Other - LSU Faculty Candidate Seminar- Interdisciplinary Data Science and Biology Position

Using integrative Bayesian approaches to examine ecological and evolutionary influences on disease dynamics

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Digital Media Center Theatre
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Abstract:
Emerging infectious diseases threaten human health, food security, and global biodiversity. Disease ecologists have used theoretical models (e.g., susceptible, infected, recovered [SIR] models; individual-based models) to understand and predict pathogen spread and disease dynamics. Despite the important theory generated by such models, they are often not practical for guiding disease management because they require large amounts of data to parameterize. To obtain parameter estimates for disease models, ecologists have relied on mark–recapture models, which require marking and tracking individuals over time. However, tracking animals can be difficult and logistically infeasible, especially for cryptic/secretive organisms or in small populations. Advanced statistical methods that provide similar inferences as mark–recapture models for unmarked host populations (e.g., populations where individuals are not individually tracked over time) are critically needed to understand disease dynamics, assess pathogen impacts on populations, and develop pathogen mitigation strategies. In this seminar, we will be exploring quantitative advances that have allowed disease ecologists to gain a better understanding of the ecological and evolutionary mechanisms shaping host populations.

Speaker's Bio:
I am a quantitative disease ecologist interested in disease dynamics, community and population ecology, and amphibian conservation. To mimic natural hierarchical systems, I develop hierarchical Bayesian models and I exploit data collected over space and time to separate ecological and observational processes to answer questions. The majority of research to date has focused on how *Batrachochytrium dendrobatidis* has affected the amphibian fauna of El Copé, Panama. I developed statistical tools to understand why some species were selected out of populations more readily than others, as well as understanding the role of environmental reservoirs in disease dynamics.

This lecture has refreshments @ 02:00 pm

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