

Use of a Pop-Up Garden Waste Bag as a Resting Mosquito Trap for Mosquito Surveillance

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INTRODUCTION

Mosquitoes in marsh habitats blood feed predominantly on wildlife where they may acquire and transmit arboviruses such as West Nile virus (Molaei et al. 2010). Carbon dioxide baited encephalitis virus survey (EVS) traps typically capture host-seeking mosquitoes, with blood-fed and gravid mosquitoes rarely present in this type of trap. As the blood-fed and gravid mosquitoes are more likely to be infected with arboviruses compared to those that are host-seeking, we sought to determine whether a resting box trap would improve our catch of virus-infected mosquitoes.

METHODS

Construction of the human-powered resting shelter trap that was described previously (Burkett-Cadena et al. 2019) was time consuming and laborious. Particularly vexing was lining the entire surface area of the trap with plastic and producing the mosquito capture lid from a plant container (Burkett-Cadena et al. 2019). As a result, we sought ready-made products that were similar to the resting shelter trap mentioned above and found that a 45-gallon pop up yard waste bag and a plastic garbage can lid available online or a local hardware store were efficient alternatives. The pop-up yard waste bag measuring 27 inches tall and 22 inches in diameter was made of durable canvas material, black on the interior with a green exterior. Thus, the shape and color were similar to what was described previously (Burkett-Cadena et al. 2019); however, it was somewhat larger. The mosquito collection apparatus (MCA) was manufactured by cutting a 4.5-inch diameter hole into the center of a 22-inch plastic lid and fitted with the funneled end of a mosquito breeder apparatus (model 1425; Bioquip, Rancho Dominguez CA). A large black wet bath towel (52x29 inches) was placed inside the RMT to produce a humid environment that encouraged mosquitoes to enter the trap and to increase the mass of the RMT so that it was less likely to be moved by wind or animals. RMT were deployed for at least 4 days prior the first collection date so

that mosquitoes became acclimated to its presence in the area. To capture mosquitoes, the MCA was rapidly placed over the front opening, the RMT rotated with the MCA facing upward and the RMT pressed down rapidly at least 4 times to expel the mosquitoes from the RMT into the collection chamber of the MCA (Poster).

RESULTS AND CONCLUSION

Using the 45-gallon pop-up Garden Waste Bag as a RMT we were able to capture gravid and blood fed and male mosquitoes. A substantial advantage of the RMT over many other mosquito trap designs is that our design does not require electrical power. The RMT collected 14 of the 22 mosquito species that commonly occurred in Alameda County during the spring of 2019 (Poster). Over 325 trap nights, the RMT captured a total of 1,131 (3.48 mosquitoes / trap night). We found a similar proportion of male and female mosquitoes collected in the RMT with no species bias. However, there was more *Cx. tarsalis* male mosquitoes in the traps as opposed to females. Most of the female mosquitoes that were captured in the RMT were either blood-fed or gravid.

The RMT is an inexpensive and simple to use trap. It is one quarter the cost of buying a commercially available resting box trap and it can be easily integrated into existing mosquito monitoring programs by simply placing it at EVS trap sites and collecting the contents of the RMT while picking up the EVS trap.

REFERENCES

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