

ELLEN ELIZABETH BIESACK

Virginia Institute of Marine Science
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EDUCATION

Master of Science, Biology Old Dominion University Faculty Advisor - Kent E. Carpenter, PhD	December, 2017 GPA 3.9
Bachelor of Science, Marine Biology University of North Carolina at Wilmington, <i>summa cum laude</i> with University Honors Faculty Advisor - Thomas Lankford, PhD	May, 2012 GPA 3.9

WORK EXPERIENCE

<i>Senior Lab and Research Technician</i> , Virginia Institute of Marine Science	2018-present
<ul style="list-style-type: none">• Conduct research using population genetic lab techniques, including mitochondrial, microsatellite, and next-generation sequencing and bioinformatics and data analysis from fisheries species• Maintain budgets for several grants for scientific research, including ordering through William & Mary's procurement portal, buyW&M• Supervise graduate students, undergraduate researchers, and volunteers and provide instruction and safety orientations in a research lab	
<i>Laboratory Technician</i> , Old Dominion University Research Foundation	2018-2018
<ul style="list-style-type: none">• Conducted next-generation sequencing research projects investigating the genetic population structure of several marine fishes collected during the Philippine Expedition of 1907-1910. Used ancient DNA extraction techniques and bioinformatics• Trained graduate student researchers in lab procedures and bioinformatics• Maintained laboratory equipment, inventory, and supplies	
<i>Graduate Teaching Assistant</i> , ODU Department of Biological Sciences	2015-2017
<ul style="list-style-type: none">• Supervised and instructed four (4) two-hour lab sections of the courses Environmental Science BIOL 111N and Environment and Man BIOL 113N, which included hands-on experiments, computer simulations, and a service learning experience• Enforced lab policies, evaluated student participation and assignments, maintained grades, and lectured on concepts for each laboratory	
<i>Graduate Research Assistant</i> , ODU Department of Biological Sciences	2014-2017
<ul style="list-style-type: none">• Conducted next-generation sequencing research projects investigating the genetic population structure of southeast Asian fisheries species, including sample collection and processing, preparation for sequencing, and bioinformatics• Maintained the ichthyological research and teaching collections curated by Dr. Kent Carpenter• Coordinated authors and completed final edits of the FAO's Eastern Central Atlantic guide to marine resources	

- Research Technician*, ODU Department of Biological Sciences 2014-2014
- Field identified, collected, and prepared Pink-ear Emperor Snapper (*Lethrinus lentjan*) specimens for RAD library preparation and sequencing data analysis
 - Organized a next-generation sequencing workshop at De La Salle University in Manila, Philippines for experts and students from the United States and Southeast Asia
 - Participated in a SCUBA and rotenone shallow water fish biodiversity survey in the Verde Island Passage in the Philippines organized by the California Academy of Sciences
- Scientific Writing Consultant*, ODU Department of Biological Sciences 2013-2013
- Completed analyses of genetic sequence data obtained from the Three-spot Damselfish (*Dascyllus trimaculatus*) in the Coral Triangle
 - Compiled a report on results of the project, including literature review
- Assistant Curator*, UNC Wilmington Natural History Collections 2010-2012
- Maintained the quality and appearance of specimens in the fish collection
 - Digitized the hard copy catalog and maintained and updated the database in Microsoft Access to prepare for upload to the Internet through Specify6
 - Assisted in the acquisition and cataloging of new research specimens
 - Achieved the complete digitization and organization of the larval fish research collection
- Laboratory and Field Technician*, UNC Wilmington Center for Marine Science Fish Ecology Lab 2010-2010
- Conducted research field work including surf zone seining, surveying topography, and collecting sediment cores and invertebrate samples
 - Collected environmental data with a YSI meter and retroreflector
 - Transported survey materials to collection sites in vehicles and by hand
 - Carried out laboratory processing of samples, including gut content dissection and analysis, particle grain size analysis, invertebrate identification, fish identification and measuring, and otolith extraction for aging

CERTIFICATIONS

- Lifeguard Certified April 2013 by the American Red Cross
- CPR/First Aid Certified August 2018 by the American Red Cross
- Open Water SCUBA certified May 2010 at Aquatic Safaris of Wilmington, NC
- IACUC certified

VOLUNTEER EXPERIENCE

- Volunteer*, Virginia Institute of Marine Science, Multispecies Research Group, Gloucester Point VA 2018-2018
- Participating in laboratory processing of ChesMMAAP and NEAMAP survey samples, including otolith cutting, mounting, and reading, and gut content analysis
- Volunteer Intern*, North Carolina Division of Marine Fisheries Regional Office, Wilmington NC 2012-2013
- Applied knowledge of the principles, methods, and procedures of fisheries management, commercial and recreational fisheries and fisheries gear, and estuarine and marine species identification in the field with the following projects: New River Juvenile Red Drum Seining, New River Estuary Shrimp Trawling, and Cape Fear River Gillnet Survey
- Volunteer Intern*, International Union for the Conservation of Nature (IUCN) Global Marine Species Assessment, Norfolk VA 2013-2013
- Worked with a team of interns and graduate students at Old Dominion University to assess extinction risk of marine taxa, mainly bony fishes
 - Composed extinction risk assessment reports based on literature review, including range and life history data, and uploaded reports to the IUCN's Species Information System (SIS) toolkit online to be used in Red List Assessments
- Volunteer*, UNC Wilmington Center for Marine Science Fish Ecology Lab, Wilmington NC 2010-2013
- See duties under "Relevant Experience"
- Education Volunteer and Safety Diver*, North Carolina Aquarium at Fort Fisher, Kure Beach, NC 2010-2010
- Educated visitors of the aquarium on eastern North Carolina aquatic habitats and species
 - Acted as SCUBA safety diver for underwater educators and performed habitat maintenance

RESEARCH INTERESTS

I am interested in the conservation of marine and freshwater fishes and in measuring human impacts on diadromous fishes, marine migratory species, and elasmobranchs through exploitation and development on rivers and coastal habitats. I am also interested in fisheries science, including the delineation and modeling of fish stocks, and management. My main research experience is in population genetics, with applications for conservation and stock delineation, of marine and freshwater fishes of Southeast Asia and the southeast United States.

ADDITIONAL CURRICULA

- Environmental Metagenomics. Physalia Online Workshop, February 2021.
- 4th Annual eDNA Technical Exchange Workshop. Online, November 2020.
- National Center for Genome Analysis Support Metagenomics Workshop. Indiana University, Bloomington, IN, October 2019.
- Statistical and Graphical Analysis in R. Virginia Institute of Marine Science, Gloucester Point, VA, January – May 2019.
- Using Environmental DNA for Surveys and Monitoring (workshop). The Wilds Conservation Training Center, Cumberland, OH, November 2018.

SOFTWARE SKILLS

- Basic skills in programming languages Python and Bash
- Proficient in Microsoft Office Suite software, R, and various population genetics programs

CONFERENCE PRESENTATIONS

American Fisheries Society: Early Life History Section 35th Annual Larval Fish Conference in Wilmington, NC. May 2011. Poster Presentation.

American Fisheries Society 145th Annual Meeting in Portland, OR. Aug. 2015. Oral Presentation.

American Fisheries Society 146th Annual Meeting in Kansas City, MO. Aug. 2016. Oral Presentation.

Tidewater Chapter of the American Fisheries Society Annual Meeting in Salisbury, MD. Feb. 2019. Poster Presentation.

Aquaculture 2019 Meeting in New Orleans, LA. Mar. 2019. Poster Presentation.

Tidewater Chapter of the American Fisheries Society Annual Meeting in Nags Head, NC. Mar. 2022. Poster Presentation.

National Shellfisheries Association Meeting in Baltimore, MD. Mar. 2023. Oral Presentation.

PUBLICATIONS

- Mowatt-Larssen, T., Thys, T.M., Hilderling, J., Caldera, E.J., **Biesack, E.E.**, McDowell, J.R., Nyegaard, M. Crowd-sourced media reveal patterns in the size and species composition of ocean sunfishes (Tetraodontiformes, Molidae) in the Northeast Pacific Ocean. *Frontiers in Marine Science*, In review.
- Bird, C.E., Dang, B.T., **Biesack, E.E.**, Ackiss, A.S., Chheng, P., Phounvisouk, L., Truong, T.O., Uy, S., Carpenter, K.E. Population structure and ddRAD barcode species verification of the Sicklefin Barb, *Puntioplites falcifer* (Cyprinidae), in the lower Mekong River basin. *Journal of Fish Biology*, Accepted.
- Corso, A.D., Desvignes, T., McDowell, J.R., Cheng, C.C., **Biesack, E.E.**, Steinberg, D.K., Hilton, E.J. *Akarotaxis gouldae*, a new species of Antarctic dragonfish (Notothenioidei: Bathydraconidae) from the western Antarctic Peninsula. *Zootaxa*, DOI: 10.11646/ZOOTAXA.5501.2.3.
- Schatz, K.A., McDowell, J.R., **Biesack, E.E.**, Rivest, E.B. (2023) Relative importance of phenotypic plasticity and carryover effects in response to small salinity shifts during oyster aquaculture production. *Aquaculture*, DOI: 10.1016/j.aquaculture.2023.740432.
- Gales, S.M., Parsons, K.T., **Biesack, E.E.**, Ready, J.S., Siccha-Ramirez, R., Rosa, L.C., Rotundo, M.M., Bills, R., Rodrigues, A.E.S., Rodrigues-Filho, L.F.S, McDowell, J., Sales, J.B.L. (2023) Almost half of the *Gymnura* van Hasselt, 1823 species are unknown: Phylogeographic inferences as scissors for cutting the hidden Gordian knot and clarify their conservation status. *Journal of Systematics and Evolution*, DOI: 10.1111/jse.13027.
- Ropp, A.J., Reece, K., Snyder, R., Song, J., **Biesack, E.E.**, McDowell, J.R. Fine-scale population structure of the northern hard clam (*Mercenaria mercenaria*) revealed by genome-wide SNP markers. (2023) *Evolutionary Applications*, DOI: 10.1111/eva.13577.
- McDowell, J.R., Grewe, P., Lauretta, M., Walter, J., Baylis, S.M., Gosselin, T., Malca, E., Gerard, T., Shiroza, A., Lamkin, J.T., **Biesack, E.E.**, Zapfe, G., Ingram, W., Bravington, M., Davies, C., Porch, C. (2022) Low levels of sibship encourage use of larvae in western Atlantic bluefin tuna abundance estimation by close-kin mark-recapture. *Scientific Reports*, DOI: 10.1038/s41598-022-20862-9.

- Corso, A.D., McDowell, J.R., **Biesack, E.E.**, Muffelman, S.C., Hilton, E.J. (2022) Larval stages of the Antarctic Dragonfish *Akarotaxis nudiceps* (Waite, 1916), with comments on the larvae of the morphologically similar species *Prionodraco evansii* Regan 1914 (Notothenioidei: Bathydraconidae). *Journal of Fish Biology*, DOI: 10.1111/jfb.15267.
- Askin, S.E., Fisher, R.A., **Biesack, E.E.**, Robins, R., McDowell, J.R. (2022) Population genetic structure in Channeled Whelk, *Busycotypus canaliculatus*, along the U.S. Atlantic coast; implications for management. *Transactions of the American Fisheries Society*, DOI: 10.1002/tafs.10374.
- Biesack, E.E.**, Dang, B.T., Phounvisouk, L., Bird, C.E., Ackiss, A.S., Truong, T.O., Chheng, P., Phounvisouk, L., Uy, S., Carpenter, K.E. (2020) Evidence for population genetic structure in two exploited Mekong River fishes across a natural riverine barrier. *Journal of Fish Biology*, DOI: 10.1111/jfb.14424.
- Ackiss, A.S., Dang, B.T., Bird, C.E., **Biesack, E.E.**, Chheng, P., Phounvisouk, L., Vu, Q.H., Uy, S., Carpenter, K.E. (2019) Cryptic lineages and a population dammed to incipient extinction? Insight into the genetic structure of a Mekong River catfish. *Journal of Heredity*, 110(5): 535-47.
- Dang, B.T., Vu, Q.H.D., **Biesack, E.E.**, Doan, V.T., Truong, T.O., Tran, T.L., Ackiss, A.S., Stockwell, B.L., Carpenter K.E. (2019) Population genomics of the peripheral freshwater fish, *Polynemus melanochir* (Perciformes, Polynemidae) in a changing Mekong Delta. *Conservation Genetics*, 20(5): 961-72.
- Biesack, E.E.** 2017. Population structure of *Lethrinus lentjan* (Lethrinidae, Percoidae) across the South China Sea and the Philippines is detected with lane-affected RADSeq data (Masters Thesis). Old Dominion University, Norfolk, VA.
- Carpenter, K.E. & **E.E. Biesack**. 2016. Bony Fishes Introduction. In K.E. Carpenter & N. De Angelis, eds. The living marine resources of the Eastern Central Atlantic. Vol. 3: Bony Fishes Part 1. FAO Species Identification Guide for Fishery Purposes. Rome, FAO.
- Biesack, E.E.** 2012. Stock structure of southern kingfish (*Menticirrhus americanus*): Defining genetic units for stock assessment and management of North Carolina fisheries (Honors Thesis). UNC Wilmington, Wilmington, NC.

PEER REVIEWS

- Schulze, M., von der Heyden, S., Japp, D., Singh, L., Durholtz, D., Kapula, V.K., Ndjaula, H., Henriques, R. (2020) Supporting fisheries management with genomic tools: a case study of Kingklip (*Genypterus capensis*) off southern Africa. *Frontiers in Marine Science*, 787.

FUNDS AWARDED

- 2019 Virginia SeaGrant Exploring New Aquaculture Opportunities 2-year grant (R/721581) awarded to Hudson, Fisher, McDowell, and **Biesack**. Developing eDNA tool for early detection of two main fouling organisms of oyster aquaculture farms, *Cliona* spp. and *Polydora websteri*.