Contribution ID: **142** Type: **Student Paper Competition**

Spatiotemporal trends and environmental correlates of Aedes aegypti, Aedes albopictus and Culex quinquefasciatus abundance in Haiti

Thursday, July 18, 2024 1:00 PM (20 minutes)

Introduction
Within Haiti, determining spatiotemporal and environmental patterns of mosquito abundance is critical for tailoring vector-borne disease control, as diseases such as dengue fever and lymphatic filariasis are endemic. Here we investigated the spatiotemporal and environmental patterns of *Aedes aegypti*, *Ae. albopictus*, and *Culex quinquefasciatus* abundance in Haiti.

Methods
Mosquitoes were captured using CDC Gravid, CDC Light, and BG Sentinel traps from August 2018 to September 2019 in three communes of Haiti's Ouest department. In total, 730 successful collection events were analyzed from 22 unique trap sites. Kernel density estimation (KDE) and space-time permutation models in SaTScan were employed to assess spatial and spatiotemporal dynamics. Zero-inflated negative binomial models and negative binomial hurdle models were used to assess the correlation between study sites, trap types, precipitation, temperature, NDVI, wind speed and mosquito abundance.

Results
KDE identified a hotspot for each mosquito species at the intersection of the three communes. Consistent spatiotemporal clusters were identified for all three species in the northwestern area of the study region, with heterogeneity across species in the central and southern areas. Count models identified statistically significant associations with trap type and site location for all three species, with the four environmental variables being associated with differing rates of abundance for each species.

Conclusions
We elucidated key differences in the spatiotemporal patterns and environmental correlates of *Ae. aegypti*, *Ae. albopictus* and *Cx. quinquefasciatus* in a periurban area of Haiti –this heterogeneity provides insights pertinent for tailored vector control, potentially warranting specific regional and seasonal approaches.

Primary authors: PSHEA-SMITH, Ian (University of Florida); OKECH, Bernard (Uniformed Services University); DUNFORD, James (Navy Entomology Center of Excellence); SUTHERLAND, Ian (Navy Entomology Center of Excellence); SO, John (Navy Entomology Center of Excellence); KOEHLER, Jeffrey (United States Army Medical Research Institute Diagnostic Systems Division); BONCY, Jacques (National Public Health Laboratory, Port-au-Prince); MATULIS, Graham (University of Florida); PONCIANO, Jose Miguel (University of Florida); BLACKBURN, Jason (University of Florida); VON FRICKEN, Michael (University of Florida)

Presenter: PSHEA-SMITH, Ian (University of Florida)

Session Classification: Student Paper Competition

Track Classification: Global Health: Infectious Diseases