



Tropentag, September 11-13, 2024, hybrid conference

“Exploring opportunities ...
for managing natural resources and a better life for all”

Tackling the nexus: Invasive alien species, mosquitoes, and health challenges evidence from Kenya

TASNEEM OSMAN¹, ERIC FÈVRE², CHRISTIAN BORGEMEISTER¹

¹University of Bonn, Center for Development Research (ZEF), Germany

²University of Liverpool, Inst. of Infection, Veterin. and Ecological Sci., United Kingdom

Abstract

Climate change is expected to substantially alter biodiversity, leading to alterations in phenology, genetic composition, and species distribution while also affecting species interactions and ecosystem. Invasive alien species (IAS) have threatened the integrity of ecosystems throughout the world. They affect the species diversity of native ecosystems. Due to increasing movement of people and goods around the world and with new trade routes opening and enhanced transportation the number of species being introduced into new areas is rising. IAS reduce agricultural yields, irrigated croplands, grazing areas, and water availability, and contribute to the spread of mosquito-borne diseases. Mosquitoes are widely spread and transmit malaria and several arthropod-borne viruses. A particular example of IAS is *Parthenium hysterophorus* (*Asteraceae*). It is one of the world's most serious invasive plants that is able to thrive and spread aggressively outside its original geographical areas. The aim of this study is to determine the abundance and diversity of mosquito vectors at sites with different degrees of invasive plant infestations in the Rift valley area in Kenya. Currently, the spread of invasive plant species is a major problem in Kenya, where indigenous flora is replaced. The study sites are located in Baringo county. A total of 50000 mosquitoes were captured using a combination of different trapping techniques from six sites, three of them with IAS and three without. We identified 48 species. Mosquitoes were analysed for evidence of recent plant feeding using cold anthrone test. An overall low fructose positivity rate was found. Barcode technique was applied to identify plant food source using specific primers for a locus from the chloroplast genome, ribulose diphosphate carboxylase. This survey is an inventory of the mosquito population composition and of the abundance and richness of arboviruses. It provides an insight into how changes in community ecology interact with the main types of land-use change and influence the dynamics of relevant arboviruses in Kenya. Thus, it provides a beneficial knowledge for targeted control.

Keywords: Agricultural expansion, infectious diseases, invasive plants, *Parthenium hysterophorus*