

CLIMATE MODELLING OF THE GEOGRAPHIC RANGE OF FASCIOLA GIGANTICA PREVALENCE IN SEMI-ARID WEST AFRICA: A CASE STUDY OF SOKOTO STATE, NIGERIA

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Abstract

Fasciola gigantica is referred to as a neglected tropical animal and zoonotic disease, which therefore poses severe threats to developing countries like Nigeria where funding on public and veterinary services are grossly inadequate. Data on 210 recorded occurrence locations of *F. gigantica* were obtained from Sokoto State Ministry of Animal Health, Sokoto, Nigeria and were used as training sites. The predictions from these training sites were validated using independent data obtained during field work from fifteen presence localities in ten provinces utilising both threshold-dependent and threshold independent measures of performance. The data on *F. gigantica* occurrence combined with long-term environmental data were inputted into three MaxEnt's modelling scenarios to predict the geographic distribution of the parasite in the study area. The analyses show statistically significant performances across all the three MaxEnt's scenarios. The results further show that precipitation of the wettest quarter, annual mean moisture index and maximum annual NDVI were the most important variables that influenced the geographic distribution of the parasite in Sokoto State. This study presents the first application of CliMond database with MaxEnt models in predicting the distribution range of fascioliasis in semi-arid West Africa.

Keywords: species distribution models, MaxEnt, *F. gigantica*, Sokoto State