

UMassAmherst

Postdoctoral researcher –Molecular Ecology & Conservation Lab

Job Summary

We are seeking a postdoctoral researcher to join our team leveraging genomic data to address research questions related to marine conservation genomics and ecological adaptation. This principally involves two study systems: population genomics of winter flounder (*Pseudopleuronectes americanus*) in the Gulf of Maine, and the genomic mechanisms underlying local adaptation and plasticity in marine snails, but with possible opportunities to develop additional projects broadly on molecular ecology in other species/systems. The postdoc will generate and work with existing datasets, including whole genome resequencing data (Illumina and Oxford Nanopore) and reduced representation data (RAD-Seq, RNA-Seq, and/or exome), that are linked to a spatial, phenotypic, and environmental data to enable addressing a variety of fundamental and applied research question in marine molecular ecology and conservation. *See more details on focal projects below.*

The postdoc will be part of a dynamic, interdisciplinary team in the Department of Environmental Conservation at UMass Amherst and collaborating scientific agencies. This position is a two year appointment, with a renewal for the second year provided satisfactory progress after year one. This position would be heavy on genomic data analyses with potential for some field and laboratory work. We hope to have the researcher begin in mid to late spring 2024 with flexibility in the exact start date. Interested candidates should email Lisa Komoroske (lkomoroske@umass.edu) with a cover letter, CV, an example writing product (e.g., published or forthcoming manuscript), and contact information for two references. Review of applications will begin **February 22th, 2024** but will continue past this date until the position is filled.

Essential Functions

Examples of duties:

- Develop research questions and experimental design to address them
- Conduct bioinformatics analyses of genomic and other (e.g., environmental) data
- Manuscript writing for publication in peer-reviewed journals

Other Functions

- Work collaboratively and effectively as part of an interdisciplinary team to promote teamwork, diversity, equality and inclusiveness.
- Mentor undergraduate and graduate students in affiliated research groups at UMass
- Participate in broader laboratory research, professional development and DEIJ activities

Minimum Qualifications (Knowledge, Skills, Abilities, Education, Experience, Certifications, Licensure)

- A Ph.D. in Ecology, Evolution, Population Genetics, or a closely related field.
- Strong foundational knowledge in population genomics and evolutionary biology
- Strong experience working with large genomic datasets (ideally, but not required, with low and/or high coverage whole genome re-sequence data combined with a high quality reference genome)
- Strong analytical/bioinformatics skills including demonstrated proficiency with HPC, R, python and/or other relevant statistical analyses/programs.
- Experience designing, planning, and conducting research studies, including the ability to meet project goals in a timely manner, and follow through on project deliverables.
- Demonstrated capacity to communicate research findings both at professional meetings and in high quality peer-reviewed journals.
- Excellent technical, analytical, organizational, and problem-solving skills.
- Strong attention to detail, and meticulous work style, as evidenced by previous research.

- Strong interpersonal and communication skills and the ability to work both independently and collaboratively with researchers from different scientific backgrounds, including NGO and agency partners as well as stakeholders.

Preferred Qualifications (Knowledge, Skills, Abilities, Education, Experience, Certifications, Licensure)

- Research experience integrating large datasets
- Research experience and/or interest in data visualization
- Previous experience managing, mentoring, or otherwise overseeing staff, graduate or undergraduate students.
- A demonstrated capability to think critically about the practical application of research outcomes.

Salary Information

Salary is commensurate with experience; for 0-2 years' post-PhD experience annual salary starts at \$52K plus benefits

About UMass Amherst

UMass Amherst, the Commonwealth's flagship campus, is a nationally ranked public research university offering a full range of undergraduate, graduate and professional degrees. The University sits on nearly 1,450-acres in the scenic Pioneer Valley of Western Massachusetts, and offers a rich cultural environment in a bucolic setting close to major urban centers. In addition, the University is part of the Five Colleges (including Amherst College, Hampshire College, Mount Holyoke College, and Smith College), which adds to the intellectual energy of the region.

As part of a commitment to their own multicultural community, CNS seeks an individual with a demonstrated commitment to diversity and one who will understand and embrace university initiatives and aspirations.

UMass Amherst is committed to a policy of equal opportunity without regard to race, color, religion, gender, gender identity or expression, age, sexual orientation, national origin, ancestry, disability, military status, or genetic information in employment, admission to and participation in academic programs, activities, and services, and the selection of vendors who provide services or products to the University. To fulfill that policy, UMass Amherst is further committed to a program of affirmative action to eliminate or mitigate artificial barriers and to increase opportunities for the recruitment and advancement of qualified minorities, women, persons with disabilities, and covered veterans. It is the policy of the UMass Amherst to comply with the applicable federal and state statutes, rules, and regulations concerning equal opportunity and affirmative action.

Project Details:

1. Winter flounder in the Gulf of Maine

A key challenge in for the assessment and management of Gulf of Maine winter flounder lies in the uncertainty surrounding the connectivity of biomass among different habitats and within estuaries. Consequently, there is a critical need to determine the appropriate spatiotemporal scale of genomic data for supporting fisheries management. The specific goals include: 1) Identifying the genetic stock structure of winter flounder at multiple spatial scales in the Gulf of Maine. 2) Characterizing genomic diversity, inbreeding status and effective population size of winter flounder populations in estuarine and nearshore habitats across the Gulf of Maine, with a specific focus on Boston Harbor and its comparison to other Massachusetts waters. 3) Investigate the contribution of spawning contingents, using Boston Harbor as a study system. This project is a collaboration with MA Division of Marine Fisheries and the UMass Amherst Fisheries & Aquatic Ecology Lab.

2. Genomic mechanisms of local adaptation and plasticity in marine snails

Rapid evolutionary change and phenotypic flexibility may play critical roles in species' adaptive capacity to ocean warming, but these processes are not well understood in marine ecosystems. This project focuses on ecological and evolutionary responses to climate change using a widely distributed marine predatory snail (*Urosalpinx cinerea*) as a tractable system in a series of field and laboratory experiments. Specifically, we are conducting field work and rearing populations across multiple generations in short and long-term lab experiments to examine variation in physiological traits (thermal tolerance, growth, consumption, metabolic rate, phenotypic plasticity), quantify trade-offs (e.g., reproductive output), and link to molecular data (genomic, epigenomic, and gene expression) to understand linkages across biological levels. This work is funded by the NSF BIO-OCE program and is in collaboration with the UMass Marine Global Change Ecology Lab.