***The UNE Marine Science Education and Research Center*** *is located at the mouth of the Saco River Estuary as it enters the Gulf of Maine, Bigelow Bight, and the NW Atlantic Ocean, allowing students and scholars unparalleled opportunities to immerse themselves daily in a wide variety of watershed, riverine, estuarine, coastal and ocean issues of vital importance to the future of the World's oceans and coasts.*

**Request for the University of New England (UNE) as a Partner in the North Atlantic Coast Cooperative Ecosystems Studies Unit (NAC CESU)**

September 30, 2012

## *Who we are and where are we situated?*

The University of New England (UNE) is located in two campuses in Biddeford and Portland, Maine, on the South Coast of Maine. UNE has the only medical school in Maine, and recently established a new College of Pharmacy (one of only two in the state, and the only one with a significant research mission). UNE is the fastest growing university in Maine due to the large demand for higher education in the South Coast region from Portsmouth to Portland, an area having a very high quality of life, a relatively low cost of living, and an expanding economy.

The Biddeford-Saco twin cities are the cornerstones of the economy of York County, the center of Maine's population, and an area experiencing economic growth. Southern Maine has superb road, rail, and airline infrastructure, and hundreds of sturdy, affordable and well maintained mill buildings beckoning entrepreneurs.

UNE is located at the mouth of the Saco River Estuary as it enters the Gulf of Maine, Bigelow Bight, and the Northwest Atlantic Ocean. The Saco River is Maine's 4$^{th}$ largest river (by discharge volume) with a large rural watershed that extends into the White Mountains of New Hampshire. UNE has invested $7.9M

in a 27,000 square foot state-of-the-art marine lab, recently hired a new Endowed Chair of Marine Sciences and Director, and has expanded its Marine and Environmental Sciences Faculty. UNE students, scholars and partners immerse themselves daily in a spectacular variety of watershed, riverine, estuarine, coastal and ocean issues right outside our campus. UNE is the hub of marine sciences and outreach programs in this area, as the state university, the University of Maine, is 3 hours away.

UNE's Marine Science Education and Research Center (MSC) also houses the UNE Marine Animal Rehabilitation Center (MARC) supporting its undergraduate and graduate curriculum, and providing large scale marine mammal and sea turtle research capacity for the Northeast. MARC fills a critical void in marine animal research along the vast reaches of the 3,500 mile Maine coast and supports the educational needs of students from throughout the Nation. UNE also educates and involves the region about marine issues through the media and through our linkages with broad-based community volunteer programs dedicated to the rescue and care of stranded marine mammals. UNE/MARC is also a USDA/APHIS permitted research facility.

***What's our plans and mission?***

Over the past 10 years the UNE has undergone a major expansion of programs in the health and marine sciences, launching new marine, coastal and environmental departments, centers and academic programs of great potential impact on student achievement and coastal communities throughout New England and the Nation. The new UNE Strategic Plan for marine programs is centered on a leadership theme of "Sustainable Oceans for a Vibrant Coastal Economy" and outlines strategic goals, implementation actions and metrics for evaluation that will advance UNE marine programs. Our plans state that:

- UNE will develop interdisciplinary scholarship and research that produces the next generation of coastal leaders who contribute to marine environmental stewardship, social-ecological wisdom, global community and diversity, and human health and wellness.
- UNE will be a student-centered marine university with acclaimed undergraduate and graduate marine programs having innovative linkages from students and investigators to coastal communities, businesses, and environmental organizations.
- UNE will be a center of excellence for the understanding of, and actions towards, the greater stewardship of marine ecosystems, their governance, and their allied marine economies.

***Mission for UNE Marine Programs***

The University of New England educates marine students as the next generation of coastal leaders as informed citizens, stewards, scientists, business leaders, and policy-makers. The UNE develops leadership ideas and skills, innovative approaches and science-based knowledge about marine environments and societies.

## *Strategic Goals for UNE Marine Programs*

***GOAL #1:*** Build a UNE Marine Science Center that houses all administrative, academic, and research/outreach centers that include development of a regional-class infrastructure for all of UNE's marine education, research, operational and service functions. Build a UNE marine physical plant into a destination that displays at a glance all UNE marine programmatic priorities as being on the cutting edge of the "living economy". Our physical plant will exude our Maine culture as warm, welcoming people. It will be a convening environment for thought leaders from throughout the world, and serve faculty, students, alumni, and their families in order to "fund raise and friend raise" so that partnership and donor organizations, marine/coastal science-based businesses, and marine organizations want to partner with UNE and be based in Biddeford-Saco.

***GOAL #2:*** Build UNE marine education and research programs, both academic year and summer programs, into leading models for innovative, 21st-century, transdisciplinary, undergraduate and graduate education/research that pioneer the experiential, internships, and "team science" (Elfner et al., 2011), so that UNE marine programs serve as an outstanding example of the "New Liberal Arts" (National Academy of Sciences, 2005).

**GOAL #3**: Expand UNE's regional, national, and international marine programs by adding innovative summer, January Semester, 4+1 B.S./M.Sc., and targeted Ph.D. programs in tightly chosen, well targeted areas that are strongly connected to Maine's coastal priorities.

## *What's our expertise, who will be active and how we can contribute?*

Our core expertise areas are: cooperative fisheries research, oceans and human health connections especially in our roles as a large marine animal research center in the USA, ecological approaches to aquaculture and carrying capacity modeling for aquaculture and fisheries, estuarine and wetlands ecology, and watersheds.

### Faculty/Research Expertise

**Anna Lee Bass,** Ph.D. *Research Assistant Professor*

Molecular ecology, phylogenetics, population genetics, conservation genetics, evolutionary biology, disease ecology, natural history of vertebrates and invertebrates, oceans and human health

**Daryl J. Boness,** Ph.D. *Research Associate Faculty, Chairman of U.S. Marine Mammal Commission, Editor-in-Chief of Marine Mammal Science*
Marine mammal behavior, ecology and conservation; behavioral ecology; mammalian reproductive strategies

**Barry A. Costa-Pierce,** Ph.D. FAAAS *Henry L. & Grace Doherty Chair of Marine Sciences, Director Marine Science Education and Research Center, Chair Department of Marine Sciences*
Ecological aquaculture, ecological engineering, marine ecology, sustainability science, social-ecological systems, seafood value chains

**William B. Driggers,** Ph.D. *NOAA/NMFS Research Fisheries Biologist*
Behavioral ecology, biogeography, fisheries biology, life history, population dynamics, reproduction and taxonomy of sharks in the western North Atlantic Ocean.

**Markus Frederich,** Ph.D. *Associate Professor, Assistant Department Chair*
Temperature physiology; polar biology; energy metabolism; crustacean biology; marine invertebrates.

**David A. Guay,** M.S. *Associate Lecturer*
Benthic marine ecology, community & population ecology, invertebrate zoology, oceanography, evolutionary biology, science education

**Steven H. Jury,** Ph.D. *Senior Research Scientist*
comparative animal physiology and behavior, invertebrate biology, fisheries and aquaculture technology development

**John Mandelman,** Ph.D. *Associate Research Faculty*
Conservation physiology and the physiological ecology of marine fishes; the physiological alterations and resultant mortality due to anthropogenic stressors, specifically fishing capture, in sharks, rays and skates; bycatch mitigation in sharks, rays and skates; blood biochemical profiling of marine fishes; movement and distribution of marine fishes around artificial structures (i.e. fish aggregation devices).

**Frederick J. Miller** *Laboratory Coordinator*
Study of mitosis using marine invertebrate models and optical microscopy techniques.

**Kathryn A. Ono,** Ph.D. *Associate Professor*
Behavioral ecology and animal behavior, marine mammal behavior and biology, marine mammal policy, evolution.

**James Sulikowski,** Ph.D. *Associate Professor*
Life history and population dynamics of sharks, skates, and rays; composition and spatial/temporal distribution of fish communities; physiological responses to stress and how this influences by-catch mortality; environmental adaptations in fish; conservation of fish communities; and trophic interactions between fish species.

**Charles Tilburg,** Ph.D. *Associate Dean, College of Arts and Sciences; Associate Professor, Department of Marine Sciences*
Physical oceanography, numerical modeling, coastal oceanography, larval transport, river plume dynamics

**Stephan I. Zeeman,** Ph.D. *Professor, Department of Marine Sciences*
Oceanography, phytoplankton, primary production, remote sensing, geographic information systems, Bering Sea ecosystems.

***Who is the point of contact?***

Barry A. Costa-Pierce, Ph.D. FAAAS
Henry L. & Grace Doherty Chair of Marine Sciences
Director, Marine Science Education and Research Center
UNIVERSITY OF NEW ENGLAND
11 Hills Beach Road
Biddeford, Maine 04005 USA

Tel: 207-602-2440 (office) or 602-8311 (cell)
Work e-mail: bcostapierce@une.edu
Personal e-mail: barrycostapierce@maine.rr.com
Web: http://www.une.edu/faculty/profiles/bcostapierce.cfm