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OPERATIONAL AND SCIENTIFIC NOTES

FIRST RECORD OF *AEDES ALBOPICTUS* FROM NEW JERSEY[1]

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ABSTRACT. In early August 1995, *Aedes albopictus* was detected in a light trap collection at a coastal location of Monmouth County, NJ. Larval surveillance indicated the species was breeding in a variety of containers over an area of at least 1.0 km^2. This New Jersey record currently represents the northernmost breeding population of *Ae. albopictus* on the eastern seaboard. The collection site is very close to the 0° C daily mean January isotherm that has been used as a conservative estimate for the northern limit of this mosquito's overwintering range.

Aedes albopictus (Skuse) spread rapidly through the southern United States after its discovery in a tire dump near Houston, TX, in 1985 (Sprenger and Wuithiranyagool 1986). Craig (1993) believed that the mosquito probably occurred in every county east of the Mississippi River and south of the Mason–Dixon Line, with the exclusion of districts within the Appalachian Mountain range. Although isolated records of *Ae. albopictus* have been documented as far north as Chicago in the midwest (Rightor et al. 1987), the mosquito has been slow to expand its range northward along the Atlantic coast. Nawrocki and Hawley (1987) suggested the 0°C daily mean January isotherm as a conservative estimate for the northern limit of this mosquito's overwintering range in North America.

Aedes albopictus was detected in Baltimore, MD, in 1987 (Sweeney et al. 1988) and at a site near Milford, DE, during the same summer (C. Stachecki, unpublished data, 1995). Both collection sites were well below the Mason–Dixon Line (39°46′N lat.) and the 0°C daily mean January isotherm (Court 1974). No further northward movement was reported until 1993 when *Ae. albopictus* eggs were recovered from an ovitrap at an inland military base near Harrisburg in central Pennsylvania (B. Pagac, unpublished data, 1995). The Pennsylvania record (40°14′N lat.) is 193 km north-northwest of the Milford, DE, focus and falls slightly north of the 0°C daily mean January isotherm. Ovitrap surveillance was conducted at the Pennsylvania collection site the following year with negative results (B. Pagac, unpublished data, 1995).

On August 1, 1995, the staff of the Monmouth County Mosquito Extermination Commission discovered a single *Ae. albopictus* female in an unbaited, standard New Jersey light trap collection from Keyport, NJ (40°26′N lat.). The specimen was delivered to the Department of Entomology at Rutgers University where the identification was confirmed and the specimen was entered into the museum collection at Headlee Research Laboratories. A preliminary search for containers in the immediate vicinity of the light trap failed to locate suitable breeding habitat for the species. Surveillance at a marina 300 m from the trap site, however, yielded *Ae. albopictus* larvae from one discarded bucket and 2 tires.

Keyport, NJ (population 7,600) is located directly on the shores of Raritan Bay in Monmouth County. The area is 130 km north of Atlantic City, NJ, 200 km north of the Milford, DE, site and 193 km east-northeast of the Pennsylvania record. On a direct line, Keyport is quite close to the New York metropolitan area (Fig. 1). Staten Island, NY, is only 9 km across Raritan Bay and Times Square in Manhattan is less than 44 km from the trap site. The light trap that collected the first specimen was operated in a residential district of the town, 0.5 km from the bay shore. The trap site abuts a 0.25-ha wetland area that is part of the marina property where the first larvae were found. The marina is privately operated and provides dockage for approximately 75 small pleasure craft. Six similar marinas are located on the 3 tidal creeks that penetrate the bay shore within 1 km of the trap location. The area immediately west of the trap site borders New Jersey route 35 and is zoned for light industry including a lumber yard, a number of automotive businesses, and a tire recapping facility.

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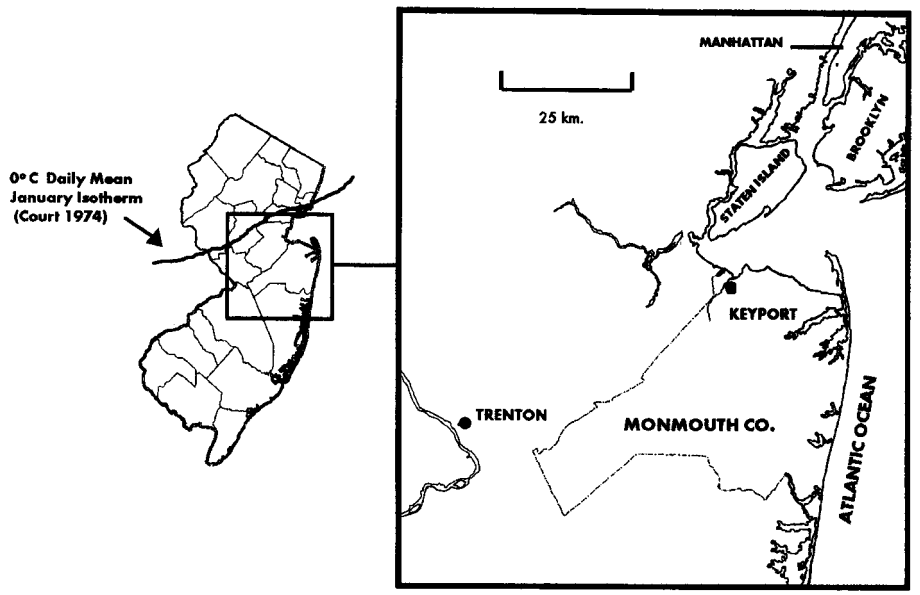

Fig. 1. The proximity of Keyport to the greater New York–New Jersey metropolitan area.

During the month of August, *Ae. albopictus* larvae were found in small collections of water in a variety of backyard situations within one block of the trap site and at 4 marinas within 1 km of the initial trapping location. *Aedes triseriatus* (Say) and *Culux pipiens* Linn. were the most common associated species in container habitats in the Keyport area. Discarded tires provided major breeding habitat for *Ae. albopictus* but larvae were also found in a variety of buckets, a dishpan, a 50-gal drum, a plastic drink cup, and a crushed beverage can. A wheelbarrow tire and a discarded socket set case were dry at the time of the survey but yielded *Ae. albopictus* larvae when they were flooded in the laboratory. Numerous derelict boats were stored on the various marina properties and many contained standing water that supported larval populations of *Cx. pipiens, Culex restuans* Theobald, and *Aedes atropalpus* (Coq.). Although *Ae. albopictus* was found breeding with each of these mosquito species in containers in the Keyport area, none were found in any of the boats that supported mosquito populations. The largest larval populations of *Ae. albopictus* were found in airplane tires stored outdoors at one of the marinas for use on the travel lifts used to move boats from wet storage to dry dock.

A tire recapping facility was located 0.75 km from the light trap that collected the first specimen and a surveillance effort was undertaken to determine if this might be the source of the infestation. Most of the tires that were being readied for recapping were covered with tarpaulins but one section of the yard contained hundreds of tires that had been left in the open for a year or more. The results indicated that *Ae. albopictus* was not firmly established at this facility despite the extensive breeding habitat that was available. *Aedes atropalpus* was the predominant mosquito in tires that were uncovered. Large populations of *Cx. restuans* and *Cx. pipiens* were present in tires that supported decomposing organic material. *Aedes albopictus* larvae were eventually detected in some of the samples that contained *Ae. atropalpus* but larval density was extremely low. Further surveillance showed that the facility was situated on the perimeter of the mosquito's distribution in the Keyport area and was probably not the original point of introduction.

The collections from Monmouth County, NJ, currently represent the northernmost record for *Ae. albopictus* on the eastern seaboard. Although the Keyport site is approximately 50 km south of the point where the 0°C daily mean January isotherm crosses the North American seacoast according to Court (1974), local weather station data indicate that Keyport, NJ, has a normal daily mean January temperature that approaches −1°C (Anonymous 1993). The Keyport strain has been colonized at the Department of Entomology at Rutgers University. Eggs will be tested for cold hardiness and critical period for diapause to determine probable origin and ability to overwinter at this latitude (Craig 1993, Estrada-Franco and Craig 1995). The Keyport area will also be closely monitored to determine if

the mosquito overwinters successfully and expands beyond its current distribution.

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