Background

Rift Valley fever (RVF) is a vector-borne zoonotic disease that has an impact on human health and animal productivity. Here, we explore the use of vector presence modelling to predict the distribution of RVF vector species under climate change scenario to demonstrate the potential for geographic spread of Rift Valley fever virus (RVFV).

Objectives

To evaluate the effect of climate change on RVF vector distribution in Baringo County, Kenya, with an aim of developing a risk map for spatial prediction of RVF outbreaks.

Methodology

The study used data on vector presence and ecological niche modelling (MaxEnt) algorithm to predict the effect of climatic change on habitat suitability and the spatial distribution of RVF vectors in Baringo County. Data on species occurrence were obtained from longitudinal sampling of adult mosquitoes and larvae in the study area. We used present (2000) and future (2050) Bioclim climate databases to model the vector distribution.

Results

Model results predicted potential suitable areas with high success rates for *Culex quinquefasciatus, Culex univitattus, Mansonia africana*, and *Mansonia uniformis*. Under the present climatic conditions, the lowlands were found to be highly suitable for all the species. Future climatic conditions indicate an increase in the spatial distribution of *Cx. quinquefasciatus* and *M. africana*. Model performance was statistically significant.

Conclusion

Soil types, precipitation in the driest quarter, precipitation seasonality, and isothermality showed the highest predictive potential for the four species.