Occurrence and distribution of *Anopheles* mosquitoes in Bura District, northern Kenya

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Introduction

Malaria is a disease of public health concern in sub-Saharan Africa. In Kenya, parasite prevalence has been stratified into various eco-epidemiological zones. Intensive vector control interventions have been implemented resulting in slight decline of malaria occurrence especially in disease endemic areas. Northern Kenya is an arid and semi arid area which is characterized with seasonal malaria transmission. Information on vector prevalence in this area is scanty therefore this study sought to investigate the occurrence of *Anopheles* species and malaria parasite in Bura, northern Kenya.

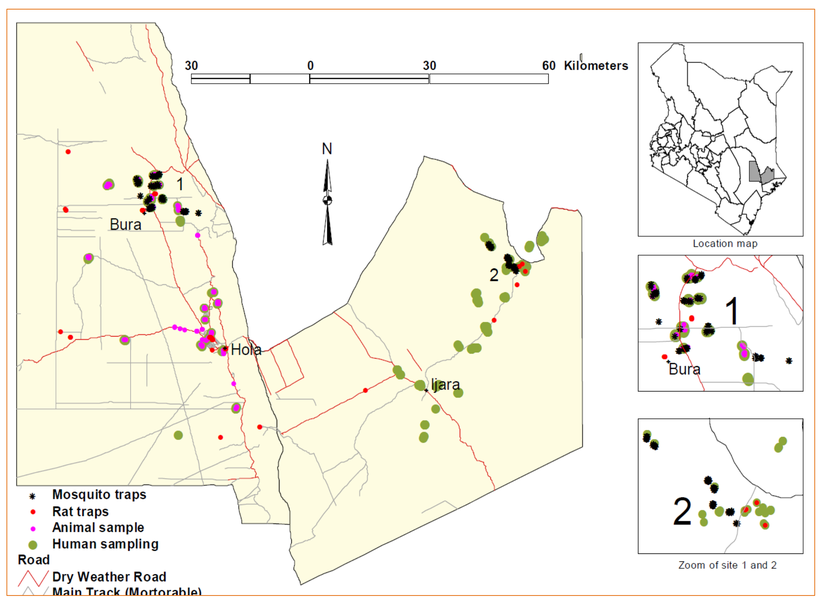


Figure 1. Map showing the sampling locations

Figure 2. Images showing the irrigated areas for farming

Methods

- Mosquito trapping was done from 10 villages along the Bura irrigation scheme
- Adult mosquitoes were sampled from both indoor and outdoor setting using CDC light traps and resting boxes, larvae were collected from the irrigation canals and fresh water pools (Figure 3).
- Morphological keys by Gillies and De Meillon (1968) & Gillies M.T. and Coetzee M.(1987) were used to distinguish *Anopheles* from culicines (Figure 4).
- Sub-species identification was done using PCR as described by Scott *et al.* (1993) and Koekemoer *et al.* (2002) (Figure 5).
- ELISA was used for *P. falciparum* sporozoite analysis as described by Wirtz *et al.* (1987)

Figure 3. Setting of the CDC traps indoor and outdoor resting boxes

Figure 4. Mosquitoes on a sorting tray

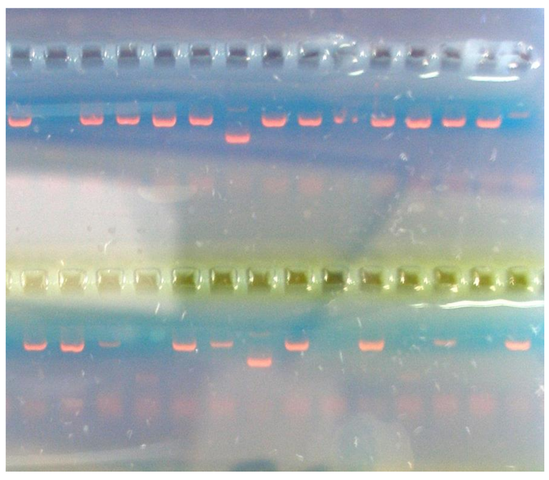
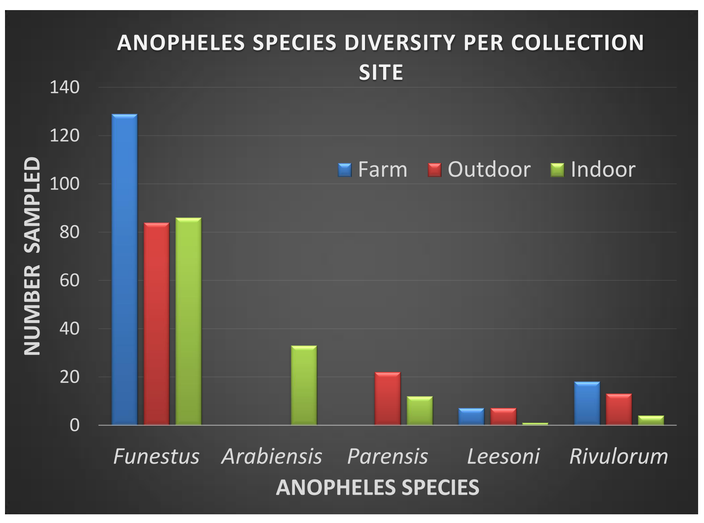
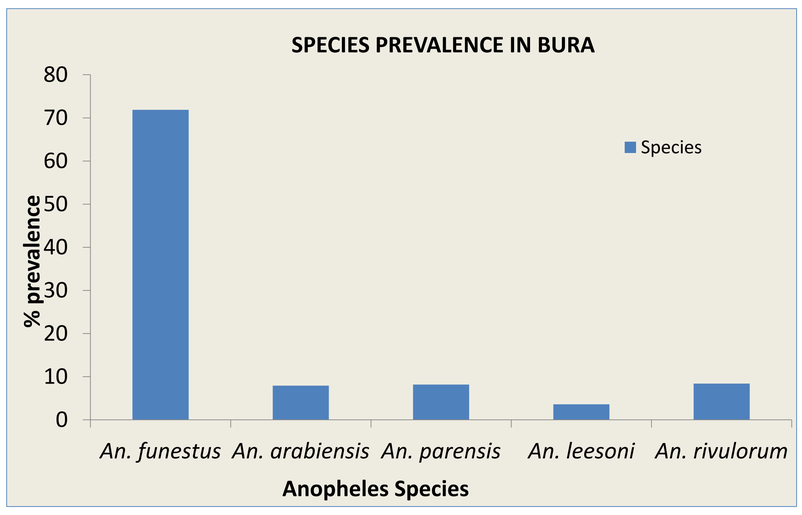


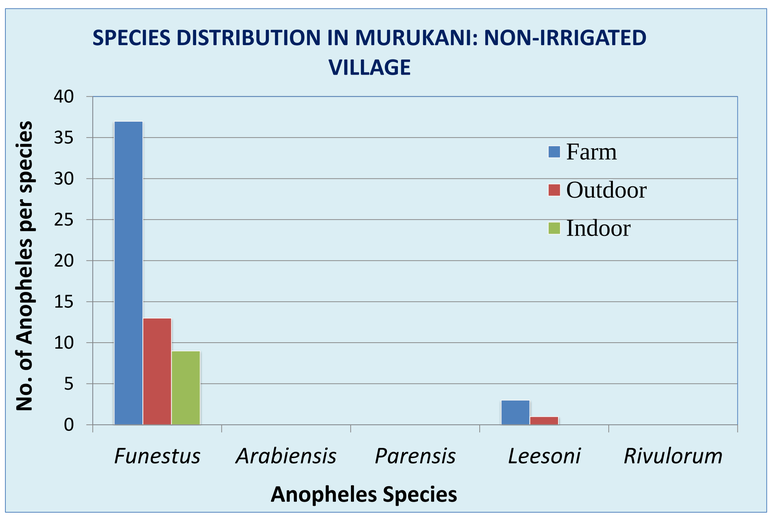
Figure 5. Bands scored on 3% agarose gel

Results

- A total of 5500 mosquitoes were collected out of which 576 were morphologically identified as *Anopheles.*
- 67% of *Anopheles* were trapped outdoors; all adult *An. arabiensis* were trapped indoors.
- *Anopheles funestus s.s.* (71.9%) was identified as the most prevalent vector, while *An. arabiensis* (7.9%), *An. rivulorum* (8.4%), *An. parensis* (8.2%) and *An. leesoni* (3.6%) were less common.
- All species were found both indoors and outdoors apart from *An. Arabiensis.*
- *An. funestus s.s.* and *An. leesoni* (all adults) were prevalent in Murukani, the non-irrigated scheme.
- None of the samples analyzed was found to be infected with *P. falciparum.*







Conclusions and Recommendations

- Spatial occurrence of malaria infections in Bura could be driven by these vectors: *An. funestus s.s., An. arabiensis, An. rivulorum, An. parensis* and *An. lessoni*. *An. funestus* being the most prevalent.
- In order to minimize sampling bias, further vector trapping using different methods and continued parasite analysis should be done.
- Vector control tools to be implemented as the enormous number of culicines collected could be playing a role in transmission of other infections.

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