

Sea Grant's Role in Resilient Communities and Economies

Coastal counties support over 45% of the U.S. gross domestic product, yet these same counties are highly vulnerable to challenges associated with natural and man-made disasters, including the devastating impacts of Hurricane Sandy, the Deepwater Horizon oil spill, and the growing strain on coastal infrastructure from sea-level change. Resilient communities are made up of prepared residents and businesses that can reduce the impacts of risks to lives and property, allowing a quicker return to normal. Resilient communities also have living coastal resources such as mangroves, oyster reefs, and salt marshes that buffer waves and protect the shoreline. Sea Grant researchers help to answer urgent new questions with science-based solutions to increase coastal resilience. Sea Grant's locally-based extension agents live in the communities they serve. The agents' trusted reputations allow them to be effective liaisons within local governing bodies and provide access to isolated populations, even in the aftermath of a disaster.

Resilient Communities and Economies Focus Area

Sea Grant's hazards activities are focused within three areas: helping communities and individuals understand the risks associated with living, working, and doing business along the coast; building community capacity to prepare for, and respond to hazardous events; and helping communities respond effectively when events occur. Some recent highlights include:

- **Georgia Sea Grant** helps coastal communities take advantage of over \$5M in flood insurance discounts through the National Flood Insurance Program Community Rating System.
- **Connecticut Sea Grant** is a partner in the new Connecticut Institute for Resilience and Climate Adaptation, offering trainings and developing practical solutions to help communities and citizens adapt to climate change.



Planting along 200 feet of shoreline in New Orleans' City Park. Image: Virginia Sea Grant

- **Maryland Sea Grant** extension specialists helped oyster growers secure \$731,000 in low-interest loans to invest in new aquaculture operations.
- **Sea Grant Great Lakes Social Science Network** helped the National Weather Service (NWS) improve communication between forecasters and emergency managers by assessing the new NWS Impact-Based Warning Tool.
- **Alaska Sea Grant** and partner agencies acted quickly in response to a coastal bird die-off from avian cholera and provided timely advice to residents who depend on marine wildlife for food.



Sea Grant has extension agents in every coastal and Great Lakes state and U.S. territory.

About Sea Grant:

The Sea Grant model integrates research, outreach, and education for science with real world impacts. To share and explain new research discoveries, engage citizens in decision-making processes, and empower stakeholders to address national, state, and local issues as they emerge, Sea Grant takes a multi-faceted approach to outreach through programs of education, extension, and communication. Specialists in each of these areas translate research into usable information and products for many audiences, ensuring that scientific information is delivered to those who need it, and in ways that are relevant.

Sea Grant experts implement national priorities at the local level, while also identifying citizens' needs in order to inform state and national research agendas. This two-way flow of services and information ensures that Sea Grant solutions meet demonstrated needs, help support businesses, and enable policy makers to make balanced, well-informed decisions.

To learn how to work with Sea Grant on climate adaptation and other projects, visit our website at seagrant.noaa.gov and explore the **National Sea Grant Resilience Toolkit** under "What We Do".

SCIENCE SERVING AMERICA'S COASTS

National Sea Grant College Program

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Investments in Resilient Coastal Communities

Sea Grant supports over 300 projects around the nation with a federal grant investment of \$15.9 million. Through partnerships, Sea Grant Programs supplement the federal funding with an additional \$7.9 million in non-federal matching funds, bringing the total investment to more than \$23.8 million. These grants support research, planning, and outreach projects that help coastal communities be more resilient to a range of natural hazards, water quality challenges, severe weather, energy needs, and the effects of climate change.

The funding is to support four main priorities:

- Develop coastal storm mapping and modeling tools to predict coastal flooding and erosion, as well as research into long-term impacts of these storms
- Develop ecosystem modeling tools to help coastal communities forecast harmful algal blooms and bacterial outbreaks, enabling community preparedness and resilience
- Research to improve community understanding of ocean acidification and other climate change-related effects on coastal communities, economies, fisheries and ecosystems.
- Research to how best to take into account community values for coastal ecosystems during planning and development of renewable energy projects.



King tides in Marina Del Rey. Image: Phyllis Grifman, USC Sea Grant.

Research to Build Resilient Communities and Economies

Sea Grant’s resilience research focuses on identifying potential hazards or threat, understanding the causes of and responses to these threats, and developing tools to minimize impacts on coastal communities and economies. Some recent highlights include:

- **Hawaii Sea Grant** funded research led to a paper in *Nature* that projected the timing of climate departure from recent variability. The research was done in collaboration with a University of Hawaii class, which provided students the opportunity to tackle real-world problems.
- **Washington Sea Grant** researchers developed new imaging technology for monitoring harmful algae and a new model for predicting when and where some will become harmful algal blooms, which will increase the ability to prepare for them.



Harmful algal bloom in Lake Erie. Image: Ohio Sea Grant.

- **MIT Sea Grant** researchers developed a sensor that addresses a major gap in technologies available for changes in water associated with key non-point sources of nutrients in the coastal zone.
- **Minnesota Sea Grant** research is revealing that public beaches in the Great Lakes may be closed more than necessary as a result of monitoring for *E.coli* and enterococci without knowing where the organisms came from.
- **Connecticut Sea Grant, New Jersey Sea Grant, and New York Sea Grant** were awarded a \$1.8M Coastal Storm Awareness Program grant for social science research to improve public understanding and awareness of natural hazards and associated risks.



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