

TESTIMONY ON THE NATIONAL SEA GRANT COLLEGE PROGRAM
before the
Committee on Science
Subcommittee on Environment, Technology and Standards
U.S. House of Representatives

Offered by
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Mr. Chairman and Members of the Committee:

Thank you for the opportunity to provide testimony regarding the National Sea Grant College Program and the network of Sea Grant Colleges that it encompasses. In developing this testimony, I have drawn upon my experiences as Director of California Sea Grant, Director Michigan Sea Grant and as a Program Officer in the Division of Ocean Sciences, National Science Foundation. I have also discussed several issues at length with my counterpart Sea Grant Directors, many members of the marine research community, and informally with staff at the National Science Foundation and National Oceanic and Atmospheric Administration (NOAA).

In this testimony I wish to cover three key issues currently before the Science Committee: the proposal by the Bush Administration to transfer Sea Grant to the National Science Foundation, the proposal to transfer the Coastal Ocean Program to Sea Grant and the establishment of new Sea Grant Programs.

The proposed transfer of Sea Grant to the National Science Foundation is by far the most important of the three and hence the primary focus of this testimony. In considering such a move, I believe the underlying premise should be to recognize and preserve the highly valued aspects of Sea Grant no matter where it resides within the Federal infrastructure. Unlike other federal programs that support Great Lakes, coastal and marine research, Sea Grant has unique elements that have allowed it to flourish since its inception in 1966.

Background on Sea Grant

As part of NOAA in the U.S. Department of Commerce, the National Sea Grant College Program engages the nation's top universities in conducting scientific research, education, training, and extension projects designed to foster science-based decisions about the use and conservation of our coastal, marine, and Great Lakes resources. Sea Grant's mission of enhancing the practical use and conservation of these resources to create a sustainable economy and environment is achieved by:

- Conducting priority-driven and peer-reviewed research to solve environmental problems and create economic opportunities through partnerships with coastal residents, businesses and industry, and local, regional, state and federal agencies.
- Transferring scientific research results to these constituencies and others through its nationwide extension program.
- Providing training opportunities for K-12 teachers to bring the sciences into the classroom and for undergraduate and graduate students to be mentored by senior researchers.
- Informing the public about marine and coastal issues through Sea Grant communications and education programs.

The 30 university-based Sea Grant programs serve as the core of a dynamic national network of more than 300 participating institutions involving more than 3,000 scientists, engineers, outreach experts, educators, and students. The Sea Grant network addresses key issues and opportunities

in areas such as aquaculture, aquatic nuisance species, marine biotechnology, seafood safety, fisheries management, coastal business and development, coastal habitat, water quality, and coastal hazards. While these topics are not the unique province of Sea Grant, the program has a well-deserved reputation as the national leader among these highly important topics.

Sea Grant is an issues- and results-based program, with remarkable achievements throughout its history (see appendix for examples of Sea Grant impacts). Sea Grant's integrated approach of applying scientific research, education and training, technical assistance and outreach focused on marine, coastal, and Great Lakes issues along America's coast truly represents "Science Serving America's Coast." By basing all its activities on sound rationale, meritorious science, and application of results, Sea Grant has contributed greatly to the economic and environmental sustainability of America's coastal resources and the education of its human "capital."

Sea Grant represents a terrific value for the investment of federal funds. Sea Grant programs are required by law to match \$1 in non-federal funds for every \$2 of federal investment. Actual revenues spent on Sea Grant activities nationwide from all sources totaled \$108 million for fiscal year 2001 in contrast to the federal appropriation that year was \$62.25 million. This highly leveraged investment in Sea Grant is crucial to ensure appropriate federal, state, local, university, and private-sector efforts to support and enhance our coastal economy while conserving and protecting the natural resource base upon which it depends.

Sea Grant Competitiveness and Program Review

All Sea Grant research, outreach, and education efforts are subject to a consistent scientific peer-review process across all national and state Programs. During 2000/2001, 2,249 proposals were submitted across all Sea Grant competitions. Following a rigorous peer review process, 520 projects were funded, a success rate of 22%. The turnover rate in principal investigators was 70% from the previous biennium. These are statistics that are similar to those of the Division of Ocean Sciences within the National Science Foundation. All Extension, Communication and Education programs are proposal-based and peer-reviewed. In 1998, the National Sea Grant College Program implemented a rigorous external review process of each of the 30 Sea Grant programs once every four years. This performance review evaluates each Sea Grant program on its management, peer review procedures, strategic planning processes, the significance of results produced, and how results are received and used by stakeholders.

Comments in Regard to the Proposal to Transfer Sea Grant to the National Science Foundation

In developing a position on the proposal to transfer Sea Grant to the National Science Foundation, I have worked extensively through the Sea Grant Association (SGA) an organization that represents more than 30 institutions that host Sea Grant programs. Below follows a brief statement of principles by the SGA on Sea Grant followed by specific recommendations regarding the proposed transfer.

Sea Grant Association Principles on the National Sea Grant College Program: The Sea Grant Association believes that that integrity of the National Sea Grant College Program must be maintained:

- • Sea Grant must remain a partnership program among the nation's premier universities and laboratories, federal, state, and local governments, the private sector, and the public. Sea Grant's partnerships make the program stronger, reduce costs, and address real world problems and opportunities.
- • Sea Grant must continue to utilize an integrated approach involving peer-reviewed research, directed education, technical assistance and extension to identify and deliver needed products and services to citizens, industry and government. Sea Grant's extension and education programs maximize the value of its research and its research maximizes the value of outreach.

- • Sea Grant must continue to focus its resources on the nation's diverse coastal, marine, and Great Lakes economic, environmental, and education needs. The huge pressures of coastal population growth in the United States will only increase the demand for Sea Grant's research products and services.

Sea Grant Association Position on the Proposed Transfer: The transfer of the National Sea Grant College Program to the National Science Foundation is proposed in the President's FY03 budget. While the intellectual merits of such a transfer are being considered, it is important to recognize that:

- Congress passed Public Law 105-160 in 1998 to authorize the National Sea Grant College Program through FY2003. This legislation was passed with the *unanimous* consent of Congress. Over 100 members of the House of Representatives and over 20 members of the Senate co-sponsored the legislation. The bi-partisan support for this legislation continued Sea Grant as a part of NOAA within the U.S. Department of Commerce.
- Recently introduced reauthorization legislation (H.R. 3389) for the National Sea Grant College Program is pending in Congress. This bill will continue the program for five years within NOAA based on its current structure, conduct and performance.
- The U.S. Commission on Ocean Policy, appointed by the President in December 2001, will be issuing major recommendations within 18 months that affect all ocean-related federal agencies, including NOAA, its status as a federal agency, and the placement of its programs, both within and outside of NOAA.

Therefore, the Sea Grant Association believes that:

- No change should be considered in mission, structure, and function of the Sea Grant program, and the location of the National Sea Grant College Program, pending the completion of these processes.
- For Sea Grant to be successful, it requires a location in the federal government that encourages partnerships among academia, government, industry and the public, that allows for the combined use of research, education and outreach, and that focuses on education, the economy and the coastal environment.
- Sea Grant also must be positioned in the government at an adequately high level to enhance its effectiveness and efficiency.

Additional Comments on the Proposed Transfer: Beyond the positions expressed by the Sea Grant Association, I wish to offer several additional comments on the proposed transfer of Sea Grant to the National Science Foundation (NSF).

- • NSF does not have an extensive outreach program in comparison to its research portfolio. A transfer of Sea Grant that would greatly diminish the value of Sea Grant outreach is not in the best interest of the public.
- • Similarly, NSF education activities tend to be generic versus the more hands-on, project-specific approach used by Sea Grant. Again, a transfer of Sea Grant to NSF should not come at the cost of reducing the highly regarded Sea Grant activities in coastal, marine and Great Lakes education.
- • The peer review processes used by the NSF is the gold standard among federal agencies. In the past five years Sea Grant has benefited greatly from incorporating many of the NSF processes into its own review procedures. However, that transfer of knowledge is not predicated on wholesale movement of Sea Grant.
- • A move of Sea Grant to NSF could signal the end of the matching funds that has been so effective at building local partnerships.
- • While many of the investigators supported by Sea Grant are also supported by NSF and vice-versa, there is not a great deal of overlap in the nature of the research supported by each organization.
- • A fundamental strength of Sea Grant is its national network. A Sea Grant program based in NSF but distributed among several divisions would seriously undermine the value of the Sea Grant national network.

- • Sea Grant involves several administrative layers that are not usually found within NSF sponsored programs and centers. Sea Grant could benefit from learning from NSF how to remove some of those layers from NSF while preserving its basic structure.

Each of the above items points toward a careful consideration of any transfer of Sea Grant. Again, because we expect a set of recommendations on marine research and education from the Commission on Ocean Policy, I highly encourage keeping Sea Grant at its present location in NOAA as proposed in HR3389 pending the arrival of those recommendations.

Comments in Regard to the Proposal to Transfer the Coastal Ocean Program to Sea Grant

Situation and Background: In the recently introduced HR3389, a bill to reauthorize the NOAA National Sea Grant College Program proposes to also authorize the NOAA Coastal Ocean Program (COP) within the National Sea Grant College Program.

Sea Grant conducts priority-driven research, transfers scientific results to the public, provides educational opportunities from K-12 to graduate degrees, and conducts successful outreach programs. Sea Grant is a partnership among academia, government, and the private sector, using a combination of research, education and outreach to improve the nation's economy and the coastal, marine, and Great Lakes environment. Sea Grant serves a broad constituency at the state and regional levels, through coordinated activities designed to address national issues by solving problems and creating opportunities in areas such as fisheries, aquaculture, ecosystems and habitat, ocean engineering, coastal hazards, marine biotechnology, urbanization, community development, and marine education.

The COP supports national and regional research programs that utilize multi-disciplinary teams of investigators, including Federal scientists, and fosters long-term collaborations among NOAA, other Federal agencies, academic institutions, and state governments. As with Sea Grant, COP programs are expected to produce products useful to coastal residents and managers of the coastal environment. The issues addressed by COP—fisheries, harmful algal blooms, and cumulative impacts of stressors on coastal ecosystems—are more long term and national and regional in scope.

The Sea Grant Association believes that the following principles must be adhered to if the Coastal Ocean Program is to be integrated with the National Sea Grant College Program:

- Integration of COP with Sea Grant should only occur if both programs are a part of NOAA, U.S. Department of Commerce.
- Integration of COP with Sea Grant must create positive benefits for COP, Sea Grant, and the nation.
 - COP will gain a strong and proven outreach capability it currently lacks.
 - Sea Grant will gain research focused on national and regional needs identified from a national perspective.
 - The United States will gain by having a stronger and more cohesive university-based coastal research and outreach program.
- The integrity of COP must be maintained, including its
 - national and regional coastal and ocean resource issue focus.
 - large-scale, long-term, and multidisciplinary program emphasis.
 - current programmatic commitments.
 - involvement and support of both university and federal scientists, and
 - provision that no matching funds are required.
- The integrity of Sea Grant must be maintained, including its
 - regional, state, and local coastal and ocean resource issue focus on national issues.
 - partnership among academia, governments, and the private sector.
 - structure of an integrated program of research, education, and outreach.
 - focus on the nation's coastal, marine, and Great Lakes economic, environmental, and education needs.

The Sea Grant Association Perspective:

From the Sea Grant Association's perspective, the proposal to integrate COP with Sea Grant within NOAA represents a positive step. The Sea Grant Association recognizes that there are potential advantages of program integration, and is committed to support the principles stated above if integration does occur. These advantages include:

- Authorization of the Coastal Ocean Program. The COP would be codified in law, with clear Congressional intent, through an authorization under the Sea Grant Act and with the common goal of coastal and marine resource conservation, management, and use.
- Enhanced program coordination, planning, and integration. Opportunities for direct coordination between the COP and the rest of NOAA's coastal and marine research efforts—in Sea Grant and throughout OAR—will be enhanced.
- Broadened stakeholder involvement in priority setting. Program integration would provide a common process of setting priorities that will give all stakeholders a role. Combining Sea Grant's user-driven priority-setting process with COP's federal and academic priority-setting process will (a) broaden the base of political and constituent support for both programs through enhanced involvement with a wider constituent base, and (b) enhance the transfer of knowledge to users and to both university and federal scientists through existing extension and outreach mechanisms.
- Improved coordination of university- and government-based coastal and marine science within the federal government. The integration of COP with Sea Grant will enhance the value and contributions of the research and outreach programs within NOAA and the Federal government by promoting greater programmatic interactions with NOAA programs and scientists, promoting interactions with Federal agencies, and providing a basis for participation in broad national projects and studies.
- More efficient delivery of products and services. Program integration will provide for a more efficient management framework, including a combined administrative structure and a common performance evaluation process, thus resulting in reduced administrative costs overall. Sufficient infrastructure and staff must be maintained to ensure that COP and Sea Grant both can function with a high level of impact.

Addition of New Sea Grant Programs to the National Sea Grant College Program

Part of the pending reauthorization legislation seeks the addition of a new Sea Grant program in the western Pacific. Collectively all the Sea Grant Directors welcome the opportunity to consider the expansion of the Sea Grant concept into a new oceanic region. In doing so, the SGA requests following the existing, well-established guidelines for the creation of new Sea Grant programs, which currently exists in PL105-160. Such guidelines assure that the high quality of Sea Grant will be preserved throughout any growth of the program.

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APPENDIX

Sea Grant Impacts

A national compilation of the economic impact of the federal investment in Sea Grant research, education, and outreach programs produced an \$813 million annual impact during 1987. Since then, Sea Grant impacts have continued to be remarkable in economic terms, in the development of human capital for the nation, and in conserving the coastal environment. A few examples are given below for recent years in each of nine major Sea Grant program areas.

Marine Biotechnology

- Sea Grant organized the first systematic research effort in the United States to develop new drugs from marine organisms, and researchers have discovered and described more than 1,000 compounds that may be vitally important as new anticancer, anti-inflammatory, and antimicrobial agents. Regulatory agencies and pharmaceutical companies are now testing some of these compounds.
- Patents and a new company are the result of Sea Grant research, which led to the development of industrial uses for crab waste derivatives. This is one step in solving a huge processing waste problem along the mid-Atlantic and Southeastern U.S.

Aquaculture

- Sea Grant research and extension efforts have contributed to the growing of hybrid striped bass in ponds. In just 10 years, a small demonstration project has led to an industry that produces 10 million pounds of fish valued at \$25 million annually.
- The development of new filter designs has led to a patent and completely automated low energy using systems now found throughout the aquaculture industry. A new company based on the technology now generates over \$1 million in annual revenues.

Coastal Communities and Economies

- Small cities in the Pacific Northwest developed and implemented revitalization plans for deteriorating waterfronts. In the wake of timber-related industrial dislocations and salmon fishing closures, Sea Grant guidance helped obtain \$1.5 million in state and federal grants for one city to use for street improvements, building a public boat landing and plaza, and museum improvements. Riverfront revitalization also has attracted a new \$5 million private development and an historic tall ship moored at the public dock.
- Sea Grant's efforts to develop underwater preserves have significantly boosted the economy of a wide range of businesses in Great Lakes coastal communities. New diving activity provided an economic stimulus of at least \$1.5 million over a two-year period for small towns near the preserves.

Urban Coasts

- Sea Grant held workshops and published best management practice manuals that led General Motors to utilize less expensive "soft" engineering techniques in the development of its multi-million dollar, 3/4-mile long urban river promenade in the heart of Detroit, thus providing substantial savings to the project while simultaneously conserving natural resources.
- After being provided with the result of Sea Grant studies on the effect of sewage effluents on coastal ecosystems, Orange County, California, officials were able to receive secondary treatment waivers under EPA's stringent water quality requirements, saving taxpayers as much as \$50 million a year during a 30-year period that would have been spent on additional treatment facilities.

Coastal Hazards

- Sea Grant recommendations led to revisions of North Carolina's hurricane resistant building code in 1986 that increased the required minimum depth of foundation pilings for erosion prone coastal buildings. During Hurricane Fran in 1996, 200 of the 205 newer oceanfront houses built to the "Sea Grant" standards survived the hurricane with minimal foundation damage. In comparison, more than 500 older oceanfront houses, in the same area, were destroyed.

- Computer models developed in California are now using an existing wave-monitoring network to develop better planning of coastal structures, saving thousands of dollars annually on prior site-by-site studies.

Ecosystems and Habitats

- Sea Grant programs have reduced the cost and adverse effects of clean-up efforts for large power plants in areas infested with zebra mussels by focusing on times when larvae are most abundant, identifying effective and inexpensive treatments, and minimizing the frequency and duration of treatments.
- Quick-testing field probes are being developed to identify harmful algal blooms in coastal waters. This will allow managers to respond more effectively to determine and reduce health risks to both humans and animals.

Fisheries

- Sea Grant research has shown that visually modifying salmon gillnets and adjusting fishing schedules can reduce entanglements of seabirds. These findings, coupled with an observer program coordinated by Sea Grant, prevented the closure of the Puget Sound sockeye salmon fishery, saving hundreds of jobs and millions of dollars in the regions' economy.
- Sea Grant was instrumental in conceptualizing and starting the teaching of marine safety and survival to over 4,000 fishermen in 65 Alaskan ports. According to Coast Guard records, fatalities have been reduced by 50% over ten years.

Seafood Science and Safety

- Sea Grant conceived and guided the formation of the "Seafood HACCP Alliance," an intergovernmental agency partnership with industry and academia. By 2001, the Alliance's programs reached 5,000 U.S. processing plants, 6,000 importers and international suppliers, and 14,000 employees and regulators with training on new seafood handling and processing techniques. Seventy-seven percent said they could not have complied with FDA regulations without the training. It has been estimated that the program has prevented 20,000 to 60,000 seafood-related illnesses a year, thereby saving as much as \$115 million annually
- Rapid and sensitive methods to detect contaminated seafood have been developed and more are under study. Ultimately, consumers can confidently buy and consume safe, wholesome seafood. These and other scientific methods are taught annually to about 60 representatives of key processors and importers of shrimp and seafood from foreign sites into the U.S., insuring safe seafood for U.S. consumers.

Education and Human Resources

- In the past three decades, the National Sea Grant College Program has supported more than 12,000 undergraduate and graduate students in disciplines ranging from oceanography to engineering to economics. In addition, 479 graduate students have completed the year-long Knauss Marine Policy Fellowship in Washington, D.C. Many of these students are now U.S. leaders in industry, government, and academia.
- By 2000, the two-week Operation Pathfinder courses in marine sciences trained over 700 teachers, who have in turn trained 14,000 other professionals in 30 states and seven territories. These teachers have the potential to educate 5.5 million K-12 students during the next five years about the world's coastlines and oceans and man's use and conservation of them.