

# Strategic Plan 2004-2010

Washington Sea Grant Program

UNIVERSITY OF WASHINGTON, SEATTLE



# Strategic Plan 2004-2010

## Washington Sea Grant Program

UNIVERSITY OF WASHINGTON, SEATTLE

### Contents

Executive Summary.....	3
About this Plan.....	4
Vision .....	4
Mission.....	4
About Washington Sea Grant Program .....	5
The Program's Setting .....	6
Key Stakeholders .....	8
Factors that Affect WSGP .....	9
WSGP Values .....	10
Putting WSGP Values into Operation.....	11
Critical Program Areas.....	12
Living Marine Resources .....	14
Ecosystem Health .....	16
New Technologies to Enhance Ocean Productivity.....	18
Economic and Community Development.....	20
Education, Training and Public Information .....	22
Measures of Program Success .....	24
WSGP Self-Study.....	25
Implementation .....	26
References .....	26
Appendix A - Stakeholders.....	27
Appendix B - WSGP Project Selection Criteria .....	27
Appendix C -WSGP Project Selection Process .....	28



This report is published in part by Grant #NA04OAR4170032, from the National Oceanic and Atmospheric Administration to Washington Sea Grant Program, University of Washington. The views expressed herein are those of the author(s) and do not necessarily reflect the views of NOAA or any of its subagencies.

© 2004 University of Washington Board of Regents



**Washington Sea Grant Program**  
College of Ocean and Fishery Sciences  
University of Washington  
3716 Brooklyn Avenue NE  
Seattle, WA 98105-6716  
206.543.6600

*wsg.washington.edu*

*Knowledge for Use in the Marine Environment*



# Executive Summary

This Strategic Plan describes Washington Sea Grant Program (WSGP) – the context in which WSGP operates, critical program areas and the strategies for meeting the goals for these areas.

WSGP serves communities, industries and the people of Washington state, the Pacific Northwest and the nation through research, education and outreach by identifying and addressing important marine issues and providing better tools for management and use of the marine environment and its resources.

WSGP uses a strategic partnership approach that includes: other universities and educational institutions; tribal and local, state and federal agencies; business and industry; marine-oriented interest groups; and citizens of the state of Washington. WSGP also benefits from close interaction with elements of NOAA and other federal agencies and laboratories in the Northwest.

WSGP is housed at the University of Washington, one of the principal marine science complexes in the world. It is one of five operating units of the College of Ocean and Fishery Sciences, the continent's largest academic marine science unit.

As the fastest growing coastal state, Washington has suffered increasing impacts on its coastal environments and habitats. Resource loss and environmental degradation, as evidenced by Endangered Species Act listings and candidate species, have guided research, outreach and education efforts.

WSGP plans, oversees and manages marine-related research projects at academic institutions throughout Washington and the Pacific Northwest. The program also provides education and outreach opportunities for targeted constituent groups and the public at large. By supporting education and outreach efforts to share current findings with its constituents, WSGP adds value to scientific research conducted at universities and colleges. It operates a full-service communications office, through which research findings, educational activities and progress on key issues can be shared with user groups.

WSGP uses its network of advisory agents, program staff, faculty members and associates to listen and respond to those needs. As such, outreach efforts have grown to place more emphasis on resource management, conservation and local involvement in watershed protection. New areas of interest for WSGP staff and faculty include the management of non-indigenous species and recovery of threatened and endangered populations of fish and invertebrates.

For 1999-2010, WSGP will focus on the following five critical program areas:

## Living Marine Resources

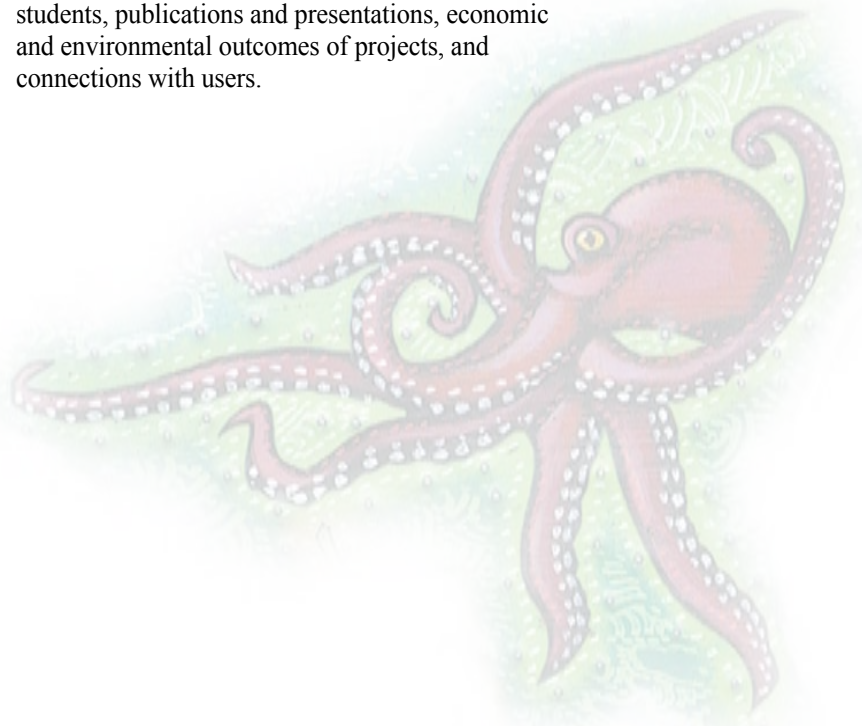
## Ecosystem Health

## New Technologies to Enhance Ocean Productivity

## Economic and Community Development

## Education, Training and Public Information

WSGP staff document quantitative and qualitative measures of success, or metrics, to determine progress made over time. Key metrics include levels of support for researchers and their students, publications and presentations, economic and environmental outcomes of projects, and connections with users.



# Strategic Plan 2004-2010

## About this Plan

**“Washington Sea Grant Program, a wonderfully hardy exemplar of improving nationally by investing locally.”**

From *Compass and Gyroscope: Integrating Science and Politics for the Environment* by Kai Lee, c. 1993, Island Press, Washington D.C.

This Strategic Plan describes Washington Sea Grant Program (WSGP) – the context in which WSGP operates, program areas of importance and the strategies for meeting the goals for these areas. While much of the underlying philosophy is intrinsic to WSGP and will vary little over time, the context and activities in this document are

primarily intended to cover the period 2004-2010.

The original WSGP Strategic Plan was published in 2000, after considering comments from 1999 PAT and NSGO reviews. The current update is the work of the WSGP strategic planning team, with input from all WSGP staff, key stakeholders and friends of WSGP. Data gathered for this update came from a series of planning discussions, a survey of constituent needs and the records and institutional memory of the WSGP organization. WSGP staff members have used this plan for five years, as well as having drawn on their ongoing contact with the wide range of stakeholders with whom they interact, to determine our critical program areas. The NOAA Strategic Plan, NOAA-Sea Grant Strategic Plan and Sea Grant network Theme Team activities provided guidance. Other pertinent planning documents are cited in the References on page 26 of this document.

Members of the WSGP strategic planning team solicited comments from staff and stakeholders for inclusion in this plan. Each year, the WSGP management team prepares an implementation plan. This strategic plan, coupled with the annual implementation plans, guides WSGP as it moves forward to address the challenges and meet the needs of the future.

## Vision

“Knowledge for Use in the Marine Environment”

## Mission

WSGP serves communities, industries and the people of Washington state, the Pacific Northwest and the nation through research, education and outreach 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.

# About Washington Sea Grant Program

Established in 1968, Washington Sea Grant Program (WSGP) began as a federal experiment in local investment. The program grew as part of the University of Washington's major interest in marine science, engineering and policy. In 1971, the program became one of the first four programs designated nationally as a Sea Grant College. Today WSGP is part of a national network of 30 Sea Grant colleges and programs administered by the National Oceanic and Atmospheric Administration (NOAA) in the U.S. Department of Commerce.

WSGP uses a partnership approach in all its activities, often including cost sharing, advice and counsel, and hands-on involvement in projects. Frequent partners include other universities and educational institutions; tribal and local, state and federal agencies; business and industry; marine-oriented interest groups; and citizens of the state of Washington.

Located at the University of Washington, WSGP is one of five operating units of the College of Ocean and Fishery Sciences (COFS), although WSGP has university-wide and statewide responsibilities. WSGP is one of the smaller COFS units and carries out planning and management duties, in addition to significant outreach and education activities. WSGP management and staff participate in research and outreach activities, in addition to providing funding and oversight for these activities.

WSGP works with multiple colleges within the University of Washington system and with other institutions of higher education throughout the Pacific Northwest. From 2000-2004 active WSGP projects have spanned 15 departments and 6 colleges at University of Washington, 7 other institutions higher education in Washington, Idaho and Arizona, as well as other institutions within the state and the nation.





## The Program's Setting

The state of Washington has an extraordinarily broad base of marine resources, including numerous species of fish and wildlife. While no longer pristine, its coastal environment still includes lengthy stretches that are not significantly altered by human activities. The richness of the Washington coastal and marine environment, and the state's location as gateway to Alaska and the Pacific Rim, contribute to a strong regional marine-related economy with high employment in the marine sector.

The state's population has grown by more than 24 percent since 1990 making Washington the fastest growing coastal state in the nation and the ninth fastest-growing state overall. Such growth has led to increased impacts on coastal environments and inhabitants. Since 1999, 13 runs of Washington state salmon and related salmonids have been listed under the Endangered Species Act (ESA). In addition, within Puget Sound, 18 species of marine fish as well as the southern resident population of orcas (killer whales) have been proposed as candidates for listing under ESA, although, to date, none have been listed. These obvious signs of resource loss and environmental degradation have added urgency to the need to understand human-inspired causes and effects on living marine resources.

The marine resources with which we work, as well as the science and education focus of WSGP, span the state of Washington, the Pacific Northwest, the nation, and into international waters. The Alaska fishing fleet, which harvests the largest fishery in the nation, is based in Washington, as is most of the commercial fleet's support structure. WSGP researchers, particularly those working in biotechnology and marine products, collaborate and provide scientific impact across the nation and around the world. WSGP education programs are a national resource and include fellowship programs and teacher trainings, among other activities.

Figure 1



Washington Sea Grant Program benefits from close interaction with elements of NOAA and other federal agencies and laboratories. Three major NOAA laboratories and a substantial portion of other NOAA line offices are located in Seattle and nearby. WSGP also collaborates and interacts extensively with scientists and resource managers at government and academic marine institutions in nearby British Columbia, Canada (Figures 1, 2 and 3).

The University of Washington is among the largest research universities in the nation, leading all other public institutions in federal research grants. The University of Washington is also one of the principal marine science complexes in the world and COFS is the largest academic marine science unit on the continent.



Figure 2



Figure 3







WSGP works with a broad range of partners 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 University of Washington and other institutions of higher learning in Washington state and beyond; NOAA; state and federal agencies; local and tribal governments; non-governmental organizations; K-12 administrators, schools and teachers; industry and business; the news media; and the public. A more comprehensive listing of stakeholders can be found in Appendix A on page 27.

Key stakeholders are surveyed regularly to determine their needs and to assess the success WSGP has had in meeting those needs over time. A copy of the most recent survey instrument is available at WSGP offices.

The responses from constituents are as varied as the activities undertaken by the organization, reflective of each respondent's discipline or occupation. Stakeholders say they interact with us primarily by participating in WSGP-sponsored events, by reading our publications and by receiving research funding through WSGP.

Overall, stakeholders felt that WSGP:

- Does an above-average to excellent job of delivering services and raising the level of interaction between and among the research community and users of the marine environment;
- Provides information on marine research and other activities in an accessible and useful manner, particularly through the quarterly publication *Sea Star*;
- Plays a unique role in the state and the region;
- Engages in useful and credible activities;
- Provides access to expertise of faculty and staff for users outside the university system; and
- Presents students with opportunities for research, training and horizons beyond the university.

# Factors that Affect WSGP

The WSGP Strategic Planning Team identified factors that affect and constrain the ability of WSGP management and staff to carry out the program's mission. Factors that are generated from outside the program constitute opportunities and challenges, while those from within the program are identified as strengths and weaknesses.

## Opportunities

- Potential for partnerships
- Large and open talent base, allowing flexibility for change
- Interaction with broad range of stakeholders
- Co-location with substantial portions of NOAA
- Substantial industrial infrastructure and potential in the region and nationwide
- Environmental change and economic opportunities

## Challenges

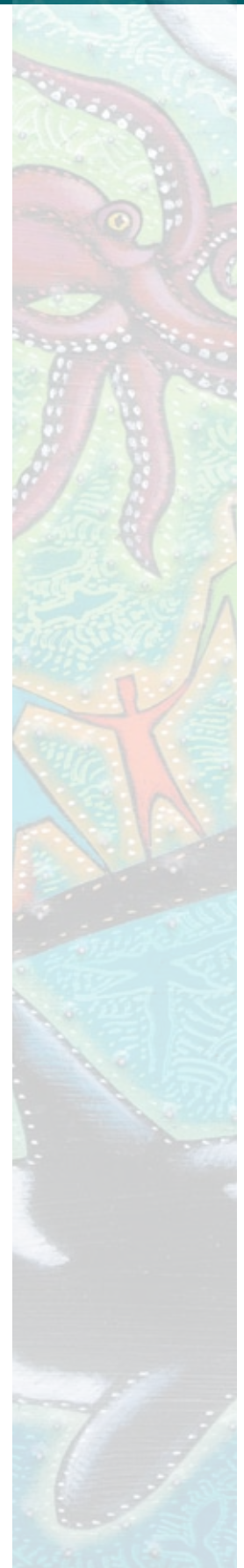
- Lack of state funding and support; diminishing university budgets
- Low priority of Sea Grant within NOAA
- Pressure to quantify outcomes and constant need for success stories
- Increasing administrative burden, due to NSGO and other requirements
- Level federal funding, which has not kept pace with inflation
- Campus culture as a non-Land Grant institution

## Strengths

- Faculty and staff have diverse backgrounds and skills
- History of program quality, innovation and success
- WSGP culture of responsiveness and unique capabilities
- Demonstrated record of achievement and impact
- Presence of network across the state and across the nation
- Strong ties in the region (especially with Oregon, Alaska and British Columbia)

## Weaknesses

- Transaction costs of recruiting and retaining research talent
- Bureaucratic obstacles to investigator funding
- Staff members have more work than they can appropriately handle
- Outside money almost never translates to increases in core funding
- Relative importance of Sea Grant funding has dramatically decreased at the University of Washington





## WSGP Values

WSGP collaborates with top researchers at academic institutions and federal laboratories, as well as educators across the state, to create a program of superior quality. We serve the needs of a wide and heterogeneous constituent group, through research, outreach and education. WSGP maintains excellence in programming by establishing and implementing quality assurance standards and through an ongoing process of quality control that includes peer reviews, expert panels and project performance reviews. Criteria by which we judge projects can be seen in Appendix B (page 27); the project selection process is included in Appendix C (page 27). Reviewers are from a broad range of national and international institutions.

WSGP focuses on excellence, innovation and societal impact. We are committed to high standards of accountability and scientific integrity. WSGP seeks to forge tools, foster insights and create partnerships that identify and manage marine resources. At any given time, WSGP supports a portfolio of high-quality research, education and outreach projects and activities. In assembling this portfolio, WSGP balances long-term stability through funding of established investigators, while seeking out new, young investigators and emerging fields of marine research and education. We emphasize interdisciplinary studies and support activities that are unique in the state and the region and those that emphasize the educational role of Sea Grant. In addition to the standard two and three year long projects, WSGP maintains a level of venture capital, commonly through program development funds and strategic partnerships, that allows WSGP to promote calculated risks in addressing new and emerging issues.



# Putting WSGP Values into Operation

WSGP plans, oversees and manages marine-related research projects at academic institutions throughout Washington and the Pacific Northwest. The program also provides education and outreach opportunities for targeted constituent groups and the public at large. By supporting education and outreach efforts to share current findings with its constituents, WSGP adds value to scientific research conducted at universities and colleges. It operates a full-service communications office, through which research findings, educational activities and progress on key issues can be shared with user groups.

By bringing together individuals and organizations within the university, the state, the region and the nation, WSGP serves as a catalyst for and facilitator of marine research, education and outreach. Like the marine community with which it works, Washington Sea Grant Program spans state, regional and international boundaries; benefits of the WSGP-sponsored research and outreach are shared by the region, the nation and the world.

Through the judicious use of partnerships, co-funding and interaction with federal and state agencies, academic institutions, community groups and industry, WSGP can accomplish much more than it would on its own. Such partnerships offer far more than the sharing of limited financial resources. They also provide access to markets, audiences and opportunities that might otherwise lie beyond an individual program's reach. By working cooperatively with government agencies, participating in industry projects, and interacting with community groups, WSGP staff become aware of emerging issues and trends in research, education and commerce, as well as the needs of marine user groups and other stakeholders. WSGP uses its network of advisory agents, program staff, faculty members and associates to listen and respond to those needs.

WSGP's ongoing relationship with its researchers reflects both stability and change. Researchers who have maintained long-term WSGP funding have done so by demonstrating progress in their research. Many have changed the direction of their research one or more times. The formal process for recruiting research talent and selecting high quality projects is outlined on the WSGP Web site ([wsg.washington.edu](http://wsg.washington.edu))

WSGP employs an integrated system of planning, implementation and evaluation. Research, education and outreach proposals are all prepared within the framework of the WSGP Strategic Plan (2000-2010) and the annual implementation plans. This allows WSGP to evaluate success in meeting strategic planning goals and objectives.



# Critical Program Areas

WSGP defines the following five areas of concentration as critical program areas for the period 1999-2010:

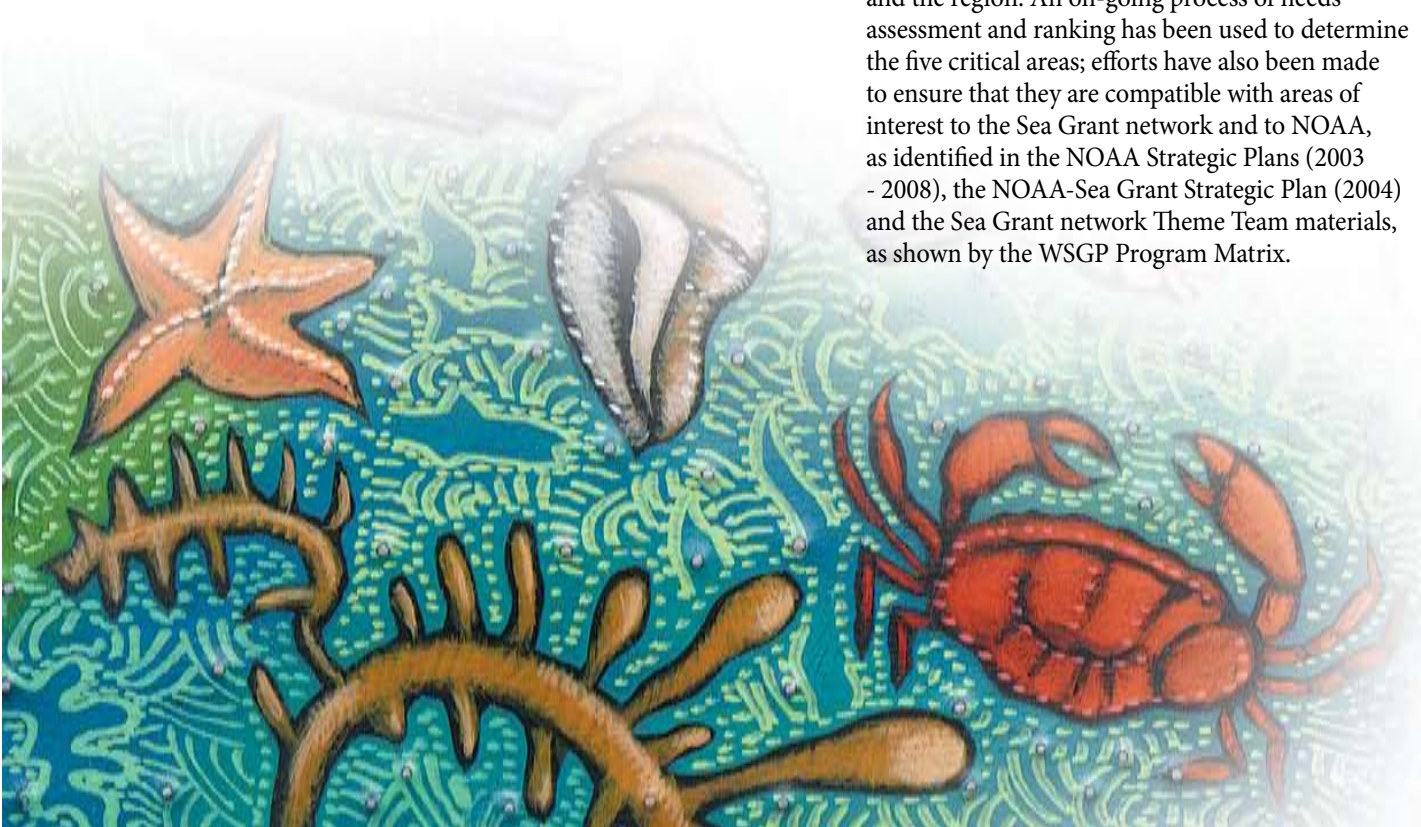
- Living Marine Resources
- Ecosystem Health
- New Technologies to Enhance Ocean Productivity
- Economic and Community Development
- Education, Training and Public Information

The goals and objectives defined under each of the critical program areas describe the direction and intent of each activity. The goals are broad and speak to the need to conserve, use, understand or otherwise interact with the natural resources and environment of Washington state, the Pacific Northwest and the nation. The role of WSGP is non-regulatory and non-advocacy; we work as facilitators, supporters, technical experts and educators to achieve these goals.

WSGP projects and activities are often interdisciplinary in nature and may fall into more than one critical program area. In general, each project or activity has been assigned to one critical program area, but some appear more than once. This redundancy also reflects a deliberate strategy to integrate research and outreach activities, which themselves may cross disciplinary and program area boundaries.

The mix of research program areas, investigators, staff and disciplines has changed, sometimes radically, over WSGP's three-and-a-half decades of service. Similarly, outreach efforts have grown to place more emphasis on resource management, conservation and local involvement in watershed protection. New areas of interest for WSGP staff and faculty include the management of non-indigenous species and recovery of threatened and endangered populations of fish and invertebrates.

The five critical program areas have been identified by WSGP staff and stakeholders to address issues of importance to the people of the state of Washington and the region. An on-going process of needs assessment and ranking has been used to determine the five critical areas; efforts have also been made to ensure that they are compatible with areas of interest to the Sea Grant network and to NOAA, as identified in the NOAA Strategic Plans (2003 - 2008), the NOAA-Sea Grant Strategic Plan (2004) and the Sea Grant network Theme Team materials, as shown by the WSGP Program Matrix.



# WSGP 2004 - 2010 Program Matrix

*WSGP programming fits into one or more of five Critical Program Areas. Nationally, Sea Grant programming falls into one of eleven Theme Areas. This table shows the relationship between WSGP Critical Program Areas and Sea Grant Network Theme Areas.*

Sea Grant Network Theme Areas	Critical Program Areas				
	Living Marine Resources	Ecosystem Health	New Technologies to Enhance Ocean Productivity	Economic and Community Development	Education Training and Public Information
Aquaculture	✓		✓	✓	✓
Biotechnology			✓	✓	✓
Coastal Communities and Economies				✓	✓
Coastal Natural Hazards		✓		✓	✓
Digital Ocean			✓		✓
Ecosystems and Habitats	✓	✓			✓
Aquatic Invasive Species		✓			✓
Fisheries	✓		✓		✓
Marine and Aquatic Literacy					✓
Seafood Science and Technology	✓				✓
Urban Coasts		✓		✓	✓

## Living Marine Resources

*Conserving marine resources while providing for their beneficial use and exploitation, thus ensuring sustainable harvests and healthy populations in the future.*

The present era of rapid demographic and environmental change has put increasing demand on sources of protein from the sea. As many traditional fisheries have been depleted, alternate species and geographic areas have become targets of capture fisheries. At the same time, enhancement and culture of shellfish and marine fish stocks have become more economically attractive. Scientists and managers are paying more attention to the impact of large-scale oceanic and environmental factors on fish populations, as well as the intersection of those populations with human activities.

In the Pacific Northwest, dramatic drops in salmon runs and marine fish stocks have mirrored losses of marine resources in other parts of the country. The listing of numerous runs of Pacific salmon under the federal Endangered Species Act and the proposed listing of marine fish species are beginning to have widespread implications for the ways people live and do business.

WSGP research and outreach activities identified for strategic investment include: quantifying and preventing bycatch from commercial fisheries; studies of fisheries/ocean/atmospheric interactions; potential impacts of global climate change on living resources; understanding the habitat needs of Pacific salmon and marine fish and developing tools to protect dwindling runs; enhancing production of shellfish in an environmentally sound manner; working with marine industry, tribes and management agencies on sustaining finfish and shellfish resources; and encouraging the consideration of scientifically based estuarine and marine protected areas as tools for fisheries management.

### GOAL LMR 1

**Conservation** of living marine resources to ensure that healthy populations are sustained into the future.

#### Objective LMR1.1

Develop an understanding of the interactions between living marine resources and their environment.

#### Objective LMR 1.2

Examine the impacts of climate change and other large-scale phenomena on populations of living marine resources, including impacts of human activities.

#### Objective LMR 1.3

Understand critical needs of stressed populations, including species listed under the Endangered Species Act, to protect them from further declines.

#### Objective LMR 1.4

Develop tools that enhance marine biodiversity and protect living resources, including models for marine stewardship and marine protected areas.

## GOAL LMR 2

Provide for the **sustainable harvest** of fish and other living marine resources.

### Objective LMR 2.1

Develop reliable tools for identifying and describing stocks of living marine resources, interactions among stocks, and interactions of stocks with the environment.

### Objective LMR 2.2

Develop tools to minimize the accidental capture of fish and wildlife during commercial and recreational harvests and communicate these developments to user groups and the public.

### Objective LMR 2.3

Work with industry, public agencies and the tribes to improve the quality and safety of seafood products and to alleviate human health concerns from exposure to marine products and the marine environment.

### Objective LMR 2.4

Support the management of Living Marine Resources through the development of alternative management strategies, models and tools that support ecosystem management.

### Objective LMR 2.5

Work with stakeholders and constituents to develop tools to minimize resource conflicts among users.

## GOAL LMR 3

**Restoration and enhancement** of natural and cultured stocks of fish and shellfish to support biodiversity and sustainable use.

### Objective LMR 3.1

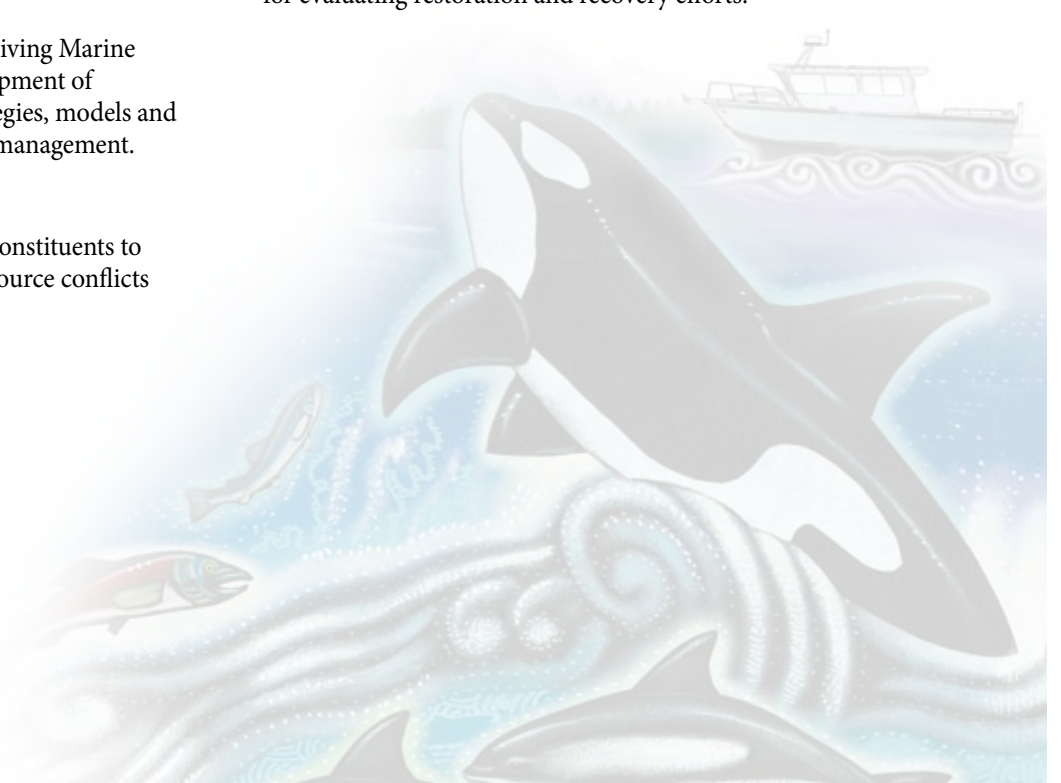
Participate in planning and education efforts that protect and restore marine resources from contamination, loss of habitat, overharvesting and threats from aquatic invasive species, in cooperation with state, local and tribal authorities and the shellfish industry.

### Objective LMR 3.2

Identify and develop tools that mitigate the effects of disease on wild and cultured stocks of fish and shellfish.

### Objective LMR 3.3

Develop improved analytical capabilities, management tools and models that contribute to the recovery of depleted stocks and communities of living marine resources, and for evaluating restoration and recovery efforts.





## Ecosystem Health

*Understanding the marine environment and protecting it from the deleterious effects of human activities, including contamination from terrestrial and ship-borne sources, degradation of nearshore, upland and open-water habitats, overharvesting of fish, shellfish, algae and invertebrates, and introductions of invasive plant and animal species.*

To understand marine and coastal systems and the changes that are taking place in them, it is important to describe these systems and document biodiversity within them. WSGP studies are process-driven and focus on many levels of the natural food web, rather than concentrating only on food fish and top predators. These studies allow for the identification and harvest of organisms and cellular products from the oceans. Descriptions and models of natural systems lead to better understanding of the impacts of conservation and exploitation of resources and the development of improved tools for ecosystem management.

Areas of interest to WSGP for strategic investment include: bioremediation; harmful algal blooms; functions and values of fish and wildlife habitat; development and assessment of restoration techniques; non-indigenous species invasions; oil spill prevention education; water quality; habitat; potential impacts of global climate change; the use of estuarine and marine protected areas as laboratories for understanding ecological processes and environmental change; and development of training workshops and educational materials on ecosystem health for K-12 students and community groups.

### GOAL EH1

Understand the coastal, estuarine and **marine environment** of Washington state and the Pacific Northwest and improve the management of coastal marine resources.

#### Objective EH 1.1

Describe the coastal and estuarine environment through research studies and assessments, to better understand interactions of marine resources and their environment.

#### Objective EH 1.2

Develop models of coastal and estuarine systems to develop better management tools and to better understand the impacts of human activities, including exploitation and conservation of resources.

#### Objective EH 1.3

Develop environmental indicators and evaluation criteria for management of the coastal ecosystems of Puget Sound and the Washington coast.

#### Objective EH 1.4

Develop information and models that assist in management of Pacific Northwest ecosystems, including alternative management approaches, and make results of estuarine and coastal research accessible and useful for resource managers and the public.

## GOAL EH 2

Protect the integrity of marine, coastal and estuarine **habitats** from the effects of physical alteration, with particular emphasis on nearshore habitats.

### Objective EH 2.1

Describe the extent and condition of estuarine and coastal habitats, and the impacts of physical alteration.

### Objective EH 2.2

Develop tools and techniques to understand and improve the efficacy of habitat restoration and to characterize, protect and enhance critical habitat for endangered species.

### Objective EH 2.3

Provide access to new habitat restoration and enhancement tools and techniques, as well as inventories of estuarine and coastal habitats for resource managers.

## GOAL EH 3

Protect the marine environment of coastal Washington from **contamination** due to human activities and periodic natural disruptive events.

### Objective EH 3.1

Identify and promote solutions to the impacts of biological and chemical contamination in nearshore waters and on resource populations.

### Objective EH 3.2

Develop better assessment capabilities, analytical techniques and models to address current and emerging water quality concerns.

### Objective EH 3.3

Investigate the causes and management of Harmful Algal Blooms to ensure the health of the ecosystem and to protect public safety.

## GOAL EH 4

Minimize the introduction of non-indigenous species and manage for established populations of **aquatic invasive species**.

### Objective EH 4.1

Understand the invasion potential and critical pathways for the introduction of non-indigenous species that are most likely to become aquatic invasive species.

### Objective EH 4.2

Develop tools and techniques to understand the impact of ballast water introductions to coastal waters from coast-wide and overseas shipping.

### Objective EH 4.3

Minimize the introduction of non-indigenous species through education and training.



## New Technologies to Enhance Ocean Productivity

*Creating and applying new technologies that show promise for expanding the horizons of ocean exploration, leading to deeper understanding of marine and coastal processes, providing greater resilience among ocean resources and developing new and useful products from the sea.*

New technologies have greatly accelerated possibilities for ocean exploration, for the development of new tools for fisheries management and for environmental assessment and protection. Modern molecular techniques have allowed for the identification, extraction and development of new products and processes. The explosion of technologies and applications made available through high-speed computing has greatly enhanced the ability of researchers to communicate information and to automate tedious and intricate screening for new products and processes. Miniaturization and other technological advances make new products and processes more cost-effective. The challenge of the new technologies lies not only in understanding and applying their potential to explorations in the marine realm, but in separating out the essential information and communicating it to managers, decision-makers and the public in a useful fashion.

WSGP activities that focus on new technologies include: the development of products and processes from organisms living in extreme environments; studies of deep-sea environments, including the identification and ecology of micro-organisms and enzyme systems from mid-ocean ridge vents; development of environmental assessment tools; applications of marine biotechnology to resource conservation and management; development of new techniques for fisheries management; modeling of circulation and natural system-response in estuaries and coastal areas; and the interpretation and packaging of large data sets into education and information tools.

### GOAL NT 1

Create and apply **molecular** techniques to identify, extract and develop new products and processes.

#### Objective NT 1.1

Develop new products from marine organisms that have potential for commercial or therapeutic use.

#### Objective NT 1.2

Identify, extract and examine the impacts of naturally occurring biotoxins.

#### Objective NT 1.3

Investigate microbiological processes that promote cleanup and bioremediation of coastal environments.

#### Objective NT 1.4

Support the dissemination of information on new molecular techniques and products among the research community and user groups.

## GOAL NT 2

Develop new technologies and tools to enhance the **management of marine resources**:

### Objective NT 2.1

Develop new products and processes of commercial interest from marine resources.

### Objective NT 2.2

Support the development and use of improved technologies, including ocean observing systems and marine acoustics, to evaluate the abundance and condition of marine resources.

### Objective NT 2.3

Support research and outreach that furthers our understanding of weather, climate and other large-scale atmospheric and oceanic impacts.

### Objective NT 2.4

Develop and apply data products that enhance educational, recreational and commercial opportunities in coastal areas.

## GOAL NT 3

Understand **extreme marine environments**, including the deep sea.

### Objective NT 3.1

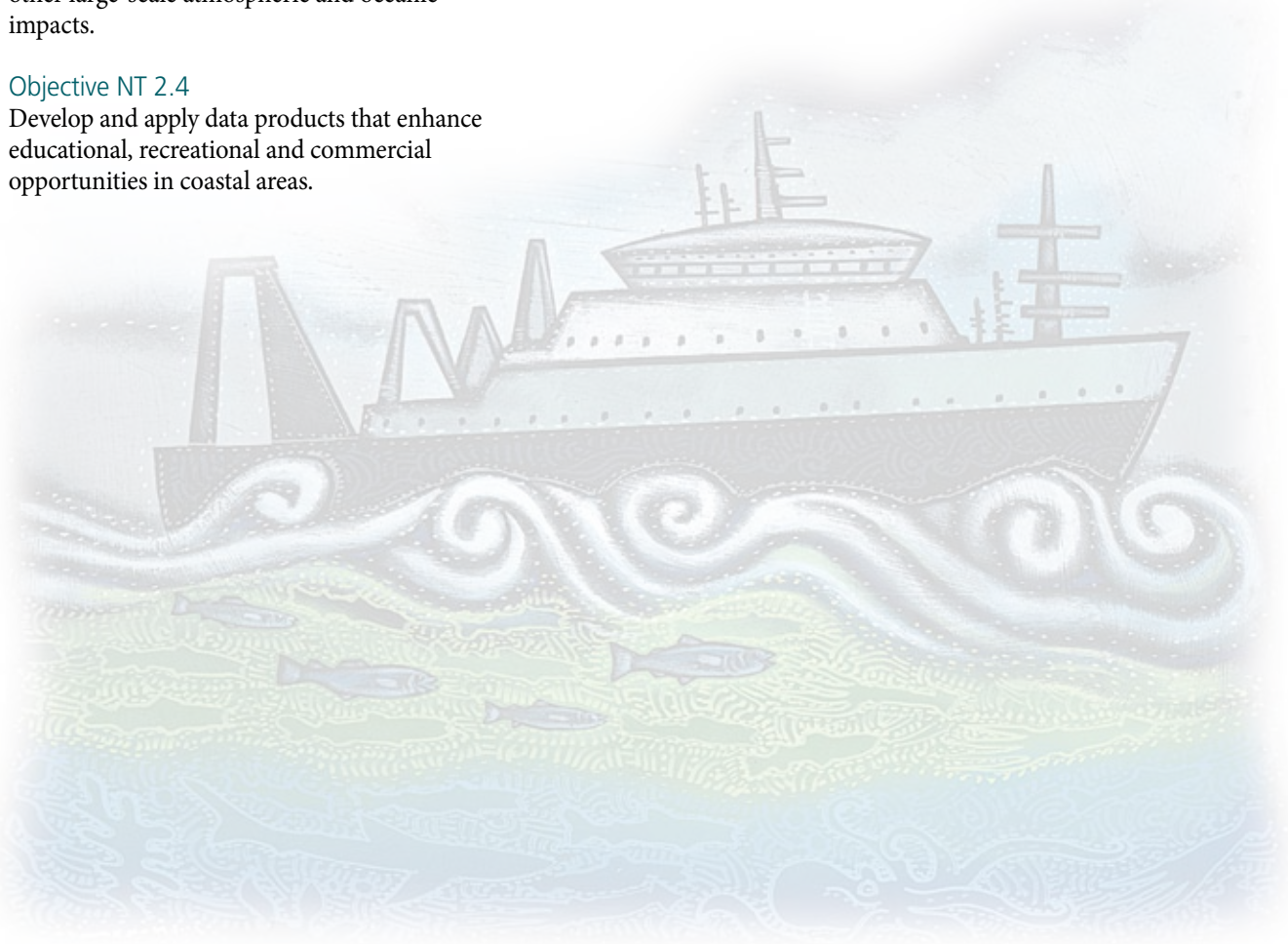
Enhance leadership role in biological aspects of deep sea, and polar regions.

### Objective NT 3.2

Encourage development of instrumentation that enhances our understanding of extreme environments.

### Objective NT 3.3

Support outreach efforts to disseminate information about extreme marine environments.



## Economic and Community Development

*Assisting marine and coastal-dependent enterprises, agencies and communities in making sound business, planning and development decisions that provide economic benefits to local communities and to the region, while managing resources for sustainability.*

Many urban communities in the Pacific Northwest are developing rapidly while many smaller coastal communities are deteriorating due to the loss of resource-based employment. Sustainable communities benefit from economic vitality and from the involvement of the citizenry and their elected officials in planning for and implementing community development. At the same time, healthy communities can benefit from new resources and technologies that are incorporated in a compatible manner.

WSGP activities enhance the sustainable production of economic goods and services that flow from or depend upon the marine environment, through: marine fisheries and aquaculture; marine biotechnology, ports and marine transportation; tourism and recreation in coastal and marine areas; ocean engineering; and emerging marine industries. WSGP's strengths are in understanding the dynamics of change that inform these activities. WSGP also works with communities to revitalize their waterfronts, to incorporate legal regimes for managing marine uses and conflicts, to improve management regimes and processes for dealing with complex marine issues, and to manage impacts of chronic and episodic coastal hazards on coastal communities and ports.

Areas for strategic investment of particular interest include: the valuation of coastal and marine resources; urban impacts on nearshore habitats and water quality; integration of watershed and nearshore planning efforts; potential impacts due to global climate change; economic assessment of marine sectors; coastal community development and revitalization; accelerating commercial

development of new marine processes and products; improvement of tools, skills and practices for coastal businesses and communities; and the use of models and Geographic Information Systems in the management of coastal resources.

### GOAL CD 1

Assist coastal communities to move toward ecologically and economically **sustainable futures**.

#### Objective CD 1.1

Understand and assist local communities, fishers, and other constituents in addressing major economic and social transitions, including the development of economic and social indicators.

#### Objective CD 1.2

Identify and assess current approaches to watershed planning, habitat restoration and salmon recovery.

#### Objectives CD 1.3

Support efforts that engage industry and communities in developing ecologically friendly tourism and recreation opportunities in the Pacific Northwest.

#### Objective CD 1.4

Examine alternative management strategies and develop models to address complex marine systems.

#### Objective CD 1.5

Provide an educational forum for coastal managers to engage with communities and address issues that will lead to improved coastal management policies and options.



## GOAL CD 2

Mitigate the impacts of **coastal hazards** and ecosystem change on coastal communities in the Pacific Northwest and beyond.

### Objective CD 2.1

Develop tools and techniques to analyze the impacts of environmental change and coastal hazards.

### Objective CD 2.2

Disseminate information on mitigation of coastal hazards to state, tribal and local governments and stakeholders in Washington state, in order to reduce the vulnerability of local communities on these hazards' effects.

## GOAL CD 3

Enhance the capacity of **coastal industries** to adapt to and prosper in the changing economic and regulatory environments of the Pacific Northwest.

### Objective CD 3.1

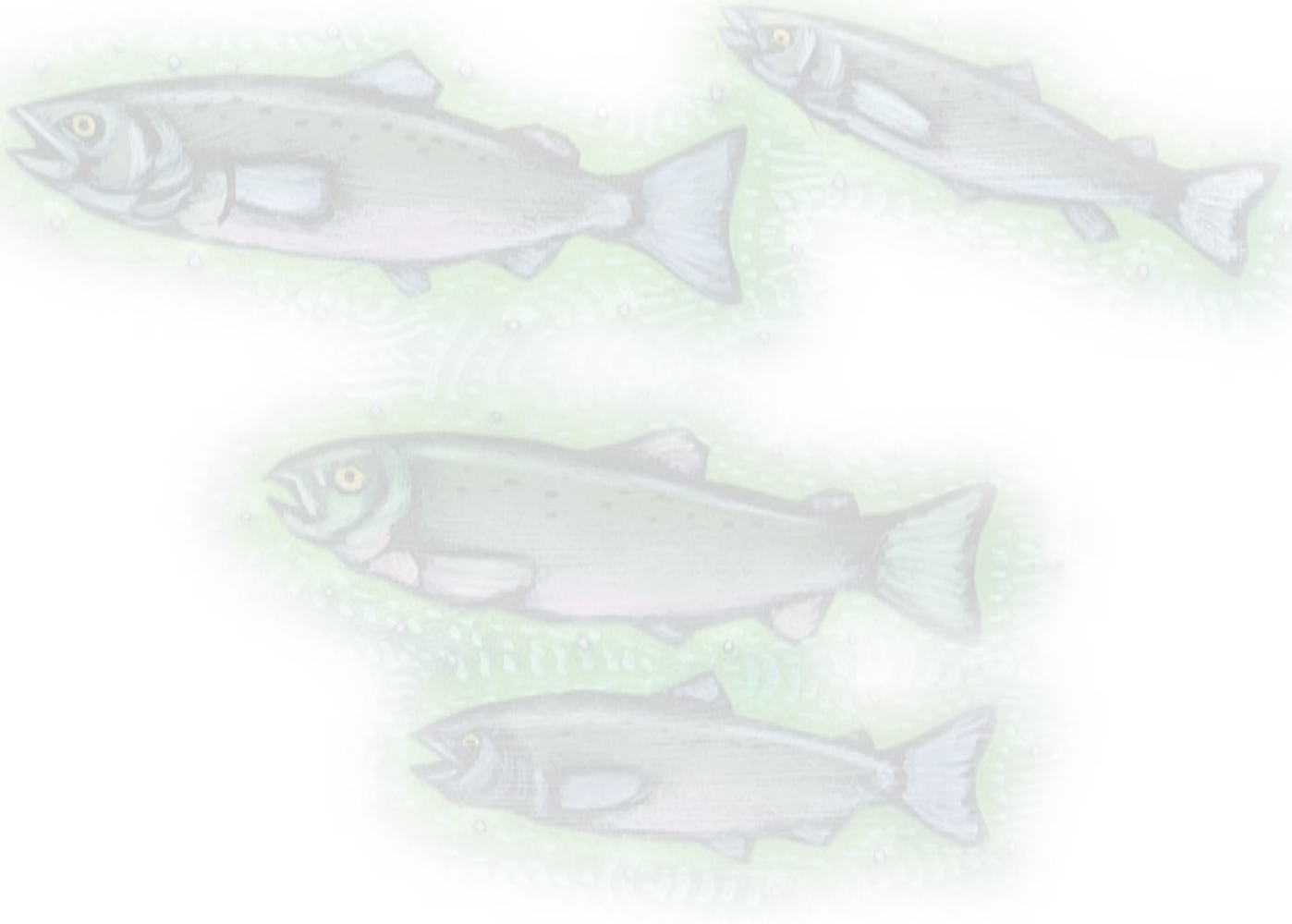
Develop and disseminate information and tools to help marine industries enhance their efficiency, productivity and sustainability.

### Objective CD 3.2

Work cooperatively with agencies and industry to address issues adversely affecting the future of marine industries.

### Objective CD 3.3

Develop partnerships to facilitate resolution of conflicts among marine resource users.



## Education, Training and Public Information

*Educating the workforce and informing the public as a means of sustaining the vitality of national marine resources and the enviable lifestyle in Washington state and the Pacific Northwest.*

WSGP works with institutions of higher learning throughout the state to maintain a high standard of teaching and research, provides K-12 teacher training on marine topics, and works closely with educational programs and information services to disseminate information on marine resources and the environment to the public.

Customarily, WSGP research and education projects involve the training of graduate and undergraduate students, as well as post-doctoral investigators. WSGP presents students with opportunities to compete for many different fellowship and internship programs. We actively participate in:

- Dean John A. Knauss Marine Policy Fellowship Program;
- Sea Grant Industry Fellowship Programs;
- NMFS/Sea Grant Resource Economics and Population Dynamics Fellowship Programs;
- NOAA's Coastal Services Center Coastal Management Fellowship Program.

Areas of interest for strategic investment include: continued support for graduate and undergraduate students; developing partnerships to provide training, workshops and conferences on topics of interest to marine business, management agencies, tribes and non-governmental and government organizations; continued support of K-12 education through teacher training activities and related publications; development of new communication tools and outlets to get appropriate information into the hands of decision-makers and the public, with particular emphasis on marine habitats and the critical needs of stressed populations; development of our role as an information broker through the use of printed and electronic communications and media relations; and support of staff professional development through in-house and external training.

### GOAL ETI1

Maintain a **highly trained workforce** that sustains the vitality of the marine and coastal environment of Washington state and the nation.

#### Objective ETI 1.1

Support graduate and undergraduate students and post-doctoral fellows at the university level.

#### Objective ETI 1.2

Support and promote fellowships that enable students to work with industry and government to enhance their education, including the Sea Grant Dean John A. Knauss Marine Policy, Sea Grant Industry, NMFS/Sea Grant Resource Economics and Population Dynamics and Coastal Management Fellowships.

#### Objective ETI 1.3

Create a diversity of educational programs for users of Washington state's marine and coastal resources that encourages a sustainable environment, using appropriate tools and techniques, with an emphasis on emerging electronic technologies.

#### Objective ETI 1.4

Ensure that the WSGP staff are current in their subject expertise and have the latest skills in the delivery of programs.

## GOAL ETI 2

Develop a scientifically literate and **environmentally informed citizenry** in order to encourage stewardship of Washington's marine and coastal resources.

### Objective ETI 2.1

Assist the news media and stakeholder groups in obtaining reliable and unbiased science-based information.

### Objective ETI 2.2

Develop educational programs that lead to Washington's citizens' and tribal members' awareness, understanding and action in marine and coastal environmental, economic and social issues.

### Objective ETI 2.3

Work with public agencies, tribes and community groups to disseminate information on critical needs of stressed marine populations, including those listed under the Endangered Species Act.

## GOAL ETI 3

Promote high-quality, **interdisciplinary marine education.**

### Objective ETI 3.1

Develop new approaches to marine education by involving experts in a range of academic disciplines.

### Objective ETI 3.2

Build on existing interagency partnerships among state, county, and local governments and communities that focus on marine educational activities.

### Objective ETI 3.3

Support innovative and emerging educational programs at community college and university levels.





# Measures of Program Success

WSGP strives to create a broad-based portfolio of research, education and outreach activities, focusing on traditional Sea Grant strengths. Decisions to initiate and support research, education and outreach projects are based on an examination of benefits to be derived, and the unique contribution that Sea Grant can make. Such decisions are grounded in many different modes of evaluation and assessment, ranging from standard extension measures (such as constituent contact hours) to surveys and evaluation forms completed by conference participants.

WSGP staff document quantitative and qualitative measures of success, or metrics, to determine progress made over time. Key metrics include levels of support for researchers and their students, publications and presentations, economic and environmental outcomes of projects, and connections with users.

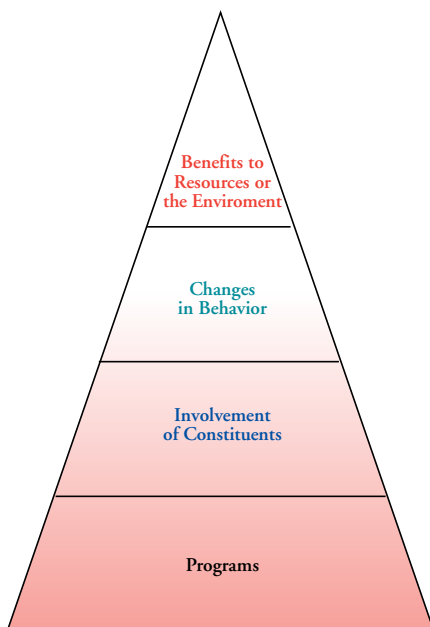
Criteria have been developed to determine whether an activity should be included in the WSGP portfolio, warrants additional emphasis and funding or should be eliminated from the program. These criteria are applied to activities in both current and emerging program areas.

In evaluating the success of an existing activity, positive impacts must be demonstrated in one or more of three outcome areas:

- Behavioral Change (Figure 4)**
- Economic Benefit (Figure 5)**
- Scholarly Pursuit (Figure 6)**

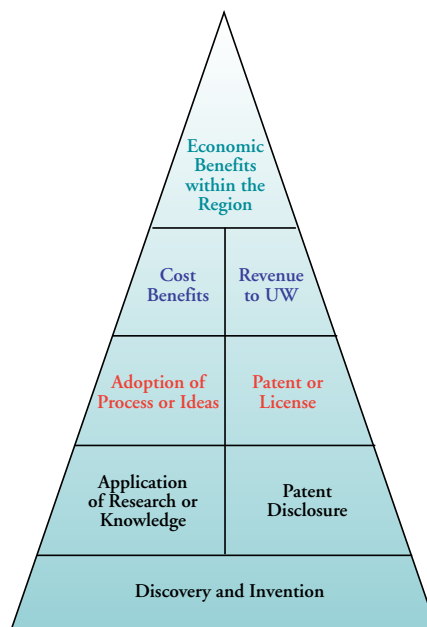
Decision Pyramids for each of these areas have been developed by the WSGP strategic planning team to assist in evaluating these impacts. Any WSGP-funded activity must show progress toward a higher level of impact on at least one of these pyramids. Progress in more than one pyramid is preferred.

The length of time that an activity occupies a level of any pyramid will vary, depending on the nature of the activity, the degree that the external environment accepts and encourages the activity, and the amount of funding and staff time directed towards the activity. Some activities may rise quickly as the immediacy of the problem soars, new technologies and paradigms accelerate progress or additional funding becomes available.



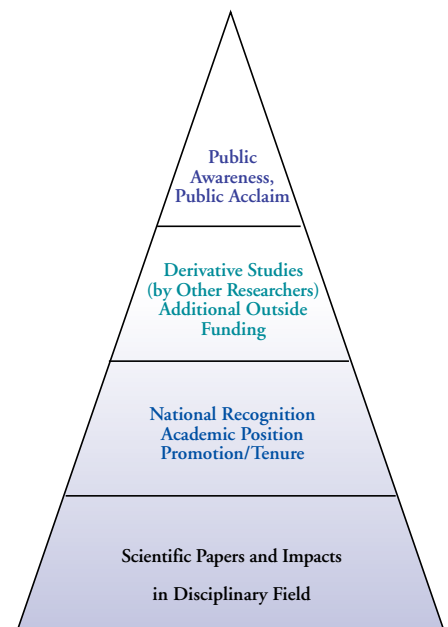
**BEHAVIOR CHANGE**

Figure 4



**ECONOMIC BENEFIT**

Figure 5



**SCHOLARLY PURSUIT**

Figure 6

## WSGP Self-Study

Activities that are primarily research-oriented are expected to make progress in the Scholarly Pursuit outcome area but are strongly encouraged to move forward in the other areas through involvement in or cooperation with outreach activities. Similarly, activities that center on outreach efforts are expected to make progress in Behavioral Change among constituents, but will often contribute to Economic Impact and Scholarly Pursuit.

In 2004, WSGP completed a self-study following the process and format favored by research centers on the University of Washington campus. The process reviewed the administrative procedures, staffing, student activities, planning, and decision-making processes that guide the program. A copy of the Self-Study document is available in the WSGP offices.

In deciding whether to include new activities in WSGP, the following questions are addressed:

- Does the activity fall into one of the five critical program areas?
- Will the activity make advancements in one or more of the outcome areas?
- Will the use of strategic partnerships help WSGP researchers and staff to succeed?
- Is there an identified funding source for the activity or a strong likelihood that funding will become available?

If the answer to all four questions is “yes,” the activity can be considered for inclusion in the program.

In addition, a measure of venture capital is reserved for investment in higher risk activities — particularly in fields of emerging research — even though these activities may not fit into the five critical program areas or directly meet the prescribed measures of success.

## Implementation

The WSGP strategic plan is implemented through a triennial program plan. The project solicitation process (RFP) released by WSGP documents the process for developing and implementing the program. Projects and activities are selected based on criteria developed by WSGP (Appendix B). The process by which we select projects is outlined in Appendix C. Program progress and outcomes are detailed in WSGP's annual report, program directory and program Web site. WSGP also manages periodic state and special national competitions for research and outreach funds. These special competitions are folded into the base WSGP program and face the same rigorous assessment and evaluation criteria as core program activities.

Detailed activities for the three-year period 2004-2006 are documented in the WSGP Program Plan. WSGP program plans that will be prepared in the years 2006 (for the period 2007-2009) and 2009 (for 2010-2012) will outline future activities. Beginning in 2000, an annual implementation plan and progress report has detailed progress in achieving our implementation goals and objectives.

## References

- British Columbia/Washington Environmental Cooperation Council, Marine Science Panel, *The Shared Marine Waters of British Columbia and Washington* (1994)
- College of Ocean and Fishery Sciences, University of Washington, *Strategic Plan* (1998)
- National Marine Fisheries Service, *Endangered Species Act Status of West Coast Salmon & Steelhead*, [nwr.noaa.gov/1salmon/salmesa/pubs/1pgr.pdf](http://nwr.noaa.gov/1salmon/salmesa/pubs/1pgr.pdf) (updated 2004)
- National Oceanic and Atmospheric Administration, U.S. Department of Commerce, *NOAA Strategic Plan, 2004 – 2008* (2003)
- National Research Council, Ocean Studies Board, *A Review of the NOAA National Sea Grant College Program* (1994)
- National Sea Grant College Program, NOAA/DOC, *NOAA Sea Grant Strategic Plan for FY2003 -2008 and Beyond* (2004)
- Pacific Northwest Regional Marine Research Program, *Research Plan* (1993)
- Puget Sound Water Quality Action Team, State of Washington, *Puget Sound Water Quality Management Plan* (2000)
- Puget Sound Water Quality Action Team, State of Washington, *2003 - 2005 Puget Sound Water Quality Work Plan*
- Sea Grant Association, Sea Grant Theme Teams, [sga.seagrant.org/themetteams.htm](http://sga.seagrant.org/themetteams.htm) (2004)
- Washington Sea Grant Program, *Research, Outreach and Partnerships, 2004-2007* (2004)
- Washington Sea Grant Program, *Program Plan, 2001 - 2004* (2000)
- Washington Sea Grant Program, *Program Plan, 2004 – 2007* (2003)
- Washington Sea Grant Program, *Call for Preproposals, Call for Proposals and Proposal Process Questions & Answers* (2003)

# Appendix A

## Stakeholders

### Common Resources

Marine resources of Washington state and the nation  
Future generations  
Youth  
Public  
Resource users

### Governments

Federal and state natural resource managers  
Tribal governments  
Management and staff of NOAA  
Federal Executive Branch  
State Executive Branch  
Local governments  
Elected officials

### Non-Governmental Organizations

Environmental groups  
Private foundations  
Organized youth groups

### Educational Institutions

Researchers/Students  
University of Washington administration and colleges  
Sea Grant National Network  
K-20 teachers  
Other educational institutions  
Professional organizations

### Industry and Trade

Marine industries  
Trade associations  
Public enterprise

### Media

Newspapers  
Magazines  
TV  
Radio  
Electronic (World Wide Web)

# Appendix B

## WSGP Project Selection Criteria

### Research Project Criteria

The best Sea Grant **research** proposals combine scientific excellence and a focus on problems or opportunities of broad societal (resource management, industrial, public) concern. Projects will be selected based on the following inclusive criteria:

- Scientific quality;
- Significance of expected scientific contribution;
- Importance of the marine resource/marine environmental need or opportunity that the project addresses;
- Appropriateness as a university-sponsored activity;
- Potential for societal impact;
- Interaction with other projects and activities and potential for leverage of funds;
- National competitiveness; and
- Capabilities of project team.

### Education Project Criteria

The best Sea Grant **education** proposals focus education efforts on problems or opportunities of broad societal concern, such as resource management, public interest or industrial use. Innovative education projects will be selected based on the following inclusive criteria:

- Potential for making a significant contribution to resource conservation;
- Importance of the marine resource/marine environmental need or opportunity addressed by the project;
- Linkage of the information or programming to a strong science base;
- Potential as a model, or reproducible project, or for long-term use;
- Objective and impartial nature of the proposed project;
- Importance of the target audience and readiness of that target audience to receive the information or programming;
- Appropriateness as a university-sponsored activity, carried out by an educational institution;
- Interaction with other projects and activities and potential for leverage of funds; and
- Capabilities of project team.

# Appendix C

## WSGP Project Selection Process

A four-step decision process will be followed for funding projects:

### Step 1.

Preproposals following the provided format will be widely sought. We will seek advice on these preproposals from the Washington Sea Grant Program Steering Committee and other knowledgeable parties. Those projects that, when combined, would form the strongest overall program will be selected for further development.

We discourage investigators from submitting more than two preproposals.

The number of preproposals selected for full proposals will be based upon an optimistic evaluation of the funding available for the proposal period.

### Step 2.

Full proposals will be solicited from those investigators whose preproposals are selected in Step 1. Guidance for preparing full proposals will be provided to successful investigators.

Peer review of the full proposals will be sought to provide an independent and knowledgeable evaluation that will help determine which proposals will be selected for the institutional program proposal that is then submitted to the National Sea Grant College Program. An external review panel of experts will provide guidance in the selection process. Where possible, investigators will have an opportunity to modify their proposals on the basis of the review comments.

### Step 3.

The proposed institutional program will be submitted to the National Sea Grant College Program, National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce, for funding.

### Step 4.

The National Sea Grant Program will review the institutional proposal and its elements. Assuming that required procedures have been followed, quality control criteria have been met and federal appropriations have not changed dramatically, the proposal will be approved.



