

Saving resources by utilizing a novel reel dipper to inspect out-of-reach sources

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INTRODUCTION

Dipper tools to survey water sources for mosquito larvae are typically comprised of a white cup that can hold up to 330 ml of water and is attached to a handle of 90 – 175 cm in length. Traditional dippers are highly effective to inspect water sources for mosquito breeding if the water is within easy reach of the mosquito control worker. However, some water sources, such as open settling tanks at waste water treatment plants, are difficult or dangerous to access when using traditional dippers. Consequently, workers may be inclined to apply larvicide at high-risk out-of-reach breeding sources without having an accurate estimate of mosquito larvae density.

METHODS

We employed a short fishing pole and reel with the line attached to a 150 ml plastic vial that was weighted with a metal

washer to dip tanks at waste water treatment facilities. To dip with the reel-based dipper, the fishing pole was suspended over the water and the weighted vial quickly released directly downward, into the water. Upon striking the water, the vial filled rapidly and was immediately retrieved by winding the spool of the fishing reel. The retrieved water was deposited into a traditional dipper to estimate larval density.

RESULTS

When tested at a waste water treatment facility during 2017, the reel-based dipper retrieved fewer larvae from hard-to-reach breeding sources than collected during the prior year, resulting in less work effort and lower quantities of larvicide (Vectorbac G) (reduced by 9 h and 119 lbs, respectively). This study highlights the value of developing novel approaches and equipment to inspect atypical and hard to access mosquito breeding sources.