

Arboviral Diseases Branch Billet

During ongoing mosquito-borne disease outbreaks, reducing infected female adult mosquitoes is the primary approach to minimizing human infections, and this requires adulticide treatments. Adulticide treatments are most effective when adult mosquitoes are most active - flying about seeking blood meals. The aim of this study is to determine the activity patterns of the WNV vectors in Phoenix, AZ. Phoenix has endured several large WNV outbreaks in the past 10 years however, the activity patterns of the WNV vector populations in Phoenix have not been specifically investigated and are currently not well understood. Geographic populations of the same vector species may have different activity patterns, and this is almost never investigated. Knowledge of the activity patterns can help guide the timing of adulticide treatments and improve the effectiveness these treatments.

Although two different species, *Cx. restuans* and *Cx. pipiens*, are involved in the transmission of WNV in the upper Midwest, only *Cx. pipiens* is routinely targeted by vector control programs. The early season *Cx. restuans*, is rarely targeted primarily because it is usually not associated with biting humans and its peak abundance not associated with arboviral outbreaks. However, *Cx. restuans* is very important in the amplification of WNV in bird populations; *Cx. pipiens* picks up WNV from the birds and transmits it to humans. Without the early amplification cycles of WNV in the bird population there may be very limited WNV in the bird population to be transmitted by *Cx. pipiens* and therefore less chances of WN outbreaks. North Shore MAD, directly North of the city of Chicago, IL has been initiating vector control as soon as the snow melts, usually in early to mid-April. On the other hand, the city of Chicago initiates vector control in mid-June; targeting the primary epidemic vector *Cx. pipiens*. The aim of this project is to compare entomological parameters between southern North Shore MAD and Northern Chicago to find out if there are different WNV transmission dynamics between these two areas.

The CDC autocidal gravid ovitraps (AGO) traps have been demonstrated to be effective in sustained area-wide control of *Ae. aegypti* in Puerto Rico. Furthermore, the AGO traps were shown to reduce the incidence of chikungunya virus (CHIKV) infections in communities and in mosquitoes in Puerto Rico. However, there is limited information on the effectiveness of AGO traps in the CONUS and no information on sustained area-wide mosquito control. The aim of this study is to find out if AGO traps are effective in the CONUS. The study area is the city of Miami, and the target vector species is *Ae. aegypti*. Large numbers of female *Cx. quinquefasciatus* are captured in the AGO traps; this method may be used to control this species as well.