

## SHORT COMMUNICATION

### *Aedes aegypti* (DIPTERA: CULICIDAE) IN ST. JOSEPH COUNTY, INDIANA

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**ABSTRACT.** Two adult female specimens of *Aedes aegypti*, the Yellow Fever mosquito, were collected on separate occasions in September of 2006 at a collection site in St. Joseph County, Indiana. The eggs of this species are not believed to be capable of surviving the winter in this area and were most likely introduced with a shipment of used automobile tires to a tire recycling facility located near the collection site. This finding emphasizes the need for caution and the potential for transport of exotic species in cargo shipments of this kind, and also represents the northernmost report of this species in the midwestern United States to date.

**Keywords:** Mosquito, Indiana, *Aedes aegypti*, introduced species

The mosquito *Aedes (Stegomyia) aegypti* (Linnaeus) (Diptera: Culicidae) may be found throughout the tropics and subtropics and is a well-known pest and the primary vector of several serious arboviruses, including Yellow fever, Dengue, and Chikungunya (Womack 1993). Wild specimens have also been found infected with the West Nile virus in the United States (CDC 2005). The usual range of this species extends only as far northward as the southern border of Tennessee (Darsie & Ward 2004), as they are unable to survive the prolonged freezing temperatures of more northern winters (Hawley et al. 1989; Womack 1993). However, scattered reports of *A. aegypti* from several counties in southern Indiana (Christensen & Harmston 1944, Hart 1944; Siverly 1972) indicate that accidental introductions of or invasions by this species are not as uncommon as might be expected, while the collection of larvae from standing water in Clark County (Christensen & Harmston 1944) suggests that imported specimens may be capable of temporary breeding that could produce significant numbers of offspring over the course of a summer. More disturbingly, Christensen & Harmston (1944) also report the collection

of several blood-seeking adult *A. aegypti* collected inside residences in Terre Haute, Indiana in January of 1943. Larvae and pupae were discovered in a bowl of water containing an aquatic houseplant, and more continued to appear and emerge over the following weeks. It is not, therefore, impossible that this species could survive even the coldest winter if suitable shelter is available.

#### METHODS

Both specimens were captured in dry ice-baited CDC-style light traps (American Biophysics Corp.) used for mosquito and West Nile virus surveillance by the St. Joseph County Health Department and the University of Notre Dame. One gravid trap (John W. Hock Co.), baited with an infusion of grass clippings, and one dry ice-baited CDC-style light trap were set at each of nine sites two nights per week beginning on 3 May 2006. Three additional trapping sites were subsequently added in response to collections of dead birds infected with the West Nile virus, for a total of 12 collection sites distributed throughout St. Joseph County. Specimens

were killed by freezing and identified by morphological characters (Siverly 1972).

The site from which *A. aegypti* was subsequently collected, located on private property in North Liberty, Indiana, was one of those added to the surveillance program in mid-season. A dry ice-baited light trap was set at this site two nights per week beginning on 17 August 2006 and ending on 26 October 2006. No gravid trap was available for this site. Single adult female specimens of *A. aegypti* were collected from the North Liberty site on 15 September and 22 September 2006.

#### DISCUSSION

While the lack of freeze tolerance in *A. aegypti* makes permanent breeding in northern Indiana unlikely, this event does highlight the need for caution regarding the transportation of tires and other containers in which eggs may be laid. It should also serve as a reminder to scientists and public health workers in northern states of the need for awareness of

this and other exotic species which may occasionally form a significant part of our local fauna, however temporarily.

#### LITERATURE CITED

- CDC. 2005. Mosquito species producing WNV positives by year. Centers for Disease Control and Prevention.
- Christensen, G.R. & F.C. Harmston. 1944. A preliminary list of the mosquitoes of Indiana. *Journal of Economic Entomology* 37:110–111.
- Darsie, R.F. & R.A. Ward. 2004. Identification and Geographical Distribution of the Mosquitoes of North America, North of Mexico. University Press of Florida, Gainesville, Florida.
- Hart, J.W. 1944. A preliminary list of the mosquitoes of Indiana. *American Midland Naturalist* 31: 414–416.
- Siverly, R.E. 1972. Mosquitoes of Indiana. Indiana State Board of Health, Indianapolis, Indiana.
- Womack, M. 1993. The yellow fever mosquito, *Aedes aegypti*. *Wing Beats* 5:4.
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