

Nicholas School of the Environment and Earth Sciences

Duke University Marine Laboratory Brings Conservation Close to Home

PIVERS ISLAND - With conservation at the heart of more and more of its programs, Duke University Marine Laboratory (DUML) practices what it teaches. The complex itself is a lesson in environmental stewardship.

DUML's planned Ocean Science Teaching Center will be a "green" structure, designed to use nature - sunshine, wind, rain - while having little impact on it. Solar heating was added to the dormitories during remodeling last year. Future new buildings and renovations also will be developed in accord with the environment.

"We are very specifically focused on conservation, on coastal and marine conservation," says Mike Orbach, marine laboratory director. "We like to think that our academics, our physical

facilities and our research are all trending in the same direction - taking science and making a difference with it."

Science at DUML includes social science. The theme of this year's undergraduate second summer term is conservation, biology and policy. Duke's is perhaps the only university marine laboratory in the nation with social scientists on the faculty alongside biologists,

zoologists, oceanographers and others from traditional marine sciences disciplines. Orbach himself is an economist and a cultural anthropologist.

"We have very consciously gone in the direction of being very broadly interdisciplinary in the natural and social sciences," Orbach says. "We're all very active in the real world of policy, and human behavioral change to achieve conserva-

tion and the goals of sustainability."

Established in 1938, DUML became an important component of the Duke University Nicholas School of the Environment and Earth Sciences when the school was created in 1991.

DUML has a full-time resident faculty and a full academic program year-round for undergraduates as well as masters and doctoral students, which also sets it apart from other marine laboratories. Orbach describes the Pivers Island complex as a "mini-campus," with dormitories, a dining hall and a student center.

Since becoming director in 1998, Orbach has been reorganizing the use of structures that had been built at different times with little order to their placement. Maintenance, administrative and social and residential areas have been clearly defined, as buildings were

reassigned and remodeled.

"Now we're starting on serious renovation of the academic and research buildings," Orbach says. A new oceanography building was the first new structure in 30 years. The next phase involves replacing the three-story Bookhout building, the main laboratory built in the 1970s, with a lower-profile, environmentally friendly facility.

DUML also is using its setting to show that environmental sensitivity can be retroactive. In cooperation with its island neighbor, the National Atmospheric and Oceanic Administration marine laboratory, a 500-foot stretch of bulkhead was removed and a marsh restored.

"There are two messages there," Orbach says. "One,

you don't have to have a vertical bulkhead, and two, if you have one, you can take it out." Duke and NOAA are working together on a plan to prevent storm water from flowing directly into adjacent waters.

DUML's surroundings are an advertisement for conservation, and for Carteret County. The island offers a vista of natural wonders, uninhabited islands and human history.

"When we stand out on the point there, and look out at Shackleford, the Rachel Carson reserve, the town of Beaufort, Fort Macon - there's no better view on the East Coast than that," Orbach says. "Everybody that comes here goes away with a pretty special appreciation of Carteret County as a place with a wonderful natural environment."

Taking Science into Society

DUML's island complex has been part of the view from the Beaufort waterfront for decades. The Cape Hatteras, a 135-foot oceanographic research vessel that docks at DUML, is a prominent feature when in port. The National Science Foundation ship is operated by the Duke/University of North Carolina Oceanographic



DUKE UNIVERSITY MARINE LABORATORY



NICHOLAS SCHOOL OF THE
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Established: 1938

Faculty and Staff: 71

Mission: Duke University Marine Laboratory's mission is education and research in the basic ocean processes, coastal environmental management, marine biotechnology and marine biomedicine.



Consortium.

The marine laboratory has a long history of natural sciences education at the undergraduate and Ph.D. levels. The largest single program at the laboratory now, however, is its professional masters program in coastal environmental management.

“Those are the people I call our translators, ‘our save the world’ people,” Orbach says. They go on to work at government agencies, non-governmental organizations and even heavy industry.

“We emphasize that you can do good environmental work from a wide variety of platforms,” he says.

Next year, a new faculty member in marine conservation technology, a joint professorship with Duke’s engineering school, will be based at the DUML. The professorship will focus on applying and developing equipment that advances preservation and monitoring work, such as tagging devices that transmit data. It will be the first of its kind.

“We’re going to create this specialty,” Orbach says. A gift from Duke graduate and West Marine founder Randy Repass and his wife, Sally-Christine Rodgers, enabled the endowed professorship. The couple also made the lead gift toward the Ocean Science Teaching Center.

DUML is increasing its scope of marine science specialties as it continues its long-term research in estuarine ecology and invertebrate zoology. New areas include large “pelagics” – creatures that range wide in the world’s oceans. DUML is working with Stanford

University on a blue fin tuna study.

It also collaborates with its local counterparts on other projects such as “FerryMon.” Researchers from DUML and the University of North Carolina at Chapel Hill Institute of Marine Sciences worked with the state to use state ferries crossing Pamlico Sound for water quality sampling.

The laboratory is expanding its work with “charismatic mega fauna” – endearing and imperiled animals such as dolphins, whales and sea turtles. A three-year project on the gender ratio of sea turtles just wrapped up.

The Wider Caribbean Sea Turtle Conservation Network (WIDECAST) recently moved operations to DUML. The volunteer coalition of scientists and policy makers oversees the largest network of sea turtle conservation and research projects in the world. It coordinates efforts with the governments of 45 sovereign states and territories in the Caribbean region. Six of the world’s seven species of sea turtles cross these national boundaries as they feed and nest. All six species are considered endangered; three critically so.

“Marine turtles are highly migratory, and this is the only way to have any reasonable assurance that they will survive the coming century,” says WIDECAST executive director Karen Eckert,

who has a doctorate in zoology and the equivalent of a master’s degree in global policy studies. Founded in 1981, WIDECAST is a partner to the Caribbean effort of the United Nations Environment Programme.

WIDECAST maintains its independent status at DUML, but Eckert and her husband, Scott Eckert, WIDECAST’s science director, are research scientists at DUML and teach classes



their eggs historically have been an important source of food and income. Her goal is to learn more about the socio-economic role of the creatures, not the animals themselves.

“I study the people who interact with, value and use sea turtles,” she says.

Conservation plans that work, she says, are the ones that involve and benefit the community as they protect the turtle population or other endangered species. Strategies that succeed in one community or with one resource may be ineffective in another.

“I think there’s a real local context to all conservation, and so we need to understand that local context,” she says.

She also is looking at how

different interests use scientific data, and the gaps in it, to support their own preferences, perhaps subconsciously.

“At some point, there is an interpretation of that data, and that is where other things come into play – your value system; whether you think turtles are available only for ‘ooh-ah’ interactions, or if they are a legitimate source of protein.”

Ultimately, she says, conservationists feel that increased understanding of the biology of natural systems, while crucial, by itself is not the key to successful, sustainable management of resources in decline.

“It’s going to be economic, political and social institutions that are the real barriers to implementing effective conservation,” she says. “The value is in furthering our understanding of those systems.”

on sea turtle biology. Both are internationally recognized for their work.

DUML was Eckert’s first choice from among many East Coast universities that offered WIDECAST the institutional support it needed when it outgrew her California home office.

“There’s a passion here for making science relevant,” she says. “When you effectively wed the natural and social sciences, you get a synergism that creates the best possible conservation.”

The Human Dimension

Lisa Campbell, the Rachel Carson Assistant Professor of Marine Affairs and Policy, is a human geographer who joined the faculty last fall. Campbell focuses on the importance of a diminishing resource to the local community and its economy, a consideration often omitted from environmental initiatives. Much of her work has been in developing countries.

She has researched a variety of sea turtle management approaches in Costa Rica, where sea turtles and

