



SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

GRADUATE EXIT SEMINAR

BETHANY WILLIAMS

The Effect of Multiple Stressors on Reproductive Physiology and Behavior in an African Cichlid



Human-induced, rapid environmental changes are limiting the ability of many species to adapt to their environments. In aquatic ecosystems, hypoxia (low oxygen) and turbidity (murky water) are two key anthropogenic stressors that can have profound effects on an animal's survival and reproduction by reducing energy availability and altering the visual environment, respectively. My dissertation examined how hypoxia and turbidity drive variation in reproductive traits across populations of a widespread African cichlid (*Pseudocrenilabrus multicolor*). I studied drivers of within-species population variation in traits using a full factorial rearing experiment (hypoxic/normoxic and clear/turbid) with two populations that differ in their prior exposure history to hypoxia and turbidity (i.e., a hypoxic/clear swamp population and a normoxic/turbid river population). I used this rearing experiment to determine the individual and interactive effects of hypoxia and turbidity on reproductive traits including behavior, color, and sex hormones in both populations. My research suggests that both hypoxic and turbid conditions negatively impact traits associated with reproduction, relative to normoxic, clear conditions, and may drive natural trait variation observed in this cichlid species. Also, the population and treatment effects on reproductive traits suggest that the overall impacts of multiple stressors on reproduction are generated through a complex set of genetic and plastic responses. This research contributes to the growing body of work that seeks to understand the effects of multiple stressors. However, to increase predictive ability and make better informed management decisions, there is still a need to understand what multiple stressor scenarios are most likely to have detrimental fitness consequences. Therefore, future research should address whether multiple stressor outcomes are more likely to be negative for certain combinations of stressors, taxa, or life stages.

Advisors: Dr. Suzanne Gray and Dr. Lauren Pintor

Monday, April 3, 2023
9:30 A.M.

Location: Kottman Hall 370

Join the seminar via Zoom:

<https://osu.zoom.us/j/95825356081?pwd=QkhBbVRWcnJ4eTRYVWliRjdsT3phdz09>

Meeting ID: 958 2535 6081

Password: 332413

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