

CURRICULUM VITAE
DAVID E. AVERY, Ph.D.

Work address

Dept. of Marine Sciences
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Research Experience

Assistant Professor in Residence Sept. 2004 to present.

Continue work begun during post-doc: toxin resistance in copepods.

Two new proposals to investigate the trophic transfer of algal toxins (ECO HAB) and the adaptive significance of resistance (NSF) were recently funded. Collaborating with molecular biologists and neurobiologists, we have identified and sequenced one gene responsible for resistance. We are expanding this area of research by looking for additional genes and making neurophysiological measurements.

Taught several courses in the undergraduate Coastal Studies program.

Team-taught Biological Oceanography, a graduate-level course.

Continue to write manuscripts and proposals and present results at professional meetings. Serving as co-advisor to graduate student.

Supervising laboratory with Hans. G. Dam.

Post-doctoral research position working with Dr. Hans G. Dam, University of Connecticut, Dept. of Marine Sciences, Groton, CT 06340, June 2002-Sept. 2004.

Conducted and supervised experiments into the evolution of resistance to toxic algae by copepod grazers. Experiments were designed to determine the cost of resistance, the genetic nature of resistance, the behavioral effects of toxins and the physiological mechanism of resistance.

Supervised laboratory purchasing and safety.

Supervised undergraduates employed in the laboratory.
Wrote grants (NSF, EPA, NOAA) to continue research program.

Ph.D. dissertation

Used laboratory experiments and field sampling to investigate the embryonic diapause of *Acartia hudsonica*, a species of copepod in Narragansett Bay that makes resting eggs in the summer. Included a quantitative genetics analysis of the heritability of the trait and protein electrophoresis to assess genetic variation.

M.S. thesis

Used analysis of long-term data from the National Marine Fisheries Service to estimate the contribution of amphipods to secondary production on Georges Bank.

Used laboratory experiments to investigate the feeding ecology of the pelagic amphipod *Gammarus annulatus*.

Other

As a **graduate research assistant on US GLOBEC** (20 hours per week), a major multi-disciplinary scientific investigation into the Georges Bank ecosystem (Dr. Edward G. Durbin, P.I.).

Served on many scientific cruises 1994-2000, gained extensive experience with sea-going operations.

Operated and assisted in operating CTD, MOCNESS, Bongo nets, and zooplankton pump samplers.

Primarily responsible for deployment and operation of GPS drifters.

Conducted shipboard experiments for copepod growth rates and molting rates.

Analyzed samples for carbon content using a CHN analyzer, chlorophyll using a fluorometer, and copepod size using a video-imaging system.

As a **graduate research assistant** for volunteer monitoring programs (20 hours per week) at the Coastal Resources Center at the University of R.I., 1990-1993. Supervisors: Ms. Meg Kerr and Ms. Virginia Lee, Graduate School of Oceanography.

Operated Lachat autoanalyzer, analyzing samples for inorganic nutrients. Conducted wet chemistry analysis for total phosphorous and total nitrogen.

Analyzed samples for total coliform and fecal coliform bacteria.

Analyzed and synthesized data.

Trained lay volunteers.

Teaching Experience

Spring 2007, part-time **sabbatical replacement** at the University of Connecticut, Marine Sciences Department, Shennecossett Road, Groton, CT 06340.

Team-taught Biological Oceanography, a graduate-level course.

Fall 2004 and Spring 2005, part-time **sabbatical replacement** at the University of Connecticut, Marine Sciences Department, Shennecossett Road, Groton, CT 06340.

Taught lecture and laboratory in MARN 211, Coastal System Science II, a multi-disciplinary lecture and laboratory course. Also, taught seminar in Coastal Studies (MARN 255W), a writing-intensive introduction to the primary literature.

Fall 2000-Spring 2002, **temporary full-time faculty position** at Maine Maritime Academy, Castine, ME 04421.

Taught lecture and laboratory in OC101, an introductory course for non-majors. Supervised the instruction of additional lab sections by other instructors. Supervised lab preparation by staff.

Taught lecture and laboratory in OC240, a required course for non-majors entitled "Ecology and Pollution." Created new laboratory exercises including very successful computer spreadsheet-based modeling explorations.

Taught laboratory sections of OS101, an introductory marine science course for Ocean Studies majors; course included field and laboratory sessions in all disciplines of oceanography.

Taught laboratory section of OC210, "Physical Oceanography." Taught students how to use the CTD and other instruments aboard ship and in the laboratory.

Taught several laboratory sections of CH210 and CH220, general chemistry for science majors and several sections of chemistry for marine engineers, CH301.

Taught three laboratory sections of BI101 and BI102, introductory biology.

Taught a one-credit seminar for Ocean Studies majors in which we discussed work presented by visiting lecturers and examined the nature of science.

Supervised one required 3-day research cruise for undergraduates.

As a graduate assistant (20 hours per week), I assisted faculty members at the University of Rhode Island with instruction in several courses.

Prepared lab specimens for and assisted with instruction in OCG666, a graduate-level course in zooplankton systematics taught by Dr. Karen Wishner.

Taught field and laboratory portion of ZOO465, a course in limnology taught by Dr. Saran Twombly, URI Dept. of Biological Sciences. Included extensive field component.

Taught laboratory and recitation sections of OCG123, an introductory course for non-majors emphasizing oceans, atmospheres and climate change taught by Dr. John Merrill.

I have taught others in **less formal** settings as well.

Taught lay volunteers how to carry out effective water quality sampling while a graduate research assistant.

Served as a peer tutor in chemistry while an undergraduate.

Trained and counseled marines in their duties.

Other Experience

As a graduate assistant at the University of RI, for UNOLS (20 hours per week), University-National Oceanographic Laboratory System, a national organization responsible for facilitating the efficient use of national oceanographic research assets such as ships and submersibles, 1998-1999. Supervisor: Mr. Jack Bash.

Established and maintained their web site and databases.

Installed and maintained hardware and software.

Coordinated electronic communications within the UNOLS community, and between the UNOLS community and the National Science Foundation.

United States Marine Corps, 1984-1988, Commissioned Officer, Signals Intelligence.

Trained in leadership and management.

Newspaper reporter (40 hours per week), 1981-1983, Bar Harbor Times, Bar Harbor, ME.

Education

Ph.D. in Biological Oceanography, December 2000, University of Rhode Island, Graduate School of Oceanography, Narragansett, RI 02882. Dissertation: Induction of Embryonic Diapause in the Copepod *Acartia hudsonica*. Advisors: Dr. Edward Durbin, Dr. Karen Wishner, and Dr. Saran Twombly.

M.S. in Biological Oceanography, University of Rhode Island, Graduate School of Oceanography, 1993. Thesis: Amphipods in the Georges Bank Ecosystem.

B.A. in Biology, 1990, Rhode Island College, Providence, RI 02908.

B.A. in Human Ecology, 1984, College of the Atlantic, Bar Harbor, ME 04609. Senior thesis: Five Members of the Fourth Estate, a critique of five newspapers and their reporting of common news events.

Central Connecticut State College, New Britain, CT 06050 1979-1981. 58 semester hours.

Berlin High School, Berlin, CT, 06037, 1979 Graduate.

Awards

U.S. Environmental Protection Agency pre-doctoral fellow, 1998.

W. Christina Carlson award from R.I. College for promise in biological research, 1990.

Publications and Presentations

Avery, David E., Jack Green and Edward G. Durbin (1996). The distribution and abundance of pelagic gammarid amphipods on Georges Bank and Nantucket Shoals. *Deep Sea Research II*, 43(7-8) 1521-2532.

Avery, David E. (2005). Induction of embryonic diapause in the calanoid copepod *Acartia hudsonica*: Proximal cues and phenotypic variation within a population. *Journal of Experimental Marine Biology and Ecology* 314:203-214.

- Avery, David E. (2005). Induction of embryonic diapause in the calanoid copepod *Acartia hudsonica*: Heritability and phenotypic plasticity in two geographically separated populations. *Journal of Experimental Marine Biology and Ecology* 314:215-225.
- Avery, David E. and Hans G. Dam (2007) Newly discovered reproductive phenotypes in a marine copepod reveal the costs and advantages of resistance to a toxic dinoflagellate (*Limnology and Oceanography*, In press).
- Avery, David E. and Hans G. Dam (In prep.) Saxitoxin alters the sex ratio in the copepod *Acartia hudsonica* through differential mortality.
- Avery, David E. and Hans G. Dam (In prep.) Evidence for positive effects of PSP toxins on a marine copepod.
- Avery, David E. and Hans G. Dam (In prep.) The genetic correlation between toxin resistance and life history traits in a marine copepod.
- American Society of Limnology and Oceanography annual meetings:
1994, The trophic role of amphipods in the Georges Bank ecosystem.
1997, Estimating copepod mortality: an application of the population surface method.
1999, Proximal cues to and individual variation in diapause in *Acartia hudsonica*.
2001, Diapause in the copepod *Acartia hudsonica*: heritability and flexibility of phenotypes.
2006, Evidence for positive effects of toxic *Alexandrium fundyense* on the copepod *Acartia hudsonica*.
2007, The genetic nature of toxin resistance in a marine copepod.
- 3rd International Zooplankton Production Symposium, Gijon, Spain:
2003, Costs of PSP toxin resistance in the copepod *Acartia hudsonica*.
- Invited presentation, Dept. of Marine Sciences, Univ. of CT, 2003: Embryonic dormancy in copepods: evolutionary and oceanographic perspectives.
- Invited presentation, University of Rhode Island, Graduate School of Oceanography, 2006: Copepods and toxic algae: the story of *Acartia* and *Alexandrium*.

Other Publications

Avery, David E. (2006) Officials ready to monitor red tide. Mount Desert Islander, Bar Harbor, ME. April 27.

Avery, David E. (2006) Weather, ocean conditions blamed for last year's red tide outbreak. Working Waterfront 19(5), Rockland, ME.

Avery, David E. (1998). Review of *Free-living Freshwater Protozoa* by David J. Patterson. *Marine Technology Society Journal*, 31:79.

Professional Activities and Memberships

American Institute of Biological Sciences

American Society of Limnology and Oceanography

Ecological Society of America

Estuarine Research Federation

Member of Steering Committee that planned ERF '97 in Providence, RI.

Successfully recruited, organized, scheduled, trained, and supervised approximately 30 student volunteers.

Society for the Study of Evolution