

ABSTRACT

Source Reduction with A Purpose: Mosquito Ecology and Community Perspectives Offer Insights for Improving Household Mosquito Management in Coastal Kenya

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Understanding mosquito breeding behavior as well as human perspectives and practices are crucial for designing interventions to control *Aedes aegypti* mosquito-borne diseases as these mosquitoes primarily breed in water-holding containers around people's homes. The objectives of this study were to identify productive mosquito breeding habitats in coastal Kenya and to understand household mosquito management behaviors and their behavioral determinants. The field team conducted entomological surveys in 444 households and semi-structured interviews with 35 female caregivers and 37 children in Kwale County, coastal Kenya, between May and December 2016. All potential mosquito habitats with or without water were located, abundances of mosquito immatures measured and their characteristics recorded. Interviews explored household mosquito management behaviors and their behavioral determinants. 2,452 container mosquito habitats were counted containing 1,077 larvae and 390 pupae, predominantly *Aedes* species. More than one-third of the positive containers were found outside houses in 1 of the 10 villages. Containers holding water with no intended purpose contained 55.2% of all immature mosquitoes. Containers filled with rainwater held 95.8% of all immature mosquitoes. Interviews indicated that households prioritize sleeping under bednets as a primary protection against mosquito-borne disease because of concern about night-time biting, malaria-transmitting *Anopheles* mosquitoes. Respondents had limited knowledge about the mosquito life cycle, especially with respect to day-time biting, container-breeding *Aedes* mosquitoes. Therefore, respondents did not prioritize source reduction. Most mosquitoes breed in containers that have no direct or immediate purpose ("no-purpose containers"). These containers may be left unattended for several days allowing rainwater to collect, and creating ideal conditions for mosquito breeding. An intervention that requires little effort and targets only the most productive containers could effectively reduce mosquito indices and, relatedly, mosquito-borne disease risk.