

**BENJAMIN MEIR FERTIG**

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**EDUCATION**

**University of Maryland Center for Environmental Science,**  
Integration and Application Network, Cambridge, MD  
**Ph.D.** Ecology. Pending.

**Brandeis University,** Waltham, MA

**B.A.** Biology. May 2003.

**Minor:** Environmental Studies

**Senior Essay:** "Integrating Science in Marine Invasive Species Policy"

**RESEARCH INTERESTS**

Anthropogenic influences on estuarine ecosystems, biological indicators of eutrophication, stable nitrogen isotope techniques, spatial analysis, ecosystem health assessment, applying science to environmental management and policy, science communication

**FELLOWSHIPS AWARDED**

National Estuarine Research Reserve System (NERRS) 2008 Graduate Research Fellowship "Connecting monitoring, long-term, and broad-scale water quality datasets through an estuarine biological indicator of nitrogen source" (\$29,500)

National Estuarine Research Reserve System (NERRS) 2007 Graduate Research Fellowship "Establishing a link between  $\delta^{15}\text{N}$  in *Crassostrea virginica* tissues to land use: spatial analysis and modeling approaches" (\$29,500)

National Estuarine Research Reserve System (NERRS) 2006 Graduate Research Fellowship "Developing the eastern oyster, *Crassostrea virginica*, as a biological indicator of nitrogen sources" (\$29,500)

## RESEARCH EXPERIENCE

**Integration and Application Network**, *University of Maryland Center for Environmental Science*. Cambridge, MD. 2005 – Present

- Assessing seasonal and tissue variations in oyster stable isotopes and determined optimal sample size to develop the eastern oyster, *Crassostrea virginica* as a bioindicator of nitrogen sources.
- Linking stable nitrogen isotopes in oyster (*C. virginica*) tissues to land use and nitrogen source in Monie Bay, a component of the Chesapeake Bay National Estuarine Research Reserve.
- Determining relative roles macroalgae and oysters can play as biological indicators of nitrogen source in Maryland's Coastal Bays.
- Surveying oyster stable nitrogen isotopes throughout Chesapeake Bay, from the Chesapeake Bay Foundation's Oyster Gardening Program.
- Communicating findings to scientists, environmental managers, non-profit organizations, and the public via journal articles, presentations, 4-page graphic-rich newsletters, and print and online news articles.

**Ecosystems Center, Marine Biological Laboratory**. *Semester in Environmental Science*. Woods Hole, MA. Fall 2001

- Studied terrestrial and aquatic ecology, and mathematical modeling while conducting fieldwork including water quality analysis and nutrient loading in various ecosystems
- Experimented on aquatic carnivorous plants, revealing nitrogen uptake patterns; presented the paper at the SES Symposium.  
<http://courses.mbl.edu/SES/data/project/2001/fertig.pdf>

## PROFESSIONAL EXPERIENCE

**Editor, Oceanic/ Aquatic Sciences and Fisheries Abstracts** 8/03 – 5/05  
*Cambridge Scientific Abstracts, Bethesda, MD*

- Selected, edited, and indexed abstracts for journal publication of Oceanic Abstracts and Aquatic Science and Fisheries Abstracts.
- Wrote review articles to showcase the ASFA and Oceanic databases in the Hot Topic series.
- Indexed websites about aquaculture, aquatic science, oceanography, sustainable fisheries, sustainable energy, sustainable development and international environmental programs

**Science and Technology Intern** 1/03 – 12/03  
*Northeast Regional Panel on Aquatic Nuisance Species, Cambridge, MA*

- Co-authored white paper "Ballast Water Exchange in the North Atlantic: A Background Paper for the Ballast Water Management Workshop", circulated at Ballast Water Workshop in Halifax. MIT Sea Grant College Program publication number 04-5

- Profiled biology/ecology of marine invasive species in Gulf of Maine incorporating information from a broad scientific literature survey
- Assisted with a regional ballast water management plan proposal, planning a ballast water exchange conference, analyzing shipping traffic

**Invasive Species Education and Outreach Fellowship** 6/02 – 12/02

*Massachusetts Bays Program, Executive Office of Environmental Affairs, Boston, MA*

- Authored public outreach brochure (35,000 printed copies) on invasive species, that advises aquatic pet owners on methods to prevent introductions of non-native species
- Profiled marine invasive species found in the Gulf of Maine through a broad scientific literature survey on their biology and ecology

**Naturalist Intern and Research Assistant** 6/02 – 8/02

*Center for Oceanic Research and Education, Essex, MA*

- Identified marine mammals and birds seen along whale watch tours
- Collected data on location and behavior patterns of marine mammals
- Publicly spoke about behavior, biology, and ecology of marine life, and the Gulf of Maine

**Environmental Systems Intern** 6/01 – 8/01

*IBM Burlington, VT (through the New England Board of Higher Education)*

- Designed and wrote intranet webpages for Environmental Systems, including Groundwater, Hazardous Waste, Chemical Management, and Industrial Waste Water
- Surveyed solid waste streams for recyclables at IBM-Burlington; prepared annual report
- Analyzed potential recycling projects, especially cell phone batteries, and developed a framework for a recycling program currently under consideration by IBM

## PEER-REVIEWED PUBLICATIONS

**Fertig, B.**, Carruthers, T.J.B., Dennison, W.C., Jones, A., Pantus, F., and Longstaff, B. 2009. Oyster and macroalgae bioindicators detect elevated  $\delta^{15}\text{N}$  in Maryland's Coastal Bays. In press. *Estuaries and Coasts*

**Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. Oyster  $\delta^{15}\text{N}$  as a bioindicator of waste nitrogen and degraded water quality in a sub-estuary of Chesapeake Bay. In Progress.

## TECHNICAL REPORTS

**Fertig, B.**, Carruthers, T.J.B., Dennison, W.C. 2008. Final Report: 2007 Water Quality Monitoring in Monie Bay. Prepared for National Estuarine Research Reserve System.

- Beckert, K., **Fertig, B.**, O'Neil, J.M., Carruthers, T.J.B., Wazniak, C., Sturgis, B., Hall, M., Jones, A., and Dennison, W. C. 2008. Fine scale patterns of water quality in three regions of Maryland's Coastal Bays: assessing nitrogen source in relation to land use. Prepared for Maryland's Coastal Bays Program
- Fertig, B.**, Carruthers, T.J.B., Dennison, W.C.. 2007. Linking Monie Bay watershed land use to nitrogen stable isotopes in tissues of the native eastern oyster, *Crassostrea virginica*. Prepared for National Estuarine Research Reserve System.
- Fertig, B.**, Carruthers, T.J.B. Wazniak, C., Sturgis, B., Hall, M., Dennison, W.C. 2006. Water quality in four regions of the Maryland Coastal Bays: assessing nitrogen source in relation to rainfall and brown tide. Prepared for Maryland Coastal Bays Program.
- Fertig, B.** August 2004. "Gardening the Oceans Using Iron Fertilizers". CSA Hot Topic <http://www.csa.com/discoveryguides/oceangard/overview.php>
- Fertig, B.**, Foster, T., and Nicholas, I. April 2005. "Tsunamis and the International Response: Economic, Social and Environmental Dimensions" CSA Hot Topic <http://www.csa.com/discoveryguides/tsunami/overview.php>
- Pederson, J. and **B. Fertig** 2003. "Ballast Water Exchange in the North Atlantic: A Background Paper for the Ballast Water Management Workshop", circulated at Ballast Water Workshop in Halifax. MIT Sea Grant College Program publication number 04-5
- Fertig B.** 2003. Integrating Science in Marine Invasive Species Policy. B.A. Senior Essay. 62 pp.

## PRESENTATIONS

- Beckert, K., **Fertig, B.**, Carruthers, T.J.B., Dennison, W.C. (March 2009) "Oyster  $\delta^{15}\text{N}$  as a downstream bioindicator of water quality declines linked to land use in a watershed of Maryland's Coastal Bays." *Oral presentation at Atlantic Estuarine Research Society.*
- Fertig, B.** (January 2009) "Stable nitrogen isotopes in the native eastern oyster (*Crassostrea virginica*) as an indicator of nitrogen source." *Invited speaker Horn Point Laboratory Student Seminar Series*
- Fertig, B.** (September 2008) "What oysters can tell us about the sources of pollution in Chesapeake Bay" *Invited speaker at Brownbag Lunch Seminar Series, Chesapeake College*
- Fertig, B.**, Carruthers, T.J.B., Dennison, W.C., Jones, A.B., Pantus F., and Longstaff, B. (March 2008) "Identifying anthropogenic nitrogen loading in Maryland's Coastal Bays using stable isotope analysis of biological indicators" *Oral presentation at Atlantic Estuarine Research Society.*
- Beckert, K., Fertig, B.**, O'Neil, J., Carruthers, T.J.B., and Dennison, W.C. (February 2008) "Fine scale patterns of water quality in three regions of Maryland's Coastal Bays: assessing nitrogen source in relation to land

- use" *Invited speaker at Maryland Coastal Bays Program Science and Technology Advisory Committee Meeting, Cambridge, MD*
- Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. (November 2007) "Identifying anthropogenic nitrogen sources in Monie Bay (Chesapeake Bay National Estuarine Research Reserve) using stable isotopes of the oyster, *Crassostrea virginica*" *Invited speaker at ERF 19<sup>th</sup> Biennial International Conference, Providence, RI*
- Fertig, B.**, Carruthers, T.J.B., Dennison, W.C. (October 2007) "Identifying anthropogenic nutrient loading in Maryland's Coastal Bays using stable isotope analysis of biological indicators" *Invited speaker Horn Point Laboratory Student Seminar Series*
- Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. (May 2007) "Developing the eastern oyster, *Crassostrea virginica*, as a biological indicator of nitrogen source: short- and long-term bioindicators in Maryland's Coastal Bays and linking land use to stable isotopes in Monie Bay" *Invited speaker at Maryland Department of Natural Resources*
- Benson, E.**, **Fertig, B.**, and **Florkowski, L.** (March 2007) "From land to lake to sea: Ecological monitoring over various spatial scales and complexities" *(Co-Invited speakers, split between authors) at Integration and Application Network Seminar Series*
- Fertig, B.** (February 2007) "Developing the eastern oyster, *Crassostrea virginica*, as a biological indicator of nitrogen source in Chesapeake Bay". *Invited speaker at Chesapeake Bay Foundation Oyster Gardening Program*
- Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. (December 2006) "Comparing the eastern oyster, *Crassostrea virginica*, to the macroalgae *Gracilaria* sp. as a biological indicator of nitrogen source in Maryland's Coastal Bays" *Invited speaker Horn Point Laboratory Student Seminar Series*
- Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. (July 2006) "Developing the eastern oyster, *Crassostrea virginica*, as a biological indicator of nitrogen source" *Invited speaker at Cooperative Oxford Laboratory*
- Fertig, B.**, Carruthers, T.J.B., and Dennison, W.C. (June 2006) "Developing the eastern oyster, *Crassostrea virginica* as a biological indicator of nitrogen source" *Invited speaker, Horn Point Laboratory Student Seminar Series*

## POSTERS

- Fertig, B.**, Carruthers, T.J.B., Dennison, W.C. 2008. Oyster  $\delta^{15}\text{N}$  as a bioindicator of waste nitrogen and degraded water quality in a sub-estuary of Chesapeake Bay. Poster at NOAA National Estuarine Research Reserve Annual Meeting, Monterey, CA
- Fertig, B.**, Carruthers, T.J.B., Dennison, W.C. 2007. Developing the eastern oyster, *Crassostrea virginica*, as a bioindicator of nitrogen source over multiple spatial scales *Poster at 2007 University of Maryland Marine, Estuarine Environmental Science Program Colloquium*

## **TEACHING EXPERIENCE**

Graduate Teaching Assistant, University of Maryland Center for Environmental Science. 2007, 2009 “Science for Environmental Management” (MEES 698A, MEES698V) Responsible for facilitating Interactive Video Network and online course readings experience, as well as grading and organizing class presentations

Integration and Application Network Science Communication Course, March and April 2008, in Charleston, SC, and Annapolis, MD. Lectured on “Principles and Pitfalls of Powerpoint”

## **MISCELLANEOUS**

Proficiency with ESRI ArcMap GIS, Adobe Creative Suite 2  
Fluency in Spanish, Proficient in Hebrew