Lauren A Castro

Graduate Research Scholar

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Education

University of Texas at Austin — Austin, TX
Ecology, Evolution, and Behavior Ph.D Program — *2014 - Present*
  – College of Natural Sciences Concentration in Teaching and Mentoring

Princeton University — Princeton, NJ
B.A. Ecology and Evolutionary Biology — *2009 - 2013*
  – Graduated cum laude
  – Certificate in Latin American Studies

Related Research Experience

Meyers Research Lab — UT-Austin
Graduate Research Assistant — *Sept. 2014 - Present*
  – Developing quantitative approaches to assess the disease risk and optimize the detection of arboviral diseases in Texas. Activities include species distribution modeling of important vectors and assessment of important climatic variables in determining the suitability for sustained disease transmission.

  – Exploring the evolutionary dynamics of viral pathogens in heterogeneous host populations by integrating network theory and population genetics to investigate the impacts of host contact networks on teh genesis and maintenance of genetic variation in viral populations. Our results will be applied towards developing a framework for inferring both host contact structure and evolutionary parameters from genetic epidemiological data.

Defense Systems and Analysis Division — Los Alamos National Laboratory
Post Baccalaureate Student — *Jun. 2013 - Jul. 2014*
  – Member of a multi-disciplinary team tasked to build a suite of tools that provide relevant and timely information during infectious disease outbreaks. Activities include identifying proximal and distal determinants that influence the progression of an outbreak and developing an epidemiological model characterization framework.

Dobson Research Lab — Princeton University
Undergraduate Student — *Jan 2012 - May 2013*
  – Senior Research Thesis: "Flight performance of trypanosome-infected Rhodnius pallescens: Implications for the spatial-temporal spread of Chagas disease in rural landscapes
  – Explored how anthropogenic landscape changes affect spatial dissemination of Chagas disease in reservoir animals and humans. Conducted flight performance studies on experimentally infected laboratory triatomine colony for flight performance studies at the Gorgas Memorial Institute for Health Studies in Panama City, Panama. Built a computational agent-based model that simulated the rural transmission cycle of Chagas disease on a lattice.

Defense Systems and Analysis Division — Los Alamos National Laboratory
Undergraduate Summer Student — *Jun. 2012 - Sep. 2012*

- – Completed epidemiological simulations and data stream analysis for disease specific outbreaks. Presented and reported findings to government agency sponsors as part of a systemic evaluation of data streams for integrated global bio-surveillance systems.

- **Smithsonian Tropical Research Institue/Princeton Biology Field Program** Panama City, Panama
  Field Semester Abroad *Jan. 2012 - May 2012*
    - – Participated in a semester-long field biology program in Panama jointly organized by the Smithsonian Tropical Research Institute and Princeton, completing four independent research projects that required journal formatted reports and oral presentations. Besides increasing my ecological knowledge, I gained familiarity with various stages of the scientific process by conducting systematic literature reviews; developing scientific questions; executing field methodologies; and analyzing and presenting my data under time constraints.

- **Biosciences Division** Los Alamos National Laboratory
  Undergraduate Summer Student *Jun.-Sep. 2009, 2010*
    - – Provided technical support on the BioWatch Gen 3 Detection System Evaluation Project. Activities included analysis of swipe samples and identification of various DNA samples through molecular techniques.

Presentations and Publications

- **Publications**

    - – **Castro, L.A.,** Fox, S.J., Chen, X., Liu, K., Bellan, S.E., Dimitrov, N.B., Galvani, A.P., Meyers, L.A. (2016) Real-time Zika risk assessment in the United States. bioRxiv. doi:10.1101/056648.

    - – Margevicius, K.J., Generous, N., Esteban A., Althouse, B., Burkom, H., **Castro, L.,**...& Deshpande, A. (2016). The Biosurveillance Analytics Resource Directory(BARD): Facilitating the use of epidemiological models for infectious disease surveillance. PloS one, 11(1) e0146600.

    - – **Castro, L.A.**, Chen, X., Dimitrov, N., & Meyers, L.A. Quantifying Aedes arbovirus risk in Texas: Import and sustained transmission. In prep for PLoS Comp Bio.

    - – Althouse, B.M., Scarpino, S.V. Meyers L.A., Ayers, J.W., Barsten, M., Baumbach, J., Brownstein J.S., **Castro, L.**, ...& Wesolowski A. (2015) Enhancing disease surveillance with novel data streams: challenges and opportunities. EPJ Data Science, 4(1), pp 1-8.

    - – **Castro, L. A.**, Peterson, J. K., Saldaña, A., Perea, M. Y., Calzada, J. E., Pineda, V., ... & Gottdenker, N. L. (2014). Flight Behavior and Performance of Rhodnius pallescens (Hemiptera: Reduviidae) on a Tethered Flight Mill. Journal of medical entomology, 51(5), 1010-1018.

    - – Generous, N., Margevicius, K. J., Taylor-McCabe, K. J., Brown, M., Daniel, W. B., **Castro, L.**, ... & Deshpande, A. (2014). Selecting Essential Information for Biosurveillance—A Multi-Criteria Decision Analysis. PloS one, 9(1), e86601.

    - – Margevicius, K. J., Generous, N., Taylor-McCabe, K. J., Brown, M., Daniel, W. B., **Castro, L.**, ... & Deshpande, A. (2014). Advancing a framework to enable characterization and evaluation of data streams useful for biosurveillance. PloS one, 9(1), e83730.

- **Presentations**

    - – "Real-Time Zika Risk Assessment in the United States." MIDAS Network Meeting, Reston, VA, May 2016 (Poster Presentation)

    - – "Determining Appropriate Surveillance Triggers for Implementing Zika Control Measures in Texas." Integrative Biology Graduate Symposium, April 2016 (Oral Presentation)

- "Species distribution modeling of arbovirus vector species." Diseases in Nature Transmissible to Man Conference, Galveston, TX, May 2015. (Oral Presentation)
- "The Surveillance Window Application: A web-hosted tool to facilitate situational awareness during outbreaks." AAAI-15: World Wide Web and Public Health Intelligence Workshop, Austin, TX, Jan 2015. (Oral Presentation)
- "Enhancing Situational Awareness by Ground Truthing with Historical Outbreaks," International Society of Disease Surveillance Conference, New Orleans, LA, Dec 2013. (Oral Presentation)
- "Characterization and Trypanosome Effects on the Flight Performance of Rhodnius pallescens" Ecology and Evolution of Infectious Diseases Conference, Penn State, PA, May 2013. (Poster Presentation)
- "Multiplexed detection of citrus pathogens using a LANL patented assay," Los Alamos National Laboratory Student Symposium, Los Alamos, NM, August 2012. (Poster Presentation)

Grants

National Defense Science & Engineering Graduate Fellowship ($102,000) 2016-2019
UT-Austin: College of Natural Sciences Dean's Office Recruitment Fellowship ($72,000) . . . 2014-2016
UT-Austin Ecology, Evolution, and Behavior Starting Research Fellowship ($2,000) 2015
University of Washington SISMID Workshop Travel Grant ($450) 2015
Princeton University Senior Thesis Research Grants ($5,000) 2012-2013

Awards & Honors

Department of Energy CSGF: Honorable Mention Recipient 2015
LANL Small Team Distinguished Performance Award 2013
LANL Small Team Decisions Analysis Division Symposium Winner 2011
Los Alamos Employees Scholarship Fund: Bronze Scholar ($4,000) 2009-2013
J. Robert Oppenheimer Memorial Scholar ($2,500) 2009

Skills

- Programming and Markup Languages
  Expert: "R", **Intermediate:** Java, Python, LaTeX

- Software
  Expert: MS Access, MS Excel, MS Word, **Intermediate:** Quantum GIS

Professional Associations

American Association for the Advancement of Science
International Society of Disease Surveillance
MAES Latinos in Science and Engineering
Sigma Xi

Institutional Service

College of Natural Sciences Diversity and Inclusion Committee 2016-Present
EEB Student Representative to the CNS Dean's Office Graduate Council 2015-Present

Community Involvement

- Breakthrough Volunteer
    - After School Academic Tutor for upper level STEM classes at Austin High School
    - Advise students on academic practices and problem-solving skills