Oral Defense Announcement
University of Missouri – St. Louis Graduate School

An oral examination in defense of the dissertation for the degree
Doctor of Philosophy in Biology with an emphasis in Ecology, Evolution and Systematics

Maricruz Jaramillo de León

M.A. in Biology, December, 2011, University of Missouri-St. Louis
B.A. in Biology, May, 2007, University of Texas at San Antonio

Haemosporidian parasites and host immune function of Galapagos avifauna

Date: February 26, 2018
Time: 3:30 p.m. to 5:30 p.m.
Place: Social Sciences and Business Building (SSB) 131

Abstract

The large number of emergent infectious diseases witnessed in the past few decades has increased interest in the ecology and distribution of potentially threatening pathogens worldwide. Island species are often considered more vulnerable to parasites due to their impoverished parasite communities, long isolation from disease and low genetic diversity. Avian surveys done by our group on the Galapagos Islands have found various pathogens infecting their endemic avifauna, including haemosporidian parasites of the genera *Plasmodium* and *Haemoproteus*. This dissertation seeks to understand the relationships between two haemosporidian parasites and their multiple bird hosts in Galapagos and to explore the immune system of insular birds. A three island survey was implemented along an altitudinal gradient between June 2013 and July 2015, to collect blood and plasma samples from 25 species of endemic and introduced birds. We explored patterns of *Haemoproteus multipigmentatus* infection in passeriform birds that provided evidence of parasite spillover events from Galapagos doves to passerines. We investigated the possibility that introduced birds in the archipelago were reservoir hosts for *Plasmodium* spp. But, contrary to our expectations, we found no evidence to suggest introduced birds are implicated in haemosporidian transmission or maintenance. We used site-occupancy modeling to obtain informed and more precise estimates of prevalence for both parasites and their influencing factors to improve assessments of disease risk for the endemic avifauna. And lastly, we investigated the relationship between a species’ time of arrival to the archipelago and strength of the immune response. We found no general trend, among six indexes of immune response, to indicate that species that arrived to the islands earlier have a weaker immune system function than more recent arrivals. However, there are differences in some indices of immune function between recently introduced birds and earlier arrivals to the archipelago. Collectively, our research demonstrates the importance of community wide surveys to identify or dismiss possible agents and factors of disease, to understand host-parasite dynamics and to better assess the disease risks faced by wildlife.

Defense of Dissertation Committee
Patricia G. Parker, Ph.D. - Chairperson
Robert Ricklefs, Ph.D.
Kathryn Huyvaert, Ph.D.
Sebastian Tello, Ph.D.