

# KEIRA HEGGIE

Smithsonian Environmental Research Center  
647 Contees Wharf Rd. | Edgewater, MD 21037 | (443) 482-2280 | heggiek@si.edu

## EDUCATION

---

**University of Otago**, Dunedin, New Zealand December 2008  
M.S. in Marine Science with Distinction

**Brown University**, Providence, RI May 2004  
B.S. in Aquatic Biology

## EXPERIENCE

---

**Smithsonian Environmental Research Center (SERC)**, Edgewater, MD February 2011 – Present  
*Biological Technician – Fish and Invertebrate Lab (Dr. Anson Hines and Dr. Matt Ogburn)*

- Implement ecological research projects in field and laboratory settings, including:
  - Examining migratory life cycles of blue crabs in the Chesapeake Bay
  - Monitoring river herring spawning runs using imaging sonar for species conservation
  - Understanding the dispersal patterns, diet, and ecosystem-level effects of non-native blue catfish
  - Studying habitat use, movement, and long-distance migration of cownose rays
- Utilize a range of laboratory skills, including microscopy, taxonomic identification, dissection, gut content analysis, and otolith aging
- Conduct fish and invertebrate sampling in the field with a variety of gear, including trawls, sled tows, fyke nets, tethers, and biotelemetry
- Conduct quantitative research, including statistical analysis in SAS and R and quality control of field and lab data
- Operate and maintain small boats, including Boston Whalers and Jon boats

*Biological Technician – Marine and Estuarine Ecology Lab (Dr. Denise Breitburg)*

- Designed and implemented marine research projects, including:
  - Predicting impacts of shoreline hardening on fish populations at the land-water interface
  - Studying the effects of an invasive marsh grass on native plant communities and juvenile fish habitats
  - Evaluating anthropogenic impacts on jellyfish abundance
- Contributed to literature reviews, writing, and data analysis for reports and manuscripts submitted to peer-reviewed journals
- Collaborated and communicated with other institutions and government agencies to collect, synthesize, and interpret data
- Conducted quantitative research, including statistical analysis in SAS and R and GIS mapping
- Processed samples for a variety of analyses, including taxonomic identification, fish and invertebrate dissection, otolith aging, and stable isotope, sediment, and gut content analyses
- Worked with a variety of gear types used in fisheries
- Coordinated a large field crew to carry out research and trained interns, summer hires, and volunteers
- Communicated with land owners and watermen regarding SERC's research goals, findings, and activities

**Washington Department of Fish and Wildlife**, Seattle, WA July 2008 - August 2008/July 2010 – August 2010  
*Scientific Technician 2*

- Performed creel surveys to collect catch per unit effort for the king salmon fishery in Puget Sound and detected and collected coded-wire tags to provide stock-specific estimation of population parameters for fishery contribution and marine survival
- Educated over 2,000 anglers about salmon species identification and new regulations for the on-going effort to conserve and rebuild marine fish communities that are protected under the Endangered Species Act

**University of Washington, Seattle, WA**

February 2009 – September 2010

*Fish Hatchery Technician*

- Maintained and monitored an aquatic zebrafish (*Danio rerio*) facility used by approximately 30 researchers
- Coordinated research activities across multiple academic institutions

**University of Otago, Dunedin, NZ**

June 2006 - January 2008

*Research Assistant - Marine Science Department (Dr. Candida Savage)*

- Used chemical markers on selected biota to assess the degree of terrestrial matter incorporated in coastal food webs that are influenced by different watershed land use practices
- Developed a model to equip New Zealand farmers, land use developers, and local and regional decision makers with a tool to guide appropriate management policies to limit nitrogen inputs to New Zealand estuaries
- Constructed GIS spatial databases from seasonal sampling data and statistically analyzed and assessed data from water quality monitoring devices, nutrient samples, and biota tissue isotopes

**Brown University, Providence, RI**

May 2003 - December 2005

*Research Assistant – Geological Science Department (Dr. Warren Prell) & Ecology and Evolutionary Biology Department (Dr. Andrew Altieri)*

- Studied foraminifera populations in sediment cores to develop a reliable historical record of the degree of Northern Narragansett Bay hypoxia
- Researched the local extinction of a foundation species due to physiological stress of hypoxia in Narragansett Bay, RI and the consequent shifts in community composition and trophic interactions

**SELECTED PUBLICATIONS, PRESENTATIONS, AND POSTERS**

---

**Heggie K**, Kornis M, Davias L, Breitburg D (2013) Effects of anthropogenic shoreline hardening and watershed land use on condition indices of two fish species. Coastal and Estuarine Research Federation Conference, November 3-7 San Diego CA.

**Heggie K** and C Savage (2009) Nitrogen yields from New Zealand coastal catchments to receiving estuaries. *New Zealand Journal of Marine and Freshwater Research* 43(5): 1039-1052.

Savage C, Hammond M, **Heggie K**, Gongol C (2009) Stable isotope ratios reveal shifts in organic matter sources and diet diversity in estuarine ecosystems influenced by agricultural run-off. Coastal and Estuarine Research Federation Conference, November 1-5 Portland OR.

**Heggie K** and C Savage (2009) Influence of salinity, flow and population structure on the clearance rates of two bivalves. Coastal and Estuarine Research Federation Conference, November 1-5 Portland OR.

Martin A, Prell W, Murray D, **Heggie K** (2007) Benthic foraminifers as proxies for the spatial and temporal extent of hypoxia (Narragansett Bay CHRP). Estuarine Research Federation Conference, November 4-8 Providence RI.

**SKILLS**

---

**Computer Skills:** Adobe (Indesign, Photoshop, Acrobat), ArcGIS, Endnote, JMP, Microsoft (Excel, Word, PowerPoint), R Project for Statistical Computing, SAS, Sigmaplot

**Certifications:** Maryland Department of Natural Resources Boating License, NAUI Advanced Certification, Open Water Scuba Certification