DUKE UNIVERSITY MARINE LABORATORY
Building for the Future of Our Oceans and Coasts

a case for support

“Our past, our present, and whatever remains of our future, absolutely depend on what we do now.”

SYLVIA EARLE, OCEANOGRAPHER AND EXPLORER
DUKE PHD, 1966
Since its inception on Piver’s Island in 1938, the Duke Marine Laboratory has grown from a small summer field station into an impressive research and teaching complex that enables our faculty, students and visitors to take advantage of the diverse habitats found among the surrounding barrier islands, sounds and estuaries, as well as the coastal communities, for marine research in the natural and social sciences.

Since 1972, few additions have been made to the campus plan. With the exception of the LEED-certified Repass Center (opened in 2006), which includes a teaching lab and lecture hall, and the Student Center (2007), the Marine Lab’s research, education and housing facilities have remained largely unchanged for more than three decades. No new research laboratories have been constructed since the Bookhout Building opened in 1972.

The Duke Marine Laboratory, a unit of the Nicholas School of the Environment, is a world-class center for research and education in marine science and conservation based in Beaufort, North Carolina. No other marine science program in the country – perhaps in the world – succeeds in interdisciplinary science as well as the Duke Marine Lab, with our unique blend of physical, life and social scientists working together to:

- understand the marine environment and how it responds to abrupt climate change, including loss of ice sheets in polar regions, ocean acidification, coastal development and increasing exploitation of natural resources,
- develop pathways for sustaining and conserving the ocean’s precious resources, and
- educate a new cadre of leaders in marine science and conservation through our year-round curricula for undergraduate, professional master’s and doctoral students.

In addition to our own faculty, the Duke Marine Lab plays host each year to thousands of scientists and students from around the globe who stay at the Lab to collaborate on joint research projects, work on the National Science Foundation’s Cape Hatteras research vessel managed by the Lab, and attend classes and special symposia. For these visitors, the Duke Marine Lab is the face of Duke University. Unfortunately, that face is aging: the Lab has remained largely unchanged for decades and its facilities are becoming outmoded.

To provide a state-of-the-art facility that enables the Duke Marine Lab to fulfill our commitment to a better future for our oceans and coasts, the Nicholas School of the Environment plans to complete a multi-phase, sustainable, “green” renovation and expansion of our research and teaching facilities.
Over the next few years, the Duke Marine Laboratory aims to:

- expand our expertise and ability to impact the study and practice of marine science and conservation worldwide through the recruitment of world-class scientists to our tenure-track, research and visiting faculty, and
- maintain, and enhance, the Marine Lab’s reputation as the premier education, research and service facility of its kind.

Growing our faculty supports our leadership strategy to expand interdisciplinary science as a hallmark of our program. Duke leads the country with our strong mix of social and natural marine science. We are building new partnerships that cross over to engineering, literature and art: liaisons that promise to deliver an even richer experiential education for Duke students. Computational and molecular approaches to marine science and conservation are strategic priorities of the Marine Lab, and we wish to accelerate our trajectory in these fields by providing new and modern research spaces for our faculty.

Faculty growth brings with it growth of the PhD program, as well as demand for space for research scientists and for visiting faculty and scholars. Our current faculty is productive in spite of being housed in cramped, old and worn lab spaces. To attract and retain the best new junior and senior faculty and visiting scientists, we must offer more up-to-date, appropriately sized and equipped research facilities.

The Master Plan

Phase I of the Master Plan is to build a new Marine Science and Conservation Genetics Center as the first of three buildings in the Research Village. Subsequent phases are planned to include a Marine Geospatial Ecology Center for research and education and an Education and Outreach Center to provide a much-needed entry portal for visitors.

Going Green

In keeping with Duke University’s commitment to leadership in sustainability, the upgraded Marine Lab will be a model for environmentally sustainable development, designed with sensitivity to the changing coastal environment. All construction projects will employ the highest (LEED) standards of “green” methods, materials and technologies.

As illustrated in the plans for the Research Village, all new buildings will seek LEED platinum status. Healthy, efficient buildings with long life-cycles will contribute to our intention to be a responsible steward and role model in the sustainable movement.
While Duke has the smallest of the nation’s top ten marine science and conservation programs, our faculty is at the forefront of efforts to understand the causes and consequences of changes in marine systems and to seek solutions that allow us to protect, restore and sustain our oceans and coasts and the marine life that, in turn, sustains us.

Of the myriad technological breakthroughs made in the past decade, the most revolutionary in terms of marine science and conservation is in the area of genetics. Recent advances in conservation genetics now enable scientists to address a host of issues, including design of sensible marine protected areas, management of commercially important or endangered species, and understanding of the impacts of climate change on ocean ecosystems. Access to the latest genetic tools is critical if we are to understand how organisms respond to the environment, map historical relationships among populations and species, and tease apart processes at the cellular level that influence the life of an organism.

To remain at the forefront of this science, Duke Marine Laboratory faculty must have access to these cutting-edge technologies.

As the first building constructed in our new Research Village, the Marine Science and Conservation Genetics Center will support the Marine Lab’s mission to excel in marine science and conservation, giving faculty and students the tools and facilities to apply state-of-the-art genetic methods as they work collaboratively toward understanding marine systems and identifying solutions to problems in the marine environment.

This nearly 10,000-square-foot facility will include a 20-seat molecular biology research lab (to replace the current 8-seat lab), as well as technical areas. It will also include a 16-seat teaching lab, as well as office space and meeting areas for faculty, research associates and visiting scholars.

The Science Inside:

The cutting edge technology and collaborative spaces within the new Center will enhance and expand the capacity for Marine Lab researchers and research trainees to study conservation genetics, biotechnology and biofuel development, climate change related to ocean warming and ocean acidification, environmental microbiology, and to explore the underlying molecular basis for behavioral, physiological and biochemical conditions of marine organisms. For instance:

- Environmental Toxicologist Dana Hunt, PhD is an expert in the study of how synthetic nanoparticles released into the environment are transformed and degraded by microbes. The molecular approaches she uses can also be applied by scientists studying microbes that degrade petroleum products such as those spilled into the Gulf.

- Zackary Johnson, PhD is a world leader in the study of Prochlorococcus, a photosynthetic microorganism found in the ocean, and its response to climate change. Using genetic tools, he has shown that these microbes sort themselves into genetically distinct groups according to light conditions and temperatures. Next, he’ll probe deeper into the biology of the cells to understand which cellular systems are involved in adapting to temperature changes.

- The river herring, a fish that spawns in freshwater and migrates to the sea, forms a critical link in marine and freshwater food webs. However, its population has declined by 99% in the past 50 years, largely as a result of bycatch in offshore commercial fishing. Eric Palkovacs, PhD is using genetic markers to assess river herring stock structure, to give fisheries managers vital data to develop strategies to avoid at-risk populations at sea.
The time has come to upgrade and modernize the facilities of the Duke Marine Laboratory. Failure to do so will threaten the Lab’s – and therefore Duke’s – stature as a premier center for marine science and conservation.

The planned facility upgrades will enhance the Marine Lab’s capacity to attract and retain the finest international faculty, as well as highly qualified PhD students, post-doctoral investigators and visiting researchers. The creation of the state-of-the-art Marine Science and Conservation Genetics Center, in particular, will signal Duke’s commitment to excellence in this vital and cutting-edge area of environmental research and education.

To move forward on Phase I of the Master Plan, the Nicholas School must secure $6.75 million to fund construction of, and operating costs for, the Marine Science and Conservation Genetics Center. The Oak Foundation has indicated their plans to make a $4.5 million challenge gift toward this project if other private funds can be raised to meet this goal.

**Construction Projects for Duke Marine Laboratory Master Plan, Phase I**
(Includes an allowance for five years of operating costs and furnishings, projected as of March 2009)

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<tr>
<th>Project</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Marine Science and Conservation Genetics Center</td>
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<td>Oak Foundation Challenge Gift Intention</td>
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<td>Must Raise from Other Sources</td>
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If you would like additional information, please contact:
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