

Field evaluation of a one gallon-sized oviposition trap for invasive *Aedes* mosquito surveillance.

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Monitoring for invasive *Aedes* mosquitoes is critical for defining the geographic region of an invasion and estimating the intensity of mosquito oviposition in the area. A commonly used surveillance method for detecting gravid invasive *Aedes* mosquitoes is the ovitrap cup. Although the ovitrap cup is effective for detecting invasive *Aedes* mosquitoes, employing this trap during hot summer months or over broad geographic areas is labor intensive because the water in this small-volume trap must be frequently replenished to maintain the water vapor attractant. Moreover, the relatively narrow base of the ovitrap cup makes it unstable and easily tipped, resulting in the loss of trap contents. We developed a low cost and simple-to-build ovitrap bucket that incorporates a perforated lid that maintains 76 % of the lid surface to prevent large debris from entering the trap and to reduce water evaporation (Figure 1). The ovitrap bucket contains 8 – 10 times more water than the one pint ovitrap cup, thereby retaining water and attracting mosquitoes for up to 25 days, and a methoprene tablet that is added to prevent mosquito emergence allowing for the identification of hatched larvae.

Comparison of 19 adjacently-placed ovitrap cups and buckets in the City of Madera, where *Aedes aegypti* were present during the September – October, 2016 study period, showed that the bucket

traps captured approximately twice as many *Aedes* eggs relative to the cup traps (total of 5,937 invasive *Aedes* eggs trapped over 28 days; bucket, n = 3,997 eggs (67 %); cup, n = 1,940 eggs (33 %)).

Because the water vapor attractant persisted in the ovitrap buckets for a longer time, the work effort needed to inspect a network of oviposition traps may be reduced if oviposition buckets are utilized instead of oviposition cups.

In summary, the ovitrap bucket trapped more invasive *Aedes* eggs compared to the ovitrap cups, and integrating ovitrap buckets into a surveillance program may reduce the work effort needed to deploy and inspect a oviposition trap network.



Figure 1. Assembled ovitrap bucket with oviposition substrate. A one-gallon black bucket with a lid perforated with 3/4 inch holes, 1/16 inch drain holes placed 3 5/8 inch from the top of the bucket, germination paper-wrapped wooden paint paddle stirrer for the oviposition substrate, containing one Altosid 30-day briquette and approximately 2 liters of water.