DRAFT REPORT
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Task Force on Marine Sciences
in Northeastern North Carolina

University of North Carolina
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EXECUTIVE SUMMARY
(To be drafted)

PREFACE: A SUSTAINABLE FUTURE FOR COASTAL NORTH CAROLINA

The oceanfront counties of North Carolina are experiencing rapid population growth. Natural habitats, water quality and coastal resources are in jeopardy, threatening traditional industries such as fisheries and tourism. Many interior coastal counties under the jurisdiction of the North Carolina Coastal Area Management Act (CAMA) are among the state’s most disadvantaged. Investments in schools and economic development activities have lagged due to low property tax bases and high property tax rates.

State regulations promulgated by the Coastal Resources Commission have attempted to protect natural resources and minimize the impact of human activities on the ecology of North Carolina’s 20 coastal counties. Under the CAMA, local governments are given flexibility to prepare local land use plans to direct growth and development into appropriate areas. The voluntary land use plan component of CAMA, however, has not been sufficiently effective in ensuring the protection of the coast’s natural resources at sustainable levels while allowing economic growth. The land use plan process is increasingly subject to criticism by local governments, economic development groups, and non-governmental conservation organizations. Indeed, the Coastal Resources Commission recently declared a two-year moratorium on CAMA land use plans.

A new approach is needed to help assure a sustainable future for North Carolina’s coast through the development of a comprehensive growth management strategy involving collaborations between local and state government agencies, business and industry, universities, non-governmental conservation organizations, local citizens, and other interested parties. This will require leadership and resources to organize local stakeholder groups, to assist regulatory agencies, and to provide technical assistance and research to address growth management issues.

North Carolina’s universities have the capacity to provide research, including natural sciences and socio-economic studies, as well as education and outreach programs to guide coastal stakeholders and governments in their planning efforts. The President of the University of North Carolina system and the Chancellors of the constituent UNC institutions with marine sciences programs (Elizabeth City State University, East Carolina University, North Carolina State University, UNC-Chapel Hill, UNC-Wilmington) all have expressed a strong University commitment to serving the needs of coastal North Carolina. A new UNC marine sciences facility, such as the one that is being proposed in northeastern North Carolina, would serve as a catalyst for improved environmental decision making by assisting local citizens and organizations in developing enforceable, comprehensive growth and coastal resource management strategies.
BACKGROUND AND SCOPE

With regard to the further development of University of North Carolina (UNC) coastal programs, a current priority is planning for the establishment of a marine sciences facility offering year-round research, education, and outreach opportunities in northeastern North Carolina. Such a facility would be consistent with the Plan for Marine Sciences adopted by the UNC Board of Governors in 1994. The plan noted that there are three diverse coastal regions in North Carolina: (1) the southernmost area around Wilmington, (2) the middle coastal region around Morehead City, and (3) the northeastern region. The Board stated that:

"Marine sciences research and teaching facilities will ultimately be needed in all three regions. Expanded or new coastal facilities for teaching and research should be based on the sharing of the facilities with all authorized UNC programs, with due attention to the three coastal areas in North Carolina, accessibility, avoidance of unnecessary duplication, and geographically considered program needs."

The Board has placed its recent priorities on the southern and middle coastal regions, including the building of a new marine science facility at UNC-Wilmington (Myrtle Grove) and the expansion of facilities involving North Carolina State University (Center for Marine Science and Technology) and UNC-Chapel Hill (Institute for Marine Sciences) in Carteret County. Also in keeping with the Board’s report, a new doctoral program in Coastal Resources Management was implemented at East Carolina University, and a new undergraduate program in marine sciences was established at North Carolina State University. The NC General Assembly responded to the Board’s plan by appropriating funds for these facilities and programs, and the collection of new construction projects is nearing completion. (Appendix 1 provides a 1998 update on the overall scope of UNC facilities and special programs related to marine sciences.)

It is important now to consider the needs of the northeastern coastal region. A marine sciences facility in the northeast would be designed to complement and strengthen those undertaken in Wilmington and Morehead City. It would provide a potential delivery site for marine-related degree programs (e.g. environmental sciences, coastal resources programs) offered by other UNC institutions. Internships and graduate assistantships would benefit from private sector and government research project support. Resident and visiting faculty would have opportunities to participate in marine sciences research, as well as to offer advanced laboratory and course work. A collaborative arrangement of institutions sharing facilities and offering courses in both traditional classrooms and through interactive distance learning also would be consistent with the plan adopted by the Board of Governors in 1994. There also would be numerous opportunities to coordinate and expand extension and outreach programs to address specific needs of the region.

In January 1999, planning for a UNC marine sciences facility in the northeast received an endorsement by the Dare County Board of Commissioners through its approval of a
request from a citizens group, the Dare County Task Force on Higher Education. Subsequent support of the concept has been expressed from the county boards of commissioners in the neighboring counties of Hyde and Tyrrell. Background materials on the Dare County Task Force on Higher Education activities are shown in Appendix 2.

It should be noted at the outset that this report focuses only on aspects related to marine sciences programs associated with UNC. A broader assessment of educational needs in the northeast region that could be served by UNC is the subject of a separate evaluation process being led by the Senior Vice President of the University of North Carolina. It is anticipated, however, that the proposed programs in marine sciences would be the first steps toward a broader UNC presence in the region to better serve coastal counties such as Dare, Hyde, and Tyrrell.

**APPROACH**

To move the planning process forward, UNC President Molly Broad appointed an *ad hoc* Task Force in June 1999 composed of selected researchers from the UNC Marine Sciences Advisory Board (one representative each from ECSU, ECU, NCSU, UNC-CH, and UNCW) to work with a small team of external consultants. The Task Force members are expert in marine and coastal issues within the context of higher education. Dr. Richard Linton, Associate Vice President for Research and Director of Sponsored Programs for UNC General Administration, chairs the UNC Marine Sciences Advisory Board and directed the Task Force’s activities. Dr. John Toll, Chancellor Emeritus of the University of Maryland - College Park, chaired the team of external consultants. Details about the Task Force membership are provided in Appendix 3. Specific activities of the Task Force are summarized as follows.

**A. Site Visit**

A site visit to northeastern North Carolina was conducted in July 1999 for extensive meetings with local resource persons to overview the natural resources, environmental, historical, cultural, and socio-economic aspects of this coastal region. Tours were arranged to highlight existing facilities and programs in the area that might be utilized in support of a UNC marine sciences facility. Planning for the visit was a cooperative effort between the University Task Force and the Dare County Task Force on Higher Education. The site visit schedule is shown in Appendix 4.

**B. Evaluation**

Based on the results of the site visit and information about marine sciences programs within the state, an evaluation was performed of the potential for a marine sciences coastal facility. The scope of the proposed facility is expected to encompass teaching, research, and outreach activities, although applied research related to coastal issues is
anticipated to be a major component. Criteria considered in the evaluation were the
same as those used in the development of the planning request for a UNC research or
public service center or institute, namely:
• Relevance to the mission of the University
• Objectives for the proposed unit
• Information about similar units or programs within the University and possible
collaborative relationships or potential overlaps with them
• Estimated needs and funding requirements for facilities, equipment, and programs to
be developed and the potential sources for funding

For convenient reference, details on the general planning and authorization process for
UNC centers and institutes are included in Appendix 5.

In addition, the Task Force evaluation specifically considered:
• The needs for marine sciences programs to address coastal and cultural resources,
environmental, and socio-economic issues facing northeastern North Carolina
• Possible cooperative relationships with agencies, educational institutions, and other
organizations involved in marine sciences activities in the state and region
• An appropriate organizational entity that could be charged with detailed planning of
the facility and associated programs

The University Task Force met in August 1999 to discuss the initial evaluation and the
preparation of a draft report. The University Task Force subsequently endorsed a full
draft report in September 1999. Following a review by university and government
officials, and the relevant organizations and citizen groups in northeastern North
Carolina, a final report will be issued to the President of the University of North Carolina.

C. Recommendations

The Task Force has developed initial recommendations on the nature of marine
sciences programs and associated facilities that would serve the unique coastal
environment in the northeast area of the state. The following sections of this report
provide detailed recommendations based on an assessment of needs in the region.
Included are suggested focus areas and a specific proposal on the planning of a UNC
marine sciences center.

Based upon the Task Force recommendations, the UNC President will consider future
UNC budget requests to address program and capital facilities needs associated with a
new marine sciences center, subject to the approval of the Board of Governors and the
subsequent allocation of funds by the General Assembly. Funds could be requested as
early as the FY2001 UNC supplemental budget request to initiate core program support
as well as planning for construction of a new facility.
NEEDS ASSESSMENT

The Task Force assessment focused on six areas of marine sciences, broadly defined:
• Coastal Processes
• Natural Resources
• Coastal Development and Management
• Environmental Issues
• Fisheries
• Cultural and Educational Resources

These categories are not mutually exclusive and were addressed from the perspectives of the citizens and organizations of northeastern North Carolina (in Dare, Hyde, Tyrrell Counties), as well as the constituent institutions of the University of North Carolina (UNC) having direct interests in marine sciences programs: Elizabeth City State University (ECSU), East Carolina University (ECU), North Carolina State University (NCSU), the University of North Carolina-Chapel Hill (UNC-CH), and the University of North Carolina-Wilmington (UNCW).

The following sections present the needs, potential benefits, and contributions that both the northeast region and the UNC institutions could make involving a new marine sciences facility, with separate discussions for each of the six topical areas cited above. The emphasis from the outset has been on coastal issues, rather than on “open ocean” or “blue water” oceanographic programs.

A. Coastal Processes

D. Regional Needs and Capabilities

A shallow estuary system and highly dynamic barrier islands heavily impacted by weather events characterize the northeast region. The Outer Banks is a delicate necklace on which there are large investments and recreational opportunities at stake. As illustrated most recently by the devastating effects of Hurricanes Dennis and Floyd, there are serious erosion and flooding problems along the North Carolina coast, especially involving the barrier islands and inner-coastal regions. The Albemarle-Pamlico peninsula is a very low-lying, wet environment that will be confronted by major ecological changes as sea level continues to rise, possibly at an accelerated rate as a result of global warming. The landforms of the coastal region of northeastern North Carolina are the most dynamic in the state, and there will be major ecological and socio-economic consequences of the changes over the coming century. There will be increasing pressure from the public for government actions to protect this coastal region and the general economic vitality of the associated counties. Without question, effective management of coastal resources in the northeast would benefit from an improved scientific understanding of coastal processes and their impact on the local environment.

Research topics include beach dynamics, coastal circulation, sediment transport, inlet dynamics, Gulf Stream dynamics, estuarine-ocean coupling, atmospheric-oceanic coupling, and land ocean interactions.
Research and monitoring efforts involving coastal processes already are conducted at the U.S. Army Corps of Engineers, Field Research Facility (FRF) in Duck. The local continental shelf is one of the best mapped in the world, and long-term studies conducted by the FRF provide extensive data on wave formation and sand/sediment migration. A UNC marine sciences facility in the area would be able to use this large base of information to improve the management of coastal development in the region. However, the primary focus of the FRF has been to address coastal processes along a relatively small stretch of the beach directly adjacent to the research pier and using its associated equipment. If the existing program could be extended to other coastal sites through collaboration (and program expansion) with a northeastern marine facility associated with UNC, then the benefits to regional and national coastal interests would be enhanced.

The prospects for coastal processes research in the northeast area are excellent because the natural processes are unlikely to reverse in the foreseeable future and are exacerbated by human activities. There is intense interest by local community managers in oceanfront shoreline stabilization and beach nourishment programs. The great interests in dynamic coastal changes in the Wildlife Refuges and National Seashore also offer outstanding partnerships for UNC research, student training, and outreach in this region.

2. UNC Institutional Capabilities and Interests
The U.S. Geological Survey (USGS) is in the planning stage for a major study of both ocean and sound bottoms in northeastern North Carolina. Coastal processes research at a northeastern marine sciences facility could focus in part on the work planned by the USGS. A geologist at ECU is expected to lead the estuarine portion of the survey that would also be of interest to scientists at ECSU, NCSU, UNC-CH and UNC-W.

ECSU and NCSU currently have programs with the U.S. Army Corps of Engineers (USACE) funded by the Office of Naval Research (ONR). The FRF at Duck also is a resource of great interest to faculty in the College of Physical and Mathematical Sciences at NCSU. Two faculty work there now, and there is potential for additional NCSU resident faculty to study coastal erosion processes. The NCSU College of Engineering has interests in this site as well, including an offshore station that has been used for staging robotic undersea vehicle work.

Eighteen NCSU faculty members within the Department of Marine, Earth and Atmospheric Sciences (MEAS, in the College of Physical and Mathematical Sciences) have studied the biological, chemical, sedimentological and physical oceanography in both the offshore and inshore waters, and through the inlets. Studies involve satellite and aircraft remote sensing, shipboard based monitoring, and \textit{in-situ} instrumented moorings, coupled with computational models to elucidate complex processes of the area. Satellite data of the region are downloaded by MEAS students for use by coastal scientists. Several MEAS scientists are on the NASA-sponsored algorithm development team that would benefit from improved data to evaluate the computational models.
Two MEAS scientists have developed one of the world's most advanced coastal and soundside flooding storm surge model systems. This predictive capability has been applied by the national weather service (NWS) to provide advanced forecasts of flooding on the NC coast and inshore areas due to extreme atmospheric events such as hurricanes. The model has been featured on the cover of "Scientific Computing and Visualization" as well as featured on the TV networks CNN, CNBC, PBS, NBC and ABC. The further evaluation and development of the model would benefit greatly from convenient access to the northeastern coastal area for field studies and monitoring efforts in advance of approaching storms.

The UNC-CH marine sciences program also has significant activity in coastal processes research along the ocean and sound sides of the barrier islands, and in the Oregon and Hatteras Inlets. Two tightly coupled areas of focus, which together form a core area of research at the Institute of Marine Sciences (IMS) in Morehead City, are beach erosion and identification of offshore sand resources for beach renourishment. A northeast facility that could provide logistical support for graduate students would virtually ensure that there would be an increase in UNC-CH graduate student projects involving the Outer Banks.

Because of the low-lying and complicated geography of northeastern North Carolina, storm surge is difficult to predict accurately, yet is vitally important to municipalities, the tourist industry, and commercial fishing. A coastal circulation model developed at the IMS and used to forecast storm surge due to Hurricanes Bertha and Fran in 1996 provided the basis for marine forecasts issued during the hours leading up to the storms. Verification after the storms indicated that the UNC-CH models were more accurate than any other storm surge information available to the National Weather Service forecasters in the immediate area, and that application could be more widespread if there were better opportunities for field verification. Additional field work focused in the northeast, especially along the estuarine shorelines of the sounds where sea level rise is a future threat, would be a logical research contribution from UNC-CH faculty and students who currently devote most of their energy to the central coastal region of the state.

Faculty members at UNC-CH have recently received funding from the Office of Naval Research and the National Oceanic and Atmospheric Administration to study the ocean circulation off the coast of North Carolina, with a special emphasis on the region near Cape Hatteras. This is an especially important area for the transport of larval fish, and there also is renewed interest in the exploration of the sub-bottom regions for natural gas. The understanding gained by this research will help in the preservation of larval pathways for fish recruitment, and in making sensible and informed management decisions when undertaking resource exploration, given the potential environmental and societal impacts of such activity.

In summary, a more comprehensive and systematic approach is needed to understand the biological, chemical, geological and physical processes impacting the northeast
coastal region and to develop strategies to mitigate further negative impacts from anthropogenic activities. UNC could play a major role in enhancing studies on coastal processes that would support better environmental decision making in the region. Basic and applied research in coastal processes would be a low risk, high return investment for the University.

B. Natural Resources
   1. Regional Needs and Capabilities
Northeastern North Carolina unquestionably has an abundance of diverse natural resources in the coastal region. Perhaps the most impressive natural resource features are the extensive conservation lands, including eight National Wildlife Refuges, the Cape Hatteras National Seashore, National Estuarine Research Reserves, North Carolina Coastal Reserves, and The Nature Conservancy’s Ecological Preserve at Nags Head Woods. The U.S. Fish and Wildlife Service, U.S. National Park Service, and allied organizations including The Nature Conservancy, the National Audubon Society, the Partnership for the Sounds, and the North Carolina Coastal Reserves manage valuable tracts of land, including the largest seashore reserves in the nation. This makes northeastern North Carolina not only of exceptional importance to the state, but also to the nation. The agencies and organizations responsible for these natural resources and conservation areas are eager for greater University involvement involving research, outreach and training.

The northeastern North Carolina region contains one of the nation’s largest estuaries, the Albemarle-Pamlico estuarine system, characterized by very shallow depths and salinity less than half that of seawater. The estuaries are microtidal environments of unparalleled extent on the Atlantic coast, are especially sensitive to land-based sources of pollution, but are some of the least studied coastal environments in North Carolina. Wildlife species of interest include red wolf, black bear, cockaded woodpecker, migrating waterfowl, migrating shorebirds, alligator, diamond back terrapin, loggerhead sea turtles, and a diversity of anadromous fishes. In general, there are needs for inventories of species in habitats, and site-specific information on refuge and park habitats. These would help protect biological diversity in the region and help conserve local ecosystems.

Much of the research desired in the natural resources arena is not heavily problem-centered, but rather focuses on providing more detailed descriptions of local land and seascapes. This would provide significant opportunities for undergraduates in search of internship experiences. However, there is also an excellent research opportunity to link species inventories to environmental monitoring data. This would allow descriptive studies of habitats to feed into problem solving activities that specifically link environmental factors to changes in wildlife populations.

2. UNC Institutional Capabilities and Interests
ECSU currently is studying the coastal wetland areas and would benefit from northeast facilities, especially upon the initiation of its proposed Marine Environmental Science B.S. degree program. More generally, a UNC program of coastal ecology research that
included the study of near-shore, beach and estuarine resources in the northeast could make significant scientific contributions. This research emphasis would also supplement the efforts of the other UNC marine facilities to the south and would create a comprehensive, collaborative marine ecology network.

Aquatic medicine programs at NCSU are considered among the best in the world. Veterinary faculty stationed in the northeast would be in position to assist health management of the NC aquarium in Manteo, to conduct endangered species health research in the numerous refuges and national parks of the region, and to support the local veterinary community through continuing education programs. The College of Veterinary Medicine (CVM) at NCSU currently plans to group its coastal veterinary positions in Morehead City at the Center for Marine Science and Technology (CMAST). However, the CVM would see high value in being able to locate additional faculty members in residence in a northeast facility to support stranding networks and research biologists doing interventional research.

UNCW scientists have studied water bird populations and nesting behavior for over thirty years, and during the last ten years have studied small mammal populations in the northeast. Such UNCW research projects have been limited in part because of the lack of a staging location for field studies. A similar situation exists with visiting scientists from other universities. A monitoring system is being developed to understand the coastal processes that impact the natural resources of coastal North Carolina. A project of this magnitude will create new opportunities for collaborations in the northeastern area involving scientists from different academic, government, and private institutions.

In summary, the natural resources of the area include large and well-managed preserves, parks and national seashores that support a diverse biota. Significant resources abound to support fishing, forestry, hunting, recreation, tourism, and farming. The impacts of the extensive use of these resources and the interactions of the use of one resource on another need further investigation. A UNC facility to support students and scientists in this region would allow important and useful investigations into issues critical to natural resource preservation.

C. Coastal Development and Management
   1. Regional Needs and Capabilities
   The northeast region faces diverse and substantial challenges in its economic and cultural development. The three counties in the immediate vicinity of the proposed facility include Dare, Hyde and Tyrrell. Dare is relatively affluent, rapidly growing, and strongly based on a tourism and retirement economy. The Outer Banks (which lies principally in Dare County) faces great development pressures, but is striving for a sustainable future for its tourism and natural resources. The demographic composition is largely Caucasian and includes a substantial percentage of non-native born residents relocating from states to the north. Hyde and Tyrrell are economically depressed agricultural counties with declining or nominally stable small populations, roughly 50 percent being minority and principally native-born. Both Hyde and Tyrrell counties have
embraced the concept of eco-tourism as a potential economic base. Both counties are faced with several large obstacles including transportation and basic infrastructure issues. More detail on the counties of Dare, Hyde, and Tyrrell can be found in Appendix 6.

The diversity of the three northeast counties and their communities offers an important opportunity for the University to study the socio-economics and development of coastal communities. There is an important need for public policy research regarding the consequences of development, including the study of alternative development scenarios. The northeast region seeks expanded economic and educational opportunities, while also having to confront a changing physical environment as sea level rises. The region may be ideal for studying tourist-driven development in a fragile environment. UNC institutions could play a major role in helping these regions of the state achieve sustainable development. Activities and programs in the environmental and social sciences, engineering, business, and education could be brought to bear through a UNC marine center with a focus on this theme.

2. UNC Institutional Capabilities and Interests
The barrier islands, from Cape Hatteras north, have experienced considerable population growth and development over the past several decades. This growth and development will, in all likelihood, continue for several decades. With increasing population density, land and water use conflicts will increase. Resolution of these conflicts requires an understanding of social and economic systems, along with an understanding of natural systems. Hence, social scientists within the UNC System will be called on increasingly to conduct the needed socio-economic studies.

ECU's new Coastal Resources Management (CRM) doctoral program does not have a coastal facility for research, instruction or outreach use. A facility in the northeast would be ideal for a variety of reasons including:
- the abundance of coastal resources that exist in the area
- the opportunity for CRM students to obtain internships with government agencies that administer the coastal resources,
- the opportunity for CRM Program faculty and students to conduct applied research projects that will help resolve land or water use conflicts
- the availability of facilities that already exist in the area that can be used for research or teaching (e.g., the FRF at Duck, the North Carolina Aquarium at Manteo, and the Graveyard of the Atlantic Museum that is to be built at Hatteras).

Even if the research, teaching and outreach activities of the CRM Program become concentrated in a northeast facility, the expensive infrastructure, equipment and instrumentation of traditional oceanographic marine science facilities would not be required. CRM faculty and students would do little, if any, offshore work in association with a northeast marine sciences facility. The proposed marine environmental science bachelors program at ECSU also includes coastal management as one of the concentrations. The concentration includes courses in Coastal Urbanization and Land Use Planning, and Coastal and Marine Resources. Thus, there would be opportunities
for ECU and ECSU collaboration in various aspects of coastal resources programs supported by a northeast facility.

Already in place and eager to participate in a northeast marine sciences facility are two faculty in the NC Sea Grant Program, a fisheries scientist and a social scientist, both appointed at ECU. They are currently focused on coastal community development projects. Their work is currently augmented by several faculty specialists in recreational development from the NCSU College of Forestry. These faculty are working on a variety of coastal development projects in Dare, Tyrrell and Hyde Counties. The College of Forestry would be potentially interested in participating with resident faculty if an emphasis on marine/land interface recreational development and coastal ecology is included in the mission of the northeast facility. The College of Forestry also manages a large maritime forest tract near Bull Bay and has plans for extensive cooperation with the nearby 4H facility managed by the NCSU College of Agriculture and Life Sciences (CALS). Resource Economics faculty members in CALS perform other research in the region and augment the work of the Sea Grant and College of Forestry faculty. Properly supported, the research efforts associated with the social and economic issues of coastal development could form the basis of an internationally recognized center. These coastal development issues are highly connected with the needs and desires of the community, and a research focus in this area would help maintain strong local support for the university.

NCSU faculty from the college of Agriculture and Life Sciences, Department of Resource Economics, have been actively involved in coastal resource issues for decades. Resource management and policy issues vital to the future development and environmental sustainability in the northeastern region of the state are direct concern to these faculty. Conduct of research and subsequent public education, including the awareness of policy implications, require on-site assessment and evaluation.

The new Carolina Environmental Program (CEP) at UNC-CH has an overarching goal of assisting society in developing a formula for sustainable development. This program coordinates interdisciplinary research and teaching and could participate in selected activities of a northeast facility. UNC-CH marine sciences faculty also could contribute extensive management and policy-based experience resulting from their service on numerous state panels, including the N.C. Environmental Management Commission, N.C. Fisheries Commission, N.C. Science Panel on Coastal Hazards, and the N.C. Science Advisory Council on Water Resources and Fisheries Management. This experience is immediately applicable to management issues facing the northeastern coast, and in-residence faculty would interface well with local managers and citizens groups.

In summary, environmental sustainability and community development are among the most pressing coastal issues. For the past two years University faculty and administrators (UNC-CH, NCSU, UNC-W, ECU, and Duke) have been meeting to discuss a “Sustainable Coast” initiative. One element of the initiative, “Managing Growth on a NC Barrier Island: Partnerships and Incentives,” deals specifically with
involving stakeholders in the discussions of coastal development and suggests a substantive involvement of social scientists to enhance coastal management practices. The northeastern part of the coast would be an ideal test bed for visionary work on sustainable development, in part because of the intense development pressures. As mentioned in the preface to this report, the N.C. Coastal Resources Commission, charged with making key policy decisions for the state's coastal management program, has a great need for better strategies. Lack of integration of development and management with physical and biological sciences research has historically led to ineffective coastal policy. ECU, with its emerging strength in coastal resources management programs, would be a critical resource that could catalyze a top-notch UNC program involving a northeast marine sciences facility.

D. Environmental Issues

1. Regional Needs and Capabilities
Risks to water quality, particularly due to nutrient enrichment, sedimentation, and wetland and lowland drainage are a major concern in the region. Tourism and fisheries obviously require clean water and healthy habitats. The effects of habitat loss and degradation (for example, affecting seagrasses) on living resources (fisheries, waterfowl) constitute a significant issue in the region. Oligohaline shallow estuaries of the area are very susceptible to upstream pollution, both point source and non-point source in nature.

Water quality monitoring is conducted by the Dare County Public Health Office for identifying bacteria-caused disease in swimmers, but more research is needed in the area to evaluate the epidemiology behind the health risk assessment of bacterial contamination. Concerns also exist about petroleum and pesticide run off, as well as waste water treatment and sewage disposal. Site specific research is needed to resolve water impairment issues and continuation of shoreline studies to better cope with population pressures. Improved and expanded delivery of environmental education also is needed. Such research and outreach needs involving water quality and related environmental issues would be enhanced through a greater UNC presence in the northeast.

Water quality data in the Neuse River are being collected from a newly funded state appropriation to NCSU (MEAS) scientists via NC Department of Environment & Natural Resources. The effort requires a one to two week evaluation of the on-site sensors. Such a time intensive study would benefit greatly from having access to the field sites from a convenient northeastern marine science facility.

2. UNC Institutional Capabilities and Interests
Northeastern North Carolina, like most coastal areas of our country, has an abundance of environmental problems, with water quality and erosion leading the list. All five UNC campuses with marine programs have faculty with environmental research interests. Many of these faculty members might prefer, from time to time, to conduct
environmental or water quality studies in the northeast. Unfortunately, facilities for these scientists to use as a staging and support area for their fieldwork are exceedingly limited. A UNC facility in the northeast would provide such a space.

ECSU's proposed Marine Environmental Science B.S. program will include marine geology as one of the concentrations, with various courses relevant to marine environmental aspects including: geology of coastal and marine regions, chemical processes in aquatic environments, coastal resources, hydrology of coastal waters, and estuarine environmental issues. The B.S. program would benefit from field trip facilities, classroom, and laboratory facilities, as well as housing for students and faculty associated with a northeast marine sciences facility. The Title III funded Dismal Swamp Boardwalk project has involved ECSU undergraduate research in water quality around Elizabeth City. Facilities in Dare County would extend the range of water quality studies.

In 1992, the Center for Marine Science Research (CMSR) at UNCW began a regional water quality monitoring and biota assessment program. The program represents an extensive collaboration between academic, industrial, and the public sectors to study fundamental scientific processes shaping and controlling the Cape Fear River Estuary. This effort, currently funded by local industries and governmental units, satisfies the environmental assessment objectives of the North Carolina Division of Water Quality. On a more fundamental basis, this program is providing a wealth of scientific information for numerous research projects (e.g., storm water studies, benthic and fisheries studies). The availability of regular, replicated, long-term environmental data is extremely valuable to physical and life scientists working in near-shore marine environments, estuarine waters and freshwater systems. Results will be used to improve the effectiveness of management practices to improve the river water quality and to protect the overall ecosystem.

Currituck Sound and Albemarle Sound are ecologically and economically important to the northeast region. The CMSR is interested in assisting with the establishment of an initiative that would exploit UNCW’s experience with the Cape Fear River Research and Education Program. Such a program, funded locally and statewide, would encourage representatives from the northeast region to shape the environmental assessment activities and provide a mechanism for effective community outreach. A northeastern marine sciences facility would provide a base of operation for field and laboratory work in addressing environmental water quality issues.

Similarly, the Institute of Marine Sciences (IMS) associated with UNC-CH, has had a well-funded program of water quality research in the Neuse River estuary and in southern Pamlico Sound for the past 20 years. It could expand these efforts to the northeast. Although much of the knowledge already gained through this long-term program can be applied to other regions, site-specific studies and close interaction with federal and state programs in the northeast would be logical and would clearly benefit the region. Two important research areas where IMS faculty could contribute initially, assuming the availability of a northeast facility, are a) Albemarle Sound-Pamlico Sound
exchange processes that occur through Roanoke and Croatan Sounds, and b) Pamlico Sound-coastal ocean exchange processes that occur through Oregon and Hatteras Inlets. In shallow-water systems like the Albemarle-Pamlico estuarine system, the water column and surficial sediments interact continually, exchanging and redistributing particles and solutes so as to impact the operation of the entire system. Consideration of sedimentary processes and information contained in the sedimentary record, such as pollution history, is therefore essential to management, and research into these processes is a vital part of any comprehensive management effort.

UNC-CH faculty in Chapel Hill, as well as at IMS in Morehead City, have several other active research programs in environmental biology and human health, sedimentary geochemistry, and environmental change in the coastal zone that could be expanded to the northeastern part of the state. One of the chief difficulties in working in these and other areas has been the lack of adequate laboratory space in which to analyze samples on site or to prepare them for transport to other laboratory facilities. With the availability of space in a northeast marine facility, UNC-CH faculty could contribute for example to: a) a better understanding of accumulation of organic-rich muds in Albemarle Sound, which concentrate heavy metals, pesticides, and other toxic substances adsorbed onto their surfaces, b) determining how sedimentation patterns have changed with watershed development, and c) providing a system-wide budget that identifies temporary and long-term storage sites important to dispersal of particle-associated pollutants.

The Institute for Coastal and Marine Resources (ICMR) at East Carolina University has conducted a water quality monitoring program on the Pamlico River estuary since 1974. This is one of the longest-running monitoring efforts for an estuary in the United States. Important findings have been made about the relationships between human activities that influence nutrient loading and water quality conditions in the estuary related to algal growth and fish health.

Experimental research on problems related to water quality and fisheries biology in the Pamlico River and other N.C. estuaries farther north has always been hampered by the lack of a nearby laboratory. Both UNC-CH and NCSU researchers working on the Chowan River blue-green algal bloom problem in the 1980s were severely limited by the absence of such a facility. ECU scientists must bring samples of water, sediments, or fish back to Greenville for analysis. Long-term experiments have been almost impossible to conduct in these estuaries. A laboratory in the northeast region would greatly facilitate estuarine monitoring and research involving various UNC institutions in an area where water quality and environmental problems are almost certain to escalate in coming decades.

E. Fisheries
1. Regional Needs and Capabilities
There is a continuing need for better research on fish stocks, better by-catch reduction technologies, and methods to interpret the complex data sets that are generated in fish population studies. As indicated by the commercial fishing interests, acrimony will likely
arise involving any regulatory program that addresses commercial and/or recreational fisheries. Commercial fishermen are in favor of involvement in data collection and management plans from the outset, but show little trust of scientists or policy makers. The benefits derived from a marine sciences facility that has a focus on conventional species-specific fisheries research will not be as great as a program that deals with management issues. A program that deals with loss or change in fisheries habitats, however, may also be beneficial.

Marine fisheries, both commercial and recreational, are exceedingly important to northeastern NC. Unfortunately, these two sectors are often competing for the same resource and have little faith in regulatory efforts. The situation that exists in the northeast holds true for the entire marine fishery industry nationally. Considerable social science research and outreach will be required to promote more effective cooperation between the commercial, government agencies, and university research communities. This area of research could be a focus of the UNC marine sciences facility in the northeast.

One area of additional interest is seafood technology, which could include improved, cost-effective means of harvesting, processing and marketing seafood. The Wanchese Seafood Industrial Park is a valuable resource in the area that could facilitate fisheries and seafood processing research. The commercial fishermen of the region represent an active industry with international interests, and are a potential asset to fisheries researchers.

2. UNC Institutional Capabilities and Interests
Prior discussions, most notably the sections addressing needs related to natural resources or environmental issues, touched upon various topics and examples related to the viability of recreational and commercial fisheries. Another illustration in North Carolina, is the extensive work involving UNC-CH on experimentally restored oyster reefs in the Neuse River. These studies indicate that the prevailing explanations for the dramatic decline of the America oyster are too simplistic. Interaction between habitat and water quality exemplifies the need for integrative ecosystem management, which is also strength in the UNC-CH Marine Sciences Program. The work in this field has been focused in the central coastal region only, but it could be extended to the northern part of the state. Benthic work, which has been a core area of research at the Institute of Marine Sciences since the mid-1970s, also includes research on clams, scallops, and their responses to beach renourishment and dredge spoil disposal.

Faculty members at NCSU (MEAS and Zoology) have conducted field and modeling studies of the recruitment of finfish larvae and blue crab megalopae from the coastal ocean through the barrier island inlets and into the Albemarle- Pamlico Sound system. This work suggests that the passage of winter weather systems favorably impact recruitment into the Pamlico sound while disallowing movement of these cohorts into Albemarle sound. The work includes extensive field sampling and modeling to provide new understanding of the life cycles of these commercially important species. However, much research remains to be done to improve the understanding of the biophysical
coupled processes of recruitment. That could be best served if there was a northeast marine sciences facility from which the studies could be staged.

East Carolina University scientists have directed long-term studies of the population ecology of striped bass in the Roanoke River and Albemarle Sound. The goal has been to elucidate the causes of the long-term decline of this important recreational fish. Since 1988, NCSU scientists have carried out research at the Pamlico Aquaculture Field Station on the shore of the Pamlico River estuary, developing a detailed understanding of the reproductive cycle of the striped bass leading to improved methods for producing these fish.

A northeast facility could enrich outreach services to local fisheries interests through enhanced integration of University-based programs such as those provided by N.C. Sea Grant, and the Cooperative Institute for Fisheries Oceanography (CIFO).

F. Cultural and Educational Resources

1. Regional Needs and Capabilities

It is important that the citizens, and especially the youth of the northeast region, have a good understanding of the marine and estuarine environments around them and the societal responsibilities for managing the rich ecological and cultural resources of the region.

Shipwrecks located just off the coastline are abundant and represent the more than four centuries of European involvement in North America. This is an ideal locale for a major underwater archaeology effort, including an expanded maritime museum and the development of a conservation center for the preservation and treatment of recovered materials from underwater excavations. Significant programming in cultural resources for the study and preservation of historical artifacts (shipwrecks, lighthouses, life saving stations) would contribute substantially to a northeast research and education facility. Heritage tourism and ecotourism also are becoming the replacement for more 'traditional' economic pursuits. Hence, more local historical and ecological research is needed, as well as interns to staff museums and guide tours.

Cultural resources in the area include several other organizations interested in preserving the history and heritage of the area and its relationship to the sea. The N.C. Aquarium in Manteo is undergoing a major renovation and expected to re-open next year with important new exhibits. Other marine-related cultural resources include the restored lifesaving station at Chicamacomico, the Pocosin Arts Center, the Elizabethan Gardens, and the Outer Banks History Center. UNC could provide assistance to museums, aquaria and other educational efforts in development of exhibits and programs concerning the local maritime environment and its rich cultural history. The existing historic preservation groups in the region provide an opportunity for coordination of programs through the University to more efficiently utilize state and private resources.
There are numerous possibilities for specific cooperation across the educational sectors, and diverse outreach opportunities. The local community college branch of the College of the Albemarle (COA) teaches marine-related technical courses through subcontracting with other community colleges in marine technology programs. A northeast marine sciences facility could effectively serve the needs for field trips, and as a base for summer classes and seminars, including those for the general public, provided in partnership with the community colleges. With the University’s continuing education programs, expanding distance learning capabilities, Sea Grant extension activities and cooperative extension programs, UNC should be well positioned to meet these needs.

The public school systems of Dare, Hyde, and Tyrrell counties and the COA are actively interested in interactions with the faculty of a UNC marine sciences facility. Potential interactions include programs for K-12 teacher training and curriculum development, marine technology programs, and "clerkships" or "internships" for undergraduates. Hyde and Tyrrell County schools are the two smallest systems in the state, but are relatively well equipped. It is likely that a University marine sciences facility would bring more students to the area than it would draw from the local community.

2. UNC Institutional Capabilities and Interests
In the early 1980s, ECU began the development of a Maritime Studies Program with an emphasis on maritime history and underwater archeology. The program's research focus is on shipwrecks, especially those located in North Carolina waters. In recent months, the Maritime Studies Program has been incorporated into the Coastal Resources Management (CRM) doctoral program as an area of concentration. As a component of the CRM program, the study of shipwrecks will continue to be emphasized, but the subject matter of maritime studies will be expanded to include other cultural resources of coastal North Carolina. There are faculty members in anthropology at NCSU who may be interested in collaborative efforts that would broaden the ECU programs as well.

Facilities appropriate for the Maritime Studies Program do not exist along the North Carolina coast or along the Atlantic Coast of the United States. Hence, the development of northeast coastal facilities for maritime studies would meet a critical need of the ECU program, and would not duplicate existing UNC coastal facilities or those of other institutions along the Atlantic Seaboard. The Outer Banks would be an ideal location for a maritime studies facility for several reasons:
- the surrounding waters have the highest concentration of shipwrecks along the Atlantic Coast of North America
- facilities with related interests are being developed in the area (e.g., the Graveyard of the Atlantic Museum in Hatteras; the Monitor "tank room" in the North Carolina Aquarium at Manteo)
- the intense interest of local citizens in the subject matter of maritime studies
- the interest of tourists in the heritage of the coast as seen in the recent television documentaries on lighthouses and the light keepers.
Because of ECU's location and mission, various other academic units regularly use coastal sites for research, teaching, or outreach. These units include the departments of biology, geography, geology, planning, sociology, and anthropology, as well as the Institute for Coastal and Marine Resources, the Regional Development Institute, and the School of Continuing Education. Some of the activities of these units have to be conducted at various locations along the North Carolina coast. However, most could be conducted at a single site if a suitable facility existed, as would certainly be the case with a facility in Manteo. Such a concentration of the field programs would not only benefit these academic units, but it would also benefit the citizens of northeastern North Carolina and other UNC institutions. Faculty and students would become more engaged in applied research projects of importance to the area, could give special lectures and short courses, as well as organize symposia and workshops on topics of local interest. Faculty could serve as mentors to students in residence and could co-teach field courses with faculty from other institutions.

Given the diversity of environments in the northeast, an inter-institutional field camp for undergraduates could be an exciting summer offering designed to be available to students from many UNC-System campuses. For example, faculty at UNC-CH could assist in providing an inter-institutional summer field course on coastal processes/habitats based in the northeast. The Carolina Environmental Program could use the facility as a field site to provide a capstone experience for undergraduates. Currently, field trips to the area from UNC institutions are difficult because of the logistical problems associated with finding suitable accommodations for students and the lack of a staging area for operations. Field trips to distant areas are much more effective if facilities exist to include some class time for review and discussion and to support field studies. UNCW's Division of Public Service offers marine science outreach programs for the public. This program currently serves over 6,000 people a year and would be able to effectively use a northeast facility for field trips and could offer special programs in the area for residents and visitors.

In addition, the NC Sea Grant Extension Agents in the area, if housed in the facility, would enhance Sea Grant outreach programs to the area through the facility. The NC Estuarine Research Reserve (NEER) Program has a site manager for Currituck Banks stationed in the area. This program provides outreach and educational programming along with site management. The northeast facility could house the NEER site manager to provide more effective coordination of outreach programs. Additionally, the ECSU Department of Geosciences is conducting education programs in the Dismal Swamp area for students, teachers, and the general public. Such programs could be expanded with access to a new marine sciences facility.

PRIORITIES

There is no question but that each of the six categories considered in the needs assessment includes appropriate research, teaching, and outreach activities within the
broad scope of a proposed UNC marine sciences facility. This section of the report addresses priorities within the six categories to help guide future allocations of limited state resources. An underlying assumption is that the state will be prepared to appropriate new funds, rather than to reallocate funds directed toward existing UNC marine science programs. Any reallocation scheme would have a deleterious effect on the scope and quality of other UNC marine sciences programs, would undermine cooperative efforts among institutions, and would have an adverse impact on faculty and staff morale.

The following criteria were utilized by the Task Force in its recommendation of programmatic priorities for a northeastern marine sciences facility:

- Relationship to Regional and State Needs
- Cost Effectiveness
- Potential for Programs Unique in Scope in North Carolina
- Relationship to Existing Marine Science Facilities and Programs, Including Possible Collaborative Activities
- Relevance to Global Concerns Involving Coastal Environments

The Task Force members concur that the rich cultural heritage in the region, particularly its early American and maritime history, is a noteworthy resource meriting attention by UNC institutions. The history of European colonization and its cultural manifestations, already provide an excellent base for developing this area of focus. In contrast, there is extensive existing capability within UNC, both at Morehead City (NCSU, UNC-CH) and Wilmington (UNCW), to conduct research that emphasizes the biological and physical sciences aspects of the coastal marine system. Hence, a unique priority for a northeast facility should be cultural and socio-economic aspects of coastal resource issues. Such an emphasis would:

- be well received by the citizens of the northeast,
- provide capacity that currently does not exist within the UNC System for cultural and socio-economic research in coastal areas,
- allow UNC to avoid duplicating laboratory facilities that already exist at Morehead City and Wilmington for biological and physical studies of the marine environment,
- not necessarily require a large complement of personnel, resources, or space for the programs to be initiated, and
- offer extensive opportunities for interinstitutional collaboration.

The focus on cultural resources and coastal management issues can build upon the unique strengths of existing ECU programs in maritime history, underwater archaeology and conservation, and coastal resources management. As a UNC doctoral-granting institution in closest proximity to northeastern North Carolina, ECU is prepared to make a substantial contribution to the new facility/programs from its existing resources. Specifically, ECU Chancellor Richard Eakin has offered to assign two or three faculty lines in Maritime Studies and one faculty line in each of the other three concentrations of the Coastal Resources Management Program (i.e., Ecology, Geoscience and Social Science) to a northeast facility in Dare County. ECU is willing to make this major contribution to strengthen a number of its academic programs and to enhance its
service to the citizens of northeastern North Carolina. ECU faculty members having coastal and marine interests also have established working relationships, such as collaborative research projects, with faculty at other UNC institutions. With the proposed ECU focus described above, a northeast facility should be attractive to faculty at other UNC institutions as a complementary, rather than competitive, resource in the marine sciences. The support services and basic equipment would be available to faculty of other UNC institutions. For example, a northeast facility would facilitate collaborative efforts between ECU's coastal/marine faculty, and the ECSU faculty serving the proposed Marine Environmental Sciences B.S. program. Such collaborative efforts between the two UNC institutions closest to the northeast region could build on their mutual strengths in the geosciences.

The northeast region appears ideally suited to research, outreach and monitoring efforts involving coastal processes. Shoreline stabilization and beach renourishment programs are of great interest to the local communities and governments. Dynamic coastal changes in the Wildlife Refuges and National Seashore offer many prospects for UNC to expand programs in this region. As described in more detail previously, there is an urgent need for better understanding of a variety of coastal processes. The U.S. Army Corps of Engineers facility in Duck provides a foundation to support such research through greater participation of the UNC marine sciences community.

Whereas water quality and other environmental issues are important throughout the state, it is apparent that at least some of the water quality issues facing the northeast can probably be understood more generically (i.e., with less site-specific information) than would be the case in other areas of potential programmatic focus. Tourism and fisheries obviously require clean water and healthy habitats, and the northeast has a unique setting. However, the current extent of environmental degradation does not seem as burdensome in the northeast as in the central and southern coastal regions of North Carolina. Moreover, there is extensive water quality research, most of it well funded, already taking place throughout the state. Thus, the Task Force concluded that water quality and related environmental research efforts need not be a major focal point for a new marine science facility in the northeast. This is especially true given what the Task Force considers to be other coastal development and cultural resource issues that can only be, or best be, addressed in the northeast.

Since virtually all of the six categories of potential program activity could be considered, in the broadest sense, as components of natural resources, the identification of a separate, descriptive focal area of natural resources is probably too general to be very meaningful. As a category it lacks a process-based context and, perhaps more significantly, there are various major functions already being performed by federal, state, and private interests. For example, there is the presence of the National Park Service, Nature Conservancy, U.S. Fish and Wildlife Service, and the Partnership for the Sounds, among others. However, a specific focus involving natural resources in the northeastern coastal region could involve relating species inventories to environmental monitoring data. An accurate database of the coastal aquatic and terrestrial species, including their changing populations and geographic distributions is a necessity.
Monitoring studies that record changes in coastal conditions would refer to the species inventory for cause/effect determinations, e.g. how are the observed environmental conditions correlated with changes in the flora and fauna of the region? Establishment of a causal relationship permits formation of specific chemical, biological, and physical questions and further investigations that serve to answer the “why” in the equation. It is simply not enough to know that there are changes and that changes influence coastal species without knowing why! In short, ecological research on the estuarine and coastal environments ultimately will improve coastal management and policy decisions in the northeast region.

Extensive fisheries research (e.g. environmental, biological, and food science components) already is being conducted by other on-campus and coastal (Morehead City and Myrtle Grove) centers, as well as by various state agencies or federally supported laboratories in North Carolina. In addition, some of the concerns of commercial fishermen in the northeast appear to center on offshore fishery resources. Fish-habitat issues and seafood processing technologies, on the other hand, could be addressed at a northeastern marine sciences facility. Work related to the ecology of the estuarine environments in the northeast also would be especially important in providing a better understanding of nursery habitats for various commercially valuable species.

The Task Force concludes that there are exciting and diverse opportunities for a marine sciences facility in northeastern North Carolina to address essential community needs and interests. UNC should develop a program of applied research, graduate and undergraduate education, and outreach around the theme of the sustainable future of the northeastern North Carolina coastal region. The activity could emphasize elements related to the study of coastal processes and the dynamic coastal environment, protection of its rich conservation resources (refuges, seashore, reserves, estuaries, etc.), preservation of the extensive cultural heritage of the region, and the study of socio-economic factors to improve the management of its precious coastal resources. Suggested priorities for specific programs include those summarized in Table 1.

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**Table 1.**

**Suggested Priorities for Marine Sciences Programs**

**In Northeastern North Carolina**

**Focus A. Coastal Resources Management**

- The northeast region endeavors to serve three kinds of tourists with its many attractions – surf and sun, heritage, and eco-tourists
- Concerns in the area stem in part from a greater emphasis on a tourist economy
- Exceptional opportunities exist to relate social and natural sciences to public policy issues of importance to the northeast region
- Activities would be well served by effective integration with the existing Coastal Resources Management Program at ECU

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Focus B. Estuarine and Coastal Ecology
- Similar estuaries are rare, and although critically important as nurseries for commercially valuable species, they are not extensively researched to date
- Preserving nursery areas may well be more significant to the well-being of commercial fisheries than any other kind of management
- Important research opportunities exist to link species inventories with environmental monitoring data to understand the origins of changes in the region’s flora and fauna
- Broad opportunities would be available for enhanced cooperation among UNC institutions and with the extensive conservation groups in the northeast region.

Focus C. Coastal Processes Research
- Barrier island and wetlands dynamics are critical to the northeast region’s future
- Better information on coastal processes is vital to effective coastal management
- The U.S. Army Corps of Engineers Field Research Facility (FRF) in Duck is an exceptional resource for coastal processes studies
- There would be extensive opportunities for improved collaboration across all UNC marine programs (ECSU, ECU, NCSU, UNC-CH, UNCW) and with the FRF

Focus D. Marine Archaeology and Maritime History
- This is an exceptional region for maritime history and marine archaeological research
- Activities in this focus area would be congruent with strong interests of local inhabitants in heritage tourism and for University education, outreach, and research efforts related to local history and the coastal environment
- A unique emphasis on cultural resources would minimize any duplication of other UNC marine sciences efforts
- Programs would build upon strengths of emerging programs and interests of ECU

The programs shown in Table 1 would address special community needs for greater educational access through cooperative efforts involving UNC. The suggested priority areas emphasize “niche” programs that would best exploit the unique setting of the northeast region. They also would leverage the resources in place at nearby UNC institutions, most notably the various ECU-based programs related to coastal issues and management. Resident “marine scientists” would be available to advise regional planners, conservation groups, or public school teachers and students, and to help develop new partnerships between agencies and groups responsible for the northeastern coastal environment. The UNC presence would strengthen the local economy and make student, staff and faculty resources available to serve community interests.
THE PROPOSED UNC CENTER FOR COASTAL STUDIES

A. Relevance to the Mission of UNC
There is outstanding potential for a UNC marine sciences facility to provide year-round educational opportunities centered about the theme of a sustainable future for the northeast coastal region. Such a facility would allow UNC to make major contributions to research and service in a relatively remote, but critically important, region of the state. It would provide a base for relevant and nationally competitive applied research addressing important issues related to the preservation and management of coastal resources, and to promote sound approaches to economic development. It also would provide a means to enhance UNC educational services, including distance and continuing education, to the region.

The northeast facility would serve other marine sciences and environmental programs in North Carolina. For example, ECSU would aid in the development of instructional programs through cooperative efforts with ECU and other UNC institutions. The facility also would enhance efforts of existing UNC coastal laboratories managed by NCSU, UNC-CH, and UNCW. It would not duplicate the primary focus of these other UNC programs on the physical or biological sciences components of marine sciences. Rather, the northeast facility would serve as a staging area and supporting laboratory to improve statewide research and outreach efforts in diverse areas such as environmental monitoring, coastal processes, estuarine ecology, and resources management. Specific regional priorities to be addressed within the mission of the proposed center were described in the previous section of the report.

B. Specific Objectives
1. Prospects as a site for supporting marine sciences degree programs offered by other UNC institutions
The facility would enhance field educational experiences of undergraduate and graduate students as a part of the existing instructional programs of the UNC constituent institutions (ECSU, ECU, NCSU, UNC-CH, UNCW). Students conducting coastal research, as a portion of their UNC degree programs, would have access to the new facility and its associated support to focus studies in the northeast region. Advanced courses would also be made available to visiting students and faculty, as well as residents of the area, who desire additional training or continuing education. These could be delivered in part via a distance learning approach if the new facility included appropriate computer, video, and networking infrastructure. Undergraduate courses could also be provided to the site using the Information Highway and Web-based instruction available through the other UNC institutions. For example, NCSU faculty routinely teach two marine science courses per year to students located at UNCW, and UNCW has likewise delivered marine sciences courses using this format. Both institutions would be eager to participate and assist as needed. Traditional instruction could be provided on site, at ECSU, or at the College of the Albemarle. The facility also could form a nucleus for the delivery or brokering of UNC baccalaureate completion or graduate programs in other areas of regional need beyond those more closely associated with the marine sciences.
2. Opportunities for marine sciences research (e.g. resident and visiting faculty, undergraduate and graduate students)

A northeast facility would provide the opportunity to initiate or expand research projects to include all coastal regions in North Carolina. Significant research would address the unique cultural resources of the region, including aspects of underwater archaeology and maritime history. The facility also would provide a focal point for coastal studies and encourage the development of natural and social science research to improve resource management practices. Much more must be learned about basic coastal processes, how they affect the resources of coastal North Carolina, and how the understanding of the region's natural processes could be extrapolated to other coastal environments. The marine sciences facility would serve as a catalyst to promote UNC multi-investigator projects of an inter-disciplinary and/or inter-institutional nature.

The location of the northeast facility and the associated core programs would create numerous research opportunities for graduate students, undergraduate students, and visiting or resident faculty. There would be a small complement of faculty from participating institutions (e.g., ECSU, ECU, NCSU, UNC-CH, UNCW) in residence at the marine center (see Section E for details on the support of faculty positions). In addition, an "academic hotel" with visiting senior researchers would provide the intellectual foundation, local expertise, and program continuity needed to make such a facility most successful. These billets would be filled to address the priorities previously outlined, and by faculty researchers whose research requires a substantial coastal presence to perform experiments or to access local resources. There must be adequate space in the facility for visiting researchers and instructors for continuous or intermittent periods, ranging from a few days to a year or more. Graduate students from UNC institutions would be a mix of those in "permanent residence" (mostly, but not exclusively under the direction of resident faculty) and those in "research residence" for shorter periods. The year-round complement of graduate students at the facility might be relatively small. The facility, including its provision of dormitory-style housing, also would support regional field trips and short-term (semester or less) research internships for students enrolled on the main UNC campuses.

3. Opportunities for outreach (e.g. continuing education, community service)

There are myriad opportunities for UNC to collaborate with governmental and private agencies and foundations in aspects of natural resources management and conservation. The two current NC Sea Grant extension agents in the northeast could be housed there to conduct various outreach programs. The NC Estuarine Research Reserve Program has a site manager for Currituck Banks who could also assist with outreach and educational programming if associated with the proposed facility.

Significant programming in cultural resources for the study and preservation of historical artifacts (shipwrecks, lighthouses, life saving stations) would contribute a substantial part to community service and the education of local citizens. The existing organizations (Outer Banks History Museum and historic preservation groups) provide
an opportunity for coordination of programs involving UNC to most efficiently utilize state and private resources.

The northeast facility could support regional extension activities and teacher training; provide information related to regional resources; enrich the community via lectures and short courses, and enhance the public service programs of various UNC institutions. The distance learning facilities mentioned earlier would also enhance the prospects for a broader delivery of educational services to the region. The facility would be a site that could support UNC continuing education, including conferences or workshops over a wide range of topics.

C. Comparison to similar units within the University and possible collaborative relationships or potential overlaps with them (e.g. UNC marine sciences facilities and programs in Morehead City and Wilmington)

Great care must be taken in the program development and identity of a northeastern North Carolina marine sciences facility. With the new marine sciences laboratories at Wilmington and Morehead City, as well as the extensive on-campus programs in marine sciences in four institutions (ECU, NCSU, UNC-CH, UNCW), UNC risks both spreading itself too thinly for the available resources and exacerbating rivalries rather than stimulating greater collaboration. Given the history of development of marine sciences in UNC and the deliberate strategy adopted to have four institutions offer relevant graduate research programs, considerable effort in coordination is necessary to insure that the collective capability is greater than the sum of its parts. Building a program for the North Carolina northeastern center that focuses on the particular environments and needs of the region and facilitates multiple institutional use is essential to its success. The earlier section of this report (Priorities) provides extensive guidance on suggested programmatic areas that would best complement other marine sciences programs in the state and that also would address significant regional needs and interests.

A northeastern facility provides a unique opportunity for NC universities collectively to develop a greater niche in North Carolina coastal research. It is imperative that the marine sciences community develops effective mechanisms by which it may deliver a coherent message on the value of marine research and monitoring to the lay public. The barrier islands in the northeastern region provide such a venue for they have the vacationing populations, and UNC institutions together may provide the information that will drive the message. Internet and multimedia presentations could supply computer-based vignettes of research carried out in UNC and how it addresses state and national needs in coastal and ocean sciences. The marine archeology that already goes on in the northeast is an ideal initial subject for intense citizen interest. A staging area for such activities, as well as facilities for environmental monitoring, ecology, and coastal processes research activities carried out by other UNC programs in marine science, should be available in this region. The value of such a program, when placed in the proper context of education and outreach, can provide the public support base for further marine research enhancement within UNC.
In summary, goals for a facility in the northeast would include the following:

- to promote and enhance the coordinated efforts of five UNC institutions in their marine sciences programs,
- to demonstrate to the state's constituents the societal value and benefits of marine research,
- to foster an integrated approach to marine sciences that addresses aspects of regional economic development, coastal management, sustainable resources, and ecosystem health,
- to provide a means to enhance UNC educational services and outreach to the region, including distance learning and continuing education courses.

Thus, a northeastern facility would augment and enhance each of the existing UNC programs in the state by promoting their individual research efforts, provide a venue for promoting interinstitutional cooperation, and at the same time develop a new opportunity for the University to produce a national resource for marine-related information. This would not be detrimental to any existing program, and in fact would enhance individual efforts to promote research and outreach. The northeastern facility would provide unique capabilities in the cultural and socio-economic aspects of marine sciences, and would place a much needed staging facility in the northernmost region of the state for use by existing programs.

D. Possible cooperative relationships with other marine-related institutions, agencies, or organizations

There are outstanding opportunities for collaborative relationships, particularly with the agencies responsible for conservation lands. These cooperative efforts could include: NC Sea Grant, NC Estuarine Research Reserve, U.S. Army Corps of Engineers, NC Museum of Natural Science, NC Museum of History, NC Department of Environment and Natural Resources, NC Department of Cultural Resources, NC Division of Marine Fisheries, National Parks, Wildlife Refuges, local counties and cities, and many of the historical or environmental preservation organizations (see Appendices 4 and 6). There are numerous Federal agencies that would have an interest in the area, based on competitive research projects that highlight the specific virtues of the area as a study site. The Department of Interior, with its responsibilities for the wildlife refuges and national seashore, seems particularly interested in enhanced cooperation with UNC. Finally, there would be opportunities for cooperative ventures with neighboring states such as Virginia and Maryland that share regional concerns including coastal development and management issues.

E. Estimated needs and funding requirements (e.g. for land, capital facilities, equipment, program support)

A phased approach would be used for funding for the proposed center. Basic support provided through a supplemental budget request would initiate core operations and allow planning and design for a permanent facility starting as early as Fiscal Year 2001 (Phase I). Capital funding for a new facility also would be considered and integrated into the overall University plan for capital facilities financing (Phase II). Details on the
anticipated Phase I and Phase II budget requests and estimated funding requirements are outlined below.

**Phase I: Initiate Core Programs (FY2001 Request)**
The initial facility operations would focus on socio-economic studies related to coastal resources management, research on cultural resources such as marine archaeology and maritime history, and outreach programs such as NC Sea Grant extension. The facility would serve as a staging area to facilitate experiments and field trips organized by the participating UNC institutions. The temporary facility also would house core faculty and administrative staff offices, and provide limited space for instruction, distance education, and research programs.

New state appropriations will be essential to provide for the initial core funding of the proposed center. An estimated $1.1 million will be needed on a continuing basis to provide for the following annual operational costs:

- **Support Staff (Director, Administrative Assistant, Technical Support and Other Staff Positions): Salaries and Fringe Benefits:** $250,000
- **Resident and Visiting Faculty (2-3 New Positions): Salaries and Fringe Benefits:** $200,000
- **Student Support (e.g. Research Assistantships, Undergraduate Fellowship Programs, Student Housing Costs):** $50,000
- **Leasing of Temporary Facilities:** $100,000
- **Other Operating Costs (Maintenance, Supplies, Communications, Travel):** $100,000
- **Scientific and Computing Equipment and Network Infrastructure:** $100,000
- **Funding of Research, Education, and Outreach Projects:** $200,000
- **Support for Staging Area (Laboratory, Dock Access, and Storage Space):** $100,000

The participating UNC institutions would also contribute resources to the operations of the proposed facility, primarily in that faculty and students employed or enrolled at the home campuses (ECSU, ECU, NCSU, UNC-CH, UNCW) or marine sciences institutes (CMAST, CMSR, ICMR, IMS) would be involved in the educational, research, and outreach programs. The UNC institutions would be expected to provide visiting faculty and students to enhance the quality and scope of programs. Funded research projects from external agencies also would be used in part to support UNC investigators or staff using the facility (see Section F, below).

It is important to recognize that no UNC institution is in a position to reallocate its resources to fund the core programs of the proposed center as defined above. Those funds must be provided by new state appropriations. However, as the doctoral-granting institution within UNC that is in closest proximity to northeastern North Carolina, ECU is prepared to make a substantial commitment to the new facility from its existing operating budget. Specifically, ECU Chancellor Richard Eakin has agreed to assign two or three faculty lines in Maritime Studies and one faculty line in each of the other three concentrations of the Coastal Resources Management Program (i.e., Ecology, Geoscience, and Social Science) to a northeast facility in Dare County. ECU is willing to make this major contribution to strengthen a number of its academic programs and to
enhance its service to the citizens of northeastern North Carolina. A focus on cultural resources and coastal management issues will build upon the unique strengths of existing ECU programs in maritime history, underwater archaeology and conservation, and coastal resources management. Thus, assuming new state funding for the core operations coupled to the ECU commitments, there would be as many as 7-10 faculty positions initially supported in the northeast facility.

In addition to the continuing funding requirements just described, an estimated $1.3 million in one-time funds would be needed to address immediate facilities needs, including temporary space and associated office and laboratory equipment, as well as initiating the design process for a permanent marine sciences facility for the northeast. It is anticipated that land for the facility, preferably to be located on Roanoke Island, could be made available through local resources.

**Phase II: Construct New Facility and Expand Core Program Support**

Construction of a marine sciences facility would follow the concept of a flexible multi-purpose building(s) that would accommodate a wide range of activities such as the housing of visiting students and faculty, core laboratories, distance learning facilities, and space for other instructional and outreach activities. It is envisioned that the new construction would provide about 50,000 gross square feet (31,000 estimated net square feet), with specific components possibly to include:

- Dormitory Housing for Visiting Students and Staff (at least 25 person capacity)
- Visiting Faculty Housing (3-5 apartments)
- Classroom Space (laboratories and lecture rooms)
- Seminar/Conference Rooms
- Distance Learning Center (video conferencing, internet, and multimedia facility)
- Resource Room (computers with internet access, maps, library)
- Marine Archaeology/Ecology/Coastal Processes Research Laboratories
- General Office Space for Faculty, Staff, Students
- Staging Area Facility (equipment and material storage room, small laboratory, dock, boats, ground transportation)
- Other Support Facilities (shop, receiving and supply room, administrative offices, outreach program offices)

It is projected that the construction cost would be on the order of $10 million based on an average cost of about $200 per gross square foot for a combination of academic, housing, and laboratory space. Costs could run as high as $275 per gross square foot depending on the extent of specialized facilities and laboratories. An additional $2 million would be required for final design and construction contingencies (8% of total budget) and for additional office and laboratory equipment and essential information technology resources. With the advent of the new facility, the continuing operations budget also would need to be increased from $1.1 million to an estimated $2 million annually. This would provide for expanded building operations and associated maintenance (annual cost is approximately $8 per gross square foot), and would accommodate a slight increase in core faculty and staff to deliver a broader scope of essential programs and services.
In summary, construction of the new marine sciences facility as outlined above would require capital funding of approximately $12 million in Phase II. Once in full operation, the facility would require about $2 million in annual core operating funds to cover essential administration, faculty and staff, basic educational and outreach programs, and facility operating costs. These should be provided by the state, and would be leveraged by external funds devoted largely to applied research programs (see Section F, below).

**F. Potential funding sources (e.g. government and private sector)**

Substantial non-university funding, for example from federal agencies involved in coastal ocean sciences, could be developed for the research programs. UNC institutions or institutes, currently funded externally, would provide some resources to the new facility in return for enhanced access to the northeast coastal region. In addition, there would be various opportunities to seek new governmental and private funds directed specifically to new research or outreach projects undertaken by the northeast facility. In the long-term, it would be anticipated that the bulk of programmatic support would be obtained from non-state appropriations. This is typical of other UNC centers and institutes that, on average, generate several-fold more in external funding than they obtain from continuing funds provided by line-item appropriations by the NC General Assembly.

Basic science studies conducted out of the northeast facility could be supported by a variety of National Science Foundation programs. However, federal mission agencies with coastal resources management responsibilities are likely to be a better source of funding for both research and outreach activities. The mission agencies have a strong interest in the northeast region, in part because the area contains a National Estuarine Research Reserve Program site, several national parks and extensive wildlife refuges. Moreover, these mission agencies have responsibilities with respect to: water quality, fishery stocks, wetlands, shoreline erosion, and inlet stabilization, as well as other coastal resources and characteristics.

Coastal management is the responsibility of the National Oceanic and Atmospheric Administration (NOAA). Units within NOAA that support coastal research include: the Office of Coastal Resources Management, the Coastal Services Center (located in Charleston, SC), the Coastal Ocean Program, and the National Marine Fishery Service. Several different programs of the U.S. Environmental Protection Agency support research on coastal water quality issues. The U.S. Army Corps of Engineers funds both basic and applied research related to coastal erosion and inlet stabilization. Funding for wildlife research can be obtained from the U.S. Fish and Wildlife Service. The National Park Service has funds to support research related to coastal park management issues. Agencies such as the above should be quite receptive to funding research at a northeast facility because of the rapid growth and coastal resource management concerns, and because the existing scientific data on this important coastal region are quite limited.
G. Possible organizational structure for the proposed center

The most appropriate organizational structure appears to be that of a UNC interinstitutional center (see Appendix 5). This governance model allows the President of the University of North Carolina to retain authority for administrative oversight, while also requiring that the UNC Board of Governors provide formal approval for authorization to establish the center and to conduct periodic reviews of its operations. Thus, a formal interinstitutional structure for a proposed UNC Center for Coastal Studies will ensure and encourage the participation of the five UNC institutions, and facilitate cooperative efforts with groups external to the University.

The UNC President designates a lead institution to serve as the administrative unit to manage daily operations of an interinstitutional center. In this instance, ECU is strongly recommended to lead the effort because of its proximity and various relevant programmatic initiatives in coastal resources management, maritime history, and marine archaeology. As indicated in the earlier discussion of possible programmatic thrusts and priorities, four other UNC institutions (ECSU, NCSU, UNC-CH, and UNCW) would all have significant roles to play as cooperating institutional participants. ECSU would use the facility to enhance its efforts to develop a Marine Environmental Science B.S. program, and could provide some faculty support for related instructional programs. ECSU also has a special relationship with ECU in the region and would work cooperatively on aspects of the instructional programs delivered through the new facility. Because of its Land Grant institutional mission, including the emphasis on applied research, extension and outreach programs, NCSU would make major contributions to the activities of the center. Along with ECU, NCSU would leverage a substantial base of existing research and outreach programs in the northeast by supporting the new facility. UNC-CH and UNCW also would benefit significantly from greater access to the northeast coastal region, for example to enhance research and educational programs on coastal processes and related physical and biological sciences studies. All five UNC institutions would be very useful resources in providing assistance and advice on outreach and environmental monitoring and ecology programs, as well as on the development of distance learning courses.

An Advisory Board, involving representatives of various stakeholder groups, would be established to assure that the facility would develop a balanced approach to serving the collective needs of the region related to coastal issues. A Policy Board, made up of representatives from the five participating UNC institutions, would provide guidance to the Director regarding operating policies and procedures. The Policy Board would establish operational goals, monitor performance, and assure that cooperative programs between the University and organizations in the region become a reality. It would help to coordinate consortial arrangements and to resolve issues concerning competing priorities or logistical matters.

The Director of the UNC Center for Coastal Studies would be appointed by the UNC President, and would report directly to a senior administrative official at ECU, as designated by the ECU Chancellor. This assumes, of course, that ECU would serve as the administrative unit for the center.
H. **Appropriate entity to provide detailed planning for the construction of the facility and associated programs**

In 1998, the UNC Marine Sciences Advisory Board was established by the UNC President and chaired by the Associate Vice President for Research at the UNC General Administration. This is a coordinating body made up of two representatives from each of the five UNC institutions involved in marine sciences programs. This body would establish a planning subcommittee, preferably chaired by a representative from ECU, and including external consultants and representatives of the northeast region, as appropriate. The planning subcommittee would develop the detailed plans for construction of the new facility and the initial strategies necessary to carry out its mission. Continuing consideration of regional and state needs would be paramount in defining the ultimate structure of the facilities and programs. The Dare County Task Force on Higher Education would help to coordinate ongoing regional involvement in the planning process for the new facility and programs.

**ENDORSEMENT OF THE REPORT BY THE COUNTIES OF DARE, HYDE AND TYRELL**

(This section to be provided subsequent to the review of the draft report by local officials)
APPENDIX 1
UNC MARINE SCIENCES REPORT:
SPECIAL RESOURCES, FACILITIES,
AND RESEARCH PROGRAMS

MAY 15, 1998
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## II. INTERINSTITUTIONAL PROGRAMS

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I. INSTITUTIONAL PROGRAMS

A. ECU INSTITUTE FOR COASTAL AND MARINE RESOURCES
The Institute for Coastal and Marine Resources was established in 1969 as an organized research unit of East Carolina University. For the past decade, the research activities of the Institute have been concentrated on estuarine/coastal ecology, marine fisheries, and coastal social science and policy. The ecological work of the Institute has been focused on nutrient cycling in estuarine systems, benthic community ecology, and estuarine dependent marine fisheries. The coastal social science and policy studies have focused on modeling the economic strategies of small-scale fishermen and wage laborers in coastal communities, social structural determinants of innovation diffusion among commercial fishermen, and an understanding of labor recruitment and labor migration processes in the seafood processing industry. Much of the Institute's estuarine work is undertaken in collaboration with ECU Department of Biology faculty. Similarly, the social science work is often done in collaboration with faculty of the Department of Sociology/Anthropology. Funding for the Institute's programs is provided by a variety of state and federal agencies. Research programs emphasize coastal resource use issues of importance to North Carolina.

B. NCSU MARINE SCIENCES PROGRAMS
NCSU has strong and highly regarded marine sciences programs in teaching, research and public outreach consistent with its Research I-Land Grant University status. Faculty from six different colleges are involved in the broad aspects of the marine sciences. The program reflects basic and applied research interests and expertise in the Colleges of Agriculture & Life Sciences, Engineering, Forestry, Physical and Mathematical Sciences, Textiles and Veterinary Medicine. Graduate level marine science degrees are offered in the Department of Marine, Earth and Atmospheric Sciences within the College of Physical and Mathematical Sciences. Following the recent planning authorization from the Board of Governors, NCSU also is preparing a proposal to establish a BS degree program emphasizing the physical science aspects of the marine sciences.

Basic research at NCSU covers diverse fields ranging from the numerical model predictions of atmospheric coastal storms and subsequent flooding, to beach erosion, to the genetics and reproduction of fish species, to the epidemiology of marine mammals, to improving fishing gear and the safety of seafood products, to evaluating water quality.

Center for Marine Science and Technology (CMAST)
An historical constraint facing the NCSU marine sciences program has been the lack of access to a coastal laboratory and research facility (although NCSU does operate applied fishery research and
extension aquaculture facilities at Aurora, and at the Vernon James Center in Plymouth). The 1995 session of the General Assembly appropriated funding for an NCSU coastal teaching and research facility, to be located on the Carteret Community College campus, and added funding during the 1997 session for two additional floors. Present plans are for a four-story building of about 51,000 gross square feet. Current funding levels allow the initial upfitting of one floor. The facility will be called the Center for Marine Sciences and Technology (CMAST) and has been designed by NCSU marine sciences faculty with the planning authorization granted by the General Administration in 1996. Submission of the request for authorization to establish CMAST is contingent upon the naming of an Interim Director, and an internal search is underway. Programmatic interactions with Carteret Community College also are in the initial planning stages. Facilities to be shared with the nearby UNC-CH Institute of Marine Sciences include a boat dock, student dormitories and sea water laboratories.

Special Facilities
Examples of other NCSU special facilities for marine sciences include:

- Facility for Ocean/Atmosphere Modeling and Visualization, which includes a computer network to predict and visualize storms, coastal flooding and trajectories of fish larvae;
- High Resolution Picture Taking Satellite Receiving Station for collection of infrared and visible imagery to produce sea surface temperature maps used to locate coastal water masses, storms and fishing hot spots;
- Light Stable Isotope Facility including ratio mass spectrometers to track the source of river nutrients;
- Global Positioning Satellite (GPS) receivers and geophysical field equipment to assess shoreline retreat and sources of groundwater in the coastal environment;
- Seismic, Ocean Margin Sequence Stratigraphy Facility to evaluate sources of sand for beach and highway renourishment;
- Toxic Algal Bloom Simulation Laboratory;
- Marine Laboratories: in-vertebrate physiology; marine phytoplankton; marine mammal triage; marine mammal pathology; biotelemetry; fish growth; and aquaculture.

These facilities support programs in coastal meteorology, estuarine and coastal processes, global climate change, paleoceanography, sea-bed studies, marine geochemistry, marine geophysics, marine hydrogeology, marine sedimentary geology, physical oceanography, satellite oceanography, marine and resource economics, biological and agricultural engineering, wetlands
and coastal botany, chemical oceanography, marine engineering, marine mammal and special
species medicine, sea food science, marine science education, marine microbiology, pathology and
parasitology, coastal soil science, textiles derived from shellfish byproducts, fisheries
oceanography, coastal ocean severe storms forecasting, coastal and estuarine flood forecasting,
estuarine plume dynamics, sea ice estimates, barrier island migration, sea level rise, and marine
minerals exploration.

The NC Office of the National Weather Service is on the NCSU Centennial campus and has
developed a marine storm forecast facility with NCSU scientists. A computer model developed by
NCSU scientists is now used operationally by the U.S. Weather Service to forecast areas of
coastal flooding during winter storms and hurricanes. Three NWS Doppler radar systems monitor
the coastal plain and continental shelf atmosphere and transmit data routinely to NCSU scientists
and weather service forecasters. This collaborative effort has resulted in the Raleigh-Durham
NWS office receiving a National Oceanic and Atmospheric Administration Unit Citation award, the
only field office ever to be so recognized by NOAA.

C. UNC-CH MARINE SCIENCES PROGRAMS
The UNC-CH Marine Sciences Program is comprised of the Department of Marine Sciences
(MASC) and the Institute of Marine Sciences (IMS). The faculties, facilities and resources of these
two units complement one another, forming an exceptionally strong, nationally recognized activity.
Located on the Chapel Hill campus, the Department of Marine Sciences is the academic unit to
which students are admitted and through which degree programs (M.S., Ph.D., undergraduate
minor) are administered. Teaching and research are fundamental to its mission, and all Department­
based faculty engage in both. The Institute of Marine Sciences, located on Bogue Sound in
Morehead City, is primarily a research and training facility. Graduate students who choose to work
with faculty members at the Institute spend their first year in Chapel Hill completing required
coursework before moving to the coast. Undergraduates receive nearly all of their instruction in
Chapel Hill, but may take summer field courses and do internships at the Institute to gain practical
experience. Both Program units engage in public service activities; the Institute places a special
emphasis in this area.

Interdisciplinary in scope, the Program encompasses the activities of 35 professional scientists -- a
core group of 17 full-time faculty members (9 in MASC, 8 at IMS) plus 6 jointly appointed faculty
based in other UNC-CH departments (i.e., Biology, Geology, Environmental Sciences and
Engineering) and 12 adjuncts. Thirty-two M.S. and Ph.D. students currently are enrolled in
Marine Sciences, and at least a dozen students enrolled in other departments conduct marine
sciences research and claim core faculty members as major advisors. More than 70 scientific projects supported by extramural grant funds are administered by Program scientists. Some of these projects take faculty and students to the far reaches of the globe (e.g., Antarctica and the Arctic Circle, Northern Europe, Amazonia, the hydrothermal vent system near the Galapagos Rift in the Pacific Ocean), but the majority are conducted closer to home, many in North Carolina's estuarine, coastal and offshore waters. A significant number specifically focus on addressing environmental concerns, and several involve collaborations with scientists from other institutions and countries.

An external review conducted in 1997 by a team of experts placed the UNC-CH Marine Sciences Program among the best in the nation. The review reinforced earlier National Research Council rankings and reflected a decade of National Science Foundation funding statistics that consistently placed the Program among the top 15 to 20 (out of ~140) receiving grant support from its Ocean Sciences Division. The uniformly high quality of faculty and students was specifically noted. In addition to assessing its national stature, the reviewers looked at the Program's role within the University and concluded that "The blending of graduate education, research and service throughout the Program provides value to the University far beyond what budgets and numbers of faculty members would indicate." They also expressed enthusiastic support for Marine Sciences as "one of the cornerstones" of UNC-CH's new Carolina Environmental Program (The CEP graduate curriculum will draw heavily on MASC faculty and course offerings, as will the new undergraduate major in Environmental Sciences).

The Department of Marine Sciences
Formerly the Curriculum in Marine Sciences, this interdisciplinary unit was established within College of Arts and Sciences in 1968. It emphasizes graduate teaching and research. Departmental research strengths are in coastal physical oceanography, marine geochemistry and geological oceanography. Current projects include observational studies of Gulf Stream dynamics, coastal air-sea interaction processes and the geology of carbonate environments; numerical modeling studies of biological and physical processes in coastal oceans and shallow seas; and field and laboratory investigations of biogeochemical cycling in organic-rich coastal environments, biogenic trace gas production and transport, the geochemistry of sediments and sediment/water exchanges, and processes affecting the geology of earth's continental margins. These projects are aimed at securing scientific information that may be practically applied in addressing environmental concerns about water quality degradation, the worldwide decline in ocean fisheries, sea level rise, diminishing energy reserves, atmospheric pollution, global warming and climate change.
The Department's location on the main campus in Chapel Hill fosters interactions with faculty, students and staff from other UNC-CH departments, nearby research institutions (e.g., Duke, NCSU) and companies (e.g., Glaxo-Wellcome); places scientists within easy reach of RDU International Airport, allowing for the convenient transport of equipment and personnel to distant ports and field locations; and provides ready access to RTP's advanced computational resources. Coastal access for field studies and instruction is provided by the Institute in Morehead City. When a new wing is completed at the Institute in Summer 1998, shared and flexible laboratory space also will be available there.

The Department houses faculty, student and staff offices; conference and seminar rooms; research and teaching laboratories; computer rooms and a storage room for field equipment. Some of the laboratories are equipped for general studies, while others are customized to meet unique faculty research needs. Observational instrumentation includes a suite of current meters and temperature/pressure sensors, near-bottom and sub-bottom water samplers and profilers, and a specially built sensor and data system for aircraft sampling of the coastal ocean and atmosphere. Specialized analytical equipment includes low background alpha, beta and gamma detectors, a dedicated organic mass spectrometer system, a state-of-the-art isotope ratio monitoring mass spectrometry facility for compound specific carbon analyses, high capacity light- and temperature-controlled incubators, and a full range of specialized chromatographic and spectroscopic gear. Computational facilities consist of a local network of high performance Unix work stations, Macintosh and IBM-compatible personal computers, b/w and color printers, scanners and communication devices for observational instrumentation. Direct, high-speed access to the coNCert network, Internet, and the North Carolina Supercomputing Center is available throughout the Department.

The UNC-CH Institute of Marine Sciences

The Institute was established in 1947 as the Institute of Fisheries Research. Its name was changed in 1967 to better reflect the broad range of investigative projects being conducted by its scientists. The Institute's primary mission is to "serve the state and nation through the conduct of high quality basic and applied marine sciences research." However, most IMS faculty members also hold appointments in the Department, participate in the training of students, and teach a select number of courses as well. Institute research strengths are in marine ecology/chemical ecology, coastal marine geology and coastal physical oceanography. Major projects include observational and computer modeling studies of shallow water circulation processes and field and laboratory investigations of coastal sedimentary processes, ecological factors controlling the organization of reef systems and soft sediment benthic communities, marine natural products and their potential for
biotechnological development, and the effects of microbially-mediated nitrogen cycling on estuarine and nearshore water quality. The direct application of information gained from these projects has already resulted in improved fisheries (particularly shellfisheries) practices and aquacultural techniques, the development of a coastal circulation mode, used to forecast storm surge and flooding during Hurricanes Bertha and Fran, improved strategies to build dunes for protecting home owners and municipalities from storm erosion, and the patenting and licensing of a group of naturally occurring marine compounds for commercial development as sunscreens. The above projects also contribute to the body of scientific knowledge upon which responsible environmental management strategies must be based.

The Institute is strategically located in the state's central coastal region on 6.5 acres of waterfront property on Bogue Sound in Morehead City. The region is rich in estuarine and wetland habitats and includes the large embayments that are typical of North Carolina's coast and tied to much of its seafood production. A deep water port offers ready access to these embayments, as well as the ecologically significant Cape Hatteras and Cape Lookout areas. Other nearby marine sciences and related facilities include the North Carolina Division of Marine Fisheries, the NCSU Seafood Laboratory, Duke University Marine Laboratory, the NOAA/National Marine Fisheries Service, and the NOAA/National Weather Service Center. Opportunities for collaboration abound and will expand when the new NCSU Center for Marine Sciences and Technology (CMAST) facility on the Carteret Community College campus is completed in 1999.

Coker Hall, the Institute's 30-year-old main building, houses offices, a library, a small seminar room, a darkroom, a computer room with network connections to university and regional computing facilities (to be upgraded to a T1 line in 1998), 10 regular research laboratories, 4 large laboratories supplied with running seawater, and a small, temporary shop facility. Outdoor ponds provide seawater habitats for controlled experiments. A separate dormitory offers short-term bunking accommodations for up to 24 students.

Over the next 2 years, these facilities will be substantially enhanced. Construction of a new 30,000 sq. ft. Coastal Processes and Environmental Health Laboratory wing is scheduled to be completed in June 1998. The building will house 20 individual faculty laboratories (12 finished, 8 "shelled out"), 9 faculty and postdoctoral offices, 2 environmental chambers, a 100-seat seminar facility and a small conference room. "Shelled out" labs will be reserved for new and visiting faculty and furnished as funds become available. A smaller, 8000 sq. ft. Fisheries Research Laboratory with a new running seawater system and dock should be completed in Spring 1999. It will contain a shop, dive lockers, 7 wet labs (2 dedicated to NCSU), 2 specimen sorting rooms, a
walk-in cooler and storage space. In addition, the Institute -- through a unique partnership agreement with NCSU -- will share new dormitories (located at IMS), a televideo classroom with an IH Down Link (located at Carteret Community College), and a fiber optics connection with CMAST. These enhancements will provide not only better facilities to accommodate the Institute's expanding research and training activities, but also shared, flexible space for collaborative studies with colleagues from the Chapel Hill campus and other institutions. A fleet of trucks, 14 outboard motor-powered boats ranging in length from 13 to 27 feet and a modern 47-ft. coastal vessel, the R.V. Capricorn, are available for field studies. The R.V. Cape Hatteras, a fully-equipped 135-ft. oceanographic ship operated by the Duke/UNC Oceanographic Consortium, is docked just minutes away.

D. UNCW CENTER FOR MARINE SCIENCES RESEARCH
The Center for Marine Sciences Research at the University of North Carolina at Wilmington (UNCW) was established in 1986 to consolidate and coordinate research efforts in the area of marine sciences. With the cooperation of the university science departments, over 42 scientists are engaged in challenging research with foci at local, national, and international levels.

The Center for Marine Sciences Research is dedicated to providing an environment which fosters a multidisciplinary approach to questions in basic marine research. With faculty from the Departments of Biological Sciences, Chemistry, Physics, and Earth Sciences, the Center encourages basic and applied research in the fields of physical, chemical, and biological oceanography, coastal and wetland studies, marine biomedical and environmental physiology, marine biotechnology and aquaculture, and marine geology. The Center supports research programs which augment the educational experience in marine sciences provided by UNCW. In close cooperation with the university's science departments, the Center promotes participation of undergraduate students in marine sciences research along with resident scientists, visiting scientists and graduate students. In addition, the Center manages the NOAA National Undersea Regional Research Center and hosts the North Carolina Sea Grant Extension Service and the North Carolina National Estuarine Research Reserve Program. The Center operates a fleet of 12 boats, including the new 65 foot, R/V Cape Fear, which are available to faculty and students for research and teaching operations ranging from shallow estuarine to offshore environments. Also available are a staff to operate and maintain the fleet. The Center provides a fully-equipped machine shop to support research projects, and has on staff a marine engineer to assist in technical questions related to research projects.
Oceanography Research

Scientists at the Center conduct oceanographic research in the shallow continental shelf, the variable slope region, the continental rise, the continental margin and the ocean basin including the continental abyssal plains, trenches and ridges. Continental shelf and slope studies include investigation of the taxonomy, biomass and ecology of benthic microalgae, demersal zooplankton, and macrofauna in sediments and seawater from the continental shelf. Investigations of shelf hardbottom-associated algae and invertebrates, soft-bottom communities, and links between these two habitats are being conducted to identify factors controlling these systems and to determine the importance of trophic links between different habitat types. The coupling of benthic productivity with other parts of these ecosystems, including reef fishes, will shed light on the complex issue of fish population dynamics.

Artificial reef studies are being conducted to provide better understanding of how fishes utilize artificial reefs with respect to feeding, reproduction, and other behaviors and to determine how the benthic communities on and adjacent to these reefs function compared to those on natural hardbottoms. Important questions include whether these reefs increase the numbers and biomass of fish, or whether they cause existing fish to congregate in the reef area, and whether artificial reefs develop a resident community functionally similar to natural hardbottoms.

Atmospheric deposition can be a significant source of nitrate and ammonium, and possibly of other nutrients, to surface coastal seawater, and even additions of rain to seawater can at times stimulate production of chlorophyll. Nutrients, in particular dissolved silica from biogenic silica, can also be delivered to the water column from the pore waters in marine sediments. The relative importance of these processes is under investigation by UNCW scientists. Investigation of the chemical defenses of soft-bodied marine invertebrate organisms, particularly sponges and corals, currently focuses on the role of secondary metabolites present in the tissues of these animals as anti-predatory and anti-fouling agents. These agents are possible sources of new drugs from the sea.

Marine Biomedical and Environmental Physiology

This program couples marine and non-marine systems and uses cellular and physiological techniques to answer questions related to basic biological mechanisms and related health care problems. The goal of this program is to bridge the gap between marine and medical research. For instance, biomineralization research is aimed at understanding the mechanics whereby organisms form and regulate calcium salts in the skeleton. Experimental systems include vertebrae bone formation and skeleton formation in invertebrates, particularly crustaceans. 

Crustacean
physiology research is taking advantage of the relative simplicity and accessibility of the respiratory, osmoregulatory, and nervous systems in crustaceans. Investigations are in progress to determine the means by which these organisms facilitate the movement and utilization of gases and ions across the gills. Also being examined is the question of how specific sensory systems are utilized to generate coordinated movements.

**Coastal and Estuarine Studies**

The coastal areas of North Carolina are characterized by highly productive sounds, tidal creek estuaries, and a shallow coastal ocean region. These areas support economically important fisheries as well as a variety of recreational activities. UNCW is located near a number of tidal creek estuaries, some of which are experiencing dramatic development. They are located near the Masonboro Island component of the North Carolina Estuarine Research Reserve. This proximity to both developed and protected habitats provides a good opportunity to examine the influence of development on coastal systems as well as the linkages between tidal creek, sound, and near-shore ocean environments. In this context, a variety of multi-disciplinary projects have been funded by the EPA, North Carolina Sea Grant, New Hanover County, private organizations, and other sources to assess the chemical and biotic status of these systems, trophic interactions, effect of development, and fisheries dynamics.

The Cape Fear River represents the largest river system wholly within North Carolina. The proximity of UNCW to the lower reaches of the Cape Fear River presents an ideal opportunity to examine the estuarine component of a large riverine system that serves as an important center for fisheries and shipping while receiving agricultural and industrial inputs from large areas of eastern North Carolina. Studies of the Cape Fear River seek to understand the biotic and chemical dynamics of this system in order to better understand how it may respond to natural and human-induced changes. Efforts also focus on using this system as a model for examining the basic functioning of estuarine habitats. The Cape Fear River Program, representing a consortium of industry, local government, state government and university interests, provides a nucleus of background information on water quality, planktonic production, benthic communities and fish populations. Research funded by other agencies, including among others, the U.S. Army Corps of Engineers, EPA, and the North Carolina Water Resources Institute, targets specific questions related to the estuary.

**Marine Biotechnology and Aquaculture**

Marine and aquatic organisms are used in environmental technologies, as sources of natural products, animal feeds or food, or sold as horticultural crops. Improvements in the applications of
marine and aquatic organisms will require natural products research, aquaculture development, tissue culture methodologies, and molecular and biochemical studies of marine organisms and populations. UNCW scientists are developing tissue culture of marine plants for use in environmental restoration and to improve the horticultural and agricultural industries. Scientists aim to discover how chemical cues affect settlement of invertebrate larvae. Applications include creation of new biological reefs and control of biofouling. DNA fingerprinting methods are being used to study populations of marine organisms to determine the impact of exotic species or those transported by shipping practices. Scientists are using the primitive immune systems of sharks, tunicates and fish to understand how the human immune system works. Further, aquaculture activities have intensified with the recent addition of mutton snapper and summer flounder projects. The mutton snapper is a promising species for aquaculture.

**Marine Geology**

Marine geologists study the coastal plain, marine marshes, beaches, the continental shelf, and the deep ocean floor. Research activities include the study of rocks, sediments, fossils, geophysics, structure, geochemistry, and stratigraphy.

Much of the work in marine geology has the goal of understanding human impact on physical processes and biotic resources. Specific projects include inlet dynamics, shoreline erosion/migration, storm impact, and the long-term evolution of headland and barrier coastal reaches. These studies provide essential data required for the management of coastal resources. Innershelf/shoreface studies are designed to determine the geologic properties of the innershelf and shoreface. Investigations focus on cross-shore sediment transport, sand resources, and distribution of hardbottom types and their role in supplying new sediment. Data from these studies allow the prediction of the fate of artificially replenished beach sands and their impact on environmentally-sensitive hardbottom areas. Isotopic studies to determine fluctuations in ocean water composition will help determine long-term variations in environment, including climatic, oceanic, tectonic, and biotic change, for the continental margin of eastern North America. A variety of geochemical investigations, ranging from applied environmental studies to global chemical geodynamics, are underway. These include the study of sub-seafloor hydrothermal systems, isotopic studies of oceanic rock, the examination of sedimentary porefluids in active and passive margins, and the chemical and isotopic analysis of microfossils to constrain paleo-ocean and atmospheric chemistry.
II. INTERINSTITUTIONAL PROGRAMS

A. COOPERATIVE INSTITUTE FOR FISHERIES OCEANOGRAPHY (CIFO)

The University of North Carolina (UNC) entered into an agreement with Duke University and the National Oceanic and Atmospheric Administration (NOAA) to form the Cooperative Institute for Fisheries Oceanography (CIFO) in March 1989. Its purposes are to:

- Coordinate existing research among NOAA, Duke University and the University of North Carolina in fisheries oceanography;
- Serve as a Center from which scientists, engineers and resource economists may focus on fisheries oceanography problems in the South Atlantic Bight;
- Stimulate the training of scientists and engineers in the disciplines involved in fisheries and oceanographic sciences.

An Executive Board (appointed by the Presidents of UNC and Duke University and the Administrator of NOAA) oversees the program, with the advice of an Advisory Council (members from each partner, plus representatives from the National Weather Service, Elizabeth City State University and the N.C. Division of Marine Fisheries). The Director is supplied by one of the university members, and is currently provided by the University of North Carolina.

CIFO serves as a center for organizing multidisciplinary teams to focus on fisheries oceanography and coordinates the development of proposals and securing funding support. Success has been realized in both activities. Support for the current year (1998) is $832,000 for research conducted by scientists at Duke, UNC-CH, NCSU, ECU, UNC-W and the Beaufort Marine Fisheries Center laboratory. Congressional authorization has been secured for rental of space at Pivers Island (near Beaufort, N. C.) in a proposed new structure to be built by Duke University to house cooperative CIFO activities. Plans for a central location are pending.

Examples of benefits from CIFO research activities include:

- The South Atlantic Bight Recruitment Experiment has provided a basic understanding of the processes that affect the population of young fish in our coastal waters;
- Research on the habitat requirements and recruitment success required to restore the coastal shellfishery has become the basis for a new state shellfish development plan;
- A multi-institutional team was organized to characterize the role of fisheries on populations and mortality of marine mammals;
• Modeling work of sea turtle population structure has identified critical life-history stages that are vulnerable to man’s influence on mortality;
• Studies of offshore reef recruitment controls has led to better management of recreational fishing resources;
• Introduction of new technology (biotechnology) to fisheries reproduction is making it possible to enhance finfish stocks and aquaculture practices.

B. DUKE-UNC OCEANOGRAPHIC CONSORTIUM

The Duke-UNC Oceanographic Consortium is a joint venture for the purposes of operating a research vessel, the R/V CAPE HATTERAS (which is licensed to the Consortium by the National Science Foundation), and of promoting the cooperation and interaction of marine scientists from Duke University and UNC. Oceanographic work is a mixture of biological, geochemical, geological and geophysical research. The research vessel is available to scientists for basic research, applied research, and education to investigate estuarine, continental shelf, and deep-sea environments off the eastern United States. More than half of this work is conducted along the continental shelf and slope regions of the Carolinas and Virginia. Vessel support includes operation of the ship, a shore facility and the offices which serve the ship, and oversee the Consortium management. Cooperation includes sponsored meetings, encouraging cooperative research ventures and expediting inter-institutional teaching, research, and public service efforts. Complete descriptions of the Consortium’s organization and financial support mechanisms can be found in the July 25, 1991, agreement signed by the UNC and Duke University presidents.

C. MARINE SCIENCE RESEARCH FACILITY - MYRTLE GROVE

Upon recommendation to the legislature, 17.5 million dollars was approved to fund a UNC Marine Research Facility at Myrtle Grove in New Hanover County. A task force including representatives from ECSU, ECU, NCSU, UNC-CH, and UNCW provided input into the planning, development, and proposed operating policies of the new facility. The main goal of the design process was to develop a facility that will encourage interaction between permanent and visiting researchers and students and at the same time be well integrated with the local community. Construction began in October 1997 and is expected to be completed by summer 1999.

The new facility will have 70,000 square feet of marine education and research space which will be divided among the following disciplines: oceanography, coastal and estuarine systems, marine geology, aquaculture, chemistry, marine biotechnology, and marine-related public service, including programs for public school students. It will provide laboratory and office space for as
many as 40 scientists including permanent and visiting faculty and their graduate students. Extension offices for the N.C. Sea Grant College Program, the National Undersea Research Program, the N.C. Estuarine Research Reserve Program, and the Marine Quest Program of UNCW's Division for Public Service and Extended Education will also be included.

D. NATIONAL UNDERSEA RESEARCH CENTER (UNCW)

The aquatic aim of the National Oceanic and Atmospheric Administration (NOAA) is to provide knowledge needed for the wise use of oceanic, coastal, and large lake resources. NOAA's National Undersea Research Program addresses this mission through advanced undersea exploration, sampling, observation and experimentation - in situ research done by divers, robots and submersibles. Specific program goals are to:

- Provide undersea technology to scientists, safely and effectively, for studies of the nation's Exclusive Economic Zone, from the coasts to the deep sea;
- Address national need and concerns by directing research towards the most relevant issues facing the marine environment;
- Enhance public awareness of the problems and solutions by sharing of knowledge education, hands-on experience and training, and access to the products of undersea research;
- Establish partnerships with academia and other ocean-related agencies and programs that enhance program resources, efficiency, and the relevance of NOAA's research.

NURP carries out its mission through a national headquarters in Maryland and six regional research centers located around the nation. The University of North Carolina at Wilmington (UNCW) is home for the South Atlantic and Gulf of Mexico regional center. UNCW's National Undersea Research Center (NURC) supports over forty undersea research projects each year addressing a range of geographic areas and environmental issues as follows.

South Atlantic Bight

Storms and beach erosion threaten lives and billions of dollars of property from North Carolina to Florida. Center researchers are using diving and advanced acoustic technologies to help plan more effective beach protection projects. The most productive (including seabirds, plankton, marine mammals, pelagic fish, and seafloor life) offshore area in the north Atlantic lies a few miles off Cape Hatteras, a few miles above a proposed Outer Continental Shelf (OCS) oil and gas lease site. Center submersibles were first to explore "the Point" and the proposed lease blocks and, most important, to determine why life was so abundant. Reefs are the subsea oases needed to sustain the most valuable fisheries in the southeast. Overfishing and habitat degradation and loss
contribute to a continued decline of important stocks such as snappers and groupers. Through partnerships with the National Marine Sanctuaries and National Marine Fisheries Service, NURC is helping NOAA meet its Magnuson Act responsibilities of describing, protecting, and restoring Essential Fish Habitat such as live bottom reefs off the Carolinas and Georgia, and coral banks and reefs off Florida.

**Florida Keys**
The Center's Florida activities (begun in 1990) focus on the condition of the only U.S. continental coral reef ecosystem and represent the largest coral reef science program in the country. This outstanding program provides boats, state-of-the-art diving technology, and shore-based accommodations, including access to laboratories, to research important environmental science issues. Program elements address water quality and nutrient pollution, factors affecting the health of coral reef organisms, and long-term biological and oceanographic monitoring. In addition, the Center operates the world's only underwater laboratory, Aquarius. After successfully completing 21 missions between 1993-1996, Aquarius was completely refurbished in 1997. Scientists use this laboratory to live and work underwater for ten days or more at a time while studying deep reef coral environments. The new program, called Aquarius 2000, will include substantial public school education and outreach activity built around each science mission.

**Gulf of Mexico**
The Gulf is the most productive and important oil and gas region of the nation’s OCS. Oil companies continue to expand exploration and development to deeper regions. New wells now exist below 1,000 meters in the northern Gulf. These deep wells are penetrating the domain of deep-water communities known as hydrocarbon seeps, lush populations of animals that feed on oil and gas seeping and venting from the seafloor. Much like the hydrothermal vent communities found at mid-ocean ridges by submersibles, the hydrocarbon seeps were first explored and studied using NURC-sponsored submersibles. The Mississippi River drains 60% of the U.S. watershed into the Gulf. Each summer a 10,000 square kilometer "dead zone" of low oxygen spreads over the inner shelf, near and in productive shrimp and finfish grounds. The shape and impacts of the "dead zone" were first studied using the UNCW Center’s robot and divers. Now this event and more like it, products of chronic non-point source pollution, are a national research priority.

**E. SEA GRANT PROGRAM**
The University of North Carolina received its first grant to establish an inter-institutional Sea Grant Program in July, 1970. The Sea Grant Program was developed under the auspices of the
UNC-General Administration on behalf of all North Carolina campuses (ECU, NCSU, UNC-CH, and UNC-W had recognized marine programs; Duke University was associated by consortium). The Sea Grant Program was originally assigned to UNC-CH (1970-73); following the retirement of the original director and the appointment of another director in 1973, it was assigned to NCSU. In 1976, the U.S. Department of Commerce recognized the University's progress by designating it the 12th Sea Grant College.

The National Sea Grant College Program supports a broad spectrum of efforts that accommodate needs and priorities on a national scale. Each state program, in turn, strives to develop programs in those areas of national emphasis that best fit its capabilities and the specific needs of the state and region it serves. Since expansion of knowledge for its own sake is not an adequate reason for Sea Grant support, focus is on increasing the value of public benefits from research leading to the development and use of marine and coastal resources. Proposed efforts are subjected to a three-tiered review process and funding is based on a suitable rationale (programmatic values), methods (project protocols), and prospective use (user relationships).

Sea Grant activities take place through the fundamental public university functions of research, extension, outreach and education. North Carolina Sea Grant currently invests approximately 50 percent of its funds in research. The other programs direct 40 percent in extension and education, and 10 percent in outreach and information transfer, activities that are all particularly appropriate to NCSU because of its extensive experience and capacity in extension work. The current Sea Grant budget is about $2.4 million per year, made up of 66 percent federal funds and 34 percent state appropriated funds. In addition, the North Carolina General Assembly approved a bill in 1996 providing $1 million per year to the North Carolina Sea Grant College Program for research grants to "protect and enhance the state's coastal fishery resources through individual grants" to persons involved in the fishing industry. Sea Grant also acts as a mechanism to secure about $650,000 in additional funds annually from other agencies to support research and extension activities that meet priority needs of its constituencies.

Some recent examples of benefits from Sea Grant program activities include:

- Development of a UNC telecommunication and Internet-based environmental education course (Fall, 1997) to meet the emerging needs for environmental education;
- Technology leading to coastal building codes designed to save the state millions of dollars each year in storm damage;
• Development and introduction of improved shrimp fishing gear that reduces by-catch and increases catch in the North Carolina white shrimp fishery;
• Better management and allocation schemes to enhance the state’s marine fisheries;
• Ensuring seafood safety through training programs;
• Increasing returns to the seafood industry through value-added product development;
• Development of a hybrid striped bass aquaculture industry worth;
• Development of a statewide waterway litter and marine debris reduction and education event that is known as “Big Sweep” with over 14,000 volunteers in its 12th year (1997);
• Increased citizen awareness of the consequences of excessive nutrient loading to coastal estuaries and university research to find solutions to the problem.
APPENDIX 2
Molly Corbett Broad, President
University of North Carolina System
General Administration
P.O. Box 2688
Chapel Hill, NC 27515-2688

Dear President Broad:

On May 4, 1998, the Dare County Board of Commissioners took formal action to establish a Task Force on Higher Education for Dare County. I now serve as co-chair of that Task Force along with Mrs. Lynn Bryant, director of Outer Banks Hotline.

Since our appointment, the Task Force has been in conversation with Senator Marc Basnight's office and with June Brotherton at North Carolina State University and both have suggested that we communicate directly with you.

A copy of our Interim Report is enclosed for your information. As stated in the report, our vision includes three components:

- a strong community college
- a university component with third and fourth year degree work and graduate opportunities, and
- some form of local governance

Within these guidelines, our sense of the future is very open and we’re excited. We think the time is right for something truly innovative.

Our Task Force would like to meet with you. We can come to Chapel Hill, but we see greater value in having you come here, if that is possible. Can we entice you for a day or two at the beach, to sit with us and share ideas, to see Dare County and meet some of its people and to get your own sense of what the possibilities are in this amazing place? We can introduce you to a living laboratory for marine sciences and environmental studies, to a community rich with history, with artists and writers, and with a solid tourism economy.

Our hope is that we might meet with you sometime between May 25 and June 12. We will call your office later this week to explore calendar options.

Sincerely,

Tom Murphy

cc: G. Irvin Aldridge
INTERIM REPORT
COMMITTEE ADVOCATING COMPREHENSIVE HIGHER EDUCATION (CACHE)
April 20, 1998

For over a decade Dare County residents have discussed the benefits that would be provided by having a comprehensive college or university campus in the area. These benefits include satisfying the educational needs of young students from the area who cannot leave for higher education and the continuing and/or advanced education needs of the entire population. Many believed that the development of a local college campus would also provide economic diversification to the area, growth to the economy during the fall/winter/spring, and an enlarged local labor pool year round.

Over the years, as the population of Dare County grew in number, diversity, and expectations, these benefits have come to be seen more and more as urgent needs, rather than as merely desirable opportunities. This point has been emphasized by the degree of interest shown recently by colleges and universities (both in state and out of state) in providing additional programs of higher education in Dare County.

During the summer of 1997 several Dare County citizens (see appendix A) decided to form a committee to discuss the topic of higher education. At its first meeting, this county wide group of individuals with diversity in occupation and education shared an enthusiasm for increased opportunity for higher education in the county. While there was a shared general enthusiasm for higher education on a conceptual level, there was clearly a wide range of thought on what needed to be done, how it should be accomplished and who should be doing it. The group therefore decided to engage in a strategic planning process to achieve a consensus among group members on purpose, mission, goals, and specific objectives in accomplishing the shared interest of higher education.

As the strategic planning process progressed, the group did reach consensus on purpose, mission and goals and adopted a name for the group - viz., the "Committee Advocating Comprehensive Higher Education" (CACHE) for Dare County (see Appendix B).

CACHE then decided both to share with, and obtain information from, the Dare County population. The Committee wished to let everyone know about its formation, purpose, and activities. A survey was designed and distributed, asking citizens for information, comments on the committee's assumptions, and personal opinions. An accompanying statement was released to the press.

More than 600 people responded to the survey. Approximately 150 of them volunteered to assist the committee in its efforts. A copy of the survey along with the procedure for its development and distribution is given in Appendix C. The details of the survey results are included in Appendix D.

Based on the survey, CACHE made the following conclusions:

1. A campus college is a high priority.
2. The primary benefit of such a college/university in Dare County would be economic (diversification/stability/growth)
3. Dare County residents would also benefit educationally and culturally from a campus college.
CACHE has now completed eight months of work. During this time, in addition to attending frequent committee meetings and conducting the survey, CACHE members had many discussions with individuals throughout the Dare County area and addressed several groups including the Outer Banks Chamber of Commerce. Based on these discussions, the survey results and the Committee's research and deliberations, CACHE has determined that the two factors most important to any effort to provide additional opportunities for higher education in Dare County are local governance and a residential campus. CACHE also believes there is an urgency to move forward with a plan that accomplishes the goals as defined.

Local governance (control) is important to insure that the wide spectrum of needs (educational, environmental, cultural and economic) of the County are identified, understood and addressed. Likewise, it is critical that actions taken to achieve advances in higher education locally are integrated with plans and activities for other strategic efforts in the County, and that these actions link existing resources. Competing programs must be evaluated by Dare County people with Dare County values. Local control will also enhance growth and help to insure permanence.

While most agree that distance learning will play a role in any plan for providing comprehensive higher education opportunities for residents of Dare County, it is imperative that any successful plan must include a physical campus and resident housing for students. In addition to the obvious economic benefits attendant to a college campus, the developmental and cultural benefits are far superior to those provided by distance learning exclusively. This latter point is reflected well in a March 30, 1998 Virginian-Pilot article where UNC-CH Chancellor Michael Hooker and UNC President Molly Broad agreed that there is no substitute for the full richness of an on-campus experience.

"This is an idea whose time has come" said co-chairman Tom Murphy in a committee press release on January 14, 1998. (See Appendix E) It is clear from the interest of those responding to the survey that there is a high local demand for higher education and, judging from the interest shown by existing colleges/universities to provide local courses, there is a growing interest in supplying the county with this higher education.

CACHE is encouraged by the apparent support from county residents and has concluded that its goals will be met through the establishment of a locally governed university campus that provides four-year and graduate degrees in conjunction with a strong community college. CACHE requests that the Dare County Board of Commissioners endorse the purpose of CACHE and appoint CACHE members listed in Appendix G as an official Task Force to the Board of Commissioners with the following mandate:

1. Develop the specifications for the establishment of a university and stronger community college.
2. Evaluate alternative plans.
3. Recommend a plan.
4. Oversee the implementation of the selected plan.
5. Monitor the needs of Dare County for higher education and update the Higher Education Strategic Plan as appropriate.

As its work proceeds, CACHE will propose to add additional individuals to the committee.
Appendix G

TASK FORCE MEMBERSHIP

The following individuals have agreed to serve on a task force appointed to investigate and evaluate plans for higher education opportunity in the Dare community:

- Tom Murphy
  
P.O. Box 147
  Rodanthe, NC 27968
  987-2656

- Rodney Perry
  
81 Dogwood Trail
  Kitty Hawk, NC 27949
  (h) 261-3574
  (o) 473-5867

- Nancy Griffin
  
P.O. Box 1607
  Manteo, NC 27954
  (h) 473-5895
  (o) 473-5841

- Leon Daniels
  
925 Sir Walter Raleigh St
  Extended
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  (h) 473-2494
  (o) 441-1531

- Justin Tillett
  
P.O. Box 1165
  Manteo, NC 27954
  473-3766

- Ronald Speer
  
110 Webb Ct.
  Manteo, NC 27954
  473-5091

- Phyllis Ortutay
  
228 Soundview Dr.
  Kill Devil Hills, NC 27948
  473-2372

- Kyle Williams
  
P.O. Box 1027
  Buxton, NC 27920
  (h) 995-4473
  (o) 995-6118

- Jack Hughes
  
P.O. Box 2209
  Manteo, NC 27954
  473-1979
  261-1794

- Lynn Bryant
  
P.O. Box 1417
  Manteo, NC 27954
  473-1461
  (o) 473-5121

- Richard Batzler
  
917 Colington Drive
  Kill Devil Hills, NC 27948
  4414926
HIGHER EDUCATION
STRATEGIC PLAN

PURPOSE: To advocate the development of comprehensive higher education in Dare County.

MISSIONS
1. Help to stabilize and diversify the economy.
2. Provide full use of local resources
3. Address dynamic (changing) community needs.
4. Attract a broad based academic community to this unique location.
5. Enrich the quality of life for residents of Dare County.

1. Help to stabilize and diversify the economy
Goals:
- Increase summer work force
- Increase winter customers
- Provide winter employment
- Provide full-time, year round jobs
- Increase non-tourist related employment
- Create more middle-to-upper income jobs
- Support local training needs
- Provide needed low cost summer housing (dorms)
- Provide facilities for professional meetings and conventions
- Provide research facility to support local planning
- Create attractions for the "long season" - extend the season
- Nurture cultural depth & quality
- Provide a source of workforce training

2. Provide for full use of local resources
Goals:
- Maintain current values and increase use of existing local institutions:
  - College of the Albemarle
  - Library system
  - Seafood Park
  - Lost Colony
  - History Center
  - Festival Park
  - Elizabethan Gardens
  - Aquarium
  - National Parks
  - Coast Guard & Air Force
  - Airport
  - Corp of Engineers
  - Fish and Wildlife
2. Provide for full use of local resources - continued
Goals:
- Provide more opportunities for retirees (SCORE, e.g.)
- Use local artist/writer community
- Use local marine industries
- Incorporate the environment as an attraction
- Incorporate the environment (ecology) as research subject

3. Address dynamic (changing) community needs
Goals:
- Serve as a means of doing community needs assessment
- Be a source of continuing education for small pockets of people
- Protect, maintain and improve the quality of life issues here
- Give thought to unusual geography of area
- Study and interpret contemporary research in various fields relevant to community needs
- Foster a symbiotic relationship between cutting edge technology and identified community needs
- Serve as a clearinghouse for educational resources in the county/region
- Oversee a flexible curriculum based on local needs with a special focus on our natural environment
- Encourage interdisciplinary, innovative, non-traditional degree programs

4. Attract a broad based academic community to this unique location
Goals:
- Create a summer workforce
- Serve as a source of summer housing (assumes a dorm campus)
- Provide winter renters
- Provide a shoulder season conference/retreat setting
- Attract out of state students to our unique island culture
- Take advantage of rich local history
- Create opportunities for local students to stay here for all or part of their education
- Provide support for growing information/communication industry
- Create "satellite" facilities for other colleges to do specific research projects, internships, etc.
5. Enrich the quality of life for residents of Dare County

Goals:
- Facilitate informed, creative public discourse
- Provide common ground, rallying point, for discussion/resolution of community issues and concerns
- Create cultural events and opportunities - e.g. theater, music, etc.
- Be a source of continual emphasis on permanent values
  - clean air, water, etc.
  - land use - guard against over development & inappropriate development
  - family and community cohesiveness
- Provide alternatives for economic growth and economic diversity (make limits on growth politically and economically viable.

FUTURE ISSUES:

Some questions/concerns which have come up, which we can’t deal with now, but which we will have to deal with sometime and don’t want to forget....

- residential college campus?
- branch of an existing educational system
- or some new organizational form we come up with?
- where do we find the “experts” to implement these plans?
- need a data-base of local resources
- at what point do we go public?
- at what point do we take our plans to the “powers that be?”
- can we learn from places where new colleges have been started?
- how do we become the clearinghouse, or broker, between community needs and community resources?
- must have a structure to maintain local control, so we are not merely subject to decision made elsewhere
SURVEY PROCEDURE

Survey questions were drawn from the assumptions and preliminary conclusions of the committee plus reference to a previous survey conducted by the Chamber of Commerce in 1995 (see below). A prototype of the survey was distributed by committee members to approximately 100 selected individuals in the Dare County community. The purpose of the prototype was to obtain preliminary feedback both to the survey design and to the specific questions. An attempt was made to include a cross section of the county geographically and otherwise.

Based on feedback to the prototype, the redrafted survey was printed in the Coastland Times and copies placed in all Dare County libraries and Hotline Thrift Shops. A press release to all area newspapers explained the work of the committee and the locations of the survey forms.

The survey forms were also distributed to teachers and high school students and through a number of other community organizations.

Over 600 surveys (including students) were returned. Approximately 40% of those responding took the time to add substantive comments. (See Appendix F) In addition 153 respondents said that they would be "interested in helping with this effort" and gave name, address and phone number. A summary analysis is included.

Following is taken from the Outer Banks Chamber of Commerce "Viewpoint 95," the annual opinion poll of the Outer Banks Chamber of Commerce.

18. In past polls, Chamber members have identified educational and research facilities as a preferred choice in broadening the region's economic base. Such development would not only help reinforce the seasonal labor pool but would also attract new skills and talents to the region. What type of educational facility do you believe would best serve the region's needs?

   A. Expansion of the existing College of the Albemarle Facility.
   B. Satellite campuses of an existing College or University that would offer limited four (4) year degree programs.
   C. A new Northeastern campus of the State University System which would offer a broad range of four year degree programs.
   D. None of the Above
   E. Other: see Addendum F
Appendix D

CACHE SURVEY RESULTS

1. There were 568 responses to the survey (not including high school students). The distribution by age group was:
   - under 25: 10%
   - 25 to 50: 54%
   - over 50: 36%
   Note: 20% of respondents did not indicate their age group.

2. Nine out of ten respondents believe that the creation of a comprehensive college or university would be a good choice in broadening the region's economic base. Less than 2% do not believe so, and a small number are unsure.

3. In addition to the economic benefits, including better paying and year-round jobs, the most noted benefits were:
   - cultural events (79% of respondents)
   - proximity to sources of new ideas, technology and research (74%)
   - local students could stay in Dare County for their education (74%)
   - flexible curriculum based on local needs/interests (63%)

4. At least one half of the respondents agreed with the committee on each of the benefits listed in the survey.
   - additional use of existing institutions and resources (61%)
   - opportunities for retirees (60%)
   - professional conferences/conventions (59%)
   - a more stable year round population (52%)
   - academic setting for discussion of community issues (50%)

5. Three out of four employers (74%) answering the survey indicated that they would benefit from the availability of a larger pool of college students (with student housing) for part time and summer employment.

6. Eight out of ten (84%) of respondents said they would take advantage of additional opportunities for higher education if they became available locally. Within the past 5 years, over one half (58%) of those responding said that they had traveled out of Dare County for education or training and an equal number did not pursue specific courses due to travel distance.

7. Respondents indicated a wide range of interest in study topics. Study topics of greatest interest include:
   - Computer (45%)
   - Education (32%)
   - Business Management (28%)
   - Human/Social Behavior (25%)
   - Arts - applied/appreciated (20%)
The level of interest in other study topics was as follows:

- Culinary (16%)
- Literature (15%)
- History (15%)
- Medical (15%)
- Creative/Technical Writing (13%)
- Languages (13%)
- Religion/Philosophy (12%)
- Public Relations/Advertising (11%)
- Marine Biology (11%)
- Technical/Mechanical (9%)
- Tourism (7%)
- Coastal Engineering (7%)
- Law Enforcement (4%)

8. Likewise, there was a wide range of interest in the level of study:

- Graduate Programs (41%)
- Non-degree/Lifelong Learning (38%)
- Professional Continuing Education (34%)
- Third and Fourth Year of College (21%)
- Vocational/Technical (11%)
- First & Second Year of College (10%)

CONCLUSION:

Survey results show that the local residents evaluate the benefits of a college or university for Dare County in the following order:

First: Economic diversification/stability/growth from bringing students, faculty and staff into the area.

Second: Social/cultural/business/technology spin offs from having the institution in our community.

Third: Opportunity for residents to take non-degree courses

Fourth: Opportunity for residents to complete and/or extend a course of study toward a bachelor or graduate degree
Survey shows Dare County residents want campus college

More than 600 people have returned questionnaires designed to determine the support for a campus of higher education in Dare County.

Nine out of 10 respondents said they thought the creation of a comprehensive college or university would provide a year-round boost to the economy of the area that now is fueled mainly by tourism.

Cultural events were cited as a benefit by 79 percent of those filling out the questionnaires, and 74 percent said the area would benefit from the proximity to sources of new ideas, technology and research. An equal number said they liked the possibility that local students could stay at home for their education.

Sixty-four percent said the institution could design its curriculum to meet local needs and interests. And 60 percent said a local campus could provide educational opportunities for the increasing number of retirees in Dare County.

The survey was distributed by the Committee Advocating Comprehensive Higher Education, a group of Dare County residents chaired by Presbyterian minister Tom Murphy of Rodanthe and Lynn Bryant of Manteo, director of the Outer Banks Hotline.

"We are pleased by the number of people who went to the trouble of filling out the questionnaire and turning it in," Murphy said. "We think that indicates there is a lot of support for a campus facility in the county."

Bryant noted that about half the respondents had taken time to elaborate on their answers, and had made additional recommendations as to the needs of the area.

"We read them all and learned a lot from the written responses," Bryant said.

The committee hopes to use the information gathered in the survey to help explore other options available for a locally based and locally controlled institution of higher education.

- The members plan to recommend to the Dare County Board of Commissioners that it quickly name a panel representative of the entire county to focus on higher education.
- Committee members said they are aware of new or existing programs in the area offered by numerous colleges and universities to Outer Banks students, directly or through the Dare Campus of Elizabeth City's College of the Albemarle.
- "But we think the people of Dare County should be able to influence the shape of whatever might come," said Murphy, speaking for the committee formed last fall by about a dozen concerned residents.

Old Dominion University in Norfolk, North Carolina State University in Raleigh and East Carolina University in Greenville either have programs in the county or have expressed interest in the area, the committee said.

Members have agreed that only a local campus facility would bring in outside professors, staff and students that would broaden the economic base and increase cultural opportunities.

Numerous respondents said the biggest benefit would be to people who have to leave the area to get a four-year degree.

"I will have to travel to Greenville to obtain my bachelor's and master's degrees," wrote Pamela Durwell of Kill Devil Hills, one of many Dare County residents returning to college. "Please let me know how I can help."

She was one of about 160 respondents who offered their help in establishing a college or university.

Another was retired surgeon H.E. "Pat" Crow of Nags Head.

"The resort location lends itself to conferences, seminars, think tanks," Crow wrote. "The talents of retirees and gifted writers could be utilized as catalysts to heighten the intellectual environment. We could become another Jackson Hole."

Another writer said many parents would be delighted "to pay lots of money to send their kids to a college near the sea."

A Kitty Hawk man said "higher education would bring more stability to Dare County by attracting businesses that would benefit from better-trained workers."

A handful of respondents opposed the creation of a college, contending it would increase the strain on the environment and attract unwanted visitors.

"We don't need any more people or buildings," one opponent wrote. "Don't ruin it anymore than it is. The very things tourists came for are disappearing."

But Kyle Williams of Buxton wrote that "Dare County is in desperate need of comprehensive education. We have the perfect environment to enhance the learning process, not to mention the winter economy. We need to provide better educational opportunities for adults and for our children if we expect them to succeed."

Rick Mizelle of Kitty Hawk said a campus facility would be attractive to outsiders and convenient for local residents. "If housing and campus sites can be acquired, the demand would be there."

"And Harriet Workman of Manteo said having a hometown college would be fun.

"It would be an opportunity to take all those courses one did not have time to take in college," she said.
Citizens committee pushes plans for campus college

A citizens committee exploring ways to establish a comprehensive college or university campus in Dare County has announced that it is surveying residents to help determine the type of facility that would best serve the area.

"The cultural and economic benefits of such a campus have been discussed for more than a decade," said the Rev. Tom Murphy of Rodanthe, pastor of the Roanoke Island Presbyterian Church. "Expanding higher education opportunities in our community is an idea whose time has come."

Murphy and Lynn Bryant of Manteo, director of Hotline, the community crisis intervention service, are co-chairs of the Committee Advocating Comprehensive Higher Education (CACHE) in Dare County.

CACHE was formed last fall by about a dozen residents from throughout the county. Several meetings were held to discuss the contributions that could be made by a campus facility.

Members of the committee agreed early on that only a resident student campus in the county would widen the cultural opportunities and broaden the economic base that now depends heavily on summer tourists.

Residents' reaction to a small, sample survey made in November convinced CACHE members that there is strong support in the community for a comprehensive campus in the county.

"We have improved the survey plan to make it available to everyone," Bryant said. The survey is being distributed to civic clubs, churches and other organizations; and is available at county libraries in Manteo, Kill Devil Hills and Hatteras, and Hotline thrift shops in Manteo, Kill Devil Hills, Rodanthe and Hatteras.

Bryant said the 10-question survey should be returned by February 1, mailed to Box 2172, Kitty Hawk, 27949, or dropped off at a library.

Plans for implementing the information will be announced after results of the survey are compiled.

"A comprehensive campus program would benefit all residents of the county," said Phyllis Ortutay of Kill Devil Hills, a committee member who is director of county library services.

"The benefits would be educational, cultural and economical."

Options discussed by the committee include a four-year public college, a four-year private college, expansion of the Dare County branch of the College of the Albemarle, a two-year bachelor's degree program, and a graduate-degree facility.

"There are a lot of possibilities, but whatever emerges out of the process must have a distinctly Dare County flavor," Bryant said.

Committee member Jack Hughes, a businessman who resides in Southern Shores, said his interest centers on the economic benefits that would come to the community in fall, winter and spring from college staffers and students.

The interest also could provide a high-quality work force in the summer for community businesses, he said.

"Without a campus in the community, there would be little economic effect," Hughes said.

"Campus is the key word in whatever we come up with," said Ronald L. Speer of Roanoke Island, a recently retired newspaper editor who is on the committee. "That would bring well-paid professors and staff members to the community, increase the cultural opportunities, and draw students who would live here when the tourists are gone. And if there were dormitories on the campus, the rooms might be available to provide housing for summer employees."

Other members of the committee include Richard Batzler of Colington, an educator and minister; Nancy Griffin of Skyco, director of student services for Dare County Schools; Rodney Perry of Kitty Hawk, director of the Seafood Industrial Park in Wanchese, and Justin Tillett of Manteo, dean of Dare County's COA branch.
OTHER BENEFITS

- Improved quality of life as a direct result
- Ecological benefits (improved water quality)
- For future generations
- Bring students to Dare County
- Improved pay scale to help with cost of living
- No Benefits
- Enlarged worldview for locals
- Will attract more businesses and new kinds of businesses
- Provide a life for more sophisticated
- Access to grant money
- Enhanced competitiveness for jobs for locals
- Research capability for local needs
- Teleconferencing benefits
- Reduced cost of continuing education for employees & employers
- Anything that would help diversification
- Re-education & retraining for locals
- Take advantage of local talent
- More opportunities for low income & minority students
- Continuity of educational plan
- Community pride and prestige
- Elder hostel programs

OTHER BENEFITS - CONTINUED

- Ability to plan financially for families
- More jobs for locals
- Would improve secondary education
- Expanded market for existing businesses & services
- Motivation for local students
- Possibility of career counseling for adults
- "clean" industry
- More sports opportunities
- Off season environment is conducive to learning
- Create larger population which would qualify us for a hospital
- Internships in local schools
- Lots of benefits for "nontraditional" students
CONCERNS

- Hatteras Island will be left out +
- Distance to 4 year+ school +++++++++++++++++++++++
- Help local kids who want to stay ++++
- Give attention to locals
- Avoid private institution
- Increase population would be a negative ++
- Environmental damage +
- Fear of Roanoke Island Dominance
- Need for a college library ++
- Expense, increase taxes & cost of living +++++
- Present COA structure stymies us
- Size of local population won't support ++
- Locals who get overeducated will leave +
- Need for winter jobs for students who need them
- Need more skilled laborers instead of educated folks
- County needs to address K-12 problems first
- Carrying capacity of the environment
- Best students have least opportunity
- Not enough population to support +
- Overdevelopment
- Depth and quality of new school (Do it right!) +++

CONCERNS - CONTINUED

- Community support needed
- Increased criminal activity (drinking, drugs) ++
- Does not want to broaden economic base
- COA won't meet local needs
- Keep us small
RECOMMENDATIONS

• More local representation to Raleigh
• Connect to Currituck, Camden and rest of region ++
• Put it on the beach +
• Strong community college
• Housing (4 year campus) is important ++++
• Utilize unique existing environment +
• Centralized (local) governance
• Take advantage of beach location ++
• Recommends public vs. private institution
• Create non profit housing
• Put it on the mainland
• Use off season environment to serve as think tank/retreat
• Night classes/ Saturday classes
• Respond directly to local needs
• Don’t start with too broad a mission +
• Don’t just consider local interests
• Only a private institution
• Distance learning/Internet course ++++
• Visiting professors from other schools ++
• Specialized programs only +
• Improve access (transportation)

RECOMMENDATIONS - CONTINUED

• Moderate housing in and around +
• ’oll local students - Who wants to stay?
• Petition +
• Find a big donor
• Plan “responsibly”
• Have exchange programs

• Use NCSU ++++++
  - Cooperative extension program here already
  - Fits it’s mission
  - Has research germane to county

• Use COA ++++++++++++++++++
  - Majority favoring COA favored it “expanded” or as part of the solution

• Create our own community college (local governance) ++
• Use ECU+++
• Use UNC ++
• Consider a trade/vocational school +++
May 21, 1998

Mr. Tom Murphy
P.O. Box 147
Rodanthe, North Carolina 27968

Dear Mr. Murphy:

Thank you for your letter of May 11, 1998, regarding the Task Force on Higher Education for Dare County. I look forward to a future meeting in Dare County, especially as it relates to the potential role of the University of North Carolina in meeting educational objectives of the region. Unfortunately, it will not be possible for me to attend a meeting prior to June 12, 1998. I would appreciate a list of alternative dates over the summer when such a meeting might be arranged.

Your letter was timely. In April I met with several of our chancellors to initiate discussions as to how to better serve Dare County. The University welcomes the opportunity to explore additional ways of providing service to North Carolina by linking educational needs and economic development in that region. I have shared your letter with the chancellors of Elizabeth City State University, East Carolina University, North Carolina State University, the University of North Carolina at Chapel Hill, and the University of North Carolina at Wilmington, and I have asked each of them to nominate persons to work with my staff in General Administration and with other interested parties such as your task force to assess the educational needs of the area. I have also asked these chancellors to summarize current programs serving Dare County to determine the scope of University outreach efforts already there.

I very much appreciate your efforts on behalf of the citizens in Dare County and hope that we can explore innovative ways for inter-institutional cooperation to enhance educational opportunities.

Sincerely,

Molly Corbett Broad

cc: Vice President Roy Carroll
     Mr. G. Irvin Aldridge, UNC Board of Governors
     Chancellor Mickey Burnim, ECSU
     Chancellor Richard Eakin, ECU
     Chancellor Larry Monteith, NCSU
     Chancellor Michael Hooker, UNC-CH
     Chancellor James Leutze, UNCW
Institutional Representatives to Work With GA Staff on "How to Better Serve Dare County"

ECU - Dr. Diana Henshaw  
Director of Division of Continuing Studies  
Phone: 252-328-6321  
E-mail: henshaw@mail.ecu.edu

ECSU - Dr. Lois W. Green  
Interim Associate Vice Chancellor for Academic Affairs  
(July 1 she will officially become the Associate VC for AA)  
Phone: 252-335-3291  
Fax: 252-335-3493  
E-mail: greenlw@alpha.ecsu.edu

NCSU - Dr. June Brotherton  
Associate Vice Chancellor for Extension  
Chancellor's Office  
Box 7001  
Phone: 919-515-2191  
E-mail: june_brotherton@ncsu.edu

UNC-CH - Dr. Jonathan Howes  
Special Assistant to the Chancellor and Director of University Outreach  
CB # 6100  
Phone: 919-962-1558  
E-mail: jonathan_howes@unc.edu

UNCW - Mr. Mark Lanier  
Special Assistant to the Chancellor  
Phone: 910-962-3030  
E-mail: lanierm@uncwil.edu
RECENT UNC PROGRAMS SERVING DARE COUNTY (1996-97)

RESEARCH

North Carolina State University

1. Collect and analyze fisheries data, funded by Department of Fisheries — cost $34,000.

2. Assess impact on septic leachate/discharge on groundwater quality at the Cape Hatteras National Sea Shore — cost $45,000.

3. Research erosional scour in coastal sounds of northeastern North Carolina. Results are directly applicable to coastal sound bridges, specifically on the impact of potential long-term scour on new bridges — cost $120,427.

4. Develop alternative clam farming and recreational fishing; participate in Blue Fin Tuna conference — cost $13,600.

The following represent federally funded grants to NCSU in which field work was conducted using equipment that may have been partially purchased with State funds:

1. Sand resources for NC-12 (DENR and DOT) — cost $655,681.

2. Modeling and visualization of dune migration at Jockey’s Ridge State Park — cost $4,600


4. Office of Naval Research high school apprentice program - supported work at Duck, NC — cost $6,720.

5. Field and modeling studies of nearshore morphology - Army Research Office — cost $104,996.

6. Acquisition of interferometric side-scan bathymetry system - Army Research Office — cost $219,632.

7. Augmentation award for science and engineering research training for nearshore sediment transport research - office of Naval Research — cost $141,594.
INSTRUCTION

East Carolina University
1. Two extension course offerings were provided in Dare County (English 5503 and Education 6480) that were funded with receipts of $4,290 and state appropriations of $3,040 — cost $7,330.

2. Once course (Introduction to Research) was taught by telecommunications to 11 students in Dare County — cost information unavailable.

Elizabeth City State University
1. ECSU is paying the salary and social security of an adjunct professor teaching two Business Administration courses in Dare County. He teaches there as part of the Business Extension Program — cost $3,230.

North Carolina School of Science and Mathematics (NCSSM)
1. The NCSSM Residential Program included one student from Dare County — cost $13,268.

2. Distance Learning Courses were provided to 11 students and 4 teachers in Dare County Schools — cost $31,570.

3. Enrichment Presentations were provided to 603 students and 41 teachers in Dare County Schools — cost $37,189.

North Carolina State University courses taught via telecommunications (self-supporting degree credit extension instruction)
1. Registrations in baccalaureate-level courses were in Videocassette Courses offered through the Office of Instructional Telecommunications. Courses included: Accounting 1, Personal Finance, Elementary Spanish, Composition & Rhetoric, The Middle Ages, and Recreation and Park Planning — cost $2,045.

2. Registration in masters-level course was in a graduate-level course in Parks, Recreation and Tourism which was offered at a receive-site for the NCREN network — cost $409.

* Although State funding was not a factor in the direct costs of these extension instruction, State funding has gone into the creation of NCREN (NC Research & Education Network) and also underwrites some of the administrative costs of extension on campus.

UNC Wilmington
1. Through the Information Highway, UNCW has taught classes (calculus, most recently) at Cape Hatteras High School and other schools in the region — cost information unavailable.


**Public Service**

*East Carolina University*
1. Needs assessment for teachers in Dare County schools to determine instructional needs — cost $613 (state appropriations).

2. Telemedicine support (equipment, facilities) in two Dare County sites - one in Nags Head, the other in Hatteras — cost $25,000 (state appropriations).

*North Carolina State University*
1. Implement and support the Transportation and Information Management System (TIMS) for school bus scheduling and routing for all school districts in North Carolina — cost $235,000.

   *This project is funded by the Department of Public Instruction and the amount directly associated with Dare County cannot be specifically identified.*

2. Empower Dare County residents, through educational programs sponsored by the Dare County Center of the NC Cooperative Extension Service, to improve their quality of living. Programs concentrate primarily on environmental education, family enhancement, and youth development — cost $123,229.

*UNC-Chapel Hill*
1. Area Health Education Center (AHEC) at Hatteras Medical Center - support for preceptor and student housing — cost $13,350 (state appropriations).

2. Math/Science Education Network (MSEN) - support for math and science step development for teaching — cost $45,100 (federal appropriations).

3. TEACCH and the Principal’s Executive Program — cost $0.

*UNC Wilmington*
1. A recent documentary, *Treasure Coast*, covers the entire NC coast, but contains a great deal of material on the Outer Banks — cost information unavailable.

*UNC-GA - Programs under the Center for School Leadership Development*
1. Center for the Prevention of School Violence - training for the School Resource Officer (SRO) at the Middle School and Alternative School in Manteo; training to implement Teens, Crime, and the Community Program at Manteo Middle School; various publications and manuals to school officials; attendance by Dare County educators at various professional development opportunities provided by the Center — cost $2,050.

2. NC Center for the Advancement of Teaching - programs were offered to teachers in every county — cost information unavailable.
3. **NC Teacher Academy** - eight teams from Dare County attended a summer academy — cost $46,820.

4. **Principal Fellows Program** — one applicant from Dare County was accepted for the program but chose not to become a fellow — cost $0.

5. **Principal’s Executive Program** - seven administrators from Dare County are graduates of the Principals’ Executive Program — cost $24,500.

*UNC-TV - UNC-TV through WUND-TV, Channel 2, Columbia, NC, provides:*

1. Extended signal coverage to homes, schools, and community colleges in the entire Dare County — cost $7,144,500 (replacement of WUND-TV tower).

2. Services to Dare County residents via the distributive television broadcasting services from the RTP site — cost $87,000.
To: henshaw@mail.ecu.edu, greenlw@alpha.ecsu.edu, june_brotherton@ncsu.edu, jonathan_howes@unc.edu, lanierm@uncwil.edu
From: Rich Linton <rwl@ga.unc.edu>
Subject: UNC Task Force on Dare County- August 11 Meeting Details
Cc: smm, rcl, mbroad, tavin
Bcc:

To: UNC Task Force on Service to Dare County

Plans have been finalized for President Broad’s visit to Dare County on August 11. The objective is to have a candid conversation about the educational needs in the area and explore ideas about the possible ways to address them involving UNC. You should have received (or will shortly receive) by mail some additional background reading relevant to the meeting.

The meeting will occur at the Roanoke Festival Park in Manteo from 8:30am to Noon. There are signs pointing the way to the Park. When entering Manteo on Highway 64 turn left on Budleigh Street. Go to the end and turn left along the Manteo waterfront. After a short block, turn right onto a bridge. The building for the meeting will be the first one on the right after the bridge. Ask the receptionist in the lobby for the meeting room location. A light lunch will be served near the conclusion of the meeting (about 11:30am).

Participants
- Dare County Task Force (~10 members chaired by Tom Murphy)
- Head of Dare County Commissioners
- UNC Board of Governors Representative- Irvin Aldridge
- UNC-GA Representatives- President Molly Broad, Senior Vice President Roy Carroll, Associate Vice President Richard Linton
- UNC Task Force on Service to Dare County
  - ECU - Dr. Diana Henshaw
    Director of Division of Continuing Studies
  - ECSU - Dr. George Jackson
    Interim Chair, Business and Economics
    (substituting for Dr. Lois W. Green, Associate Vice Chancellor for Academic Affairs)
  - NCSU - Dr. June Brotherton
    Associate Vice Chancellor for Extension
  - UNCCH-Dr. Jonathan Howes
    Special Assistant to the Chancellor and Director of University Outreach
  - UNCW - Mr. Mark Lanier
    Special Assistant to the Chancellor

Agenda (meeting chaired by Tom Murphy)
- Overview of Educational Needs in Dare County
- Possible Means to Enhance UNC Involvement
  - Community College and UNC Collaboration
  - Distance Education
  - Continuing Education
  - New Facilities and Programs
  - Other
- Next Steps / Organization

Many thanks for your cooperation and assistance!

Sincerely, Rich Linton
MEMORANDUM

TO: Chancellor Richard Eakin, East Carolina University
    Chancellor Mickey Burnim, Elizabeth City State University
    Chancellor Marye Anne Fox, North Carolina State University
    Chancellor Michael Hooker, UNC Chapel Hill
    Chancellor James Leutze, UNC Wilmington

FROM: Molly Corbett Broad

DATE: April 14, 1999

SUBJECT: Marine Science Program Activities

In light of recent discussions each of you have had with me regarding marine science programs I wanted to take this opportunity to write the five of you to address these important activities. As you are all aware, our collective efforts in the marine sciences offer the potential for North Carolina to become a world leader in the development of marine research and related educational and public outreach programs. I know that you and your institutions all have been active in various discussions and forums to consider ways to move forward, both individually and collaboratively, in this arena. Recent conversations with Senator Perdue have served to underscore legislative interest in strengthening the scope and quality of marine science research and in maximizing collaboration among research scientists throughout the universities of North Carolina. The research and scientific communities involved in marine sciences programs seem ready to invigorate cooperative efforts, and they should be given our full support. This memorandum addresses some immediate issues regarding needs to foster improved coordination and communication, as well as to allow a continuing development of coastal programs and facilities in North Carolina.

First, with regard to improving cooperation, I hope we can utilize the UNC Marine Sciences Advisory Board I appointed in June 1998 to help facilitate interinstitutional communication between the diverse programs across UNC. The Board includes two representatives from each of the five campuses involved in marine sciences, as well as an ex officio status for the NC Sea Grant Director. The UNC Marine Advisory Board efforts could be expanded by reaching out to additional groups, including: the directors of major marine science or water quality research organizations, representatives from Duke University, state and federal agencies and marine laboratory representatives, as well as economic development organizations, all holding a stake in marine science efforts in North Carolina. A resulting Marine Sciences Coordinating Council (MSCC) could serve to formalize the statewide discussions. The MSCC could contribute to ongoing planning efforts, including for example those involving the Cooperative Institute for Fisheries Oceanography (CIFO), in considering appropriate facilities and programmatic needs that would best complement other activities.
It also would provide valuable input into the development of the strategic plan for NC Sea Grant in both research and outreach programs. If you have comments or suggestions about this approach, I hope you will discuss them with me soon.

Second, with regard to the continuing development of UNC coastal programs, a matter of some priority must be initiating planning for the establishment of a marine science facility offering year-round research and educational opportunities in northeastern North Carolina. Such a facility would be consistent with the Plan for Marine Sciences adopted by the Board of Governors in 1994. The plan noted that there are three diverse coastal regions in North Carolina: (1) the southernmost area around Wilmington, (2) the middle coastal region around Morehead City, and (3) the northeastern region. The Board noted that

"Marine sciences research and teaching facilities will ultimately be needed in all three regions. Expanded or new coastal facilities for teaching and research should be based on the sharing of the facilities with all authorized UNC programs, with due attention to the three coastal areas in North Carolina, accessibility, avoidance of unnecessary duplication, and geographically considered program needs."

The Board placed its recent priority on the building of a new marine science facility at UNCW (Myrtle Grove) and the expansion of facilities involving NCSU (Center for Marine Science and Technology) and UNC-CH (Institute for Marine Sciences addition) in Carteret County. A new doctoral program in Coastal Resources Management also was implemented at ECU. The General Assembly responded to the Board’s plan by appropriating funds for these facilities and programs, and the collection of new construction projects is nearing completion.

In addition to assuring the effective use of existing UNC marine sciences programs, it is important now to consider the recognized needs of the northeastern coastal region. A marine sciences facility in the northeast, offering research and educational opportunities, would complement and strengthen those undertaken in Wilmington and Morehead City. It would provide a delivery site for marine-related degree programs (e.g. environmental sciences, coastal resources programs) offered in other UNC institutions. Internships and graduate assistantships would benefit from private sector and government research project support. Resident and visiting faculty would have opportunities to participate in marine science research, as well as to offer advanced laboratory and course work in marine related topics to undergraduates and graduates. Collaboration in the use of facilities and in offering courses, for example, would be fully consistent with the plan adopted by the Board of Governors in 1994.

To move the planning process forward, I will appoint an ad hoc working group composed of selected researchers from the UNC Marine Sciences Advisory Board (one representative each from ECSU, ECU, NCSU, UNC-CH, and UNCW) to work with a small team of outside consultants.
Memo to: Chancellors Eakin, Burnim, Fox, Hooker, and Leutze  
Subject: Marine Sciences Activities  
April 14, 1999  
Page Three

The working group would provide recommendations on the nature of appropriate scientific programs and scope of facilities that would uniquely serve the research, educational, and outreach needs in marine science by utilizing the distinct marine coastal environment in the northeast area of the state. Dr. Richard Linton, Associate Vice President for Research and Director of Sponsored Programs for UNC General Administration, chairs the UNC Marine Sciences Advisory Board and will oversee the working group’s activities. I will expect a preliminary report by the Fall of 1999.

I appreciate your continuing support in these matters and welcome your comments and suggestions.

cc: President Nannerl Keohane, Duke University  
   Senator Beverly Perdue, North Carolina General Assembly  
   Associate Vice President Richard Linton, UNC General Administration  
   Marine Science Advisory Board Members
Ms. Molly Corbett Broad, President  
University of North Carolina General Administration  
P. O. Box 2688  
Chapel Hill, North Carolina 27515-2688  
Dear Ms. Broad:  

The Dare County Board of Commissioners at its meeting on January 19, 1999 officially received the enclosed report from the Dare County Task Force on Higher Education. The Board then voted unanimously to approve the report and to forward it on to you in order to initiate a planning process to establish a higher education facility in Dare County. Needless to say, we are very excited about the prospect of having the University of North Carolina system in Dare County and look forward to working with you on this endeavor.

Very truly yours,  

Geneva H. Perry  
Chairman

GHP:g  
Enclosure  
cc: Dr. Roy Carroll
The Dare County Task Force on Higher Education proposes that the Dare County Board of Commissioners formally invite the University of North Carolina General Administration to initiate a strategic planning process to establish an innovative, collaborative higher education facility in Dare County. This facility would serve the educational and research needs of the state and region through the establishment of:

(1) a year-round marine research center

(2) a joint-use facility offering an array of baccalaureate and graduate programs drawn from the University of North Carolina system

(3) facilities for seminars, conferences, workshops and educational research

A marine research center located in our estuarine and ocean environments would complement and expand coastal research activities undertaken in Wilmington and Moorehead City, as well as provide for marine-related baccalaureate and graduate programs offered in institutions throughout the state. There will be opportunities for internships and graduate fellowships in both private sector and government research projects. Visiting faculty could participate in research as well as offer advanced laboratory
and coursework in marine related topics. Universities in the University of North Carolina system would share the facility and offer courses in traditional and electronic classroom environments, extending the boundaries of the university programs.

The proposed joint-use facility would function as a new model for the delivery of university education. As with the marine programs, the new facility would provide an array of baccalaureate and graduate courses and programs to students at the Dare site. The campus would be a unique residential facility providing housing to students and visiting faculty. A full range of administrative and student support services would be provided. The new facility would have access to the full catalog of programs and coursework at existing UNC institutions. It would "broker" these offerings and make them available at the Dare site. The facility would further help ease the pressures of an anticipated surge in enrollment at other university sites. An opportunity for interdisciplinary study and non-traditional major concentrations could also result from this collaboration. The goal is to expand the boundaries of existing university programs beyond the confines of the traditional campus and provide educational access in geographically underserved areas of the state.

All programs at the Dare site would benefit from a strong community college which provides foundation courses in post secondary education. The site would offer study at the baccalaureate and graduate levels, but it would share faculty and facilities with training and research needs of the world community. Special programs and institutes developed for and by industry and governmental agencies (i.e., Army Corps of
Engineers, etc.) would use the center and its resources. It is further envisioned that the Dare facility could provide a "convention" or "marketplace" for studies with a marine environment focus, including coastal engineering, ecological studies, marine-related business (commercial fishing and travel, tourism, etc.), and cultural/historical topics.

In addition to the educational and research opportunities, the creation of a university facility in Dare County would have significant, positive, and diverse economic, cultural and environmental impacts on county residents, businesses and natural resources, including the following:

1. Diversified economic activity for the county.
2. Year-round employment opportunities with possibilities of increased wage and salary rates both within the proposed higher educational facility and within businesses serving the local demands created by that entity.
3. Local spending by students, faculty and staff (and family members visiting or living here) will improve the financial performance of existing businesses during the current off-season.
4. Opportunities for Dare County residents to complete and/or extend a course of study toward bachelor or graduate degrees.
5. A labor pool of students and family of faculty/staff for positions in tourist related businesses.
6. Educational and economic opportunities for neighboring counties.
7. Enriched quality of life for county residents and visitors by way of a venue for cultural and professional events.
8. Local research and educational activity may spawn new business ventures.
9. Creation of a focal point for research, development, and application of ideas and procedures to improve water quality and the protection of the fragile coastal environment.
10. Maximize the potential of services and programs offered by existing institutions such as the Dare County Libraries, College of the Albemarle, North Carolina Aquarium, the Graveyard of the Atlantic Museum, etc.

11. Economic development that is aesthetically and environmentally sensitive.

12. Integration of the economy and population of the Northeastern North Carolina within the region and the rest of the state.

Conclusion:

For all of these reasons, the Dare County Task Force on Higher Education requests that the Dare County Board of Commissioners adopt this proposal as its vision for the future of higher education Dare County and forward it to the UNC General Administration as an official request.
County board asks UNC to study Dare facility

By DAVE SCHULTY

There's no doubting the enthusiasm for creating some form of Dare County educational facility within the University of North Carolina system, but financial reality will control such a quest.

The Dare board of commissioners took a step toward achieving the UNC link at its meeting this past week.

On the request of the Dare County Task Force on Higher Education, the commissioners adopted a proposal asking UNC to send staff members to develop a plan for establishing a marine science and research center in the county. The letter from the county board will be accompanied by a task force report about details and benefits of the center.

The presentation to the commissioners was given by task force co-chairman Tom Murphy, with other committee members including co-chairman Lynn Bryant on hand.

Murphy explained the formal request from the commissioners was needed now since the UNC general administration is preparing an overall budget package to be presented to the N.C. General Assembly, which opens its 1999 session on Wednesday, Jan. 27, in Raleigh.

Whether the Dare County center passes muster in the slate legislature likely will focus on a push by Senate Pro Tem Marc Basnight of Manteo.

Murphy said the university is anxious to create the Dare center. He said the final goal not yet reached in a UNC five-year plan, 1994-99, is establishment of a marine center in northeastern North Carolina.

UNC projections indicate a significant enrollment increase is expected in the next few years, and a Dare facility would ease space limitations at other campuses. Murphy said Molly Broad, the new UNC system president, is particularly interested in northeastern North Carolina expansion.

Murphy said a Dare center would not be a 17th campus of the UNC system. The task force report lists three main functions of the proposed facility:

1) A year-round marine research center;

2) A joint-use facility offering an array of baccalaureate and graduate programs drawn from the University of North Carolina system;

3) Facilities for seminars, conferences, workshops and educational research.

The center also would bring economic benefits to Dare County, including employment and educational opportunities.

In other business at the county board meeting, the commissioners approved the following board appointments:

Older Adult Services Advisory Council — Henry Haywood.

East Lake Community Center — Danny Rowe.

Manns Harbor Community Center — Darlene Craddock and Vicky Craddock.

Dare County Transportation Advisory Board — Alex Risser.

Most of the slots on the recently created Juvenile Crime Prevention Council were filled with the following persons:

Leon Holleman, F.T. D'Ambraca, William Morris, Amber Davis, Don Alexander, Jim Southern, Jay Burrell, Bonnie Bennett, Melinda Mogowski, Tom Murphy, Anna Sadler, Jeannine Evans, Edgar Barnes, Bill Teague, Anne Thomas, Lynn Bryant, Jerry Allen, Ray Davis, Nancy Griffin, Kathy Kidde, Liz Shaub, Sue Mosedale and representatives of College of the Albemarle and the YMCA.

The next scheduled meeting of the Dare board of commissioners will be at 9 a.m. Monday, Feb. 1, in Manteo.

See UNC, Page 4A
February 15, 1999

Ms. Geneva H. Perry
Chairman
Board of Commissioners
County of Dare
P.O. Box 1000
Manteo, North Carolina 27954

Dear Ms. Perry:

Thank you for your recent letter enclosing the report and request from the Dare County Task Force on Higher Education. By copy of this letter, I am asking Vice President Roy Carroll to evaluate your request and to give me his recommendations.

Sincerely,

Molly Corbett Broad

cc and attachment:

Vice President Roy Carroll
March 10, 1999

Ms. Lynn Bryant
Co-Chairperson
Dare County Task Force on Higher Education
P.O. Box 1417
Manteo, North Carolina 27954

Dear Ms. Bryant:

Thank you and Mr. Tom Murphy for your very informative presentation to the Hyde County Board of Commissioners on March 1, 1999. Please know that the Hyde County Board of Commissioners supports the Dare County Task Force on Higher Education's mission to establish an innovative, collaborative higher education facility in Dare County.

We truly believe that the facility will serve the educational and research needs of the state and region and will provide needed opportunities for Hyde County Citizens. We agree that the counties of Hyde, Tyrrell and Dare provide, as you stated, "a marshaling of resources" for our tri-county area to support and sustain educational activity in our region.

We know that you have not yet proposed a site for the educational facility. Additionally, we understand that your initial plan is to establish (1) a year round marine research center; (2) a joint-use facility offering an array of baccalaureate and graduate programs drawn from the University of North Carolina system; and (3) facilities for seminars, conferences, workshops and educational research.

Please know that we will be happy to assist you in your efforts to establish a Tri-County Educational Authority. We are also happy to look for any potential satellite sites in Hyde County for the University of North Carolina systems in Dare County.

Sincerely yours,

Jeff M. Credle
County Manager

cc: Hyde County Board of Commissioners
Molly Corbett Broad, President, University of North Carolina General Administration
Alice M. Keeney, County Planner / Economic Developer
President Molly C. Broad  
University of North Carolina  
General Administration  
Post Office Box 2688  
Chapel Hill, NC 27515-2688

Re: Marine Science Center - Northeastern North Carolina

Dear Molly:

I am enclosing a copy of an article, which appeared in the local paper on April 19, 1999. As you can see, there is a lot of speculation going on in Dare County regarding this matter. You will notice in the article it was stated that the facility would be up to the UNC President or Board of Governors to make a recommendation for consideration by the General Assembly.

As I have indicated on other occasions, I sincerely believe the time is right to make some type of proposal to the General Assembly to get the marine science center underway. I know that you are very busy and can appreciate your time schedule; however, I sincerely believe it is time to move with a proposal that can be sent to the Senate leadership.

With best personal regards, I am

Sincerely yours,

G. Irvin Aldridge
Many decisions on horizon, including money

Will ‘UNC-Dare’ become reality?

By DAVE SCHULTY

There’s a nebulous feeling when talking to people about the possibility of a University of North Carolina campus being established in Dare County.

Most everyone agrees there’s a need, and enthusiasm runs high among those promoting the concept. Who can argue against improving higher education opportunities for area students.

But, for now, it’s nothing more than an idea. Even using the word “campus” is misleading. The talk has been to establish a marine center linked to the UNC system.

Tom Murphy, co-chairman with Lynn Bryant of the county’s Task Force on Higher Education that’s been talking to UNC officials, said the thought is not to ‘establish’ 17th UNC campus. But, he didn’t rule out that happening.

Also nebulous is what the Dare facility would offer. Could a high school graduate start studies here and come away a few years later with a degree? Murphy said that may be possible, although it would be an idea for future consideration after some form of facility becomes a reality.

On the question of a four-year institution, two members of the Dare board of commissioners said that’s a decision to be made by UNC. Board Chairman Geneva Perry and Commissioner Punk Daniels emphasized that all decisions about the facility will be made by the university administration, not the county board. Daniels recently was appointed as liaison between the county board and UNC officials.

Of course, when discussing any new capital project, the reality only occurs if the money can be found. Marc Basnight, the N.C. Senate President Pro Tem whose home is in Dare County, acknowledged money was the key. Basnight said he hasn’t seen any details on a proposed UNC facility in Dare. He said it’s up to the UNC president or board of governors to make a recommendation for consideration by the General Assembly.

See UNC, Page 14.
Looking for backers

MEMBERS of the Dare County Task Force on Higher Education asked Tyrrell commissioners to support development of a University of North Carolina teaching facility in this vicinity. (R. McClees photo)

Dare task force seeks Tyrrell support

Three members of the Dare County Task Force on Higher Education asked Tyrrell commissioners, school administrators and citizens here last week to support efforts to bring the University of North Carolina to the area.

Lynn Bryant, Tom Murphy and Ron Spear met with county commissioners and later were guests at a reception hosted by school superintendent Dr. Betsey Stallings.

In both places task force members recounted early efforts in Dare County to expand higher education facilities beyond the community college level and of the cooperation received from the UNC general administration.

They explained how the facility would become home to a year-round marine research center, a joint-use base for an array of undergraduate and advanced programs drawn from throughout the UNC system, and a site for seminars, conferences, workshops and educational research.

The creation of a university facility in Dare County would also have significant, positive, and diverse economic, cultural, and environmental impacts on area residents, businesses and natural resources, Murphy said.

The task force may recommend to Dare commissioners that Hyde and Tyrrell counties be asked to join them in forming a tri-county group to pursue the higher education goals, Murphy said.

Tyrrell commissioners postponed action on the task force's request for endorsement, saying they wanted time to study the proposal. The matter will be on the board's May 18 agenda.
The University of North Carolina has taken the first step toward establishing a marine sciences center in the northeastern region of the state.

UNC President Molly Corbett Broad has decided that the system will go ahead and research the possibility rather than wait for a $5 million budget item to clear the state legislature.

The budget item would fund research into a variety of new facilities across the state, including a marine sciences facility in the northeast.

But Broad’s decision specifically addresses the marine research facility and calls for a working group to put together a preliminary report on the concept by the fall. A local task force has proposed such a facility in Dare County.

"It is fair to say that the university is moving ahead with its plans to assess the nature of scientific programs, actions and facilities to serve marine science needs in the northeastern part of the state," University Vice President for Public Affairs J.B. Milliken said Wednesday.

In an April 14 memo to the chancellors of five campuses, Broad wrote, "Our collective efforts in the marine sciences offer the potential for North Carolina to become a world leader in the development of marine research and related educational and public outreach programs... A marine sciences facility in the northeast, offering research and educational opportunities, would complement and strengthen those undertaken in Wilmington and Morehead City."

Broad referred to a Plan for Marine Sciences adopted in 1994 by the UNC Board of Governors. It called for "expanded or new coastal facilities for teaching and research... with due attention to the three coastal areas in
North Carolina."

Since the Board of Governors adopted its 1994 plan, the system has expanded marine facilities in Wilmington and Morehead City, the southern and central areas of the coast.

Dare County is the only entity to submit a proposal for the remaining research facility. Dare also has the only population center in the northeast and accounts for a major portion of the northeastern coastline.

Milliken said Broad has set up a group to research the issue. Associate Vice President for Research Richard Linton will oversee the committee and has begun looking for outside consultants to join the group.

"There will be a working group composed of people within the university in the marine sciences area, as well as a couple of outside consultants," Milliken said.

Broad told her chancellors she would expect a preliminary report from the group by this fall.

The Dare County Task Force on Higher Education crafted a proposal, adopted by the county Board of Commissioners and forwarded to UNC, for not only a marine research center, but also a joint-use college and a university conference center.

The task force envisions a marine science center where four-year and master's degree programs would be offered from university campuses in Raleigh, Chapel Hill, Greenville and Elizabeth City. Local students could move from a two-year program at the College of the Albemarle into a bachelor's degree program.

Scientists would gather for research and symposiums on the razor's edge between the ocean and the country's largest estuarine system.

The task force contends that higher education would have numerous benefits for Dare County, including year-round jobs and a student labor force for the summer.

State Senate President Marc Basnight, who has been a supporter of the idea from the beginning, met with task force members and university officials in April to discuss the progress of the county's proposal.

At that meeting, Milliken informed the group of Broad's decision to go ahead with the work group and encouraged them to continue to build a local following and to contact neighboring counties for support.

According to member Tom Murphy, the task force will also inventory the county's existing buildings for places that might house classes or meetings and "reduce the need for new construction immediately."
Roy Carroll
Senior Vice President and Vice President for Academic Affairs
UNC General Administration
919-962-4614
RCL@ga.unc.edu
June 28, 1999

The Honorable Marc Basnight
President Pro Tempore
N.C. State Legislative Building
Raleigh, North Carolina 27601-2808

Dear Marc:

I am writing to provide an update on our planning for higher education activities in northeastern North Carolina. Two new University task forces are currently at work in cooperation with the Dare County Commissioners' Task Force on Higher Education and associated groups in the region.

The first task force is addressing the development of marine science programs. As you know, we believe that a marine sciences facility in the northeast could offer significant research and educational opportunities complementing those in Morehead City and Wilmington. The facility could provide a delivery site for marine-related degree programs, such as environmental sciences and coastal resources, and could provide opportunities for visiting and resident faculty, as well as undergraduate and graduate course work, in marine-related topics and research. Collaboration in the use of facilities and in providing courses would be entirely consistent with the plan for marine sciences adopted by the Board of Governors in 1994.

The first task force includes UNC campus representatives from the UNC Marine Sciences Advisory Board, chaired by the Associate Vice President for Research, Dr. Richard Linton. It will be assisted by an expert team of four external consultants headed by Dr. John Toll, Chancellor Emeritus of the University of Maryland. Other members of the consulting team will be announced shortly and include experts of national prominence in the fields of ocean sciences, coastal resources and environmental studies. The group is planning an extensive site visit to Dare County July 15-16, 1999, and aims to have a summary report and recommendations presented to me by September.
The second task force is directed by the Senior Vice President, Dr. Roy Carroll, and includes UNC officials involved in the planning of academic programs and distance education, as well as the operation of graduate centers within UNC. The focus of the group is to evaluate the general needs for educational programs and associated facilities, and was formed in response to the request by the Dare County Board of Commissioners in January of this year. This task force held meetings in Dare County on June 24 and is organizing a comprehensive educational needs assessment in the region as the next step. The needs involving specific initiatives in marine sciences will also be considered in this broader context.

Thank you very much for your support of our ongoing strategic initiatives. Please do not hesitate to contact me with any questions or concerns as we continue to explore ways the University can be of greater service to the northeastern coastal region of the state.

Sincerely,

Molly Corbett Broad

cc: Irvin Aldridge, Member, UNC Board of Governors
    R.V. Owens, III, Member, UNC Board of Governors
    Roy Carroll, Senior Vice President
    J.B. Milliken, Vice President for Public Affairs
    Richard Linton, Associate Vice President for Research
Task Force on Marine Sciences in Northeastern North Carolina

External Consultants:
(Chair) Dr. John Toll, Chancellor Emeritus
(Current: President, Washington College in Chestertown, Maryland)
Physics Building 4124, Regents Drive
University of Maryland
College Park, MD 20742-4111
Phone: 301/405-6051 FAX: 301/314-9525 E-mail: johntoll@physics.umd.edu

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Center for Environmental Science, UMCES, Center Administration Building
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PO Box 775
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Dr. John Gatewood, Professor
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Internal Consultants:
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Associate Vice President for Research and Director of Sponsored Programs
UNC General Administration
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Dr. Dan Baden
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UNC Wilmington
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Dr. William H. Queen
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Dr. Leonard J. Pietrafesa  
Professor and Head  
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Dr. Ravindra P. Sinha  
Chairperson, Department of Geosciences  
Elizabeth City State University  
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Elizabeth City, NC 27909  
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Dr. John Wells  
Director, UNC-CH Institute of Marine Sciences  
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Morehead City, NC 28557  
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E-mail: john_wells@unc.edu

Substitutes for July 15-16 Site Visit

Dr. James Merritt  
(substitute for Baden, UNCW)  
Center for Marine Sciences Research  
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Wilmington, NC 28403  
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Dr. Michael K. Stoskopf  
(substitute for Pietrafesa, NCSU)  
Professor  
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Dr. Francisco San Juan, Jr.  
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John S. Toll, Ph.D.

Dr. John Sampson Toll has made numerous contributions to science, science policy, and education. He is currently serving as President of Washington College in Chestertown, Maryland; as Professor of Physics and Chancellor Emeritus at the University of Maryland in College Park, Maryland.

Dr. Toll is a theoretical physicist who with John Wheeler opened up a major branch of dispersion theory in elementary particle physics, showing the broad consequences of causality when combined with other basic physics assumptions. These implications were extended further by Dr. Toll and his students and in his collaborations with Gunnar Kallen and others. This effort also led to various advances in quantum field theory, including derivation of the most general integral expression for the three point function in quantum field theory in terms of integrals over physical domains.

Dr. Toll has devoted much of his life to building great universities at Stony Brook and Maryland, which became major research universities under his leadership. He has also supported international scientific cooperation and improvements in education and research as former President of the Washington Academy of Sciences, as former President of the Universities Research Association, as former national Chairman of the Federation of American Scientists, and in many other roles.

Dr. Toll received his B.S. degree with highest honors from Yale University and his Ph.D. in Physics from Princeton University. He remained at Princeton after completing his Ph.D. to serve as Associate Director of Project Matterhorn (which later became the Princeton Plasma Physics Laboratory). He left Project Matterhorn to become Professor and Chairman of Physics and Astronomy at the University of Maryland College Park, where a small department became one of the nation's leading physics departments. He then served as President of the State University of New York at Stony Brook, developing a small institution into a major research university. After thirteen years at Stony Brook, he became President of the University of Maryland System and served as President and Chancellor in Maryland for eleven years of dramatic development.
In 1989 Dr. Toll became President of the Universities Research Association, a consortium of eighty major research universities that manages the Fermi National Accelerator Laboratory. The URA also managed the Superconducting Super Collider Laboratory until that project was cancelled by Congress. In 1995 Dr. Toll accepted his present post as President of Washington College, the first college chartered in Maryland.

Among honors that he has received are the University of Maryland Sigma Xi Award for Scientific Achievement, the National Golden Plate Award of the American Academy of Achievement, the Copernicus Medal from the Government of Poland, the Silver Medal of the Science University of Tokyo, a John Simon Guggenheim Memorial Foundation Fellowship, and six honorary doctorates from universities in the United States, Poland, and China.

Dr. Toll is currently Chairman of the Friends of the AIP Center for History of Physics. He is a member and former chairman of the National Sea Grant Review Panel. He formerly served as Chairman of advisory committees for the National Science Foundation and the National Aeronautics and Space Administration and three advisory committees for the U.S. Congress's Office of Technology Assessment. His career has also included service as an ensign and lieutenant j.g. in the United States Navy in communications research and as a staff member of the Los Alamos Scientific Laboratory.

Dr. Toll's scientific publications have appeared in American, Danish, Japanese, Swiss and Italian scientific journals. He has been active in efforts to improve mathematics and science education at all levels, including membership of the Mathematical Sciences Education Board of the National Academy of Sciences/National Research Council. He has also served as a member of the Board of Directors of the American Council on Education, as Chairman of the Marine Division of the National Association of State Universities of Land Grant Colleges and in numerous other committees involved in the improvement and support of science and education.
Donald F. Boesch

Don Boesch is President of the University of Maryland Center for Environmental Science (UMCES), where he also holds the rank of Professor. One of two non-degree granting research institutions in the 13-member University of Maryland System, UMCES conducts comprehensive environmental research, trains graduate students, contributes to public education and advises public agencies and others on environmental and natural resource management from its three laboratories spread across the state: Chesapeake Biological Laboratory on Solomons Island, Appalachian Environmental Laboratory in Frostburg, and Horn Point Environmental Laboratory near Cambridge. CEES has a $23 million/year operating budget and receives substantial support for its research from a wide array of federal agencies and private foundations. The Center houses one of the four university-based Exploratory Environmental Research Centers supported by the U.S. Environmental Protection Agency.

A native of New Orleans, Louisiana, Dr. Boesch received a B.S. in biology from Tulane University and a Ph.D. in marine science from the College of William and Mary. He was a Fulbright Postdoctoral Fellow at the University of Queensland and was later on the William and Mary faculty. He returned to his home state of Louisiana in 1980 to build and direct that state’s first permanent university marine laboratory, serving as the first Executive Director of the Louisiana Universities Marine Consortium, and was Professor of Marine Science at Louisiana State University. He was also the first director of the Louisiana Stimulus for Excellence in Research, a highly successful program to increase the competitiveness of science and engineering research. He moved to the University of Maryland in 1990.

Dr. Boesch is an internationally known marine ecologist who has conducted research in coastal and continental shelf environments along the Atlantic Coast, and in the Gulf of Mexico, eastern Australia and the East China Sea. He has published two books and more than 50 papers on marine benthos, estuaries, wetlands, the continental shelf, oil pollution, nutrient over-enrichment and environmental assessment and monitoring.

Don Boesch is particularly active in extending knowledge to environmental and resource management at regional, national and international levels. He is a science advisor to the Chesapeake Bay Program and to Maryland state agencies and in such diverse regions as Alaska (advisor to the Federal and State trustees on the Exxon Valdez oil spill), San Francisco Bay, Southern California, coastal Louisiana and south Florida. A particular focus of his recent writing is the application of science in the management of large ecosystems incorporating watersheds, estuaries and shelf waters, including the Chesapeake Bay and Mississippi Basin-Gulf of Mexico. Over a twelve-year period he was a member of the Marine Board and the Ocean Studies Board of the National Research Council. He chaired three prominent NRC committees, producing three reports which have had resulted in Congressional acts and federal science initiatives: Managing Troubled Waters: The Role of Marine Environmental Monitoring (1990), Priorities for Coastal Ecosystem Science (1994) and Science, Policy and the Coast: Improving Decisionmaking (1995).

Dr. Boesch has also served on national advisory boards for the Department of the Interior, Environmental Protection Agency, National Science Foundation, and National Oceanic and Atmospheric Administration. He until recently chaired the Florida Bay Science Oversight Board for the interagency research program there and is presently co-chairing the Coastal Zone Sector Panel of the U.S. National Assessment of the Potential Consequences of Climate Variability and Change. He is also currently Vice-Chair of the Governing Board of the Consortium for Ocean Research and Education (CORE).
John B. Gatewood
( SSN: 350-44-2764 )
Department of Sociology and Anthropology  E-mail: JBG1@Lehigh.edu
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Education

Ph.D. 1978 University of Illinois Anthropology
A.M. 1974 University of Illinois Anthropology
A.B. 1971 University of Illinois Anthropology (minors: Mathematics and History)

Academic Positions

Professor 1991-present Sociology & Anthropology, Lehigh University
Associate Professor 1984-91 Social Relations, Lehigh University
Assistant Professor 1978-84 Social Relations, Lehigh University
Department Chair 1990-93 Sociology & Anthropology, Lehigh University
Associate Dean 1989-90 College of Arts & Sciences, Lehigh University

Specializations and Interests

Maritime Anthropology North American Indians
Cognitive Anthropology Contemporary North America
Tourism Studies Research Methods

Professional Activities Relevant to Fisheries and Tourism

Proposal Reviewer — National Science Foundation, NOAA/National Sea Grant Program, Hawaii Sea Grant Program, Texas Sea Grant Program, Oregon Sea Grant Program, North Carolina Sea Grant Program, Georgia Sea Grant Program

Relevant Workshops / Conferences


National Sea Grant Workshop: “Oyster Rehabilitation” (James McVey, organizer). Annapolis, Md., December 5-6, 1989.


**Representative Publications**

**Fisheries**


**Tourism**


Agenda

Task Force on Marine Sciences in Northeastern North Carolina
July 14-16, 1999

Wednesday, July 14

Social Gathering for Task Force members. Van or walk to Festival Park in Manteo. In case of rainy weather, the picnic and concert will move to inside facilities at Festival Park

6:45 p.m.    Outer Banks History Center, Wynne Dough, Director

7 p.m.    Picnic at Festival Park, East End deck. Catered by White Doe Inn.

8 p.m.    Summer Series, North Carolina School of the Arts Orchestra

Thursday, July 15

7:30 a.m.    UNC Task Force Organizational Meeting, Elizabethan Inn. Second floor meeting room. UNC Task Force only.

8:00 a.m.    Breakfast Buffet, Elizabethan Inn, Raleigh Room

8:45 a.m.    Brief Introduction, Dare County Task Force on Higher Education

9:15 a.m.    North Carolina Aquarium on Roanoke Island. Tour of Construction Site.
             David Griffin, Aquarium Director

10:00 a.m.    Regional Air Tour (weather permitting).

12:30 p.m.    LUNCH
             Elizabethan Gardens. Catered by White Doe Inn.

1:30 p.m.    Presentations by UNC Institutions on Marine Sciences Programs

- UNC General Administration, Dr. Rich Linton
- East Carolina University (ECU), Dr. Bill Queen
- Elizabeth City State University (ECSU), Dr. Francisco San Juan
- North Carolina State University (NCSU), Dr. Michael Stoskopf
- University of North Carolina at Chapel Hill, (UNCCH), Dr. John Wells
- University of North Carolina at Wilmington (UNCW), Dr. James Merritt

continued...
Thursday, July 15 continued

3-5:30 p.m.  Roundtables: Presentations and Discussions  
Jockey’s Ridge State Park.  Auditorium

**Roundtable 1 - Coastal Processes**
- *Coastal Processes*: U.S. Army Corps Engineers Field Research Facility, Duck  
  William A. (Bill) Birkemeier, Director

**Roundtable 2 - Coastal Development**
- *Coastal Development: Nags Head*, J. Webb Fuller, Town Manager  
- *Planning Issues*, Raymond P. Sturza, Planning Director for Dare County  
- *Water Quality Issues*, Ann Thomas, Director, Dare County Health Department

5:30 p.m.  DINNER. Oregon Inlet Coast Guard Station.  Catered by First Impressions Catering.

7:00 p.m.  Oregon Inlet Coast Guard Station

**Roundtable 3 - Cultural Resources**
- *Graveyard of the Atlantic Museum*, Joseph Schwarzer, Executive Director  
- *Chicamacomico Historical Association*, Michael Halinski, President,  
- *Pocosin Arts Center*, Feather Phillips, Director  
- *Coastal Wildlife Refuge Society*, Bob Webster

Return to Elizabethan Inn
Friday, July 16

7:30 a.m.  BREAKFAST
Breakfast Buffet, Elizabethan Inn, Raleigh Room

8:15-9:30 a.m. Presentations by Hyde and Tyrrell Counties.
Elizabethan Inn, Elizabethan Room

10:00 a.m.  Wanchese Seafood Industrial Park

**Roundtable 4 - Fisheries**

- Wanchese Seafood Industrial Park, Rod Perry, Director, and Bob Peele
- Commercial fishermen, Joey Daniels, James A. Ruhle
- NC Marine Fisheries, Red Munden

11:00 a.m.

**Roundtable 5 - Environmental Issues and Natural Resources**

- U.S. Fish & Wildlife, Dennis Stewart and/or Mike Bryant
- U.S. National Park Service, Steve Harrison, Chief, Natural & Cultural Resource Management
- N.C. Coastal Reserves, Barbara Blonder
- Nags Head Woods, The Nature Conservancy, Jeff Deblieu
- Partnership for the Sounds, Jackie Woolard, Tom Stroud

12:00 a.m.  LUNCH, Fisherman’s Wharf Restaurant, Wanchese

1:30 p.m.  Manteo High School. Media Center

**Roundtable 6 - Educational Resources**

- College of the Albemarle, Dr. Sylvester McKay, President
- Dare County School Board, Hatteras Island, Allen Burrus, Member
- Dare County Schools, Gene Gallelli, Assistant Superintendent
- Tyrrell County Schools, Dr. Betsey Stallings, Superintendent
- Hyde County Schools, Dr. Ronald L. Montgomery, Superintendent

2:30 p.m.  Wrap-up Session. UNC Task Force only
Local representative available.

3:30 p.m.  Departures. Possible press interview with co-chairs Dr. Toll and/or Dr. Linton.
APPENDIX 5
ADMINISTRATIVE MEMORANDUM

SUBJECT: Revised Policies and Procedures for Planning, Establishing, and Reviewing Institutes and Centers in The University of North Carolina

NUMBER: 373

DATE: July 30, 1997

REPLACES ADMINISTRATIVE MEMORANDUM #145

Administrative Memorandum #373 specifies the revised policies and procedures for planning, establishing and reviewing institutes and centers in The University of North Carolina. These policies and procedures supersede those described previously in Administrative Memorandum #145.

Molly Corbett Broad
Policies and Procedures for Planning, Establishing, and Reviewing Institutes and Centers in The University of North Carolina

A. INTRODUCTION

This Administrative Memorandum defines the basic policies and procedures governing institutes and centers in the University of North Carolina. One important means to address the diverse mission of the University is through partnerships with organizations such as private or corporate sponsors, educational institutions, and federal or state agencies. A wealth of effective partnerships involving UNC institutions have been developed under the rubric of centers and institutes. Such units are usually multidisciplinary, have an important educational component, and may be established when a collection of faculty have secured long-term funding commitments to pursue unique research, public service, and/or instructional endeavors. Specific types of institutes and centers, as well as any policies or procedures pertaining to these individual categories, are defined in the Addendum to this section. The reporting format follows the addendum as Appendix 1.

The objective of this memorandum is to provide a uniform framework governing the establishment, monitoring, and discontinuation of centers and institutes to assure the effective and efficient use of resources. The constituent institutions are encouraged to develop more detailed protocols as appropriate, as long as they are in compliance with these basic policies and procedures.

B. PURPOSE AND SCOPE OF INSTITUTES AND CENTERS

Institutes and centers are established within the University to strengthen and enrich multidisciplinary programs of research, instruction or public service conducted by the faculty and staff. They also may provide undergraduate, graduate, and postdoctoral students with added research opportunities, facilities, and assistance, as well as enhance their involvement in public service and educational activities. The units also have a strong positive impact on the economic development of the state by providing job opportunities, supplying technical assistance and training, fostering community development, and enhancing the transfer of new technologies.

Institutes and centers must avoid unnecessary duplication within UNC. Each unit seeks to differentiate its mission and activities from other units, and to make its facilities available to other constituent institutions for cooperative activities as appropriate. The creation of an institute or center will not be authorized if the goals and clientele are essentially the same as those of an existing department, school, institute or center.
The activities of an institute or center may be funded from state appropriations, or from extramural funds sought for that purpose, or both. Unless organized specifically in response to legislation and appropriations approved by the North Carolina General Assembly to focus on a specific state need, each center and institute is expected to demonstrate a strong foundation of non-state support to justify its establishment and continuing operation.

C. AUTHORITY AND LINES OF RESPONSIBILITY

Institutes and centers are established or discontinued by the Board of Governors, acting upon recommendation of the President who shall seek the advice of the Chancellor(s) of the constituent institution(s) involved. Centers and institutes have the authority to manage space, budget, and personnel matters, but in general do not offer faculty appointments.

1. Institutional Centers and Institutes

An institute or center serving a single institution is responsible to the Chancellor or, by his or her delegation, to another administrative officer. The Director of an institutional institute or center is appointed by the Chancellor. If the Director's position is that of a senior administrative officer, the Director is nominated by the Chancellor for appointment by the President and the Board of Governors. If a faculty appointment is involved, the regular procedures for faculty appointments also are followed. Associate or Assistant Directors are appointed by the Director, subject to the approval of the Chancellor or a designated administrative officer of the institution.

2. Interinstitutional Centers and Institutes

Interinstitutional units are responsible to the President on policy and interinstitutional coordinating matters. They report through the Chancellor of the institution serving as the "administrative unit" to whom the President has delegated responsibility and authority to act. The President, however, retains ultimate responsibility for matters of general policy and intercampus coordination. The Director of an interinstitutional institute or center is responsible for administrative purposes to the Chancellor, or another administrative officer as designated by the Chancellor, of that constituent institution. The Director is appointed by the Board of Governors, upon recommendation of the President. A search committee for the Director is appointed by the President, based upon recommendations from the Vice President for Research and the Chancellor or his or her designee. If a faculty appointment is involved for the Director, the regular procedures for faculty appointments also are followed. Associate or Assistant Directors are appointed by the Director, subject to the approval of the Chancellor on whose campus the appointees will serve.

D. PROCEDURES FOR AUTHORIZATION TO PLAN AN INSTITUTE OR CENTER
To initiate the approval process for a new institute or center, the Chancellor shall first submit to the President a formal request for authorization to plan the institute or center. This is accomplished by a letter to the President, with a copy to the Vice President for Research, including sections (a-d) summarizing the following:

a. relevance of the proposed center or institute to the mission of the institution or of the University;
b. objectives and organization of the proposed unit, and why these objectives cannot be achieved within the existing institutional or University structures;
c. information about any similar units in the University and the State and any proposed relationships or possible overlaps with them; and
d. potential sources and estimated funding required to initiate the institute or center.

When the President acts on the request for authorization to plan the proposed institute or center, the Chancellor(s) of the relevant constituent institution(s) will be notified accordingly.

If the proposed institute or center is to be included as a component of a grant or contract application for support from an external agency, the authorization to plan must be granted prior to submission of the application from the constituent institution to the external agency. Review of the planning request will be given highest priority by the UNC General Administration staff to minimize problems with meeting agency deadlines for proposal submission. If the proposal is inadvertently submitted without prior authorization to plan, it may be required to be withdrawn or revised to satisfy University policies, in addition to requiring the submission of an appropriate request for planning authorization to the President. All submitted proposals also should include a statement that a subsequent request for establishment to the Board of Governors of the University of North Carolina will be required.

There are instances where institutions seek funds to establish a center or institute of limited scope that does not require authorization by the Board of Governors. The abstract of the proposal should make it clear that such a proposed unit is in a category such as an institutional "instructional center," "small c center," or "consortium," and should not be subject to these policies (see Addendum - Items 4 and 7). If, however, it later becomes apparent that the proposed institute or center is of sufficient scope to require Board of Governors' approval, authorizations to plan and to establish must be submitted and approved before the institution can accept any funds from the granting agency.

Authorization to plan an institute or center is valid for an initial period of two years. The status of proposed centers will be updated and planning authorizations reconfirmed by the respective institutions with each update of the University Long-Range Plan (see also Section G).

E. PROCEDURES FOR AUTHORIZATION TO ESTABLISH AN INSTITUTE OR CENTER
If the President approves the request for authorization to plan, the institution involved subsequently submits a formal proposal to establish the unit. Issues such as securing adequate start-up funding, confirming the absence of duplication with existing units, and the identification of suitable space and capital equipment resources should be addressed before requesting authorization to establish an institute or center.

The proposal for authorization to establish the center or institute is submitted to the President, with a copy to the Vice President for Research, and contains the following sections:

- a. the name of the proposed institute or center;
- b. the specific objectives and goals of the proposed unit;
- c. the unit's relevance to the institutional or University mission, including the impact upon the existing academic departments, schools, institutes and centers;
- d. a statement about any anticipated effects of the proposed unit on the instructional programs of the proposing institution(s);
- e. the name of the proposed director, and a description of any proposed advisory or policy boards;
- f. a description of the proposed unit's responsibility structure, including an organizational chart showing the relationship of the proposed unit to the existing organizations, the institution and the internal organization of the proposed unit;
- g. budget estimates for the first year of operation, projections for the following four years, and anticipated sources of funding;
- h. a statement of capital needs such as equipment and library resources;
- i. a description of immediate space needs and projections of future space needs;
- j. any additional information necessary to support the request to establish.

If the President approves the request for authorization to establish the proposed institute or center, it will then be recommended to the Committee on Educational Planning, Policies, and Programs of the Board of Governors. If the Committee approves the request, it will then recommend approval to the full Board of Governors at its next scheduled meeting. The President will notify the Chancellor of the constituent institution of the decision of the Board of Governors.

A simple change in the name of a previously established center or institute does not require Board approval, but should be reported in writing by the Chancellor to the President, with a copy to the Vice President for Research.
F. PERIODIC INSTITUTIONAL REVIEW OF INSTITUTES AND CENTERS

Chancellors shall establish mechanisms and schedules for periodic review and evaluation of all institutes and centers housed or administered by their respective institutions. Such reviews should result in recommendations regarding continuance of the unit. Particular attention should be paid to the relationship between the objectives of the institute or center and the mission of the institution. Other important criteria in internal or external evaluations should include the following:

a. Is current funding of the unit sufficient to continue its operation? If the unit was originally given start-up funds from the University or other granting agencies, has it been able to attract sufficient external funds to continue without major additional institutional support?

b. Are the unit's stated goals and objectives being met? Are the support and training of students consistent with the unit's stated goals and objectives?

c. Are the quality and quantity of scholarly activity by faculty, professional staff, and students reflected in the unit's output (e.g., publications, patents, grants, contracts)?

d. Do current operations duplicate the efforts of other units?

e. Do financial audits and professional evaluations demonstrate that the unit is being managed appropriately?

f. Are the facilities required for continued operation of the unit adequate?

g. Are the unit's clients being served? (The clients may include students, faculty, University administration, practicing professionals, the general public, the North Carolina General Assembly, or funding agencies, as may be appropriate considering the unit's mission.)

G. PROCEDURES FOR SUBMISSION OF REPORTS TO UNC GENERAL ADMINISTRATION

In addition to the institutional reviews described in Section F, routine status reports shall be submitted to UNC General Administration. The Director of each institute or center prepares a status report, typically between three to five pages in length, to be submitted to the President by the appropriate Chancellor. The report is prepared as part of each general update of the Long-Range Plan of the University carried out every two years. The status report provides summary information following the format shown in Appendix 1 at the end of this section, and includes quantitative data for the most recent fiscal year. The institution serving as the administrative unit for an interinstitutional center is responsible for submitting its status report. Major proposed changes in the budget, administrative structure, mission and/or goals (Section IX of Appendix 1) also may require formal approval by the Board.
Institutes or centers proposing discontinuation for consideration by the Board of Governors must complete only Sections I, II, and X of the reporting form shown in Appendix 1.

The UNC General Administration staff will work with the constituent institutions to develop direct electronic reporting procedures, including the use of World Wide Web based templates to collect data and to facilitate the submission and processing of routine status reports for existing centers and institutes.

For each Long-Range Plan update, institutions also must indicate the status of proposed new centers and institutes for which planning authorization has been granted previously. The institution must specify a requested action, either: (a) that reconfirmation is requested, including the estimated date for submitting the request to establish, or (b) that the planning request is withdrawn.

H. PROCEDURES FOR DISCONTINUATION OF AN INSTITUTE OR CENTER

When an institution decides to discontinue an institute or center, the Chancellor will forward a written request to the President, with a copy to the Vice President for Research. For example, if there is a loss of funding or key faculty; or if the mission, goals, or objectives of an established center or institute are to be superseded by a new one; the Chancellor should recommend that a unit be discontinued. The adequacy of funding sources is a critical element in determining whether a center or institute should continue operations. There are, of course, instances where the continuing operation of the center is of sufficient importance to warrant some additional financial assistance from the University on an interim basis. However, if the external sources of support have been lost, the Chancellor is strongly advised to recommend discontinuation unless alternative long-term prospects for funding can be identified.

After considering the recommendations of the Chancellor and the Vice President for Research, the President is responsible for recommending that an institute or center be discontinued by the Board of Governors. The Committee on Educational Planning, Policies, and Programs has the final authority for approving discontinuation. The President will notify the Chancellor of the constituent institution of the Committee's action.

The "phase-out" period for an institute or center that is to be discontinued shall be sufficient to permit an orderly termination or transfer of contractual obligations and to allow an effort to find alternative employment for full-time staff. Normally, the "phase-out" period shall be no more than one year after the end of the academic year in which final approval is given to discontinue the unit.
I. EXCEPTIONS

The North Carolina Agricultural Research Service, the North Carolina Cooperative Extension Service, and the Area Health Education Center Program are exempt from these policies and procedures. The UNC Center for Public Television and the public radio stations housed at the constituent institutions also are not subject to these policies. In addition, some instructional institutes or centers, as well as some institutes and centers of limited scope, may not require authorization by the Board of Governors (see items 4 and 7, respectively, in the Addendum). Any other exceptions or modifications must be approved by the President, based upon a written request from the Chancellor.

J. INVENTORY OF EXISTING INSTITUTES AND CENTERS

An inventory of existing institutes and centers listing the research and public service units authorized by the Board of Governors is included in each Long-Range Plan of the University and is available upon request from the Vice President for Research. Information also is available under the "Centers and Institutes" listings within the "Research" pages of the UNC General Administration World Wide Web site (http://www.ga.unc.edu/research), including a copy of these policies and procedures.

Molly Corbett Broad
ADDENDUM. DEFINITION AND POLICIES FOR SPECIFIC CATEGORIES OF INSTITUTES AND CENTERS

1. Institutes Versus Centers

For the purposes of classification within UNC, there is no technical distinction made between the terms "institute" and "center." Both typically offer interdisciplinary programs attracting faculty, students, and staff from various academic departments. In practice, an "institute" frequently refers to an activity with a broader scope than a "center." For example, an institute may create centers as separate units within its administrative structure.

2. Research Institute or Center

A research institute or center is a formal organization that has research as its primary mission. A research institute or center may also provide instructional, training, technical assistance, or public service programs. Although such units do not usually have jurisdiction over academic curricula, they may offer courses in cooperation with academic units.

3. Public Service Institute or Center

A public service institute or center is a formal organization that has public service or technical assistance as its primary mission. Research, instruction, and training may also be conducted as secondary components of its activities. Although such units do not usually have jurisdiction over academic curricula, they may offer courses in cooperation with academic units.

4. Instructional Institute or Center

An instructional institute or center is a formal organization that has training or instruction as its primary mission. Research and public service activities may also constitute a part of its activity. Although such units do not usually have primary jurisdiction over academic curricula, they may offer courses in cooperation with academic units. In contrast to typical research and public service units, instructional centers may require little in additional appropriations or extramural support via grants or contracts. As a consequence, an instructional institute or center may not be required to receive formal authorization by the Board of Governors. However, requests for authorization to plan should be submitted as outlined in Section D. The President, in consultation with the Vice Presidents for Research and for Planning, will decide whether formal authorization to establish the center is required from the Board of Governors. If so, then the center or institute must abide by all of the policies and procedures herein.

5. Laboratory

Primarily used by NCSU, the term "laboratory" may designate a distinct category of a center or institute. In this context, a "laboratory" involves a collection of specialized equipment and supporting facilities providing services to clientele from the University or external organizations. Such a "laboratory" is considered a center or institute and normally is covered under these policies and procedures.
6. Membership Centers or Institutes

A research or public service unit also may be defined as a "membership" center or institute. These units receive a substantial portion of their funding from membership fees paid by corporate or other private or governmental entities to pursue research or public service activities of mutual benefit. Membership agreements are routed through the institution using the standard internal processing forms for approvals of sponsored program requests. Once signed and fees paid by the member organization, the agreement is processed as a sponsored program award by the institution. NCSU, for example, has detailed administrative procedures in place to manage membership units involved in organized research or public service.

7. Centers That May Not Require Authorization by the Board of Governors

Centers or institutes that operate within a single academic unit, and which do not have a separate administrative structure or budget normally are considered exempt from these policies and procedures. Such centers limited in scope sometimes are referred to as "small c" centers. For example, a center that operates within an academic department, submits sponsored program proposals and receives funds through the department, and has an administrative staff that is incorporated within the department's organizational structure, is a "small c" center. In other words, the academic department provides the direct support for the instruction, public service, and/or research activities performed by the "small c" center. Similarly, a center incorporated within a larger center or institute may be considered as a "small c" center if it does not have an independent budget and governance structure. At UNC-CH, there are a number of "small c" organizations, such as some clinical centers, that are established and administered within the institution. At NCSU, centers not requiring Board of Governors approval include "consortia" which are limited in scope, are established by NCSU for a fixed period, and are monitored internally by NCSU. Centers or institutes that report directly to the "school" or "college" or to a senior administrative level of an institution usually are considered major centers requiring authorization by the Board of Governors. However, there are exceptions where a school may be smaller than some departments within an institution, such as at UNC-CH. In such instances, the school may be sufficiently narrow in scope to be considered as a single academic unit in the context of these guidelines.

Whenever an institution suspects there is a possibility that a proposed institute or center may require Board of Governors approval, a request for authorization to plan must be submitted as outlined in Section D. Such a request may include a recommendation from the Chancellor that the proposed unit be considered as exempt from the requirement for Board approval, as appropriate. The President, in consultation with the Chancellor and the Vice Presidents for Research and for Planning, will decide whether formal authorization to establish the center is required from the
Board of Governors. The Chancellor will be notified by the President whether a subsequent proposal to establish the center or institute must be submitted as described in Section E.

If an existing "small c" center or other similar unit previously considered exempt from these policies is proposing to have an independent budget and adopt a separate administrative structure, requests for authorization to plan and to establish must be submitted as described in Sections D and E, respectively.

Occasionally the classification of an existing center, not previously authorized by the Board of Governors, may be called into question. For example, a sponsored program proposal request or an announcement of a major grant award may suggest that the center has expanded in scope and might require authorization by the Board of Governors. In such instances, the President will ask the respective Chancellor to provide a written justification as to why the center or institute should continue to be considered exempt from these policies and procedures.

8. Institutional Versus Interinstitutional Centers and Institutes

Institutes and centers may be either institutional or interinstitutional in nature. They may include the participation of other institutions, agencies, or organizations, such as other colleges and universities, schools, hospitals, industry, foundations, or governmental bodies.

Interinstitutional centers and institutes generally involve more than one academic institution within UNC and must designate a specific campus to serve as the site of the administrative unit for the center or institute. Interinstitutional units serve to promote cooperation and to minimize duplication within the University. They may serve to increase the opportunities for external funding by enhancing interdisciplinary collaborations, and by facilitating access to a wider range of facilities, faculty, students, and other resources. Interinstitutional units also may enhance outreach and public service to the citizens of North Carolina by providing a coordination of "regional sites" in fields such as small business and economic development, cooperative extension, public health, the environment, and teacher training.

If an existing institutional center wishes to expand its scope by serving as the administrative unit for an interinstitutional center, a request for authorization to establish should be submitted as described in Section E. The request should address the impact of the proposed change to interinstitutional status. (Since the center already has a record of performance as an institutional center approved by the Board of Governors, it is not necessary to submit another authorization to plan.) Once the change in status to an interinstitutional center or institute is approved, the unit must adhere to the authority and lines of responsibility described in Section C, Item 2.
APPENDIX 1: REPORTING FORMAT FOR INSTITUTES AND CENTERS

I. Center
   A. Name of Institute or Center
   B. Year Established by the Board of Governors
   C. Internet Home Page URL

II. Director
   A. Name
   B. Title
   C. Address
   D. Phone and FAX Numbers
   E. E-mail Address

III. Mission Statement

IV. Relevance to Institutional Mission (including involvement with instructional programs)

V. Measures of Performance - Fiscal Year ______
   A. Personnel
      1. Number of FTE Faculty and Staff: EPA Positions ___ SPA Positions ___
      2. Number of FTE Students: Doctoral ___ Masters ___ Undergraduate ___
   B. Funds
      1. Direct State Appropriations: $___________
      2. All Other University Support (overhead receipts, cost sharing): $___________
      3. Total External Support from Grants and Contracts to the Center: $___________
      4. Estimated External Support Derived from Grants and Contracts Awarded to Other University Units: $___________
      5. Total All Sources of Support (Items 1-4 above): $___________
   C. Contracts and Grants Awarded to Center (numbers)
      1. Numbers of Awards
         Federal ___ Industrial ___ State ___ Other ___ Total ___
      2. Dollar Amounts of Awards
         Federal $ ___ Industrial $ ___ State $ ___ Other $ ___ Total $ ___
   D. Publications (numbers)
      Books ___ Journal Articles ___ Proceedings Papers or Reports ___ Total ___
   E. Technology Transfer Activities (numbers)
      Invention Disclosures ___ Patent Applications ___ Patents Received ___ Licenses ___
   F. Membership Centers Only
      Number of Members ___ Number of Licenses Awarded to Center Members ___

VI. Major Services Delivered to North Carolina (including clientele served, societal benefits, State and regional priorities being addressed, economic impact)

VII. Examples of Most Significant Accomplishments

VIII. Role of Center within the UNC System
   A. Geographic Region Served by Center, if Limited within North Carolina
   B. Duplication of Center within UNC System (if yes, please justify)
   C. Inter-Institutional Cooperative Activities Involving the Center

IX. Planned Changes for Program Improvement During Next Planning Period
   A. Size (personnel, space)
   B. Budget (include internal versus external support)
   C. Administrative Structure and Governance
   D. Mission

X. Centers or Institutes Proposing Discontinuation
   A. Reason for Discontinuation
   B. Proposed Phase Out Period
   C. Effective Date for Discontinuation
APPENDIX 6

Background Information on Dare, Hyde and Tyrrell Counties

(To be supplied by Dare County Higher Education Task Force)
Dear Dr. Linton:

As mentioned to you, attached please find a summary outline of the Plan to Establish a Marine Environmental Science Program at Elizabeth City State University. Please feel free to distribute or circulate as you wish.

I am trying to locate Dr. San Juan to request him to go to the meeting. If he is not available then I will try Bill Barker. My secretary, Mrs. Spellman will keep your office informed.

Regards,

R. P. Sinha
SUMMARY
OF A
PLAN TO ESTABLISH A DEGREE PROGRAM
IN
MARINE ENVIRONMENTAL SCIENCE
AT
ELIZABETH CITY STATE UNIVERSITY

Submitted by
R.P. Sinha, Chairman
Department of Geosciences,
Math & Computer Science
Elizabeth City State University
Elizabeth City, NC 27909
SINHARP@ALPHA.ECSU.EDU
SUMMARY

PLAN TO ESTABLISH A DEGREE PROGRAM
IN
MARINE ENVIRONMENTAL SCIENCE

Background Information

Approval to submit a request for authorization to establish a new degree program was
received from the UNC-GA in January of 1993. The proposal submitted earlier was held in
abeyance pending review of all academic programs by the UNC-General Administration.

Justification for the Program

Elizabeth City State University’s principal service population is derived from a sixteen county
region in northeastern North Carolina and is somewhat isolated from the major hub of academic
activity of the main campuses of the University of North Carolina System. For this reason, the public
schools of this region are very dependent upon ECSU and its science programs for the fostering of
science to its students and teachers. ECSU therefore represents a valuable resource for the
dissemination and advancement of scientific knowledge to the people of northeastern North Carolina.
Being situated on the Albermarle Sound, and close to the Dismal Swamp, and the coast, the aquatic
environment heavily influences the life in northeastern North Carolina where a number of problems
confront the people living in the area. Foremost is the multiple adverse effects of pollution of our
aquatic environment which includes sounds, rivers, wetlands, and coastal areas. Beach erosion is
causing considerable damage to the beach property in the area and understanding of the natural
geological causes to control such erosional processes has become essential. There is also a growing
concern about the adverse impact of commercial development on the extensive wetlands of the area.

All these become important for Elizabeth City State University when we realize that over 27%
of the area in the northeastern North Carolina is underwater compared to 3.3% for the whole state.
In the coastal counties of Dare and Currituck, the percentage of area under water goes up to 70 and
40. Aquatic environment, therefore, is a part of life in the northeastern North Carolina, and with
Elizabeth City being situated at the triple junction of Pasquotank River, Albermarle Sound, and the
Atlantic Ocean, the understanding of the coastal, marine and estuarine environment becomes
important. The deteriorating water quality in the large estuarine systems of North Carolina resulted
in the formation of Albemarle-Pamlico Estuarine Study, a public concern committee, supported by
EPA and the North Carolina Department of Natural Resources and Community Development. While
the Committee has been successful in making public aware of the problems, their solution would
require professionals trained in the appropriate field.

In addition to the local needs, there is a national and global need for scientists to understand
marine environment. More than one third of global hydrocarbon resources now come from offshore
environment and the percentage continues to grow. Large deposits of economic minerals of the
future most likely will come from the localized areas on ocean floors. Geological understanding of
the future resource environment, therefore, is of utmost importance to all of us. Furthermore, oceans
play a major role in influencing global climate and as the issue of global warming heats up, the
understanding of the marine environment becomes essential.
Program Description

The program is a baccalaureate level program with a B.S. degree in Marine Environmental Science. The instructional program will be interdisciplinary so as to cover the broad spectrum of the marine environment including biological, geochemical and geological processes, and will be designed to address, specifically, the problems of the marine and coastal environments in the areas of estuarine and coastal ecosystems, and geological processes which has impact on erosional processes.

The objective of the program would be to:

i) prepare students for professional fields in the areas of chemical, biological and geological sciences for professional employment in coastal and marine facilities and

ii) prepare students for graduate level training at other institutions in North Carolina in areas of Marine Sciences at other UNC campuses including East Carolina University, UNC-CH, NCSU and UNC-W.

Specifically, the courses would include

i) a set of core courses required of all majors which will assure that students have a basic understanding of the whole spectrum of marine environment.

ii) a set of concentration courses in the areas of geology, coastal environment, and chemistry and biology

ii) a set of required related and supportive courses from mathematics, chemistry, physics, and computer science

iv) 21 semester hours for free electives. Appropriate advisement will be provided to make effective use of those electives by choosing supportive courses.

The curriculum as approved by the Curriculum Committee, is attached.

Other Similar and Supportive programs

The existing baccalaureate level program in marine science in North Carolina is at UNC-Wilmington which is located in the southeastern North Carolina, about seven and a half hours drive from ECSU. At other UNC campuses only graduate programs are offered. It is obvious that Elizabeth City State University’s program, which will have a broader curriculum, would be an excellent pipeline for graduate schools at East Carolina University, UNC-Chapel Hill, Duke University, and North Carolina State University.

The University has a joint program with UNC-Chapel Hill in Marine Sciences for the last seven years and for the last two years a number of research projects are underway in the Dismal Swamp area. This year, the Office of Naval Research (ONR) has granted $149,000 for 1999-2001 (PI - R.P. Sinha) for a joint project with ACE facilities at Duck, NC to study oceanographic measurements off the coast in North Carolina. In addition to the above a minor program in Environmental Science was started in the Geoscience Department about three years ago which has been quite successful. Members from the N.C. Department of Health and Environment participate in the program as Adjunct lecturers and take our students out regularly to their field sites. It may be pointed out here that of 117 HBCU’s in the country, Elizabeth City State University is the only campus with a program in Geology. Thus, the program blends easily with the existing programs in the department.
Relation of Program to other Programs at Elizabeth City State University

The new program relates closely to existing programs for majors in geology, biology, and chemistry. Some of the courses required for the core and concentration, as well as supportive courses, are currently offered. Thus, a significant proportion of the courses can be taught by the current faculty. However, two additional faculty members will be required to meet the needs of the program. Possibilities also exist for students to combine field oriented internships and one or two courses during the summer months at Duke/UNC-Chapel Hill, NCSU and ECU Universities’ Marine Science Programs. During the last seven years, UNC-Chapel Hill has provided such internships for several students from Elizabeth City State University, and possibilities of continued support for such internships are very good.

Demand for Graduates

In a series of meetings arranged by the Southern Association of Marine Laboratories (SAML) and funded by the National Science Foundation, in which Elizabeth City State University’s Department of Geosciences participated, it was apparent that there is indeed a need for marine scientists in all the discipline areas outlined. The same message echoed from the Minority Institutions Marine Science Association (MIMSA) meetings in which Elizabeth City State University participated. There is a shortage of persons with the professional knowledge necessary to understand and manage marine and coastal resources.

Immediate employment of graduates, therefore, would obviously be with several state and federal agencies involved in marine and estuarine studies in the area. ECSU already has a grant with the ACE. Other agencies where these future graduates could work include Environmental Protection Agency, North Carolina Department of Natural Resources and Community Development, U. S. Fish and Wildlife Service, National Oceanographic and Atmospheric Administration, and the U. S. Department of Agriculture. Employment opportunities are also possible with National Park Services, U.S. Forest Service, and North Carolina State Parks.

Resources and Facilities

The new science building completed in 1990 has been provided with excellent facilities in terms of space for the program. There is adequate room for laboratory investigation, seminar and lectures. For future field training we anticipate use of the planned facilities of the UNC system Marine Lab in northeastern North Carolina. In addition, combined facilities at Beaufort and Morehead City, NC includes an ocean going vessel in which our students can participate. Cooperation from these two Institutions to date has been excellent, and is expected to continue in the future. Good possibilities exist also for using other SAML (Southern Association of Marine Laboratory) facilities. The Director of SAML was also very encouraging in this regard, and Elizabeth City State University students could go to other SAML marine labs for summer internships.
Thus, there is adequate space available for the program, and we do not anticipate need for additional on-campus facility. There may be need for some specialized equipment at a later date. These can be acquired through general grants for equipment e.g. Title III or through subsequent grant awards from outside agencies like National Science Foundation.

To conclude, the public awareness about the problems related to the estuaries, coastal, and marine environment is considerable. There is a dire need to solve the problems of the coastal areas of North Carolina. Students graduating from the above program will be trained to make sound scientific decisions on many problems related to the coastal area and engage in environmental investigations. Marine Environmental science is on the threshold of creating new horizons. Horizons never end.
# Marine Environmental Science Curriculum

Approved by the Curriculum Committee
Elizabeth City State University

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MAJOR

B.S. in Marine Environmental Sciences

A. General Education Core .................................................. 43 Sem. Hrs.

B. Major Core Requirement


   *MAS 111 Introduction to Marine Science ............................... 3.0
   MAS 224 Marine and Coastal Resources ................................. 3.0
   MAS 226 Beach & Island Environ. Processes ............................ 3.0
   *MAS 330 Coastal and Marine Geology .................................. 3.0
   MAS 331 {Marine Biology}
     or
   MAS 332 {Marine Ecology} ................................................. 3.0
   MAS 333 Chemistry of Aquatic Environment ............................. 3.0
   MAS 340 Field Internship .................................................. 4.0
   MAS 401 Global Geochemical Cycles .................................... 3.0
   *MAS 402 Physical Oceanography ......................................... 3.0
   MAS 425 Independent Study ............................................... 3.0
* Courses that can be taught by existing faculty. (1) To be included in GE (Natural Science) courses (2) One of MAS 331 or MAS 332

Concentration in Marine Biology

*MAS 400 Physiology of Marine Animals ............................................. 12 Sem. Hrs.
*MAS 421 Marine Biology (Invertebrate) ........................................... 3.0
MAS 422 Benthic and Planktonic Life .............................................. 3.0

* (MAS 331 Marine Biology)

* (MAS 332 Marine Ecology) ......................................................... 3.0

(Biology 141/L and 142/L to be taken as part of the GE requirement)

Concentration in Geology ............................................................... 12 Sem. Hrs.

**GEOL 341/L Mineralogy .............................................................. 3.0
**GEOL 440 Structural Geology ...................................................... 3.0
**GEOL 441/L Petrology ................................................................. 3.0
*MAS 443 Geological Oceanography ................................................ 3.0

**GE 158/L Principles of Geological Sciences (to be taken as part of the GE Course requirement)

Concentration in Coastal Management .............................................. 12 Sem. Hrs.

MAS 440 Hydrology of Coastal Waters ............................................. 3.0
MAS 441 Estuarine Environment ...................................................... 3.0
MAS 442 Coastal Urbanization and Land Use Planning .................... 3.0
MAS 443 Coastal and Marine Management Policy ......................... 3.0
*Courses that can be taught by existing faculty
**Existing courses

Concentration in Chemistry .................................................. 12 Sem. Hrs.

**CHEM 202/L Quantitative Analysis/Lab ............................... 4.0
**CHEM 301/L Organic Chemistry I/Lab ................................ 4.0
**CHEM 403/L Physical Chemistry I/Lab ................................ 4.0

Related Area Courses (Required) .......................................... 19 Sem. Hrs.

**CHEM 101/L General Chemistry I/Lab ................................ 4.0
**CHEM 102/L General Chemistry II/Lab ................................ 4.0
**PHYS 181C/L University Physics I/Lab ................................ 4.0
**PHYS 182C/L University Physics II/Lab ................................ 4.0
**CSC 115 Computer Science I ............................................. 3.0

Electives (Recommended)

**CSC 214 Fortran Programming ........................................... 19 Sem. Hrs.

MAS 450 Research in Marine Science I ................................. 3.0
MAS 451 Research in Marine Science II ................................. 3.0

**CHEM 401 Biochemistry .................................................. 3.0

*STAT 251 Basic Statistics ................................................ 3.0

**BIOL 486 Scientific Writing ............................................ 3.0
(GE 118 is required of all students)
MATH 158 - Calculus II is required of all Chemistry Concentration Majors
BIOL 487 Statistical Application in Sciences .............................................. 3.0
GEOG 308 Weather and Climate ................................................................. 3.0
**GEOL 499 Seminar in Geology ................................................................. 1.0

*Required Course
**Calculus I and II are part of required GE courses

** Existing Courses

COURSE DESCRIPTIONS (New Courses)

MAS 111: Introduction to Marine Sciences (3)*
Physical, chemical, geological and biological processes of ocean and interaction with adjacent waters. Ocean environment and configuration of the ocean floor. Lecture three (3) hours; A minimum of 1 Field Trip.

MAS 224: Marine and Coastal Resources (3)
An introduction to the resources and economic potential of the marine and coastal environment. Lecture three (3) hours.

MAS 330: Coastal and Marine Geology (3)*
Geology of different coastal and marine regions and their evolution. Lecture three (3) hours; Lab. Prerequisite: MAS 111

MAS 331: Marine Biology (3)
Physical, chemical, and biological processes emphasizing adaptation of marine organisms. Lecture three (3); Lab two (2) hours.

MAS 333: Chemistry of Aquatic Environment (3)*
Various chemical processes in estuary fresh water and ocean environments including coastal ionic distribution. Lecture three (3) Marine Lab two (2) hours. Prerequisite: CHEM 101/L.

MAS 340: Field Internship (4)
Field work at an accredited facility such as Marine Laboratory. Prerequisite: MAS 111,330,331; CHEM 102/L.

MAS 401: Global Geochemical Cycle (3)
A seminar course evaluating the global geochemical cycle of carbon, nitrogen, water and sulphur with emphasis on their impact on global climate. Lecture three (3) hours.
MAS 402: Physical Oceanography (3)*
Physical processes of the oceans, the dynamics of waves, tides, current, and transmission of light and sound. Lecture three (3) hours; Field trips.

MAS 420: Physiology of Marine Animals (3)*
Comparative physiology of marine animals with emphasis on responses of organisms to environmental factors. Lecture three (3) hours. Prerequisite: MAS 331.

MAS 421: Marine Biology (Invertebrate) (3)*
Structure, function, and development of marine invertebrates. Lecture three (3) hours. Prerequisite: MAS 331 Lab.

MAS 422: Benthic and Planktonic marine Life (3)*
Morphology, reproduction, life history, and environment for the growth of benthic and planktonic marine life. Lecture Three (3) hours; Lab.

MAS 425: Independent Study (3)
At least junior level with approval from the appropriate instructor and chairperson.

MAS 433: Geological Oceanography (3)*
The geology of ocean basins, including origin, bottom physiography, sediment distribution, and sedimentary processes. Lecture (3) hours; field trips. Prerequisites: GE 158L, PHYS 101L, PHYS 102L.

MAS 440: Hydrology of Coastal Waters (3)
The discharge and current activity of coastal waters including estuaries, wetlands, and marine environment factors affecting water quality and ecological imbalance. Field oriented seminar course. Prerequisite: CHEM 101L, 102L; MAS 330, 331, and 332.

MAS 441: Estuarine Environment (3)
Chemistry, microbiology, and pollution of estuaries, wetlands, and marine coastal waters. Lecture three (3) hours. Prerequisites: CHEM 101L, 102L; MAS 330, 331, and 332; Lab

MAS 442: Coastal Urbanization and Land Use Planning (3)
Review of the growth of the coastal urban areas, particularly North Carolina problems, practice, and policies of developing coastal urban area. Lecture three (3) hours. Prerequisites: GE 158L; GEOL 331; MAS 431, 432; Field trips.

MAS 443: Coastal and Marine Resources Management (3)
Managing the natural resources of the coastal and marine environment. Human activities affecting those environments and policies governing those activities. Lectures three (3) hours. Prerequisites: GE 158L; GEOL 331; MAS 402, 431; Field trips.
### Suggested Curriculum Guide for Marine Environmental Science Concentration in Geology

#### First Semester

<table>
<thead>
<tr>
<th>Course Number and Title</th>
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<tr>
<td>*GE 102 Comp. &amp; Literature I</td>
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<td>*MATH 57 Calc/Analytic Geom. I</td>
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<td>*GE 130 Art Appreciation</td>
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<td>*GE 140 World Civ. I</td>
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<td>*Physical Activity</td>
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#### Second Semester

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<tr>
<td>*GE 103 Comp. &amp; Literature II</td>
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<td>*GE 158/L Prin. of Geol. Sci.</td>
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<td>*GE 185 Health Concepts</td>
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#### Sophomore Year

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<td>*GE 135 Intro. to Music Lit.</td>
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<td>*GE 201 World Lit. I</td>
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<td>*CHEM 101/L Gen. Chemistry I</td>
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<td>MAS 224 Marine &amp; Coastal Resources</td>
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<td>CIS 115 Computer Science I</td>
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<tr>
<td>*GE 142 Intro. to Geography</td>
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<td>*GE 202 World Lit. II</td>
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<td>CHEM 102/L General Chemistry II</td>
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<td>PSYC 212 Gen. Psychology</td>
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<td>**Electives (incl. Statistics)</td>
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#### Junior Year

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<tr>
<td>MAS 226 Beach &amp; Island Environ.</td>
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<td>MAS 330 Coastal &amp; Marine Geol.</td>
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<tr>
<td>PHYS 181C/L University Physics</td>
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<td>MAS 333 Chem. of Aquatic Environment</td>
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<td>PHYS 182C/L Univ. Physics</td>
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#### Summer

**MAS 340 Field Internship** 4

#### Senior Year

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<thead>
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<tbody>
<tr>
<td>GEOL 341/L Mineralogy</td>
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<td>GEOL 440 Structural Geol.</td>
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<td>MAS 443 Geological Oceanography</td>
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<td>MAS 425 Independent Study</td>
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<td>MAS 402 Physical Oceanography</td>
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<td>Electives</td>
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*GE Courses
### Suggested Curriculum Guide

**for**

**Marine Environmental Science**

**Concentration in Chemistry**

**Freshman Year**

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Second Semester</th>
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<td>*GE 130 Art Appreciation</td>
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<td>*GE 140 World Civ. I</td>
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**Sophomore Year**

| | | |
| **CSC 115 Computer Science I** | 3 | **CSC 115 Computer Science I** | 3 |
| **GE 135 Intro. to Music Lit.** | 2 | **GE 142 Intro. to Geography** | 3 |
| **GE 201 Gen. Lit.** | 3 | **GE 202 World Lit. II** | 3 |
| **CHEM 101/L Gen. Chem. I** | 4 | **CHEM 102/L Gen. Chemistry II** | 4 |
| MAS 224 Marine & Coastal Resources | 3 | **PSYC 212 Gen. Psychology** | 3 |
| Physical Activity | 1 | Electives (includes Statistics) | 4 |
| | 16 | | 17 |

**Junior Year**

| | | |
| **CHEM 202 Quant. Analysis** | 4 | **MAS 331 Marine Biology** | 3 |
| **MAS 226 Beach & Island Environ.** | 3 | **MAS 333 Chem. of Aquatic Environment** | 3 |
| **MAS 330 Coastal & Marine Geol.** | 3 | **PHYS 182C/L Univ. Physics II** | 4 |
| **PHYS 181C/L University Phys I** | 4 | **Electives** | 6 |
| | 14 | | 16 |

**Summer**

**MAS 340 Field Internship** 4

**Senior Year**

| | | |
| **CHEM 301 Organic Chemistry** | 4 | **MAS 402 Physical Oceanography** | 3 |
| **CHEM 403 Physical Chemistry** | 4 | **MAS 422 Biology of Benthic Planktonic Organism** | 3 |
| **MAS 401 Global Geochemical Cycles** | 3 | **MAS 425 Independent Study** | 4 |
| **MAS 332 Chemistry of Marine Environment** | 3 | **Elective** | 4 |
| | 14 | | 14 |

*GE Courses
Suggested Curriculum Guide
for
Marine Environmental Science
Concentration in Coastal Management

Freshman Year

<table>
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<tr>
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<td>*GE 141 World Civilization II</td>
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<tr>
<td>*GE 130 Art Appreciation</td>
<td>*GE 158/L Prin. of Geol. Sci.</td>
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Sophomore Year

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|                                                        |                                                        |
| *GE 135 Intro. to Music Lit.                          | *GE 142 Intro. to Geography                          |
| 2                                                   | 3                                                   |
| *GE 201 World Lit I                                  | *GE 202 World Lit. II                                |
| 3                                                   | 3                                                   |
| *CHEM 101/L Gen. Chemistry I                         | *CHEM 102/L Gen. Chemistry II                        |
| 4                                                   | 4                                                   |
| MAS 224 Marine & Coastal Resources                   | PSYC 212 Gen. Psychology                             |
| 3                                                   | 3                                                   |
| **Electives                                         | Electives (incl. Statistics)                         |
| 3                                                   | 4                                                   |
| *Physical Activity                                  |                                                     |
| 1                                                   |                                                     |
|                                                        |                                                        |
|                                                        | 16                                                  |

Junior Year

|                                                        |                                                        |
|                                                        |                                                        |
|                                                        |                                                        |
|                                                        |                                                        |
| MAS 226 Beach & Island Environ.                      | MAS 332 Marine Ecology                                |
| 3                                                   | 3                                                   |
| MAS 330 Coastal & Marine Geol.                       | MAS 333 Chem. of Aquatic Environment                 |
| 5                                                   | 3                                                   |
| PHYS 181/L General Physics I                         | PHYS 182/L General Physics II                        |
| 4                                                   | 4                                                   |
| Electives                                           | Electives                                           |
| 6                                                   | 6                                                   |
|                                                        | 16                                                  |
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|                                                        |                                                        |
|                                                        | 14                                                  |

Summer: MAS 340 Field Internship 4

Senior Year

|                                                        |                                                        |
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|                                                        |                                                        |
|                                                        |                                                        |
| MAS 440 Hydrology of Coastal Waters                   | MAS 442 Coastal Urbanization and Land Use Planning   |
| 3                                                   | 3                                                   |
| MAS 441 Estuarine Environments                        | MAS 443 Coastal & Marine Management Planning         |
| 3                                                   | 3                                                   |
| MAS 401 Global Geochemical Cycles                    | MAS 425 Independent Study                            |
| 3                                                   | 4                                                   |
| Electives                                           | Electives                                           |
| 6                                                   | 4                                                   |
|                                                        | 14                                                  |

*GE Courses
April 28, 1999

Molly Corbett Broad, President
The University of North Carolina
PO Box 2688
Chapel Hill, NC 27515-2688

Dear President Broad:

I write concerning your recent correspondence regarding development of a marine science facility in northeastern North Carolina. Attached is a proposal developed by Dr. Bill Queen of ECU. I believe this proposal, which outlines the development of a coastal studies center in Dare County, begins to address the concerns expressed in your letter.

I will be happy to discuss the proposal with you at any time.

Sincerely,

Richard R. Eakin
Chancellor
In the event of Transmission problems, 919/515-3711

Date: 5-26-99

To: Dr. R. Sexton

From: Ben Pietrasca

Recipient # 919-962-7139

Sender # 515-3711

(DOES NOT INCLUDE COUNTRY CODE)

Memo:

(Draft - Do not cite.)

(prepared for NCSU Chancellor in 1998)
EXECUTIVE SUMMARY. The intrinsic and extrinsic value of the Outer Banks is enormous and appreciating rapidly. The region from Ocracoke to Corolla serves as a base for tourism and vacation development, commercial and recreational fishing and seafood processing. Continued viability of biologically productive estuaries contained within the thin sandy strip comprising the barrier island system is essential to the well-being of North Carolina, and the Outer Banks' ability to sustain growth and to recover from natural disasters depends on accelerating scientific understanding of intricately intertwined coastal and estuarine phenomena.

Presently, coastal research stations in North Carolina are based in Morehead City, Beaufort and Wilmington. The waves, weather, underlying geology and sand supply along the south-facing beaches at these stations differ tremendously from the conditions on the barrier islands to the north. Oregon Inlet exemplifies society's need for better information. It is the most important connection between North Carolina's rivers, estuaries and the Atlantic Ocean, and while the 150-year-old inlet's tendency to migrate is well-known, the economic, biologic, hydrologic and oceanographic implications of options to stabilize it are contentious. Similarly, much attention has been focused on the Neuse River, yet fish kills are more common in the Pamlico River to the north.

North Carolina State University, East Carolina University and Elizabeth City State University have established marine programs ideally suited to address these problems. Understanding coastal phenomena requires intensive, on-site, interdisciplinary studies. At present, the Outer Banks lacks facilities to conduct research, teaching and public outreach programs. A coastal research and education center in northern Dare County would be an investment in the well-being of North Carolinians for the 21st Century.

Location of such a center in Dare County, perhaps near the Manteo aquarium or other suitable site, would offer opportunity to better understand:

- Barrier island erosion and beach renourishment programs
- Coastal oceanographic and meteorological conditions
- Groundwater management
- Fish population dynamics
- Estuarine water quality

An essential component of the educational mission is dissemination of knowledge to the general public. The prospects for preserving the coastal zone and its potential bounty are directly related to awareness of its fragility. Science House, an NCSU outreach program networking K-12 teachers to university faculty and resources, will provide the link between research and teaching activities and the public.

NCSU has signed a Memorandum of Understanding (MOU) to enhance and foster collaboration in scientific research and education with the US Army Corps of Engineers Waterways Experiment Station, Field Research Facility at Duck, North Carolina. The Field Research Facility (FRF) occupies 176 acres on the Outer Banks, and the beach and areas offshore of the FRF are arguably the best-characterized in the world from a coastal scientific and engineering standpoint. The FRF could serve as a satellite to the main center.

The FRF property is of special and unique scientific value, because it contiguously connects both ocean and sound and is only minimally developed. Such connectedness offers the possibility of direct field access to both Currituck Sound and ocean environments from a single locale, and would thus serve as an effective base for biological studies critical to NC fisheries.

The scope of this project is of order $10M for construction and upfitting of the center. Continuing costs will be of order $2M/year.
range of marine programs and activities are ideally suited to address these problems. The complexity of coastal ecological problems requires on-site, interdisciplinary, approaches. At present, the NE sector of NC's coast lacks dedicated space to conduct the necessary research, teaching and public outreach programs. An investment in coastal facility in northern Dare County would be an investment in the well being of NE coastal North Carolinians for the 21st Century. The NC Estuarine Research Reserve System has a site between Duck and Corolla and offers a superb study site to compare the ecology of a system left in its natural state versus sites to the north and south which are undergoing heavy development.

Some anticipated benefits are: Improved fisheries stocks and assistance to aquaculture; Improved forecasting of atmospheric storms and coastal flooding; Fewer fish kills and disease outbreaks; Sustainable economic development of resource management; Improved, and restored fish and shellfish habitats; Reduced erosion rates and improved shoreline protection; Reduced conflict through better informed users; Improved water quality through technology transfer and education.

To make rapid progress in addressing these issues in a comprehensive and coordinated way, will require a dedicated coastal facility for marine related research, teaching and extension efforts:

Location of such a facility in Dare County would not only improve research capabilities, it would also permit greater involvement of coastal residents and immediate technology transfer and education for technicians needed in the application of new coastal technologies. A working relationship with the location would be enhanced by the location of NCSU, ECU and ECSU faculty, staff, students, and visiting scientists in close proximity to the institution on the frontline of technical training.

As costs increase, and conflict among users intensifies, commercial fisheries is becoming much more competitive. Economic analyses of fisheries management alternatives, business plans and tax/business accounting for fisheries firms, and demands for higher quality handling require more technology transfer activities. NCSU scientists have had major programs that have achieved national and international attention in modeling marine atmospheric storms and related coastal currents and this portion of NC's coast undergoes frequent and heavy assault by coastal storms. Their models forecast the ocean and estuarine response to atmospheric storm events from thunderstorms, tornadoes, and water spouts to hurricanes and winter storms, "nor'easters". Models that predict flood stages in the coastal zone have performed very well and have been adopted by the National Weather Service. These models are extremely important to coastal residents. NCSU scientists have had major programs in air-sea interaction, focusing on the late fall through early spring gales that form along the North Carolina coast, reach maximum intensification off Cape Hatteras, and bury the eastern US seaboard with snow and sleet. In addition to the study of the effects on water currents on fish larval movement, these models also are being used to forecast phenomena such as the spread of the Red Tide and coastal erosion rates. Other less dramatic weather-related processes may be equally important to the coastal zone. The transport of finfish and shellfish larvae from spawning areas in the Chesapeake Bay region to the north and from the offshore Gulf Stream to nursery grounds in the estuaries, appears to be driven by winter storm events. Water levels in Pamlico Sound and inlet flow models and predictions are additional components of this larval movement research program.

Biologists are involved in studies of the decline in fisheries species and water quality, as well as in NE NC production of phytoplankton and seagrasses. Biologists are also involved in formulating fisheries management plans in conjunction with the NC DMF, and examining the feasibility of stock enhancement with hatcher-reared finfish. Chemists and geologists are examining the distribution of oxygen and nutrients vital to plankton and to seagrasses and marshgrasses, the movement of sediments, and the dispersal of pollutants and microbial contaminants that affect water quality. Real-time data, coupled with satellite data downloaded directly on site, will allow far more detailed description of how these attributes of our waters, including the Red Tide, are moved about. This new knowledge will lead to improved strategies for minimizing fish kills and shellfishing closures, clearer
exponential population growth which has been occurring in this in this part of the state along with continued growth in upstream drainage areas, water quality research and extension programs will become even more important in the development of basinwide water quality planning strategies.

Sea level had been rising at a relatively constant and slow rate for the past four to five thousand years. However, the rate of rise has been accelerated in the past 60 years and further, is forecast to greatly accelerate in the next 50 years as greenhouse gases accumulate in the atmosphere, leading to global warming and subsequent melting of polar ice. Sea level rise and coastal flooding will have global consequences. In NE coastal North Carolina, there has been significant shoreline retreat and coastal erosion; evolution of coastal wetlands through migration or drowning; and changes in the number and position of inlet sites, deltas, and navigational hazards. Encroachment of salt water on wetlands has negative impacts, causing either landward migration or drowning in place. These losses of wetland can be mitigated through better understanding of the mechanics of wetland evolution. A coastal facility would allow frequent sampling of sedimentation rates and infill processes of the fully functioning wetland habitat.

Members of the NCSU/ECU/ECSU faculty use computer modeling, digital photogrammetry, and field surveys to analyze shoreline change and coastal hazard risk assessment. A laboratory located near the coast would significantly enhance the field studies undertaken at the Army Corps of Engineers Duck facility. Studies emphasizing wave energy events and their interaction with shoreline change are also underway, and would benefit from real-time sampling as discussed earlier under the facility for the study of coastal dynamics.

NCSU has signed a Memorandum of Understanding (MOU) to enhance and foster collaboration in scientific research and education with the U.S. Army Corps of Engineers Waterways Experiment Station, Field Research Facility at Duck, North Carolina. The Field Research Facility (FRF) occupies 176 acres on the Outer Banks, and the beach and areas offshore of the FRF are arguably the best-characterized in the world from a coastal scientific and engineering standpoint. The demonstrated capabilities and potentialities of the Field Research Facility (FRF) have considerable direct and intangible value to the State of North Carolina, and offer perhaps the best opportunity to understand:

- barrier island erosion and beach renourishment programs
- coastal oceanographic and meteorological conditions
- groundwater management
- fish population dynamics

The FRF property is of special and unique scientific value, because it contiguously connects both ocean and sound and is only minimally developed. Such connectedness offers the unique possibility of direct field access to both Currituck Sound and ocean environments, and would thus serve as an effective base for biological studies critical to NC fisheries.

The MOU can and should be exploited for studies of oceanographical, hydrological and biological systems of interest to North Carolina, DoD and commercial enterprises.

The FRF could also support small scientific meetings and workshops, following such U.S. examples as the University of Washington’s Friday Harbor Laboratories and the Mark Hatfield Marine Center in Newport, Oregon, and French-government-supported scientific-meeting locations in the mountains near Grenoble and on the island of Corsica, where inspiring natural environments are conducive to creativity, and are in year-round demand.

In addition to the scientific opportunities offered by the FRF, economies of surrounding counties would benefit from direct contributions during such large-scale, long-term experiments on coastal processes as Duck94 and SandyDuck, multi-disciplinary studies of coastal processes supported by the Office of Naval Research, Naval Research Laboratory, US Geological Survey, National Science Foundation, U.S. Department of Energy and the National Aeronautics and Space Administration.
April 28, 1999

Molly Corbett Broad, President
The University of North Carolina
PO Box 2688
Chapel Hill, NC 27515-2688

Dear President Broad:

I write concerning your recent correspondence regarding development of a marine science facility in northeastern North Carolina. Attached is a proposal developed by Dr. Bill Queen of ECU. I believe this proposal, which outlines the development of a coastal studies center in Dare County, begins to address the concerns expressed in your letter.

I will be happy to discuss the proposal with you at any time.

Sincerely,

Richard R. Eakin
Chancellor
PROPOSAL

For a

COASTAL STUDIES CENTER

In

DARE COUNTY, NORTH CAROLINA

To be operated by

EAST CAROLINA UNIVERSITY

October, 1998

The first European settlement of North America was established in 1587 on Roanoke Island in what is now Dare County, North Carolina. The settlement failed, and for approximately three hundred and fifty years Roanoke Island and the surrounding area remained sparsely populated and undeveloped. Small fishing villages existed in the area in the eighteenth century and recreational/tourism facilities were developed in Nags Head in the middle of the last century. However, major development activities were not initiated in the region until the late 1960s and early 1970s. These developmental activities have been concentrated on the barrier islands, and they are likely to continue for the foreseeable future. Because land costs have increased dramatically on the barrier islands, development activities will, in all likelihood, move inland to the shoreline of the sounds and nearby estuarine rivers over the next decade.

Dare and other nearby counties have benefited in many ways from these development activities. Numerous jobs have been created, cultural and recreational activities have been provided, and increased tax monies have resulted in improved schools, roads and other public facilities. Nevertheless, considerable public concern has developed in recent years over the negative impacts of development. Specifically, degradation of estuarine water quality, loss of wetlands and other important natural areas, gentrification of historic fishing communities, increased traffic congestion, and the decline in marine fishery stocks.

State agencies, local government, chambers of commerce, and various business groups have carefully documented the advantages of economic development. The marine science community
has gathered considerable data on the negative impacts of development on the estuarine and near-shore coastal environments. However, little if any effort has been made, in either North Carolina or nationally, to use this information in the development of guidelines, paradigms or procedures that could be employed by either policy makers or the general public to make informed decisions about further economic growth.

The administration and faculty of East Carolina University (ECU) firmly believe that Dare and other northeastern counties offer a superb opportunity to develop such guidelines, paradigms and procedures. This view is based on several important realities. First, the coastal area of northeastern North Carolina is still in a relatively early stage of development. Second, development will continue at an increased pace on the barrier islands, and within several years expand to the shorelines of the nearby sounds and estuarine rivers. Third, ECU has the faculty and facilities, as well as a strong interest, in conducting the long-term type study that is necessary if guidelines, paradigms and procedures useful to policy makers and the general public alike are to be developed. Existing faculty have a deep understanding of the cultural history of the region, knowledge of the physical and biological systems of the coast, and have considerable expertise in studying the socio-economic systems of coastal North Carolina.

To date, the faculty has developed this expertise and assembled scientific information about coastal systems through many isolated and independent studies. For this expertise and information to be useful to coastal policy makers and the general public, the efforts of the faculty need to be integrated and focused on a specific area of the North Carolina coast. For the reasons cited above, we believe this effort should be concentrated on Dare and surrounding counties. A focus of this type will require a major facility in Dare County—a facility that can serve as a base for regional biological, physical, socio-economic, cultural and historical research efforts, and also as a center for educational and training opportunities for policy makers and the general public.

We believe that such a program in an appropriate facility in Dare County would not only be an invaluable asset in the further economic development of northeastern North Carolina, but it would contribute to the resolution of coastal problems of the remainder of the state, and also the nation.
May 11, 1999

Chancellor Richard R. Eakin
East Carolina University
103 Spilman Building
Greenville, North Carolina 27858-4353

Dear Dick:

Thank you for your letter of April 28, 1999 and the accompanying proposal developed by Dr. Bill Queen of ECU outlining the development of a coastal studies center in Dare County.

I have learned that Dr. Queen will be asked to provide a report on this proposal to the Marine Science Advisory Board at its meeting on May 26, 1999.

Sincerely,

Molly Corbett Broad