Sabrina C. Lopez

Geographic and Genetic Examination of Chagas Disease Vectors in Bolivia

Abstract

Chagas disease, an infectious vector borne endemic plaguing eight to eleven million Latin Americans, threatens the social and economical progress in the already poverty stricken land-locked nation of Bolivia. The causative agent, Trypanosoma cruzi, is transmitted via a reduviid insect vector called Triatoma infestans, in Bolivia. This vector's resilience to public health efforts, such as by the Southern Cone Initiative, has been attributed to domicile re-infestation from sylvatic environments. Genetic information for 10 microsatellite loci was obtained for 169 T. infestans specimens previously collected from across ten provinces in Chuquisaca, Bolivia. Analyzing this T. infestans genetic microsatellite data against ecological influences will be examined through proximity to impervious and sylvatic land cover, elevation, temperature, and so forth. By using Geographic Information Systems, we gain insight into environmental preferences and barriers for T. infestans. Analyzing social factors, such as access to clean water, sewer system, building materials and education, may potentially be key in predicting why certain areas have a high incidence of Chagas disease. This data may further aid public health officials to provide better health care and education and perhaps lower the spread of the Chagas disease on a more long-term scale.

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