

North Carolina Sea Grant

National Sea Grant College Program Site Review Team Visit, June 28-29, 2011



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A. Program Management and Organization

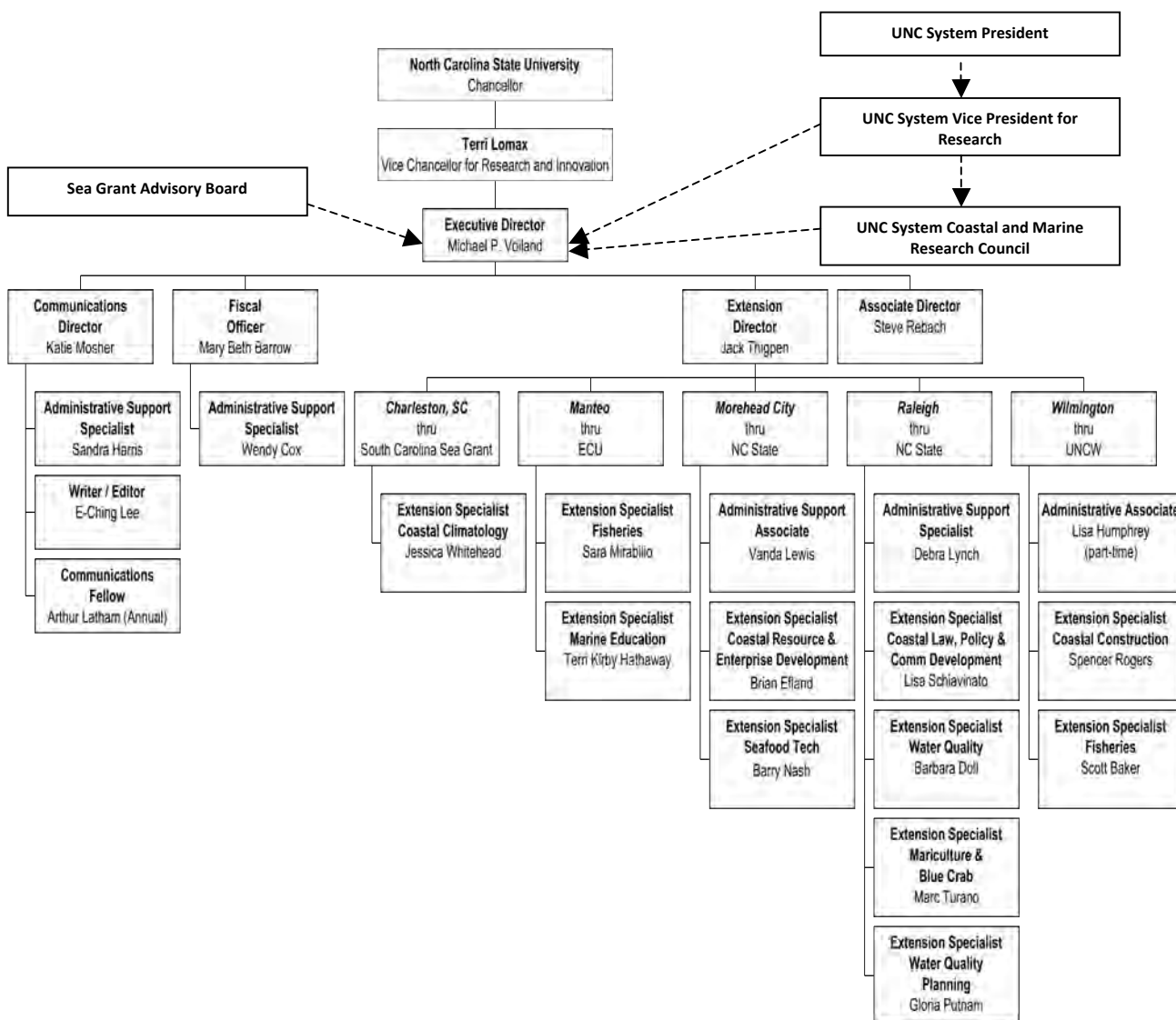
North Carolina Sea Grant began with an institutional planning and project grant in 1970. With the establishment of the 16-campus University of North Carolina system in 1972, Sea Grant programs began to engage all senior institutions of higher education in North Carolina, including Duke University. In 1976, the program was designated as the nation's 12th Sea Grant College.

Organizational Setting & Structure

The North Carolina Sea Grant College Program is better known in the state simply as North Carolina

Sea Grant. Figure 1 reflects the program's overall management, research administration, extension, communications and fiscal functions, as well as the full complement of staffing that conducts all program business. The NCSG coastal law and policy efforts are conducted as part of its extension component, in association with the N.C. Coastal Resources Law, Planning and Policy Center. The center is a cooperative effort between NCSG, the UNC School of Law and UNC Department of City and Regional Planning. The NCSG coastal law program is one of only a few formal, state-based programs within the national Sea Grant network.

Figure 1: North Carolina Sea Grant Organizational Chart, 2011



NCSG operations are the administrative responsibility of its executive director. As an inter-institutional center within the UNC system, the NCSG programmatic authority is sanctioned by the office of the vice president for research in the UNC General Administration. Overall, UNC is a 16-campus system of higher educational institutions operated under the authority of a president and a board of governors. Each campus is administered under the authority of a chancellor and board of trustees. Duke University is a partner via an informal consortial agreement among marine programs in the state. NCSG research resources are now available, mainly through open competitions, to marine and coastal faculty from all public and private colleges and universities in the state.

The UNC system has remained committed to the Sea Grant College Program, now into a fifth decade. NCSG is a true state/federal partnership. Federal funding administered through the National Oceanic and Atmospheric Administration is matched by state funds appropriated by the North Carolina General Assembly to the university. Separate, distinct, and significant state support for marine programs also funds marine science-related faculty salaries and their research. This partnership enables NCSG to focus on national, regional, and state priorities and needs.

The Sea Grant executive director serves at the pleasure of both the chancellor of North Carolina State University, who delegates direct supervision of the Sea Grant executive director to the vice chancellor for research and innovation, and the UNC system president, who delegates broad oversight of Sea Grant to the UNC vice president for research. On all administrative, fiscal, human resource, program reporting and evaluation, and office space matters, the executive director reports directly to the NC State vice chancellor for research and innovation. The program's central administrative office and functions are housed on the campus of NC State. Annual performance appraisals of the executive director are initiated and performed by Vice Chancellor Terri Lomax.

NCSG is one of only a few inter-institutional programs that work across the entire UNC system. The office of the UNC vice president for research provides these programs general guidance and oversight. In terms of coastal topics, that office also may convene various groups and meetings of the system's widespread marine science leadership to generate system-wide focus, policy-making, need assessments, programs, and new or expanded collaborative/inter-institutional efforts.

Over much of the long history of NCSG, general program direction, philosophy, program development guidance and broad oversight has been received via variously named UNC system marine science advisory bodies. These groups, typically convened under the auspices of the UNC vice president for research, consisted of representatives of those campuses having substantive formal marine science programs. The Sea Grant director served *ex officio* on these committees, and reported to them on an annual basis.

Between late 2006 and 2008, there was no such UNC systemwide body focusing on marine sciences. With NCSG and other marine centers and institutes on the various campuses calling attention to its absence and expressing a need, the new, UNC-wide Coastal and Marine Research Council was formed in 2009. The Sea Grant director has been an active participant in reconstituting the council, is an *ex officio* member, and co-sponsored that council's first workshop/retreat. That session — led by Courtney Thornton, research director for the UNC system — identified emerging marine research issues. Participants agreed to share datasets for coastal observing; coordinate various campus' climate and coastal/marine science programs with the new Cooperative Institute for Climate and Satellites-NC, funded by NOAA; and plan for data quality and sharing of datasets in the social sciences.

Administrative activities at the NCSG program level are accomplished via processes, procedures and administrative offices at NC State. Project management is handled through appropriate campus channels, working closely and cooperatively with the NC State budget, sponsored programs, and contracts and grants offices. Technical and fiscal matters are conveyed directly to and through the Sea Grant office with the concurrence of appropriate campus administrators. Sea Grant has NC State departmental status for approval of administrative and fiscal matters.

Management Team

Program leadership within North Carolina Sea Grant has long reflected a team approach, as well as the program's basic administrative structure. The management team encompasses those engaged in management and supervision of the program's major functions/components, and, as such, is composed of the executive director, associate director, and assistant directors for extension, communications and finance.

Michael P. Voiland (currently 0.70 FTE to Sea Grant) was named executive director in July 2006. Voiland served with the New York Sea Grant Institute from 1976 through 1994 at Cornell University as an extension specialist (in sportfisheries and tourism), Great Lakes program coordinator and associate director. From 1994 through 2006, he held the positions at Cornell of senior legislative associate, assistant director for government affairs, and assistant director of Cornell Cooperative Extension and the Cornell University Agricultural Experiment Station. Voiland holds an academic appointment as a research associate professor in the Department of Environmental Studies at UNC-Wilmington, and also as an adjunct associate professor in the Department of Biology at NC State. In August 2009, Voiland was appointed director of the Water Resources Research Institute (WRI) of the UNC system, at a 0.30 FTE level. WRI offices are also located on the NC State campus, in the same building as NCSG. Voiland lends extension support on waterfront access, working waterfronts and coastal resource policy topics.

Steve Rebach (1.0 FTE to Sea Grant) joined the team as associate director in 1999. He was a professor of biology at the University of Maryland - Eastern Shore, and brings a wealth of experience in marine science to the program, as well as his specialty in crustacean ecology and aquaculture, especially crabs. Steve oversees all research administrative activities for NCSG.

Jack Thigpen (1.0 FTE to Sea Grant) serves as extension director. He was appointed in 2000 after having served for three years as an extension specialist in coastal tourism stationed on the Outer Banks. His background in sociology and ecotourism has been invaluable to a program called upon to address issues relating to sustainable

tourism use and development. He previously was at Texas A&M University.

Kathleen Mosher Patterson (currently 0.70 FTE to Sea Grant), known in the Sea Grant network and UNC system as Katie Mosher, was named communications director in July 2000, after serving two years as communications coordinator. Her background includes experience in newspaper, television and Internet media services and products. In February 2011, she was appointed managing editor at the NC State Office of Research and Innovation, at a 0.30 FTE level.

Mary Elizabeth Barrow (currently 0.70 FTE to Sea Grant) recently joined Sea Grant as fiscal officer in September 2009. A certified research administrator or CRA, Ms. Barrow brings a wealth of information and experience managing financial matters for various units on the NC State campus, including an earlier stint with NCSG as an administrative and fiscal assistant from 2002 to 2005. In December 2010, she was appointed business manager for WRI, at a 0.30 FTE level.

Rebach, Thigpen, Mosher, Barrow and Voiland all serve on the NCSG management team, which meets both formally and informally to discuss major program projects, special initiatives, staffing issues and policies. Thus, the management team represents and addresses the various components — research, extension/education, communications, and financial/human resources management — necessary to forge and manage an effective Sea Grant program.

Outreach and Administrative Staffing

The organizational chart (Figure 1) also notes the positioning of NCSG staffing beyond its management team. This includes outreach — extension and communications — and administrative support staff as listed:

Raleigh-based Staff (NC State-employed)

Coastal Law, Planning and Policy:	Lisa Schiavinato, Extension Specialist (1.0 FTE)
Water Quality:	Barbara Doll, Extension Specialist (0.50 FTE)
Environment/Community Planning:	Gloria Putnam, Extension Specialist (1.0 FTE)
Mariculture/Blue Crab Fishery:	Marc Turano, Extension Specialist (1.0 FTE)
Communications:	E-Ching Lee, Writer/Editor (1.0 FTE)
	Art Latham, Communications Fellow (1.0 FTE)
	Sandra Harris, Support Specialist (1.0 FTE)
Administrative Support:	Debra Lynch, Support Specialist (1.0 FTE)
	Wendy Cox, Support Specialist-Fiscal (0.50 FTE)

Morehead City-based Staff at the CMAST facility (NC State-employed)

Seafood Technology & Marketing:	Barry Nash, Extension Specialist (1.0 FTE)
Coastal Enterprise Development:	Brian Efland, Extension Specialist (1.0 FTE)
Administrative Support:	Vanda Lewis, Support Associate (0.75 FTE)

Manteo-based Staff at the UNC Coastal Studies Institute (East Carolina University-employed)

Marine Education (K-12): Terri Kirby Hathaway, Extension Specialist (1.0 FTE)
Fisheries/Estuarine Environment: Sara Mirabilio, Extension Specialist (1.0 FTE)

Wilmington-based Staff at the Center for Marine Science (UNC Wilmington-employed)

Fisheries: Scott Baker, Extension Specialist (1.0 FTE)
Construction/Erosion/Hazards: Spencer Rogers, Extension Specialist (1.0 FTE)
Administrative Support: Lisa Humphey, Administrative Associate (0.75 FTE)

Charleston, SC-based Staff at the SCSGC Office (SCSGC-employed)

Regional Climate Outreach: Jessica Whitehead, Extension Specialist (0.50 FTE)

NCSG also has one or more interns most semesters and summer terms. Undergraduates earn class credit while they work on *Coastwatch* magazine and other projects in the Raleigh office. Law students work on policy topics. NCSG also is certified to be a “public service” site for NC State students who qualify for federal work-study programs.

Advisory Mechanisms

Active involvement of faculty and staff at all levels of marine and coastal resource interest in the state, region and nation enhance the receiving — and giving — of advice. Sea Grant-supported faculty and staff are continuously involved with a wide variety of state and federal committees, management agencies, commissions, and interest groups, which provides direct and immediate feedback for information needs and establishment of priorities. The NCSG Management Team members occupy formal positions on several boards and commissions responsible for addressing marine and coastal issues. The Sea Grant Extension Program is actively involved on a regular basis with agencies, interest groups and businesses — interaction that provides continuous short and long-range planning information. NCSG has built a loyal and large constituency whose input and involvement is vital to the future relevance and effectiveness of Sea Grant in North Carolina.

UNC System Input

As noted above under “Organizational Setting and Structure,” NCSG serves *ex officio* on the UNC system’s reconstituted Coastal and Marine Research Council, from which it can seek and receive program input and advice.

See **Appendix A** for a listing of the council’s member centers and contacts.

NC State Input

Beyond the administrative support and guidance the program regularly receives from fiscal, contracts

and grants, and sponsored programs offices at NC State, guidance is also received on marine science and research matters from the NC State Coastal and Marine Sciences Council. This council’s duties include (a) collecting information on matters pertaining to coastal and marine issues at NC State from the coastal and marine sciences faculty, administrators, staff and other appropriate sources; (b) sharing information on a timely basis with the coastal and marine sciences faculty and administrators at NC State; and (c) making recommendations to the campus administration on policies and procedures affecting coastal and marine-related research, extension and academic programs. The NCSG director and associate director are council members.

External Programmatic Input

Since 2007, the program has maintained an overall program advisory board made up of stakeholders/partners external to NCSG. Prior to 2007, this board only advised on outreach programs. The current board includes individuals who represent the interests of communities, businesses, and organizations who care about and/or steward the state coastal resources. The board typically meets twice a year in a coastal setting for a day and a half. Usually, one meeting per year is “piggy-backed” with a full NCSG staff meeting. Board sessions offer updates on Sea Grant activities and provide opportunities for board members to share input on improving NCSG focus and efforts. The board is charged with the following tasks:

- Identify — though informal and formal group dynamics — the critical research and outreach needs of our coastal constituency over the next two to five years.
- Discuss and/or recommend programs to meet these needs.
- Assist in identifying the necessary research required to develop the foundation for wise decision-making and to undergird outreach programming.

- Assess Sea Grant’s progress in reaching its stated goals and objectives.
- React to, critique, or evaluate specific NCSG programs, products and activities.
- Assist in developing NCSG’s priorities and strategic plan, in reviewing research or outreach proposals, and in evaluating program effectiveness at the state and federal levels.

See **Appendix B** for a listing of current and recent advisory board members.

Other Means of Receiving Advice/Input

Additional mechanisms and channels to gather background and advise the program on complex or emerging issues, and to guide priority setting include:

- A thorough, group dynamics-driven, and forward-looking annual plan-of-work process undertaken by our extension and communications staff.
- Evaluations of outreach meetings, conferences, and workshops.
- Semi-annual full NCSG staff meetings, and more regular meetings of extension and communications staff, in addition to separate meetings among staff in topical/theme areas (e.g., fisheries, community-based marketing, community development, water quality programming).
- Informal and formal meetings of NCSG management.
- Full participation on the *NOAA in the Carolinas* steering committee and serving on its executive committee.
- Frequent conference calls or meetings of the South Atlantic Sea Grant directors.
- Full involvement in regional (South Atlantic and Mid-Atlantic) research priority-setting projects (SARRP and MARRP).

Tapping and Nurturing Talent

RfP Development/Review Process

Although formal submission of an omnibus proposal occurs every two years, at NCSG, the process of its development is regarded as a continuous one. Early in the omnibus submission year, NCSG would traditionally convene interactive presentations and discussion sessions scheduled on various campuses in the state that host major marine research programs. Faculty members are introduced to Sea Grant and its research funding cycle mechanics, and are asked to review the existing NCSG strategic plan and submit suggestions for its revision/updating. At the start of the last two cycles, this step was changed, due to

the new national strategic planning process. In 2009, potential applicants were instead provided with our draft planning focus areas. In 2011, potential applicants used the final NCSG 2009–13 strategic plan in developing proposals.

In March of odd years, North Carolina Sea Grant issues a request for preproposals, complete with instructions for preproposal preparation and a description of the process of review and selection. The preproposal approach minimizes the time investments required of researchers, and enhances the odds of receiving proposals more directly relevant to program goals and resource priorities. In recent cycles, typically 41 to 65 preproposals have been received (46 in 2011). These are reviewed for relevancy to North Carolina’s needs and priorities by a panel consisting of state agency officials, select members of the NCSG advisory board, representatives of coastal interest groups, individuals holding identified coastal resource interests, and Sea Grant Extension staff. A fairly unique aspect of the NCSG RfP is that applicants must submit a concise, statement of the relevancy and purpose of their proposed work. Instituted in 2007, this step assists initial reviewers, as well as NCSG management and communications staff, with ultimately understanding and describing the work and its anticipated results and impacts.

Researchers whose preproposals pass “relevancy muster” via this stakeholder review are then invited to submit full proposals (the “uninvited” may submit full proposals if they feel so compelled). All full proposals (in recent cycles, generally numbering about 21 to 35) receive extensive review by peers and program management. Sea Grant Extension staff also are invited to review proposals in their fields of interest. Each proposal is reviewed by at least five peers with expertise in the field, as selected from a nationwide pool. Thereafter, a panel of nationally recognized, out-of-state (to eliminate in-state conflicts of interest) experts is convened to lend its own assessments, and to assist in evaluating the proposals and peer reviewer comments. As a result of all these reviews, the panel recommends to the NCSG executive director the most meritorious, fundable proposals. The director then makes final project selections in consultation with the associate director and fiscal director, and, when appropriate, with other members of the management team.

Emphasis is placed on developing a well-balanced, high-quality omnibus proposal to the National Sea Grant College Program and NOAA, one that addresses issues not only within North Carolina but also in all national focus areas. Based upon our recent history of receiving about 21 to 35 invited

Figure 2: Core Funding Proposals

	2000– 2001	2002– 2003	2004– 2005	2006– 2007	2010– 2012	2012– 2014
Preproposals Submitted	52	58	40	65	41	46
Full Proposals Submitted	33	32	28	31	22	24*
Full Proposals Funded	13	14	14	14	11	
Percent Success	39	44	50	45	50	
Institutions	6	6	6	5	8	

* Anticipated

full proposals each cycle for full review, a goal is to include approximately half of them in the NCSG institutional omnibus proposal. Figure 2 presents statistics regarding our core research proposals in recent funding cycles.

See *Appendix C* for a list of core projects from last two cycles. Researchers and institutions new to NCSG are highlighted in that list.

Mini-Grant Program

While NCSG has traditionally funded mini-grants to investigators via allocation of omnibus “program development” dollars, application of the mini-grant function has been purposefully increased since 2008. Proposals, usually in the \$1,000 to \$8,000 range, can be submitted by prospective investigators (or invited from them) at any time. While the great majority of mini-grants are for applied research, outreach proposals may also be funded. Proposals receive reviews by NCSG staff and typically one or two outside peer reviewers. Processing and awarding of grants often takes less than two weeks. Non-federal matching dollars are not required, nor are indirect costs applied.

Typically, the temporal element is a significant factor in awarding of mini-grants. Successful mini-grant proposals will frequently provide a rapid response to an immediate or timely need within different stages of the research process. Examples include: needs identification, hypothesis development, preliminary data gathering needed for larger proposal development, field testing of new methodologies, capturing baseline measurements during a tight time or opportunity window, and following up on unexpected research results.

Notable mini-grants awarded since late 2007 included projects that:

- Built and tested a low-cost prototype underwater video data-logger for use in fish stock assessment work over longer durations (> 1 month). Results from field-testing far exceeded expectations for reliability, deployment time, and fish observation totals.
- Demonstrated the successful use and high potential of text messaging and online compilation of recreational fish harvest data, resulting in further testing under a state grant, and interest by fishery managers at the state and federal level, as well as from varied individuals and groups seeking options for simple “citizen science” data-gathering. Maryland state fisheries officials cite the NCSG project as the impetus for a new text-message option for commercial fishermen to report daily crab catches — believed to be the first formal use of texting for basic harvest data collection by a public fisheries agency.
- Via funding of a new faculty member’s research, developed new understandings and modeling of rip current dynamics, which directly led to an NSF *CAREER* award of \$567,000 over five years.
- Provided six undergraduates at a Elon University, a small school that had never received Sea Grant support, with research experiences in laboratory and field settings, exploring the response of a salt marsh rush (*J. roemerianus*) to climate change-related variables (i.e., CO₂ and salinity). This resulted in three peer-reviewed publications, numerous professional presentations in the state and as far away as China, and three of the students subsequently enrolling in graduate programs. Their faculty advisor had been funded by NCSG during his graduate studies.
- Gained baseline physical oceanographic, biological/geological, human dimensional, and biochemical data from along the North Carolina coast that was, or will be, used to anticipate and

gauge effects of oil spilled in the Gulf of Mexico or locally.

Appendix D is a list of mini-grants awarded over the last three years.

Success in National Competitions

NCSG has a solid track record in gaining support through national competitions run by NSGO or other NOAA offices, including:

National Investments

- 2010: Aquaculture Research and Extension NSI. “Developing Tools for the Growth of North Carolina Shellfish Industry: Site Condition Assessment and Economic Impacts.”
- 2010: Aquatic Nuisance Species NSI. Mid-Atlantic Sea Grant Regional Network project. “Preventing Aquatic Invasive Species Through Vector Management: Live Bait Vector As a Model in the Mid-Atlantic Region.”
- 2010: National Sea Grant Law Program Competitive Research. “Strategies for Managing North Carolina’s Estuarine Shoreline.”
- 2010: Aquatic Nuisance Species NSI. South Atlantic and Puerto Rico Sea Grant Regional Project. “Lionfish in the South Atlantic and Caribbean: Integrated Regional Research and Extension to Support Effective Management of an Invasive Marine Species.”
- 2009: Mid-Atlantic Regional Research Priorities (MARRP).
- 2009: Fisheries Extension Enhancement (FEE). “Fisheries Extension Transition: Towards Fuller Integration of Improved Fisheries Extension Program with North Carolina Sea Grant and the North Carolina Fisheries Management Community.”
- 2007 – 2013: NOAA Climate Office/SARP - Climate Extension Initiative: “Integrating Climate Science and Water Management in North and South Carolina.”
- 2006: South Atlantic Regional Research Priorities (SARRP).
- 2005: Aquatic Invasive Species Outreach NSI. “A Tool Kit for Educators in American Zoo and Aquarium Association Member Institutions.”
- 2003: Fisheries Extension Enhancement (FEE). “Enhancing Education and Outreach to the Mid-Atlantic Charter Boat Fisheries” and “Enhancing the Quality of North Carolina’s Fisheries Extension and Applied Research Products.”
- 2002: Fisheries Extension Enhancement (FEE). “South Atlantic Region Fisheries Extension: Facilitation and Planning,” “South Atlantic Region Fisheries Extension: Essential Fish Habitat,” “South Atlantic Region Fisheries Extension: Marine Protected Areas” and “Shark

Sense: Atlantic and Gulf Coasts.”

- 2002: Office of Naval Research for SouthEast Coastal Ocean Observing System (SEACOOS). “Assessing Coastal Constituents’ Needs and Delivery Methods for SEACOOS Information.”

Knauss Marine Policy Fellowships

Since the Knauss program began, NCSG has had one of the most successful track records in placing North Carolina graduates in the program, with a total of 55 applicants selected. From 2004 through 2012, NCSG has placed three or four fellows each year. NCSG consistently earns praise — and is held up as a model to other Sea Grant programs — by NSGO for management of its Knauss Fellow recruitment, selection, orientation, and ongoing contact.

NOAA Coastal Management Fellowships

NCSG has a history of nominating candidates that are selected as finalists for the two-year Coastal Management Fellowships that place graduate students with state coastal zone management programs. With six fellows placed since 1996, North Carolina as one of the top four states with placements. According to the program manager, North Carolina is also among states that have nominated the most candidates over the life of the fellowship. Two 2008–10 fellows were from North Carolina: Patricia Bowie, assigned to New York, and Daniella Hirschfeld, assigned to Massachusetts.

Other National Fellowships

- 2008: NOAA Fisheries Fellowship, PI David Eggleston, student Brandon Puckett, NC State.
- 2005: NOAA Fisheries Fellowship, PI Kenneth Pollock; student Matthew Krachey, NC State; “Multi-Species Spatial and Temporal Analysis of Fishery Independent Surveys.”
- 2004: Sea Grant Industry Fellowship with Bumble Bee Foods; PI Tyre Lanier, student Maria Ruilova, NC State; “Proteolysis and Effects on Meat Quality and Canned Yield During Precooking of Albacore Tuna.”
- 2001: Sea Grant Industry Fellowship with Kent SeaTech; PI Craig Sullivan, student Charlene Couch, NC State; “DNA Marker-assisted Selective Breeding of Striped Bass,” which set the stage for an industry broodstock initiative.

Regional or Multi-program Projects

A formal member of two Sea Grant regional networks (South Atlantic and Mid-Atlantic), NCSG is a most willing and active participant in regional and multi-state efforts with sister Sea Grant programs. The following represent selected major

activities that NCSG is engaged in the South Atlantic-Caribbean, Mid-Atlantic and Gulf regions:

CI-FLOW: NCSG is working with the NOAA National Severe Storms Laboratory, National Weather Service Forecast Offices, National, South Carolina and Texas Sea Grant partners, the University of Oklahoma, and others on a multi-faceted project focusing on the Tar-Pamlico and Neuse river basins affected by Hurricane Floyd. The project — Coastal and Inland Flood Observation and Warning or CI-FLOW — provides a research and demonstration program to evaluate/test new technologies and techniques to produce accurate and timely identification of inland, coastal and flash floods. NCSG links CI-FLOW researchers at several campuses and institutes with agencies and the coastal public.

Invasive Species: NCSG is currently a partner in two competitively funded, regional projects to be supported under the National Sea Grant Aquatic Invasive Species Initiative. These include the funded project “Preventing Aquatic Invasive Species through Vector Management: Live Bait Vector as a Model in the Mid-Atlantic Region” being conducted by the Sea Grant Mid-Atlantic Region, as well as the project “Lionfish in the South Atlantic and Caribbean Regions: Integrated Research and Extension to Support Effective Management of an Invasive marine Species,” to be carried out via the Sea Grant South Atlantic & Caribbean Region.

Regional Research Priorities: NCSG also is an active partner and contributor with other state Sea Grant programs in both the South Atlantic-Caribbean and Mid-Atlantic Sea Grant Regions on two projects designed to identify and prioritize regional coastal research needs. These projects include the South Atlantic Regional Research Project (SARRP) and the Mid-Atlantic Regional Research Project (MARRP). In particular, the development of the SARRP priorities helped the new Governors’ South Atlantic Alliance to identify its regional focus areas.

Carolinas Coastal Climate Extension Initiative: With funding from the NOAA Climate Office/ Sectoral Applications Research Project (SARP), this partnership between NCSG and South Carolina Sea Grant seeks to (1) develop the capacity of NC/SC Sea Grant to inform and educate coastal decision makers of the implications of climate variability and change for major coastal issues including erosion, invasive species, land use change, salt water intrusion, health of fisheries, agriculture, tourism, coastal community

development, and natural hazards; (2) provide tailored, decision relevant information on the implications of climate variability and change to coastal decision makers from residents to government officials to business people; (3) increase and demonstrate the capacity of the Sea Grant network regionally and nationally to research and deliver outreach programs on the impacts of climate variability and change for coastal stakeholders; and (4) evaluate and review increases in SG climate education and outreach capacity and approaches. Faculty involved in the Carolinas Integrated Sciences and Assessments (CISA, a NOAA-supported RISA project; see www.cisa.sc.edu/links.html) assist in guiding the project, while a regional Sea Grant extension climate specialist provides leadership on this project. Although a bi-state Sea Grant effort as initially proposed and envisioned, the project has expanded to address climate change extension needs and opportunities throughout the South Atlantic region, and the specialist has assumed several national Sea Grant network climate extension duties as well.

South Atlantic Regional Sea Grant-NERRS Fellowships: With omnibus award monies reallocated due to a funded core research project investigator leaving the UNC system, NCSG initiated a fellowship program with Sea Grant and NOAA National Estuarine Research Reserve System programs in the four South Atlantic states (NC, SC, GA and FL). Calls in each state sought graduate student fellowship proposals focused on research opportunities or needs identified at the respective reserve sites. In 2011, the selected fellows (under the guidance of their advisors) initiated four projects via this initiative:

- “Managing intertidal oyster reefs in a changing climate: How macroalgal cover affects reef dynamics within the Rachel Carson Reserve,” Michelle Brodeur, fellow; Joel Fodrie, advisor; UNC-Chapel Hill Institute of Marine Science, NC.
- “Comparative impact of the invasive parasitic species, *Anguillicoloides crassus*, on the American Eel populations between the ACE Basin and North Inlet NERRs and the Cooper River,” Jennifer Hein, fellow; Isaura DeBuron, advisor; Grice Marine Lab, College of Charleston, SC.
- “An investigation of the spatial extent and cause(s) of an oyster reef die-off in Guana Tolomato Matanzas National Estuarine Research Reserve,” Hanna Garland, fellow; David Kimbro, advisor; Florida State University Coastal and Marine Laboratory, FL.

- “Listening for / Learning from ecological knowledge: a social science pilot study in McIntosh County, GA,” Danyel Addes, fellow; Laurie Fowler, advisor; University of Georgia, School of Ecology, Sapelo Island NERR.

Initiatives in Creation, Use, and Focus of Fellowships

Since its last federal review, NCSG has increased its activity and investment in support of graduate student fellowships as means to advance marine careers, to tap faculty expertise, and to address research needs. All of these fellowships are offered via an open-call, competitive, student proposal-based process.

- Since 2003, seven joint NCSG-N.C. Division of Marine Fisheries (DMF) **Fisheries Management Fellows** were supported, addressing critical fishery needs. DMF, which identifies the annual topic area, has now assumed two-thirds of fellowship costs by allocating Coastal Recreational Fishing License revenues. Jeff Buckel, of NC State’s Department of Biology, serves as fellowship coordinator and mentor. These fellowships are based at the NC State Center for Marine Science and Technology (CMAST) in Morehead City. Several of the fellows analyzed data directly used in fishery management plans required by the N.C. General Assembly. In recent years, the focus has been an ecosystem-based management approach by reviewing data in order to identify “strategic habitat areas” as required by the N.C. Coastal Habitat Protection Plan.
- In 2007, NCSG created an annual **Maritime Heritage Fellowship** program jointly with East Carolina University, home to a unique-to-the-state-and-region graduate program and course curriculum in Maritime Studies, with emphasis in nautical archeology and history. To date, eight fellows have been supported. These fellowships are based at ECU, and mentored by the fellows’ respective major professors. Topics have included innovative use of field-survey tools, identification of historical estuarine “boat graveyards,” and impacts of policies on maritime heritage tourism.
- In 2010, after discussions that began at the N.C. Coastal Reserve/NC NERRS federal review, **NCSG and NCCR/NERRS** initiated a joint fellowship focused on research needs identified by reserve leadership. The initial project, focused on Masonboro Island, set the template for the regional SG/NERRS fellowship initiative in 2011, as described above.
- In addition to the research fellowships, NCSG

has had a **Science Communications Fellowship** since 2004, supported with state funds. Each selected fellow has had interest and ability in both science and writing. They have gone on to work at NCSG and VASG, the U.S. Geological Survey, RTI International, and two are on faculty at smaller colleges in the state.

See Appendix E for a listing of fellows.

Management of Leveraged Funding for Applied Research Programs

Based on the success of North Carolina Sea Grant over the years, the program has been asked to administer three applied research programs, thus allocating leveraged funding received outside the NCSG omnibus. These include (1) the N.C. Fishery Resource Grant Program, as funded by the N.C. General Assembly; (2) the Blue Crab and Shellfish Research Program, as funded via the UNC system; and (3) NOAA Fisheries’ Bycatch Reduction of Marine Mammals in Mid-Atlantic Fisheries Program. All are competitive, peer-reviewed proposal-based programs. The state programs focus on research by teams that include university researchers and stakeholders. The FRG program in particular has been a model for others states, including an ongoing similar program in Virginia.

See Appendix F for lists of recent projects funded under these three programs.

Funding Picture

Pie charts provided in Figures 3-A through 3-D offer an overview of NCSG funding in 2010, showing functional distribution of federal omnibus funding, and both functional and sourcing components of total program funding.

To help offset inflationary erosion of continuing level federal funding and to help meet potential state budget cuts, extension specialists have been encouraged to seek external sponsor support of their programs in recent years. In 2010, external or leveraged awards to staff totaled \$237,277.

To not only address constrained federal and state budget realities, but to also gain staffing efficiencies and meet calls for reducing the costs of administering centers and institutes in the UNC system and at NC State, select NCSG positions have assumed duties with other university programs. This has theretofore led to new sources of partial salary support for those positions. By the end of 2011, this will have resulted in savings of \$142,118 to the NCSG program since April 2009.

FIGURE 3-A: Federal Omnibus Funding, 2010

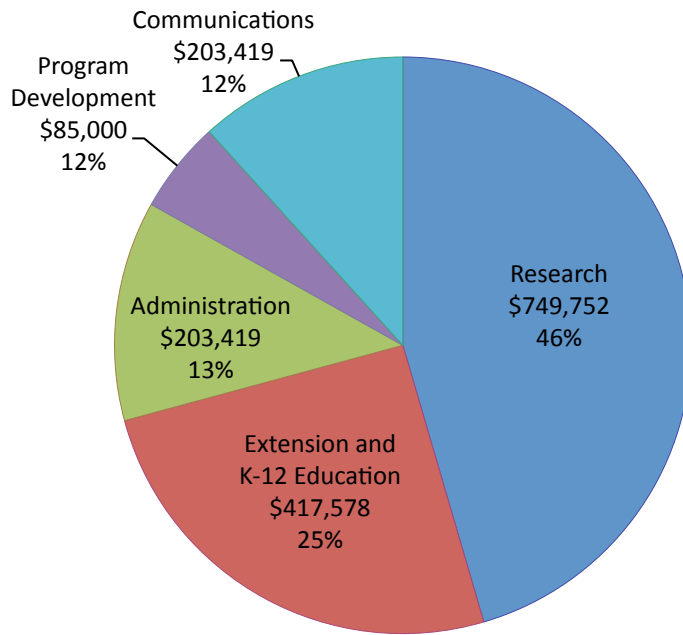


Figure 3-B: Total Omnibus Funding (Including State Match), 2010

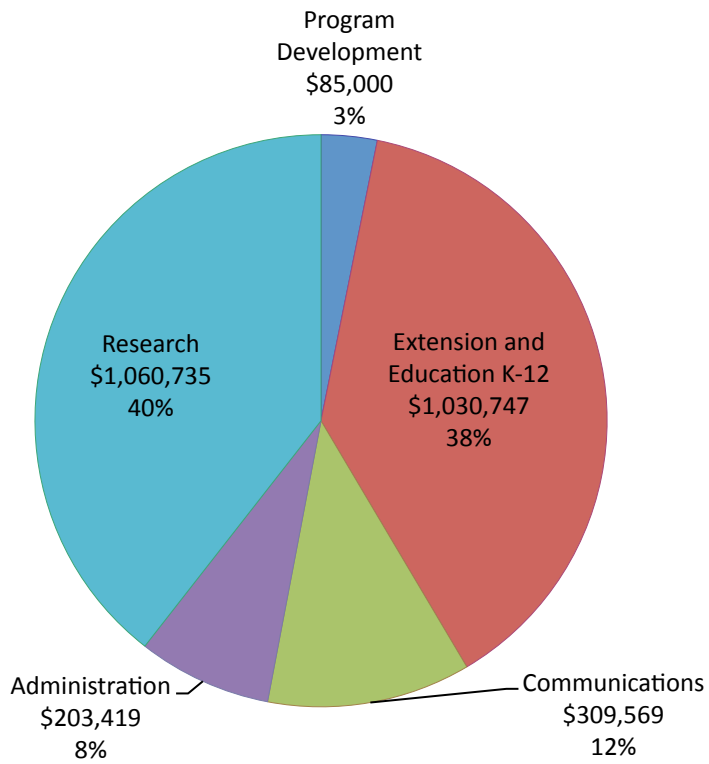


Figure 3-C: Total NCSG Funding from All Sources, 2010

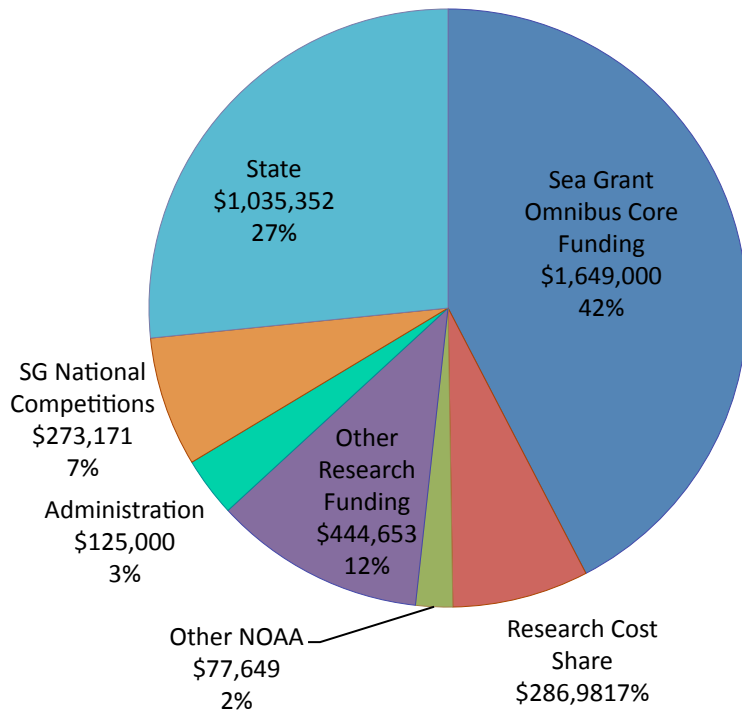
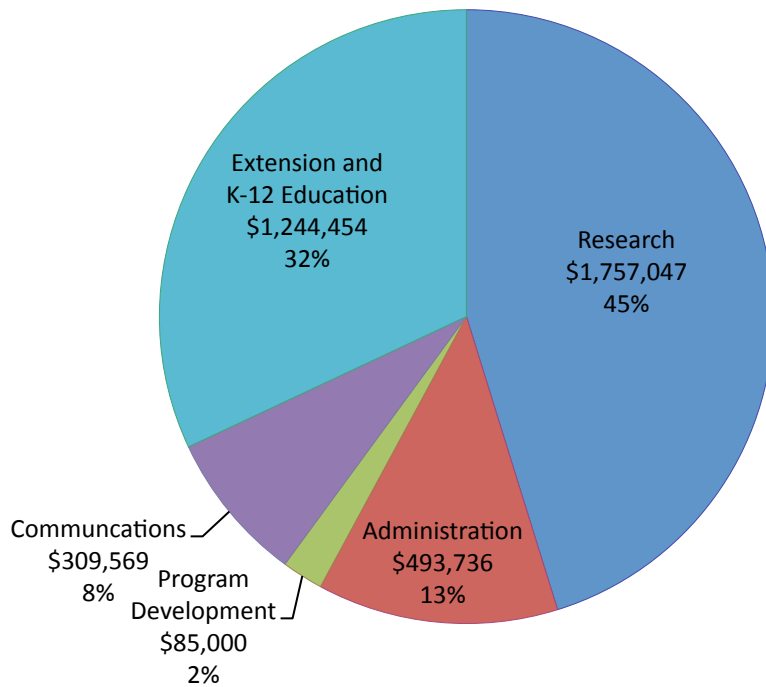


Figure 3-D: Total NCSG Funding by Function



Due to state budget difficulties since 2008, funding of the N.C. Fishery Resource Grant Program, which for the previous decade was set at \$1million annually, has declined to \$300,000 per year in 2010 – 11. Similarly, the Blue Crab and Shellfish Research Program funding has fallen from \$500,000 in 2003 to \$169,653 currently. Further cuts to both these programs are in play as the state biennial budget for 2011 – 2013 is being finalized by the state legislature. Cuts to the latter program in recent years have buffered NCSG from cuts to its state-appropriated matching dollars.

NCSG also is extremely proud to note that projects initiated within our program set the groundwork for significant leveraging by researchers and/or partners for follow-up efforts. Our 2010 report cites nearly \$7.3 in projects influenced by NCSG.

Stakeholder Engagement

In striving to foster individual, community, agency, business, and non-governmental organization capacities that can lead to wise use, development, and conservation of North Carolina’s coastal resources, NCSG relies on constant, consistent, and unbiased interaction with myriad stakeholders and the general public. The program follows the “tried-and true” extension approach of having extension specialists working and living in coastal communities, where they can apply refined networking, listening, and needs-assessment skills and tools to identify and address key educational and research needs. NCSG outreach specialists are located at university centers at four locations, three of these along the coast, allowing convenient interaction not only with a wide spectrum of geographically dispersed stakeholders, but also with research faculty interested in addressing coastal resource issues and opportunities.

Channels used to reach and engage audiences include the traditional (e.g., meetings, workshops, one-on-one visits, telephone contact, committee service, bulletins, newsletters, program magazine, surveys, etc.) as well as newer, telecommunication-based means (e.g., website access and visitation, emailing, tele-video conferencing).

See Appendix G for a listing of boards/committees led or served on by NCSG staff.

See Appendix H for a listing of partners/stakeholders.

Select Stakeholder Partnership Examples

With support from the NSGO **Community Climate Adaptation Initiative**, NCSG developed a pilot program to work with the Town of Plymouth,

located at the mouth of the Roanoke River. A team — made up of Sea Grant specialists in water quality planning and climate extension, an ECU graduate student, and UNC-system computing specialists — is working with town officials to develop and utilize mapped visualizations of the likely impacts of inundation stemming from sea level rise. Oregon Sea Grant is involved in this project too, via its NOAA SARP project entitled “Mobilizing the NOAA Sea Grant Network for Coastal Community Climate Resilience.”

A \$5 million **oyster reef** development project was successfully proposed by the N.C. Coastal Federation and funded by NOAA with federal stimulus dollars. NCCF is the largest coastally focused interest group in the state, with more than 20,000 members. Not only did NCSG staff work closely with NCCF in proposal development, but NCSG and FRG research results were key in identifying sites to receive reef substrate enhancements based on historic reefs locations and recent studies in oyster larvae movement in the Pamlico Sound currents.

With seed funding from NC State’s Office of Extension, Engagement and Economic Development, NCSG and UNC-TV, the statewide public television network, initiated the ***Coastwatch on North Carolina Now series*** (www.uncvtv.org/coastwatch). Print/video story pairs and study questions correlate to middle-school objectives in the N.C. Standard Course of Study. The project earned national honors and was selected for the PBS Digital Learning Library.

NCSG has led state and national efforts in **local seafood harvest marketing/promotion**. In North Carolina, partners have included state offices of Marine Fisheries, Aquariums, and Seafood Marketing, seafood retailers, coastal restaurateurs, and four county-based “local catch” promotion groups formed as a result of NCSG efforts. In addition, the state now has three community-supported fisheries (CSF) programs, and many more are found around the country and now in Europe. The CSF concept was initially explored via a Fishery Resource Grant project managed by NCSG.

NCSG also is a leader in development and promotion of rural community-focused, non-consumptive or “sustainable” recreation and tourism activities. With dozens of partners, such as the N.C. Wildlife Resources Commission, N.C. Audubon, UNC Press, supply and service businesses, local communities and N.C. Parks and Recreation, NCSG helped to develop and establish

birding and paddling trail systems and educational materials, which can spike local tourism-related expenditures.

Working with community groups and civic organizers in Carteret, Dare and Hyde counties, NCSG has directly influenced development of **Saltwater Connections**, part of economic projects funded by the N.C. Rural Center and Z. Smith Reynolds Foundation. Those efforts grew out of

NCSG-funded core research by a Duke team that explored the “sense of place” and views toward future development in the Down East region of Carteret County. That research, its results and ongoing impacts have been featured in local media as well as in *Coastwatch* and the NOAA Coastal Services Center magazine. NCSG extension specialists serve on the Saltwater Connections resource teams.

B. Collaborative Network/NOAA Activities

Network Engagement

NCSG Management Team members participate in Sea Grant network activities, and often provide leadership in national program development.

- Katie Mosher served as chair of the national Sea Grant communications network in 2001. She remains active in the network, including as an informal network liaison to the National Association of Science Writers and annual Science Online meetings.
- Jack Thigpen has held various leadership positions in the Sea Grant Assembly of Extension Program Leaders, including as the assembly chair and head of the Sea Grant Association’s Networks Advisory Council (NAC) in 2007–08. He remains active in Assembly matters, including leadership on regional extension committees.
- Steve Rebach was chair of Sea Grant’s research coordinators network in 2005–07, and remains active in network affairs, particularly in the development/adoption/adaptation of research submission/tracking systems. He serves as NCSG alternate representative to the SGA.
- Mike Voiland serves as Sea Grant Association (SGA) delegate for North Carolina, and also as SGA External Relations Committee chair. He served as SGA Treasurer from 2009–2011. He co-chaired the National Sea Grant Response Integration Team’s (RIT) Strategic Planning Steering Sub-Team in 2007–08. He served as a member of the NSGO Site Review Team for the National Sea Grant Law Program.

In addition, NCSG is one of only a few state-based Sea Grant programs that has retained a **law and policy** program thrust. Through a specialized extension program, NCSG interacts with sister Sea Grant law programs, contributes to National Sea Grant Law Center activities, including waterfront access and coastal wind energy development. She occasionally lends legal perspective and guidance

to Sea Grant programs without such expertise. She also currently serves as president of The Coastal Society, and thus is a key network contact for this international organization. She previously chaired program and overall planning committees for the society’s meetings.

Similarly, NCSG has also maintained a **seafood technology/safety/marketing** program thrust and staffing expertise, and, as such, is one of the few programs in the network that had been directly engaged in national Hazard Analysis and Critical Control Point training/certification efforts. In North Carolina, 765 staff members from seafood processors and dealers have received HACCP training since 1997. A total of 97 individuals have completed National Sanitation Control Procedures Workshops since 2000. In addition, 366 N.C. county-based environmental health specialists have completed the Seafood Quality & Safety Workshops. This benefit is widespread across the industry, assisting total of 75 businesses.

NCSG is leading efforts for the Sea Grant network to develop collaborative projects with the **Extension Disaster Education Network**, known as EDEN, a national USDA/Cooperative Extension Service offered program. One of the early projects undertaken under the EDEN-Sea Grant initiative is planning to adopt the *Community Resilience Index Project*, developed by various Gulf of Mexico partner organizations, to the South Atlantic region. Partners include the four South Atlantic Sea Grant programs, NOAA CSC, and NOAA SECART.

Also, the NCSG coastal engineering specialist contributed in a leading way to efforts led by NSGO to convene and engage **coastal geology/engineering outreach** specialists in the national network in discussions of approaches to climate change-related outreach activities. He has also led efforts to convene the network of hazards specialists for workshops in conjunction with national meetings such as the Coastal Zone series.

Within the Sea Grant network, NCSG has been a leader on the issue of **working waterfronts and waterfront access**. This stemmed from the NCSG executive director's experience as chair (pursuant to 2006 North Carolina state law) of the N.C. Waterfront Access Study Committee, and NCSG's administrative and communications support to that committee in 2006–07. NCSG gave invited presentations at national Sea Grant-led symposia in 2007 and 2010, an annual workshop for Virginia coastal zone managers in 2007, and at The Coastal Society in 2008 and 2010. In 2009, at the request of the MS-AL Sea Grant Consortium, the executive director also gave a presentation to the State of Alabama's Waterfront Access Study Committee, which had been based on the model information provided by NCSG about North Carolina legislative action on the issue.

Lastly, NCSG also is recognized as a national and regional leader on the **"local catch"** seafood marketing, promotion and branding approaches. (See details above under "Select Stakeholder Partnership Examples.") In 2010, NCSG cosponsored, with NSGO, a well-received special session on the topic as part of the American Fisheries Society convention in Pittsburgh, PA.

Regional Engagement

With Other Sea Grant Programs

In addition to the several regional/multi-state projects noted above under "Regional/multi-program projects" in Section A (including CI-FLOW, the Carolinas Coastal Climate Outreach Initiative, the South Atlantic Regional Sea Grant-NERRS Fellowships, SARRP, MARRP, and Invasive Species Initiatives), NCSG has been actively and directly engaged in the following other Sea Grant efforts within two regions:

- Over the last 6 years, via leadership mainly provided early on by NCSG and more recently by the South Carolina Sea Grant Consortium, the Governors' South Atlantic Alliance (www.southatlanticalliance.org) has been established. NCSG has actively contributed to the Alliance's planning and priority-setting.
- NCSG regularly hosts and fully participates in Mid-Atlantic Sea Grant Network conferences, often held at Corolla, N.C.
- Under NCSG co-leadership, plans are well along for NCSG to host a Sea Grant fisheries extension conference involving specialists from the Carolinas and Virginia.
- From May 2010 to present, NCSG has been an active participant with the SC, GA, and FL

programs in a regional effort to inform and prepare the South Atlantic states for the possibility of spilled oil from the Gulf of Mexico Deepwater Horizon disaster reaching and contaminating coastal beaches and ecosystems in the region via the Gulf Stream. This included NCSG co-sponsorship of two expert summits — on ocean current circulation and on oil degradation processes — held at the Skidaway Institute in Georgia in June 2010 and at the University of North Florida in July 2010, travel support for four N.C. university researchers to participate at these summits, and allocations of communicators' time to produce news article and web coverage. One NCSG mini-grant resulting from the summits supported modeling of the Gulf Stream and Florida Current that was used by NOAA and other federal officials. A second provided baseline biological data from N.C. surfzone sites.

With Other NOAA Programs

Regional collaboration with NOAA programs is a hallmark of NCSG efforts. In addition to examples already given above in other sections of this briefing book (i.e., NOAA Fisheries Bycatch Reduction of Marine Mammals in Mid-Atlantic Fisheries Program; South Atlantic Regional Sea Grant-NERRS Fellowships; Carolinas Coastal Climate Extension Initiative; CI-FLOW), activities include:

- *NOAA in the Carolinas (NinC)*. Founded by NCSG and NC NWS Forecast Offices, this is a unique-within-the-agency, grassroots affinity group of all NOAA-affiliated units in and/or focusing on North and South Carolina. Designed to enhance the public's *OneNOAA* perceptions and understanding of NOAA's value to the bi-state region, NinC uses conferences, a website, regular meetings of a steering committee, and special event hosting and sponsorship to increase use — and appreciation — of agency products/services by local and state officials and the public. NCSG leads annual efforts among NinC members to maintain the group's coordination functions. The group's current coordinator is an NCSG contractor employed through UNCW.
- *NOAA Southeast and Caribbean Regional Team (SECART)*. Beyond interaction with SECART via NOAA in the Carolinas (see above), NCSG engaged SECART through the project "Building a community of practice of climate extension and outreach professionals." A workshop and follow-up activities were conducted to coordinate and improve climate outreach approaches.
- *NOAA Marine Sanctuary Program*. NCSG is

involved in Sanctuary activities in NC and VA via the contributions of Terri Kirby Hathaway, NCSG marine education specialist, who serves on the Monitor National Marine Sanctuary Advisory Council, and provides guidance to Sanctuary staff in communicating with stakeholder groups on how Sanctuary resources are managed. She received the Sanctuary's "Volunteer of the Year" recognition in 2009.

- *SEACOOS and SECOORA*. NCSG has been active with regional coastal ocean observing interests in the state and Southeast region, mainly through early involvement in SEACOOS (Southeast Atlantic Coastal Ocean Observing System) and its current form, SECOORA (Southeastern Coastal Ocean Observing Regional Association). NCSG led the SEACOOS Outreach/Education Workgroup and piloted observing information projects with commercial fishers and offshore tournament anglers.
- *NOAA Fisheries/South Atlantic Marine Fisheries Council*. Through two Cooperative Research Program grant awards to a NCSG fisheries specialist in 2007 and 2009, and an N.C. Fishery Resource Grant project co-proposed, co-

conducted, and monitored by that specialist, the council received valuable data related to regional management of black sea bass, red porgy, and snapper/grouper. The latter study was recognized as "excellent and very valuable" in providing the council with insights on release mortality management options for sea bass.

With Other Federal Entities

In recent years, NCSG has interacted on regional efforts with several other federal agencies, most notably with USEPA on several regional climate change planning-related activities; FEMA on floodplain mapping and Hurricane Ike damage assessment; and USDA on the Trade Adjustment Assistance in Shrimp Delivery program. NCSG, along with SCSG and GASG, is a key partner in the National Science Foundation-funded Centers for Ocean Sciences Southeast (COSEE-SE). NCSG also is working with USGS relating to establishment and planning for its new Southeast Climate Science Center to be located at NC State. And NCSG has had two joint research projects with USGS-funded Water Resources Research Institute of UNC since 2009.

C. Program Changes Resulting from Previous Reviews

Much has changed since NCSG's last federal review (known then as a PAT) conducted in 2003. A select few of these changes — changes NOT made in response to PAT findings — include:

- The program has retained a new director (since July 2006). This has been accompanied by a change in management style, relatively greater focus in the social sciences and natural resource policy fields, and greater delegation of administrative responsibilities to the Management Team and select extension staff.
- The program's direct reporting relationship within the UNC system has shifted, and there has been new university leadership involved with NCSG oversight at both NC State and the UNC system.
- NCSG staffing FTE has decreased by approximately 15 percent, with two positions lost through attrition and several NCSG staff members now having "split" positions with other university programs.
- Support for state-funded research programs administered by NCSG has been cut significantly. At the same time, the state legislature and agencies have more frequently requested assistance and guidance from NCSG on coastal ocean, estuarine, access, beach/sand

stabilization, and wind energy policy matters.

- Since 2007, the program's external advisory committee on outreach has been transformed into an overall program advisory board.

These integral changes noted above, plus the time that has lapsed, the range of new program management and federal reporting requirements that have been established, and the funding realities and constraints affecting the program and its partners since 2003 clearly render some of the PAT recommendations (and responses to them) moot.

All recommendations stemming from the program's 2003 PAT review were initially and thoughtfully addressed by its previous director in early 2004.

*A copy of that response by Ronald Hodson can be viewed in the attached **Appendix I**.*

In retrospect, NCSG believes that, to one degree or another, all the PAT recommendations have been addressed in earnest and thoughtful fashion. Most notable have been:

- *Develop a tracking system and central database for all aspects of the program.* NCSG adopted Webnibus into its core research project process

in 2007 and developed an online annual progress reporting system, and has refined both systems. NCSG is in the process of adopting and adapting the *eSeaGrant* system, as developed and offered by MIT Sea Grant, to track and collect all research and outreach activity reporting, including and impacts and other metrics and measures submitted to NSGO through its National Information Management System.

- *Develop mechanisms to pay additional salary to NCSG staff.* Steps have been taken to afford state-mandated salary increases without taxing the program's federal funds (in the past, state salary increases were not accompanied by increased state funding). Since 2008, state funds are provided to support mandated salary increases. Also, classification/banding system changes at NC State have made possible upgraded pay for support positions.
- *Use free public service announcements on radio and TV to advertise NCSG and NCSG products.* NCSG and UNC-TV launched the *Coastwatch Now* series focused on key coastal issues and solutions. Also, a partnership with Public Radio East has provided *Coastwatch* subscriptions during fund drives in exchange for sponsorship taglines throughout the year to highlight the magazine as well as NCSG events, websites and other outreach efforts.
- *Develop a formal program of encouraging and supporting continuing education and training for all NCSG staff....Increase participation of NCSG staff...at national conferences and in publishing their work, budgets allowing.* Staff are encouraged and supported to participate in national and professional society conferences that may advance their skills and expertise. Program management fully supports, morally and fiscally, the publishing of papers, technical bulletins, etc., of staff and specialists' work.

- *Explore strengthening relationships with county and other NCCES partner groups in the areas of fishery, tourism and community development.* Given extreme budget issues for CES in recent years, expectations that it could increase its interest and programming in the fields of coastal fisheries, communities, and tourism would be unrealistic. However, CES support in water quality and community water quality planning for two NCSG positions has increased since 2008. In addition, NCSG specialists have been strong partners in the "Currituck Goes Green" project in Currituck County. NCSG has led a Currituck project to renovate stormwater ponds at the Currituck CES location.

During June 28–29, 2011, NCSG would welcome Site Review Team questions and discussions on the program's response to any PAT recommendations and other program changes and advancements since 2003.

This briefing book and cited appendices will be posted at: www.ncseagrant.org/2011sitereview. Supplemental handouts to be presented during the site review will be posted as well.

APPENDIX A: COASTAL AND MARINE RESEARCH COUNCIL UNIVERSITY OF NORTH CAROLINA

Membership of the Coastal and Marine Research Council, or CMRC, includes seven different entities from within the UNC System, from the Triangle eastward to the coast, as well as Duke University (represented through the Duke University Marine Laboratory in Beaufort). Thus the council collectively represents more than 235 Ph.D. scientists who conduct coastal and marine science research, along with 195 staff and 1,500 students at all university levels.

Dr. Daniel Baden, Director, Center for Marine Science (CMS)

www.uncw.edu/cms

UNC-Wilmington, Wilmington

Dr. Maurice Crawford, Coordinator, Marine Environmental Sciences Program (MESP)

www.ecsu.edu/academics/mathsciencetechnology/biology/index.cfm

Elizabeth City State University, Elizabeth City

Dr. David Eggleston, Director, Center for Marine Sciences and Technology (CMAST)

www.cmast.ncsu.edu

North Carolina State University, Morehead City

Dr. Rick Luettich, Director, Institute of Marine Sciences (IMS)

marine.unc.edu/IMS

UNC-Chapel Hill, Morehead City

Representing the UNC-CH Marine Science Program, which is comprised of IMS and the Department of Marine Science on the Chapel Hill campus (marine.unc.edu/Department).

Dr. John Rummel, Director, Institute for Coastal Science and Policy (ICSP)

www.ecu.edu/rgs/ICSP

East Carolina University, Greenville

Dr. Michael Voiland, Executive Director, North Carolina Sea Grant (NCSG)

www.ncseagrant.org

Raleigh

Dr. Nancy White, Director, UNC Coastal Studies Institute (CSI)

csi.northcarolina.edu

Manteo

By invitation:

Dr. Cindy Van Dover, Director, Duke University Marine Laboratory (DUML)

www.nicholas.duke.edu/marinelab

Beaufort

Representing DUML and Duke's Nicholas School of the Environment.

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APPENDIX B: NORTH CAROLINA SEA GRANT ADVISORY BOARD MEMBERS 2005 – 2011

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APPENDIX C: NORTH CAROLINA SEA GRANT CORE PROPOSALS 2008 – 2012

* New NCSG core researchers are highlighted

2010 – 2012 Core Proposals Funded

Grant Number	Principal Investigator and University	Co-Principal Investigator and University	Title	Amount
Healthy Coastal Ecosystems				
R/10-HCE-1	Jeffrey Buckel (NCSU)	Joseph Hightower (NCSU) Benjamin Letcher (USGS - Massachusetts)* Frederick Sharf (UNCW)	Effects of Habitat Alteration and Biotic Interactions on Survival of Juvenile Estuarine Fish	\$120,000
R/10-HCE-2	Brent McKee (UNC-CH)*	Antonio Rodriguez (UNC-CH)* Richard Miller (UNC-CSI & ECU)*	Impacts of Sea-Level Rise and Land-Use Modifications on Fringing Marsh Sustainability	\$119,998
R/10-HCE-3	Michael Piehler (UNC-CH)*		Assessing the Potential for Estuarine Nitrogen Removal using Ecosystem Engineers	\$69,998
R/10-HCE-4	Amy Ringwood (UNC-Charlotte)	James Oliver (UNC-Charlotte) Sandra Clinton (UNC-Charlotte)*	Environmental Stress and Microbial Dynamics of Oysters and Marsh Mussels	\$69,996
Hazard Resilience in Coastal Communities				
R/10-HRCC-1	Eva Gonzales (Appalachian State)*		Sand Dune Restoration: What is Local? Understanding Relationships Between Evolutionary History of Sea Oats (<i>Uniola paniculata</i>) Poaceae and Adaptations to Local Environmental Conditions	\$62,736
Sustainable Coastal Development				
R/10-SCD-1	Patrick Long (ECU)*	Huili Hao (ECU)* James Kleckley (ECU)*	Tourism Impacts and Second Home Development in Coastal Communities: A Sustainable Approach	\$69,952
R/10-SCD-2	Brian Miles (NCSU)*	Mehran Elahi (Elizabeth City State)*	Community Wind Education and Job Training in Coastal North Carolina	\$119,328
Safe and Sustainable Seafood Supply				
R/10-SSS-1	Russell Borski (NCSU)	Harry Daniels (NCSU) Wade Watanabe (UNCW) Md Shah Alam (UNCW)	Optimizing All-Female Southern Flounder Culture in Low Saline Waters	\$119,285
R/10-SSS-2	Edward Noga (NCSU)		A Novel Approach to Improving Resistance to the Parasite Causing Dermo in Oysters	\$119,684
R/10-SSS-3	Frederick Scharf (UNCW)*	Amanda Southwood (UNCW)*	The Physiological Basis of Winter Induced Stress and Mortality in Juvenile Red Drum	\$66,338

Grant Number	Principal Investigator and University	Co-Principal Investigator and University	Title	Amount
R/10-SSS-4	Christopher Finelli (UNCW)*	Troy Alphin (UNCW) Martin Posey (UNCW) Ami Wilbur (UNCW)	To Seed or Not to Seed: The Value of Seeding Restored Oyster Reefs for Ecosystem Function	\$88,597
Projects				\$937,315
Graduate Students				\$320,000
TOTAL				\$1,257,315

2008 – 2010 Core Proposals Funded

Grant Number	Principal Investigator and University	Co-Principal Investigator and University	Title	Amount
Aquaculture				
R/AF-49	Craig Sullivan (NCSU)	Ronald Hodson (NCSU) Charlene Couch (NCSU) Andrew McGinty (NCSU)	Domesticated Broodstock and Selective Breeding for Hybrid Striped Bass (HSB) Farming: Enabling Industry Implementation	\$78,870
R/AF-50	Wade Watanabe (UNCW)	Harry Daniels (NCSU) Shah Alam (UNCW)*	Enhancing Commercial Aquaculture of Southern Flounder in North Carolina: Requisite Tools for Broodstock Husbandry and Expanded All-Female Fingerling Production	\$66,720
Coastal Communities and Economies				
R/BS-18	Lisa Campbell (Duke)*	Mike Orbach (Duke) Zoe Meletis (Duke)* Carla Norwood (UNC-CH)* Gabriel Cumming (UNC-CH)*	Change in Coastal Communities: Perspectives from Down East	\$56,346
R/BS-19	Catherine Smith (ECU)*	Donna Kain (ECU)* Kenneth Wilson (ECU)*	Risk Perceptions and Emergency Communication Effectiveness in Coastal Zones	\$69,231
Coastal Hazards				
R/CZS-35	Margery Overton (NCSU)	Helena Mitasova (NCSU)*	Multi-Temporal, Three Dimensional Coastal State Indicators	\$48,575
R/CZS-36	Scott Hippensteel (UNC-C)*		Outer Banks Paleotempestology: Enhancing the Paleo-Storm and Sea-Level Record for North Carolina	\$40,000
R/CZS-37	Antonio Rodriguez (UNC-CH)*	Greg Rudolph (Emerald Isle)* Christopher Freeman (Pine Knoll Shores)*	Examining the Geospatial Linkage Between Modern Erosional Hotspots and Holocene Progradation and the Implications for Predicting Future Shoreline Positions Along the Outer Banks, North Carolina	\$69,383

Grant Number	Principal Investigator and University	Co-Principal Investigator and University	Title	Amount
Ecosystems and Habitats				
R/MER-55	Jim Rice (NCSU)	Russell Borski (NCSU)	Linking Changes in Hypoxia to Effects on Fish Growth Using Three Short-Term Growth Indicators	\$74,063
R/MER-56	Lawrence Cahoon (UNCW)	Martin Posey (UNCW) Lynn Leonard (UNCW)* Thomas Lankford (UNCW) Troy Alphin (UNCW)	Key Parameters for Assessing Beach Functionality	\$72,758
R/MER-57	Craig Tobias (UNCW)	Bongkeun Song (UNCW)	Nitrogen Removal Capacity of North Carolina Estuaries: Assessing Distribution and Controls	\$69,524
R/MER-58	Michael Wetz (UNC-CH)*	Hans Paerl (UNC-CH)	Picophytoplankton: A Potential Link Between Climate Change, Estuarine Food Web, Eutrophication and Hypoxia Dynamics	\$45,446
Fisheries				
R/MRD-55	Anthony Overton (ECU)*	Rhea Miles (ECU)*	Recruitment of Estuarine-Dependent Alosines to Albemarle Sound: Will Food Availability or Nursery Habitat Limit Success of Restoration Programs?	\$65,302
R/MRD-56	David Eggleston (NCSU)	Cynthia Cudaback (NCSU) Craig Hardy (DMF)* Eugene Ballance (Ocracoke)* Kyle Shertzer (NMFS)*	Oyster Dispersal and Metapopulation Dynamics in Pamlico Sound: Part II — Settlement, Survival and Spawning Potential	\$74,028
R/MRD-57	Jeffrey Buckel (NCSU)	Frederick Scharf (UNCW) Joseph Hightower (NCSU) Kenneth Pollock (NCSU)	Does Density-Dependent Mortality in Juvenile Estuarine Fish Limit Recruitment?	\$100,797
R/MRD-58	Thomas Lankford Jr. (UNCW)*	Ami Wilbur (UNCW)	Stock Structure of Southern Kingfish: Defining Units for Stock Assessment and Management of North Carolina Fisheries	\$37,947
Urban Coasts				
R/UC-1	JoAnn Burkholder (NCSU)		Long-Term Impacts of Changing Land Use Practices on Water Quality and Phytoplankton Assemblages in the Neuse Estuary, North Carolina	\$46,918
Projects				\$1,015,908

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APPENDIX D: NORTH CAROLINA SEA GRANT MINI-GRANTS 2008 – 2011

* New PI or institution

2011 Mini-grants

Project Number	Principal Investigator	University	Title	Award Amount
R/MG-1101	Chuck Hopkinson/ Laurie Fowler	GA Sea Grant	GA Sea Grant — Sapelo Island National Estuarine Research Reserve Grant: 2011 Coastal Research Fellowship for Graduate Students	\$7,500
R/MG-1102	Rick DeVoe/ Isaure DeBuron	SC Sea Grant	SC National Estuarine Research Reserve — SC Sea Grant Consortium: 2011 Coastal Research Fellowship Program	\$7,500
R/MG-1103	Michelle Brodeur*	UNC-CH	Managing Intertidal Oyster Reefs in a Changing Climate: How Macroalgal Cover Affects Reef Dynamics within the Rachel Carson Reserve	\$10,000
R/MG-1104	Susan Andreatta	UNCG	Examining the Impact of Social Marketing Programs on the Public Accessing Local Seafood	\$4,870
R/MG-1105	Nathan Richards	ECU	Ship Ashore! The role of risk in the development of the U.S. Life-Saving Service and wrecking patterns along the North Carolina coast	\$3,000
R/MG-1106	Donna Kain	ECU	Risk Communication and Perception of Climate Change and Adaptation in Northeastern North Carolina	\$5,500
R/MG-1107	Karl Havens/ David Kimbro	FSU	FL National Estuarine Research Reserve — FL Sea Grant: 2011 Coastal Research Fellowship Program	
R/MG-1108	Francois Birgand*	NC State	Quantification of Nutrient and Organic Matter Fluxes in a Restored Tidal Marsh	\$9,500
R/MG-1109 OLD MG FUNDS	Spencer Rogers	UNCW	GIS Analysis Hurricane Ike Mini-Grant Proposal	\$1,000

2010 Mini-grants

Project Number	Principal Investigator	University	Title	Award Amount
R/MG-1001	Michelle Staudinger*	UNCW	Foraging Ecology of Large Pelagic Predators Off North Carolina	\$5,000
R/MG-1002	Calvin H. Mires*	ECU	The Value of Maritime Archaeological Heritage: Understanding the Cultural Capital of Shipwrecks in the Graveyard of the Atlantic	\$3,000
R/MG-1003	Sean Lema*	UNCW	Identifying Endocrine Pathways for Reproduction in Blue Crab (<i>Callinectes sapidus</i>)	\$3,721
R/MG-1004	Brant Touchette	Elon University	Coastal Maritime Swamp Restoration: Evaluating the Importance of Hydrology and Plant-Water Relations	\$8,000
R/MG-1005-A	Barbara Doll	NC State	Assessment of Water Quality Treatment of Enhanced Stormwater Ponds at the NC Cooperative Extension Services Center in Currituck County	\$3,311
R/MG-1005-B	Robert McClendon*	ECU	Assessment of Water Quality Treatment of Enhanced Stormwater Ponds at the NC Cooperative Extension Services Center in Currituck County	\$4,048
R/MG-1006	Michael Voiland	NC State	Potential Conveyance, Arrival and Forms of Gulf of Mexico Spilled Oil in North Carolina Waters: Using Perspectives of Experts to Inform Key State Leaders and Resource Managers	No fixed budget
R/MG-1007	Ruoying He*	NC State	Modeling the Vertical and Horizontal Distributions of the Oil Plumes Arising from the Deepwater Horizon Spill in the Southeast U.S. Coastal Waters	\$7,000
R/MG-1008	Lawrence (Larry) Cahoon	UNCW	Response to BP Oil Spill: Baseline Beach Sampling for North Carolina	\$6,000
R/MG-1009	Dana Newton*	CoA*	Marine Science Job Fair and Networking Opportunity: College of the Albemarle	\$4,359

Project Number	Principal Investigator	University	Title	Award Amount
R/MG-1010	Lynn Leonard	UNCW	Analysis of Geomorphologic Evolution of Masonboro Island, North Carolina (1857-Present)	\$4,000
R/MG-1011	Huili Hao	ECU	Employers' and Managers' Perception of Drilled Oil Risks for Coastal North Carolina's Tourism-Impacted Businesses and Organizations	\$4,931
R/MG-1012	Amanda Southwood	UNCW	Using Postcard Surveys to Investigate Potential Interactions Between Blue Crab Fisheries and Diamondback Terrapins in Coastal North Carolina	\$800
R/MG-1013	Susan Andreatta	UNCG	Examining the Impact of Social Marketing Programs on the Public Accessing Local Seafood	\$4,870
R/MG-1014	Constance Rogers Lowery*	Catawba College*	Effects of Ocean Acidification on a Sentinel Species of Hydroid Found in the Sounds of North Carolina	\$4,770
R/MG-1015	Sara Mirabilio	ECU	Hatteras Connection Seafood Marketing Youth Team	\$4,400
R/MG-1016	JoAnn Burkholder	NC State	Harnessing Novel Saltwater Microalgae as a Renewable Biofuel Sources: Identifying Best Strains for Maximal Lipid Production Under Salinity Stress	\$8,000
R/MG-1017	Chris Dumas	UNCW	North Carolina Coastal Homeowner Perceptions and Attitudes About Climate Change and Sea Level Rise	\$8,000
R/MG-1018	David Kimmel*	ECU	Hydrocarbon Signatures in Coastal NC Water and Mesozooplankton Tissue	\$4,953
R/MG-1019	Craig Sullivan	NC State	Egg Quality in Striped Bass: Profiling Ovarian Gene Expression by Microarray and RNA-Seq Methodologies	\$7,500
R/MG-1020	Donna Kain	ECU	Risk Communication and Perception of Climate Change and Adaptation in Northeastern North Carolina	\$5,500

2009 Mini-grants

Project Number	Principal Investigator	University	Title	Award Amount
R/MG-0901	Esther Leise*	UNCG	Effect of pH on Larval Metamorphosis in the Marine Snail, <i>Ilyanassa obsoleta</i>	\$4,300
R/MG-0902	Heather Koopman*	UNCW	Factors Affecting Egg Quality in American Lobsters (<i>Homarus americanus</i>)	\$1,500
R/MG-0903	Craig Harms*	NC State	Predation on Important Commercial and Recreational Fishes Along the Coast of North Carolina by the Bottlenose Dolphin (<i>Tursiops truncatus</i>)	\$4,900
R/MG-0904	Katie Patterson	NC State	Hurricane Floyd 10-Year Anniversary	\$9,180
R/MG-0905	Chris Dumas	UNCW	Economic Impacts of the North Carolina Ocean Striped Bass Fishery	\$2,500
R/MG-0906	Inna Sokolova	UNCC	Effect of High CO2 Concentrations on Calcification and Energy Metabolism of Marine Mollusks, <i>Crassostea virginica</i> (Eastern Oysters)	\$4,970
R/MG-0907	David H. Wells*	UNCW	Development and Field Testing of Fisheries Video Data Logger	\$1,300
R/MG-0908	Nathan Richards	ECU	At the Crossroads: Maritime Systems in Transition and the Elizabeth City Ships' Graveyard	\$3,000
R/MG-0909	Marcel Van Tuinen*	UNCW	Novel Genetic Markers of North Carolina Tern Conservation	\$1,350
R/MG-0910	Bradley Rodgers*	ECU	Analyses of Vessel Remains and Other Artifact Assemblages on the Cashie River, Bertie County, NC	\$2,000
R/MG-0911	Sankara Subramanian Arumugam*	NC State	Vulnerability of Coastal Watersheds in NC to Climate Change and Variability	\$9,593
R/MG-0912	Frederick S. Scharf	UNCW	Laboratory Validation of Field-Based Estimates of Red Drum Foraging Rates	\$1,725
R/MG-0913	Katie Patterson	NC State	North Carolina Sea Grant Participation in Science Writers 2009 Conference of NASW/CASW	\$680
R/MG-0914	Kenneth Bost*	UNCC	Expressing Viral-Like Particles in Transgenic Soybean Seeds as a Possible Fish Vaccine	\$9,385
R/MG-0915	Marc Turano	NC State	Evaluation of Cultch Bags Constructed of Coir for Spat Recruitment and Oyster Mariculture	\$1,500

2008 Mini-grants

Project Number	Principal Investigator	University	Title	Award Amount
R/MG-0801	Ron Baird	UNCW	Coastal Communities Research/Outreach Initiative	\$5,615
R/MG-0802	Larry Babits*	ECU	A Re-Evaluation of Compromised Archaeological Sites Case Study of the Confederate Ironclad Neuse	\$4,000
R/MG-0803	Nathan Richards*	ECU	Hard Times for Small Craft: A Study of the Wright's Creek Abandoned Vessel Complex	\$2,279
R/MG-0804	Barry Nash	NC State	Develop an Industry Blueprint on Commercializing Value-Added Seafood and a Consumers' Guide to Home Seafood Preparation	\$5,000
R/MG-0805	Susan Andreatta*	UNCG	Evaluating the "Local Catch: North Carolina Seafood Availability" Cards	\$2,000

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APPENDIX E: NORTH CAROLINA SEA GRANT-INITIATED AND -SUPPORTED FELLOWSHIPS

North Carolina Sea Grant's 2011 South Atlantic Regional Sea Grant-National Estuarine Research Reserve System fellows were highlighted in the main text of this briefing book. The following listings identify additional fellows who have served in programs initiated by NCSG.

NCSG-NC DMF Marine Fisheries Management Fellowships

Jeffrey Buckel, of North Carolina State University's Department of Biology, has mentored all of these fisheries management fellows. He is based at the Center for Marine Sciences and Technology in Morehead City, near the DMF headquarters. The full-time stipend averages approximately \$30,000.

- "Movements and mortality of striped mullet in North Carolina." July 2002 – June 2003. Nathan Bacheler, graduate of NC State. He finished his Ph.D. in Zoology at NC State in 2008, took a post-doctoral position at Oregon State University, and now is a research fishery biologist with NOAA's National Marine Fisheries Service in Beaufort, N.C.
- "Development and validation of juvenile abundance indices for selected North Carolina finfish." July 2003 – November 2003. Corey Oakley, graduate of NC State. He is now a fisheries biologist with the N.C. Wildlife Resources Commission.
- "Development and validation of juvenile abundance indices for selected North Carolina finfish with an examination of factors affecting recruitment of white perch and yellow perch in Albemarle Sound, North Carolina." July 2004 – June 2005. Stacy Luthy, graduate of University of Miami. She is now an assistant professor at University of the Pacific.
- "Quantitative analyses of mark and recapture data for adult red drum (*Sciaenops ocellatus*) in North Carolina." July 2005 – June 2006. Summer Burdick, graduate of NC State. She is now a fisheries biologist with the U.S. Geological Survey in Klamath Falls, OR.
- "Analysis of a long-term ichthyoplankton dataset at Beaufort Inlet, N.C.: What can larval abundance patterns tell us about recruitment?" July 2006 – June 2007. Warren Mitchell, graduate of NC State. He is now a fisheries biologist with NOAA's National Marine Fisheries Service in Beaufort, N.C.
- "Using biological and habitat data to identify strategic habitat areas for living marine resources in Albemarle Sound, North Carolina." July 2007 – July 2008. Tim Ellis, graduate of NC State. He is now a Ph.D. student in Fisheries and Wildlife there.
- "A comparison of fish scales vs. otoliths (ear bones) to determine which is a better indicator of age in summer flounder." August 2008 – July 2009. Ray Mroch, graduate of NC State. He is now a stock assessment scientist with the N.C. Division of Marine Fisheries.
- "Addressing research questions generated from the North Carolina Coastal Habitat Protection Plan." August 2009 – August 2011. Jen Weaver, graduate of Duke University. She is currently completing the fellowship that was extended for a second year.

NCSG-NC Coastal Reserve/NERRS Fellowships

Following North Carolina Sea Grant's participation in the federal review of the N.C. Coastal Reserves/N.C. National Estuarine Research Reserve System program in 2010, the NCSG-NCCR/NERRS Fellowship was established. The North Carolina fellowship set a model for a regional Sea Grant-NERRS Fellowship that started in 2011, as described earlier in this report.

- "Analysis of geomorphological evolution of Masonboro Island, N.C.: 1857 to present." 2010. Kristen Hall, master's candidate, Department of Geology and Geography, UNC Wilmington. Lynn Leonard, advisor.

NCSG-ECU Maritime Heritage Fellowships

All maritime fellows were/are graduate students in the Maritime Studies Program at East Carolina University. Advisors have varied based on specific proposals. Fellowship stipends averaged \$3,000. Projects have been featured in Coastwatch and other media.

- “Underwater and terrestrial study of the maritime cultural landscape in New Bern, NC.” 2007. Jeremy Eamick, master’s candidate. David Stewart, advisor.
- “Heritage tourism development for North Carolina shipwrecks: a policy analysis.” 2007. Valerie Grussing, doctoral candidate. Larry Babits, advisor. Valerie now is with the NOAA National Marine Protected Areas Center.
- “Re-evaluation of compromised archeological sites: case study of the Confederate ironclad *Neuse*.” 2008. Peter Campbell, doctoral candidate. Larry Babits, advisor. Peter is now an underwater archaeologist with CAIRN.
- “Hard times for small craft: a study of the Wright’s Creek abandoned vessel complex.” 2008. Jacqueline Marcotte, master’s candidate. Nathan Richards, advisor.
- “At the crossroads: maritime systems in transition and the Elizabeth City ships’ graveyard.” 2009. Lindsey Smith, master’s candidate. Nathan Richards, advisor.
- “Analyses of vessel remains and other artifact assemblages on the Cashie River, Bertie County.” 2009. Theresa Hicks, master’s candidate. Bradley Rogers, advisor.
- “The value of maritime archeological heritage: understanding the cultural capital of shipwrecks in the Graveyard of the Atlantic.” 2010. Calvin Mires, doctoral candidate. Nathan Richards, advisor. Calvin is a staff archaeologist at ECU.
- “Ship Ashore! The role of risk in the development of the U.S. Life-Saving Service and wrecking patterns along the North Carolina coast.” Joshua Marano, master’s candidate. Nathan Richards, advisor.

North Carolina Sea Grant Science Communications Fellowships

Communications fellows have come from various universities and from various academic backgrounds. But all have had strong interest and ability in science and communications. Katie Mosher, NCSG communications director, has mentored all these fellows as they have worked on Coastwatch, www.ncseagrant.org, newsletters, video projects and other products. Many have won state and national writing awards and travel fellowships from the Council for the Advancement of Science Writing.

- 2004–2005. Kathleen Angione, NC State. She moved to a full-time position with NCSG from 2005-2010.
- 2005–2006. Erin Seiling, Duke University. She initially joined Virginia Sea Grant, and now is assistant director of the Reese Institute at Lenoir-Rhyne University in Hickory, N.C. She also is a Ph.D. student with Antioch University.
- 2006–2007. E-Ching Lee, NC State. She initially joined RTI International in Research Triangle Park, N.C., and last year returned to NCSG in a full-time communications position.
- 2007–2008. Heather Ward, ECU. She is now on faculty at Barton College in Wilson, N.C. while she completes her Ph.D. at ECU.
- 2008–2009. Robin Wienke, NC State. She is currently a quality specialist at Expression Analysis in Research Triangle Park.
- 2009–2010. Ben Young Landis, Duke University. He is currently outreach and communications director for the U.S. Geological Survey’s Western Ecological Research Center in Sacramento, CA.

APPENDIX F: LEVERAGED FUNDS MANAGED BY NORTH CAROLINA SEA GRANT

NC FISHERY RESOURCE GRANT RESEARCH PROGRAM

Most FRG projects are partnerships between fishermen and academics. All projects have substantial involvement from the fishing community. Each year, the grants committee strives for balance of projects along the North Carolina coast.

Funded 2011

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
11-AM-01	Nelson Paul (Raleigh) (PI) Dennis DeLong (Raleigh) (PI)	Nick Reynolds (Beaufort)	Spawning Activity of Mud Minnows (<i>Fundulus heteroclitus</i>) in Tank-Based Systems for the Production of Baitfish	\$18,100
11-AM-02	Harry Daniels (Raleigh) (PI) Russell Borski (Raleigh) (PI)	I.J. Won (Marshallberg) Archie Cooke (Pinetown)	Year-Round Indoor Production of Hybrid Striped Bass Fingerlings	\$93,608
11-AM-03	Wade Watanabe (Wilmington) (PI) Md. Shah Alam (Wilmington) (PI) Shawn Longfellow (Wilmington) (Co-PI)		Salt Incorporated Diets for Enhancing Growth Performance During Intensive Cultivation of Black Sea Bass in North Carolina Using Low Salinity Brackish Water	\$42,000
11-AM-07	Stephen Locke (Aurora) (PI)	Nancy Sugg (Aurora) Craig Sullivan (Raleigh) Ronald Hodson (Apex)	Domesticated Broodstock for Hybrid Striped Bass Farming: Pioneering Industry Implementation	\$88,345
11-EP-06	Niels Lindquist (Morehead City) (PI) Adam Tyler (Smyrna) (Co-PI) David Eggleston (Morehead City) (Co-PI)	Craig Hardy (Morehead City) NCSU Masters Student (Morehead City) UNC/IMS Research Tech (Morehead City)	Identifying Sustainable Substrates for Oyster Restoration and Artificial Reefs	\$120,000
11-EP-08	F. Joel Fodrie (Morehead City) (PI)	Adam Tyler (Smyrna) David Cessna Sr. (Smyrna)	Turning Negatives into Positives: Recycling Derelict Crab Pots as Substrate for Shallow-Water Oyster Reef Production	\$51,251
11-EP-09	Roger Rulifson (Greenville) (PI) Chris Hickman (Hatteras) (PI)	Andrea Dell'Apa (Greenville) Jennifer Cudney-Burch (Winterville)	Identification of Juvenile Spiny Dogfish Habitats in North Carolina Coastal Waters	\$106,683
11-FEG-01	Buck Cuthrell (Aurora) (PI)	NCDMF (Washington)	Exploratory Sampling of Older Striped Bass in the Pamlico River	\$17,000
11-FEG-02	Thomas Schultz (Beaufort) (PI) Dan Rittschof (Beaufort) (PI)		Genetic Contributions to Body Size in Blue Crabs	\$16,924
11-FEG-03	Alan Doughtie (Newport) (PI)	Paul Rudershausen (Morehead City) Ernest Small (Newport)	Testing Rectangular Gillnet Mesh in a Tidally Driven North Carolina Estuary	\$25,470

11-FEG-04	Tom Burgess (Sneads Ferry) (PI)	Jeff Buckel (Morehead City)	Accounting for the Effects of Pressure Trauma in Estimating Rates of Discard Mortality of Black Sea Bass (<i>Centropristis striata</i>) in the Deepwater North Carolina Reef Fishery	\$30,225
TOTAL				\$609,606

Funded 2010

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
10-AM-01	Bob King (Raleigh) (PI) Keith Bolick (Raleigh) (PI) George Moore (Raleigh) (PI) Dennis Mast (Raleigh)(PI)	Nancy Sugg (Aurora) Harry Daniels (Raleigh)	Efficient Water Oxygenation and Purification for Aquaculture	\$21,808
10-AM-02	Wade Watanabe (Wilmington) (PI) Md. Shah Alam (Wilmington) (PI) Ted Davis (Wilmington) (Co-PI) Shawn Longfellow (Wilmington) (Co-PI) Keith Hairr (Wallace) (Co-PI)		Pilot Commercial Scale Testing of Promising Diets for Intensive Cultivation of Southern Flounder and Black Sea Bass in North Carolina Using an Alternative Protein Source	\$45,361
10-AM-03	Thomas Losordo (Raleigh) (PI) Tom Burgess (Sneads Ferry) (PI)		Development of a Holding System for the Sale of Live Black Sea Bass	\$16,151
10-EP-03	Eugene Ballance (Ocracoke) (PI)	Barry Cullens (Elizabeth City)	A GIS Assessment of NCDMF Oyster Enhancement from 1981 to 2009	\$37,653
10-EP-04	Roger Rulifson (Greenville) (PI) Willie Phillips (Columbia) (PI)	Daniel Zapf (Greenville)	Identification of River Herring Spawning and Juvenile Habitat in Albemarle Sound Inferred from Otolith Microchemistry	\$70,429
10-EP-05	Anthony Overton (Greenville) (PI) Terry Pratt (Merry Hill) (Co-PI)		Can Spawning Habitat Be Characterized and Prioritized Based on the Presence of Early Life Stages of River Herring?	\$57,726
10-EP-07	Dan Rittschof (Beaufort) (PI)	Amy Freitag (Beaufort) Josh Stoll (Beaufort) Mark Hooper (Smyrna) Dell Newman (Swan Quarter) Willy Phillips (Columbia) Sam Donathan (Wilmington)	Is North Carolina Seafood Wholesome: Mercury and Polychlorinated Biphenyl Levels in North Carolina Seafood	\$50,640
10-EP-10	Niels Lindquist (Morehead City) (PI) David Gaskill (Morehead City) (PI)	Raymond Graham Jr. (Newport)	Quantifying Boring Sponge Abundance and Biomass in North Carolina Oyster Reefs	\$46,576
10-FEG-03	John Broome (Wilmington) (PI)	Julian Anderson (Rocky Point) Donna Anderson (Rocky Point)	By-Catch Volume Reduction Through Turtle Excluder Device (TED) Reduced Grid Spacing	\$19,859

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
10-FEG-06	Dale Britt (Morehead City) (PI)	Pete Zook (Morehead City) Jeff Buckel (Morehead City) Randy Gregory (Morehead City)	Comparing Circle Hook and J Hook Performance in the Yellowfin Tuna Bluewater Troll Fishery, North Carolina	\$11,400
10-FEG-07	Charles Renda Jr. (Beaufort) (PI)	Paul Rudershausen (Morehead City) Tom Shultz (Beaufort) Richard Knowles (Harkers Island)	Gear Modifications for Fishing Octopus on Live-Bottom and Adjacent Flat Bottom Habitats in Onslow Bay, North Carolina	\$41,125
10-FEG-08	Teresa Thorpe (Wilmington) (PI) David Beresoff (Bolivia) (Co-PI)		Delineation of Essential Shark Habitat in North Carolina Coastal Waters	\$52,983
10-FEG-10	Frederick Scharf (Beaufort) (PI) J. Christopher Taylor (Wilmington) (PI)	Jeff Wolfe (Wilmington) Cecil Simons (Atlantic) Troy Outland (Manteo)	Updating Size and Age at Maturity Schedules for Southern Flounder Through Examination of Reproductive Tissue and Otolith Microchemistry	\$47,221
10-FEG-18	Edward Lee Morris (Plymouth) (PI)	Leslie Perry (Plymouth) Randy Jett (Plymouth)	Flounder Hoops	\$17,497
10-FEG-19	Edward Lee Morris (Plymouth) (PI)	Leslie Perry (Plymouth) Randy Jett (Plymouth) Sara Mirabilio (Manteo)	Evaluation of an Alternate Low-Profile Gillnet in the Pamlico Sound Southern Flounder (<i>Paralichthys lethostigma</i>) Fishery	\$21,200
10-FEG-20	Joseph Williams (Scranton) (PI)	Lena Carawan (Greenville) Paul Kauffmann (Greenville) Mike Behm (Greenville)	Adapting European Trawl Doors to North Carolina Shrimp Fishery in Pamlico Sound	\$28,931
10-ST-02	Derek Aday (Raleigh) (PI) Chris Conklin (Morehead City) (PI) Dale Britt (Morehead City) (Co-PI) Sally Petre (Raleigh) (Co-PI) Dana Sackett (Raleigh) (Co-PI)		Consumption Risk from Locally Harvested Fish: A Survey of Mercury in Economically Important Fishes Commonly Landed Off the Coast of North Carolina	\$18,043
10-ST-05	Lee Ann Jaykus (Raleigh) (PI) Jim Swartzenberg (Jacksonville) (PI)	Steve Murphey (Morehead City) Green's Oyster Company (Sunset Beach) T&A Oyster Company (Supply) David Green (Morehead City) Greg Bolton (Morehead City)	Validation of a Post Harvest Process (PHP) to Reduce <i>Vibrio vulnificus</i> in Oysters	\$35,700

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
10-ST-06	Cathy Dobbins (Research Triangle Park) (PI)	Brunswick Catch (Supply) William Small (Elizabeth City) Barry Nash (Morehead City) Scott Baker (Wilmington)	Raising Consumer Awareness and Interest in North Carolina Seafood	\$38,724
10-ST-07	David Green (Morehead City) (PI) K.P. Sandeep (Raleigh) (PI)	Greg Bolton (Morehead City) Barry Nash (Morehead City)	Validation of Microwave Cooking Instructions for Not-Ready-to-Eat (NRTE) Seafood	\$23,500
TOTAL				\$702,527

Funded 2009

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
09-AM-02	Tom Osborne (Wilmington) (PI) Nelson Bullock (Morehead City) (PI)		Experimental Culture of the Native Pen Shell, <i>Atrina sp.</i> : Examining Production Cost to Determine the Economic Feasibility of Pearl Culture in Coastal Areas	\$35,062
09-AM-03	Thomas Losordo (Raleigh) (PI) Shawn Longfellow (Leland) (PI)	Todd Guerdat (Raleigh) Dennis DeLong (Raleigh)	Enabling Marine Recirculating Aquaculture Effluent for Reuse Using Constructed Wetlands	\$17,666
09-EP-03	Dina Leech (Morehead City) (PI) Scott Ensign (Morehead City) (PI) Herbert Byrum (Tyner) (PI) Michael Piehler (Morehead City) (PI)	Chris Taylor (Beaufort)	Zooplankton Assessment Project (ZAP): Reassessing Prey Availability for River Herring in the Chowan River Basin - Year 2	\$32,813
09-FEG-01	John Broome (Wilmington) (PI)	Julian Anderson (Rocky Point) Donna Anderson (Rocky Point) Robert Misenheimer (Wilmington) Sherry Broome (Raleigh/Wilmington)	Culling Efficiency Sorter (CES) and By-Catch Mortality Reduction in a Shrimp Trawling Operation	\$29,545
09-FEG-02	Dale Alan Doughtie (Newport) (PI)	Keith Bruno (Oriental) Paul Rudershausen (Morehead City) Blake Price (Morehead City)	Bycatch Reducing Rectangular Gillnet Webbing Testing in the Neuse River Southern Flounder Fishery	\$45,778
09-FEG-03	Tom Burgess (Sneads Ferry) (PI)	Paul Rudershausen (Morehead City)	Estimating Rates of Trap and Escape Vent Loss in the Black Sea Bass Fishery	\$22,020
09-FEG-04	Tom Burgess (Sneads Ferry) (PI)	Jeff Buckel (Morehead City)	Using SCUBA Diving to Scale Rates of Discard Mortality in the U.S. South Atlantic Reef Fishery	\$17,620

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
09-FEG-05	Amanda Southwood (Wilmington) (PI)	Joanne McNeill (Beaufort) Eddie Willis (Harkers Island)	Timing and Pathways of Fall Migration for Juvenile Green Sea Turtles in Back, Core and Pamlico Sounds North Carolina	\$44,590
09-FEG-07	Andrew Read (Beaufort) (PI) Dewey Hemilright (Kitty Hawk) (PI)	Ari Friedlaender (Beaufort) Kim Urian (Beaufort) Danielle Waples (Beaufort) Lynne Williams (Beaufort) Eric Dawe (Massachusetts)	Foraging Behavior of Pilot Whales in the Cape Hatteras Special Research Area	\$46,463
09-FEG-08	Roger Rulifson (Greenville) (PI) Dewey Hemilright (Kitty Hawk) (PI)	Garry Wright (Greenville)	Gillnet Calibration for Spiny Dogfish Abundance Assessment	\$68,664
09-FEG-09	Timothy Daniels (Wanchese) (PI)	Faron Daniels (Wanchese) Joe DeAlteris (Rhode Island) Henry Milliken (Massachusetts) Sara Mirabilio (Manteo)	Evaluation of a Modified Turtle Excluder Device (TED) in the Summer Flounder (<i>Paralichthys dentatus</i>) Ocean Trawl Fishery	\$52,620
09-FEG-10	Frederick Scharf (Wilmington) (PI) Chris Taylor (Beaufort) (PI)	Jeff Wolfe (Wilmington) Cecil Simons (Atlantic) David Hilton (Ocracoke Island) Michael Hilton (Ocracoke Island)	Updating Size and Age at Maturity Schedules for Southern Flounder Through Examination of Reproductive Tissue and Otolith Microchemistry	\$47,221
09-FEG-14	Joseph Kimel (Hampstead) (PI) Sammy Corbett (Hampstead) (Co-PI)	Teresa Thorpe (Wilmington) Danny Stephens (Bolivia)	Effects on Habitat When Using Bottom Disturbing Devices in the Estuarine Gillnet Fishery	\$45,093
09-ST-01	Robert Handfield (Raleigh) (PI) Bill Rice (Beaufort) (PI) Sandra Kellum (Beaufort) (PI)	Barry Nash (Morehead City)	Expanding the Market for Carteret County Seafood: Strategic Site Selection for a Cold Storage Seafood Distribution Facility	\$23,700
09-ST-05	Pam Morris (Harkers Island) (PI) Dave Green (Morehead City) (PI)	Joyce Taylor (Morehead City) Barry Nash (Morehead City) Charlie Krouse (Morehead City) Ben Chapman (Raleigh)	Mariner's Menu Online: Blogging New Recipes to Meet Consumer Demand for North Carolina Seafood	\$16,360
TOTAL				\$545,215

Funded 2008

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
08-AM-01	Jim Swartzenberg (Jacksonville) (PI)	Tracy Skrabal (Wilmington) Ted Wilgis (Wilmington)	Remote Setting Oyster Larvae on Shell: Innovate - Evaluate - Educate	\$19,800

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
08-AM-02	Frank Montgomery (Wilmington) (PI) Wade Watanabe (Wilmington) (Co-PI) Md. Shah Alam (Wilmington) (Co-PI) James Morris (Beaufort) (Co-PI)		The Red Porgy (<i>Pagrus pagrus</i>): Optimizing Prey Enrichment and Artificial Microdiet Applications for Expanded Hatchery Production of Fingerlings	\$51,418
08-AM-04	Mark Hooper (Smyrna) (PI)		Effect of Water Column Position on Oyster Spat Settlement Success	\$9,116
08-AM-05	Byron Bey (Southport) (PI) Harry Daniels (Raleigh) (PI) Royce Potter (Southport) (PI)	Tim Barefoot (Wilmington)	Pilot Project to Evaluate the Feasibility of Using a Pond Culture Aquaculture System for Rearing Southern Flounder	\$19,203
08-AM-06	Russell Borski (Raleigh) (PI) George Sugg (Pinetown) (PI)	Peter Ferket (Raleigh) Matthew Parker (New Bern)	Alternative Feeds and Feeding Reduction Strategies to Improve Production Efficiency of Hybrid Striped Bass Culture	\$64,701
08-AM-07	William Simendinger (Raleigh) (PI) Brad Lienhart (Raleigh) (PI) Henry Styron (Cedar Island) (PI)	Alton Parker (Bath) James Morris (Sea Level)	Improving Productivity of Oyster and Shellfish Farming by Coating Cages, Pots, Equipment, Lines and Nets with an Environmentally Friendly, Light-Weight Non-Fouling Coatings (PHASECOAT® BARE BOTTOM)	\$25,475
08-EP-02	Roger Rulifson (Greenville) (PI) Willie Phillips (Columbia) (PI)	John Mohan (Greenville)	Movements of Striped Bass Between Nursery Habitats in the Albemarle Sound Inferred from Otolith Microchemistry	\$43,914
08-EP-03	Roger Rulifson (Greenville) (PI) Charles Van Salisbury (Engelhard) (PI)	David Evans (Beaufort) M. Ryan Spidel (Greenville)	Critical Habitat for Southern Flounder, <i>Paralichthys lethostigma</i> : Do Coastal Watersheds Play an Important Role in Life History and Growth?	\$36,895
08-EP-04	Bradford Marx (Avon) (PI)	Anthony LeBude (Fletcher)	Toward a Sustainable Marshscape: Growing Pre-Vegetated <i>Spartina alterniflora</i> Biologs	\$10,108
08-EP-06	Dina Leech (Morehead City) (PI) Scott Ensign (Morehead City) (PI) Michael Piehler (Morehead City) (PI) Herbert Byrum (Tyner) (PI)	Chris Taylor (Beaufort)	Zooplankton Assessment Project (ZAP): Reassessing Prey Availability for River Herring in the Chowan River Basin	\$30,071
08-FEG-02	Dale Britt (Morehead City) (PI)	Peter Zook (Morehead City) Jeff Buckel (Morehead City) Randy Gregory (Morehead City)	A Comparison Between Circle and J Hook Performance in the Wahoo, Yellowfin Tuna and Dolphin Bluewater Troll Fishery of North Carolina	\$60,300
08-FEG-03	Troy Alphin (Wilmington) (PI) Martin Posey (Wilmington) (PI) Henry Styron (Wilmington) (PI)	Marc Turano (Raleigh)	Feasibility of Implementing a Monitoring Program for Oyster Larval Settlement Throughout the North Carolina Coast	\$54,166

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
08-FEG-04	Jason Hassell (Washington) (PI)	Dinah Hassell (Washington) Sean McKenna (Washington)	Effects of Various Mesh Sizes on Flounder Gill Net Bycatch in the Pamlico River	\$18,042
08-FEG-06	Tim Ellis (Morehead City) (PI) Brian Horsley (Oregon Inlet) (PI) Ricky Kellum (Jacksonville) (PI) David Mason (Bath) (PI) Dave Watkins (Manteo/Oregon Inlet) (PI) Jeff Wolfe (Cape Fear River) (PI)	Beth Burns (Wanchese) Jeff Buckel (Morehead City)	Collecting the Preliminary Data Necessary to Design and Conduct an Effective Long-Term Tagging Study on Spotted Sea Trout (<i>Cynoscion nebulosus</i>) in North Carolina	\$62,061
08-FEG-10	Tom Burgess (Sneads Ferry) (PI)	Paul Rudershausen (Morehead City) Jeffrey Buckel (Morehead City) Warren Mitchell (Morehead City) Elliott Hazen (Beaufort) Erik Williams (Beaufort)	Pilot Survey of Deepwater Reef Fishes Off North Carolina Using a Two-Stage, Adaptive Design: Part 2 - Use of Chevron Trapping	\$44,920
08-FEG-11	Roger Rulifson (Greenville) (PI) Dewey Hemilright (Kitty Hawk) (PI)	Chris Hickman (Hatteras Village) Jennifer Cudney (Greenville)	Coastal Movements of Spiny Dogfish Overwintering Off the Outer Banks, North Carolina	\$195,639
08-FEG-12	Jim Atack (Oak Island) (PI)	Craig Andrews (Bolivia) Erin Burge (South Carolina)	Determination of Size, Stock Density and Temporal Patterns of Grouper on Offshore Hard Bottom Habitats	\$42,453
08-ST-01	Sam Daniels (Wanchese) (PI)	Tyre Lanier (Raleigh)	Development of a Succulent Eastern North Carolina Barbeque Meat Product Derived from North Carolina Tuna Species	\$21,698
08-ST-02	Peter Miller (Beaufort) (PI)	Tyre Lanier (Raleigh)	An Efficient Process to Produce High Quality Crab and Seafood Meals	\$74,254
TOTAL				\$884,234

NC BLUE CRAB AND SHELLFISH RESEARCH PROGRAM

Funded 2011

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
11-BCSRP-MG-01	Mike Mixon (Powells Point) (PI)		Bait Pocket Modifications to Extend the Life of a Commercial Crab Pot	\$8,350
11-BCSRP-MG-02	Phil Smith (Carolina Beach) (PI)		Evaluating a New Filter Design, An Upflow Kaldnes Media Filter for Recirculating Shedding Operations	\$6,000
11-BCSRP-MG-03	Henry J. Styron III (Wilmington) (PI)		Design and Development of an Articulated Jig for Increased Efficiency for Build Out of Floating Oyster Growout Bags	\$975
11-BCSRP-MG-04	Philip S. Kemp Jr. (Morehead City) (PI)	Randy Hanford (Morehead City) Terri Hanford (Morehead City) Thomas Hosley (Morehead City)	Assessment of Operational and Economic Factors of Value Added to Clams in a Wet Storage Facility	\$19,750
TOTAL				\$35,075

Funded 2010

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
10-BIOL-01	Heather Koopman (Wilmington) (PI)	Martin Posey (Wilmington) Troy Alphin (Wilmington) Andrew Westgate (Wilmington)	Linking Variation in Egg Quality to Hatching Success and Larval Survival in Blue Crabs	\$18,935
10-ECON-03	Jason Hassell (Washington) (PI)	Heather Stoker (Wilmington)	Crab Catch Comparison Between Two Pots Fished on One Buoy and One Pot Fished on One Buoy in the Pamlico River	\$12,393
10-HD-01	Henry Styron III (Wilmington) (PI)	Troy Alphin (Wilmington)	Evaluation of Novel Technique to Reduce Fouling and Overspat in Oyster Growout Operations	\$9,960
10-MARI-01	Mark Hooper (Smyrna) (PI)		Feasibility of Increasing Initial Mesh Size for Hard Clam (<i>Mercenaria mercenaria</i>) Growout	\$6,000
10-MARI-02	James Morris Jr (Beaufort) (PI)		Comparison of Oyster Seed Stock Performance in Floating Bag Culture Systems	\$14,000
10-SR-02	Joel Fodrie (Morehead City) (PI)	Jeremy Braddy (Newport) Paul Dunn Robert Dunn Captain Chris Elliot John Fear (Morehead City) Nathan Hall Jess Hawkins (Morehead City) Chris Yeomans	Restoration Revisited: Assessing the Long-Term Primary and Secondary Production Value of Decade-Old, Man-Made Oyster Reefs	\$39,762
10-STOK-01	Paul Rudershausen (Morehead City) (PI)	Jimmy Nobles (Greenville)	Working Towards Reducing the Rate of Discards and Bycatch in the North Carolina Blue Crab Trap Fishery: Testing a Device to Exclude Southern Flounder	\$14,050
TOTAL				\$115,100

Funded 2009

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
09-BIOL-03	Dan Rittschof (Beaufort) (PI) Dell Newman (Swan Quarter) (PI) Tom Schultz (Beaufort) (PI)		Genetic and Environmental Contributions to Body Size in Blue Crabs	\$18,933
09-ECON-01	Mike Dennis (Currituck) (PI)	Justin Barie (Currituck) Heather Stoker (Wilmington)	Blue Crab Catch Comparison Between Conventional Crab Pots and Shaker Crab Pots in Currituck Sound	\$8,430
09-ECON-03	Jason Hassell (Washington) (PI)	Heather Stoker (Wilmington) Sean McKenna (Washington)	Pilot Project Testing the Feasibility of Fishing Two Crab Pots on a Single Buoy for Purposes of Conflict Resolution Between the Fishing and Recreational Communities	\$9,321
09-POP-04	Amanda Southwood (Wilmington) (PI)	Jeff Wolfe (Wilmington) Leigh Anne Harden (Wilmington)	Diamondback Terrapin Distribution and Habitat Utilization in the Lower Cape Fear River: Request for Year 2 Funding for BCRP # 08-POP-06	\$43,998
09-POP-05-A	Kristina Bridges (Kill Devil Hills) (PI)	Murray Bridges (Kill Devil Hills) H.L. Bond (Edenton) F. Bell (Coinjock) M. Mixon (Powell's Point)	Continuation of Tagging Mature Female Blue Crabs in Albemarle and Currituck Sounds	\$66,814
09-POP-05-B	David Eggleston (Morehead City) (PI) Geoffrey Bell (Raleigh) (PI)		Timing and Route of Movement in Mature Female Blue Crabs in Northeastern North Carolina	\$6,000
09-HD-01	Patricia McClellan-Green (Morehead City) (PI) Jim Swartzenberg (Jacksonville) (PI)		Identification of Factors Influencing Disease Related Mortality in the Eastern Oyster (<i>Crassostrea virginica</i>)	\$32,349
09-HD-02	Ami Wilbur (Wilmington) (PI)		Evaluation of Genetic Differentiation and Disease Status of North Carolina Populations of the Eastern Oyster, <i>Crassostrea virginica</i>	\$65,650
09-SR-02	Troy Alphin (Wilmington) (PI)	Martin Posey (Wilmington)	Evaluation of Oyster Health and Sanctuary Function of Closed Shellfish Beds	\$32,452
TOTAL				\$283,947

Funded 2008

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
08-BIOL-02	Edward Noga (Raleigh) (PI) Larry Bolton (Sneads Ferry) (PI)		Adaptation of the Callinectin Assay for Assessing Health in Blue Crab Shedding Operations	\$72,790

Grant Number	Principal Investigator(s) Co-Principal Investigator(s)	Other Participant(s)	Title	Amount Awarded
08-BIOL-04	Dan Rittschof (Beaufort) (PI) M. Zachary Darnell (Beaufort) (PI) Ray Golden (Beaufort) (PI) Gary Cannon (Newport) (PI)		Distribution and Movements of Spawning Blue Crabs in Non-Tidal Systems: Year 2	\$15,275
08-ECON-01	Mike Dennis (Currituck) (PI)	Justin Barie (Currituck) Heather Stoker (Wilmington)	Evaluation of the Effects of Bait Well Mesh Size and Soak Time on Blue Crab Catch in Currituck Sound	\$20,753
08-ECON-02	David Gallop (Columbia) (PI)	Aaron Gallop (Columbia)	The Economic and Environmental Issues Surrounding Pot Dips in the Albemarle and Pamlico Sounds	\$19,880
08-POP-01	Alton Parker (Bath) (PI)	Fred Scharf (Wilmington)	Potential for Shrimp Predation on Peeler Blue Crabs: The Effects of Shrimp Density	\$7,125
08-POP-03	Troy Alphin (Wilmington) (PI) Martin Posey (Wilmington) (PI)	Ernest George (Wilmington) Glen Hargett (Jacksonville)	Spatial Variation in Blue Crab Distribution in the New River During Spawning Season	\$39,358
08-POP-04	David Eggleston (Morehead City) (PI)		Timing and Route of Movement in Mature Female Blue Crabs in the White Oak River, North Carolina	\$69,992
08-POP-06	Amanda Southwood (Wilmington) (PI)	Jeff Wolfe (Wilmington) Leigh Ann Harden (Wilmington)	Diamondback Terrapin Distribution and Habitat Utilization in the Lower Cape Fear River	\$36,964
08-POP-07	Benny Davis (Chocowinity) (PI)		Peeler Crab Bycatch	\$8,950
08-POP-08	Kristina Bridges (Kill Devil Hills) (PI)		Determine the Size and Sex of Peeler Crabs in the Albemarle/Roanoke Sound Fishery	\$4,360
08-POP-09	Kristina Bridges (Kill Devil Hills) (PI)	Murray Bridges (Kill Devil Hills) H.L. Bond (Edenton) F. Bell (Coinjock) M. Mixon (Powell's Point)	Tagging Mature Female Blue Crabs in Albemarle and Currituck Sounds	\$67,273
08-SHED-01	Edward Ray Barnett (Aurora) (PI)	Heather Stoker (Wilmington)	Size Comparison of Peeler Crabs	\$15,538
08-STOK-01	Jimmy Nobles (Greenville) (PI)	Hans Vogelsong (Greenville)	Increased Catch Using Crab Pots with Biodegradable Escape Panels	\$13,380
TOTAL				\$391,638

**BYCATCH REDUCTION OF MARINE MAMMALS IN
MID-ATLANTIC FISHERIES 2005 – 2011**

Grant Number	Principal Investigator(s)	Title	Amount Funded
05-DMM-01	Teresa Thorpe (Wilmington, NC) David Beresoff (Bolivia, NC)	Effect of Twine Size and Bridle Elimination on the Structural Integrity and Target Catch Efficiency of Coastal Anchored Gill Nets	\$63,214
06-DMM-03	David Kerstetter (Miami, FL)	Recovering Marine Mammal Interaction Data from Anecdotal Captain's Reports: A Pilot Study	\$2,350
06-DMM-02	Andrew Read (Beaufort, NC)	Documenting Interactions Between Pilot Whales and the Pelagic Longline Fishery	\$126,892
07-DMM-04	David Kerstetter (Dania Beach, FL)	Evaluation of Variable Strength Hooks to Reduce Serious Injury Pilot Whale Interactions with the US Atlantic Pelagic Longline Fishery	\$49,775
08-DMM-02	Andrew Read (Beaufort, NC)	A Pilot Study to Test the Efficacy of Pingers as a Deterrent to Bottlenose Dolphins in the Spanish Mackerel Gillnet Fishery	\$86,471
08-DMM-03	Susan Barco (Virginia Beach, VA)	Do Alternative Leaders Affect Fish Catch in Pound Nets at the Mouth of Chesapeake Bay?	\$43,417
10-DMM-01	Andrew Read (Beaufort, NC)	Stock Discrimination of Bottlenose Dolphins Along the Outer Banks of North Carolina: Implications for the Risk of Entanglement in Coastal Gill Net Fisheries	\$39,939
10-DMM-03	David Kerstetter (Dania Beach, FL)	Probability-Based Analysis of Pilot Whale-Pelagic Longline Interactions	\$43,524
Supplement to 08-DMM-03	W. Mark Swingle (Virginia Beach, VA)	2011 Pound Net Leader Study	\$18,829
TOTAL			\$411,197

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APPENDIX G: NORTH CAROLINA SEA GRANT STAFF COMMITTEE ROLES AND MEMBERSHIP

First Name	Last Name	Title	Panel	Title	Year
Scott	Baker	Fisheries Specialist	Sea Grant/AFS Symposium Planning Committee for "Local Catch" Symposium	Member	2010
Scott	Baker	Fisheries Specialist	National Sea Grant Catch Shares Advisory Committee	Advisor	2010
Scott	Baker	Fisheries Specialist	Trade Adjustment and Assistance Program for Shrimp Fishermen Commodity Team	Member	2010
Scott	Baker	Fisheries Specialist	Atlantic Fisheries Technology Conference	Logistical Chair	2007-2008
Scott	Baker	Fisheries Specialist	South Atlantic Fisheries Management Council Limited Access Privilege Program (LAPP) Snapper / Grouper Exploratory Workgroup	Member Co-chair, Subcommittee	2007-2008 2007-2008
Scott	Baker	Fisheries Specialist	South Atlantic Fisheries Management Council Shrimp Advisory Panel	Advisor	2006-present
Scott	Baker	Fisheries Specialist	Mark of Quality	Team Member	2006-2008
Scott	Baker	Fisheries Specialist	Wild American Shrimp, Inc.	Advisor	2006-2008
Scott	Baker	Fisheries Specialist	National Fisheries Extension Meeting Organization Committee	Organizer	2005-2006
Scott	Baker	Fisheries Specialist	N.C. Marine Fisheries Commission Shrimp Fishery Management Plan Advisory Panel	Advisor	2004-2005
Barbara	Doll	Water Quality Specialist	Mid-Atlantic Regional Panel for Aquatic Invasive Species	Panel Member	2006 - present
Barbara	Doll	Water Quality Specialist	Albemarle-Pamlico National Estuary Program's Science and Technical Advisory Committee	Member	2004 - 2007
Barbara	Doll	Water Quality Specialist	NC State Campus Design Review Panel	Member	2004 - 2010
Barbara	Doll	Water Quality Specialist	NC State Campus Environmental Sustainability Team (CEST)	Member	2009 - present
Barbara	Doll	Water Quality Specialist	NC State University Physical Master Plan Committee (5-year update)	Member of Open Space and Foundations Task Forces	2006
Barbara	Doll	Water Quality Specialist	Currituck County Goes Green Initiative	Team Member	2008-present
Barbara	Doll	Water Quality Specialist	CALS Centennial Campus Sustainability Committee	Member	2010-present
Brian	Efland	Marine Conservation and Enterprise Development Specialist	N.C. Seafood Coalition	Member	2010-present
Brian	Efland	Marine Conservation and Enterprise Development Specialist	National Weather Service Marine Advisory	Member	2008-present

First Name	Last Name	Title	Panel	Title	Year
Brian	Efland	Marine Conservation and Enterprise Development Specialist	NOAA in the Carolinas Planning Committee	Member	2007-2008
Brian	Efland	Marine Conservation and Enterprise Development Specialist	N.C. Clean Marina Advisory Board	Member	2007
Brian	Efland	Marine Conservation and Enterprise Development Specialist	N.C. Shellfish Expo Planning Committee	Member	2006-present
Brian	Efland	Marine Conservation and Enterprise Development Specialist	N.C. Shellfish Growers Association	Board of Directors	2005-present
Terri	Kirby Hathaway	Marine Education Specialist	NOAA Office of Education	Proposal Reviewer	2010
Terri	Kirby Hathaway	Marine Education Specialist	South Carolina Sea Grant Consortium	Proposal Reviewer	2009
Terri	Kirby Hathaway	Marine Education Specialist	Mississippi-Alabama Sea Grant	Proposal Reviewer	2009
Terri	Kirby Hathaway	Marine Education Specialist	Texas Sea Grant	Proposal Reviewer	2009
Terri	Kirby Hathaway	Marine Education Specialist	Monitor Sanctuary Advisory Council	Education Seat	2007-present
Terri	Kirby Hathaway	Marine Education Specialist	Georgia Sea Grant	Proposal Reviewer	2007
Terri	Kirby Hathaway	Marine Education Specialist	Big Sweep Board of Directors	Board Member	2006-2009
Terri	Kirby Hathaway	Marine Education Specialist	National Marine Educators Association	Secretary	2002-2006
Sara	Mirabilio	Extension Fisheries Specialist	College of the Albemarle – Dare Campus Marine Sciences Advisory Council	Member	2008-present
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Aquarium on Roanoke Island Advisory Committee	Member	2007-present
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Coastal Federation Northern Oyster Work Group	Member	2005-present
Sara	Mirabilio	Extension Fisheries Specialist	UNC Chapel Hill Institute for the Environment's Albemarle Ecological Field Site Community Advisory Board	Member	2004-present
Sara	Mirabilio	Extension Fisheries Specialist	American Fisheries Society Parent & Tidewater Chapters	Member	2004-present
Sara	Mirabilio	Extension Fisheries Specialist	American Fisheries Society Parent & Tidewater Chapters (Tidewater Chapter newsletter)	Editor	2008-present
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Marine Fisheries Commission Emerging Contaminants Workgroup	Member	2008

First Name	Last Name	Title	Panel	Title	Year
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Division of Marine Fisheries Oyster/Hard Clam Fishery Management Plans, Plan Development Team	Member	2006-2008
Sara	Mirabilio	Extension Fisheries Specialist	SouthEast Atlantic Coastal Ocean Observing System (SEACOOS) Extension & Education Work Group	Member	2003-2007
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Oyster Hatchery Program Advisory Committee	Member	2005-2007
Sara	Mirabilio	Extension Fisheries Specialist	N.C. Marine Fisheries Commission Northeast Regional Advisory Committee	Member	2004-2006
Katie	Mosher Patterson	Communications Director	Big Sweep Board 25th anniversary committee	Communications Advisor	2010-2011
Katie	Mosher Patterson	Communications Director	NC State Office of Research and Innovation	Communications Team Member	2011
Katie	Mosher Patterson	Communications Director	NOAA Rip Current Strategies Team	Sea Grant Communications Representative	2002-present
Katie	Mosher Patterson	Communications Director	Indonesia Sea Partnership Program	Communications/Outreach Advisor	2001-present
Katie	Mosher Patterson	Communications Director	Science Communicators of N.C.	Member	2008-present
Katie	Mosher Patterson	Communications Director	Science Online Meetings	Sponsor Contact	2009-present
Katie	Mosher Patterson	Communications Director	Science Writers 2012	Planning Committee Member	2010-present
Katie	Mosher Patterson	Communications Director	National Sea Grant Communications Network	Executive Committee (chair and past-chair)	2001-2002
Katie	Mosher Patterson	Communications Director	NOAA in the Carolinas Planning Committee	Steering Committee	2002-2005
Katie	Mosher Patterson	Communications Director	National Association of Science Writers	Member	1999-present
Barry	Nash	Seafood Technology and Marketing Specialist	N.C. Seafood Coalition	Member	2010-present
Barry	Nash	Seafood Technology and Marketing Specialist	N.C. Sustainable Local Food Advisory Council	Member	2009-present
Barry	Nash	Seafood Technology and Marketing Specialist	N.C. Food Safety & Defense Task Force	Member	2006-present
Barry	Nash	Seafood Technology and Marketing Specialist	N.C. Seafood Festival Board of Directors	Member	2007-2012
Barry	Nash	Seafood Technology and Marketing Specialist	NC State University Department of Food, Bioprocessing and Nutrition Sciences' Undergraduate Recruiting and Outreach Committee	Co-author	2007
Barry	Nash	Seafood Technology and Marketing Specialist	Center for Environmental Farming Systems	Advisor	2009

First Name	Last Name	Title	Panel	Title	Year
Gloria	Putnam	Water Quality Planning Specialist	N.C. Department of Environment and Natural Resources	NCSG Liaison	2007-present
Gloria	Putnam	Water Quality Planning Specialist	N.C. Nonpoint Education for Municipal Officials Workgroup	Planning Member	2007-present
Gloria	Putnam	Water Quality Planning Specialist	Currituck County Goes Green Initiative	Planning Member/Chair of Training and Development Sub-committee	2008-present
Gloria	Putnam	Water Quality Planning Specialist	U.S. Army Corps of Engineers' Currituck Sound Ecosystem Restoration Feasibility Study Project Delivery Team	Team Member	2010
Steve	Rebach	Associate Director	Marine Sciences Council	Member	2001-present
Steve	Rebach	Associate Director	Awards for Excellence Committee	Member	2004, 2007, 2010
Steve	Rebach	Associate Director	N.C. Ocean Science Bowl	Celebrity Moderator	2000-2002, 2005-2006
Steve	Rebach	Associate Director	Fisheries Resource Grant – Grant Committee	Member	2000-present
Steve	Rebach	Associate Director	Blue Crab and Shellfish Research Program – Grant Committee	Member	2001-present
Steve	Rebach	Associate Director	NC State Building Liaison	Liaison	2000-2006
Steve	Rebach	Associate Director	CAMS (University Inventory)	Coordinator	2000-2009
Steve	Rebach	Associate Director	Mid-Atlantic Regional Research Priority Group	Member	2008-present
Steve	Rebach	Associate Director	South Atlantic Regional Research Priority Group	Member	2007-present
Steve	Rebach	Associate Director	National Sea Grant Research Coordinators	Incoming Chair Chair Past Chair	2003 2005 2007-2009
Spencer	Rogers	Coastal Engineering Specialist	N.C. Coastal Resources Advisory Panel	Member	1993-present
Spencer	Rogers	Coastal Engineering Specialist	NC Science Panel on Coastal Hazards	Member	1999-present
Spencer	Rogers	Coastal Engineering Specialist	Florida Innovative Erosion Control Review Committee	Member	2006-present
Spencer	Rogers	Coastal Engineering Specialist	Board of Directors, Applied Technology Council	Member	2006-present
Spencer	Rogers	Coastal Engineering Specialist	N.C. Integrated Hazard Risk Management Advisory Committee	Member	2009-present
Spencer	Rogers	Coastal Engineering Specialist	Flood Resistant Design and Construction, American Society of Civil Engineers	Standards development committee member	1996-present
Spencer	Rogers	Coastal Engineering Specialist	N.C. Floodmapping Committee	Member	1999-present

First Name	Last Name	Title	Panel	Title	Year
Spencer	Rogers	Coastal Engineering Specialist	Professional Development Committee, N.C. Association of Floodplain Managers	Member	2011-present
Spencer	Rogers	Coastal Engineering Specialist	Coastal Zone Management Committee; Coasts, Oceans, Ports and Rivers Institute; American Society of Civil Engineers	Member	2011-present
Spencer	Rogers	Coastal Engineering Specialist	N.C. Beach, Inlet and Waterway Association	Ex-officio, Member Board of Directors	2011-present
Spencer	Rogers	Coastal Engineering Specialist	SE Region Advisory Committee, N.C. Coastal Federation	Member	2011-present
Spencer	Rogers	Coastal Engineering Specialist	HAZUS Flood Loss Estimation Model Coastal Storm Surge Committee, National Institute of Building Sciences & FEMA	Member	2010
Spencer	Rogers	Coastal Engineering Specialist	Committee on Flood Maps, National Research Council, National Academies of Science	Member	2009
Spencer	Rogers	Coastal Engineering Specialist	Organizing committee, International Rip Currents Symposium	Member	2009
Spencer	Rogers	Coastal Engineering Specialist	N.C. DOT panel to assess impact of climate/sea level change on proposed Oregon Inlet bridge replacement	Member	2008
Spencer	Rogers	Coastal Engineering Specialist	Hurricane Ike damage inspection team, COPRI, American Society of Civil Engineers	Co-leader	2008
Spencer	Rogers	Coastal Engineering Specialist	Coastal Engineering Advisory Committee	Member	2008
Spencer	Rogers	Coastal Engineering Specialist	RCAST Rip Current Education Planning Committee	Member	2008
Spencer	Rogers	Coastal Engineering Specialist	Coastal A Zone and V Zone Demographics Study Committee, FEMA	Member	2007
Spencer	Rogers	Coastal Engineering Specialist	Legislative Study Committee on Emergency Preparedness and Building Codes	Member	2006
Spencer	Rogers	Coastal Engineering Specialist	FEMA Hurricane Katrina Mitigation Assessment Team	Member	2005
Spencer	Rogers	Coastal Engineering Specialist	American Society of Civil Engineering post-Katrina damage assessment team for coastal construction in Mississippi	Member	2005
Spencer	Rogers	Coastal Engineering Specialist	Coastal building damage assessment team, Hurricane Dennis in Florida, US Army, Corps of Engineers	Leader	2005
Spencer	Rogers	Coastal Engineering Specialist	Coastal building damage assessment team, Hurricane Ivan in Florida & Alabama, US Army, Corps of Engineers	Leader	2004

First Name	Last Name	Title	Panel	Title	Year
Spencer	Rogers	Coastal Engineering Specialist	HAZUS Flood Committee (damage model development), National Institute of Building Sciences & FEMA	Member	1998-2004
Spencer	Rogers	Coastal Engineering Specialist	Coastal building damage assessment team, Hurricane Isabel in N.C., N.C. Emergency Management/ FEMA	Leader	2003
Spencer	Rogers	Coastal Engineering Specialist	BeachFX building damage model development committee for the Corps of Engineers	Member	2003
Lisa	Schiavinato	Law, Policy and Community Development Specialist	Ocean Policy Steering Committee	Co-chair	2007-2009
Lisa	Schiavinato	Law, Policy and Community Development Specialist	NC State University Public Policy Task Force	Member	2007-2008
Lisa	Schiavinato	Law, Policy and Community Development Specialist	Planning Committee of The Coastal Society's 21st international conference	Program Chair	2007-2008
Lisa	Schiavinato	Law, Policy and Community Development Specialist	UNC N.C. Wind Working Group	Member	2008-present
Lisa	Schiavinato	Law, Policy and Community Development Specialist	N.C. Wind Advisory Group	Member	2009
Lisa	Schiavinato	Law, Policy and Community Development Specialist	Committee of The Coastal Society's 22nd international conference	Conference Chair	2009-2010
Lisa	Schiavinato	Law, Policy and Community Development Specialist	Estuarine Shoreline Steering Committee	Co-chair	2010-2012
Jack	Thigpen	Extension Director	Southern Coastal Agromedicine Center Advisory Board	Member	2005-2010
Jack	Thigpen	Extension Director	Partnership for the Sounds Advisory Board	Member	2000-2004
Jack	Thigpen	Extension Director	NC State Extension Operations Council	Member	2002-2005
Jack	Thigpen	Extension Director	Mid-Atlantic Sea Grant	Regional Coordinator	2003-2005
Jack	Thigpen	Extension Director	South Atlantic Sea Grant	Regional Coordinator	2005-2007, 2010-2012
Jack	Thigpen	Extension Director	N.C. Paddle Trails Association Advisory Committee	Member	2003-2005
Jack	Thigpen	Extension Director	National Sea Grant Port and Harbors Working Group	Member	2002-2005
Jack	Thigpen	Extension Director	National Sea Grant IOOS Working Group	Member	2003-2005
Jack	Thigpen	Extension Director	National Sea Grant Climate Advisory Committee	Member	2009-2010
Jack	Thigpen	Extension Director	N.C. Seafood Marketing Advisory Committee	Member	2004-2005

First Name	Last Name	Title	Panel	Title	Year
Jack	Thigpen	Extension Director	NOAA National Estuarine Research Reserve Advisory Committee	Member	2003-2005
Jack	Thigpen	Extension Director	NC State Department of Sociology & Anthropology Outreach Committee	Member	Ongoing
Jack	Thigpen	Extension Director	National Extension Tourism Design Team	Member	2003-2005
Jack	Thigpen	Extension Director	Sea Grant National Assembly of Program Leaders	At-Large Representative Chair-elect Chair	2004-2005 2006-2007 2008-2009
Jack	Thigpen	Extension Director	N.C. Cooperative Extension Land Use Planning Training Committee	Member	1998-2000
Jack	Thigpen	Extension Director	National Extension Disaster Education Network Executive Committee	Member	2008-2010
Jack	Thigpen	Extension Director	EPA Albemarle-Pamlico National Estuarine Program Policy Board	Member	2005-2007
Jack	Thigpen	Extension Director	EPA Albemarle-Pamlico National Estuarine Program Policy Board	Chair	2008-2010
Marc	Turano	Mariculture and Blue Crab Specialist	Blue Crab Scientist Advisory Subcommittee	Member	2009-present
Marc	Turano	Mariculture and Blue Crab Specialist	N.C. Aquaculture Conference	Program Chair	2009
Marc	Turano	Mariculture and Blue Crab Specialist	Oyster Spat-fall Monitoring Network	NENC Coordinator	2008-present
Marc	Turano	Mariculture and Blue Crab Specialist	N.C. Shellfish Growers Association	Board Member	2007-present
Marc	Turano	Mariculture and Blue Crab Specialist	N.C. Aquaculture Conference	Planning Committee Member	2006-present
Marc	Turano	Mariculture and Blue Crab Specialist	Carteret Community College Aquaculture Program	Advisory Committee Member	2006-present
Marc	Turano	Mariculture and Blue Crab Specialist	N.C. Oyster Hatchery Program	Advisory Committee Member	2006-2008
Marc	Turano	Mariculture and Blue Crab Specialist	Oyster and Hard Clam Fishery Management Plan Development Team	Member	2006-2007
Michael	Voiland	Executive Director	Carolinas Integrated Sciences and Assessments Advisory Board	Member	2010-present
Michael	Voiland	Executive Director	State Water Infrastructure Commission	Member	2009-present
Michael	Voiland	Executive Director	N.C. Sedimentation Control Commission	Commissioner Co-chair	2009-2010 2011-present
Michael	Voiland	Executive Director	UNC Coastal and Marine Research Council	Member	2008-present
Michael	Voiland	Executive Director	The Sea Grant Association	UNC System Delegate Treasurer Board Member External Relations Chair	2006-present 2009-2011 2007-present 2009-present

First Name	Last Name	Title	Panel	Title	Year
Michael	Voiland	Executive Director	Steering Committee, NOAA in the Carolinas	Member	2007-present
Michael	Voiland	Executive Director	Executive Committee, NOAA in the Carolinas	Member	2011
Michael	Voiland	Executive Director	N.C. Department of Environment and Natural Resources Advisory Committee for the Coordination of Waterfront Access	Member	2007-present
Michael	Voiland	Executive Director	Steering Committee, Southeast Atlantic Research Priorities Project, National Sea Grant Office and Georgia Coastal Research Council	Member	2006-present
Michael	Voiland	Executive Director	Strategic Planning Sub-Committee, National Research Council Response Integration Team (RIT), National Sea Grant College Program	Co-chair	2007-2008
Michael	Voiland	Executive Director	UNC Coastal Studies Institute, Science Coordinating Committee	Member	2007-2009
Michael	Voiland	Executive Director	N.C. General Assembly Special Legislative Waterfront Access Study Committee	Member	2006-2007
Michael	Voiland	Executive Director	N.C. General Assembly Special Legislative Waterfront Access Study Committee	Chair	2006-2007
Michael	Voiland	Executive Director	Advisory Board, Centers for Ocean Sciences Education Excellence – Southeast	Member	2006-present
Jess	Whitehead	Regional Climate Extension Specialist	The Nature Conservancy Alligator River NWR Climate Adaptation project, Science Advisory Panel	Member	2009-present
Jess	Whitehead	Regional Climate Extension Specialist	Sea Grant Climate Network Southeast Regional Group	Chair	2009
Jess	Whitehead	Regional Climate Extension Specialist	Sea Grant Climate Network Steering Committee	Co-chair	2010
Jess	Whitehead	Regional Climate Extension Specialist	Science and Technical Advisory Committee of the Albemarle-Pamlico National Estuary Program	Elected Member	2010-2011

APPENDIX H: NORTH CAROLINA SEA GRANT PARTNERS

ACADEMIC INSTITUTIONS

North Carolina

Appalachian State University	North Carolina Cooperative Extension
Carteret Community College	North Carolina State University
College of the Albemarle	Renaissance Computing Institute (RENCI)
Dare County Schools, Cape Hatteras Secondary School	UNC-CH Institute of Marine Sciences
Duke Marine Laboratory	UNCW Center for Marine Science
Duke University	University of North Carolina Asheville
East Carolina University	University of North Carolina Chapel Hill
ECU Center for Natural Hazard Research	University of North Carolina Coastal and Marine Research Council
ECU Institute for Coastal Science & Policy	University of North Carolina Coastal Studies Institute
Elizabeth City State University	University of North Carolina Greensboro
NC State Center for Marine Science & Technology	University of North Carolina Press
NC State Natural Resources Leadership Institute	University of North Carolina System
NC State Seafood Laboratory	University of North Carolina Wilmington
North Carolina A&T State University	University of North Carolina-TV
North Carolina Coastal Resources Law, Planning & Policy Center	Water Resources Research Institute of UNC

Outside North Carolina

California State University, Fresno	University of Delaware
Coastal Carolina University	University of Maryland, Horn Point
Columbia University	University of Hawaii at Manoa's Institute of Marine Biology
Louisiana State University	University of Oklahoma
Oregon State University	University of South Carolina
Princeton University	Virginia Commonwealth University
South Carolina Marine Resources Research Institute	

FEDERAL

Albemarle-Pamlico National Estuary Program, NC/VA, EPA	National Hurricane Center, NOAA
Atlantic States Marine Fisheries Commission	National Institute of Building Sciences
Camp Lejeune, U.S. Marine Corps	National Marine Fisheries Service, NOAA
Cape Hatteras National Seashore, NPS	National Marine Fisheries Service/Milford Laboratory, CT, NOAA
Cape Lookout National Seashore, NPS	National Marine Fisheries Service/Beaufort Lab, NOAA
Climate Program Office, NOAA	National Ocean Sciences Bowl
Coastal Carolina Climate Program	National Oceanic and Atmospheric Administration
Coastal Services Center, NOS NOAA	NOAA in the Carolinas
Environmental Protection Agency	NOAA National Ocean Service
Environmental Protection Agency Research Triangle Park Laboratory	NOAA Oceanic and Atmospheric Research
Federal Emergency Management Agency	NOAA-OAR Office of International Affairs
Federal Emergency Management Agency, Hurricane Katrina Mitigation Assessment Team	NOAA Office of Education
Hollings Marine Laboratory, NOAA	NOAA Southeast and Caribbean Regional Team
Mid-Atlantic Fisheries Management Council	National Park Service
Monitor National Marine Sanctuary	National Severe Storms Laboratory, NOAA
National Centers for Coastal Ocean Science, NOAA	National Weather Service, NOAA
National Center for Cool and Cold Water Aquaculture, USDA/ARS	National Weather Service Marine Forecast, NOAA
National Climatic Data Center, NOAA	National Weather Service, Raleigh, NC, NOAA
National Estuarine Research Reserve System, NOAA	National Weather Service Wilmington, NOAA
National Extension Disaster Education Network	National Weather Service, Newport, NC, NOAA
	South Atlantic Fisheries Management Council
	Southeast River Forecast Center, NWS, NOAA

U.S. Army Corps of Engineers
U.S. Army Corps of Engineers Field Research Facility,
Duck, N.C.
U.S. Department of Homeland Security
U.S. Coast Guard
U.S. Coast Guard Auxiliary

U.S. Department of Agriculture
U.S. Department of Homeland Security
U.S. Fish and Wildlife Service
U.S. Fish and Wildlife Service, National Wildlife
Refuges
U.S. Geological Survey

INDUSTRY/BUSINESS

18 Seaboard
Alford Seafood
American Seafood Company
Atlantic Seafood Company
Austin Fish Company
Aurora Packing Company
Bachem Biosciences Inc.
Baker Crab Company
Bay City Crab Company
Biltmore Estates
Bistro By The Sea
Blackburn Brothers Seafood Company
Blue Ocean Farms
Brightwater Seafood Company
Carolina Fisheries
Carolina Flounder
Carolina Seafood Ventures
Castle Hayne Fisheries
Catalonia Abalone
Core Sound Seafood Community Supported Fishery
Coastal Carolina Smokehouse
Craven County Health Department
Daniels Seafood Company
Evans Seafood
Engelhard Seafood
Fresh Catch Seafood
Fishermen's Seafood
Food Lion, LLC
Fresher Than Fresh
Full Circle Seafood Company
Geodynamics
Germantown Crab Company
Great Atlantic Trading Company
Greenville Loop Seafood
Hanover Fisheries
Hobo Seafood
Hopkins Seafood
Ike's Specialty Salads
Inland Seafood Company
Inland Shrimp Company
Intrinsic LifeSciences LLC
J & B Aquafood
Jeffrey's Seafood
Jennette Brothers
Kent SeaTech Corporation
Keo Fish Farms
Laportilleria Distributors
Little River Aquaculture

Locals Seafood
Lowland Seafood
Lupton Seafood
Mac Jones Seafood
Mark of Quality
Mattamuskeet Seafood Company
Morgan Harvest
Murray L. Nixon Fisheries
National Association of Charter Boat Operators
Nature's Catch
Norman Seafood
N.C. 10% Campaign
N.C. Fisheries Association
N.C. Seafood Coalition
N.C. Shellfish Growers Association
N.C. Watermen United
Ocean Pride
Ocean Seafood
Outlaw Gourmet Products
Pamlico Packing Company
Pelican Seafood
Portside Marina
Poseidon Marina
Pride of the Pond Farms
Public Radio East
Pungo Fisheries
Quality Crab Company
Quality Foods
Quality Seafood Company
Red Barn Fish House
Rite Aid Pharmacy
Runners Seafood
The Seafood Center
Sea Safari Ltd
Seaview Crab Company
Select Seafood
Shellfish 2000
The Shrimp Shack
T.B. Smith Seafood
Southern Farm Tilapia
South Point Seafood
S&S Seafood
State Charter Boat Organizations
Striped Bass Growers Association
Summerland Foods
Sunburst Mountain Trout Company
Town Creek Marina
Trident Seafood

Tripp's Seafood
Two Fish Seafood
Walking Fish Community Supported Fishery
Wanchese Fish Company
Washington Crab Company
Williams Seafood

(David) Willis Seafood
Westside Fisheries
Wild American Shrimp
WRAL
Wrightsville Beach Chamber of Commerce

LOCAL & STATE

Brunswick Catch
Brunswick County, N.C.
Carteret Catch
Carteret County Economic Development Council
Carteret County, N.C.
Currituck County, N.C.
Dare County, N.C.
Eastern Carolina Council of Governments
Environmental Educators of North Carolina
Freshness from N.C. Waters
Hyde County, N.C.
Kitty Hawk Ocean Rescue
Marine Biotechnology in N.C. (MARBIONC)
Museum of the Albemarle, Elizabeth City
New Hanover County, N.C.
Nags Head, N.C.
N.C. Aquaculture Development Conference
N.C. Aquarium at Roanoke Island
N.C. Aquarium at Fort Fisher
N.C. Aquarium at Pine Knoll Shores
N.C. Center for the Advancement of Teaching
N.C. Clean Marina Program
N.C. Clean Water Management Trust Fund
N.C. Coastal Resources Commission
N.C. Coastal Reserves
N.C. Cooperative Extension
N.C. Department of Agriculture and Consumer Services, Seafood Marketing Division
N.C. Department of Agriculture and Consumer Services, Aquaculture
N.C. Department of Crime Control and Public Safety, Division of Emergency Management
N.C. Department of Environment and Natural Resources
N.C. Department of Environment and Natural Resources, Division of Coastal Management
N.C. Department of Environment and Natural Resources, Division of Marine Fisheries

N.C. Department of Environment and Natural Resources, Division of Water Quality
N.C. Department of Insurance
N.C. Eastern Region
N.C. Floodplain Mapping Program
N.C. General Assembly
N.C. Joint Legislative Commission on Seafood and Aquaculture
N.C. Legislative Study Commission on Emergency Preparedness and Building Codes
N.C. Marine Fisheries Commission
N.C. Museum of History
N.C. Museum of Natural Sciences
N.C. NEMO Program
N.C. Ocean Sciences Bowl
N.C. Office of Environmental Education
N.C. Real Estate Commission
N.C. Sediment Control Commission
N.C. State Emergency Response Team
N.C. State Parks
N.C. Sustainable Local Foods Advisory Council
N.C. Underwater Archaeology Branch
N.C. Waterfront Access & Marine Industries Fund
N.C. Waterfront Access Study Committee
N.C. Wildlife Resources Commission
N.C. Wind Advisory Group
Ocracoke Fresh
Ocracoke Seafood
Onslow County, N.C.
Outer Banks Catch
Pamlico County, N.C.
Pender County, N.C.
Plymouth, N.C.
Riverworks at Sturgeon City
Town of St. James, N.C.
Wrightsville Beach Ocean Rescue

NONGOVERNMENTAL ORGANIZATIONS

American Fisheries Society
American Meteorological Society
American Society of Civil Engineers
American Shore and Beach Preservation Association
American Zoo and Aquarium Association
Applied Technology Council
Atlantic Intracoastal Waterway Association

Audubon N.C.
Blog Together/Science Online
Council for the Advancement of Science Writing
Coastal States Organization
Coastal Wildlife Refuge Society
Core Sound Waterfowl Museum and Heritage Center
Discovery Place, Charlotte

Environmental Defense
Environmental Educators of North Carolina
Florida Aquarium
Hatteras Connection
Island Institute, Maine
National Association of Science Writers
National Fisheries Institute
National Marine Educators Association
North American Association for Environmental
Education
N.C. Big Sweep
N.C. Birding Trail Association
N.C. Coastal Federation
N.C. Beach Inlet and Waterway Association

N.C. Homebuilders Association
N.C. Paddle Trails Association
N.C. Rural Center
N.C. Seafood Festival
Pamlico Tar River Foundation
Partnership for the Sounds
Saltwater Connections
Science Communicators of North Carolina
Sea Grant Association
The Coastal Society
The Nature Conservancy
U.S. Lifesaving Association

OTHER

Georgia Department of Natural Resources
South Carolina Cooperative Extension

Florida Fish and Wildlife Conservation Commission
State of Maine

REGIONAL

Carolina Beach Vitex Task Force (NC/SC)
COSEE Southeast
Gulf of Mexico Alliance
Governors' South Atlantic Alliance
Mid-Atlantic Coastal Ocean Observing Regional
Association

Mid-Atlantic Regional Panel for Aquatic Invasive
Species
Southeast Aquatic Resources Partnership
Southeast Coastal Ocean Observing Regional
Association

SEA GRANT PROGRAMS

Alaska Sea Grant
California Sea Grant
Connecticut Sea Grant
Delaware Sea Grant
Florida Sea Grant
Georgia Sea Grant
Illinois-Indiana Sea Grant
Louisiana Sea Grant
Maine Sea Grant
Maryland Sea Grant

Mississippi-Alabama Sea Grant
New Jersey Sea Grant
New York Sea Grant
Oregon Sea Grant
South Carolina Sea Grant Consortium
Texas Sea Grant
Virginia Sea Grant
Washington Sea Grant
South Atlantic Sea Grant region
Mid-Atlantic Sea Grant region

INTERNATIONAL

Faculty of Fisheries Hokkaido University, Hakodate
Japan
Hokkaido National Fisheries Research Institute,
Kushiro Japan
Universita Milano
University of Southern Denmark

Savour Kilkenny, Ireland
Science of the Surf, Australia
Sea Partnership Program, Indonesia
Indonesia Ministry of Marine Affairs and Fisheries
Queensland Catch, Australia

**APPENDIX I: NORTH CAROLINA SEA GRANT
PROGRAM ASSESSMENT TEAM LETTER**

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NORTH CAROLINA SEA GRANT

100 B 1911 BUILDING
BOX 8605, NORTH CAROLINA STATE UNIVERSITY
RALEIGH, NORTH CAROLINA 27695-8605
919-515-2454, FAX: 919-515-7095

Feb. 4, 2004

Dr. Ronald Baird
National Sea Grant College Program
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, Maryland 20910

Dear Dr. Baird,

On behalf of the North Carolina Sea Grant management team and our entire staff, I would like to thank our 2003 Sea Grant Program Assessment Team for its thorough and thoughtful review that will help us improve our program. The review itself was an intense, yet enjoyable week, one that allowed us to focus on only a fraction of our many success stories.

We offered a full agenda for the team members and they eagerly responded. Lead by chair Peter Bell and vice-chair Manuel Hernandez-Avila, both representing the National Sea Grant Review Panel, the team expressed genuine interest in our program that covers a broad spectrum of research and outreach activities. We also appreciated the support that program officer Elizabeth Day provided to the PAT members, as well as to our management team as we prepared for and conducted the various panels, tours and events. Dorn Carlson from the national office also provided valuable assistance during the PAT week.

Below, I would like to respond to the specific recommendations as presented in the executive summary of our PAT report.

** Develop a tracking system and central database for all aspects of the program. This system would include results, findings and accomplishments, finances, research projects, outreach contacts and activities, and personnel and students, past and present. Sea Grant metrics could also be included. The database could then be available for access through the National Sea Grant Data Base.*

In the past several years, we have monitored the development of tracking systems by Oregon and Wisconsin Sea Grant programs, as well as the National Sea Grant Office. We also attended a meeting on tracking systems, hosted by South Carolina Sea Grant. This background work is critical to our efforts to ensure that our system will be compatible with others in the Sea Grant network. The development of a robust central database — to include items such as those suggested by the team — will be a priority for North Carolina Sea Grant in 2004-05.

** Develop a formal program of encouraging and supporting continuing education and training for all NCSG staff.*

While we may not have highlighted our continuing education and professional development policy during the PAT, we have a long tradition in this area. For example, several staff members have completed the yearlong Natural Resources Leadership Institute — and one of our newest specialists is in the program this year. Often, specific workshops are identified in advance and are included in annual work plans and travel budgets. In other cases, staff members take advantage of opportunities that arise during the year. We include professional development in our staff meetings, and staff members may take courses on their respective campuses for a nominal fee. We support staff members seeking advanced degrees. For example, Marc Turano remains on staff as an extension graduate assistant coordinating our Blue Crab Research Program while he completes his doctorate in zoology at NC State.

** Explore further opportunities for expanding NCSG's educational opportunities for high school and undergraduate students.*

With one marine educator on staff, we emphasize training the teachers, who then give direct lessons to many students, rather than conducting camps or other student programs through NCSG. Our new marine education specialist, Terri Kirby Hathaway will focus on developing innovative programs for the elementary and secondary level. Such projects likely will include teams of students and educators — as the Sea View curriculum has provided a strong model.

Our most direct impact on undergraduate students has been the multidisciplinary courses taught by Walter Clark and Lundie Spence. Between 1999 and 2003, more than 260 students enrolled in either the undergraduate or graduate-level courses. Clark also taught a First Year College course in 2003.

Undergraduates also are routinely involved in research efforts, including ongoing projects. For example, Dominique Donato — who has won international honors for her work on hybrid striped bass reproduction, conducted with Craig Sullivan of NC State, and has served as NCSG communications intern — was one of several dozen undergraduates invited to participate in a research symposium for the N. C. General Assembly. NCSG has agreed to cosponsor an expanded UNC system undergraduate summer research program with an emphasis on minority students. We will continue to encourage our researchers to include high school and undergraduate students where appropriate. We also will look for opportunities to expand our efforts to expose bright young scientists to our outstanding research and outreach programs.

** Explore strengthening relationships with county and other NCCES partner groups in the areas of fishery, tourism, and community development.*

In North Carolina, Sea Grant and the Cooperative Extension Service are two distinct programs. We partner with CES when such projects fulfill Sea Grant goals. Most efforts are with regional or statewide emphasis rather than a single county office in order to achieve a broader impact. Barbara Doll's water quality specialist position is funded 25 percent by the CES Water Quality Group. Kate Ardizzone joined our staff this year as a water quality planning specialist, a position that is a partnership between Sea Grant, CES and the N.C. Division of Water Quality, with funding through the Environmental Protection Agency. Sea Grant and CES aquaculture programs have worked closely over the years, including sharing Marc Turano's previous position. Jack Thigpen is active in Extension Tourism on the state, regional and national levels. In North Carolina, CES has had very limited involvement in marine fisheries topics, leaving that area to the Sea Grant expertise. In the community development arena, Nancy White, former outreach leader for the NC State College of design, wrote a *Soundfront Series* guidebook.

** Increase participation of NCSG staff and extension specialists at national conferences and in publishing their work, budgets allowing.*

All of all our professional staff members attend national conferences, and most have been invited to make presentations. NCSG extension staff also led planning for national meetings of The Coastal Society and the National Marine Education Association, as well as a national recreational fisheries forum. We anticipate our newest staff members will follow suit. Funds are available if "page charges" are required for scientific and technical journals. Extension specialists also work with the communications team to publish their work through working papers and technical reports, as well as through products for targeted audiences and the general public.

** Undertake a concerted effort to reach out to broad constituencies including minorities. Where appropriate, materials should be produced and programs should be offered in languages other than English, i.e. Spanish.*

This topic was identified in our staff visioning exercise in December 2002 and is on our outreach agenda. As positions open with rotation schedule of our Outreach Advisory Board, we are seeking greater diversity on that panel.

Currently our Spanish-language products have been limited to seafood processing materials, based upon requests from that industry. The Hispanic population in the coastal plain region — extending beyond the 20 Coastal Area Management Act Counties — is less than 5 percent, according to the 2000 Census. The Asian population in the same region is less than 1 percent. We are in contact with other programs that have products in Spanish and are looking at buying into those print runs or making bulk purchases of specific products, such as blue crab information produced by Louisiana Sea Grant. Our plans for Spanish versions of our rip current safety materials were placed on hold in anticipation of the national NOAA-U.S. Lifesaving Association task force products.

** Continue to pay attention to dealing with traditional, as well as new constituent groups. The value of continued commitment to North Carolina Sea Grant's historic interest in "County agents in hip boots" is an important element involving organized groups as well as individual constituents.*

NCSG will continue to serve traditional constituent groups while at the same time monitoring the changes in our coastal region and responding to new issues and audiences. While often in hip boots, our specialists may be found working anywhere on the coast, or across the state, rather than in a single county.

** Make special efforts to incorporate Historically Black Colleges and Universities (HBCUs) in NCSG activities and reach out to under-represented individuals at institutions across the state. Also target minority constituent populations.*

Associate Director Steve Rebach has had ongoing contact with the HBCUs in North Carolina. We have funded a minigrant at N.C. A&T State University, and in the most recent core funding sequence, we received one proposal from an HBCU, Elizabeth City State University. Our scientific review panel did not recommend the ECSU project, but NCSG has encouraged the researchers to develop portions of the project as one or more minigrant proposals. We also have identified researchers at NC State who agreed to work with the HBCU researchers to develop proposals for the state-funded Fishery Resource Grant and Blue Crab Research programs. NCSU has funded minority researchers at non-HBCU campuses.

** Develop protocols under which a percentage of the proceeds accruing to a university as a result of research supported by NCSG that results in a patent or license are shared with NCSG.*

We will look into the legal considerations of this recommendation. Preliminary indications are that each award contract would require specific language regarding return of patent revenues to Sea Grant.

** Develop mechanisms to pay additional salary to NCSG staff.*

Generally, the N.C. General Assembly mandates raises for state employees. But we also routinely evaluate positions to identify that the staff members have the most appropriate designation for the work being done, and that their experience is properly reflected within the salary range available. Prior to the 2003 PAT, we had moved all extension professionals to the "specialist" designation. This "professional" status allows more flexibility regarding merit raises when budgets allow. Since the recent PAT, we have raised Sandra Harris' position from Office Assistant III to Public Information Assistant IV, based on her additional duties for the communications team.

** Explore opportunities to encourage high school, undergraduate, and graduate students at NCSU institutions to become involved in Sea Grant activities, including Extension. The American Fishery Society Hutton funds can aid high school students in this.*

As noted above, we currently encourage our researchers and outreach staff to include high school, undergraduate and graduate students in Sea Grant activities. We will explore new opportunities for high school students, such as the Hutton program. In addition, we anticipate establishing a third NCSG graduate fellowship. Modeled on our coastal management and fisheries management fellowships, the science communications fellow would write and edit news stories and other products for the Fishery

Resource Grant and Blue Crab Research programs. Graduate students also are often paired with members of the fishing communities to conduct research for the FRG and Blue Crab programs.

** Use free Public Service Announcements on radio and TV to advertise NCSG and NCSG products.*

The NCSG communications team seeks the most cost-effective way to share information on Sea Grant activities and products. Changes in FCC requirements for radio and television public service announcements have left most of the PSA slots at odd hours with low audience numbers. Rather than developing expensive PSAs on our own, we are looking at several other options. One is a regional radio PSA project with other Mid-Atlantic programs to focus on blue crabs. We have proposed a partnership with UNC-TV to develop a *Coastwatch* series that would serve multiple functions. We also are renewing contacts with coastal cable service companies that provide public access channels.

In addition, we are looking at PSA opportunities in newspapers. In 2002-03, we had a successful partnership with *The News & Observer* to develop a Newspapers in Education series — the N.C. spin to the national series focusing on the JASON project. NCSG is working on a coastal culture series in conjunction with the Southeast Center for Ocean Science Education Excellence.

** Evaluate the evenness of NCSG along the coast with the goal of reaching out to those who have not received sufficient attention by extension and education personnel in the past.*

NCSG has located its offices to provide contact in north, central and southern coastal locations, as well as in Raleigh, where most state agencies are headquartered. Also, NCSG is seeking to identify and implement the most effective and cost-efficient methods to evaluate our impact. Such evaluations would reflect whether we are achieving our goal of a balanced approach to meeting the needs of many audiences along our extensive coastline and across the state.

In addition to the recommendations included in the executive summary, the PAT team also suggested that we strengthen the specificity of extension strategic training, such as setting milestones. We anticipate developing a workshop for our staff to identify the best methods for outreach strategic plans and individual work plans. The updated plans would then provide a sound basis for the evaluation of our program.

Finally, the team recommended that we develop “specific, measurable program goals that are related to a timeline for accomplishment.” We anticipate that the PAT process will provide some “best management practices” in the strategic planning process, which could be essential background as we work to improve our NCSG Strategic Plan and Implementation Plan. But at the same time, we will continue to be cautious that timelines do not set arbitrary deadlines. The coast is a dynamic place, and the results of ongoing research could cause us to refine and potentially refocus our goals as we update the strategic plan every two years.

Again, we thank our PAT chair Peter Bell, all the team members, and program officer Elizabeth Day for their assistance in improving the North Carolina Sea Grant research and outreach programs.

Sincerely,

Dr. Ronald G. Hodson
Director

cc: Dr. Elizabeth Day
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North Carolina Sea Grant develops research, education and outreach programs on current issues affecting the North Carolina coast and its communities. We provide a valuable resource for scientists, educators, local officials, government agencies, coastal businesses and the public to find unbiased, scientifically sound information about our coastal ecosystems.