



IMAGE CREDIT: Michelle L. D'Souza

# POLLINATORS OR NECTAR THIEVES? THE ROLE OF MALARIA-TRANSMITTING MOSQUITOES IN POLLINATION

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## ***Establishing the impact of the *Anopheles gambiae* complex on fruit sets and their role in a natural pollinator community***

**P**ollination is an important ecosystem service that is necessary for the reproduction of over 90% of the 250,000 species of modern vascular plants. The diversity of wild plants and food crops depend on the diversity of animal pollinators, hence a reduction and/or loss of either will affect the survival of both.

Due to their ecological and economical importance, studies on pollinator communities and conservation efforts have generally focused on bees (Hymenoptera), butterflies (Lepidoptera) and hoverflies (syrphid Diptera). However, there is a paucity of information on the potential influence

of other flower-visiting insects (i.e., non-syrphid Diptera) on pollination. Non-syrphid Diptera are diverse, common, widely distributed, and among the most ubiquitous insect species in both natural and managed habitats. Hence, collectively, they may be more important pollinators than previously understood.

The malaria-transmitting mosquito complex *Anopheles gambiae* is not a known pollinator of any plant. Yet they visit flowers to feed on nectar, and thus have the potential to pollinate flowers. However, many malaria control strategies, including [Target Malaria's](#) approach, target the vector,

hence it is important to assess the impact of these mosquito species on pollination and seed sets, as well as to study their role in the pollination community network.

My research will provide a better understanding of the ecological role of *An.gambiae* using both observational and experimental studies. I will collect both male and female *An. gambiae* from their resting places in rooms, abandoned houses, beneath grasses, and on public toilets among others, within the study areas. Through DNA metabarcoding, I will identify pollen attached to each collected *An. gambiae* and use the results to determine the plants that are visited and potentially pollinated by them.

To establish the impact of *An. gambiae* pollination on fruit set, I will raise several plants including those known to be visited by *An. gambiae* in a semi-field environment. I will designate the plants into three groups: In the first, *An. gambiae* will be introduced as the only pollinator; the second group will be opened to all pollinators and; the third group (i.e., control) will be kept away from all pollinators. I will use the number and quality of fruit sets and dry weight of fruit yield in each group to determine the impact of *An. gambiae* pollination on plant reproduction.

This research will identify potential consequences of new and existing methods to control the malaria vector, especially as current interventions typically rely on insecticide sprays and insecticide-treated bed nets that are less species-specific and therefore affect a broader range of species.

**THIS RESEARCH IS PART OF A LARGER EFFORT BY TARGET MALARIA IN GHANA TO UNDERSTAND THE ROLE OF THE *AN. GAMBIAE* MOSQUITO IN THE BROADER ECOSYSTEM.**

For more information see:

*The important interactions behind the itch*

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