Malaria mosquitoes in the Solomon Islands are a single population that bite early and outdoors

Malaria transmission is controlled with interventions placed to protect people when they are indoors and sleeping, being bednets and indoor residual surface sprays. These interventions are most effective against mosquitoes that bite people when they are indoors during the night time. Knowing the importance of mosquito feeding behaviour, we questioned if individual mosquitoes repeat these behaviours during successive feeding events. This is important because if an individual mosquito repeatedly feeds outside of houses, then it is unlikely to be exposed to the malaria control tools. This question was examined with a series of mark-release-recapture experiments.

Anopheles farauti mosquito that has been marked with green fluorescent dust for the mark-release-recapture experiment.

The results of the experiments were that the malaria mosquito, *Anopheles farauti*, was a single population regarding time (early evening or late night) and location (indoor or outdoor) of blood

feeding. While most mosquitoes fed early and outdoors, and would repeat those behaviours, some fed late at night and indoors in the next feeding cycle. This finding is significant, because during the multiple feeding cycles that a mosquito takes during the time required to become infective with malaria parasites, many individual female mosquitoes will enter houses late at night and be exposed to the insecticides used in bednets or indoor residual sprays. These findings provide an explanation for the seeming anomaly that indoor interventions can effectively control mosquitoes considered outdoor biting. However, because most of the mosquito bites occur outdoors, the bednets and indoor residual spraying may not be capable of eliminating malaria on their own but they should be the foundation upon which a successful control program can build.

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