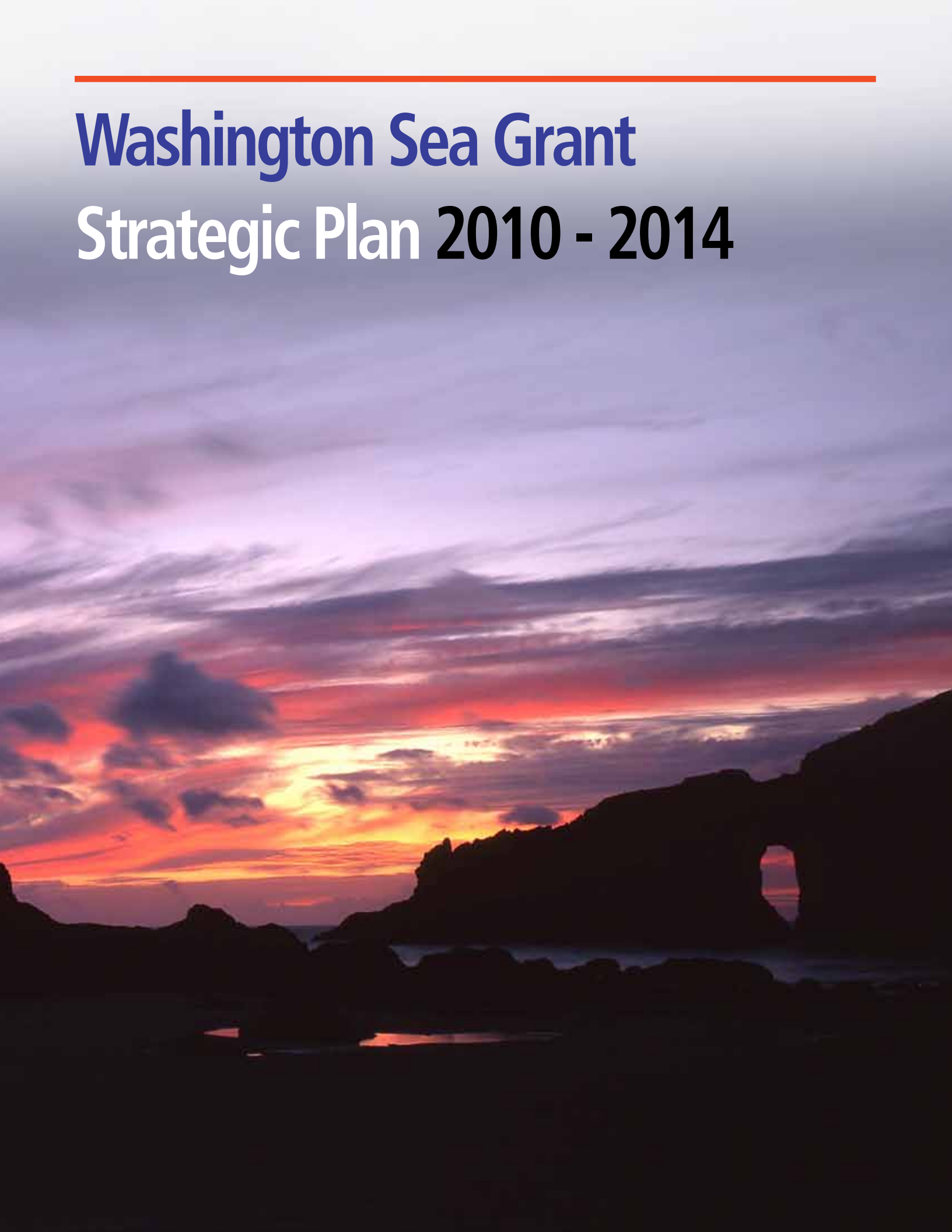


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# Washington Sea Grant

## Strategic Plan 2010 - 2014



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## I. Summary

For more than 40 years, Washington Sea Grant (WSG) has served the Pacific Northwest and the nation by funding marine research and working with communities, managers, businesses and the public to strengthen understanding and sustainable use of ocean and coastal resources. Based at the University of Washington, WSG is part of a national network of 32 Sea Grant colleges located in every coastal and Great Lakes state and in Puerto Rico. The Sea Grant program is administered by the National Oceanic and Atmospheric Administration (NOAA) and funded through federal-state partnerships.

WSG operates within an extremely diverse and productive ocean and coastal region. Washington's ocean coast is an area of low population densities, tribal lands, small ports and natural resource-based economies. By contrast, larger communities with diversified urban economies rim the densely populated Puget Sound basin. Given these differences, separate state governance approaches have developed for Puget Sound and the Washington coast. WSG is involved in implementing the Puget Sound Partnership's Action Agenda to restore and protect Puget Sound. WSG is also a member of the State Ocean Caucus, established to implement an action plan for improving protection and management of Washington's ocean and coastal resources. On a larger regional scale, WSG is actively collaborating with NOAA's Western Region, the six West Coast Sea Grant programs and the West Coast Governors' Agreement on Ocean Health.

WSG organizes its activities around four core programs: Research, Outreach, Education and Communications. Research sponsored by WSG combines scientific excellence and a focus on problems and opportunities faced by ocean users and managers in Washington and the Pacific Northwest. Outreach staff work individually and in teams to provide technical expertise and connect marine and coastal constituents to the best scientific information available. The WSG Education program provides opportunities to graduate students for academic growth and to students of all ages to improve understanding of marine ecosystems. WSG Communications translates information on the ocean and coastal environment for use by agencies, organizations, businesses, schools and individuals. Integration of these four core programs is key to effectively carrying out WSG's mission.

Through the national and local strategic planning process, four interrelated topics have emerged as critical program areas for WSG for 2010-2014.

- Living Marine Ecosystems: understanding the marine environment and conserving marine resources while providing for sustainable use and ensuring healthy populations in the future.
- Ocean and Coastal Environmental Health: assessing and addressing the effects of human activities, including contamination, habitat loss and aquatic invasive species, to protect and maintain ecosystem health.
- Changing Oceans and Coastal Communities: providing support to coastal communities for economically sound and environmentally sustainable management and development.
- Ocean Literacy and Workforce Capacity: educating students of all ages and strengthening workforce capacity.

This strategic plan details the goals and strategies for each of the four program areas. It identifies critical regional needs and establishes WSG's direction for the next five years. Finally, it articulates guidelines for program planning, implementation and evaluation, including work planning and reporting and the process for soliciting, evaluating and selecting competitive research projects.

## II. Vision, Mission and Values

### Vision

Washington Sea Grant envisions collaboration at all levels — local, state, regional, national and international — to restore and protect a healthy marine environment. Managers rely on science-based knowledge in making decisions that affect marine ecosystems. Communities prosper socially and economically from the benefits these ecosystems provide. Individuals take active roles in conserving and nurturing the natural marine environment for themselves and for future generations.

### Mission

WSG is dedicated to improving the translation of research and scientific information into knowledge for use in the marine environment. WSG serves communities, industries and the people of Washington state, the Pacific Northwest and the nation by:

- identifying and addressing important marine issues;
- providing better tools for management of the marine environment and use of its resources; and
- initiating and supporting strategic partnerships within the marine community.

Through research, education, outreach and communication, WSG helps sustain economic development while encouraging ecosystem-based approaches to management of Washington's ocean and coasts.

### Values

To accomplish its mission and achieve its vision, WSG adheres to a set of core values, focusing on excellence, innovation and societal impact. It seeks to forge tools, foster insights and build capacity for sustainable management and use of Washington's marine resources. In maintaining a portfolio of high-quality projects and activities, WSG balances support for proven researchers with investments in promising new investigators and addresses emerging issues as well as those of long-standing significance. The program emphasizes interdisciplinary approaches and activities that complement or leverage efforts of other ocean and coastal organizations. WSG builds credibility among user groups by serving as an unbiased broker of scientific information, but does not act in a regulatory role or as a policy advocate.

Partnerships are a cornerstone of the Sea Grant model. The WSG affiliation with the University of Washington (UW) provides ocean and coastal constituencies with access to important marine research, while helping the UW identify and address pressing local environmental problems. Through its partnerships within the UW and with the region's other leading research universities, other NOAA programs, tribes, nongovernmental organizations and public agencies at the local, state and federal levels, WSG accomplishes far more than it could independently. Such partnerships offer more than the sharing of limited financial resources and have proven to be highly effective in solving problems and creating opportunities. They also provide access to audiences, resources and opportunities that WSG might not otherwise reach. By working cooperatively with government agencies, participating in community projects and interacting with industry groups, WSG staff becomes aware of changing issues and understands better how to respond to stakeholder needs.

### III. Program Setting

The state of Washington is located within one of the world's most productive ocean and coastal regions, providing a bounty of resources associated with fisheries, tourism, alternative energy and habitat for threatened and endangered species. Residents and visitors draw deep cultural, aesthetic and spiritual benefits from the ocean and its surroundings. Washington coastal communities share many common economic, social and cultural elements: reliance on coastal ports, a need for diversified economies and a strong connection to natural resources. The state serves as a gateway to Alaska and is interconnected with other parts of the Pacific Rim.

Washington's ocean environment is strongly influenced by the colder waters of the southward-flowing California Current and is characterized by temperate marine flora and fauna. Rocky northern shores support prolific assemblages of marine animals and plants. The southern coast contains three of the largest coastal estuaries along the West coast, supporting rich eelgrass beds and mudflats and providing valuable nursery grounds for fish and shellfish. The plume of the Columbia, one of the continent's largest rivers, varies seasonally and exerts influence over a broad area at the Washington-Oregon border.

Washington's ocean and coasts also are characterized by high interannual variability due to such climatic events as the El Niño Southern Oscillation. This variability, along with the effects of climate change, has significant impacts on the health of estuarine, nearshore, continental shelf and offshore environments. Seventy percent of Washington's 6.5 million residents live in the state's coastal counties, notably influencing regional environmental quality.

Statewide, the marine sector employs almost 150,000 residents. Thirty-three of the state's 39 counties contain public port districts, which handle almost 7 percent of the country's exports and imports. A substantial part of the state's \$11-billion-a-year tourism industry is based in coastal areas. Washington's commercial fishing industry is the largest of the Pacific states, with much of Alaska's commercial fleet based in Seattle. Commercial fishery landings in the state totaled 206,950 metric tons in 2007, worth more than \$214 million. Washington is the leading producer of farmed bivalve shellfish in the United States, producing about 90 million pounds, worth almost \$100 million, annually.

The 29 federally recognized Indian tribes or nations in Washington serve as co-managers for coastal and marine resources and play an important cultural role. Individual tribes and intertribal councils conduct research, regulate fisheries and work government-to-government with state and federal agencies. The Northwest Indian Fisheries Commission acts as a central coordinating body for its 20 member tribes and provides support services, enabling the tribes to efficiently use the limited federal funding provided for their natural resource management activities. Involving four member tribes, the Columbia River Inter-Tribal Fish Commission plays a similar role for the Columbia Basin.

Coastal Washington is a study in contrasts — geographically, ecologically, socially and culturally. Shorelines vary extensively, from Puget Sound's protected deep-water fjords and inlets to the outer coast's mixture of islands, rocky cliffs and headlands, cobble and boulder fields, beaches and estuaries. Small fishing towns, tribal lands and misty rain forests distinguish Washington's coast. It is a region of low population densities, small ports, natural resource-based economies and multigenerational fishing families and has limited access to goods, services and infrastructure. The northwestern part of the state, including adjacent marine areas, is largely under federal protection through the Olympic Coast National Marine Sanctuary and the Olympic National Park and Olympic National Forest system.

By contrast, the Puget Sound Basin is home to about 3.5 million people, more than half the state's population. By 2025, an estimated 5.2 million people will populate the area. The Puget Sound region is characterized by diversified urban economies and is home to the ports of Seattle and Tacoma, which are among the largest container ports in North America. The region also faces significant concerns about polluted waters, habitat loss and declines in native species.

Given differences in habitats, population densities and resource issues, separate state governance approaches have developed for Puget Sound and the Washington coast. In 2005, Washington's governor established a working group to evaluate outer coast resources and develop an action plan for improving their protection and management ([www.ecy.wa.gov/programs/sea/ocean/](http://www.ecy.wa.gov/programs/sea/ocean/)). The Washington State Ocean Caucus evolved from this process and is currently working to implement the action plan. The Intergovernmental Policy Council provides a forum for the four coastal treaty tribes and state and federal governments to discuss management issues and coordinate activities within the Olympic Coast National Marine Sanctuary.

In 2007, the state established the Puget Sound Partnership as an agency charged with protecting and restoring Puget Sound and its diversity of life, while strengthening its role in the regional economy. The Partnership has worked with local decision-makers, tribal and business leaders, scientists, environmentalists and the public to identify priorities and develop an action agenda ([www.psp.wa.gov/](http://www.psp.wa.gov/)) for integrating the work of local, state and federal governments with private sector and citizen efforts to protect and restore Puget Sound.

Recent regional approaches have also been developed to protect coastal and marine resources while preserving and bolstering the region's ocean economy. In September 2006, the three West Coast governors signed *The West Coast Governors' Agreement on Ocean Health* ([westcoastcoceans.gov/](http://westcoastcoceans.gov/)), a groundbreaking agreement to protect and manage ocean and coastal resources along the entire Pacific coast. In 2007, Sea Grant programs in Oregon, Washington and California began developing a regional marine research and information plan to help the Pacific region move toward an ecosystem-based approach to marine resource management ([www.wsg.washington.edu/regional\\_plan.html](http://www.wsg.washington.edu/regional_plan.html)).

## IV. About Washington Sea Grant

Established in 1968, Washington Sea Grant began as an experiment in effective investment of federal resources to meet local needs. In 1971, it became one of the first four programs designated nationally as a Sea Grant College. Today, WSG is part of a national network of 32 Sea Grant college programs administered by the National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce. This network provides a strong national system of marine research, outreach and education programs in every coastal and Great Lakes state and in Puerto Rico, with an additional project in Guam.

WSG is located at the University of Washington (UW), one of the largest research universities in the nation and a leader among public institutions in receipt of federal research support. WSG is one of 11 core units of the College of the Environment and draws on the college's academic strengths in fisheries, marine science, engineering and policy. WSG also works with numerous other colleges and departments within the UW system and with other institutions of higher education throughout the Pacific Northwest.

As a state entity, WSG is involved in major initiatives targeting Puget Sound and Washington's outer coast. WSG is working with the Puget Sound Partnership to provide technical assistance to user groups and establish programs that involve citizens in the collection of scientific data in support of Puget Sound research. WSG also is a member of the State Ocean Caucus and is involved with other state agencies in implementing an action plan to enhance management of Washington's ocean and outer coast.

On a regional scale, Sea Grant programs in Washington, Oregon and California are collaborating with NOAA's Western Region (NOAA West) in its efforts to better integrate and coordinate the agency's ongoing activities and communications in the nine Western states. The West Coast Sea Grant programs also are engaged with federal and state partners in actions to implement the West Coast Governors' Agreement on Ocean Health, particularly identification of regional research priorities. Recently, all six Pacific Sea Grant programs (Alaska, Washington, Oregon, University of Southern California, California and Hawaii) met to discuss collaboration and revitalization of the Pacific Sea Grant College Program.

Nationally and internationally, WSG activities contribute to meeting the goals of the national Sea Grant strategic plan. In this way, local needs receive national attention and national commitments are fulfilled at the local level. Issues are addressed through participation in national strategic initiatives and through cooperative efforts among interested state programs. For example, the Washington, Oregon and Southern California Sea Grant programs are collaborating with Florida and Great Lakes programs and a Canadian agency on a project to assess pathways for introduction of aquatic invasive species through classroom specimen releases. On an international level, WSG applied research is reducing the impacts of fishery operations on seabird populations in the Southern Hemisphere.

At all levels, WSG relies on an engaged and active advisory committee that provides ideas, perspective, feedback and direction on implementation of the WSG mission. Membership of the WSG Advisory Committee is representative of program partners and stakeholders and is listed online at [www.wsg.washington.edu/about.html](http://www.wsg.washington.edu/about.html). WSG works with a broad range of organizations concerned with the use and conservation of the marine environment and its resources and helps support the needs of an even larger set of stakeholders. Stakeholders include: the faculty, staff and students in departments and colleges of the UW and other institutions of higher learning; NOAA and other state and federal agencies; local and tribal governments; nongovernmental organizations; K-12 administrators, schools, teachers and students; industries and businesses; the news media; and the public. In 2007, almost 700 partners and stakeholder groups were involved in WSG programs and activities.

### Program Organization

WSG organizes its activities around four core programs: Research, Outreach, Education and Communications. Integration of these four core programs is key to effectively carrying out WSG's mission. Spending on core programs is depicted in Figure 1.

*Research* sponsored by WSG combines scientific excellence and a focus on problems and opportunities that ocean users and managers face. It maximizes the productive use of marine resources while preserving and, if necessary, helping to restore the essential qualities of a healthy marine environment. From the discovery of rare deep-sea glass sponge reefs off the coast of Washington to the design of habitat-friendly seawalls on Seattle's urban waterfront, WSG's portfolio includes a mix of basic and applied research. In 2008, WSG had 36 ongoing research projects involving 48 investigators, 13 research organizations and about 60 graduate and undergraduate students.

*Outreach* efforts are a central component of WSG Marine Advisory Services (MAS). Outreach staff works individually and in teams, reaching out to marine and coastal constituents with program-generated information. The MAS network of campus- and community-based specialists carries out research and shares university resources and their own expertise with the public and state and local user groups. MAS specialists work in a broad range of topic areas, including aquaculture, fisheries, water quality, marine operational safety, aquatic invasive species, coastal economic development, shoreline and coastal land use, oil spill prevention and marine technology training.

The WSG *Education* program provides learning opportunities for students of all ages to improve ocean literacy and maintain a vibrant marine-related workforce in Washington and the Pacific Northwest. The program presents undergraduate, graduate and postdoctoral students with opportunities to compete for many

different fellowship and internship programs that will expand their horizons and enhance future careers. WSG also supports informal educational programs for K-12 students including an annual science camp and the region's ocean sciences competition for high-school students. It works closely with educators and technical experts to disseminate information on marine resources and the environment. Many WSG research projects involve the training of undergraduate and graduate students, as well as postdoctoral investigators.

As unbiased brokers of information, WSG *Communications* develops products to help agencies, organizations, businesses, schools and individuals better understand and manage marine resources and the environment. WSG Communications keeps the public informed about current research and technology and promotes the understanding of marine issues among industry, educators and marine resource users. The Communications office maintains a publications database, produces and distributes informational brochures, pamphlets and books, creates public exhibits and responds to media inquiries about Sea Grant activities and research. It maintains the WSG Web site and produces publications and other materials in support of all the other WSG program areas — helping translate technical and scientific findings into useful information.

**2008 Washington Sea Grant Program Elements**

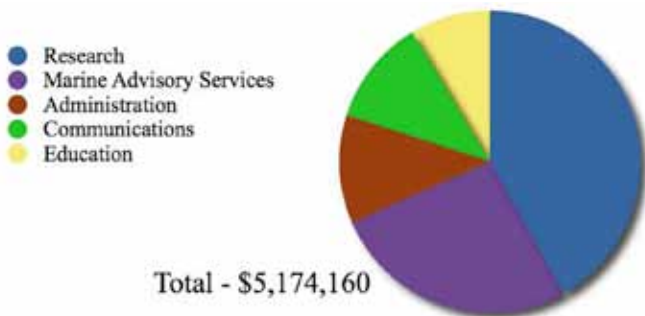


Figure 1. WSG spending by core program.

**Opportunities and Challenges**

Many internal and external factors — identified in part by staff, the Advisory Committee and stakeholders during the strategic planning process — affect WSG's performance as an organization. WSG is aided by a public that increasingly values the marine environment and programs that address marine problems. Regionally, WSG involvement with the Puget Sound Partnership, Puget Sound State Caucus, Washington State Ocean Caucus, NOAA West, the Northwest Straits Commission and West Coast Governors' Agreement on Ocean Health have provided new opportunities for WSG services and expertise.

WSG's range of capabilities, enhanced by a diverse and expert staff, gives the program the flexibility to engage in and respond

to key marine issues and problems in the region. The program has earned credibility with its constituencies through its 40-year track record of accomplishment and by carefully adhering to its important role as a translator and neutral broker of scientific information. It also gains recognition and appreciation through its ability to connect one of the nation's foremost research universities to local communities and user groups.

Some factors, however, challenge WSG's ability to carry out its mission. One consideration is the rapidly evolving nature of ocean and coastal issues and the demographics of marine user groups. WSG must work continuously to understand growing and diversifying constituencies, track and evaluate program impacts and assess and adjust priorities to meet changing coastal needs.

Unlike the home institutions of many Sea Grant programs, UW is not a land grant college. While the UW is among the nation's premiere institutions in the marine sciences, its public outreach programs are limited and the UW lacks a county-based extension infrastructure. As a result, WSG is an unusual program within the university and must work to ensure that potential investigators, partners and constituents are aware of its applied research and outreach focus. Although the situation has created some challenges for public recognition and understanding of WSG, it also has provided incentives for development of a network of strong partnerships and cost-effective operation to enhance the delivery and reach of WSG services.

Another continuing challenge is posed by funding constraints for the program at both federal and state levels. Constituent interviews during the strategic planning process indicated strong support for ongoing WSG activities and offered a number of suggestions for new initiatives and expanded operations. However, as marine environmental problems have multiplied over the past decade, program revenue has been stagnant (Figure 2). Federal support has declined in spending power and WSG has become increasingly reliant on state and other sources of income to maintain its programs.

**Funding Trends**

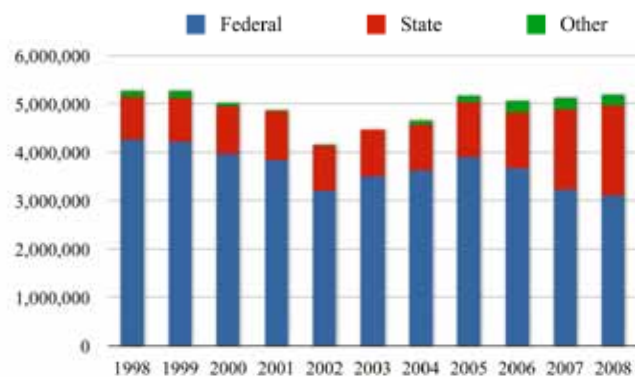


Figure 2. Decreasing federal funding over the past decade has forced WSG to rely more on funding from state and other sources to carry out its mission.

## V. Critical Program Areas

Through the national and local strategic planning process, four interrelated topics have emerged as critical program areas for WSG for 2010-2014. They respond to issues of major importance to WSG constituents and partners, including NOAA, the National Sea Grant Office, research scientists and WSG stakeholders throughout the Pacific Northwest. They also reflect ongoing WSG programs and the expertise of WSG specialists. These critical program areas are compatible with focus themes identified in the national Sea Grant strategic plan, *NOAA National Sea Grant College Program Strategic Plan 2009-2013: Meeting the Challenge* ([www.seagrant.noaa.gov/other/ppe.html](http://www.seagrant.noaa.gov/other/ppe.html)), and their alignment is depicted in Table 1.

In each of the four areas, WSG has identified goals to pursue and strategies designed to take advantage of the organization's strengths in integrated research, outreach, education and communication. The goals are broad and speak to the need to understand, use, conserve or otherwise interact with the region's natural resources and environment.

### Living Marine Ecosystems

Washington coastal and marine ecosystems provide diverse habitats that support a wealth of living marine resources, including numerous species of fish, crab, oysters and other wildlife. Northern coastal islands support one of the largest concentrations of seabird nesting sites in the contiguous United States. Thirty marine mammal species inhabit the state's marine waters. Seven salmonid species spawn in coastal river systems. In 2007, WSG researchers discovered glass sponge reefs, once thought to be extinct, in deep waters near Grays Canyon.

Washington's economy and culture are closely linked to its rich marine resources. Top sectors in the state's ocean economy are tourism and recreation, marine transportation and living marine resources — sectors that rely on and affect marine ecosystems. Seafood-related activities traditionally have been central to the cultures and economies of both tribes and coastal communities. In 2006, the estimated harvest value from tribal fisheries was \$48.9 million, excluding ceremonial and subsistence use. The Washington shellfish industry currently produces about 98 percent of Pacific Coast region oysters. Washington also is home to much of the Alaska fishing fleet, the largest fishing enterprise in the nation, and provides a large part of the fleet support structure.

Today, environmental change coupled with increasing population demands is putting unprecedented pressure on Washington's living marine resources. Pacific Northwest losses of salmon runs and other marine population declines mirror those in other parts of the country. As marine ecosystems change, understanding their structure, function and key processes becomes increasingly important. At the same time, some marine businesses (such as aquaculture) have become more economically attractive and increasingly controversial.

The situation has widespread implications for how people live and do business and also highlights interactions within systems. Through research and outreach, WSG helps managers, scientists, marine users and the public understand and develop approaches to ensure productive and resilient marine resources that provide the ecosystem services relied on by coastal communities.

### Ocean and Coastal Environmental Health

The oceans are subject to a multitude of natural and anthropogenic stresses, including water and airborne contaminants, pollution from stormwater runoff and habitat modification. In addition to direct impacts on marine and coastal resources, such stressors may have broader effects on the health of marine and coastal ecosystems, creating harmful conditions that affect biodiversity and trophic dynamics, with potential implications for human society, health and safety. For example, harmful algal blooms have posed serious human health threats to Washington's residents and visitors and severely affected numerous coastal industries. High levels of toxins in state razor clam and Dungeness crab populations have resulted in human illness and periodic harvesting closures, causing economic losses in the tens of millions of dollars, including reduced sales, diminished tourist activity, unemployment and bankruptcies.

Algal blooms are one of the many stressors, and other prominent near-term concerns include climate change, habitat destruction, aquatic invasive species, hypoxia and ocean acidification. WSG has supported research for decades on the dynamics of many persistent stressors and has the flexibility to respond to new threats emerging from a continually evolving mosaic of natural and anthropogenic factors. The complexity and interconnectedness of these stressors underscore the need for ecosystem-based management approaches and a strong and comprehensive scientific basis for ocean and coastal decision-making. Information on the intensity and distribution of human activities and impacts on marine and coastal ecosystems, including socioeconomic factors, can be synthesized to provide tools for resource conservation, management and informed planning, education and research.

Degradation and loss of marine, coastal and estuarine habitats place a significant stress on ecosystems. Past development activities have significantly altered the natural structure, functions, processes and aesthetics of Washington's shorelines. Public interest and support for habitat protection have grown, but new approaches are needed, including protection of existing shoreline, enhancement and rehabilitation of already modified urban habitats, and development of strategies to inform local restoration projects.



## Changing Oceans and Coastal Communities

Washington has the fourth largest state ocean economy, worth more than \$8 billion (*noep.mbari.org/*) in 2004, and seven out of 10 Washington residents live in the state's 15 coastal counties. Over the past 150 years, the population of the Puget Sound region has grown from 50,000 to 3.5 million people. Many urban communities have developed rapidly, adding stress to local coastal ecosystems. These communities could benefit from more careful environmental management and planning and adopting low-impact development requirements. At the same time, some smaller coastal communities in the region are losing resource-based employment and are considering ways to generate new economic activity, such as cultural tourism and alternative energy generation. In coastal communities of all sizes, the involvement of informed local citizens and governments is essential to achieving economically and environmentally sustainable development.

Responsibility for decisions affecting ocean and coastal resources is often fragmented, divided among federal, state and local agencies and the tribes. Within Washington, for example, several federal agencies, some 15 state agencies and offices, 20 tribes, numerous coastal counties, three commissions and many other organizations address marine matters. This multilayered approach may be inefficient, result in conflicts among sectors, contribute to management gaps and overlaps and give rise to calls for integrated approaches to managing ecosystems. In addition, new ocean and coastal uses, such as wave and wind energy and ocean net-pen aquaculture, create unique information needs that must be addressed and incorporated into place-based planning. Coastal communities face risks posed by marine hazards from severe weather and sea-level rise, possibly related to climate change. In the Pacific Northwest, unique and incompletely understood marine geological features increase the likelihood of undersea earthquakes and tsunamis. Elected officials, government agencies and the general public need credible information about the costs and benefits of traditional and emerging ocean and coastal uses and threats.

## Ocean Literacy and Workforce Capacity

Throughout the past four decades, WSG has conducted formal and informal marine education activities, reaching out to: teachers and K-12 students to enhance understanding of the marine environment and resources; graduate and undergraduate students to provide support for marine-related careers; and marine professionals to enhance safety and provide critical job-related information and skills.

Ocean-related education is essential to strengthen local, regional and national appreciation for the importance of the oceans and coasts and to improve scientific literacy. In 2006, a major public-opinion poll concluded that most people in the Puget Sound region knew very little about this central environmental feature in their lives — its resources, industries and the career potential it offers. Working with educators and other ocean and coastal organizations, WSG seeks to spark informed enjoyment of the marine environment and help others articulate why taking care of this environment matters.

A diverse and well-trained workforce is key to addressing future marine-related technical, business, research and management needs. WSG's position within the academic community provides ample opportunities to expand the research horizons of interested graduate and undergraduate students and enhance their careers. Fellowship programs encourage qualified applicants to pursue careers in marine policy, fisheries population dynamics, marine resource economics and oceans and human health. They serve to increase available expertise in these fields, foster closer relationships between academic and agency scientists and provide real-world experience and accelerated career development.

WSG also supports lifelong educational activities, bolstering local economies through training in a variety of marine-related enterprises.

## Washington Sea Grant 2009-2014 Program Matrix

National Strategic Plan Focus Areas and Cross-Cutting Goals	WSG Critical Program Areas			
	Living Marine Ecosystems	Ocean and Coastal Environmental Health	Changing Oceans and Coastal Communities	Ocean Literacy and Workforce Capacity
Healthy Coastal Ecosystems	■	■	■	■
Sustainable Coastal Development		■	■	
Safe and Sustainable Seafood Supply	■	■	■	■
Hazard Resilience in Coastal Communities			■	
Sound Scientific Information	■	■	■	■
An Informed Public	■	■	■	■
Integrated Decisionmaking	■	■	■	

Table 1. WSG 2010-2014 Program Matrix, showing the connections among WSG’s critical program areas (across the top) and the National Sea Grant program’s focus areas and crosscutting themes (down the left side).

## VI. Program Goals and Strategies – 2010-2014

### Living Marine Ecosystems

*Understanding the marine environment and conserving marine resources while providing for sustainable use and ensuring healthy populations in the future.*

#### Goals

1. Strengthen ecosystem approaches to management of living marine resources through improved understanding of marine biodiversity, marine and coastal ecosystem function, climate change and other sources of variability.
2. Support conservation and sustainable use of living marine resources through effective and responsible approaches, tools, models and information for harvesting wild and cultured stocks and preserving protected species.

#### Strategies

1. Encourage and support research that explores and improves our understanding of marine ecosystems, including human dimensions.
2. Contribute to and facilitate better management and research tools and approaches, including stock assessments and collaborative research, to improve fisheries productivity, ecological sustainability and management.
3. Support research and application of best available science to further aquaculture that is economically viable and environmentally responsible.
4. Invest in research and programs that support the recovery of depleted species, address cumulative impacts on stressed populations and provide insight into natural variability in marine biodiversity.
5. Provide balanced information to enhance understanding of Pacific Northwest marine ecosystems and resources, the communities and businesses that rely on them, and the impacts and effects arising from the interactions between them.

### Ocean and Coastal Environmental Health

*Assessing and addressing the effects of human activities, including contamination, habitat loss and aquatic invasive species, to protect and maintain ecosystem health.*

#### Goals

1. Reduce toxic, nutrient and pathogen pollutants in water and the marine food web and address their relationships to and impacts on human health.
2. Improve understanding and management of emerging and cumulative threats to ocean and coastal health.
3. Protect and restore marine, coastal and estuarine habitats.

#### Strategies

1. Facilitate place-based impact assessments to support ocean and coastal decisions that integrate ecological and sociological effects and consider cumulative impacts of different sectors.
2. Identify and promote approaches to understand, mitigate and prevent the impacts of biological and chemical contamination, from stormwater and other sources, in nearshore waters and on human and resource populations.
3. Support development and use of observations, tools, techniques and information to monitor, forecast, prevent, mitigate or control ocean stressors such as climate change, aquatic invasive species, harmful algal blooms, hypoxia and ocean acidification.
4. Provide scientific and technical expertise to assess habitat condition and the impacts of physical alteration and to support habitat and shoreline restoration.
5. Employ outreach and communications to improve public understanding of threats to marine ecosystems and their implications for human health, including seafood safety.

## Changing Oceans and Coastal Communities

*Providing support to coastal communities for economically sound and environmentally sustainable management and development.*

### Goals

1. Improve capacity to manage ocean and coastal ecosystems and resources for societal benefit under changing climatic and demographic conditions.
2. Assist coastal communities and marine-dependent businesses in planning and making decisions that provide local and regional economic benefits, increase resilience and foster stewardship of social, economic and natural resources.
3. Improve understanding of coastal hazards and environmental change and develop tools and approaches for observation, prediction, planning and adaptation.

### Strategies

1. Engage social science and policy researchers in assessing the capacity of institutions to effectively manage the sustainability, resilience and recovery of coastal systems.
2. Provide technical assistance and outreach to tribal communities, coastal planners, decision makers, resource managers, educators, businesses and residents to adapt to and prosper in changing environmental, economic and regulatory conditions.
3. Foster collaborations that enhance the safety and productivity of coastal and maritime operations, promote stewardship and minimize environmental impacts and reduce conflicts among user groups and coastal constituencies.
4. Support research in the natural and social sciences to further understanding of weather, climate, coastal processes and large-scale coastal hazards and assess their effects on sustaining coastal communities.
5. Support development and application of innovative observation technologies, information products and extension approaches that improve awareness and understanding of coastal hazards, reduce impacts and enhance community resilience.

## Ocean Literacy and Workforce Capacity

*Educating students of all ages and strengthening workforce capacity.*

### Goals

1. Improve ocean literacy and interest in the marine sciences among students and educators, including those in tribal and under-represented communities.
2. Encourage future ocean leaders through high-quality academic and professional growth opportunities.
3. Sustain and enhance a highly trained workforce that supports the vitality of marine and coastal environments and communities.

### Strategies

1. Coordinate and support diverse K-12 educational programs that foster understanding and interest in marine stewardship and careers.
2. In partnership with marine science and education organizations, provide access to formal and informal marine education resources, including an online database for K-12 educators.
3. Identify and implement programs and activities to link university, regional and national scientific expertise with primary and secondary schools, community colleges and vocational schools.
4. Enhance and expand successful fellowships, internships, scholarships, traineeships and other student support programs, broadening recruitment within the UW and at educational institutions throughout the region.
5. Provide training to improve marine safety, bolster coastal economies, protect the environment, ensure safe and sustainable seafood and meet other priority needs.
6. Train and support a network of volunteer stewards and educators and create a coordinated citizen science program.

## VII. Program Planning, Implementation and Evaluation

The long-term vision and direction set by this strategic plan will guide WSG's development of a four-year federal funding request, including selection in 2009 and 2011 of competitively funded research projects. Building on the plan's goals and strategies, the WSG 2010-2014 federal funding request will include specific program activities designed to ensure real progress in fulfilling Sea Grant's state and national missions.

Separate but complementary processes are used to plan, implement and evaluate the two major components of the WSG program. Outreach, communications and education activities are addressed through the annual staff work planning and reporting process. Research projects are administered through a competitive biennial process for requesting, evaluating and selecting projects and an annual reporting requirement. Detailed information on each process and on strategic planning is provided below.

### Strategic Planning

This strategic plan identifies critical regional needs and establishes WSG's direction for the next five years. It articulates a five-year vision for success that will serve as a road map for WSG's long-term programmatic strategy and emphasis. It is aligned with and supports many of the priorities of the *NOAA National Sea Grant College Program Strategic Plan 2009-2013: Meeting the Challenge*.

WSG presently is operating under a six-year strategic plan that extends through 2010. Overall, the current plan has served the program well. It is very complex, however, setting out five focus areas, 16 goals and 56 objectives. In addition, WSG has experienced a substantial transition in recent years, bringing in new staff and a fresh mix of expertise and interests. Working with a strategic planning expert, the WSG management team launched a process in April 2008 for updating the existing strategic plan to reflect changing national, regional and organizational needs.

WSG was fortunate to be able to draw on several far-ranging and comprehensive assessments of Washington marine and coastal issues carried out within the state and region in the past five years. Reports from these extensive public processes include the Action Plan for the West Coast Governors' Agreement on Ocean Health, the Puget Sound Partnership Action Agenda and biennial science work plan and the Washington State Ocean Policy Work Group's Ocean Action Plan. In addition, the West Coast Sea Grant regional planning process resulted in valuable insights from six state workshops and an online survey in which more than 300 Washington residents participated, providing more than 2,000 comments on priority marine research needs.

Focusing specifically on WSG goals and objectives, the planning process provided the impetus for closer working

relationships with the WSG Advisory Committee and constituents. WSG management team members conducted extensive interviews with key stakeholder groups and each of the 14 members of the Advisory Committee to discuss WSG performance, capabilities and opportunities. About two-dozen individual interviews were conducted with representatives from academia, state and federal marine agencies, environmental organizations and coastal and marine businesses. In addition, over a period of nine months, the WSG staff and the Advisory Committee met regularly to review the planning process and make recommendations.

WSG also formed specific project teams to study staff effectiveness and the education program and make both short- and long-term recommendations. The teams addressed the need for WSG to build its capabilities as an organization. The process identified opportunities to improve organizational cohesion, create stronger connections with constituents and strengthen and diversify funding sources.

### Outreach, Communications and Education Activities

A staff effectiveness survey during strategic planning resulted in a new process for planning and carrying out WSG staff activities and new guidelines covering three issues — annual work plans, monthly reporting and annual reviews. The purpose of these guidelines is to encourage staff members to systematically assess their efforts and, if needed, refocus their programs so they result in positive impacts and align with national, state and university priorities.

This approach builds on the logic model used by the National Sea Grant Office and many of WSG's partner organizations as a tool for planning. This model will also be used to report program impacts. Thoughtful planning of projects — including consideration of constituent needs, inclusion of affected target audiences, appropriate choice of teaching and facilitation techniques, and relevant, rigorous methods of evaluation — will ensure that WSG programs are successful and relevant.

*Annual Work Plans* will be related directly to the goals and initiatives described in the WSG strategic plan and consistent with relevant state or national goals, such as the Puget Sound Partnership Action Agenda. They will identify metrics for each project, such as outputs, outcomes and performance measures. Individual and team work plans, once approved by a supervisor and the director, will form a basis for the components within WSG's omnibus proposals submitted to the National Sea Grant Office. To facilitate coordination of efforts within the program and encourage communications and integration, completed work plans will be shared among WSG staff.

*Monthly Staff Reports* will include brief narrative summaries that identify major monthly activities and highlight upcoming events, as well as metrics to be compiled for federal, state and other reporting needs. Distribution of monthly reports among

WSG staff will further facilitate coordination of efforts and foster collaboration. Systematic tracking of project metrics will streamline administration of federal, state and other reporting requirements.

*Annual Reviews* will be carried out as part of the process of developing mandatory annual program reports for the National Sea Grant Office. As an organization, WSG will review progress toward its own strategic goals, evaluate the effectiveness of its strategies and assess its ability to have positive impacts on the communities it serves. In a complementary process, annual staff reviews will evaluate progress toward individual and organizational goals, assess project direction and priorities and foster professional growth and development.

### Competitive Research Projects

WSG selects, funds, oversees and manages marine-related projects carried out by academic and research institutions throughout Washington. While smaller program development projects are funded on a continuing basis, most research projects are funded through a rigorous, competitive proposal selection process that WSG conducts on a biennial basis. This peer review process relies on independent experts, primarily from outside Washington, to assess scientific merit and a WSG staff and Advisory Committee evaluation of the contribution to regional and local needs.

A four-step *Project Application and Decision Process* is followed for selecting WSG research projects:

1. A call for preliminary proposals is widely distributed across the state and submitted applications are screened to ensure that all eligibility criteria are met. Eligible preliminary proposals are reviewed by a WSG preliminary proposal panel and are evaluated on the basis of project evaluation criteria. Each is considered on its own merits without regard for university or institutional affiliation. Full proposals are requested for those projects that rate highly in all evaluation criteria, considering the funding level that is likely to be available while the project is under way.
2. Each completed full proposal is distributed to three to five external merit reviewers for peer review and submission of a written evaluation and comments. At the end of the merit review process, investigators are given the opportunity to respond to reviewer comments. WSG convenes a scientific review panel of six to eight experts in the range of disciplines proposed in the submitted projects. Members of the panel are provided with copies of the proposal, all merit reviews and the investigator response to those reviews. The panel discusses each proposal individually and develops recommendations for funding. Summaries of each proposal that is recommended for funding are provided to members of the WSG Advisory Committee, who evaluate the project's contribution to the WSG program and make

recommendations regarding priorities for funding. The director and associate director review all information available and make final decisions on which projects can be included and the budget for inclusion in the WSG omnibus proposal. Proposals selected for funding may be returned to applicants for revision prior to submission to the National Sea Grant Office.

3. A letter of intent is submitted to the National Sea Grant Office, describing the proposed projects and the rationale for their selection. Once the letter is approved, final proposals are incorporated into the WSG omnibus proposal and submitted to the National Sea Grant Office, NOAA, U.S. Department of Commerce, for funding.
4. The National Sea Grant Office reviews the omnibus proposal and its elements to ensure that all requirements have been met. Contingent on the availability of funds, the omnibus proposal will be approved and implemented on Feb. 1 of the next funding cycle.

*Project Evaluation Criteria* are used to ensure selection of proposals that combine scientific excellence with societal relevance. WSG applies five criteria in evaluating proposed projects at both the preliminary and full-proposal stages. However, the criteria are weighted differently at each stage, with some differences in emphasis.

1. Project Contribution: Importance, relevance and applicability of proposed project to WSG goals, applicability of expected outcomes to address problems or opportunities with societal relevance (resource management, economic development, public engagement), and contribution to capacity building (undergraduate, graduate and postdoctoral support).
2. Technical and Scientific Merit: The degree to which the activity will advance scientific understanding and whether the approach is technically sound and innovative, including:
  - complete project description with adequate detail, clearly stated goals and measurable objectivess;
  - project technical feasibility and use of appropriate methods;
  - appropriate mechanisms to evaluate the success of the project;
  - the likelihood of meeting milestones and achieving anticipated results in the time proposed; and
  - extent to which the project employs partnerships and leverages other resources to achieve its objectives.

3. Outreach Plan: Description of public engagement goals and how specifically targeted groups will learn about and benefit from research outcomes through outreach, communications and education activities. The degree to which users or potential users of the results have been and will be included in project planning and implementation.
4. Qualifications of Applicants: Whether the applicant possesses the necessary education, experience, training, facilities and administrative resources to accomplish the project, with consideration of career stage and past performance.
5. Project Costs: Budget evaluation to determine if costs are realistic and commensurate with the project needs and timeframe and reasonable given the availability of program funds.

WSG and NOAA require an *Annual Progress Report* to evaluate each project and assess project accomplishments, outcomes, performance measures, impacts and other metrics that have been achieved. In addition, a report after project completion requires a clear explanation of the implications of the project and outreach outcomes.



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