

A Comparison of the Efficacy of Several Models of Mosquito Magnet[®] Traps Baited with Lurex³ versus Commercially Available Traps Supplied with Octenol on the Collection of Mosquitoes in Oahu, Hawaii, Primarily *Aedes albopictus*, September 2004.

K.E. McKenzie¹ and S.D. Bedard²

Summary*

In August and September of 2004, five commercially available mosquito traps were compared using a Latin square test design. The Mosquito Magnet[®] Professional and Mosquito Magnet[®] Liberty Plus, both utilizing Lurex^{3™} as the secondary attractant, performed significantly better than all other traps tested for collecting Total Culicidae ($p < 0.08$). All Mosquito Magnet[®] products utilizing Lurex^{3™} collected significantly more *Aedes albopictus* than the Coleman MD-2500 that used Octenol ($p < 0.01$).

Mosquito traps have been used to monitor mosquito populations and to help in general research for over 50 years (Schreck et al. 1970). The traps that were typically used required an external power source and the use of a Carbon dioxide tank plus light and sometimes Octenol to attract mosquitoes (Kline 2002). Some species such as the Asian Tiger mosquito, *Aedes albopictus*, are extremely difficult to collect (Jensen et al. 1994). This mosquito also proved to be a relatively fast spreading, voracious daytime biter, making it one of the lead pest species in areas where it has established (Moore et al. 1988). This study was designed to compare the efficacy of a new mosquito attractant developed to specifically target *Aedes albopictus*.

Five commercially available mosquito traps were evaluated in this study (Table 1). The testing was conducted in Oahu, Hawaii, in a local botanical garden. Individual trap sites were chosen that were approximately 80 meters apart. This spacing was designed to prevent trap interference and was based on trap coverage area claims. A basic Latin square design was implemented to evaluate the efficacies of the traps involved in testing. Each trap was randomly placed in one of the chosen sites on day one of testing. Each trap was put together and operated based upon manufacturers' instructions found within the original trap boxes. Traps were rotated at 48 hour intervals, at approximately the same time each day. Contents of trap nets were frozen and then later counted and identified. Nets were replaced each day. Three repetitions were conducted; a repetition was defined as the amount of time required for each trap to have successfully trapped at each site. If for any reason there was a trap failure, traps would be restarted and rerun without rotating. Nets would be replaced before the rerun.

¹ Medical Entomologist, American Biophysics Corp., North Kingstown, RI 02852.

² R&D Technician, American Biophysics Corp., North Kingstown, RI 02852.

* Excerpt of Data.

Table 1. Traps used in Oahu, Hawaii Lure Comparison Study.

Designation	Treatment
Trap 1	Mosquito Magnet [®] Professional + Lurex ^{3™}
Trap 2	Mosquito Magnet [®] Liberty Plus + Lurex ^{3™}
Trap 3	Coleman: MD-2500 + Coleman Octenol
Trap 4	Mosquito Magnet [®] Defender + Lurex ^{3™}
Trap 5	Mosquito Magnet [®] Liberty Plus + Octenol

Raw data (Figure 1) were normalized using a standardizing equation ($\sqrt{N + 1}$), then analyzed using a standard t-test assuming unequal variances.

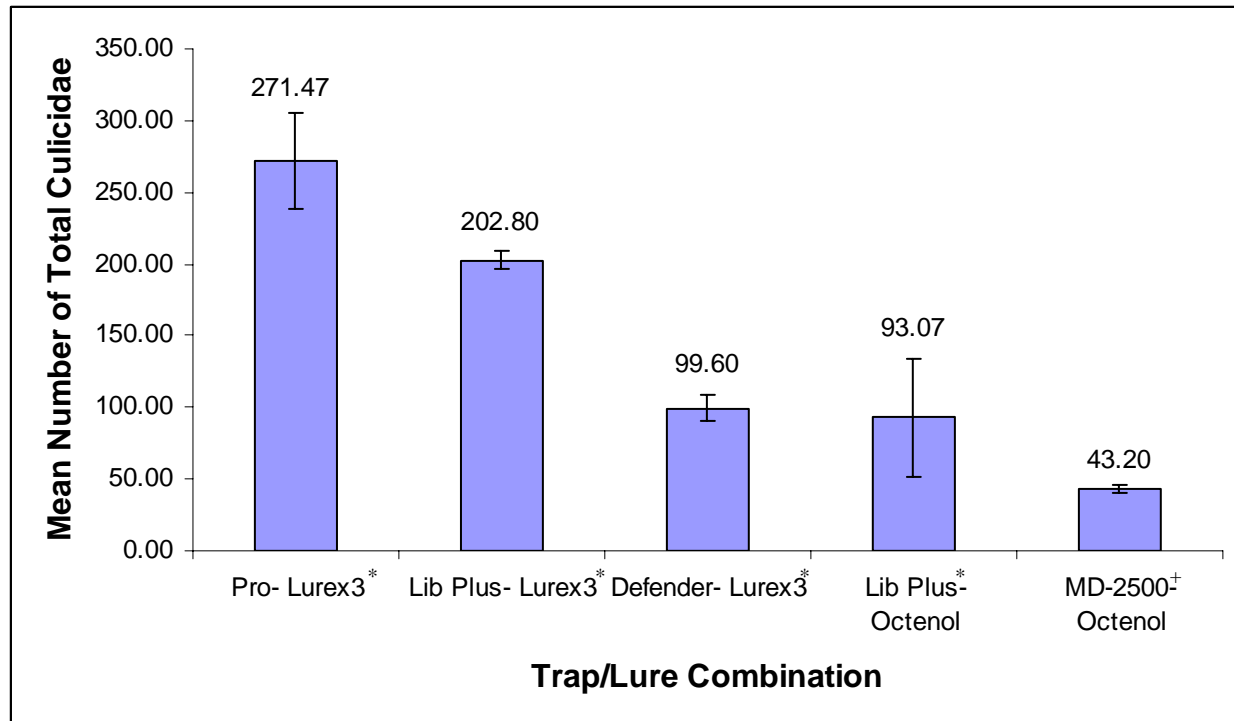


Figure 1. Raw Data Comparison of Mosquito Traps versus Average Number of Total Mosquitoes Collected in Oahu, Hawaii; Fall 2004.

* Mosquito Magnet[®] Line of mosquito traps.

+ Coleman Line of mosquito traps.

There was only a slight difference between the Mosquito Magnet[®] Professional and the Mosquito Magnet[®] Liberty Plus, both utilizing Lurex^{3™} for Total Culicidae collected ($p = 0.08$). This was also true for *Aedes albopictus* collected ($p = 0.09$). Subsequently both traps caught significantly more *Aedes albopictus* as well as Total Culicidae than all other traps ($p < 0.10$). Overall the traps that used Lurex^{3™} caught significantly more mosquitoes than traps that used Octenol. The exceptions were; the small Mosquito Magnet[®] Defender with Lurex^{3™} was not significantly different than the Coleman MD-2500 at collecting Total Culicidae and it also did not collect significantly more *Aedes albopictus* than the Mosquito Magnet[®] Liberty Plus with Octenol (Figures 2 & 3).

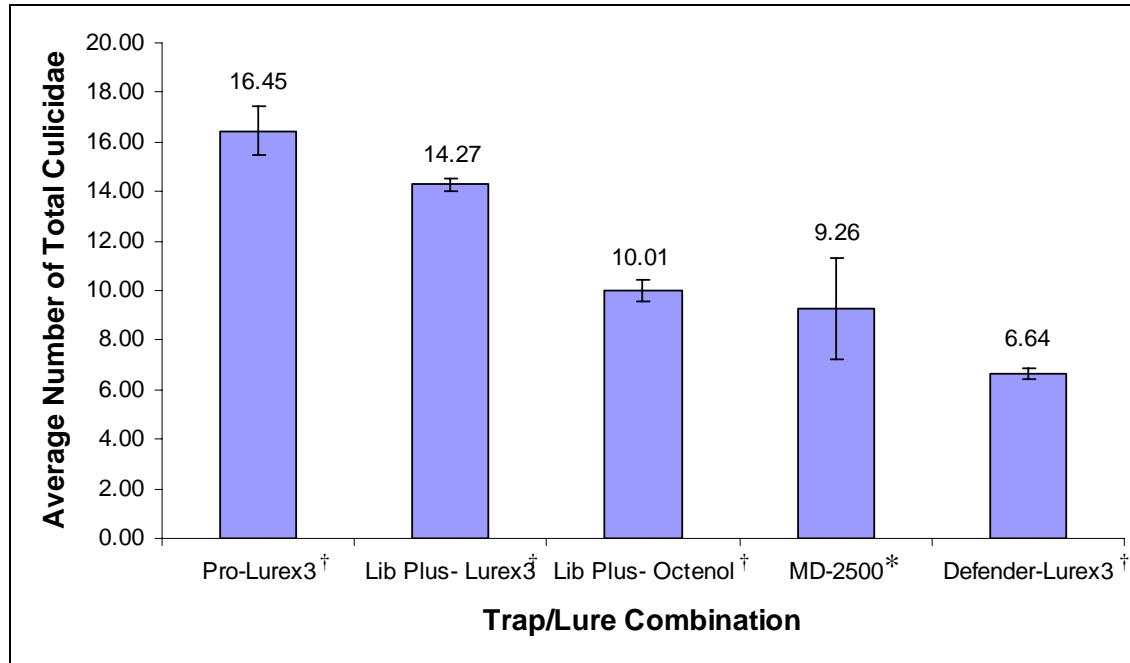


Figure 2. Comparison of Mosquito Traps and Different Lures versus Average Number of Total Mosquitoes Collected in Oahu, Hawaii: Fall 2004, Normalized Data (SQRT (N +1)).

* Coleman Line of mosquito traps.

[†] Mosquito Magnet[®] Line of mosquito traps.

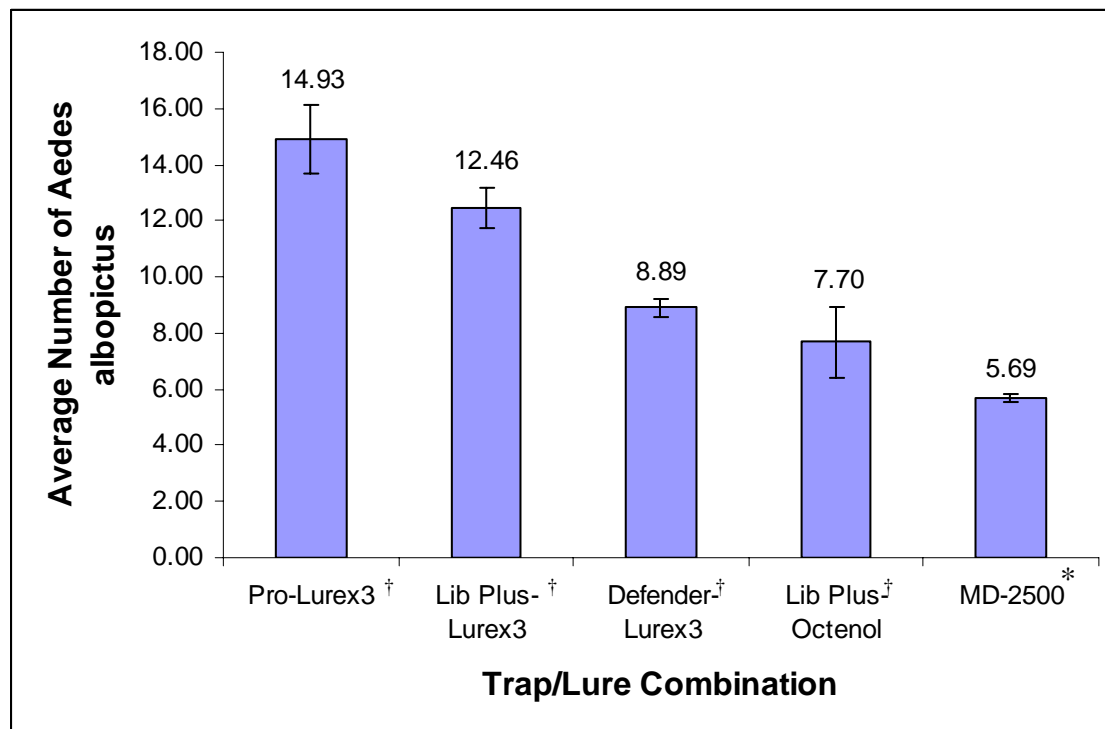


Figure 3. Comparison of Mosquito Traps and Different Lures versus Average Number of *Aedes albopictus* Collected in Oahu, Hawaii: Fall 2004, Normalized Data (SQRT (N +1)).

* Coleman Line of mosquito traps.

[†] Mosquito Magnet[®] Line of mosquito traps.

In general, Mosquito Magnet[®] products collected more mosquitoes than the Coleman trap. The Mosquito Magnet[®] Pro, Mosquito Magnet[®] Liberty Plus and Mosquito Magnet[®] Defender, all with Lurex^{3™} caught 528%, 369% and 131% more mosquitoes, respectively, than the Coleman trap (Figure 1). As evidenced by this study, Lurex^{3™} outperformed Octenol for the collection of the Asian Tiger mosquito, *Aedes albopictus*. Catch rates of traps using Lurex^{3™} increased by 118% when using the same model trap, Mosquito Magnet[®] Liberty Plus, and by at least 369% when using a competitive trap, using Octenol, with comparable specifications to the Mosquito Magnet[®] Liberty Plus. More studies need to be conducted in other regions of the country where *Ae. albopictus* is an issue, to verify this increased catch rate using Lurex^{3™}.

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