

**Impact of changed feeding behaviour of *An. funestus* on
malaria transmission in southern rural Tanzania**

by

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ABSTRACT

In Tanzania both *Anopheles funestus* and *An. gambiae s.l.* play a role as major vectors of malaria. Different species exist in the *An. funestus* group and the *An. gambiae* complex and play different roles in disease transmission. For malaria vector control programmes knowledge of vector species and their behaviour is key. A recent report on increased exophagy of *An. funestus* in southern rural Tanzania as a response to increased use of insecticide treated bed nets raised the question of whether there was misidentification of species and/or behavioural insecticide resistance playing a part. The present study used molecular tools to identify the species and determine human biting rates indoors and outdoors along with development and field evaluation of a new tool for sampling malaria vectors which is more effective than human landing catches.

The results showed that the majority (96.2%) of the *An. funestus* group that were collected were *An. funestus s.s.* by PCR assay. Also, the exophagic proportion (45.9%) of *An. funestus* was lower than the endophagic proportion (54.1%), similar to other places in Africa, although in this study the difference was insignificant when untreated bed nets and treated bed nets were used. In addition, there was significant outdoor biting activity early in the evening that could lead to the malaria transmission cycle being unaffected by ITNs. The new trap, “Sticky Bucket Trap”, caught considerably fewer mosquitoes (14.2%) than that caught by human landing catches (85.8%), with statistical significance of $P > 0.05$. These results imply that the sticky bucket trap is not a suitable substitute for human landing catches and some modifications are needed to make it more effective. Whereas indoor and outdoor proportions insignificant difference in feeding preference imply that both indoor and outdoor interventions should be used to control this vector.

