

## **BACKGROUND:**

Schistosomiasis, a parasitic disease that affects over 200 million people, can lead to significant morbidity and mortality; distribution of single dose preventative chemotherapy significantly reduces disease burden. Implementation of control programs is dictated by disease prevalence rates, which are determined by costly and labor intensive screening of stool samples. Because ecological and human factors are known to contribute to the focal distribution of schistosomiasis, we sought to determine if specific environmental and geographic factors could be used to accurately predict *Schistosoma mansoni* prevalence in Nyanza Province, Kenya.

## **METHODOLOGY/PRINCIPAL FINDINGS:**

A spatial mixed model was fit to assess associations with *S. mansoni* prevalence in schools. Data on *S. mansoni* prevalence and GPS location of the school were obtained from 457 primary schools. Environmental and geographic data layers were obtained from publicly available sources. Spatial models were constructed using ArcGIS 10 and R 2.13.0. Lower *S. mansoni* prevalence was associated with further distance (km) to Lake Victoria, higher day land surface temperature (LST), and higher monthly rainfall totals. Altitude, night LST, human influence index, normalized difference vegetation index, soil pH, soil texture, soil bulk density, soil water capacity, population, and land use variables were not significantly associated with *S. mansoni* prevalence.

## **CONCLUSIONS:**

Our model suggests that there are specific environmental and geographic factors that influence *S. mansoni* prevalence rates in Nyanza Province, Kenya. Validation and use of schistosomiasis prevalence maps will allow control programs to plan and prioritize efficient control campaigns to decrease schistosomiasis burden.