	_____
	July 21	AM	_____
Sugar Bush South	June 26	PM	<i>Ochlerotatus triseriatus</i> (Say)
	July 10	AM	_____
	Sept 16	PM	_____

RESULTS AND DISCUSSION

Only two species of treehole mosquitoes, *O. triseriatus* and *O. japonicus* were collected. (*Ochlerotatus trivittatus* (Coquillett), a species whose larvae develop in temporary ground pools was also collected.) Collections of *O. triseriatus* were made in all four sampling series at Thayer's, but only a total of six specimens were caught. Collection of single specimens of *O. japonicus* made in separate sampling series is of interest, since this is the first record of this species in any of our research areas. (A single specimen collected at Greenwoods in 2001 was sent to a specialist for verification, but its current whereabouts is unknown).

The pattern of distribution appears to be typical of the scattered, localized populations expected under natural conditions. It further suggests that treehole breeders do not represent a large concentration of pest mosquitoes in the area sampled. However, the presence of these species indicates a potential for the initiation of peri-domestic populations which can develop in small, water-filled containers, clogged rain gutters and particularly in discarded tires. The increased use of used tires as a means of securing

tarpaulins in bunk silos may warrant future consideration. This type of localized expansion can work in both directions. The appearance of *O. japonicus* is quite likely related to the large number of summer residents and tourists who frequent the area, and may inadvertently transport larvae or adult mosquitoes.

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