

20th Annual P.U.R.E. Symposium “Spring Session”!

Tues Apr 16th, 2024. LSF 205

Snacks 3:45, Talks begin at 4:00pm



This Semester’s Presentations and Speakers:

4:00 – 4:20:

Presentation title: Similarities and Differences in Mammal Species Diversity for Two FMU Sites.

Students: Reese Inabinet & Cyrus Ingram. **Faculty Mentors:** Travis Knowles & Dr. Jeff Steinmetz

The purpose of this study was to compare and contrast the mammal species diversity between two different ecosystems. One study site is a southern hardwood mixed forest on the Francis Marion University campus. The other, the Francis Marion Ecology Center (FEC), is a more secluded site with hilly topography from an old river bluff that supports a hardwood forest, and the terrain is more similar to that of the Piedmont ecoregion. One FEC sampling grid also bordered bottomland swamp vegetation. We established trapping grids of 25 Sherman traps arranged in a 5x5 trap grid measuring 640 m². 6 to 8 larger Tomahawk live traps were also set in suitable locations within each grid, near large root masses and mounted on trees to catch rats and squirrel-sized rodents. Four trail cameras were placed along the sides of the grid facing the interior to document medium to large sized mammals. One autonomous recording device, Wildlife Acoustics Song Meter Mini Bat 2, was placed at each grid center to record and identify bat species. Two grid replicates were sampled on different dates at each location for three consecutive nights each. Each trap capture was recorded including species, sex, age class and location (GPS). For camera traps, we visually identified each species. Bat species identification was done with Wildlife Acoustics Kaleidoscope Pro software. We discuss possible explanations for the similarities and differences between the mammal populations of these sites, including habitat differences, population cycles, and predation, including the large free-ranging house cat colony on the main FMU campus.

4:20 – 4:40:

An Analysis of Water Quality by Evaluating Concentrations of Microcystins and Coliforms in the Local Florence Area.

Student: Emily Llewellyn

Faculty Mentor: Dr. Jeremy Rentsch

Water quality is used to describe the condition of water, usually including biological, chemical, and physical qualities of a particular body of water. Measures of water quality in freshwater ecosystems are of great importance to humans, who rely on access to clean drinking water, and use bodies of water for energy, food supply, and recreational activities. Disturbances in water quality can lead to a variety of consequences, like the accumulation of microcystins. Microcystin toxins can cause a variety of issues in humans, which include gastrointestinal issues, headaches, liver and kidney damage (CDC, 2023). These factors have caused HABs to gain attention from scientists. The documentation of the presence of these contaminants has seen an increase over the past decade, as global temperatures continue to rise. This study analyzes three local bodies of freshwater: Goodson Pond, Lee Nursing Building Pond at Francis Marion, and Lynches River county park, to determine if they are at risk of HABs in Florence County.



4:40 – 5:00:

Effects of Hypoxia on Cancer Cells.

Student: Grace Trautman

Faculty Mentor: Dr. Lori Turner

Cells found in the center of large tumors lack sufficient oxygen to undergo normal metabolism. This reduced oxygen environment is known as a hypoxia. The upregulation of genes associated with oxygen deprivation results in a change in the cells' metabolic pathways. We hypothesized that the increased expression of stress response factors would make them more resistant to chemotherapy treatments. To examine the effect of hypoxia on the cancer cells' ability to withstand chemotherapy we looked at four different cancer cell lines: breast, cervical, prostate, and adrenal carcinoma. We incubated our samples in hypoxic or normoxic environments, then treated them with one of three chemotherapy agents (Cisplatin, Taxol, or Doxorubicin), and ran a survival assay after 48 hours. We observed that HELA cells incubated under hypoxic conditions had a survival advantage compared to cells in normoxic conditions when treated with Cisplatin, but there was no difference observed when the other cells lines were treated with Cisplatin. In addition, cell lines did not see increased resistance when treated with Taxol or Doxorubicin. These results suggest that hypoxia may increase resistance of HELA cells to specific concentrations of Cisplatin.

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 PURE or available research opportunities, scan the QR code below. You can also contact Dr. Barbeau (tbarbeau@fmarion.edu), the coordinator of PURE, to answer any questions you might have and get you started on a research project!

