Invasive *Aedes* Surveillance Network in Alameda County

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INTRODUCTION

Surveillance for invasive *Aedes* mosquitoes in urban landscapes is challenging because they tend to disperse short distances from sites of emergence, may not be strongly attracted to traps that are commonly used to monitor *Culex spp.* abundance, and breed cryptically using small ubiquitous containers. Accurately defining the geographic distribution and abundance of invasive *Aedes* mosquitoes is critical for effective control efforts. Traps that are currently used for surveillance by mosquito control agencies can be burdensome because they are costly to purchase (e.g. BG-Sentinel®) or require a large workforce to replace mosquito attractants (e.g. EVS dry ice-baited traps and water-baited oviposition cup traps (OCT).

METHODS

To overcome the large workforce needed for invasive *Aedes* surveillance using OCT, we developed a modified oviposition trap that contains a larger volume of water and Altosid® 30-day briquettes to prevent larval development. Total cost for manufacturing each OBT (oviposition bucket trap) was $2.80 and 3 minutes of labor. The OBT can be inspected less frequently than OCT because the water attractant is retained in the trap for at least 30 days.

RESULTS

The modified OBT enabled the Alameda County Mosquito Abatement District to deploy an *Aedes* trap network that consisted of 660 OBTs that were distributed throughout Alameda County where people reside or work (land area of 2,130 km^2, of which approximately 800 km^2 contain residences). The trap network was deployed by two seasonal lab technicians over the course of one month. More time was needed to identify trap locations using Google Maps compared to finding trap locations while driving, except in highly urbanized areas where first identifying the trap sites using Google Maps was more efficient, potentially because of the challenges of finding spaces for truck parking in dense urban settings. Trap site locations and photos of trap placements were mapped using Google Maps. OptiMap web services were used to optimize driving time between trap sites. Approximately 200 h of work effort, or 25 full-time work days, was used to inspect and service the *Aedes* trap network each month (20 min per trap, inclusive of driving time). Use of OBT in high density trap networks for monitoring invasive *Aedes* mosquito abundance in highly populated and large landscapes where these species have not been established may be an economical and effective alternative to OCT.