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EVALUATION OF SIX MOSQUITO TRAPS FOR COLLECTION OF *AEDES ALBOPICTUS* AND ASSOCIATED MOSQUITO SPECIES IN A SUBURBAN SETTING IN NORTH CENTRAL FLORIDA[1]

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ABSTRACT. We compared 6 adult mosquito traps for effectiveness in collecting *Aedes albopictus* from suburban backyards with the goal of finding a more suitable surveillance replacement for the Centers for Disease Control and Prevention (CDC) light trap. Trap selection included 2 commercial propane traps (Mosquito Magnet™ Professional trap and Mosquito Magnet Liberty trap), 2 *Aedes*-specific traps (Fay-Prince Omnidirectional trap and Wilton trap), 1 experimental trap (Mosquito Magnet-X trap), and a standard surveillance CDC light trap that served as a control. Traps that did not generate carbon dioxide were provided with bottled CO_2 at a flow rate of 500 ml/min. Those traps designed for use with chemical attractants (Mosquito Magnet traps) were baited with Lurex™ (L-lactic acid) and octenol (1-octen-3-ol) commercial baits, known attractants to *Ae. albopictus*. Three repetitions of a 6×6 Latin square test yielded a total of 37,237 mosquitoes, of which 5,280 (14.2%) were *Ae. albopictus*. Significantly more ($P < 0.05$) *Ae. albopictus* were collected from the experimental and commercial traps (4,244/5,280; 80.3%) than from the CDC light trap and *Aedes*-specific traps. The Mosquito Magnet Liberty collected the most *Ae. albopictus* (1,591), accounting for 30.1% of the total take, followed closely by the Mosquito Magnet-X (1,468) and the Mosquito Magnet Pro (1,185). The omnidirectional Fay-Prince trap performed better than the CDC or Wilton trap. Twenty-seven mosquito species were collected during these trials, 9 species in large enough numbers for meaningful analysis. *Aedes albopictus* was the second most common mosquito trapped. The results of these trials indicate that propane-powered commercial traps would serve as useful substitutes in lieu of CDC traps in *Ae. albopictus* surveillance efforts. Trap features advantageous for collecting *Ae. albopictus* and other mosquito species are discussed.

KEY WORDS *Aedes albopictus*, Mosquito Magnet Professional trap, Fay-Prince trap, CDC Wilton trap, Mosquito Magnet-X trap, Mosquito Magnet Liberty trap

INTRODUCTION

Aedes albopictus (Skuse), a competent vector of dengue viruses and dog heartworm, has expanded its range throughout the southeastern and central portions of the United States from 911 counties in 25 states in 1999 (Moore 1999), to 1,035 counties in 32 states including California (Linthicum et al. 2003) as of December 2004 (McKnight, personal communication). *Aedes albopictus* became established in Hawaii approximately a century before its introduction into the continental USA (Perkins 1913, Sprenger and Wuithiranyagool 1986). It is particularly well adapted for colonizing artificial containers and the forested environs typically found in suburban settings in much of the USA. Once established, it rapidly reaches nuisance population levels and has proven difficult to control. Like other *Aedes* (*Stegomyia*) mosquitoes (including *Aedes aegypti* L.), *Ae. albopictus* are small black and white mosquitoes, weak fliers, mostly silent in flight, and often capable of taking a blood meal with no immediate noticeable effect. *Aedes aegypti* and *Ae. albopictus* are the most important yellow fever and dengue virus vectors in most of the world. Although *Ae. aegypti* preferentially feeds on man (Harrington et al. 2001) and breeds almost exclusively in artificial containers, *Ae. albopictus* is an aggressive opportunistic feeder (Savage et al. 1993) and breeds in both natural and artificial containers (Hawley 1988), facilitating its colonization of suburban and rural areas while consequently making it more difficult to control than other peridomestic mosquitoes.

Unfortunately, diurnally active mosquitoes do not respond well to light traps; such is the case with most *Aedes* (*Stegomyia*) mosquitoes (Thurman and Thurman 1955), making distribution and population assessments difficult with commonly used adult mosquito surveillance traps such as the New Jersey light trap or the Centers of Disease Control and Prevention (CDC) light trap (Service 1993).

Several traps designed for surveillance of *Ae. aegypti* may also be effective for collecting *Ae. albopictus*. *Aedes*-specific traps rely on key visual features deemed highly attractive to lure them to these traps, which are often baited with dry ice or bottled carbon dioxide to increase capture (Rudolfs 1922, Gillies 1980). Highly attractive

[1] This paper reports the results of research only. Mention of a proprietary product does not constitute an endorsement or a recommendation by the U.S. Navy or USDA for its use.

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