

Welcome to the 12th Annual P.U.R.E. Symposium! “Fall Session”

Thursday Nov 17, 2016, LSF 102

Snacks 3:45, Talks begin at 4pm



ABSTRACTS:

4:00 – 4:12pm:

“Two new records of *Phereoeca uterella* (Tineidae) and observations on its biology.”

Student: Lucas Berry; Faculty Mentor: Dr. David Malakauskas.

The moth *Phereoeca uterella*, also known as the household casebearer, is found in the southeastern United States but has never been reported from South Carolina despite predictions it may be found in coastal areas of the state. We have positively identified specimens from a private residence in Florence and from the Riverbanks Zoo in Columbia, using morphological characters and DNA fingerprinting of the CO1 gene. Columbia and Florence are outside of the moth’s expected range, and further, the larvae were found feeding on feces and detritus, where they had previously only been reported feeding on spider webs and other fibrous materials. This indicates that the species may be more of a habitat and feeding generalist than previously thought.

4:12 – 4:24pm:

“Study of pro-social behavior in rats.”

Students: Jasmyne Brown-Bellinger and Geno Davis; Faculty Mentor: Dr. Shayna Wrighten

Pro-social behavior, behavior carried out to help another individual, has been studied in a variety of animals including rodents. However, because the study of pro-social behavior in rodents is a fairly new field, many questions still remain. Our lab is interested in developing a paradigm to study pro-social behavior in rats that does not involve physical pain. Our lab has modified a paradigm used in the literature, which includes placing one rat in a restrainer while giving another rat the opportunity to either free the restrained rat or not. Previous work from our lab has shown that the more stressful the restrainer environment the more likely the free rat is to open the restrainer, thereby engaging in pro-social behavior. We found that the presence of a light source increases door-opening behavior. In our current studies we have tried various techniques to maximize door opening including changing the size of the restrainer and adding a light source. We found that placing rats in a restrainer containing water increases door opening behavior, placing rats in a smaller space (restrainer and arena) increases door opening behavior, and adding a light source will change door opening behavior. We hope that these findings will allow us to create an optimal paradigm to test various behavioral and neural aspects of pro-social behavior in rats. Increased knowledge of the underlying factors of pro-social behavior will aid in understanding how pro-social behavior is developed and changed over time.

4:24 – 4:36pm:

“Developing population genetic markers for *Manayunkia speciosa*.”

Students: Taylor Byrd and Breahna Lee; Faculty Mentor: Dr. David Malakauskas

Manayunkia speciosa is a freshwater polychaete found in the Laurentian Great Lakes and coastal areas of the United States. While it currently has a wide geographic range, numerous authors and government agencies have it classified as an exotic species throughout much of its range, suggesting the polychaete had a more narrow historic range. The objective of our study is to develop genetic markers for *Manayunkia speciosa*. We will review our current progress on marker development and discuss future plans. Once developed, the markers will be used for population genetic studies such as determining the geographic origin of the potentially exotic Lake Erie population of *M. speciosa*.

4:36 – 4:48pm:

“Reproductive Morphology of the Two-Toed Amphiuma (*Amphiuma means*).”

Student: Kadesha Jordan; Faculty Mentor: Dr. Tamatha Barbeau

The purpose of this study was to examine the reproductive anatomy of the Two-Toed Amphiuma (*Amphiuma means*), an aquatic salamander. Virtually nothing is known about the reproductive biology of this species due to its secretory behavior of hiding at the bottom of streams, ponds, and swamps. During this study, reproductive tissues, collected from a previous research, were examined using histological analysis in order to determine the sex of an animal that could not be diagnosed from dissection. Previously prepared slides of unidentified reproductive “tubules” were stained with hematoxylin and eosin for examination under light microscopy. We discovered that tubule morphology indicated the animal was male, and furthermore identified the tubule as a vas deferens. The vas deferens consisted of a single continuous cell layer of columnar epithelial cells lining a central tubule lumen, and that the lumen of the tubules contained mature spermatozoa. Morphometric analyses were performed using Image J analytical software. Average vas deferens tubule areas and epithelial cell heights were significantly smaller than that found published on another, unrelated species of salamander collected at a similar time of year. This pilot study provided us with valuable information about the reproductive morphology of male *A. means*, which will help direct future research on this elusive amphibian.

4:48 – 5:00pm:

“Survey of parasites infecting *Hexagenia* (Ephemeroptera: Ephemeridae) nymphs from western Lake Erie.”

Student: Amber Zonca; Faculty Mentor: Dr. David Malakauskas

Hexagenia spp. are important biomonitoring indicators of the mesotrophic water quality. However, little research has been done on parasites infecting *Hexagenia* spp. and what role parasites may play in *Hexagenia* population dynamics. Therefore, the aim of our study is to catalog parasites of these mayflies and examine host-parasite population dynamics. Specimens were collected from Lake Erie, MI and were examined for parasites. Based on tentative morphological identifications, *Hexagenia* are infected with trematodes in the genus *Crepidostomum*, protists of the genera *Vorticella* and *Epistylis*, and an as yet unidentified nematode. DNA from parasites and mayflies will be sequenced to molecularly characterize parasites and to accurately identify nymphal mayflies. Results from the *Hexagenia* spp. and parasites will be analyzed to infer correlations of host-parasite population dynamic relationships.

The Department of Biology at FMU strongly encourages student participation in research activities. We offer many opportunities for undergraduates to assist in faculty research or develop their own independent research projects. Students can earn academic credit through Special Studies (BIOL 497) and Honors Independent Study.

If you are interested in learning more about P.U.R.E. or available research opportunities, please visit our website at: http://people.fmarion.edu/tbarbeau/PURE_symposium.htm. You can also contact Dr. Barbeau (tbarbeau@fmarion.edu), the coordinator of P.U.R.E., to answer any questions you might have and get you started on a research project!