

CURRICULUM VITAE

Raymond E. Grizzle

Jackson Estuarine Laboratory and Department of Biological Sciences
University of New Hampshire
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EDUCATION

Ph.D. 1988, Department of Biological Sciences, Ecology Program, Rutgers University, New Brunswick, NJ
M.S. 1981, Biology Program, University of Central Florida, Orlando, FL
B.S. 1972, Major: Biology, Florida State University, Tallahassee, FL

PROFESSIONAL POSITIONS

2007-pres. Research Professor: Department of Biological Sciences, University of New Hampshire, Durham, NH
2000-07 Research Associate Professor: Department of Zoology, University of New Hampshire
2000-02 Director: Jackson Estuarine Laboratory, University of New Hampshire
1999-00 Research Scientist III: Jackson Estuarine Laboratory, University of New Hampshire
1996-99 Associate Professor of Environmental Science: Taylor University, Upland, IN 46989; tenure granted, August 1998.
1994-96 Assistant Professor of Environmental Science: Taylor University
1992-94 Assistant Professor of Biology: Campbell University, Buies Creek, NC 27506
1989-92 Assistant Professor of Biology: Livingston University, Livingston, AL 35470
1988-89 Research Scientist II: Jackson Estuarine Laboratory, University of New Hampshire
1987-88 Postdoctoral Research Associate: Jackson Estuarine Laboratory, University of New Hampshire
1984-87 Research Assistant: Center for Coastal & Environmental Studies, Rutgers University, New Brunswick, NJ 08903
1982-84 Teaching Assistant: Department of Biological Sciences, Rutgers University.
1980-82 Water Resources Planner: Brevard County Water Resources Department, North Courtenay Parkway, Merritt Island, FL 32952
1972-80 Biologist: Environmental Engineering Section, Brevard County Health Department, Merritt Island, FL

COLLABORATORS

University of New Hampshire: Euyalem Abebe, Jeb Byers, David Burdick, Semme Dijkstra, Larry Harris, Hunt Howell, Lloyd Huff, Steve Jones, Arthur Mathieson, Larry Mayer, Gregg Moore, Chris Neefus, Andy Rosenberg, Fred Short, Charles Walker, Larry Ward

Other institutions: Monica Bricelj (Rutgers University), Loren Coen (Florida Atlantic University), Eileen Hofmann and John Klinck (Old Dominion University), John Kraeuter and Eric Powell (Rutgers University), Mark Luckenbach (Virginia Institute of Marine Science), Bernhard Riegl (NOVA Southeastern University), Linda Walters (University of Central Florida), John Burt (New York University)

TEACHING RECORD

University of New Hampshire (2000-present)

Introduction to Marine Biology: Upper level course for majors and nonmajors (guest lecturer)

Taylor University (1994-1999)

Senior Seminar: Capstone course for Environmental Biology majors

Environmental Pollution: Upper level course for majors

Environmental Survey Techniques: Upper level environmental planning and methods course.

Global Ecology/Global Issues: Upper level course for majors.

Environmental Geology: Introductory environmental geology course.

Introduction to Environmental Science: Introductory survey course for majors and nonmajors.

Campbell University (1992-1994)

Basic Biology: Introduction to biology for majors and non-majors.

Introduction to Environmental Science: Introduction to environmental issues for non-majors.

Livingston University (1989-1992)

General Biology I: First of three courses in a freshman one-year sequence for majors and non-majors.

General Zoology: Second course of the freshman sequence.

Field Zoology: Upper-level animal ecology and systematics course.

Ecology: Upper-level course covering general ecological concepts with an emphasis on environmental issues.

Evolution: Survey of biological evolution, including issues involved with teaching evolution in public schools.

Aquatic Biology: Research course for upper level undergraduates and graduate students.

Cornell University/University of New Hampshire (1987-1989)

Marine Pollution (summer course at Shoals Marine Laboratory; with C.A. Penniman): Upper-level undergraduate and graduate course surveying the types of pollutants in coastal waters and their effects on organisms.

Rutgers University (1982-1984; Teaching Assistant)

General Biology Laboratory I, II; General Physiology Laboratory; Anatomy & Physiology Laboratory

SERVICE & ADMINISTRATION**University of New Hampshire**

Jackson Estuarine Laboratory, Director (2000-2002)

Office of Sponsored Research Advisory Committee (COLSA Faculty representative) (2001-present)

Marine Program Director Search Committee (2001)

Thesis and Dissertation committees:

Augustine Mungkaje, Ph.D. (1998-2000)

Randy Cutter, Ph.D. (2001-2005)

Jennifer Greene, M.S. (2002-2004; Major Advisor)

Mark Capone, M.S. (2003-2007; Major Advisor)

Jean Wan-Lee, Ph.D. (2006-2011)

Helen Cheng, M.S. (2010-present)

Robert Eckert, M.S. (2013-present; Major Advisor)

Melissa Brodeur, M.S. (2000-2002)

Tay Evans, M.S. (2001-2002)

John Meyer, M.S. (2002-2005)

Paul Sokoloff, M.S. (2004-2007)

David Schulte (VIMS), Ph.D. (2009-2012)

Yvette Garner, Ph.D. (2009-2013)

Megan Glenn, M.S. (2013-present; Major Advisor)

Taylor University

Coordinator for Global Stewardship Initiative of the Coalition for Christian Colleges and Universities

Co-sponsor (with Paul Rothrock) for student environmental club

Faculty advisor to students majoring in Environmental Biology

Campbell University

Freshman Biology laboratory coordinator (management of activities and hiring instructors for 600+ students per year).

Development of a new Environmental Studies program.

Faculty advisor to students majoring in Biology

Recycling Committee

Livingston University

Divisional Curriculum Development Committee

University Liaison Officer to the Alabama Marine Environmental Sciences Consortium

Faculty advisor to students majoring in Marine Biology

Self-study committees, SACS accreditation review: Assessments Instrument Task Force; Education Program Committee

Faculty advisor to students in Pre-Forestry and Pre-Wildlife programs

PUBLISHED PAPERS & BOOK CHAPTERS

- Bricelj, V.M., R.E. Grizzle, R.M. Alshih, K.M. Ward, E.A. Jamali and D.M. Anderson. Marine bivalves and gastropods in coastal habitats of the United Arab Emirates in relation to harmful algal blooms. *Journal of Shellfish Research* (in revision)
- Hollein, T.J., C.B. Zarnoch and R.E. Grizzle. 2015. Eastern oyster (*Crassostrea virginica*) filtration, biodeposition, and sediment nitrogen cycling at two oyster reefs with contrasting water quality in Great Bay Estuary (New Hampshire, USA). *Biogeochemistry* 122:113-129. DOI 10.1007/s10533-014-0034-7
- Coen, L.D. and R.E. Grizzle. 2014. Bivalve molluscs. M.J. Kennish (ed.), *Encyclopedia of Estuaries*, DOI 10.1007/978-94-017-8801-4, © Springer Science+Business Media Dordrecht 2014
- R.E. Grizzle, L.G. Ward, D.W. Fredriksson, J.D. Irish, R. Langan, C.S. Heinig, J.K. Greene, H.A. Abeels, C.R. Peter, A.L. Eberhardt. 2014. Long-term seafloor monitoring at an open ocean aquaculture site in the western Gulf of Maine, USA: development of an adaptive protocol. *Marine Pollution Bulletin* 88:129-137
- Moore, G.E., R.E. Grizzle, K.M. Ward, and R.M. Alshih. 2014. Distribution, pore-water chemistry, and stand characteristics of the mangrove of the United Arab Emirates. *Journal of Coastal Research* (in press)
- Grizzle, R.E., and L.D. Coen, 2013. Slow-down and reach out (and we'll be there): a response to "shellfish as living infrastructure" by Kate Orff. *Ecological Restoration* 31:325-329.
- Zu Ermgassen, P.S.E., M.D. Spalding, R.E. Grizzle and R.D. Brumbaugh. 2012. Quantifying the loss of marine ecosystem service: filtration by the eastern oyster in US estuaries. *Estuaries and Coasts* DOI 10.1007/s12237-012-9559-y.
- Zu Ermgassen, P.S.E., M.D. Spalding, B. Blake, L.D. Coen, B. Dumbauld, S. Geiger, J.H. Grabowski, R. Grizzle, M. Luckenbach, K. MacGraw, W. Rodney, J.L. Ruesink, S.P. Powers and R.D. Brumbaugh. 2012. Historical ecology with real numbers: past and present extent and biomass of an imperiled estuarine habitat. *Proceedings of the Royal Society, B* DOI 10.1098/rspb.2012.0313.
- Grizzle, R.E., L.G. Ward, L.A. Mayer, M.A. Malik, A.B. Cooper, H.A. Abeels, J.K. Greene, M.A. Brodeur and A.A. Rosenberg. 2009. Effects of a large fishing closure on benthic communities in the western Gulf of Maine, USA: recovery from the effects of gillnets and otter trawls. *Fishery Bulletin* 107:308-317.
- Grizzle, R.E., J.K. Greene, and L.D. Coen. 2008. Seston removal by natural and constructed intertidal eastern oyster (*Crassostrea virginica*) reefs: a comparison with previous laboratory studies, and the value of in situ methods. *Estuaries and Coasts* 31:1208-1220.
- Capone, M., R. Grizzle, A.C. Mathieson, and J. Odell. 2008. Intertidal oysters in northern New England. *Northeastern Naturalist* 15:209-215.
- Grizzle, R.E., M. Brodeur, H. Abeels, and J.K. Greene. 2008. Bottom habitat mapping using towed underwater videography: subtidal oyster reefs as an example application. *Journal of Coastal Research* 24:103-109.
- McDermott, S., D. Burdick, R. Grizzle, and J. Greene. 2008. Restoring ecological function and increasing community awareness of an urban tidal pond using blue mussels. *Ecological Restoration* 26:254-262.
- Kraeuter, J.N., J.M. Klinck, E.N. Powell, E.E. Hofmann, S.C. Buckner, R.E. Grizzle and V.M. Bricelj. 2008. Effects of the fishery on the northern quahog (=hard clam, *Mercenaria mercenaria* L.) population in Great South Bay, New York: a modeling study. *Journal of Shellfish Research* 27:653-666.
- Coen, L.D., R.D. Brumbaugh, D. Bushek, R. Grizzle, M.W. Luckenbach, M.H. Posey, S.P. Powers, and S.G. Tolley. 2007. As We See It: Ecosystem services related to oyster restoration. *Marine Ecology Progress Series* 341:303-307.
- Coen, L.D. and R.E. Grizzle. 2007. The importance of habitat created by molluscan shellfish to managed species along the Atlantic coast of the U.S. published by the Atlantic States Marine Fisheries Commission.
- Grizzle, R.E., J.K. Greene, M.W. Luckenbach, and L.D. Coen. 2006. A new *in situ* method for measuring seston uptake by suspension-feeding bivalve molluscs. *Journal of Shellfish Research* 25:643-650.
- Greene, J.K. and R.E. Grizzle. 2006. Successional development of fouling communities on open ocean aquaculture fish cages in the western Gulf of Maine, USA. *Aquaculture* 262: 289-301.
- Hofmann, E.E., J.M. Klinck, J.N. Kraeuter, E.N. Powell, R.E. Grizzle, S.C. Buckner, and V.M. Bricelj. 2006. A population dynamics model of the hard clam, *Mercenaria mercenaria*: development of the age- and length-frequency structure of the population. *Journal of Shellfish Research* 25:417-444.
- Cutter, G.R., Jr., Y. Rzhannov, L.A. Mayer, and R.E. Grizzle 2005. Ground-truthing benthic habitat characteristics using video mosaic images. pp. 171-177 In: *Benthic Habitats and the Effects of Fishing*. P.W. Barnes and J.P. Thomas (eds.) American Fisheries Society Symposium 41.
- Grizzle, R.E., L.G. Ward, J.R. Adams, S.J. Dijkstra, and B. Smith. 2005. Mapping and characterizing oyster reefs using acoustic techniques, underwater videography, and quadrat counts. pp. 153-160 In: *Benthic Habitats and the Effects of Fishing*. P.W. Barnes and J.P. Thomas (eds.) American Fisheries Society Symposium 41.
- Wall, L.M., L.J. Walters, R.E. Grizzle, and P.E. Sacks. 2005. Recreational boating activity and its impact on the recruitment and survival of the oyster *Crassostrea virginica* on intertidal reefs in Mosquito Lagoon, Florida. *Journal of Shellfish Research* 24:965-973.
- Abebe, E., R.E. Grizzle, D. Hope, and W.K. Thomas. 2004. Nematode diversity in the Gulf of Maine, USA, and Web-accessible, relational database. *Journal of the Marine Biological Association of the United Kingdom* 84:1159-1167.
- Grizzle, R.E., L.G. Ward, R. Langan, G.M. Schnaittacher, J.A. Dijkstra, and J.R. Adams. 2003. Environmental monitoring

- at an open ocean aquaculture site in the Gulf of Maine: results for 1997-2000. Pp. 105-118 In: *Open Ocean Aquaculture: from Research to Reality*. Eds: C.J. Bridger and B.A. Costa-Pierce. The World Aquaculture Society, Baton Rouge, LA, USA. JEL Contribution Series, No. 388.
- Grizzle, R.E. Grizzle, R.E., L.G. Ward, J.R. Adams, S.J. Dijkstra, and B. Smith. 2003. Research note: mapping and characterizing subtidal oyster reefs using acoustic techniques, underwater videography, and quadrat counts. Proceedings of Symposium on the Effects of Fishing Activities on Benthic Habitats: Linking Geology, Biology, Socioeconomics, and Management. American Fisheries Society. (in press)
- Grizzle, R.E., J.R. Adams, L.J. Walters. 2002. Historical changes in intertidal oyster (*Crassostrea virginica*) reefs in a Florida lagoon potentially related to boating activities. *Journal of Shellfish Research* 21:749-756
- Raz-Guzman, A., R.E. Grizzle. 2001. Techniques for quantitative sampling of infauna and small epifauna. Chapter 9, In: *Global Seagrass Research Methods*. Eds: F.T. Short and R. Coles. Elsevier.
- Grizzle, R.E., M. Bricelj, S. Shumway. 2001. Physiological Ecology. Chapter 7, pp 305-382 In: *Biology of the Hard Clam, Mercenaria mercenaria* Eds: J. Kraeuter and M. Castagna. Elsevier.
- Grizzle, R.E., F.T. Short, C.R. Newell, H. Hoven, L. Kindblom. 1996. Hydrodynamically induced synchronous waving of seagrasses: "monami" and its possible effects on larval mussel settlement. *Journal of Experimental Marine Biology and Ecology* 206:165-177.
- Grizzle, R.E., R. Langan and W.H. Howell. 1992. Growth responses of suspension-feeding bivalve molluscs to changes in water flow: differences between siphonate and nonsiphonate taxa. *Journal of Experimental Marine Biology and Ecology* 162:213-228.
- Grizzle, R.E. and C.A. Penniman. 1991. Effects of organic enrichment on estuarine macrofaunal benthos: A comparison of sediment profile imaging and "traditional" data. *Marine Ecology Progress Series* 74:249-262.
- Grizzle, R.E. 1990. Distribution and abundance of *Crassostrea virginica* (eastern oyster) and *Mercenaria* spp. (hard clams) in a coastal lagoon. *Journal of Shellfish Research* 9:347-358.
- Grizzle, R.E. and R.A. Lutz. 1989. A statistical model relating horizontal seston fluxes and bottom sediment characteristics to growth of *Mercenaria mercenaria*. *Marine Biology* 102:95-105.
- Grizzle, R.E. and P.J. Morin. 1989. Effect of tidal currents, seston, and bottom sediments on growth of *Mercenaria mercenaria*: Results of a field experiment. *Marine Biology* 102:85-93.
- Grizzle, R.E. and R.A. Lutz. 1988. Descriptions of macroscopic banding patterns in sectioned, polished shells of *Mercenaria mercenaria* from southern New Jersey. *Journal of Shellfish Research* 7:367-370.
- Ashley, G.M. and R.E. Grizzle. 1988. Interactions between hydrodynamics, benthos, and sedimentation in a tide-dominated coastal lagoon. *Marine Geology* 82(1/2):61-82.
- Grizzle, R.E. and W.E. Stegner. 1985. A new quantitative grab for sampling benthos. *Hydrobiologia* 126:91-95.
- Grizzle, R.E. 1984. Pollution indicator species of macrobenthos in a coastal lagoon. *Marine Ecology Progress Series* 18:191-200.
- Grizzle, R.E. 1979. A preliminary investigation of the effects of enrichment on the macrobenthos in an east coast central Florida lagoon. *Florida Scientist* 42:33-42.
- Grizzle, R.E. 1974. The estuarine decapod crustaceans in Brevard County, Florida. *Florida Scientist* 37:129-141.
- Gore, R.H. and R.E. Grizzle. 1974. Studies on decapod Crustacea from the Indian River region of Florida. III. *Callinectes bocourti*: A. Milne Edwards, 1879 (Decapoda, Portunidae) from the central east coast of Florida. *Crustaceana* 27:306-308.

SIGNIFICANT TECHNICAL REPORTS (since 2005)

- Grizzle, R., K. Ward, J. Lodge, D. Suszkowski, K. Mosher-Smith, K. Kalchmayr, P. Malinowski. 2013. Oyster Restoration Research Project (ORRP) Final Technical Report. Submitted to: Hudson River Foundation, New York, NY. 26 pp.
- Grizzle, R. and K. Ward. 2012. Diversifying shellfish aquaculture in coastal New Hampshire. Final Report submitted to: New Hampshire Department of Environmental Services, Portsmouth, NH and NOAA Fisheries. 81 pp.
- Grizzle, R.E. and K.M. Ward. 2011. Final Report. Sea trials of Wieland-Werke copper alloys: Biofouling community (plants and invertebrates) assessment.
- Grizzle, R.E., J.A. Burt and K.M. Ward. 2012. Mapping and characterizing coral habitats in the United Arab Emirates. Submitted to the Ministry of Environment and Water, UAE.
- Grizzle, R.E. and K.M. Ward. 2011. FINAL REPORT to ND Life Sciences, USDA SBIR Project, Aquaculture, under USDA-CSREES-SBIR-000891 project: Slow Release Non-Toxic Antifouling Additives for Coatings Used in Aquaculture.
- Grizzle, R.E., G.Foster, B. Riegl, and L.Coen. 2010. Objective 4: Determining the distribution of bottom substrate types and potential macroalgal classes using underwater video and hydroacoustic surveys. In: Bioavailability and sources of nutrients and the linkages to red drift algae: A Two Year Study. Submitted to: City of Sanibel, FL.
- Grizzle, R. and K. Ward. 2009. Restoration of oyster (*Crassostrea virginica*) habitat for multiple estuarine species benefits. Final Report. Submitted to: the Piscataqua Region Estuaries Partnership. Durham, NH. 53 pp.
- Coen, L.D and R.E. Grizzle. 2007. The importance of habitat created by molluscan shellfish to managed species along the Atlantic coast of the U.S. published by the Atlantic States Marine Fisheries Commission. Final Report. 115 pp.

GRANTS, CONTRACTS & AWARDS (since 2004)

Habitat restoration assessment and planning, Sarah Mildred Long Bridge Replacement. 06/14-06/15. Funded by NH Department of Environmental Services. \$78,882 (PI with David Burdick, Gregg Moore)

Restoration of oyster (*Crassostrea virginica*) habitat in Great Bay. 6/14-7/15. Funded by The Nature Conservancy, US Fish and Wildlife Service. \$26,079

Oyster restoration for ecosystem services and fish habitat in Great Bay Estuary. 11/13-10/14. Funded by the New Hampshire Chapter of the Nature Conservancy and US Army Corps of Engineers. \$192,214

Building on five years of oyster restoration success in Great Bay Estuary, New Hampshire. 09/12-12/13. Funded by the New Hampshire Chapter of the Nature Conservancy. \$15,700.

Oyster and eelgrass restoration in the Piscataqua River. 10/12-09/13. Funded by the New Hampshire Chapter of the Nature Conservancy. \$64,225 (PI with David Burdick)

New oyster bed mapping in the Great Bay Estuary. 09/12-06/13. Funded by New Hampshire Department of Environmental Services. \$44,000

Community based restoration of oyster reef habitat in the Bronx River: assessing approaches and results in an urbanized setting. 11/11-11/13. Funded by the Hudson River Foundation and WCS/NOAA Regional Partnership Grants Program. \$40,000 (Grizzle total only)

Mapping and characterizing coral and mangrove habitats in the United Arab Emirates. 03/11-12/13. Funded by the Ministry of Environment and Water, United Arab Emirates. \$189,000

Developing integrated multi-trophic aquaculture methods for land-based and near-shore systems. 10/10-09/15. Funded by New Hampshire Agricultural Experiment Station, University of New Hampshire. \$60,00. (Grizzle total only; PI with L. Harris, D. Berlinsky, and C. Neefus).

Oyster Restoration Research Project (ORRP) coordinator-Restoring oysters to the New York Harbor region. 05/10-04/12. Funded by the Hudson River Foundation, New York, NY. \$105,700

Experimental quantification of the nutrient bioextraction potential of oysters in the estuarine waters of New Hampshire. 03/10-12/10. Funded by NH Sea Grant and Piscataqua Region Estuaries Partnership. \$20,000.

Oyster reef restoration in the Oyster River, New Hampshire. 03/10-12/10. Funded by Piscataqua Region Estuaries Partnership and The Nature Conservancy. \$24,000.

Diversifying shellfish aquaculture in coastal New Hampshire. 9/09-8/12. Funded by the National Marine Fisheries Service. Administered by NH Department of Environmental Services. \$330,086 (total for 3 yrs)

Restoration of shellfish habitat in Berry's Brook, Rye, New Hampshire. 08/08-06/11. Funded by the Natural Resources Conservation Service, US Department of Agriculture. \$100,000 (Grizzle total for 3 yrs) (principal investigator with Gregg Moore and David Burdick)

Effects of the Western Gulf of Maine closure area on groundfish populations in rocky habitats. 10/06-9/08. Funded by the Northeast Consortium. \$339,103 (total for 2 yrs) (principal investigator with Hunt Howell, Mike Leary)

Environmental monitoring at UNH's Open Ocean Aquaculture Demonstration site. 9/06-8/07. Funded by NOAA/Sea Grant. \$50,000 (Grizzle portion only) (principal investigator with L. Ward, UNH, Jim Irish, WHOI)

Developing a combined oyster shell recycling and "oyster conservationist" program in New Hampshire. 07/06-06/07. Funded by NH Sea Grant. \$5,352

Environmental monitoring at UNH's Open Ocean Aquaculture Demonstration site. 9/05-8/06. Funded by NOAA/Sea Grant. \$50,000 (Grizzle portion only) (principal investigator with L. Ward, UNH, Jim Irish, WHOI)

A community-based shellfish habitat Restoration program for New Hampshire. 9/05-8/07. Funded by NOAA/The Nature Conservancy. \$72,000 (total for 2 yrs.) (principal investigator with Jay Odell)

Restoration of eelgrass and shellfish habitats in the Great Bay Estuary. 7/05-6/08. Funded by USDA/Natural Resource Conservation Service. \$101,500 (Grizzle total for 3 yrs.) (principal investigator with David M. Burdick, Frederick T. Short and Gregg E. Moore, UNH)

Developing a protocol for sampling juvenile groundfish in rocky habitat. 7/05-6/06. Funded by NOAA/Northeast Consortium (NEC). \$25,000 (principal investigator with David Berlinsky and Mike Leary)

Effects of oyster reefs on water quality. 06/05-05/07. Funded by NOAA/National Estuarine Research Reserve System, Graduate Fellowship Program. \$40,000 (Mark Capone, graduate fellowship)

Monitoring marine protected areas: intensive study of the Western Gulf of Maine Closure Area - Bottom habitat mapping. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar). \$130,873. 9/05-8/07. (principal investigator with Andy Rosenberg)

Oyster reef restoration project for City of Dover. 11/04-12/06. Funded by the City of Dover and New Hampshire Estuaries Project. \$38,994 (total for 2 yrs)

Environmental monitoring at UNH's Open Ocean Aquaculture Demonstration site. 9/04-8/05. Funded by NOAA/Sea Grant. \$50,000 (Grizzle portion only) (principal investigator with L. Ward, UNH, Jim Irish, WHOI)

Reef structure alternatives for restoration of oyster (*Crassostrea virginica*) populations. 3/04-12/05. Funded by USEPA/NH Estuaries Project. \$120,000 (total for 2 yrs)

Development of a general protocol for characterizing subtidal oyster reefs using remote sensing techniques. 3/04-12/05. Funded by NH Sea Grant. \$119,121 (total for 2 yrs) (principal investigator with Semme Dijkstra and Brian Smith)

Monitoring marine protected areas: intensive study of the Western Gulf of Maine closure area - Distribution and abundance of demersal fish in selected bottom habitats. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar). \$52,789. 9/04-8/05. (principal investigator with Andy Rosenberg, David Berlinsky)

Monitoring marine protected areas: intensive study of the Western Gulf of Maine closure area - Bottom habitat mapping. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar). \$70,883. 9/04-8/05. (principal investigator with Andy Rosenberg)

Environmental monitoring at UNH's Open Ocean Aquaculture Demonstration site. 9/03-8/04. Funded by NOAA/Sea Grant. \$49,365 (Grizzle portion only) (principal investigator with L. Ward and D. Fredriksson, UNH)

Chitosan-based anti-fouling coatings for marine fish cages. 9/03-8/04. Funded by NOAA/Small Business Innovation Research. \$27,680 (REG portion only) (principal investigator with Alex Walsh)

Restoration of molluscan shellfish populations in New Hampshire. Funded by USDA, Hatch Fund. 9/03-8/06. \$27,000

Oyster (*Crassostrea virginica*) restoration studies in the Great Bay Estuary, New Hampshire. 6/03-5/04. Funded by NOAA/National Estuarine Research Reserve, Graduate Fellowship Program. \$17,500. (Jennifer K. Greene, graduate fellowship)

Oyster reef mapping and softshell clam population assessments. 3/03-12/03. Funded by USEPA/NH Estuaries Project. \$19,000.

Analysis of sediment profile imagery from the Gulf of Maine. 3/03-9/03. Funded by Wells National Estuarine Research Reserve. \$14,571.

An Environmental Impact Assessment of the Spaulding Turnpike widening project. 03/03-10/06. Funded by VHB, Inc./NH Department of Transportation. \$50,135.

Monitoring marine protected areas: intensive study of the Western Gulf of Maine closure area - Distribution and abun-

dance of demersal fish in selected bottom habitats. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar). \$40,262. 9/03-8/04. (principal investigator with Andy Rosenberg, David Berlinsky)

Monitoring marine protected areas: intensive study of the Western Gulf of Maine closure area - Bottom habitat mapping. Funded by NOAA/UNH Cooperative Institute for New England Mariculture and Fisheries (CINEMar). \$142,104. 9/03-8/04. (principal investigator with Andy Rosenberg)

MANUSCRIPT & PROPOSAL REVIEWER

Estuarine, Coastal and Shelf Science; Journal of Coastal Research; Journal of Experimental Marine Biology and Ecology; Journal of Shellfish Research (editorial board, 1995-present); *Limnology and Oceanography; Marine Biology; Marine Ecology Progress Series;*

Marine Resources Division, State of Virginia; National Coastal Resources Research & Development Institute; National Science Foundation (Biological Oceanography; Undergraduate Education); NOAA/Sea Grant: Delaware, New Jersey, Maryland, New York, Oyster Disease Research Program; Maine Aquaculture Innovation Center; UNH/NOAA Cooperative Institute for Coastal and Estuarine Environmental Technology

SOCIETY MEMBERSHIPS

American Fisheries Society; Coastal & Estuarine Research Federation; National Shellfisheries Association