

INVASIVE SPECIES

A HUGE PROBLEM IMPACTING AQUATIC ECOSYSTEMS, THE ECONOMY AND HUMAN HEALTH

Aquatic invasive species may constitute the largest single threat to our coastal ecosystem, our coastal economy and human health in the coastal region. All four coasts—East, West, Gulf and Great Lakes—and the majority of the interior of this country have been severely impacted by aquatic invasive species. Congress passed the Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) in 1990. This Act was reauthorized and strengthened by the National Invasive Species Act in 1996, and by the recently introduced National Aquatic Invasive Species Act in 2003. Yet, since 1990, an average of one new invader has been entering the Great Lakes region annually and other coasts are experiencing similar problems. The National Sea Grant College Program is unsurpassed in its efforts to address this problem.



sance Species Report: An Update on Sea Grant Research and Outreach Programs, which documents work on 22 species in 24 states, is the largest of its kind. Still, with more than 160 invasive species reported from the Great Lakes and about 235 from San Francisco Bay, much more needs to be done.

■ Sea Grant scientists hosted the first zebra mussel research conference in 1990 and led the way in the development of research, education and outreach strategies to address all invasions. These strategies include gathering information for all invasive species on their biology/life history, ecosystem effects, socioeconomic impacts, control and mitigation, and strategies to prevent future introductions and the spread of species that are already here. Our initial zebra mussel research conferences have expanded into International Conferences on Aquatic Invasive Species (the 12th in 2003), and Sea Grant is now also supporting International Conferences on Marine Bioinvasions (the third in 2003).

■ Sea Grant research results have been used to control current invasions, minimize their impacts, reduce the cost and environmental impact of monitoring and control measures, prevent future invasions, and even completely eliminate invading species.

■ Using results from Sea Grant research, Sea Grant programs have been instrumental in the development of state invasive species management plans on every coast and the development of Hazard Analysis and Critical Control Point (HACCP) programs to identify and correct practices that could present a risk of invasive species introduction. This HACCP program is now in use in fish hatcheries in many states and by the U.S. Fish and Wildlife Service.



Why Sea Grant?

No program is better suited to address this problem than Sea Grant, which has programs in every coastal state. 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.



Sea Grant's Impact

■ Sea Grant has led the way in addressing the aquatic invasive species problem including research, education and outreach efforts. Our 2000 report, *Aquatic Nui-*

■ Sea Grant research and outreach demonstrated that education programs on invasive species significantly change human behavior and can reduce the chance that people will introduce or spread invasive species. Armed with this information and results from many outstanding Sea Grant research projects, Sea Grant educators and communication/extension specialists have created:

- critically acclaimed and award-winning radio and television documentaries and educational materials for teachers, students, the shipping industry and the public; a National Aquatic Nuisance Species Clearinghouse serving industry, resource managers, researchers and the public as a center for information transfer; a Sea Grant Nonindigenous Species Web Site (SGNIS) where more than 1.7 million files are downloaded by users in government, academia and industries from 117 nations annually; and many specialty publications and web sites for specific invaders in specific locales. Together these programs give Sea Grant an unsurpassed



education and outreach capability in the invasive species arena and clearly have saved this country millions, and possibly billions, of dollars.

- Sea Grant research has documented the significance of the Invasive Species threat by observing that invasive species populations can explode to 30,000 per square meter of bottom within a year of their discovery, can reduce the size and economic value of native fish stocks by more than 50 percent, and can change food chains and thereby increase the likelihood that humans will be exposed to toxic substances.

Expectations: 2004-2008

Since NANPCA was passed in 1990, the Great Lakes region has averaged at least one new aquatic invader per year. Other regions have similar experience and some scientists suggest the rate of introductions will increase in the future. Clearly the door to invaders has not been closed. Recent studies suggest that invasive species are a leading threat to endangered species and the number one problem facing our coastal, ocean and Great Lakes ecosystems. Much more research is needed to: understand the biology of the invaders to develop effective means of prevention and control, under-

stand their impacts on aquatic systems and our economy, identify safer and more effective control strategies, and identify more effective and less expensive strategies to prevent new introductions. All agencies should make use of Sea Grant's tremendous outreach and education capabilities to assure that the most recent research results are immediately put to use by coastal decision makers and managers. Sea Grant, with its links to government, academia and the private sector, should lead the way in addressing and solving the invasive species problem.

Sea Grant is requesting Congress to fully fund its Invasive Species authorization for FY 04 in the amount of \$2.8 million.



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