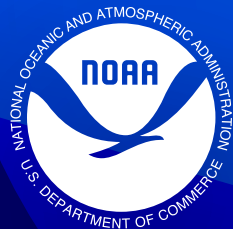
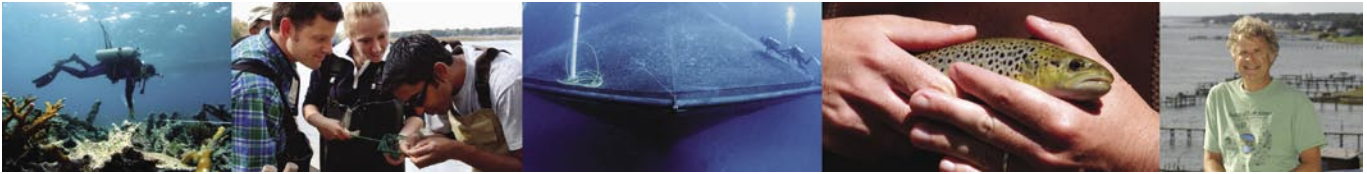


SEA GRANT IN THE NEW CENTURY

NOAA SEA GRANT STRATEGIC PLAN EXECUTIVE SUMMARY

SCIENCE FOR SUSTAINABILITY
IN THE 21ST CENTURY
FY2003-2008 AND BEYOND





NOAA SEA GRANT FOR THE 21ST CENTURY

The expanding urbanization and development of coastal environments represent immense management challenges for the United States. Currently, our nation's capability and capacity to manage coastal resources is inadequate and solutions are urgently needed. The understanding and conservation of coastal resources will require a broad commitment and intense, sustained involvement on the part of the federal government in partnerships with state/local governments, industry and universities. This will be an immense undertaking—one that will severely strain the cultural fabric of this country. Coastal development promises to be one of the most dramatic and dynamic engines of human alteration to associated ecosystems and a primary challenge of the 21st century.

The assets and strengths of NOAA's National Sea Grant College Program are well positioned to help address the transition to sustainability and ecosystem based management that this new century will demand of us as a nation. Sea Grant's management paradigm, legislative mandate, and strong performance against exacting criteria, have shaped an innovative program that has developed efficient, effective mechanisms for getting scarce resources to problems—the right problems—as defined by NOAA priorities and urgent local/regional needs.

Sound planning is critical to effective performance. To that end, NOAA Sea Grant has produced its first strategic plan that focuses specifically on the needs of the new century—a plan that is consistent with the mission of its parent agency, NOAA, yet tailored to the program's unique strengths. This plan is the result of numerous retreats/workshops and input from many stakeholders—especially our university partners and National Review Panel.

WHAT IS SEA GRANT?

Sea Grant's legislative charge (PL107-299) is to “increase the understanding, assessment, development, utilization, and conservation of the nation's ocean and coastal resources by providing assistance to promote a strong education base, responsive research and training activities, and broad and prompt dissemination of knowledge and techniques.”

Sea Grant is a national organization headquartered in NOAA comprising 30 university-based colleges or centers located in coastal and Great Lake states and Puerto Rico. These programs form a dynamic national network of over 300 participating institutions involving more than 3,000 scientists, engineers, educators, students and outreach experts. Sea Grant's organizational paradigm of national programming and local implementation is a powerful mechanism for broad engagement of multiple nationwide issues.

Sea Grant engages the capabilities of our finest research universities in addressing coastal/Great Lakes resource management issues consistent with NOAA's mission. Sea Grant is a partnership among the federal government, universities, and state/local governments that creates, through federal matching funds, considerable financial leverage and local participation.

Through integration of peer-reviewed research, outreach, and education, and by employing multidisciplinary teams working with broad stakeholder participation, Sea Grant's infrastructure is a national resource that distinguishes it from most other federal programs. The result is a powerful mechanism for building capacity for 21st century challenges.

WHY SEA GRANT IN THE 21ST CENTURY?

Ecosystem based management is well short of realization. Continued coastal degradation and urgent timelines demand appropriate action now. Recent reports from the National Council for Science and the Environment list the following elements for achieving sustainability: communities, stakeholders, science/technology, conflict resolution, timelines, cost, integration of science/society/governance, education, information dissemination, long-term focus, place-based activism, and collaborative governance. The recent report from the U.S. Commission on Ocean Policy contains similar language. The report specifically recommends that Sea Grant's role be expanded to address urgent capacity building needs, and the infrastructure is seen as an essential link to the academic community for applied research. Sea Grant provides the commitment and proven vehicle for the federal government to work with state and local governments, private industry, universities, organizations and individuals concerned with or impacted by our oceans, coasts and Great Lakes.

This plan identifies priorities and charts directions for NOAA Sea Grant for 2003-2008 in accordance with the imperatives identified above. It relies on both the NOAA strategic planning process and that of the 30 participating programs. The plan describes what Sea Grant does and will do for NOAA's mission and for the nation's welfare in the 21st century and beyond.



Ronald Baird
Director
NOAA Sea Grant

NOAA SEA GRANT'S VISION

Sea Grant will, in the 21st Century, serve as one of this nation's leading enterprises in addressing the urgent and long-term needs in ocean/coastal/Great Lakes resource management and in the successful transition to ecosystem based approaches through sound science and educational excellence.

NOAA SEA GRANT'S MISSION

To enhance the sustainable use and conservation of ocean, coastal, and Great Lakes resources to benefit the economy and the environment.

MAJOR STRENGTHS AND BENEFITS OF NOAA SEA GRANT TO THE NATION

Sea Grant has a legislative mandate to address resource management issues within NOAA through strong university-based programs. The Sea Grant Program provides the long-term infrastructure and resource base necessary for significant progress in sound science and ecosystem based management, and the ability to adapt to a broad spectrum of local cultures, institutions of governance, and regional socio-economic conditions. Sea Grant is a proven, effective network with both a long history of engaging disparate societal elements in order to accomplish its objectives, and a unique role as an "objective broker" of information to a wide range of constituencies. A unique financial and flexible management structure provides leverage for quick resource deployment to high priority and emerging challenges, and a geographically diverse network of immense, collective scientific capability involving our finest research universities, ensures a "cutting edge" approach to virtually every facet of coastal resource management. Finally, Sea Grant is a national leader in providing educational opportunities, promoting environmental literacy, and developing a highly trained workforce necessary to build our national capacity for sustainable ecosystem based resource management that will be vital to meeting urgent 21st Century needs.

NOAA MISSION GOALS AND MISSION STRATEGIES

The NOAA Sea Grant strategic plan identifies priorities and directions for the National Sea Grant College Program for FY2003-2008 and beyond. The plan outlines how Sea Grant contributes to NOAA's mission goals, and describes the issues and opportunities that require Sea Grant attention in the 21st century.

NOAA has adopted four overarching Mission Goals that will drive the organization from FY2003 through FY 2008 and beyond. These are described in detail in the NOAA Strategic Plan (<http://www.spo.noaa.gov/strplan.htm>) and are listed below:

1. Protect, Restore, and Manage the Use of Coastal and Ocean Resources through Ecosystem-based Management
2. Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond
3. Serve Society's Needs for Weather and Water Information
4. Support the Nation's Commerce with Information for Safe, Efficient and Environmentally Sound Transportation

Each of the Mission Goals is organized on an outline of common strategies. The strategies are:

1. Monitor and observe the land, sea, atmosphere, and space and create a data collection network to track earth's changing systems.
2. Understand and describe how natural systems work together through investigation and interpretation of information.
3. Assess and predict the changes of natural systems and provide information about the future.
4. Engage, advise, and inform individuals, partners, communities and industries to facilitate information flow, assure coordination and cooperation, and provide assistance in the use, evaluation, and application of information.
5. Manage coastal and ocean resources to optimize benefits to the environment, economy, and public safety.

This plan outlines how NOAA Sea Grant contributes to the four NOAA Mission goals. The Performance Measures and Measures of Success described in this plan include those listed in the NOAA strategic plan to which Sea Grant contributes.

NOAA SEA GRANT'S THEME AREAS AND NATIONAL PRIORITIES

Eleven Sea Grant thematic areas have been identified as critical areas of focus for sustainable resource management in the next decade and where investment of Sea Grant resources towards these themes will make a significant contribution nationwide. All are consistent with NOAA's mission and strategic plan, and are described below.

Sea Grant priority activities organized under these 11 thematic areas directly relate to one or more of the NOAA mission goals. Results from theme-based projects contribute to a national pool of cutting edge knowledge and capabilities. Each of Sea Grant's theme-based areas fits within one (or more) of the NOAA mission goals and strategies as indicated in the following matrix.

Each Sea Grant thematic area can be found on the internet at:
<http://www.seagrants.noaa.gov/themesnpa/themesnpa.html>

SEA GRANT THEME AREA #1: AQUACULTURE

http://www.seagrants.noaa.gov/themesnpa/pdf/aquaculture_main.pdf

Sea Grant will continue to be at the forefront of efforts to grow a sustainable U. S. marine aquaculture industry through an integrated program of research, education, and technology transfer that is focused on key scientific, engineering, environmental and socioeconomic issues that currently constrain this emerging industry. Marine aquaculture is a primary focus area for the Ocean Resources section of the U.S. Commission on Ocean Policy Report.

Priorities for NOAA Sea Grant action include:

1. Culture system technology development
2. Nutrition and feeds
3. Genetics of cultured species
4. Health and disease
5. Stock enhancement
6. Public policy and law
7. Socioeconomic issues

SEA GRANT THEME AREA #2: BIOTECHNOLOGY

http://www.seagrants.noaa.gov/themesnpa/pdf/biotechnology_main.pdf

Sea Grant will invest in biotechnology to catalyze advances in marine and coastal science. These investments will be coordinated with outreach and communication efforts designed to generate an understanding of the potential of marine biotechnology and develop links between scientists and stakeholders, including managers, industry, and the public.

Priorities for NOAA Sea Grant action include:

1. Marine natural products
2. Biomolecular process discovery
3. Marine environmental biotechnology
4. Marine resource management
5. Seafood safety and processing

SEA GRANT THEME AREA #3: COASTAL COMMUNITIES & ECONOMIES

http://www.seagrants.noaa.gov/themesnpa/pdf/coastalcomm_main.pdf

Sea Grant research and outreach will provide coastal communities with the best available science-based information for sustainable community decision-making, coupled with the knowledge, experience and tools needed to bring diverse coastal interests together. The Sea Grant network will expand its efforts to improve coastal community leadership and planning capabilities to jointly address economic, environmental, and social issues. The issue of coastal growth and development (including urbanization) is a cross-cutting issue highlighted by the U.S. Ocean Commission.

Priorities for NOAA Sea Grant action include:

1. Strengthening coastal planning
2. Resource valuation
3. Constructing indicators of sustainable development
4. Educating coastal planners
5. Building leadership
6. Developing decision support systems
7. Revitalizing communities

SEA GRANT THEME AREA #4: COASTAL NATURAL HAZARDS

http://www.seagrants.noaa.gov/themesnpa/pdf/coastal hazards_main.pdf

Risks associated with coastal natural hazards are compounded by sea level rise, land subsidence, growth, unfamiliarity of coastal residents with local hazards, and an increasingly valuable building stock along the nation's coastline. These observations underscore the need for a dedicated national effort to reduce the economic, social, and environmental costs of natural hazards. Research and outreach programs are needed to help states and localities create an aware and prepared citizenry capable of employing the most effective means to reduce these risks. This too is treated extensively by the U.S. Ocean Commission.

Priorities for NOAA Sea Grant action include:

1. Reducing the loss of life and property
2. Weather-related hazards
3. Earthquakes and tsunamis
4. Shoreline change

SEA GRANT THEME AREA #5: DIGITAL OCEAN

http://www.seagrants.noaa.gov/themesnpa/pdf/digitaloceans_main.pdf

Models will be created to enable the translation of chemical, biological, and physical data into tools that will help the nation learn how best to use and tend its marine resources. The Digital Ocean Theme Area builds on work pioneered by Sea Grant in the areas of autonomous underwater vehicles (AUVs), modeling, mobile platforms, robots, sensors, and more. Sea Grant is also participating in the National Oceanographic Partnership Program's *Ocean.US* to develop an integrated and sustained ocean observing system for the United States. These existing technologies coupled with developing others to gather, analyze and make data widely available hold much promise and are intended to support the emerging national efforts in integrated ocean observations and coastal monitoring.

Priorities for NOAA Sea Grant action include:

1. Focusing on coastal areas
2. Preparing for extreme events
3. Passive acoustics in fisheries
4. Supporting offshore industry

SEA GRANT THEME AREA #6: ECOSYSTEMS AND HABITATS

http://www.seagrants.noaa.gov/themesnpa/pdf/ecosystems_main.pdf

Sea Grant offers an integrated program of education, research, and technical assistance that promotes the judicious use of coastal resources. Sea Grant's interest in coastal ecosystems is primarily focused on two broad areas:

- minimizing the negative impacts of human-induced changes to coastal ecosystems, and
- developing and implementing methods of restoring damaged coastal habitats.

Priorities for NOAA Sea Grant action include:

1. Reducing stresses on coastal ecosystems
2. Coastal watersheds
3. Conserving and restoring coastal habitats

SEA GRANT THEME AREA #7: FISHERIES

http://www.seagrants.noaa.gov/themesnpa/pdf/fisheries_main.pdf

Many of our nation's marine and Great Lakes fisheries are in trouble. Sea Grant researchers and outreach specialists are part of the solution—they identify, analyze and help solve problems in fisheries. Sea Grant has identified the following research and outreach actions as top priorities to revitalize and maintain our fisheries. Sea Grant will work on these problems in collaboration with NOAA Fisheries, state and regional fisheries agencies, and the recreational fishing sector.

Priorities for NOAA Sea Grant action include:

1. Partnering with constituents to improve fisheries management
2. Caring for people by helping them adapt to changes in fishery resources and by interjecting socio-economic dimensions into fisheries management decisions
3. Better understanding fish biology and behavior
4. Balancing needs of fishermen and managers with technological improvements to reduce bycatch, develop new value-added products, and reduce waste
5. Predicting effects of climate and ecosystem change and other perturbations to aquatic systems

SEA GRANT THEME AREA #8: MARINE AND AQUATIC SCIENCE LITERACY

http://www.seagrants.noaa.gov/themesnpa/pdf/marineaquatic_main.pdf

Educating the 21st century workforce in marine and aquatic sciences is integral to both the educational and scientific missions of Sea Grant. Sea Grant educators provide valuable leadership in marine and aquatic science education activities at the local, regional, and national levels throughout the U.S. Sea Grant's educational efforts contribute to improving marine and aquatic science literacy by facilitating the delivery of science-based information, programming, and resources to the formal and informal education communities. Capacity building and education are U.S. Ocean Commission concerns.

Priorities for NOAA Sea Grant action include:

1. Create and sustain effective marine and aquatic science-based educational programs
2. Cultivate Sea Grant leadership in marine and aquatic sciences education communities
3. Support the use of marine and aquatic sciences content and examples in science and mathematics teaching and standardized testing
4. Expand professional development opportunities for all educators
5. Engage underrepresented populations in science efforts

SEA GRANT THEME AREA #9: SEAFOOD SCIENCE & TECHNOLOGY

http://www.seagrants.noaa.gov/themesnpa/pdf/seafoodtech_main.pdf

Sea Grant seafood scientists and technologists are uniquely qualified to provide the research, education, extension, and technology transfer needed to help the seafood industry increase quality and safety, add value, lower costs, and expand seafood supplies and markets.

Priorities for NOAA Sea Grant action include:

1. Ensuring seafood safety
2. Ensuring seafood quality
3. Improving processing technology
4. Expanding supplies and markets

SEA GRANT THEME AREA #10: URBAN COASTS

http://www.seagrants.noaa.gov/themesnpa/pdf/urbancoasts_main.pdf

Sea Grant combines research and outreach to help residents, business leaders, and government officials cope with urban issues in coastal settings. Sea Grant outreach facilitates the rapid transfer of research and new technologies valuable to densely populated coastal communities.

Priorities for NOAA Sea Grant action include:

1. Reducing nonpoint-source pollution
2. Enhancing port and harbor operations
3. Managing coastal resources

SEA GRANT THEME AREA #11: INVASIVE SPECIES

<http://www.seagrants.noaa.gov/themesnpa/pdf/inv.spp.pdf>

The invasive species problem requires a breadth of scope that only Sea Grant can provide—research, education and outreach on all coasts; for all age groups; for government, private businesses and private citizens; and on issues ranging from biology to economics to the physical sciences. Research alone will not solve this problem, yet we must develop a better arsenal of weapons than currently exists, and ensure that these tools are available to those who need them.

Priorities for NOAA Sea Grant action include:

1. Reducing ballast water introductions
2. Reducing intentional and accidental releases of aquaculture species
3. Responding with integrated, multi-state programs of research, outreach and education

In addition to the 11 Theme Areas, the National Sea Grant College Program Act Amendments of 2002 identify and authorize three priority activities for fiscal years 2003 through 2008 (in addition to the general appropriation). These three priorities (Oyster Research and Restoration, Harmful Algal Blooms and Enhanced Fisheries Extension) represent national issues and are incorporated into Sea Grant Theme Areas described above.

LOOKING FORWARD

2008 AND BEYOND: BUILDING ON NOAA SEA GRANT'S INFRASTRUCTURE AND LEADERSHIP

The Sea Grant network represents one of the nation's most effective mechanisms for transferring objective, science-based information and technology on the sustainable use of marine resources, protection of coastal environments, and economic development of the coastal zone to a variety of constituencies.

Over the next five years, funding permitting, Sea Grant will embark on the following major improvements in products and services.

1. Enhance Sea Grant's Research, Outreach, and Education Capabilities. (Each of these three elements is critical to the success of Sea Grant activities, and it is the combination and integration of the three elements that makes Sea Grant unique.)
 - (a) Credible science is essential to informed public policy. As NOAA and the nation transition to ecosystem based management approaches, Sea Grant's research portfolio of place-based science is designed to fill an urgent and growing need for such information. Sea Grant-supported research is currently seriously oversubscribed. Only about 20% or fewer proposals receiving funding. Increasing the number, average grant size, and duration of research projects will enable Sea Grant to greatly enhance the benefits of its research portfolio. Sea Grant's research is also a significant contribution to the education of the next generation of scientists.
 - (b) Sea Grant's extension network is uniquely positioned to deliver urgently needed science-based information to coastal constituents. At present, there are many geographic areas with only minimal coverage in terms of personnel and expertise. This is especially so in rapidly growing urban/suburban areas. As problems grow more complex, many more specialists with diverse backgrounds will be needed.
 - (c) Sea Grant plays a leadership role in science education, outreach, and the promotion of environmental literacy. Opportunities to expand partnerships abound. Enhancing teacher training, improving access to curriculum materials, and enlarging fellowship programs are a priority for Sea Grant.
2. Augment Regional Programs. It is clear that many contemporary problems in coastal resource management involve multi-state or regional issues. There is a critical need for regional research planning and federal coordination at that level. Sea Grant is strengthening its regional infrastructure to be better positioned to take a leadership role in cooperative regional efforts.
3. Expand the Sea Grant Network. The addition of new Sea Grant programs in geographic areas not currently served is envisioned in the authorizing legislation.

NOAA SEA GRANT

SCIENCE SERVING AMERICA'S COASTS

Purpose: Sea Grant conducts research, outreach and education to achieve a sustainable environment and to encourage the responsible use of America's coastal, ocean and Great Lakes resources.

How We Work: The National Sea Grant College Program is a nationwide network, administered through the National Oceanic and Atmospheric Administration (NOAA), of 30+ university-based programs that work closely with coastal communities.

Location: Sea Grant programs are located at universities in every coastal and Great Lakes state, and Puerto Rico.

Size: Sea Grant involves over 3,000 scientists, engineers, outreach experts, educators and students drawn from over 300 institutions.

Focus: We invest in high priority issues such as marine biotechnology, coastal communities and economies, coastal hazards mitigation, ecosystems and habitats, aquaculture, fisheries and seafood technology, the urban coast, ocean technology and education.

