Sea Grant

National Sea Grant College Program

Science Serving America's Coast

- Three Decades of Impacts -

The National Sea Grant College Program is committed to enhancing the practical use and conservation of coastal, marine, and Great Lakes resources to create a sustainable economy and environment. Created in 1966, it is a partnership program among the National Oceanic and Atmospheric Administration, the nation's universities, and the nation's citizens, businesses and governments. Faculty and students at over 300 universities have participated in Sea Grant during the last five years.

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. Some of these compounds are now being tested by regulatory agencies and pharmaceutical companies.
- 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. Industrial and municipal water users, shoreland property owners, boaters, agencies, students, teachers and researchers continuously access the data from a web-site.
- 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.

Sea Grant Association

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