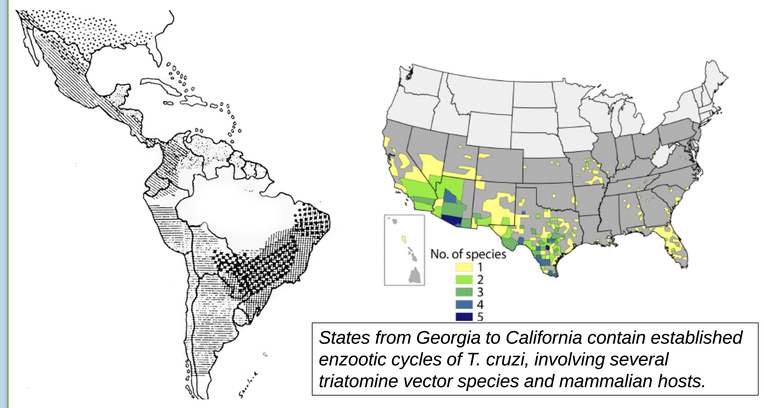
Chagas disease in New Orleans: an opportunity for student and community training

Anna Sanford, Sarah Hill, Ryan Moore, Jennifer Knoeppel, Dawn Wesson, Lorelei Cropley, Claudia Herrera*

Tulane University School of Public Health and Tropical Medicine
*cherrera@tulane.eu

Introduction

The parasitic protozoa *Trypanosoma cruzi* is the causative agent of Chagas disease, an anthropozoonosis that represents a major public health problem in Latin America. *T. cruzi* is widely distributed throughout the American continent, from the southern regions of the United States (U.S.) to Argentina, and infects at least 6 million people in Latin Americas (1) Although it has been known for nearly a century that *T. cruzi* is enzootic in the southern US, much remains unknown about the dynamics of its transmission among the sylvatic and peridomestic cycles (1).



States from Georgia to California contain established enzootic cycles of T. cruzi, involving several triatomine vector species and mammalian hosts.

Although a high prevalence of *T. cruzi* has been observed in vectors and rodents around the house (2,3,4) of the first reported case in Louisiana, very little is known about the habitat of the triatomines and mammalian hosts. Community knowledge of Chagas disease is still limited and education of the West Bank community is needed. Dr. Wesson's team performed a survey from October 2008 to November 2009 (2,3) to inform the local residents about Chagas disease epidemiology and potential risk factors.

Given the need for community and student education in Chagas disease, the project's aims are:

Aim 1. To develop knowledge, attitudes, and practices using a baseline survey on all aspects of Chagas Disease, including transmission cycles, the vector, mammalian hosts, etc. in the local community in our study area**. Aim 2.** To identify the habitat of triatomines. **Aim 3.** To develop a comprehensive web page for awareness on Chagas disease and its risks in southern Louisiana.

Methods

- This study was approved by the Tulane University Social-Behavioral IRB, Exempt status No. 16-840350UE.
- The community in the neighborhood Lower Coast Algiers in the West Bank have been invited to participate in the Chagas survey. At least 50 houses will be surveyed.
- After consent from the property owner, the yard is surveyed for potential triatomine (kissing bug) habitats and pictures are taken of any found habitats. No home identifiers are photographed.
- Light traps are being used in consented yards overnight to collect kissing bugs. The trapping site and surrounding habitat are photographed to document its topography, vegetation cover and other characteristics.
- Data from the survey is entered into a database on Microsoft Excel 2013. The spreadsheet is a fillable form with a dropdown for each question so each entry has the same format.

A typical kissing bug habitat

A chicken coop, a feeding source of the kissing bug

Light trapping for kissing bugs

Results

- After IRB approval in February 2016, a total of 22 surveys have been administered. The project received approval to work until June 30th, 2016 and could potentially receive an extension.
- All data have been entered into the database. This database is maintained using form controls in order to ensure that responses are entered correctly and consistently.
- As a result of this survey, one triatomine has been collected in the study area, which is now under study for *T. cruzi*.
- A website is being generated to further the citizen science and public health education initiatives and aims of this study.

T. sanguisuga, kissing bug in the southern US
The main vector of Chagas Disease in Louisiana

Anna and Sarah taking a break from surveying

Conclusions

People in the neighborhood Lower Coast Algiers in the West bank have been very open to this study.

A relationship has been established with the community. The community benefits by having a source of reliable information on Chagas disease, and the research team benefits by determining what the community's needs are for future education on and prevention measures against Chagas disease.

The website will provide the community with educational resources to broaden their understanding of Chagas disease and to facilitate communication between the research team and focus population.

Future Research

- Molecular analysis of the feces from triatomines and possible *T. cruzi* strains isolation in culture media as part of the independent study of Sarah Hill.
- The project's results will be part of the preliminary results for a NIH R01 grant.

Acknowledgments

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