



University of Massachusetts  
School of Marine Sciences

Scholastic Report 2002–2007

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## **University of Massachusetts School of Marine Sciences**

### **Scholastic Report January 2002–August 2007**

This report contains a compilation of scholastic activity from the University of Massachusetts School of Marine Sciences or SMS (formerly the University of Massachusetts Intercampus Graduate School of Sciences and Technology or IGS) from January 2002–August 2007. SMS, the first intercampus graduate school in the University of Massachusetts system, is made up of the campuses at Amherst, Boston, Dartmouth, and Lowell. Although SMS was formally founded in October 2001, each of the campuses already had extensive, long-established resources in marine sciences and technology.

The foundation of SMS is based on the efforts of numerous faculty at four diverse UMass campuses across the state of Massachusetts. SMS builds upon this critical mass of four-campus assets and greatly expands it, crafting a complex, multidisciplinary school to match the complex, multidisciplinary nature of marine science today.

It is our belief that the diversity and breadth of knowledge that each faculty member brings is what makes our program so unique. Our students and faculty get to share in the intercampus advantage, where they have rights and privileges at all campuses, whether that means accessing our distance learning or library facilities or cross collaborating on various research projects. The goal of SMS is to contribute to the quality of graduate education in marine sciences and technology within the University, as well as to foster research and public service in support of the Commonwealth's efforts in protection, preservation, restoration, and sustainable economic development of its extensive coastal and ocean lands, waters, and resources.

SMS has top-notch professors in their respected areas of research. SMS also has adjunct faculty from the renowned Woods Hole Oceanographic Institution; a private, non-profit research facility dedicated to the study of marine science and education of marine scientists. SMS faculty represent 16 departments among the campuses, with additional faculty from University centers, institutes, or other institutions. The faculty have graduated from high-ranking institutions and have gone on to write numerous publications, attend and present at meetings around the world, are responsible for millions of dollars in research grants, and within the five year period, they have helped to educate SMS students in the discipline of marine science. The faculty benefit from interaction with students, who bring a fresh perspective to their research. The purpose of this report is to give an overview of the remarkable academic and scholastic achievements that have occurred during January 2002–August 2007, a result of the SMS intercampus graduate program

At SMS there is no separation between education and research. SMS students are rigorously trained in today's most important marine science issues. Academic programs cross traditional discipline lines to form contemporary interdisciplinary concentrations that prepare students to become vital members of the marine science community of today and of the future. SMS combines the biological, chemical, and physical marine sciences with technology and social sciences concentrating in marine applications. This seamless integration of the primary approaches to marine sciences fosters new collaborations, new partnerships, and new discoveries.

SMS offers M.S. and Ph.D. degrees in Marine Science and with concentrations in Integrated Coastal Management, Ocean and Human Health, Living Marine Resources Science and Management, Marine Biogeochemical Cycles and Environmental Change, Analysis and Modeling of Marine and Atmospheric Systems, Coastal Systems Science, and Marine Observation Technologies. SMS encourages and supports interactions among the faculty in intercampus research projects and in team-taught courses making use of the University's extensive, modern distance learning facilities and technologies.

Distance learning has grown considerably in the University system, including the launch of UMass online, and the multi-campus broadband network connections facilitated by the Massachusetts Information Turnpike Initiative. Through these networks, students enrolled in SMS have access from their home campus to courses taught at any other UMass campus.

All of these program functions support the University's mission: to provide an affordable education of high quality and to conduct programs of research and public service that advance knowledge and improve the lives of the people of the Commonwealth. The University of Massachusetts School of Marine Sciences (SMS) is a new paradigm in marine sciences education.

This report begins with a brief summary of SMS activity. It also contains grant activity and recent publications, which are listed by title. There is a section on research interests, journals published in, countries visited by special invite/presentation, and awards received. Lastly, there is a segment which lists the faculty and his/her designated campus and research interests, as well as current and graduated M.S. and Ph.D. students.

## **SMS Mission Statement**

The purpose of the University of Massachusetts School of Marine Sciences (SMS) is to become a nationally and internationally recognized center of excellence dedicated to the scientific understanding, management, and economic growth and sustainability of the oceans, continental shelf, coastal zone, and communities of Massachusetts that border on the ocean.

SMS educates M.S. and Ph.D. students who are rigorously trained in basic and applied sciences and have the confidence and ability to carry this knowledge with them into key roles in academia, government, and industry. The school capitalizes on existing strengths at the different campuses to fashion innovative programs taking maximum advantage of the more promising marine science and technology opportunities.

SMS, a collaboration of the Amherst, Boston, Dartmouth, and Lowell campuses, significantly enlarges the capacity of the University to address the environmental, economic, and policy-related needs of the Commonwealth in marine sciences and technology. SMS partners with state and federal agencies, non-governmental organizations, and industry to better serve these needs. SMS provides not only a broad and thorough examination of problems at the forefront of marine science and technology, but also offers flexibility to address the complex questions that lay ahead.

## **About the University of Massachusetts**

Founded as an agricultural college in Amherst in 1863, the University of Massachusetts is a uniquely American institution, a public land-grant university. As such, it is intended to serve all students who can do the academic work; it is committed to practical as well as theoretical education; and it puts new knowledge to work for the common good.

In 1991, the University of Lowell (now the University of Massachusetts Lowell) and Southeastern Massachusetts University (now the University of Massachusetts Dartmouth) were joined to the existing University of Massachusetts system campuses of Amherst, Boston, and the medical school at Worcester. The system's breadth allows for commonality of mission, but diversity in location and expertise. Because it is located on the eastern U.S. coastline, Massachusetts is an ideal site for marine sciences study and research. Massachusetts has 192 miles of coastline-1,500 miles if the coastline of each bay and inlet is added. Along the coast are the Boston, Gloucester, and New Bedford Harbors. The state has 27 watersheds, 2,900 lakes, 590,000 wetlands, and 2,000 rivers and streams flowing over 8,200 miles. Forests cover over 3.2 million acres of Massachusetts.

The campuses cover the wide range of the state's environments, from urban sites to rural settings. Campuses are located on the coast with proximity to the deep ocean, estuaries, and watersheds, and also near forests, rivers, lakes, and valleys.

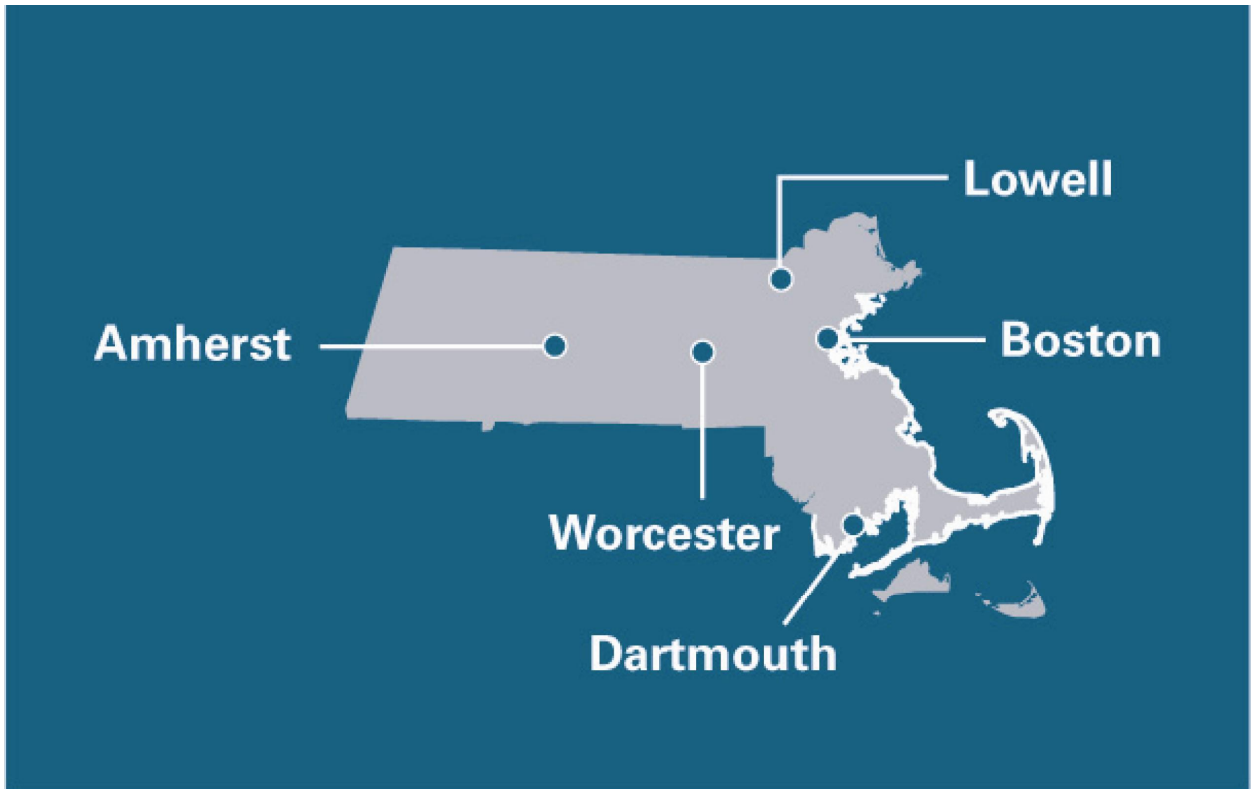
The 1,450-acre Amherst campus is located in a picturesque, culturally and educationally-rich New England town along the Connecticut River Valley, just a few hours from Boston and New York City. Its neighbors and collaborators include Smith College, Mt. Holyoke, Amherst College, and Hampshire College.

Its surroundings include the Connecticut River, University-owned Mt. Toby and Cadwell Memorial forests, the 81,000-acre Quabbin River Reservation of the Metropolitan District

Commission, and the 800-acre Swift River Wildlife Management Area of the Massachusetts Division of Fisheries and Wildlife. Nearby are the Green Mountains of Vermont and White Mountains of New Hampshire. On-campus affiliates include the Massachusetts Cooperative Fish and Wildlife Research Unit, the UMass/NOAA Cooperative Marine Education and Research Program, and the USDA Forest Service.

Additional affiliates include the National Marine Fisheries Service Northeast Fisheries Science Center in Woods Hole, the Conte Anadromous Fish Research Center in Turner's Falls, the regional office of the USDI Fish and Wildlife Service in Hadley, and the Massachusetts Department of Environmental Management Division of Forest and Park Region 4 Headquarters.

The Boston campus is located on the Columbia Point Peninsula, three miles from downtown Boston, and overlooks Boston Harbor. It is nationally recognized as a model of excellence for urban universities. The city of Boston is renowned for its educational, cultural, and social opportunities. Campus surroundings include the Boston Harbor ecosystem, with its 31 islands, its salt marshes, tributary rivers, and proximity to Georges Bank. The University also maintains a marine station located on 115 acres in Nantucket.



The University's coastal location provides the ideal environment for its marine science programs, which emphasize a science-policy interface. This integrated science and management approach includes both academic programs and the Urban Harbors Institute, which provides analysis and expertise in integrated coastal zone management and urban harbor management.

Boston Harbor, one of the most polluted harbors in the nation, is undergoing a \$3.5 billion dollar cleanup by the Massachusetts Water Resources Authority that began in 1989. The

secondary sewage treatment plant at Deer Island, opened in 1997, is also located near the campus. This ecosystem has provided numerous research opportunities for SMS faculty.

The Dartmouth campus is located ten minutes from state's largest fishing port city of New Bedford, with its marine laboratory, the School for Marine Science and Technology (SMAST), located in the city. According to the 1999 U.S. Department of Commerce annual ranking of the nation's top fishing ports, New Bedford ranked second in the country in seafood catch value. The city was the world's preeminent whaling port in the 1800s.

In 1998, a joint survey between SMAST and the scallop industry surveyed Closed Area II of Georges Bank. For the first time in New England, six New Bedford commercial fishing vessels were used to collect scientific data. This survey found high densities of mature scallops in the closed area compared to the open area, and resulted in the opening of this strictly regulated fishery in 1999.

In 1999 and 2000, SMAST, again in association with the scallop industry, conducted 13 video surveys in Georges Bank. These surveys produced a series of sea floor maps in areas containing high aggregations of scallops.

The surrounding environment includes New Bedford Harbor, the fishing fleet of New Bedford, proximity to Buzzards Bay and Massachusetts and Cape Cod Bays, as well as Georges Bank and the deep ocean. The University is also within a one-hour drive to the Boston and Woods Hole areas.

The Lowell campus is located in the historic industrial city of Lowell, 25 miles northwest of Boston and home to the first urban National Historic Park in the United States. The University's campuses lie on both sides of the Merrimack River, the power source for mills built along the river, which gave rise to America's first industrial city. The lakes and mountains of New Hampshire, Vermont, and Maine, as well as the shores and beaches of the Atlantic Ocean and Cape Cod are short driving distances away.

In the early to mid-1800s, Lowell led the nation in cotton textile production, and by the 1840s, Lowell was the second largest city in New England and the industrial center of America. After resurgence during the technological boom of the 1980s, Lowell today continues as a thriving commercial area. This technology-rich environment surrounding the campus permeates into the school's research and teaching. The University has many research centers and institutes that offer state-of-the-art research and training opportunities.

## History of the Deans

### ***Associate Dean Jack Archer***



Dr. Jack Archer retired in 2002; however, he has played a major role in helping to establish the University of Massachusetts School of Marine Science. Dr. Archer not only wrote the prospectus describing the Intercampus Graduate School of Marine Sciences and Technology (IGSMT) application for degrees, he successfully carried it through four campus faculty senates and finally to the Board of Higher Education. Without him, the school would not be in existence.

### ***Dean Brian Rothschild***



Dr. Brian Rothschild, one of the co-founders, was the Dean of the University of Massachusetts School of Marine Sciences (formerly IGS) from 2002 to 2005, when he stepped down to take the position of Montgomery Charter Professor of Marine Science and Technology to more fully pursue his research. His field of expertise include population dynamics, biological oceanography, and fishery management. His research has contributed to the fundamental understanding of fish stock recruitment, and to the role of physical forcing on ocean biodynamics in particular, to the role of small-scale turbulent flow on plankton encounter rates. His work on the effects of the interactions between turbulent flow and plankton dynamics is cited frequently in scientific literature.

Prior to joining SMS, Dr. Rothschild held professorships at the University of Maryland and the University of Washington. He has had faculty or visiting scientist's affiliations with the University of Hawaii; Scripps Institution of Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Institut fur Meereskunde, University of Kiel, Woods Hole Oceanographic Institution, and Harvard University.

### ***Dean Robert R. Gamache***



Dr. Robert Gamache began his relationship with the University of Massachusetts School of Marine Sciences as a member of the committee that developed the program (IGMST). In 2002, he accepted the position of Associate Dean of IGMST. In September 2005, he assumed the position of Dean. He is also a professor in the Department of Environmental, Earth, and Atmospheric Sciences at the University of Massachusetts Lowell. His fields of expertise include the interaction of radiation with matter, and chemistry and physics of atmospheres with particular application to remote sensing.

Dr. Gamache is a graduate of the University of Massachusetts receiving his baccalaureate from the Dartmouth campus and his graduate degrees from the Amherst campus. He has been a member of the faculty since 1978, where he served as an active researcher, teacher, and an administrator for the Center for Atmospheric Research. He also has a long-standing relationship with universities in France. He has had eight invited professorships since 1990 and he spent his 2002 sabbatical leave as a CNRS research associate at the Laboratory of Molecular Photo-Physics of the University of Paris-South.

Dr. Gamache has presented over 140 papers at professional conferences, published 92 articles in refereed journals, published ~ 50 scientific reports, and has presented numerous invited lectures in the United States and Europe. He was the co-recipient of the 1998 Sir Harold Thompson Memorial Award, which is presented by Pergamon Journals, Ltd. to the authors of the paper that makes the most significant contribution to spectroscopy.

He is currently principal investigator for more than \$300 thousand in federal grants, with over two and a half million in external funding received to date. Dr. Gamache's current work involves Aqua and Aura satellite programs of NASA's Earth Observing System, remote sensing missions to Mars and Venus, and several satellite programs of ESA, EUMETSAT and CNES.

Since accepting the position as Dean of SMS, Gamache has helped to re-establish SMS as a prominent graduate school in the field of marine science. He has designated a faculty campus coordinator at each campus, who in turn serves as the eyes, ears, and voices of each campus, further unifying the program's intercampus approach. He continues to strive to unite the school's faculty, students, and research efforts; whether it is holding an annual colloquium, student orientation, or serving as the liaison for collaborative propositions.



## SMS Administration

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### ***University of Massachusetts President's Office***

#### **Executive Office**

Jack Wilson, President

Leslie Granese, Director of Marketing

#### **Academic Affairs**

Marcellette Williams, Senior Vice President, Academic Affairs, Student Affairs and International Relations

Kate Harrington, Associate Vice President

#### **Robert R. Gamache, Dean**

University of Massachusetts Lowell

[Robert\\_Gamache@uml.edu](mailto:Robert_Gamache@uml.edu)

#### **Erin Jenkins, Assistant to the Dean**

University of Massachusetts Lowell

[Erin\\_Jenkins@uml.edu](mailto:Erin_Jenkins@uml.edu)

978 934 3898

### ***SMS Campus Coordinators***

#### **Francis Juanes, Professor**

University of Massachusetts Amherst

[Juanes@nrc.umass.edu](mailto:Juanes@nrc.umass.edu)

#### **Gordon Wallace, Associate Professor**

University of Massachusetts Boston

[Gordon.Wallace@umb.edu](mailto:Gordon.Wallace@umb.edu)

**James J. Bisagni, Professor**

University of Massachusetts Dartmouth

[JBisagni@umassd.edu](mailto:JBisagni@umassd.edu)

**Juliette Rooney-Varga, Associate Professor**

University of Massachusetts Lowell

[Juliette\\_RooneyVarga@uml.edu](mailto:Juliette_RooneyVarga@uml.edu)

# SMS Overview

Year Established: 2002

Total Number of...

Faculty: 91

Current Students: 62

Alumni: 12

Directors/Affiliates: 7

Campuses: 5

Countries Visited: 35

Professional Memberships: 63

Publications: 449

Awards Received: 110

Grants: \$47,255,659

Number of Journals Published in: 166

Invited Talks/Presentations: 408



## SMS Faculty

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As diverse as the faculty at SMS may be in their respected areas of research and schooling, each member shares a common characteristic that makes our program so academically unique: our faculty members are world-renowned, top-notch professors. The breadth of knowledge and devotion to all aspects of science not only add to the content of our program, it prepares our students for a lifetime career in marine science. During the time period of this report, the SMS faculty have published 449 papers, brought in \$47,255,659 in research dollars, given over four hundred invited lectures/presentations, and received over 100 awards. This diversity of the faculty at SMS has led to publications in over 165 different peer-reviewed journals, membership in over sixty different professional organizations, and visits to some 35 countries around the world for research and collaboration purposes. Below the faculty are listed in alphabetical order with a short description of their research interests.

### **Full Time Faculty**

**Altabet, Mark, Ph.D.**

**Harvard University 1984**

**1995-present UMD, Professor**

Research interests include Major marine biogeochemical cycles, as they operate present and past, using natural variations in isotopic ratio (e.g.  $^{15}\text{N}/^{14}\text{N}$ ,  $^{13}\text{C}/^{12}\text{C}$ , and  $^{18}\text{O}/^{16}\text{O}$ ). Focus is on the global N cycle and its interactions with climate change, atmospheric  $\text{CO}_2$  concentration, and coastal eutrophication.

**Barlow, Mathew, Ph.D.**

**University of Maryland 1999**

**2005-present UML, Assistant Professor**

Research interests include focusing on understanding how large-scale climate variability and climate change influence local conditions, and to what degree the associated societal impacts can be predicted and mitigated. Research areas include the dynamics and predictability of severe drought, especially in water-stressed regions; climate change in New England; and the influence of tropical intraseasonal variability on midlatitude severe weather. Societal impacts of interest include water resources management, disaster relief, pollution, agriculture, and health.

**Beck, Gregory, Ph.D.**

**SUNY at Stony Brook 1994**

**1999-present UMB, Associate Professor**

Research interests include the role of cytokines, major immunoregulatory molecules that act as orchestrators of host defense mechanisms, as mediators of all phases of acute inflammation. Biochemical characterization and studies of the molecular biology of cytokines from a number of invertebrate species have revealed basic similarities in the structure and biological properties of these important host defense molecules.

**Bisagni, James, Ph.D.**

**SUNY at Stony Brook 1972**

**1997-present UMD, Professor**

Research interests include focusing on use of both satellite-derived and in situ hydrographic data to better understand the time-varying physical oceanographic circulation patterns along the eastern seaboard of the US and Canada. This variation has been shown to affect waters surrounding the Commonwealth of Massachusetts, including the Gulf of Maine, Georges Bank, and southern New England regions. In addition, recent work is examining the inter-annual variation of salinity for the same region over a long time period and its possible relationship to climate variability in the high arctic. While use of these data is valuable for physical oceanographic and climate studies, applications of these same data for studies of coastal pollution, eutrophication, marine ecosystems and fisheries-related work may also have a wide benefit within the Commonwealth of Massachusetts. Projects include spatial and temporal variability of sea surface temperature on Georges Bank and the Gulf of Maine; relationships between ocean temperatures, salinity, primary production (phytoplankton) and secondary production (zooplankton) in highly productive regions such as Georges Bank; and relationships between regions of high ocean temperature gradients and biological variability.

**Bowen, Robert, Ph.D.**

**University of Southern California 1981**

**1984-present UMB, Associate Professor**

Research interests include addressing the evolution of Integrated Coastal Management (ICM) practices. ICM is an emerging area of policy analysis which attempts to assess the development of management practices which respond to the environmental pressures of expanding resource exploitation and new, multiple and often competing human uses of coastal areas.

**Brault, Solange, Ph.D.**

**Imperial College (University of London) 1990**

**UMB, Associate Professor**

Research interests include the processes occurring within the life cycle and the ways that these can influence survival and reproduction at the population level. The main current topics are: Demography of pilot whales and other marine mammals, and the effect of human exploitation; metapopulation dynamics of migratory bird populations; effects of the forms of density-dependence on population dynamics.

**Brigham-Grette, Julie, Ph.D.**

**Albion College 1976**

**1993-present UMA, Professor**

Research interests include late Cenozoic marine and non-marine stratigraphic problems in Arctic regions and in regional correlations and paleoclimate reconstructions, especially across Arctic North America and eastern Russia. Long-range research interests are in the paleogeography and sea level history of Alaska and the circum- Arctic coast, Arctic climate evolution, deglacial history of New England, and in the development of better chronostratigraphic methods combining a number of geochronological techniques.

**Brown, Wendell, Ph.D.**

**Brown University 1965**

**2000-present UMD, Professor**

Research interests include seeking to provide a better understanding coastal ocean processes through the combination of ocean observations and numerical circulation models. Measurements from moorings, shipboard surveys, operational coastal high-frequency radars, gliders, satellites, and meteorological platforms are assimilated into a suite of model hindcasts and forecasts of various oceanic and estuarine domains. Automated data and information management systems are used to produce near-real-time maps of some of these various measured and modeled oceanic fields for selected oceanic regimes.

**Bruell, Clifford, Ph.D.**

**University of Connecticut 1987**

**1986-present UML, Professor**

Research interests include the development of remediation technologies for soils contaminated with hazardous wastes. He has investigated innovative techniques for the remediation of petroleum hydrocarbons and chlorinated solvents such as: electro-kinetics (E-K), soil vapor extraction (SVE), in situ air sparging (IAS), surfactant enhanced soil flushing, in situ biological treatment and in situ chemical oxidation. Additionally, his research interests include studies of the transport of organic chemicals in the vadose zone.

**Buck, John, Ph.D.**

**Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program 1996**

**1996-present UMD, Associate Professor**

Research interests include animal bioacoustics, signal processing, and underwater acoustics.

**Calabrese, Edward, Ph.D.**

**University of Massachusetts Amherst 1973**

**1982-present UMA, Professor**

Research interests include environmental toxicology with an emphasis on biological factors including genetic and nutritional factors that enhance susceptibility to pollutant toxicity and the environmental implications of toxicological hormesis.

**Chen , Chi Hau, Ph.D.**

**Purdue University 1965**

**1973-present UMD, Chancellor Professor**

Research interests include AI & neural networks, ultrasonic NDE, image processing pattern recognition time series analysis, and ultrasonic signal processing.

**Chen, Changsheng, Ph.D.**

**Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program 1992**

**2001-present UMD, Professor**

Research interests include modeling and observational exploration of coastal ocean circulation, oceanic frontal processes, turbulent mixing/bottom boundary layer dynamics, chaotic mixing, western boundary currents, internal waves and tides, and biological/physical interaction. His recent research covers a broad range of scales, from global to basin, coastal ocean, and estuaries.

**Chen, Robert, Ph.D.**

**University of California San Diego 1992**

**1999-present UMB, Professor**

Research interests include organic molecules in the ocean play a vital role in regulating the health and future of the earth on global and local scales. Cycling of dissolved organic carbon (DOC), the largest pool of organic carbon in the ocean, must be understood to accurately predict effects of fossil fuel  $C_o^2$  on Greenhouse warming. Toxic organic compounds such as petroleum hydrocarbons and chlorinated pesticides can dramatically affect the health of a coastal ecosystem. Both natural and anthropogenic organic compounds exist in the marine environment as complex dilute solutions and undergo a number of biochemical, photochemical, physical transformations from photosynthesis through diagenesis and remineralization. My interests are to better understand the sources, transport, and fate of OES, transport, and fate of organic compounds at interfaces such as those between land and sea, sediment and water, particle and bulk solution.

**Colby, Frank, Ph.D.**

**Massachusetts Institute of Technology 1983**

**1988-present UML, Professor**

Research interests include mesoscale numerical models and detailed observations that are used to investigate the behavior of the New England sea breeze circulation and the effect of moisture and heat exchange from the ocean surface on the development of nor'easters. Work continues with the National Weather Service to better understand and simulate the turbulent exchanges of heat, moisture, and momentum in the atmospheric boundary layer, with the aim of improving off-shore wind and wave forecasts.

**Connor, Richard, Ph.D.**

**University of Michigan 1990**

**1996-present UMD, Associate Professor**

Research interests include animal behavior and communication.

**Damery, David, Ph.D.**

**University of Massachusetts Amherst 2006**

**1996-present UMA, Associate Professor**

Research interests include the area of natural resources economics and market research. Recent projects include wildlife conservation economics, and reviewing an Aquaculture marketing handbook.

**Duff, John, Ph.D., J.D.**

**Suffolk University Law School 1990; University of Southern Maine**

**2004-present UMB, Assistant Professor**

Research interests include matters related to ocean and coastal policy; marine resource management; ocean zoning; land use; and the laws and policies related to public and/or common property interests.

**Eberbach, Eugene, Ph.D.**

**Warsaw University of Technology**

**2001-present UMD, Assistant Professor**

Research interests include process algebras, resource bounded optimization, autonomous agents and mobile robotics. General topics of interest include distributed computing, concurrency and interaction, evolutionary computing and neural nets, new computing paradigms, languages and architectures.

**Ebersole, John, Ph.D.**

**University of California Los Angeles 1977**

**1977-present UMB, Associate Professor**

Research interests include (1) Experimental and comparative studies of adaptive strategies, particularly territoriality and heterospecific foraging aggregation in coral reef fishes; (2) Theoretical problems in community structure, empirical study of niche relationships and species diversity in coral reef fishes as determined by adult interactions and planktonic events, and the intra- and interspecific interactions of temperate hermit crabs, their predators, and their ectosymbionts; (3) The process of acidification in ponds of Southeastern Massachusetts and its effect on pond biota, especially the age structure of centrarchid fish populations.

**Eby, Nelson, Ph.D.**

**Boston University 1971**

**1972-present UML, Professor**

Research interests include Gamma ray spectroscopy, characterization of crystalline materials, geochemistry of alkaline igneous rocks, environmental contaminants, geo-archaeology, forensic geology.

**Etter, Ron, Ph.D.**

**Harvard University 1987**

**1991-present UMB, Professor**

Research interests include exploring ecological and evolutionary processes in a wide variety of marine ecosystems (intertidal zone down to the deep sea) to better understand the forces

that control the origin and maintenance of biodiversity. Collaborative research is conducted with SMS faculty Mike Rex.

**Frankic, Anamarija, Ph.D.**

**Virginia Institute of Marine Science, College of William & Mary 1998**

**2005-present UMB, Assistant Professor**

Research interests include understanding ecosystem's "function, health and resilience". It's imperative for successful application of adaptive coastal management. The general premise is that the environment sets the limits for sustainable development.

**Frasier, Stephen, Ph.D.**

**University of Massachusetts Amherst 1994**

**1997-present UMA, Assistant Professor**

Research interests include microwave imaging and interferometry, radar and radiometer systems, radio oceanography and meteorology.

**Friedman, Peter, Ph.D.**

**Johns Hopkins University 2002**

**2002-present UMD, Assistant Professor**

Research interests include experimental fluid mechanics. Specific topics he has investigated include the behavior of negatively buoyant jets and the dispersion of droplets in a turbulent flow.

**Gallagher, Eugene, Ph.D.**

**University of Washington 1983**

**1983-present UMB, Associate Professor**

Research interests include the multivariate analysis of benthic community structure, especially the effects of pollution on community structure, as well as biological interactions among benthic populations, bioturbation, and benthic diatom production.

**Gamache, Robert, Ph.D.**

**University of Massachusetts Amherst 1978**

**1978-present UML, Professor**

Research interests include quantum theory of the interaction of radiation with matter, spectral line shapes, widths, and pressure shifts for atmospheric molecules, theoretical molecular spectroscopy, theoretical studies of remote sensing of the Earth's troposphere, stratosphere, and ionosphere, and planetary atmospheres, database structure, maintenance and design for application to physical data, modeling of tropospheric pollutant gases, atmospheric modeling and simulation code development and maintenance, radiative transfer and its applications to the Greenhouse effect, electron density and molecular density profiles for terrestrial atmosphere, Expert Systems, ionospheric modeling and prediction.

**Gangopadhyay, Avijit, Ph.D.**

**University of Rhode Island 1990**

**1997-present UMD, Professor**

Research interests include ocean modeling, analysis and prediction, including development of a nested, feature-oriented operational model system for the northeastern U.S. continental

shelf (for Mid-Atlantic Regional Ocean Observation System - MARCOOS and for Northeast Regional Ocean Observation System - NERACOOS); various global and coastal ocean environmental three-dimensional simulations; basin-scale modeling to understand climatic impacts in (i) North Atlantic from North Atlantic Oscillation, and (ii) in South Pacific on Oxygen Minimum Zones; Concurrent satellite data analysis; development of a knowledge-based real-time oceanographic data and information network; and interdisciplinary modeling and simulations for biogeochemical applications.

**Georgianna, Daniel, Ph.D.**

**University of Massachusetts Amherst 1977**

**1978-present UMD, Chancellor Professor**

Research interests include marine resource economics, comparative economic systems, and economic history.

**Golomb, Dan, Ph.D.**

**Hebrew University 1958**

**1989-present UML, Professor Emeritus**

Research interests include atmospheric pollution studies, deposition and transfer of atmospheric pollution, and carbon sequestration in the earth's oceans.

**Gontz, Allen, Ph.D.**

**University of Maine 2005**

**2006-present UMB, Assistant Professor**

Research interests include (1) Coastal Evolution: Coastlines change over time as the coastal zone is affected by various processes including: storms, sea-level change and anthropogenic activities, to name a few. These changes hold the potential of severely impacting infrastructure in the coastal zone. The style of coastal change can also be used to decipher the processes and recurrence intervals of specific events. The study of coastal change relies heavily on geophysical, geospatial, geological and stratigraphic techniques. (2) Marine and Coastal Archaeology: The seafloor throughout the world is a repository for history in the form of sunken vessels. Many of these vessels could have changed the world, if their voyage had been completed. Tools similar to those used in examining coastal change are employed in searching for, identifying, conserving, and in certain cases, recovering the information contained inside these vessels.

Geophysical tools, such as sidescan sonar, sub-bottom profiler, magnetometers, gravimeters, and multibeam sonars can greatly enhance archeological and geological site assessments. Geophysical and geological investigations of the seafloor reveal information about the surficial and subsurface composition in terms of grain size, porosity, chemical properties and organic content. This information can be related to the health of the seafloor community as well as correlated to the structure of the community.

**Goodman, Louis Ph.D.**

**Drexel University 1971**

**1984-present UMD, Professor**

Research interests include ocean turbulence, ocean acoustics and developing unique underwater platforms.

**Graves, Michael, Ph.D.**

**Oregon State University 1992**

**2002-present UML, Assistant Professor**

Research interests include the chlorella viruses that infect chlorella-like algae. They are distributed worldwide and many genetically distinct isolates populate a single water sample. Their genome is unusually large. One isolate, PBCV-1, for example, (genome size = 330744 bp dsDNA) codes for ~375 proteins, nearly half of which resemble proteins of known function. The genomes of other chlorella virus isolates are probably co-linear with PBCV-1 and appear to share many, but not all, genes. This suggests that the entire "gene pool" of this genus exceeds the 375 PBCV-1-encoded genes. Many of these genes encode proteins (e.g. enzymes involved in protein glycosylation) rarely associated with viruses.

**Griffin, Curtice, Ph.D.**

**University of Missouri 1985**

**1988-present UMA, Professor**

Research interests include wetlands wildlife ecology and management, biodiversity conservation, and integrated natural resources management issues, with extensive experience conducting research on endangered species, including genetic variation and hybridization, behavioral ecology, and population viability analyses.

**Haas, Peter, Ph.D.**

**Massachusetts Institute of Technology 1986**

**1998-present UMA, Professor**

Research interests include how societies resolve differences. His recent work focuses on multilevel governance and the role of science in international and environmental regimes, on the management of transboundary and global environmental threats, but his teaching goes beyond that to include International Political Economy (IPE) and the conflicts associated with globalization more generally.

**Hagar, William, Ph.D.**

**Temple University 1972**

**1980-present UMB, Associate Professor**

Research interests include experimental approach to biochemical reactions and environmental perturbations. The biochemical studies involve the use of instrumentation to analyze plant protein complexes. The environmental monitoring work is centered on measuring anthropogenic inputs on water systems, such as acid precipitation on freshwater ponds and pools in Massachusetts. Environmental monitoring includes development of on-site instrumentation to monitor pH, temperature, and oxygen concentration, and also the collection and analysis of freshwater organisms. Recently, this has involved the use of stable isotope analysis of organisms in the water systems to determine structure of food webs and possible effects of anthropogenic inputs.

**Hines, Mark, Ph.D.**

**University of New Hampshire, 1981**

**2002-present UML, Professor**

Research interests include studying the role of microorganisms in the cycling of elements in depositional environments such as sediments, soils and wetland peats. Interests include a) the

production and consumption of trace gases and b) the transformation of toxic materials as well as their effects on microbial life. We are currently focused on three projects. In the first we examine phenomena that control the formation of biogenic methane in anaerobic freshwater wetlands at high latitude. In the second we investigate factors affecting the methylation and demethylation of mercury in soils, freshwater and marine sediments, as well as wastes associated with mining activities. Our third area involves studies on the effects of solid rocket fuel components on marine and freshwater habitats.

**Hochberg, Rick, Ph.D.**

**University of New Hampshire 2002**

**2005-present UML, Assistant Professor**

Research interests include the systematics, functional morphology and ecology of marine meiofaunal invertebrates (e.g., Gastrotricha, Platyhelminthes) and the biology of freshwater rotifers. Investigations often utilize an assortment of microscopical imaging techniques (LM, CLSM, SEM, TEM). Current geographical regions of research include Panama and the wider Caribbean.

**Howes, Brian, Ph.D.**

**Boston University 1984**

**1997-present UMD, Professor**

Research interests include restoration of estuarine nutrient related habitat quality, restoration of salt marshes through tidal enhancement and through Phragmites removal using natural biogeochemical cycles, groundwater nutrient transport and transformations from uplands to coastal waters, relationship between nutrient loading, algal production, oxygen levels and benthic communities in coastal embayments, long-term impact of sea level rise on community structure of wetland ecosystems, interactions between gas and solute exchange and pathways of porewater turnover in intermittently flooded wetlands, and biogeochemistry of redox stratified waters: effects on ecosystem functioning.

**Jahngen, Edwin George Emil, Ph.D.**

**University of Vermont 1974**

**1988-present UML, Professor**

Research interests include biochemistry and biosensors.

**Juanes, Frances, Ph.D.**

**S.U.N.Y at Stony Brook 1992**

**1999-present UMA, Professor**

Research interests include ecology, evolution and behavior of fishes and benthic crustaceans. Particular interests include: the mechanisms leading to recruitment variability of marine fishes; the evolution of life history strategies, particularly with reference to the onset of piscivory in fishes; behavioral ecology of piscivorous fishes and decapod crustaceans, foraging theory specifically as it applies to prey size selection, and the allometry of animal spatial distributions.

**Kostecki, Paul, Ph.D.**

**University of Michigan 1981**

**1992-present UMA, Vice Provost for Research**

Research interests include regulatory issues and technical developments in the assessment and remediation of hydrocarbon contaminated soils, the evaluation of fish as toxicological models, and ecological risk assessment.

**Levin, Robert, Ph.D.**

**University of California at Davis 1963**

**1964-present UMA, Professor**

Research interests include molecular biology of low temperature bacteriophage infections of fish spoilage bacteria, metabolism and taxonomy of fish spoilage bacteria, bacterial production of gums, and bacterial rennet production. Additional research areas include detection of mutagens and carcinogens in foods; mechanisms of chemical modulation of DNA repair; fish protein hydrolysates; detection of E. coli in foods by immunological and real-time PCR.

**Lilly, Emily, Ph.D.**

**Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program 2003**

**2005-present UMD, Assistant Professor**

Research interests include microbial phylogeny, horizontal gene transfer as an evolutionary force, origin and evolution of autotrophy and rubisCO proteins in bacteria, archaea and protists, evolution of symbiotic associations, phylogeny and biogeography of marine dinoflagellate species, ecology and physiology of toxin production in harmful algae.

**Looney, John, Ed.D.**

**Boston University 1972**

**1968-present UMB, Professor**

Research interests include the study of rainfall patterns and the effects of acid rain on sunfish, coastal ecology issues; especially pertaining to beach type and the negative effects of algal distributions on beaches.

**MacDonald, Daniel, Ph.D.**

**Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program 2003**

**2003-present UMD, Associate Professor**

Research interests include Stratified hydrodynamics, turbulence and frontal dynamics, with specific emphasis on estuarine flows, river plumes, and industrial discharges; coastal and environmental engineering.

**Mather, Martha, Ph.D.**

**Ohio State University 1990**

**1991-present UMA, Asst Unit Leader Fisheries**

Research interests include focus on fish ecology that addresses applied management problems. Specifically, problems related to (1) the ecology of anadromous fish, (2) processes that structure estuarine fish communities, (3) how to use community ecology to devise fish

sampling regimes that aid conservation, and (4) integrated bio-social approaches to natural resource conflicts. I approach these topic areas by addressing the conceptual issues of (a) how abiotic and biotic factors drive animal distribution and abundance, (b) variations in patterns and processes across systems and through time, (c) the role of human impacts, and (d) multi scale investigations.

**McComb, Brenda, Ph.D.**

**Louisiana State University 1979**

**1996-present UMA, Professor**

Research interests include focus on quantifying the effects of land management practices on the abundance and distribution of vertebrates as a result of habitat change. Land management activities including forest management and development have local effects and can have cumulative impacts on habitat availability for terrestrial vertebrates. Considering the potential impacts on biodiversity prior to taking a management action can help to minimize adverse effects of management and identify key areas for habitat restoration.

**Moeller, William, Ph.D.**

**University of Connecticut 1970**

**1971-2002 UML, Professor Emeritus**

Research interests include water resources with a research focus on small and alternative wastewater treatment technologies such that he authored a comprehensive model environmental code for on-site wastewater treatment technologies, directing time at appropriate, sustainable infrastructure in developing regions. This effort is being carried out through the Initiative for Sustainable Infrastructure in Developing Regions located at Lowell and of which he is currently the director.

**Robert Muth, Ph.D.**

**University of Washington, Seattle 1985**

**1990-present UMA, Associate Professor**

Research interests include natural resource policy and the human dimensions of natural resources, as well as the public policy-making process, conflict resolution, conservation of marine and freshwater ecosystems, and examining a broad array of social values and human behavior related to natural resources and the environment, such as integrated water resource management, poaching, trapping, animal rights activism, subsistence uses of natural resources, and the attitudes of conservation professionals.

**Niemi, Eugene, Ph.D.**

**University of Massachusetts Amherst 1974**

**1966-present UML, Professor**

Research interests include hydrodynamic design of marine vehicles, including hulls, hydrofoils, and submarines; wind energy for marine power generation; and ocean wave behavior.

**O'Connor, Nancy, Ph.D.**  
**North Carolina State University 1990**  
**1999-present UMD, Professor**

Research interests include questions related to the ecology of marine invertebrates, particularly coastal species of crabs. Since the late 1990s the lab group has been investigating the ecological impacts of the invasion of the Asian shore crab, *Hemigrapsus sanguineus*, on coastal ecosystems, focusing on the potential effects of the Asian shore crab on resident crab species and the incorporation of the crab into food webs as both predator and prey. The group also examines habitat characteristics that stimulate or inhibit the settlement of planktonic megalopae (late-stage crab larvae) into coastal habitats, and metamorphosis to the benthic crab stage.

**Oliveira, Kenneth, Ph.D.**  
**University of Rhode Island, 1994**  
**2003-present UMD, Assistant Professor**

Research interests include invertebrate ecology and nonindigenous marine species.

**Olsen, Curtis, Ph.D.**  
**Columbia University 1979**  
**2005-present UMB, Professor**

Research interests include examining the dispersal and fate of contaminants in linked watershed and coastal environments, biogeochemical and environmental tracers (radionuclides and stable isotopes), and environmental remediation and management. Throughout the world, human population growth and urbanization are driving accelerated changes in environmental quality and ecosystem structure and functioning at the land/ocean interface. The distribution of radionuclides, stable isotopes, and other biogeochemical tracers can be used to study the complex biological, chemical, physical, and geological interactions that affect the transport, cycling, and ecological fate of materials in terrestrial and aquatic systems. Natural and anthropogenic radionuclides have an advantage over other types of biogeochemical tracers because they not only serve as tracers to quantify the net effect of complex biogeochemical interactions, but they also decay with a constant half-life and serve as biogeochemical clocks to quantify the rates for environmental and ecological processes.

**Pennell, Stephen, Ph.D.**  
**Brown University 1982**  
**2000-present UML, Professor**

Research interests include mathematical modeling, fluid mechanics, including nonlinear wave propagation and interaction, flow through porous media, and drop shape analysis.

**Perot, Blair, Ph.D.**  
**Stanford University 1994**  
**2003-present UMA, Associate Professor**

Research interests include turbulence modeling, computational fluid dynamics, numerical methods, supercomputers & parallel computation; droplets, hydrophobic surfaces, and micro flows.

**Pilskaln, Cynthia, Ph.D.**

**Harvard University 1984**

**2006-present UMD, Professor**

Research interests include geochemical particle fluxes in the ocean and large lake systems with a focus on the quantitative relationship of such fluxes to climate forcing over variable time scales, the resultant changes in water column chemistry, nutrient cycling and ecology, and the formation of the sediment record. Measurements emphasize organic and inorganic carbon cycling, particle aggregation and remineralization processes in the water column, and particle dynamics at the sediment/water interface. Additional work includes quantification of the role of mid-water aggregates in carbon and silica remineralization and export fluxes, and the development and use of imaging and optical instrumentation on submersible vehicles for in-situ study of marine particulates.

**Randhir, Timothy, Ph.D.**

**Purdue University 1995**

**1997-present UMA, Associate Professor**

Research interests include watershed management, Climate change, water quality, water supplies, ecological economics, GIS, systems simulation, natural resources modeling, agricultural economics, international trade and development, common property issues, nonpoint source pollution, and natural resources policy and management.

**Reinisch, Bodo, Ph.D.**

**University of Lowell 1970**

**1996-present UML, Professor Emeritus**

Experimental and analytical research in atmospheric and space sciences, solar wind - magnetosphere interaction modeling, magnetosphere-ionosphere-thermosphere coupling theory, plasmasphere sounding and modeling, plasmasphere depletion and refilling processes, ionosphere sounding and modeling, radiation belt wave-particle interactions, antenna-plasma interaction, antenna radiation theory and experiments, whistler mode wave propagation and ionospheric coupling.

**Rex, Michael, Ph.D.**

**Harvard University 1972**

**1981-present UMB, Professor**

Research interests include focusing on the ecology and evolution of deep-sea benthic communities. It includes analyses of bathymetric and global-scale patterns of biodiversity and their causes. We are using satellite imagery to examine the relationship of surface production to community structure in the deep sea at different temporal and spatial scales. Geographic variation in body size of mollusks is being explored to study adaptation to the deep-sea environment. Multivariate analyses of shell architecture and mitochondrial DNA are being employed to study patterns of population differentiation in deep-sea mollusks. Adaptive radiation and taxon cycles are being investigated by documenting patterns of taxonomic diversity. A major long-term research goal is to synthesize patterns of distribution, geographic variation, taxonomic composition and life histories to formulate a model of evolution in deep-sea invertebrates.

**Robinson, William, Ph.D.**  
**Northeastern University 1981**  
**1992-present UMB, Professor**

Research interests include functional mechanisms in aquatic toxicology, particularly those processes involved in metal uptake, depuration, sequestration and internal transport. This work focuses on two groups of marine organisms: bivalve molluscs, such as mussels and clams, and tunicates. Studies are investigating several mechanisms--physiological, biochemical and molecular--that bivalve molluscs and tunicates utilize in response to specific metals. Ongoing and past studies have addressed metal bioavailability, detoxification, and the circulatory transport of metal ion complexes in both bivalves and tunicates. Research has also aimed at advancing monitoring techniques, using the biomarker approach and the marine mussel transplant approach, in both Boston Harbor and regional embayments.

**Rooney-Varga, Juliette, Ph.D.**  
**University of New Hampshire 1997**  
**1998-present UML, Associate Professor**

Research interests include microbial ecology: utilizing molecular biology, in combination with cultivation and biogeochemical methods, to study environmentally significant microorganisms in situ. Current research involves the analysis of microbial communities capable of anaerobic benzene degradation in petroleum-contaminated aquifers, in addition to studying microbial diversity and links between marine bacteria and toxic algae in the Gulf of Maine.

**Ross, Michael, Ph.D.**  
**Ohio State University 1975**  
**1975-present UMA, Professor Emeritus**

Research interests include population dynamics and life history analysis of riverine and coastal fisheries resources, and species /habitat relationships in stream systems.

**Brian Rothschild, Ph.D.**  
**Cornell University 1962**  
**2005-present, Montgomery Charter Professor of Marine Science and Technology**

Research interests include Population dynamics, biological oceanography, fisheries management, and natural resources policy. Dr. Rothschild has served on many national and international committees, and has held faculty or other associations with such institutions as Harvard University, Scripps Institution of Oceanography, and the Woods Hole Oceanographic Institution. His research and service have been widely recognized, most recently in 2004 by the Outstanding Achievement Award from the American Institute of Fishery Research Biologists.

**Ryan, David, Ph.D.**

**University of New Hampshire 1983**

**1997-present UML, Professor**

Research interests include the development of instrumental techniques to determine the various forms and reactions of pollutants in the environment. This includes analysis of trace elements, polychlorinated biphenyls (PCBs) and other parameters in water, biota, and sediments. Recent work in the area of soil remediation focused on the use of electrokinetics for the removal of inorganic contaminants and soil flushing with surfactants for the removal of organic compounds. Current research efforts address several related areas: the use of particle stabilized emulsions of CO<sub>2</sub> and water for applications in ocean and geologic sequestration of CO<sub>2</sub>, fluorescence and nuclear magnetic resonance spectroscopy to study the binding of potential pollutants to humic materials, the bioaccumulation and physiology of metals in aquatic organisms particularly shellfish and the oxidation/reduction reactions of alpha tocopherol (vitamin E)

**Sengupta, Sukalyan, Ph.D.**

**Lehigh University 1994**

**1999-present UMD, Associate Professor**

Research interests include adsorbents and ion-exchangers nutrient removal and recovery, reuse of solid wastes, wastewater treatment, and water treatment.

**Shiaris, Michael, Ph.D.**

**University of Tennessee 1979**

**UMB, Professor**

Research interests include focusing on three general areas of molecular environmental microbiology/microbial ecology. One area is bacterial indicators of pollution and their survival in coastal environments, the second is the bacterial population ecology in coastal environments, and the third area is biodegradation of organic pollutants in coastal ecosystems. DNA fingerprinting, DNA sequencing, and routine microbiological techniques are used in the study of bacteria in coastal environments, while radioisotopic tracers, microcosms, and high performance liquid chromatography are used for biodegradation studies.

**Singh, Bal Ram, Ph.D.**

**Texas Tech University 1987**

**1990-present UMD, Professor**

Research interests include molecular mode of botulinum neurotoxin action, and experimental investigation of oligomeric nature of BoNT.

**Stevens, Bradley, Ph.D.**

**University of Washington, Seattle 1982**

**2007-present UMD, Associate Professor**

Research interests include the ecology, reproduction, recruitment processes, and aquaculture of invertebrate fishery species (crustaceans, molluscs, echinoderms). Research projects focus on understanding how environmental variables and habitat structure influence behavior, spawning, larval settlement, survival, and growth. Our laboratory uses a variety of tools including histology, microscopy, and image analysis to make quantitative comparisons.

**Stokesbury, Kevin, Ph.D.**

**Université Laval, Quebec City 1994**

**2000-present UMD, Associate Professor**

Research interests include the interdisciplinary sciences related to the interactions between marine organisms and marine environments. This covers a wide range of categories including field exploration, laboratory experiments, theoretical research and modeling. Critical to the development of the DFO at UMASSD is cooperative research with the fishing industry of New England. The scallop industry has worked extensively with the DFO to develop the world's largest video survey data-base of the sea scallop resource and this research has been used in every management plan since 1999, As well as Impacting fisheries management, conservation and the scallop fishing industry in a positive and constructive manner.

**Sundermeyer, Miles, Ph.D.**

**Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program 1998**

**2001-present UMD, Associate Professor**

Research interests include vertical and horizontal mixing processes, dye release and Lagrangian drifter studies, numerical modeling of two- and three-dimensional turbulent flows, and numerical modeling of physical and biological interactions. Recent projects include laboratory simulations and numerical modeling of mixing by small-scale geostrophic motions generated by the adjustment of mixed patches in the ocean interior, and observations using airborne LIDAR to survey upper ocean dye release experiments at horizontal scales of 0.1- 10 km, vertical scales of a few meters, and time scales of minutes to hours.

**Tandon, Amit, Ph.D.**

**Cornell University 1992**

**1999-present UMD, Associate Professor**

Research interests include processes that lead to uncertainties about the oceans' role in climate change. Upper ocean properties and air-sea interaction also affect upper ocean biological processes in significant ways. Using theory, data analysis, and numerical simulation, research aims to bridge the gap between scientists studying large scale ocean processes and those studying small scale ocean mixing processes. The upper ocean is the important connecting conduit between the atmosphere and the deep ocean, which carries a long-term "memory" of climate change.

**Terkla, David, Ph.D.**

**University of California Berkeley 1979**

**1987-present UMB, Professor**

Research interests include analysis of the New England groundfish industry, focusing on management of the harvesting industry and the industry structure and marketing channels of the onshore processing industry. Studies also include the interaction between various types of environmental controls and onshore economic development in coastal areas, analyzing the problems faced by rapidly growing coastal communities in controlling waterfront development and, in particular, allocating scarce waterfront land among residential and a variety of commercial uses. Additional work includes estimating the social benefits from pollution control and studying the use of various economic incentive schemes for controlling water pollution and inducing cost-effective cleanup.

**Tian, Yong Qian, Ph.D.**

**University of Waikato, New Zealand 1995**

**2003-present UMB, Assistant Professor**

Research interests include focusing on EcoHydrology applying quantitative methods to link between watershed ecology and hydrology. Expertise is in the process-based model development, model calibration and application, implementation of models and decision rules to test the interaction effects of natural system components and to examine model function responses to changes in natural environmental driven by management, policy, climatic conditions and anthropogenic processes. Scientific experiences are in the field of multi-disciplinary research integrating geography, watershed hydrology, terrestrial ecology, climatology, and meteorology such as biochemical cycles, the fate of microorganism contaminants in watersheds and hydrological and nutrient flows. Since accurate and informative data are essential to successful modeling, Use of Geographic Information System and Remote Sensing technologies for data management, multi-scale mapping, and monitoring of environmental change and natural hazards. Future research goals are to continue integrative modeling of geographic phenomena, and to enhance these models to support mitigation and management projects at a range of temporal and spatial scales.

**Turner, Jefferson, Ph.D.**

**Texas A&M University 1977**

**1991-present UMD Chancellor Professor**

Research interests include marine phytoplankton and zooplankton ecology: zooplankton trophic vectoring and transport of red tide toxins, long-term phytoplankton and zooplankton fluctuations in Boston Harbor, Massachusetts Bay, Cape Cod Bay, Buzzards Bay, copepod feeding ecology, copepod diets and reproductive success, importance of zooplankton fecal pellets in the vertical flux to the deep sea.

**Urban-Rich, Juanita, Ph.D.**

**University of Maryland 1997**

**2000-present UMB, Associate Professor**

Research interests include zooplankton processes in marine environments and around ocean science education for K-8 and the general public. The primary areas in zooplankton ecology and ocean science education that I am interested in are: Zooplankton inputs to the dissolved and particulate organic carbon pools, zooplankton-microbial interactions, role of gelatinous zooplankton in submicron particle cycling, biological processes that affect the formation, composition and degradation of particles, development of hands-on ocean activities for young children, and development of web-based learning.

**Wallace, Gordon, Ph.D.**

**University of Rhode Island 1976**

**1982-present UMB, Associate Professor**

Research interests include biogeochemical processes and their control on the speciation, distribution and transport of metals in coastal ecosystems. The speciation, transport and distribution of metals in coastal ecosystems are a complex function of both abiotic and biotic variables and are often influenced by, or influence, a number of important biological activities in aquatic ecosystems. Our laboratory is principally involved in identifying and

understanding the nature of these processes in coastal and continental shelf ecosystems from both fundamental and applied research perspectives.

**Xing, Baoshan, Ph.D.**

**University of Alberta, Canada 1994**

**2000-present UMA, Professor**

Research interests include (1) environmental fate and impact of engineered nanoparticles, (2) interactions between organic compounds (including pesticides) and natural organic matter, (3) fate and sorptive behavior of pesticides and metals in soils and sediments, (4) characterization of soil organic matter and its roles in sustainable agriculture and environmental protection, and (5) application of advanced analytical instruments (e.g., NMR, FTIR) in environmental and soil science research.

**Zhou, Meng, Ph.D.**

**S.U.N.Y at Stony Brook 1992**

**2001-present UMB, Professor**

Research interests include focusing on small and mesoscale physical processes and their effects on spatiotemporal variability of chemical and biological processes in aquatic ecosystems by using observation tools, numerical models and mathematical theories. I am particularly interested in integrating observations, models and mathematical theories, which will lead to better understandings of the ecosystems and better ecosystem models. Research topics include: Buoyancy driven and tidal currents in estuaries and fjords, baroclinic circulation and instability on continental shelves, zooplankton population dynamics, zooplankton aggregation behavior and patch dynamics, coupling between physical and biological processes.

**Zuo, Yuengang, Ph.D.**

**Swiss Federal Institute for Water Resources and Water Pollution Control, Zurich, Switzerland**

**1999-present UMD, Associate Professor**

Research interests include the chemical reactions of organic and inorganic substances and their transportation in the natural environments at a fundamental level: i.e. pathways, mechanisms, and kinetics. Most of his work has focused on field measurements and quantitative kinetic experiments to study the sources, distribution, bio-effects and sinks of organic and inorganic pollutants in the atmosphere, marine and fresh water and sediments.

***Adjunct Faculty***

**Gardner, George, Ph.D.**

**University of Washington 1984**

**1984-present UMB, Adjunct Professor**

Research interests include estuarine and coastal dynamics, contaminant transport within coastal waters, mixing processes in stratified fluids, numerical modeling marine processes.

**Mitchell, David, Ph.D.**  
**Cornell University 1986**  
**UML, Adjunct Professor**

Research interests include aquatic resource assessment and management, ecological risk assessment, water quality analysis and permitting.

**Sarah Oktay-Quigley, Ph.D.**  
**Texas A&M University 2000**  
**2000-present UMB, Adjunct Professor**

Research interests include the measurement of radioactive and stable iodine isotopes ( $^{129}\text{I}$  and  $^{127}\text{I}$ , respectively) in the environment and investigating the transport mechanisms responsible for their distribution. Other research interests include: usage of radioactive tracers in natural environments, investigating colloidal, particulate, and dissolved forms of organic carbon associated with iodine; and trace metal interactions in estuarine and coastal environments.

**Wang, Xu-Chen, Ph.D.**  
**S.U.N.Y at Stony Brook 1993**  
**1998-present UMB, Adjunct Professor**

Research interests include the distribution and biogeochemical behavior of organic compounds in marine environment and diagenetic processes involved in the decomposition and preservation of organic matter in marine sediments. Other activities include carbon cycling in the ocean; determination of the sources, transformation and turnover times of organic compounds in the ocean using natural carbon isotopes  $^{14}\text{C}$  and  $^{13}\text{C}$  as tracers; and adsorption of biogenic and anthropogenic organic compounds with clay minerals and marine sediments.

### ***Directors and Affiliates***

**Cadrin, Steven, Ph.D.**  
**University of Rhode Island 2003**  
**Director, NOAA/UMass Cooperative Marine Education and Research Program and UMD, Adjunct Professor**

Research interests include general fisheries science that is relevant to resource management, population modeling of fishery resources, spatial population structure and movement, and collaborative research with fishermen. Student research represents a wide range of fisheries topics.

**Jin, Di, Ph.D.**  
**University of Rhode Island 1991**  
**Associate Scientist, Marine Policy Center**

**Halvorson, Harland, Ph.D.**  
**University of Illinois 1952**  
**Director, Policy Center for Marine Biosciences and Technology (PCMBT)**

**Hoagland, Porter, Ph.D.**  
**University of Delaware 2000**  
**Public Policy Research Specialist, Marine Policy Center**

**Hauke Kite-Powell, Ph.D.**  
**Massachusetts Institute of Technology 1992**  
**Research Specialist, Marine Policy Center**

**Brian Rothschild, Ph.D.**  
**Cornell University 1962**  
**Co-Director, Massachusetts Marine Fisheries Institute**  
**UMD professor**

**Andrew Solow, Ph.D.**  
**Stanford University 1986**  
**Director, Marine Policy Center**

**Jack Wiggin**  
**Boston College (M.S.) 1981**  
**Interim Director Urban Harbors Institute**



## The University of Massachusetts School of Marine Sciences (SMS) Graduate Students and Alumni

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### **Current M.S. Students**

Adam Barkley

Talia Bigelow

Glenn Chamberlain

Peter Chase

Anne Corriea

Gregory DeCelles

Daniel Goethel

Nikki Jacobson

Shawna King

David Kowalske

Jon Loehrke

Alicia Long

Gustavo Marques

Dave Martins

Jess Melgey

Peter Milligan

Margaret Ney

Owen Nichols

Carolina Nobre

David Novak

Sarah Pautzke

Derek Perry

Lucia Rueda

Roland Samimy

Sara Sampieri

Christopher Sarro

Michelle Schenk

Carrie Schuman

Andrew Shantz

Tiffany Vidal

Jianjun Wang

Lin Zhang

## ***Current Ph.D. Students***

Felipe Alvarenga

Anne Marie Brunner

Ayan Chadhuri

Fei Chen

Stephanie Gazda

Guoping Gao

Valerie Hall

Andrew Hoell

Fiona Hogan

Zhigang Lai

Yuejuan Lin

Daniel Madigan

Guarav Mukherjee

Shannon O'Connor

Marco Pedulli

Roop Saini

Marcos Sastre

Annie Sawabini

Joe Smith

Fei Song

Hu Song

Michelle Staudinger

Brad Stevens

Zhankun Wang

Mouzhong Xu

Yi Xu

Pengfei Xue

Zhitao Yu

Dongsheng Zhang

## ***SMS Alumni***

Isaac Adatto, M.S. 2008

Christine Buzzell, M.S. 2005

Deborah Cobb, M.S. 2006

Brent Courchene, M.S. 2008

Melanie Griffin, M.S. 2007

Yuko Hasawega, M.S. 2005

Alyssa MacDonald, M.S. 2008

Michael Marino, M.S. 2007

Jacob Nogueira, M.S. 2005

Adrienne Pappal, M.S. 2006

Christopher Pease, M.S. 2005

Mary Radlinski, M.S. 2006

Grant Stuart, M.S. 2006



## The University of Massachusetts School of Marine Sciences Option Areas of Study

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### **(1) *Integrated Coastal Management (ICM)***

The management of coastal systems has evolved over the past decade, in particular, to embrace a broader, more systemic approach — management that recognizes the “reality of interdependence” of coastal watershed environments, for example. Integrated Coastal Management is a management strategy to achieve the sustainable development of coastal areas based upon a policy process that is information driven, inclusive and adaptive. Its goal is to ensure integration of all levels of government (local, national and international), natural and social scientific disciplines, appropriate spatial and temporal dimensions within natural systems, and broad sets of representative stakeholders. This theme is designed to include the study of international marine resource regimes. Courses within this theme would be drawn from both the natural and social sciences but would build upon a foundation of coursework in environmental and natural resource management and policy; environmental, coastal and ocean law; and environmental and marine resource economics.

### **(2) *Ocean and Human Health (OHH)***

In most areas of the world, ocean and coastal areas continue to experience extensive environmental stresses. The consequential risks imposed by those stresses affect not only the health of marine systems but human health as well. Human exposure to these risks derives from a variety of vectors including the consumption of contaminated seafood and direct contact from recreational bathing in affected coastal waters. Several recent international conferences have focused on the threats from persistent organic pollutants such as DDT and PCBs; metals (such as methyl mercury and cadmium); algal toxins; cholera and other pathogens, pharmaceuticals introduced by aquaculture operations, and possibly, genetically modified organisms.

Recent estimates place the number of annual marine originated disease cases in the range of tens of millions worldwide. The challenge has been that, for the most part, research and management of these issues has been characterized by a sector-driven approach lacking interdisciplinary effort and comprehensive understanding. Effective mitigation of these risks requires the integration of broad range of disciplinary efforts including: marine biology and chemistry, fisheries science and management, integrated coastal management, public health, epidemiology, aquatic toxicology, and science and human nutrition.

### **(3) *Living Marine Resources Science and Management (LMRSM)***

Historically, humans have been inconsistent at best in utilizing living marine resources in a wise, sustainable manner. Management has traditionally been based on assessment of the condition of specific populations of fish or other aquatic organisms, and the capacity of those

populations to withstand the impacts of human harvest. However, fisheries are not defined simply by the relationship between resource and harvester. Effective resource management potentially must include establishing an understanding of the interrelationships and interactions of taxa within a biotic community, the impacts of dynamic conditions of the environment on target resources, and the impact of policy decisions driven by socioeconomic as well as biological issues on the management system. Since populations of most resources cross boundaries of multiple governmental units, management strategy must be based on interstate, national and international initiatives and agreements. In addition, management decisions increasingly must not only address interests and issues of user groups (commercial harvesters and recreational anglers), but also an increasing number of stakeholders, whose interest in resource use and management may differ substantially from those of traditional users. Thus, the living marine resources science and management arena is extremely complex; advanced training of effective fisheries scientists of the future must truly be of an interdisciplinary nature. The student pursuing this theme should receive training in population and community dynamics, in oceanography and its impacts on resource productivity, the impacts of fishing and other human activities on ecosystem quality, and the socioeconomic issues that drive policy development and management.

#### **(4) *Marine Biogeochemical Cycles and Environmental Change (MBCEC)***

The production, consumption, and alteration of chemical species by aquatic organisms are central to the functioning of marine systems. The supply and recycling of nutrients and trace metals is an important control on plant productivity. Ecosystem activity and structure as well as their alteration are often monitored through chemical signatures. Human impacts are felt through perturbation of natural cycles as in the case of eutrophication and through release of contaminants as in the case of toxic organic compounds (e.g., PCB's) and heavy metals. These impacts can be both local and global in nature. The student pursuing this area of emphasis is expected to develop a fundamental understanding of major marine biogeochemical cycles and their interactions with physical and biological components of the system. Since the ability to monitor these cycles is often analytically limited, students are encouraged to become competent in pertinent sensor technology.

#### **(5) *Analysis and Modeling of Marine and Atmospheric Systems (AMMAS)***

Mathematical models, particularly those employing multi-dimensional numerical simulations, have become powerful tools for analysis of marine systems. Modeling efforts have traditionally emphasized physical components such as fluid motions; energy, heat, and salinity budgets; interactions with atmospheric forcing; and paleoclimatic changes. State-of-the-art efforts now include key biological (e.g., primary and secondary production, biomass distribution) and chemical (e.g., hydrological cycling, air/sea gas exchange, nutrient and contaminant distributions) processes and parameters. Global scale models have been used to understand past, present and future global changes in the ocean-atmosphere system.

Data assimilation is an essential element of state-of-the-art models for establishing initial and boundary conditions as well as for providing 'nowcasts'. Data sources include remote and in situ sensors, experimental results, as well as historical databases. Development of predictive

capability is critical for optimizing environmental remediation and restoration, coastal and watershed development, and fisheries management.

The student pursuing this concentration is expected to develop a fundamental capability for interdisciplinary algorithm development/implementation and data assimilation. Required is familiarity with physical oceanography, biology, chemistry, and ocean-atmospheric sciences. Exposure to sensor technology is recommended.

### **(6) Coastal Systems Science (CSS)**

Human society reaps large economic and recreational benefits from the land/sea margin which often result in adverse environmental impact. Understanding and remediating these impacts must begin with the realization that coastal marine ecosystems in effect extend well inland, encompassing their watersheds and estuaries. Freshwater inputs not only affect salinity distributions and circulation patterns but are also sources of nutrients and contaminants. The land/sea boundary is the home of unique ecosystems (e.g., marshes, shallow embayments, shelf environments) which are critical for the lifecycles of many economically and recreationally important finfish and shellfish species. However, the complex ecology and multiple interconnections of these systems are far from being sufficiently well understood to predict the outcome of present and future human impacts. The student pursuing this area of emphasis is expected to develop a fundamental understanding of aquatic ecology in the coastal zone and its dependence on physical, chemical, and geological processes and phenomena. This area often requires synthesis of diverse, spatially distributed data and students are encouraged to be competent in using Geographic Information Systems. Student should also become familiar with the scientific issues that influence coastal resource management and policy.

### **(7) Marine Observation Technologies (MOT)**

Increasingly sophisticated interdisciplinary marine science has spurred engineering advances both in the instrumentation used to measure marine environments and the signal processing techniques used to analyze the resulting data. Scientific and policy studies considering the complex interrelated nature of marine environments demand accurate and extensive measurements. In response to these demands, modern marine observation systems are routinely microprocessor controlled, often autonomous vehicles or moorings, and frequently communicate automatically with each other and scientists to report measured data and receive updated instructions and measurement protocols. The engineering design of these instrumentation systems requires expertise spanning several traditionally distinct engineering disciplines. In addition, the extensive data records generated by these instruments and the more subtle and complicated scientific questions addressed provide novel challenges in signal processing and analysis. Students studying both system design and signal analysis must be informed by a solid foundation in ocean science to understand the context of the questions addressed by the instruments and data they produce. Often, they must incorporate knowledge of the marine policy issues driving scientific studies to focus the design and analysis on the most important questions and frame the results in an appropriate manner. Simultaneously, policy and science students must have a clear working knowledge of the realistic capabilities of ocean measurement systems to design meaningful standards and studies, as well as a clear sense of the time and effort required to obtain observations necessary for meaningful answers.



## Professional Memberships

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Our faculty often go beyond their duties as professors at SMS and their respective campus departments when it comes to their passion for science. SMS faculty are involved as members in over 60 prestigious organizations that reiterate the utter diversity that makes SMS so exceptional..

Acoustical Society of America  
American Academy of Underwater Sciences (AAUS)  
American Association for the Advancement of Science  
American Association for University Women  
American Association for Virology  
American Association of Immunologists  
American Bar Association  
The American Chemical Society  
American Fisheries Society Parent Society  
American Fisheries Society  
American Geophysical Union  
American Institute of Biological Sciences  
American Institute of Research Fishery Biologists  
American Mathematical Society  
American Meteorological Society  
American Microscopical Society  
American Nuclear Society  
American Physical Society  
American Society for Engineering Education  
American Society of Aeronautics and Astronautics

American Society of Ichthyologists and Herpetologists  
American Society of Limnology & Oceanography  
American Society of Mechanical Engineers  
American Society of Microbiology  
American Statistical Association  
Association for Women in Science  
Atmospheric Spectroscopy Applications (ASA) Working Group  
The Canadian Society of Zoologists  
Coastal Zone Canada Association  
Ecological Society of America  
Estuarine Research Foundation  
Gamma Sigma Delta  
Institute of Electrical and Electronics Engineers (IEEE)  
International Association of Meiobenthologists  
International Society for Microbial Ecology  
International Society for Microbiology  
International Society for the Study of Harmful Algae  
International Society of Developmental and Comparative Immunology  
International Symbiosis Society  
Marine Technology Society  
National Association of Biology Teachers  
National Marine Educators Association  
The National Shellfish Association  
The New York Academy of Sciences  
Ocean Governance Study Group  
The Oceanography Society  
Optical Society of America  
Phi Beta Kappa  
Phi Kappa Phi Honor Society  
Phycological Society  
Sigma Xi  
Society for Conservation Biology  
Society for Industrial and Applied Mathematics

Society for Integrative and Comparative Biology  
Society for Leukocyte Biology  
Society for Marine Mammology  
Society of Environmental Journalists  
Society of Naval Architects and Marine Engineers  
Society of Wetland Scientists  
Tau Beta Pi  
The Wildlife Society  
Union of Concerned Scientists  
Xi Sigma Pi



## Journals Where Work Has Been Published

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These scientifically peer-reviewed journals not only represent the extent of knowledge that our four campus faculty have as a whole, they also display the diversity and oftentimes intersecting similarities in their respective areas of research. Our faculty have published in over 165 peer-reviewed journals.

Acta Zoologica

American Journal of Agricultural Economics

American Naturalist

Analytical Chemistry

Animal Behavior

Applied and Environmental Microbiology

Applied Optics

Applied Spectroscopy

Aquaculture Economics and Management

Aquatic Mammals

Aquatic Microbial Ecology

Aquatic Sciences

Atomizations and Sprays

Atmos. Oceanic Optics

Biogeochemistry

Biological Bulletin

Biological Conservation Journal

Bulletin of the American Meteorological Society

Bulletin of Marine Science

Bulletin of the Plankton Society of Japan

Cahiers de Biologie Marine  
Cambridge Journal of Economics  
Canadian Journal of Fisheries and Aquatic Sciences  
Canadian Journal of Zoology  
Chemical Geology  
Chemistry and Ecology  
Coastal and Shelf Science  
Coastal Engineering Journal  
Continental Shelf Research  
Copeia  
Cosmochimica Acta  
Cykotine  
Deep Sea Research  
Deep Sea Research II  
Developmental and Comparative Immunology  
Earth Sciences Review  
Ecological Applications  
Ecological Modeling  
Ecological Monographs  
Ecosystem Health & Medicine  
Ecotoxicology and Environmental Safety  
Environmental and Resource Economics  
Environmental Pollution Journal  
Environmental Science & Technology  
Environmental Technology Letters  
Eos Trans, American Geophysical Union  
Estuaries  
Estuarine, Coastal and Shelf Science  
European Planning Studies  
FEMS Microbiology Ecology  
Fish and Shellfish Immunology  
Fisheries Oceanography  
Fishery Bulletin

Geobiology  
Geoinformatics  
Geomicrobiology Journal  
Geophys. Res. Lett  
Harmful Algae  
Human Ecology  
Hydrobiologia  
ICES Journal of Marine Science  
IEEE Signal Processing Magazine  
Industrial & Engineering Chemistry Research  
International Journal of Climatology  
International Journal of Rotating Machinery  
International WOCE Newsletter  
Invertebrate Biology  
J. Acous. Soc. Am.  
Journal of Aging and Social Policy  
Journal of Atmospheric and Oceanic Technology  
Journal of Atmospheric Science  
Journal of Bacteriology  
Journal of Biogeography  
Journal of Chemical Physics  
Journal of Climate  
Journal of Computational Physics  
Journal of Computer Physics Communications  
Journal of Environmental Economics and Management  
Journal of Environmental Quality  
Journal of Experimental Marine Biology and Ecology  
Journal of Field Ornithology  
Journal of Fluid Mechanics  
Journal of Fluids Engineering  
Journal of Geophysical Research  
Journal of Geophysical Research–Atmospheres  
Journal of Geophysical Research–Oceans

Journal of Hydrometeorology  
Journal of Marine Environmental Engineering  
Journal of Meteorology and Atmospheric Physics  
Journal of Molecular Spectroscopy  
Journal of Molecular Structure  
Journal of Natural History  
Journal of the Optical Society of America: B  
Journal of Quantitative Spectroscopy and Radiative Transfer  
J. Neurosci Res.  
Journal of Northwest Atlantic Fisheries Science  
J. Nut. Health & Aging  
Journal of Oceanic Engineering  
Journal of Oceanography (Japan)  
Journal of Phycology  
Journal of Physical Oceanography  
Journal of Plankton Research  
Journal of Safety Research  
Journal of Shellfish Research  
Journal of the Marine Biological Association of the United Kingdom  
Journal of Theoretical and Applied Climatology  
Journal of Turbulence  
Journal of Wildlife Management  
Limnology and Oceanography  
Marine and Freshwater Research (Australia)  
Marine Biology  
Marine Biology Research  
Marine Chemistry  
Marine Ecology (P.S.Z.N.)  
Marine Ecology Progress Series  
Marine Geology  
Marine Mammal Science  
Marine Microbial Food Webs  
Marine Money

Marine Resource Economics  
Marine Technology Society Journal  
Maritime Economics and Logistics  
Maritime Policy and Management  
Meddelelser om Grønland  
Meiofauna Marina  
Molecular Ecology  
Monthly Weather Review  
Nature  
Neuromol. Med.  
New Zealand Journal of Marine & Freshwater Research  
Northeast Gulf Science  
Northeast Naturalist  
Northeast Wildlife  
Northwest Science  
Nutr. Neurosci.  
Ocean and Coastal Management  
Oceanologica Acta  
Oikos  
Ophelia  
Organic Geochemistry  
Regional Science and Urban Economics  
Remote Sensing of the Environment  
Renewable Resources Journal  
Paleoceanogr.  
Pedosphere  
Physics of Fluids  
Polar Biology  
Proceedings of the National Academy of Sciences  
Proceedings of the Royal Society Series B  
Progress in Oceanography  
Raffles Bulletin of Zoology  
Science

Scientia Marina  
South African Journal of Marine Science  
Terra Nova  
The Journal of Comparative Physiology B  
The Quarterly Review of Biology  
The Veliger  
Transactions of the American Fisheries Society  
Virology  
Virtual Journal of Nanoscale Science and Technology  
Wea & Fore  
Western Journal of Applied Forestry  
Zoological Studies (Academica Sinica, Taiwan)  
Zoologischer Anzeiger  
Zootaxa



## Countries Visited for Research/Collaboration/ Invited Presentation(s)

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Although SMS spans across the state of Massachusetts, the thirst for knowledge does not end there. Through collaboration and invited presentations in over thirty countries, our faculty have aided in building a global vision for SMS. International recognition of SMS has allowed the school to attract a pool of high-quality student applicants.

Australia

Austria

Belgium

Brazil

Botswana

Canada

China

Czech Republic

Denmark

France

Germany

India

Ireland

Italy

Japan

Korea

Mexico

Morocco

Namibia

Netherlands

Norway

Peru

Portugal

Russia

Scotland

Slovenia

South Africa

Spain

Sweden

Switzerland

Taiwan

Tanzania

Tasmania

Tunisia

United Kingdom



## SMS Faculty Awards

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The achievements of the SMS faculty have not gone unnoticed. Our faculty have received over 100 awards for scholarly and academic achievements, recipients of these awards are often only bestowed upon the best and the brightest.

Aaron Janoff Award for Excellence in Research.

Achievement Award in Teaching and Curriculum Development.

Albion College Distinguished Alumni Award.

American Society for Microbiology General Meeting Travel Grant.

Award for Course Website Excellence, UMass Lowell.

Award for Excellence in Teaching, UMass Lowell.

Berg Fellow of the Soil and Water Conservation Society.

Best paper award at 60th New Zealand Grassland Association conference.

Camille and Henry Dreyfus Foundation Award in Environmental Chemistry.

Carlton E. Tucker Teaching Award, Dept. of EECS, MIT.

CAS Award for Outstanding Achievement in Teaching, University of Massachusetts/Boston.

Certificate of Merit for Presentation "Fossil Fuels and Acid Sensitive Ponds".

Chancellor's Award for Outstanding Research, UAA.

Chancellor's Distinguished Service Award.

Chancellor's Award for Outstanding Community Service University of Massachusetts.

College Outstanding Advisor Award, University of Massachusetts.

College Outstanding Teacher Award, University of Massachusetts.

Dean's Award for Outstanding Scholarship, University of Massachusetts, Boston.

Dean's Award for Outstanding Teaching, University of Massachusetts, Boston.

Dean's Group Outstanding Achievement Award (Research Forest Plan Development).

Department of Commerce Bronze Medal Award for scientific advances in restoring New England groundfish stocks.

Department of Commerce Special Service Award for contributions to the Overfishing Definition Review Panel.

Distinction in Teaching - Harvard University Book Award for Academic Excellence, University of Massachusetts/Boston.

Distinguished Researcher, College of Arts & Sciences, University of Massachusetts Dartmouth.

Donner Research Fellowship, Environmental Sciences Program, UMass Boston.

Dr. David L. Belding Award for marine resource conservation; awarded by the Massachusetts Marine Fisheries Advisory Commission to the individual who has done the most to promote the conservation and sustainable use of the Commonwealth's marine resource.

East Tennessee Professional Society, Technical Communication Award.

Editorial Board, Journal of Environmental Radioactivity, (Elsevier Science).

E-Fellow Teaching Award UMB for On-Line Education Programs.

Elected Fellow, Geological Society of America.

EPA Division Honor Award, Special Accomplishment Recognition Award issued by the Western Ecology Division, National Health and Environmental Effects Research Lab,

EPA for exceptional job as Branch Chief.

EPA Team Award, Team award issued by the Western Ecology Division, National.

Excellence in Advising – College of Food and Natural Resources.

Faculty Early Career Development Award, National Science Foundation.

Forest Products Society – Excellent Section Performance, Northeast.

Forest Products Society – Outstanding Section Performance, Northeast.

Forest Products Society – Outstanding Student Section 2004-05 (Faculty Advisor).

Fulbright Senior Scholar for Australia, US State Dept.

Hammer Award for “building government that works better and costs less.”

Health and Environmental Effects Research Lab, EPA for development of communications information to market services of the WED.

Honored by the Dartmouth Town of Dartmouth Select Board for coaching the Dartmouth Destination Imagination Team Certificate of Appreciation from the UMD Committee for Assessment for being co-chair, MST committee.

Invited Foreign Expert, Zhejiang University, Hangzhou, China.

J.M. Burgers Visiting Professor, Delft University of Technology, Netherlands.

Joseph Goldstein Award for Outstanding Junior Faculty, University of Massachusetts.

Leo Sullivan Teacher of the Year Award.

Lilly Fellowship, Center for Teaching.

Mac Van Valkenburg Early Career Teaching Award, IEEE Education Society.

Martin Marietta Corporation Jefferson Cup for Excellence (Highest Corporate Honor).

Martin Marietta Energy Systems ORNL Author of the Year.

Martin Marietta Energy Systems Technical Merit Award.

Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement “Pride in Performance” Award for stock assessment research on lobster, menhaden and cod.

NASA-ASEE Summer Faculty Fellowship, NASA Ames Research Center.

NASA-ASEE Summer Faculty Fellowship, NASA Ames Research Center.

NASA-ASEE Summer Faculty Fellowship, NASA Langley Research Center.

National Merit Scholar.

National Science Foundation Doctoral Dissertation Enhancement Grant.

National Science Foundation Science Faculty Fellowship.

New York State Regents Scholarship.

NY Academy of Sciences Certification of Appreciation

NY State Regents Scholarship Award.

Ocean Margins Program Scientist Appreciation Award.

Outstanding Achievement Award for work in teaching, research, and service, College of Arts and Sciences, Univ. of Mass., Boston.

Outstanding Overseas Young Scientist Award, National Science Foundation of China.

Outstanding Research Award from the Northeast Branch of Soil Science Society of America.

Outstanding Researcher Award, the College of Natural Resources and the Environment, University of Massachusetts, Amherst.

Outstanding Teaching Certificate, College of Food and Natural Resources.

Outstanding Woman Geoscientist Award, Association of Women Geoscientists, Denver Chapter.

President’s Award for Public Service, awarded by the President of the University of Massachusetts for “outreach and scientific work, involving both students and fishermen, that led to the re-opening of the scallop beds on Georges Bank and enabled an additional \$55 million of catch”.

Presidential Scholar.

Recipient College of Sciences Outstanding Achievement Award in Service.

Recipient of Chancellor’s Distinguished Teaching Award UMB.

Recipient of College of Arts and Sciences Outstanding.

Recipient of Massachusetts Marine Educators Award for Dedicated Service and Outstanding Contribution to the Field of Marine Education.

Recognition and Appreciation Award McNair Program.  
Richard Fontera Memorial Award for Community Service, Dubin Labor Education Center.  
Schechtman Award for outstanding teaching assistant in Biology, University of California, Los Angeles.  
Scholar of the Year, University of Massachusetts Dartmouth.  
Scholar of the Year, University of Massachusetts, Dartmouth.  
Service Learning Fellow in Teaching awarded by Provost's Special Committee.  
Sigma Xi Excellence in Research.  
Sigma Xi Northeast Regional Young Investigator Award.  
Sigma Xi Travel Award.  
Sir Harold Thompson Memorial Award  
State of California: Woman of the Year and Maritime Woman Explorer Award.  
The Goodwin Medal, MIT.  
The Oceanography Society: Innovative Use of New Technology Award.  
UMass Lowell, Department of Chemistry, Teaching Excellence Award.  
UML Council on Undergraduate Teaching Award.  
UML Department of Mathematical Sciences Teaching Excellence Award.  
UML Disability Services Recognition Award.  
UML Student Government Association "Exceeding Expectations" Teaching Award.  
UML Student Organization Advisor of the Year.  
University Award for Excellence in Research, UML.  
Urban Scholars Recognition Award for Service.  
US Army Summer Faculty Fellowship, U.S. Army Natick R. D. & E. Center.  
US Environmental Protection Agency Research Traineeship.  
USAF-SCEEE Summer Faculty Fellowship, Arnold Engineering Development Center.  
W.A Tarr Award, Senior Geology Award.  
Young Investigator Award, Office of Naval Research.  
Yvonne Sandstroem University Service Award.



## SMS Faculty Grants 2002–2007, Listed by Title

During the period of this report, SMS faculty have brought in over 47 million dollars in research money through grants from world renowned institutions like the National Science Foundation (NSF) and the National Aeronautics and Space Administration. Research, which is an essential component to our school, has allowed us to remain on the cutting edge of marine science.

A Biologically-inspired Architecture for Situation Understanding Applications with Large-scale Wireless Sensor Networks \$2,200,000

A Pilot Study Using Airborne LIDAR to Survey Dye-Release Experiments \$37,705

A Proposal to establish a Center for Excellence in Advanced Ocean Observation System, \$300,000

Age and Growth of YOY Bluefish from Estuaries with Different Pollution Levels Theoretical and Experimental Verification of Parachute Canopy Stiffness Scaling \$53,000

Airborne LIDAR Dye Mapping for Upper Ocean Mixing and Dispersion Studies, \$34,964

Alexandrium spp. cyst dynamics in the Gulf of Maine: Delivery, deposition, and resuspension. \$417,621

Alliance stability, group size and relatedness in Indian Ocean Bottlenose dolphins \$12,264

An Assessment of Watermass Distributions and Circulation Patterns in Buzzards Bay in Relation to the Lobster Fishery. \$24,000

An Oriented Eddy Collision Model for Turbulence Prediction \$200,004

Analysis and Development of Acoustic System to Improve CPUE Statistics and Track Movements and Migration of Fish. \$554,200

Analysis of Grey Whale Migration Tracks for SURTASS-LFA Environmental Impact Statement \$20,800

Application of High-Resolution Satellite-Derived Sea Surface Temperature Data for Improved Management and Forecasting of Atlantic Mackerel, *Scomber scombrus*, Habitat and Predation Impact Off the East Coast of the United States, \$200,057

Applying GIS to Labor Market Participation of People with Disabilities, \$165,410

Aquaculture/CWA/ESA Analysis, \$76,204

Arsenic Speciation and Transformation in Drinking Water Supplies \$30,000

Assessing Trade-offs Between Crop Production and Ecological Services: The Calapooia Basin \$640,000

Assessing impacts of policy change in multi-ownership landscapes - wildlife responses \$75,000

Assessment of Ocean and Coastal Economy in the Commonwealth of Massachusetts, \$74,208

Atlantic Pearl: Treasures from the Ocean Floor documentary funded for \$33,643

Atmospheric Absorption Parameters for Laser Propagation, \$ 25,000

Atmospheric Deposition, Transport, Transformations and Bioavailability of Mercury across a Northern Forest Landscape. National Science Foundation-Biocomplexity Program \$1,800,000

Bacteria-Phytoplankton Interactions: The Influence of Marine Bacteria on Alexandrium spp. Blooms in the Gulf of Maine \$317,884

Beach Planning Legal Issues \$ 5,000

Biocomplexity: Coupled multi-scale natural and human processes driving softshell clam settlement, success and ecosystem dynamics in Cape Cod Bay \$ 1,999,927

Biophysical modeling of the Northern Humboldt Current System \$10,000

Biosonar Target Classification in Target/Clutter Scenes \$120,800

Building Capacity of Serve Value-Added Markets for FSC Certified Locally Produced Forest Products \$10,000

Chalk-Ex: Transport of Optically Active Particles from the Surface Mixed Layer \$665,326

Characterization of Monoclonal Antibodies Against Invertebrate Natural Killer (NK) Cells: Potential Clinical Applications \$7,500

Climate-Related Interannual Variability of Potential New Production Over the Western North Atlantic Ocean \$662,000

Collaborative Project: Large scale property fluxes in the North Atlantic \$140,000

Collaborative Project: Interaction of Eddies with Mixed Layers \$47,446

Collaborative Research: Decadal to orbital links between climate, productivity, and denitrification on the Peru Margin; Do models of persistent El Niño or La Niña apply? \$354,580

Collaborative Research: Gulf of Maine Microbial Observatory: Cultivation and Functional Characterization of Novel Planktonic Consortia in the Temperate Coastal Ocean \$477,024

Collaborative Research: Anaerobic Decomposition and Trace Gases in Northern Wetlands: An Environment in Transition \$599,141

Collaborative Research: The effect of submesoscale processes on property fluxes and distributions in the upper ocean \$177,110

Collaborative Research: Laboratory Studies of Stirring by Small-Scale Geostrophic Motions \$297,583

Collaborative Research: Acetate biogeochemistry in Northern Wetlands: Implications for Methane Formation During Climate Change \$50,002

Collaborative Research in Molecular and Ecological Biology \$269,000

Comparative Genomics of Marine and Freshwater Cyanobacteria (Cyanobium and Synechococcus) to Examine Key Evolutionary Events Including Horizontal Gene Transfer from Proteobacteria \$397,743

Comparison of habitats supporting high and low sea scallop, *Placopecten magellanicus*, densities on Georges Bank. U.S. Department of Commerce \$341,700

Complete genome sequencing of *Cyanobium* sp

Complex Robert-Bonamy calculations of pressure-induced shifts and pressure-broadened halfwidths of atmospheric asymmetric rotor molecules \$180,000

Continuation of Rescue of 160-year Data Sets for a NE Shelf Oceanographic Regime Assessment \$93,000

Correlations of Physical Environmental Data with Scallop Density and Size Distributions on Georges Bank \$24,000

Curriculum and Materials Development in Land and Property Management System in Russia \$292,000

Deformation Measurement and Modeling of Parachutes Using Imaging and Smart Material Sensors \$103,328

Department of Energy Cooperative Agreement \$859,000

Developing a feature-based analysis system for shallow water applications \$440,273

Development of Regional Fisheries/Oceanography Application Centers for Alaska and Massachusetts \$2,000,000

Development of a Biogeochemical Forensics Laboratory \$70,000

Development of a Monterey Bay Forecasting System Using The Regional Ocean Modeling System \$45,000

Development of an interactive video map detailing the Georges Bank and Mid-Atlantic benthic community \$365,400

Diapycnal fluxes in the Southern Ocean \$173,782

Direct Numerical Simulation of Turbulent Drop Dispersion \$98,214

Distance-Education for Natural Resources Students to Improve Private Forest Land Management \$95,000

Duke Energy Grant \$47,369

Dynamics of *Alexandrium fundyense* distributions in the Gulf of Maine: An observational and modeling study of nearshore and offshore shellfish toxicity, vertical toxin flux, and bloom dynamics in a complex shelf sea \$523,260

Economic Valuation of Shellfish Industry on Cape Cod \$5,000

Ecophysiological and molecular control of nitrogen cycling in Lake Kinneret., US-Israel Binational Science Foundation \$40,000

Ecosystem Management through Improved Forest Products Marketing \$44,989

Effect of Ammonium Perchlorate on microorganisms and fish \$90,000

Effects of the Asian Shore Crab *Hemigrapsus Sanguineus* in New England: Changes in Resident Crab Populations \$15,259

Employment, Income, Working Conditions, and Vessel Safety before and after Amendment 13 to the Multispecies Plan \$100,768

Environmental Fate of the Solid Rocket Fuel Oxidant Ammonium Perchlorate Near Launch Sites \$118,000

Examination of benthic substrates and macroinvertebrate distributions in the western Great South Channel and Nantucket Shoals \$836,913

Examination of population biology and dynamics of the sea scallop, *Placopecten magellanicus*, in discrete areas of Georges Bank \$200,000

Examination of population biology and dynamics of the sea scallop, *Placopecten magellanicus*, resource from Virginia to the Hague line, USA \$180,000

Examination of sea scallop-starfish predator-prey interactions on Georges Bank. Cooperative Marine Education and Research CMER, NOAA/NMFS \$60,655

Examination of the sea scallop, *Placopecten magellanicus*, recruitment in closed and open areas of Georges Bank \$483,300

Examining the effect of the 2004 pulse fishing event on the Georges Bank closed area benthic community \$584,640

Exploiting laboratory experiments in the teaching of Meteorology, Oceanography and Climate: Phase II \$31,745

Formation and Degradation of Methylmercury and its Accumulation in Biota of Southwestern Alaska \$180,000

Foundations of the Vertebrate Acute Phase Response Potential Clinical Applications \$100,307

Full-time Employment and Income in New Bedford before and after Days at Sea Management, Saltonstall-Kennedy \$79,128

Genetic variation in widely distributed deep-sea molluscs: the role of oceanographic and topographic features \$368,817

Geochemical Fingerprint Associated with the World Trade Center Terrorist Attack as Recorded in New York Harbor Sediments \$58,000

Graduate School Level Curriculum Development \$5,952

Green Chemistry, Toxicology, and Biogeochemical Fate of Trace Substances \$48,000

How important are regional processes in determining the local species diversity of marine communities? \$260,000

Hierarchical Codes for Humpback Whale Songs \$20,000

Human Dimensions Project \$7,000

In-water demonstration of monochromatic single-mode excitation \$29,700

Integration of Acoustic and Behavioral Observations for Blue and Finback Whales for SURTASS-LFA Environmental Impact Statement \$3,200

Information Theoretic Design of Matched Field Processing Arrays and Algorithms \$292,000

Instruments and Algorithms for Marine Mammal Behavioral Acoustics \$390,000

Interactive Software Systems for Expert-Assisted Image Analysis and Classification of Aquatic Particles \$1,555,521

International Continental Drilling Program Science Workshop Funding for Science and Planning at El'gygytgyn Crater Lake \$48,000

Internet2 Connection for the University of Massachusetts Dartmouth's School for Marine Science and Technology \$150,000

Isolation and Characterization of Primitive Cytokines \$300,000

Kinship and alliance formation in male bottlenose dolphins in Shark Bay, WA. Co-PI w M. Krutzen & W. Sherwin \$85,729

Konarka Technologies \$8,316

Laminar Drag Reduction using Ultrahydrophobic Surfaces \$19,451

Large Eddy Simulation using a Transport Equation for the Subgrid-Scale Stress Tensor \$227,859

Line shape parameters for water vapor and other atmospheric asymmetric rotor molecules \$218,821

Long-term study of bottlenose dolphin life history and social ecology \$298,052

Marine Climate and Relative Sea Level Across Central Beringia: Collaborative Research \$201,516

Marine Connectivity Grant \$90,000

Massachusetts Community Development Planning \$140,000

Massachusetts Department of Environmental Protection Contract \$40,204

Massachusetts Estuarine Assessment Program to sample coastal waters of Massachusetts \$34,976

Massachusetts Estuarine Assessment Program \$40,286

Massachusetts Ocean Science and Technology Innovation Alliance \$100,000

Massachusetts Sawmill Survey and Timber Products Output \$9,094

Massachusetts Technology Transfer Center \$25,000

Measurement of Acoustic Properties of Marine Mammal Tissues \$15,300

Mercury transformations in the Idrija River System, Slovenia \$68,877

Mercury, Methylmercury, and Mercury (II) Analysis, Salmon Creek Reservoir, Idaho \$13,279

Microbial Community Dynamics in Arctic Peatlands \$9,200

Mixing, spreading, and water mass modification in near field river plumes \$521,094

Modeling wildfire smoke dispersion including model validation and sensitivity analysis, \$130,000

Modernization of Computer, Communications, and Data Management Equipment at the Nantucket Field Station \$46,458

Monitoring system for the Buzzards Bay Natural Laboratory \$150,000

Multistage centric systematic video survey design verification \$429,520

NSF Climate and Large-scale Dynamics Project \$269,000

NSF Water Cycle Project \$229,147

NUE: Laboratory Modules on Environmental Impacts of Nanotechnology \$200,000

NWA Georges Bank: Impacts of Climate and Basin-Scale Variability on Seeding and Production of *Calanus finmarchicus* in the Gulf of Maine/Georges Bank Region \$452,245

National Geographic Society: Study of group size and alliance stability among male bottlenose dolphins \$6,130

National Marine Aquaculture Initiative \$44,600

National Science Foundation Grant 2002 "A Watershed Integrated Sciences Partnership (WISP) between UMass Boston and Local School Districts" for NSF's GK12 Program \$1,500,000

Natural isotopic tracers for anthropogenic nitrogen in Long Island Sound, EPA Assessing Coastal Benthic Denitrification using High Precision Water Column N<sub>2</sub>/Ar, NSF \$125,000

New England Multispecies Survey \$2,968,000

Numerical Simulations of Episodic Mixing and Lateral Dispersion by Vortical Modes, \$251,805

POC Production and Export in the Southern Indian Ocean: A US-China Collaborative Program \$513,926

Pathways of Carbon Flow in Northern Peatlands. National Science Foundation Carbon and Water in the Earth System \$249,237

Patterns of Energy Flow and Utilization on Georges Bank \$1,175,262

Phylogenetic Perspectives on the Vertebrate Immune System \$12,000

Phytoplankton and zooplankton monitoring in Boston Harbor, Massachusetts Bay and Cape Cod Bay, 2006-2008, \$102,716

Phytoplankton and zooplankton monitoring in Boston Harbor, Massachusetts Bay and Cape Cod Bay \$55,979

Phytoplankton and zooplankton monitoring in Boston Harbor, Massachusetts Bay and Cape Cod Bay, 2002-2006, \$225,282

Predictive Turbulence Models for Computational Fluid Dynamics \$190,000

Professional Science Master's (PSM) Planning Grants \$6000

Project EXCEL. National Science Foundation-Robert Noyce Scholarship Program. \$343,862

Project for Teaching Basic Core STEM Material Critical to Solving Dynamic Systems Problems \$266,000

Proxy development for interpreting the paleoclimate record from El'gygytgyn Crater Lake \$99,300

REU Supplement to Large Scale fluxes \$20,000

Regional Patterns of Forest Wildlife Habitat: Scaling from Plots to Landscapes \$135,000

Relationship of bird diversity to forest cover, urbanization, and agriculture \$50,000

Research Experience for Undergraduates in Biology \$264,000

Research Experience for Undergraduates: Acetate Biogeochemistry in Northern Wetlands: Implications for Methane Formation During Climate Change \$4,563

Rhizosolenia Mats as a Source of Nitrogen Flux into the Surface Waters of the Pacific Ocean \$492,414

Sampling coastal waters of Massachusetts \$35,242

Scallop Fishery Assessment \$1,979,000

Seaweed Harvesting Legal and Regulatory Framework \$10,490

Strategic Improvement Plan for Environmental Sciences in Alaska. EPA EPSCoR Program. \$124,000

Structure, function and evolution of helicoidal muscles in Gastrotricha \$70,000

Study of alliance stability and relatedness among male bottlenose dolphins in Shark Bay, Western Australia \$25,000

Study of group size and alliance stability among male bottlenose dolphins \$25,000

Synchrony and Social Bonds in bottlenose dolphins: a preliminary study \$2500

Taxonomy of typhloplanid Micro-turbellarians (Platyhelminthes) of eastern Australia \$75,000

Testing Southern Ocean Control of Atmospheric CO<sub>2</sub> using Diatom-based Paleo-proxies, NSF-OPP \$271,100

The Blue Mussel as an Indicator of Environmental Pollution in Massachusetts Bay: Analysis by Biochip Antibody Array Technology \$6,650

The Effects of Mesh Shapes and Excluder Devices on Species and Size Selectivity in the Multispecies Fishery \$122,700

The Effects of Tenting Installed on Manufactured Home Structures in Hurricanes, \$75,000

The Flexibility of Fresh Groundfish Processing to Respond to Variation in Local Landings \$99,609

The Mobilization and Transformation of Mercury in Response to the Installation of a Gas Conduit in Boston Harbor \$50,000

The Physics of Georges Bank and its Impact on Biology \$2,001,912

The Relationship Between the Northern Right Whale (*Eubalaena glacialis*) Sightings and Satellite-Derived Sea Surface Temperature Fronts in Great South Channel, Gulf of Maine \$41,466

The Role of Convection and Growth Competition in Phase Selection in Microgravity (LODESTARS) \$1,290,000

The Role of Cortisol as a Potential Physiological Link Between Habitat and Environmental Sex Determination in Fishes \$500,000

The Signals and Systems Concept Inventory, Passive Sonar Performance Limits from Information Theory, ONR Undersea Signal Processing Program \$211,000

The ecology and oceanography of toxic Alexandrium blooms in the Gulf of Maine \$108,292

The future range of variability \$160,000

The impact of three invasive invertebrate species on subtidal Gulf of Maine communities, \$9500

The nervous and muscular systems of interstitial solenogastres: functional and phylogenetic significance \$1,471

The role of light, predation and flow in structuring marine subtidal communities, \$132,275

Theory in support of laboratory spectroscopy for AIRS, TES and HIRDLS \$201,911

Theory in support of laboratory spectroscopy for AIRS, TES and HIRDLS \$176,645

UMASS Teaching and Learning Technology \$5500

Undergraduate Cooperative Fisheries Sampling \$19,620

Use of Blue Mussel as an Indicator of Environmental Pollution \$10,000

Video examination of the continuing change in habitats within the closed areas of Georges Bank \$99,910

Weather Effects in Night Vision Goggle Training \$120,000



## Recent Publications, Listed by Title

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The highest level in scholarly achievement for a scientist is the publication of his/her work in peer-reviewed journals. Often the reputations of the scientists are based on the papers which they have published. Without publication, important scientific findings simply become dust-collecting notes packed in the corner of a lab somewhere. All the grants brought in, awards received, countries visited, journals published in, professional memberships, are all important factors that revolve around research. The final stamp of approval from the scientific community comes when a paper is published. This fact aptly ties into why our faculty are world renowned. Below the 449 peer-reviewed publications of the ~ 80 SMS faculty over the 5-year period are listed sorted by title of the paper. Reading these titles will give insight into the diversity of the research being carried out by the SMS faculty.

K. R. Ball and J. R. Buck, A beamforming video recorder for integrated observations of Dolphin behavior and vocalizations (L), *J. Acous. Soc. Am* **117**, 1005–1008, 2005.

J. S Peters, D. T. Damery, and P. Clouston, A Decade of Innovation in Particleboard and Composite Materials: a content analysis of Washington State University's International Particleboard, Composite Materials Symposium Proceedings", *Journal of Forest Products Business Research* **3**, 2006.

W. White, Y. Tourre, M. Barlow, and M. Dettinger, A delayed action oscillator mechanism shared by biennial, interannual, and decadal signals in the Pacific basin, *J. Geophys. Res* **108** 3070, 2003.

S. Gazda, R.C. Connor, R. Edgar, and F. Cox, A Division of Labor with Role Specialization in Group-Hunting Bottlenose Dolphins (*Tursiops truncatus*) off Cedar Key, Florida , *The Proceedings of the Royal Society: Biological Sciences* **272**, 135-140, 2005.

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J.M. Mesias, J. J. Bisagni, and A.-M. Brunner, A high-resolution satellite-derived sea surface temperature climatology for the western North Atlantic Ocean, *Continental Shelf* **27**, 191-207, 2007.

- J. B. Perot and S. Natu, A Model for the Dissipation Tensor in Inhomogeneous and Anisotropic Turbulence, *Physics of Fluids* **16**, 4053-4065, 2004.
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## Reflection

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This report summarizes some of the activity that occurred from January 2002 to August 2007. It is a review of the academic accomplishments from our most active faculty members. For detailed information on all SMS faculty, as well as application and admissions information, program descriptions, and recent news please visit the SMS website at [www.umassmarine.net](http://www.umassmarine.net). For additional information about the program you can contact the Dean's office or one of the four campus coordinators. (Please see page 7 for contact information).

The SMS intercampus program is unique in the fact that it unifies four diverse UMass campuses through faculty and student collaboration. Although the University of Massachusetts is a statewide system, each campus has its own distinct history and educational appeal. However, as different as the four campuses may be, each campus shares a common goal of academic excellence, which is reflected in the SMS program through its faculty and students.

The SMS program began with only a handful of students. Over the past five years, the school has developed a reputation of excellence and its numbers have grown exponentially. Even in the past academic year, which is not included in this report (September 2007-May 2008) the school has added even more faculty members and it has surpassed the fifty student mark. The upcoming fall 2008 semester boasts the largest number of applicants in the school's history. Just like our faculty members, each student is hand selected by the admissions committee and the Dean to ensure that the SMS alumni are the best and the brightest in the field of marine science.

Although this report displays scholarly activity from January 2002 to August 2007 of The University of Massachusetts School of Marine Sciences, it is a testament of what is to come. It is the hope of the Dean, faculty, and UMass administration that SMS will continue to attract intellectually able students who will be mentored by our world class professors who share a passion for marine science. It is our students, after all who will continue to promote the legacy and represent the magnitude that our intercampus institution will have in the field of marine science and beyond.