(OPs) may exert their toxicity on insect pests by inhibiting the critical body enzyme cholinesterase. Unfortunately, they cannot discriminate in the exercise of their toxicity against unintended target organisms including humans. Therefore, an assessment of the danger posed to unintended targets is warranted. Of particular concern to aquiculture farmers in the state of Mississippi is the impact upon the catfish farming industry from OPs. Cholinesterases have been widely used as a biomarker for the assessment of exposure to organophosphate insecticides. In this study, Blue Channel Catfish (*Ictalurus furcatus*) were exposed to the following concentrations of the organophosphate insecticide Malathion: 0, 0.5, 1.0, 2.0, 2.5, 5, 7, 10 and 15 ppm. After 96 hours, the surviving catfish were sacrificed after using 0.1% 2-Phenoxyethanol as anesthesia. Brain, liver and muscle tissues were extracted and homogenized in pH 8.0 phosphate buffer. The supernatant of the homogenization was analyzed for cholinesterase activity using the Ellman Method. We hypothesized that all cholinesterases are inhibited after exposure to malathion. The results showed that the LC_{50} for the fingerling Blue Channel Catfish is between 10 and 15 ppm. The actylcholinesterase activity was significantly inhibited in brain tissue especially at the concentrations > 5 ppm. The butyrylcholinesterase activity in muscle and liver tissues was not significantly inhibited. This research was supported by the U.S. Department of the Army Research and Development grant # W912H2-04-2-0002 to Jackson State University.

11:30 ENVIRONMENTAL VARIABLES AFFECTING ANT (FORMICIDAE) COMMUNITY COMPOSITION IN FOUR HABITATS IN MISSISSIPPI

JoVonn Hill*, Richard L. Brown, and Joe A. MacGown, Mississippi State University, Mississippi State, MS 39762

Numerous species of ants have habitat preferences and respond quickly to disturbances to their environment, making them valuable for habitat monitoring. However, the effects of various environmental variables remain uncertain. This study investigates the relationship of ant community composition to various habitat characteristics by comparing ant communities and 12 environmental variables across four habitat types in Mississippi. The four habitat types include pasture, prairie, and oak-hickory forests in the Black Belt and forests in the Flatwoods physiographic region. Ants were sampled using pitfall traps, litter sampling, baiting and hand collecting. NMS and ANCOVA both revealed three distinct ant communities (pasture, prairie, and "forests") between the four habitat types based on species composition and mean ant abundance per habitat type. Principal component analysis (PCA) partitioned the environmental variables into four axes with eigenvalues >1. Axis 1 divides the site into two types (open and forests), while axis two separates pasture from prairie. Multiple regression models using the four significant PCA axes revealed that total species richness was significantly affected by variation in the first two PCA axes. Forested sites supported approximately nine more species of ants than prairies, and 21 more than pastures (p=.0001). Comparisons of ant functional group abundance were also made between the four habitat types with multiple regression models to investigate how the environmental variables affected certain groups of ants.

11:45 Divisional Business Meeting

GEOLOGY AND GEOGRAPHY
Chair: Barbara Yassin, MDEQ - Geology
Vice-chair: David Ufnar, University of Southern Mississippi

THURSDAY MORNING

Meeting Room 6

10:00 NATURAL DISASTERS IN MISSISSIPPI'S PAST AND FUTURE

Michael B. E. Bograd, Mississippi Office of Geology, Jackson, MS 39289

Mississippi has experienced natural disasters in the past, including earthquakes, hurricanes, tornadoes, floods, ice storms, droughts, and storm surges. With today's understanding of uniformitarianism, we can expect to suffer such events in the future. These events cause loss of life, property damage, crop damage, and significant economic impacts. Geologists are extending the record of these events into the geologic past through studies of sedimentological evidence left by hurricanes, dendrochronological evidence of hurricanes and droughts, paleoseismological studies of past earthquakes, and other methods. Mississippi will be impacted also by effects of long-term trends such as climate change (warmer/cooler, wetter/drier), sea level rise, rising sea surface temperatures, and cycles of increased numbers or severity of tropical storms. We will experience increasing flood disasters as growing populations develop coastal properties and flood plains, and as urbanization increases flash flooding. Geologists will engage these trends through: (1) geologic mapping; (2) studies of coastal erosion and accretion, coastal flooding, and barrier island migration; (3) geological engineering responses to natural hazards; and (4) by disseminating information about hazards and areas at risk. The challenge is to develop predictive capability and a distribution mechanism for information about hazards, based in the philosophy of Walter Hays that "natural hazards are inevitable but natural disasters are not."