

Mikayla Newbrey, Ph.D. Student

Easthampton, MA

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EDUCATION

Ph.D. Student in Organismic & Evolutionary Biology

Advisor: Dr. Lisa Komoroske

University of Massachusetts Amherst

2025 - Present

Bachelor of Science in Biology

GPA: 3.56

Deans List: Spring 2023; Fall 2023; Spring 2024

University of Massachusetts Amherst

2022-2024

Associate of Arts in Biology

GPA: 3.73

Graduated with Honors

Deans List: Spring 2019; Fall 2020; Spring 2020; Fall 2021; Spring 2021

Cape Cod Community College

2019-2022

RESEARCH EXPERIENCE

CAFE Scholars Program

2023

Molecular Ecology and Conservation Lab, University of Mass. Amherst

Supervisor: Dr. Lisa Komoroske

- Conducted population genetics research to determine relatedness among adult turtles utilizing the same nesting beach in a single season.
- Validated parent-offspring assignments using molecular markers, contributing to a deeper understanding of reproductive strategies and genetic structure in marine turtles.
- Applied statistical tools to analyze genetic data and inform conservation strategies.

WHOI, CC-CREW Internship

June 2022 – Aug 2022

Biology Dept., Woods Hole Oceanographic Institution, Woods Hole, MA

Supervisor: Dr. Carolyn Tepolt

- Designed a 213-SNP panel to capture genetic differentiation and population structure in invasive European green crabs.
- Developed and validated cost-effective genetic analysis tool using targeted genotyping to analyze population structure and adaptation, enabling spatial and temporal population studies across thousands of samples.
- Integrated transcriptome sequencing data to identify key markers of adaptation and selection pressures.

WHOI, Blue Economy Internship, Guest Student

May 2022 - June 2022

Biology Dept., Woods Hole Oceanographic Institution, Woods Hole, MA

Supervisor: Dr. Yaamini Venkataraman

- Investigated the influence of phenotypic plasticity and evolutionary adaptation on thermal tolerance in European green crabs using integrative approaches, including respirometry and genomics
- Analyzed data to explore links between thermal stress response and population dynamics.

WHOI, Blue Economy Internship

Jan 2022 - May 2022

Biology Dept., Woods Hole Oceanographic Institution, Woods Hole, MA

Supervisor: Dr. Carolyn Tepolt

- Investigated the influence of phenotypic plasticity and evolutionary adaptation on thermal tolerance in European green crabs using integrative approaches, including respirometry and genomics

PROFESSIONAL EXPERIENCE

Lab Manager

2024-2025

Molecular Ecology and Conservation Lab, University of Mass. Amherst

Supervisor: Dr. Lisa Komoroske

- Directed daily lab operations, including molecular protocol development, sample preparation, and equipment maintenance.
- Coordinated multiple research projects, ensuring adherence to timelines and compliance with safety protocols.
- Trained undergraduate and graduate researchers in molecular techniques and mentored them on independent thesis projects.

Lead Lab Technician

2022 - 2025

Molecular Ecology and Conservation Lab, University of Mass. Amherst

Supervisor: Dr. Lisa Komoroske

- Optimized Nanopore sequencing protocols through experimental testing and performance analysis.
- Managed multiple large-scale projects, including experimental design, data collection, and bioinformatic analysis.
- Maintained organized, reproducible data workflows to ensure high-quality results and facilitate collaboration.

Lab Technician

2022 - 2023

MACRO Lab, University of Mass. Amherst

Supervisor: Dr. Brian Cheng

- Supported research on local adaptation, phenotypic plasticity, and environmental stress responses in marine organisms.
- Conducted animal husbandry, providing daily care and monitoring health of marine species in a controlled experimental setting.
- Assisted in the execution of a common garden experiment, contributing to the study of species resilience to environmental stressors.

Supplemental Instructor

2020-2022

Cape Cod Community College, Barnstable MA

- Collaborated with faculty to develop course materials, including lecture notes, problem sets, and solution guides, to enhance student understanding of complex topics.
- Planned and facilitated study sessions for General Chemistry, General Biology, and Survey of Biology, reinforcing core concepts and fostering collaborative learning.
- Provided individualized study plans tailored to diverse learning needs, supporting students in mastering challenging material and achieving academic success.
- Cultivated strong communication and mentoring skills by engaging with students to build confidence and deepen their understanding of scientific principles.

Student Tutor

2020-2022

Cape Cod Community College, Barnstable MA

- Conducted peer-led review sessions to clarify lecture material, address student questions, and prepare students for exams in General Chemistry, General Biology, and Survey of Biology.
- Delivered one-on-one and group tutoring sessions, tailoring content and teaching approaches to accommodate individual learning styles and academic goals.
- Encouraged critical thinking and problem-solving by guiding students through complex scientific concepts and processes.
- Demonstrated adaptability by addressing a wide range of topics and student needs, contributing to improved academic performance and engagement.

MENTORING & RESEARCH SUPERVISION

Cammi Cooper — Undergraduate, Five College Marine Science Program, UMass Amherst
Summer 2025 – Present

Annalise Kuhlmann — Undergraduate, Five College Marine Science Program, Mount Holyoke College
Fall 2024

Mary Rutter — Undergraduate, Animal Science Independent Study, UMass Amherst (Jan–May 2024); Post-Baccalaureate Research Technician (June–July 2024)

Mikayla Donovan — Undergraduate, Biology Independent Study, UMass Amherst (Jan–May 2024); Lee-SIP Summer Scholar Mentee (2024)

Emma Ferreira — Undergraduate, Animal Science-Biotechnology Independent Study, UMass Amherst (2023)

ACADEMIC AWARDS AND GRANTS

Summer STEM BRIDGE Program University of Mass. Amherst Program Leader: Stephan Fernandez	2022
<ul style="list-style-type: none"> ○ Accelerated, merit-based program for community college students transferring into UMass Amherst in the STEM program ○ 6-week course program that provided course stipend 	
Lawrence-Lynch Corporation Scholarship for STEM studies	2021
Phi Theta Kappa Honors Society	2020
Louise M. Dimeo Scholarship	2020
Federal Pell Grant Recipient	2019 - 2024

TECHNICAL SKILLS

Software Proficiencies

- R
- Python
- Bash
- ImageJ
- ArcGIS
- Proficient in various other software platforms

Laboratory Techniques & Equipment

- GT-seq
- RAD-seq
- RNA-seq
- Whole Genome Resequencing
- Nanopore Sequencing
- Proficient in a range of advanced laboratory techniques and equipment

CERTIFICATIONS

Scientific Diver Certification (AAUS)

2025 (Active)

Certified under the standards of the American Academy of Underwater Sciences (AAUS) for conducting scientific research diving. Training included advanced diving techniques, underwater data collection, species surveys, equipment deployment, and strict adherence to safety and emergency protocols for research environments.

Rescue Diver Certification (NAUI)

2025 (Active)

Trained to prevent, recognize, and respond to diving emergencies. Skills include self-rescue, assisting distressed divers at the surface and underwater, managing emergency scenarios, and administering first aid and oxygen in dive-related incidents.

Open Water Scuba Certification (NAUI)

2024 (Active)

Certified Open Water Scuba Diver with comprehensive training in diving techniques, underwater navigation, and emergency procedures. Proficient in the use of scuba equipment and committed to maintaining high safety standards.

PRESENTATIONS

A Genetic Toolkit for Understanding the Rapid Expansion of European Green Crabs in the Northeast Pacific

2023

International Conference on Marine Bioinvasions, Baltimore MD

Authors: Mikayla Newbrey, Sara Shapiro, Dr. Carolyn Tepolt

- Presented original research, showcasing the design and application of a 213-SNP panel for population genetics.
- Highlighted novel findings on genetic differentiation and adaptive variation across thousands of samples, with implications for understanding invasion dynamics.
- Received 3rd place in the conference-wide poster competition, demonstrating effective science communication and the broader impact of the research.

Quantifying Relatedness of Green Sea Turtles in the Hawaiian Islands

2023

CAFE Scholars Program Poster Presentation

Authors: Mikayla Newbrey, Jamie Adkins, Dr. Lisa Komoroske

- Presented a pilot study investigating the genetic relatedness of Hawaiian green sea turtles (*Chelonia mydas*), a threatened species, to inform conservation efforts under changing environmental conditions.
- Focused on understanding relatedness among adult turtles nesting at French Frigate Shoals and validating parent-offspring assignments to assess inbreeding risks and genetic diversity.
- Conducted DNA extraction using NucleoMag bead isolation protocols, with DNA quantification via Qubit fluorometry and Agilent Fragment Analyzer to ensure high-quality samples.

PUBLICATIONS

**Adaptation to warm environments with a fast pace of life in a marine
predatory snail**

bioRxiv, 2025. [Preprint]

DOI: 10.1101/2025.06.20.660751

Contributors: Christopher Dwane; Lisa M Komoroske; Allison L Rugila; Blair P Bentley; Emma Rawson; Elizabeth Clark; Gillian Nichols; **Mikayla Newbrey**; Emily Bucari; Chance Yan et al.

References Furnished Upon Request
