

Title of thesis: Biophysical factor influencing oviposition site selection behavior of female *Anopheles gambiae* sensu lato in a semi-field

ABSTRACT

Background

Mosquitoes of the *Anopheles gambiae* sensu lato complex consist of nine morphologically indistinguishable species. Some females of the species transmit malaria causing parasites and preferentially lay eggs in aquatic habitats with different biophysical compositions. These factors likely influence their oviposition site selection behaviour. Little is known about the influence of these biophysical factors on the oviposition site selection behaviour of some species of gravid *An. gambiae* s.l.

Methods

Artificial aquatic habitats were randomly planted in two compartments of the semi-field. Aquatic macroinvertebrate predators, maize and rice pollens, intraspecific and interspecific mosquito larvae were randomly inoculated into each habitat. Wild-caught gravid *An. gambiae* s.l. were released into each compartment to lay eggs. In some objectives, eggs were counted and returned to the habitats and the resultant larvae were counted until pupation. In one objective, no external organism was added in small and large contrasting habitat sizes while in another, similar habitat sizes were inoculated with intraspecific and interspecific 3rd larval instars. Subsequently, the 3rd larval instars of the released mosquitoes were preserved for species identification and siblingship analyses.

Results

Gravid females preferred to lay eggs in habitats without predators over those with predators, rice over maize pollens, smaller over larger habitats, those without mosquito larval competitors over those with competitors, and those with conspecific than those with interspecific mosquito species. Mosquito larvae significantly developed into 4th larval instar and pupae in habitats with maize pollen, those without predators and mosquito larval competitors than their comparators. Skip-oviposition was high across smaller than larger habitats, those without mosquito larval competitors followed by conspecific larvae.

Conclusions

This study showed that habitat size, presence of aquatic macroinvertebrates, mosquito larval competitors, rice and maize pollens in aquatic habitats are important biophysical factors influencing ovipositing site selection behaviour in female *An. gambiae* s.l.