MEES 631 FISH ECOLOGY

(3 CREDITS)

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Spring 2024: TBA; Offered over IVN

Pre-requisite: MEES 660 Ecological Systems

Course materials and exercises: https://moodle.cbl.umces.edu

Summary: In this class we introduce central questions, concepts, and topical research related to fish ecology, building on foundational knowledge on ecological processes (pre-requisite MEES 660; Ecological Systems). Fish Ecology has traditionally wrestled with the issues of population regulation, species interactions, and species richness focusing on the aspects unique to fishes including huge diversity compared to other vertebrates; high regenerative capacity; and somewhat stable multi-species interactions and fish assemblages. Theoretical advances that have focused on fishes include life history, niche, and foraging theory; and concepts of density-dependence related to population growth, predator-prey interactions, and migration. These advances depended heavily on assumptions of stationarity, which are increasingly difficult to support. Still, the unique aspects of fishes can sometimes lead to resilient outcomes, leading to conservation priorities to understand the adaptive responses of fishes to global change, fishing exploitation and other prevalent stresses.

Outcomes and Assessment: The overall assessment focus will be on skills in scientific advancement that occur through critical scholarship, scientific communication, and creation of novel research projects through proposal development and review. Principal Learning Outcomes from the course include

1. Foundational knowledge in processes and concepts in Fish Ecology (40% grade): Lecture material, assigned readings, reinforcement of MEES 660, mid-term (20%) and final (20%) take-home exams.
2. Critical reading and literacy (10%): Assigned readings: in-class participation on how published literature contributes to scientific advancement (identification of key questions, key assumptions, study design, and research legacy and impact).
3. Proposal development, construction, feasibility data analysis, intellectual merit (40%): Individual exercise to construct competitive proposal on a fish ecology topic unrelated to student's thesis or dissertation research.
4. Proposal review, panel group dynamics (10%): Individual and panel peer-review of proposals.