EEB Seminar Series – Spring 2018
Postdoc Research Presentations
Talk Summaries

Monday, January 29, 2018

Dr. Pierre Lesne (Behmer Lab)

Title: Behavioral plasticity as a driver of the competition between the invasive ant species *Solenopsis invicta* and *Nylanderia fulva.*

The United-States has witnessed successive invasions of exotic species that dramatically reduced biodiversity and made ecosystems more susceptible to new invasions. The recent introduction of the tawny crazy ant (*Nylanderia fulva*) in Texas and its interaction with the previously established red imported fire ant (*Solenopsis invicta*) is a remarkable opportunity to understand the mechanisms involved in the competition between two exotic species in their invasive range. Unicoloniality and high polygyny are essential features of the invasive potential of numerous ant species that hinge upon the ability of workers to rapidly adapt their foraging efforts to the needs of the colony. This behavioral plasticity in response to colony composition has been largely overlooked and only one recent study evidenced an influence of the number of queens on the foraging behavior of workers. Our study constitutes a follow-up of this work by combining nutritional physiology and collective behavior to investigate the plasticity of *N. fulva* and *S. invicta* foraging behavior in response to variations in colony composition and resource availability. Besides providing valuable insights about the nutritional physiology and behavior of these two species, the results of our study aim at showing how phenotypic plasticity can tip the outcome of the competition between two highly invasive social insects and set the stage for further investigations in this field.

Dr. Isabel Caballero (Hurtado Lab)

Title: Population genomics of the blue crab, a tale of caution

Due to a lack of obvious physical barriers to dispersal in the world's oceans, early predictions on genetic structure of marine organisms with long-lived planktonic larvae suggested little genetic structure across their ranges. Use of highly variable genetic markers, however, have shown genetic structure at different scales in marine species presumed to have long distance dispersal capabilities, and revealed the presence of different types of dispersal barriers in the sea. Nonetheless, detecting genetic structure in marine organisms characterized by extremely large populations and high dispersal potential is difficult, especially with recently diverged populations, because there is little genetic drift and even low migration can eliminate differentiation at neutral loci. Use of genomic techniques, such as RAD-seq, provide a vast amount of markers that increase the power to detect genetic structure in these organisms. In this seminar, I will talk about our population genetic studies of the blue crab (*Callinectes sapidus*) in the US Atlantic and Gulf of Mexico coasts using microsatellites and dd-RAD-seq, for which previous population genetic studies based on allozymes, mitochondrial, and nuclear markers

have provided conflicting results. The blue crab, which is characterized by very large populations and a long-lived larval stage, is an important species in estuarine habitats of this region, serving as both predator and prey to other species. It is the main prey item of the critically endangered whooping crane, and is also important in the diet of the critically endangered Kemp's Ridley sea turtle, as well as of commercially important fish species, such as the red drum. Historically, the blue crab represents a multibillion dollars fishery in the US. Therefore, it is crucial to obtain information that can aid in management and monitoring of this important species. I will also discuss potential problems when analyzing RAD-seq data in population genomics studies.