Molecule to Ecosystem: Environmental DNA as a Nexus of Coastal Ecosystem Sustainability for Maine
(Maine-eDNA)

1 8 6 5 THE UNIVERSITY OF MAINE

Ph.D. assistantships available starting Summer 2020

The University of Maine seeks a diverse pool of up to 18 doctoral students to join a new NSF-funded $20 million program in eDNA approaches to coastal ecosystem understanding and sustainability. Maine-eDNA is a multi-institution EPSCoR program involving the University of Maine, Bigelow Laboratory for Ocean Sciences, and seven other post-secondary and research institutions (https://umaine.edu/edna/).

We are seeking students with backgrounds and interests in the following areas: Aquatic ecology, marine science, bioinformatics, data science and spatial informatics, communications and team science.

Maine's coastal ecosystems, from lakes to rivers, estuaries and in-shore waters, are impacted by numerous stressors, including warming, fisheries declines, invasive species, harmful algal blooms, and severe disturbance events. Resolving ecological patterns and processes at diverse spatial, temporal and taxonomic scales of complex coastal systems is required to tackle these issues. The vision of Maine-eDNA is to achieve a leap forward in our understanding and sustainable use of coastal ecosystems through emerging eDNA science that is transforming how we collect, share, and integrate biological data. Maine-eDNA research will advance ecological knowledge about the population, community, and ecosystem processes using transdisciplinary research approaches to support sustainable fisheries and identify emerging harmful and shifting species. Through program-wide data sharing and collaboration, Maine eDNA will also leverage the -omics revolution and Big Data capacity of eDNA to advance the next generation of ecological inferences and engaged team science for coastal systems.

Graduate students will conduct research in one of three research themes:
1) Sustainable Fisheries: Employ eDNA-based ecological inference to understand population and community processes and consequences of fisheries recovery and recruitment dynamics of invertebrates and macroalgae.
2) Harmful and Shifting Species: Employ eDNA-based ecological inference to understand population and community processes governing emergence and controls on harmful blooms and broader species range shifts.
3) Macrosystem eDNA Integration: Leverage the team science and Big Data integration capacity of Maine-eDNA to understand community dynamics and stability across the full coastal gradient and taxonomic scope, from microbes to whales, as well as studies of how communication shapes team science processes and outcomes in the context of eDNA research.

Students in this program will receive up to 4 years stipend, plus tuition and health insurance coverage, with annual renewal based on satisfactory degree and program progress. Because of the interdisciplinary nature of Maine-eDNA, applicants can choose among a range of different degree programs based on their interests and primary advisors. Students will also participate in cross-program grad training, professional development, and communicating science to the public through a robust education and outreach program supported by Maine-eDNA.

Interested students should contact Maine-eDNA prospective advisors (https://umaine.edu/edna/). Applicants should submit the following materials:
- Resume/CV
- GRE scores and undergraduate and graduate transcripts (unofficial versions are acceptable)
- A letter from the applicant that indicates: why they are interested in participating in this program, whether they have experience working in interdisciplinary teams, and how their research interests relate to one or more of the three research themes listed above.
- A letter from a prospective Maine-eDNA affiliated graduate advisor supporting the application and likely contributions of the student's work to goals of Maine-eDNA.

Application materials should be sent to maine.epscor@maine.edu. Review of applications will begin January 15, 2020, and continue until positions are filled. Questions about this program should be sent to the Chair of the Graduate Education Committee, Dr. Jasmine Saros, jasmine.saros@maine.edu