JOINT OCEAN COMMISSION INITIATIVE

ONE COAST, ONE FUTURE

SECURING THE HEALTH OF WEST COAST ECOSYSTEMS AND ECONOMIES

RECOMMENDATIONS TO LOCAL AND STATE LEADERS FROM THE JOINT OCEAN COMMISSION INITIATIVE

ONE COAST, ONE FUTURE

SECURING THE HEALTH OF WEST COAST
ECOSYSTEMS AND ECONOMIES

January 2009

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Wednesday, June 20, 2007
Admiral James D. Watkins (Ret.), Co-Chair
Hon. Leon E. Panetta, Co-Chair
Joint Ocean Commission Initiative
1920 L Street NW, Suite 500
Washington, DC 20036

Dear Admiral Watkins and Mr. Panetta:

As local government officials and state legislators we take very seriously our obligation to sustain the livelihoods and well being of the citizens we represent, and the natural resources that sustain our communities. At the same time, we recognize that our actions at the local level collectively affect the state and national interest in maintaining healthy oceans and coasts that support thriving economies and ecosystems.

Both the U.S. Commission on Ocean Policy and the Pew Oceans Commission acknowledged the vital role of local governments in making myriad decisions affecting our ocean and coastal resources. The Joint Ocean Commission Initiative has similarly recognized the importance of networks of people involved in local, state, and regional ocean issues to achieving the meaningful ocean policy reform called for by the two national commissions. Indeed, the Joint Ocean Commission Initiative lauded the West Coast Governors' Agreement on Ocean Health as a recent example of regional cooperation that is putting state-level efforts at the forefront of advancing U.S. ocean interests.

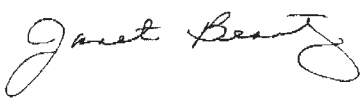
It is against this backdrop that we write to ask the Joint Ocean Commission Initiative to provide us a report identifying the highest priority actions that should be taken to ensure that local governments and state legislators in Washington, Oregon, and California are able to effectively advance our mutual interest in vibrant, sustainable coastal communities and ocean resources.

We are particularly interested in your counsel on practical, locally-relevant ways to implement ecosystem-based management, to incorporate sound science in decision making, and to improve the governance of our ocean and coastal resources. It is also our hope that a report back to us could provide broader West Coast recommendations as well as specific state-by-state recommendations that could build support for local initiatives and opportunities for action.

We appreciate your continued work and commitment to advance the recommendations of the U.S. Commission on Ocean Policy and the Pew Oceans Commission. A report from you could help us ensure that the citizens within our cities, counties and states enjoy vibrant coastal communities and healthy ocean resources for generations to come.

Sincerely,

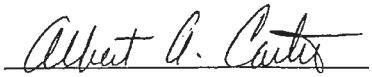
James Auborn, Mayor
Port Orford, Oregon



Janet Beautz, Supervisor
Santa Cruz County, California

Sam Blakeslee, Assemblyman
California State Assembly

Deborah Boone, Representative
Oregon House of Representatives



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Grays Harbor County, Washington

Nancy Gardner, Council Member
Newport Beach, California

Bill Hall, Commissioner
Lincoln County, Oregon

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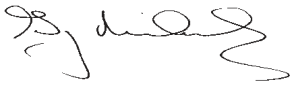
Don Munks, Commissioner
Skagit County, Washington

Pedro Nava, Assemblymember
California State Assembly



Greg Nickels, Mayor
Seattle, Washington

Kevin Ranker, Commissioner
San Juan County, Washington

Ron Sims, Executive
King County, Washington

Pam Slater-Price, Supervisor
San Diego County, California

Harriet Spanel, Senator
Washington State Senate

Darrell Steinberg, Senator
California State Senate

Mark E. Wheetley
Mayor, City of Arcata

John Woolley, Supervisor
Humboldt County, California

January 2009

EXECUTIVE SUMMARY

In 2007 the Joint Ocean Commission Initiative received a letter from nineteen local and state elected officials from California, Oregon, and Washington requesting guidance on high priority actions that they, in their capacity as local and state officials, can take to improve the health of coastal and ocean ecosystems and incorporate sound science into decision making. The Joint Initiative welcomed the opportunity to work with these ocean champions, recognizing the critical role of local and state elected leaders in ensuring a vibrant future for our coastal communities and the ocean and coastal resources on which they depend. The unique qualities of each community and ecosystem and the importance of local knowledge, priorities, and values in policy making require that each place determine its own path forward. However, the Joint Initiative believes the common solution to the myriad challenges local leaders face can be found in integrated decision making that takes into account the interconnections within and among ecosystems, climate change and its significant impact on the world around us, and the important relationship between ecosystem health and human quality of life. The recommendations contained in this report focus on actions that local leaders can take to implement an integrated approach and ways that state legislatures can support their efforts.

Recommendations to Local Leaders

1. **IDENTIFY A COORDINATION AREA AND ENGAGE STAKEHOLDERS IN SETTING GOALS.** Coordinate people within geographic areas that are based on ecological and socioeconomic characteristics and at the appropriate scale to address critical issues. Then, engage the public, stakeholders, and all relevant agencies in setting clear, measurable goals for the health of coastal and ocean ecosystems and economies.

2. **UNDERSTAND AND MONITOR ECOSYSTEM HEALTH.** Collaborate with managers, scientists, and citizens to assemble information about the condition of coastal and ocean resources and the local economy that depends on them. Use that information to manage adaptively, particularly in light of climate change.

3. **ESTABLISH COORDINATING MECHANISMS.** Coordinate citizens, agencies, and stakeholders across jurisdictions and sectors in identifying and implementing strategies to achieve multiple ecosystem goals.

4. **MAKE THE LAND-SEA CONNECTION.** Ensure that existing codes and ordinances adequately protect the health of coastal and ocean ecosystems, focusing in particular on reducing the impacts of land uses and development on water quality.

Recommendations to State Legislatures

5. **COLLECT AND INTEGRATE LOCALLY-RELEVANT INFORMATION.** Facilitate the collection and integration of high quality coastal and ocean information that is critical for informed decision making.

6. **SUPPORT INTEGRATED, ECOSYSTEM-BASED APPROACHES, PARTICULARLY AT THE LOCAL LEVEL.** Pass legislation that supports integrated, ecosystem-based approaches to management, in particular providing incentives and support for local communities to coordinate at ecosystem scales and address coastal and ocean issues proactively.

7. **CONSIDER MARINE SPATIAL PLANNING.** Consider comprehensive spatial planning for marine areas whose management is complicated by several conflicting uses.

Addressing Climate Change Impacts: An Overarching Issue

8. **PLAN FOR CLIMATE CHANGE IMPACTS AT ALL LEVELS OF GOVERNMENT.** Require the coordinated development of local and state climate change adaptation plans to prepare coastal communities and ecosystems for sea level rise, changes in the habitat and life cycles of marine life, and increasing frequency and intensity of coastal hazards, and other impacts.

Acquiring Resources to Implement an Integrated Approach

9. **MAINTAIN OR ENHANCE FUNDING FOR CORE COASTAL AND OCEAN PROGRAMS.** In this time of economic slowdown, it is particularly important for leaders at all levels of government to vigilantly ensure that the core coastal and ocean programs so important to protecting ecosystem health maintain current funding levels, and are enhanced where possible.

10. **SEND A CLEAR MESSAGE TO CONGRESS AND THE ADMINISTRATION.** Local and state leaders should call on Congress and the incoming Obama Administration to establish a national ocean trust fund and increase funding to address critical coastal and ocean issues that are important to the nation.

11. **CREATIVELY CONSOLIDATE OR REALLOCATE EXISTING RESOURCES.** Local leaders should ensure they are taking advantage of the full range of grants offered by federal and state agencies, leverage resources with other jurisdictions to address shared priorities, build on existing progress, and establish programs to recognize and support local communities that demonstrate commitment to an integrated, ecosystem-based approach.

12. **ESTABLISH PUBLIC-PRIVATE PARTNERSHIPS FOR FUNDING AND IN-KIND RESOURCES.** Local leaders should consider establishing public-private partnerships to develop and implement strategies for coastal and ocean health.

BACKGROUND

Important coastal and ocean resources are declining in many places domestically and around the world. To formulate responses to the root causes of this decline, two independent national commissions, the Pew Oceans Commission and the presidentially-appointed U.S. Commission on Ocean Policy, released reports in 2003 and 2004 that identified remarkably similar core priorities and made complementary recommendations in a number of areas. These core priorities include the need for significant ocean governance reforms, increased reliance on science in management decisions, and more funding for coastal and ocean programs—all grounded in an integrated approach to managing coastal and ocean resources that accounts for the interconnectedness of our marine ecosystems, economies, and cultural heritage.

To accelerate implementation of the Commissions' recommendations, in early 2005, members of both Commissions agreed to form a collaborative effort called the Joint Ocean Commission Initiative. The Joint Initiative works closely with networks of people involved in local, state, and regional ocean issues and pursues movement on critical national ocean policy issues that reflect the Commissions' core priorities.

In 2007 the Joint Initiative received a letter from nineteen local and state elected officials from California, Oregon, and Washington requesting guidance on high priority actions that they, in their capacity as local and state officials, can take to implement coastal and ocean policies consistent with the recommendations of the Ocean Commissions. In their letter these leaders acknowledge the potential to address many critical coastal and ocean issues through integration of management efforts at an ecosystem scale, as well as the importance of incorporating sound science into decision making. The Joint Initiative welcomes the opportunity to work with these ocean champions, recognizing the critical role of local and state elected leaders in ensuring a vibrant future for our coastal communities, addressing the challenges of a changing climate, and protecting the ocean and coastal resources they depend on for societal well-being, economic vitality, and indeed, life itself.

About this Report

This report presents the Joint Initiative's recommendations for actions local and state elected leaders can take to improve the health of coastal ecosystems and economies. The recommendations focus on:

- Actions local leaders can take to implement an integrated, ecosystem-based approach
- Actions state legislatures can take to support local communities in this effort
- Ways both local and state leaders can begin to address coastal climate change impacts
- Strategies coastal communities and state legislatures can employ to ensure the resources needed to implement the recommendations are available
- On-the-ground examples of how local and state governments on the West Coast are already making progress toward an integrated, ecosystem-based approach

The local and state officials who requested this report have sparked a necessary discussion about how elected leaders can take actions to implement a broader vision for healthy coastal ecosystems and economies on the West Coast that reaches beyond the boundaries of their individual jurisdictions. The unique qualities of each local community and ecosystem and the importance of local knowledge, priorities, and values in policy making require that each community determine its own path forward in addressing the issues that are important to local quality of life. The Joint Initiative believes the solution to the myriad challenges local leaders face can be found in integrated decision making that accounts for the interconnections within and among ecosystems and the important relationship between ecosystem health and human quality of life. The recommendations in this report can help local and state leaders to identify specific policies and projects that build an integrated approach toward reaching the unique and varied goals of their communities.

Throughout this report, recommended decision making processes are illustrated through existing examples of progress on the West Coast. The Joint Initiative acknowledges there are numerous additional examples of local communities, states, and private organizations that are making important strides and whose efforts at integrated management of ocean and coastal resources are not specifically referenced here. The Joint Initiative applauds the many leaders along the West Coast who are championing the sustainability of ocean and coastal resources and the local communities that depend on them. In particular, the Joint Initiative commends the leadership and initiative of the elected officials who requested this report. In many cases, they represent jurisdictions that are cited as examples of progress or are engaged in other important state and local efforts to better manage, protect, and restore the coastal ecosystems and economies that are so important not only to their local constituencies, but to their states and to the nation.

Coastal and Ocean Ecosystems Under Threat

Healthy coasts and oceans provide us with very real benefits, including recreation and tourism opportunities, an abundance of fish and wildlife to eat, watch, enjoy, and make a living from, shoreline protection, a means of transportation and trade, and climate regulation. Unfortunately, the goods and services that healthy coastal and ocean ecosystem provide are in many cases declining sharply because of the impacts of some human activities. While these declines are certainly not limited to the West Coast of the United States, they are causing a sense of urgency among elected leaders, coastal and ocean managers, and residents in California, Oregon, and Washington.

The decline of coastal and ocean health stems from a fundamental mismatch between the way ecosystems work and the way we manage the activities that impact them. Coastal and ocean ecosystems do not fit neatly within the jurisdictional boundaries that guide and distinguish various governmental regulatory and management authorities. Neither do our current policies and management approaches typically consider or account for the cumulative impacts of the range of human activities when making policy and management decisions, which may be entirely based on any given activity as if it were occurring in isolation. In addition, the management of coastal and ocean resources is fragmented by an outdated and disjointed collection of laws, institutions, and jurisdictions. At the federal level alone there are more than 140 laws, dozens of agencies, and divided authority. Add to this a vast number of state and local jurisdictions, each with their own laws and regulations, and it becomes clear that this overlapping and uncoordinated patchwork cannot effectively address the complex challenges that coastal communities face. The result is an unnecessarily frustrating, costly, confusing, and time consuming process for decision makers, resource users, and the public.

ECOSYSTEMS are the interlocking human and environmental components of the world around us, the natural machinery that allows humans, plants, and animals to thrive on this planet.

Rapid advances in ecosystem science and economics have revealed the many ways coastal economies and quality of life are dependant on the goods and services provided by properly functioning ecosystems. This relationship means that governance mismatches and inefficiencies impact coastal communities in many tangible ways.

Conflicts about existing ocean uses

The lack of coordination among a broad range of agencies, laws, and regulations at various levels of government over existing uses of coastal resources leads to conflicts and uncertainty among ocean users, coastal residents, and government agencies. Examples on the West Coast include:

- Heated disagreements over the management of marine reserves and protected areas in or near traditional fishing grounds

- Community struggles to revitalize working waterfronts in the face of declining natural resource-based industries and increasing tourism
- Conflicts between military, shipping, commercial and recreational fishing, energy production, and marine conservation interests about uses of the sea and impacts on threatened and endangered species
- Battles within and among communities over allocation of fresh water for salmon, agriculture, dams, and thirsty cities
- Struggles within communities to encourage the type of economic growth that also protects coastal water quality and critical habitat needed to sustain life
- Conflicts over the need to both produce electricity for communities and protect and restore the living marine resources those communities depend on for food, livelihood, and enjoyment, particularly as related to once-through cooling of power plants and hydroelectric dams

Conflicts exacerbated by emerging uses

In addition to the already conflicting mix of existing uses, local and state leaders are facing growing political pressure and an increasing number of proposals for new ocean uses. Each of these new activities has benefits and potentially negative impacts that, ideally, would be evaluated comprehensively and transparently against clearly established societal goals and priorities. New and proposed uses causing conflicts on the West Coast include:

- Wave and tidal energy facilities
- Ocean-water desalinization plants
- Offshore and coastal aquaculture
- Liquefied natural gas terminals
- New marine reserves and protected areas

Land use and degradation of coastal water quality

Coastal water quality along the West Coast is threatened by pollution from numerous point and nonpoint sources, compromising the health of humans and marine wildlife, leading to beach advisories and closures, and contributing to increasing occurrences and severity of harmful and even toxic algal blooms that kill and contaminate marine life, including valuable shellfish. A key challenge to protecting and improving coastal water quality is the fragmentation of decision making related to the various sources of pollution that include:

- Runoff from lawns, streets, parking lots, and agricultural operations that add vast quantities of nutrients and other manmade chemical pollutants to coastal waters
- Combined sewer and stormwater overflow systems that discharge raw sewage into rivers and coastal waters during storm events
- Malfunctioning or poorly sited septic systems that allow waste to enter coastal waters
- Discharges from wastewater treatment plants, industrial facilities, and power plants that change the chemistry and temperature of coastal waters

- Tons of trash, plastics, derelict fishing gear, and other debris that endanger and kill ocean life
- Invasive marine species released from the ballast water of ships and inappropriate disposal of aquarium species, among other sources, which threaten the survival of native species and the health of coastal ecosystems
- Atmospheric deposition of chemicals from places across the Pacific Ocean that impact West Coast waters and present the ultimate multi-jurisdictional management challenge

Declining fisheries and impacts on fishing communities

Regional-scale declines of many key fish populations are leading to significant decreases in catch, access, and viability of local fishing fleets and associated industries. This poses a dramatic threat to an important cultural heritage and source of food, income, and enjoyment for many people on the West Coast. The closure of most of the West Coast ocean salmon fishery, for example, is expected to cost the region a loss of thousands of jobs and hundreds of millions of dollars. The management and regulation of human activities that affect the viability of fish populations, which include a range of land and ocean uses, depends on agencies and levels of government that are making decisions and taking actions independently of one another. This jurisdictional fragmentation, and the lack of any strategy to overcome it, mean that local and state agencies responsible for managing each of these sectors do not routinely account for how the activities they permit or even encourage may impact one another. Roots causes of the fisheries decline most likely result from a combination of factors, including:

- Habitat degradation directly resulting from poorly planned coastal development
- Overfishing and use of some fishing gear that damages habitat and kills high numbers of nontarget species
- River and coastal water pollution from both land- and ocean-based sources
- Human-induced climate change and natural weather patterns
- River obstructions, water diversions, and other activities leading to changes in water and sediment flows

Climate change and coastal communities

A changing climate is having major impacts in the U.S., particularly on coastal communities, which are on the front lines of many significant climate-related ecosystem changes. Some of the most critical impacts that coastal communities are facing include:

- Sea level rise, which is causing inundation and saltwater intrusion on precious freshwater aquifers, higher storm surges and other flood events, and increasing erosion and infrastructure damage
- Stronger and more frequent storms that jeopardize human life, coastal property, and important habitat areas
- Changes in ocean circulation, upwelling, and other processes critical to the proper functioning of marine ecosystems

- Ocean acidification, the impacts of which we are only beginning to understand, but which is known to threaten the viability of entire categories of marine life and ecosystems

These complex and interrelated challenges are daunting, but fortunately governments at all levels are beginning to recognize the need for a new integrated approach that can lead to more successful, efficient, and coordinated management that achieves multiple social and environmental goals and engages citizens and local talent in implementing truly effective solutions.

Complex Challenges Demand a New Approach

Both Ocean Commissions, the Joint Initiative, and a range of other experts have advocated for improving management of coastal and ocean resources using a strategy that recognizes the interconnections within and among ecosystems and the people who depend on them rather than the more traditional approach of managing individual species or places as if they were isolated. This management strategy goes by many names. One is "ecosystem-based management," which emphasizes a shift from single-species to multi-species management by restoring and maintaining ecosystems. Another, "integrated coastal zone management" recognizes the strong connections between adjacent marine, freshwater, and terrestrial habitats and the benefit of managing them in a coordinated way on a regional scale. "Smart growth" is a community planning strategy that is consistent with an integrated approach in that it aims to focus new growth in revitalized urban centers, protect important ecosystem features, reduce sprawl and the accompanying increases in city services and taxes it often requires, promote energy efficient transportation, and make development decisions predicable, fair, and cost effective. Regardless of the terms used, the objectives of these approaches are to better coordinate government and engage citizens in taking account of the interactions that exist in the real world to achieve vibrant and sustainable communities, economies, and ecosystems.

"Stewardship of our oceans and coasts cannot happen with words alone."

—The Honorable William D. Ruckelshaus, Joint Initiative Commissioner and Chair, Leadership Council, Puget Sound Partnership

It is important to remember that humans do not manage the ecosystems that provide us with food, shelter, air, jobs, joy and recreation—we have little control over where wild fish swim or how ocean currents and winds move. However, we can understand these processes, identify and monitor indicators that gauge the effectiveness of our management measures, and modify human actions within the surrounding environment to accurately take ecosystem interactions into account in our pursuit of healthy and prosperous coastal communities. This approach can be used to achieve very specific objectives, for example increasing the value of local fisheries by marketing sustainable, local catch for a price

premium. Another specific objective might be development of alternative offshore energy that is environmentally responsible, that benefits adjacent local communities and the nation, and helps states make the necessary shift to renewable sources of energy; or revitalizing a working waterfront with a clean marina and sustainable fisheries, balanced with the tourism and recreation that is often critical for coastal economies. Also consistent with such an approach is protection of the natural diversity of species to ensure ecosystem health, productivity, and resilience to the stress of cumulative human activities, particularly important in light of climate change. The specific objectives might vary, but all communities share the same vision of high quality of life that an integrated approach can facilitate.

It is important to note that imperfect science should not prevent leaders from implementing an integrated management approach. Even though our understanding of coastal and ocean ecology and the social and economic forces that rely on coastal resources will always be evolving, we already have enough reliable science now to start making decisions that reflect the interconnections within ecosystems. Of course, decision makers should always fully consider and weigh the best available science and all potential impacts of activities when permitting, incentivizing, and regulating an activity.

The federal role

The federal government has an important role to play in improving ocean and coastal resources management. In addition to its jurisdiction over offshore areas beyond the three mile limit of state waters on the West Coast, it also has regulatory authorities over environmental quality (water and air) and some species management. Unfortunately, the various federal agencies are guided by a mishmash of laws and mandates that are not well-coordinated, leading to confusing and fragmented policies and regulations. And although there has been some progress, Congress and the Administration have not provided sufficient funding for ocean and coastal research and management, nor adequate assistance to local jurisdictions that keenly feel the impacts of polluted coastal waters, loss of marine life, natural hazards, climate change, and degradation of the coastal economy.

Local and state roles

Local and state leaders play a key role in integrating their unique understanding of their community and the surrounding environment when making decisions, rather than considering only single isolated parts at a time. Coordinated management at the local and state levels could result in better community planning and more effective laws and policies that can achieve multiple goals related to economic, cultural, and environmental considerations and quality of life. To address the varied and complex coastal issues they face, local leaders need good information about the biophysical environment, about how their quality of life and economy depend on specific coastal and ocean resources, and about how key components of ecosystems relate to and depend on each other. They need that

information to make informed decisions about setting goals and determining strategies to achieve them; establishing sound policies, incentives, and regulations that will lead to restoration, protection, and sustainable development of coastal areas; making tradeoffs among competing uses in coastal areas; assessing cumulative impacts of a variety of human activities; and monitoring key indicators of success to determine the effectiveness of existing policies and improve them over time.

Finding Opportunity in Crisis

The realities of the current financial crisis mean that ocean and coastal policy reform must now be seen through a new lens. Funding government programs, including natural resource management and protection, will be even more challenging at all levels of government. In addition to these challenges, however, there are also opportunities, including a new federal Administration and some new state and local leaders along the West Coast; an increasingly urgent national call for action to address climate change and its impacts; and a national discussion about development of offshore areas for alternative and traditional energy sources. Ocean champions at all levels should take advantage of such opportunities to focus public attention on coastal and ocean health, to highlight the critical connections between oceans and climate and the importance of coastal areas to our nation's economy and quality of life, and to promote "green jobs" initiatives that could benefit coastal communities in a number of ways, including revitalizing working waterfronts, promoting energy efficiency and new energy technologies, and restoring natural and built infrastructure.

ECOSYSTEM-BASED MANAGEMENT

Ecosystem-based management accounts for the relationships and interactions among the components of an ecosystem, including the humans and nonhuman species that depend on a functioning ecosystem for key goods and services (e.g. fish, water, recreation, and storm protection). It includes the following principles:

- Base management areas on ecosystems, not only political jurisdictions
- Focus on overall, long-term ecosystem health
- Consider cumulative impacts of different activities
- Recognize connectivity among and within ecosystems
- Respond to uncertainty with precaution
- Coordinate at scales appropriate to specific goals
- Restore and protect native biodiversity to strengthen resilience
- Develop indicators to gauge the effectiveness of management measures
- Acquire more and better science for decision making
- Engage stakeholders and the public
- Provide for adaptive management through systematic monitoring and adjustment

RECOMMENDED ACTIONS FOR INTEGRATING DECISION MAKING

An integrated, ecosystem-based approach is the most effective way for West Coast governments and citizens to restore, protect, and maintain the ecological and economic health of ocean and coastal areas. A key challenge to more effective integrated management is bridging administrative and political boundaries. This can be done without redrawing actual jurisdictional lines through effective coordination and complementary legislation between and among jurisdictions in an area. Because there may be bureaucratic tendencies to protect turf and desire to grow as individual agencies, effective coordination will require strong elected leadership that presents compelling incentives and advocates successfully for breaking down agency resistance to a new way of doing business. Elected leaders can find political support for these efforts by tapping into strong constituent desire for more coordinated and efficient government that can effectively address complex challenges.

State legislatures and municipal and county leaders possess important authorities, abilities, insights, and relationships that are critical for an integrated approach. These include:

- Authority over policies and regulations related to land use and development, including facilities and transportation planning, zoning of allowable land uses, codes and regulations related to stormwater and shoreline management, and enforcement of existing policies.
- Knowledge of their local ecosystem and community, including social, cultural, and economic challenges and opportunities. In particular, elected leaders enjoy valuable opportunities for community and citizen action that come from the strong sense of stewardship and volunteerism that characterizes many places on the West Coast.
- Relationships with their constituents, other community leaders, private industry and nonprofit organizations operating in the area, leaders of neighboring jurisdictions, and state, federal, and tribal officials. These relationships are invaluable in forming partnerships and facilitating collaboration needed for communities to reach their multiple economic, cultural, and environmental goals.

Integrating Decision Making: Recommendations for Local Leaders

1. IDENTIFY A COORDINATION AREA AND ENGAGE STAKEHOLDERS IN SETTING GOALS.

Coordinate people within geographic areas that are based on ecological and socioeconomic characteristics and at the appropriate scale to address critical issues. Then, engage the public, stakeholders, and all relevant agencies in setting clear, measurable goals for the health of coastal and ocean ecosystems and economies.

There is a geographic mismatch between jurisdictional and ecological boundaries that complicates efforts to address coastal issues, but communities and their institutions can overcome this problem with effective coordination. Once an appropriate scale and specific area for coordination have been determined, communities within that area can work together to better understand the ecosystem and its impact on local quality of life, set goals based on that information, and develop coordinated strategies to work toward them.

Local leaders should identify a coordination area based on environmental and socioeconomic factors and common sense. They should work with local people and scientists to determine both land and sea areas to include, as appropriate. The coordination area should encompass those local jurisdictions needed to effectively address key coastal challenges. For example, in many coastal communities nonpoint source pollution and its impact on coastal water quality is an important issue. In these cases, watersheds are logical coordination areas. Neighboring jurisdictions within a watershed could coordinate their efforts to address key nonpoint pollution issues such as failing septic tanks, overuse of agricultural and lawn chemicals, inadequate buffers along streams and rivers, and inappropriate development in sensitive areas of the watershed. Where sustaining the local fishing industry is a priority, communities might include areas of the sea that encompass key nearshore habitats and fishing grounds of the local fleet. They can then work with local fishermen and other ocean users, local and state agencies, and land use planning entities to coordinate protection of the life cycle of key fish species and provide incentives for sustainable fishing and land use practices. Of course, some specific actions or policies might require coordination on a larger or smaller scale. An integrated approach calls for coordination at whatever scale makes the most sense and best reflects the key interconnections within ecosystems and economies.

> "Supporting our local coastal communities requires more than reacting to immediate needs. We must do the big picture visioning necessary to preserve our quality of life for the next generation."
>
> *—The Honorable Kevin Ranker, Commissioner, San Juan County, Washington*

Local communities should ensure that the goals they strive to achieve through comprehensive planning and local codes and regulations prioritize properly functioning ecosystems that contribute to a high quality of life for coastal residents and support coastal-dependant economic activities. Local policies, regulations, and budget expenditures can provide clear and strong incentives for a balance of development and conservation that achieves multiple environmental and economic goals. This requires setting and prioritizing clear, measurable goals that reflect an understanding of the interconnections of ecosystems and provides a sound basis for:

- Evaluating tradeoffs among conflicting uses of land and sea
- Reducing conflict and negotiating compromises among competing ocean uses
- Analyzing both the direct and secondary impacts of existing and proposed activities
- Evaluating how existing policies and regulations are working to achieve goals
- Formulating coordinated implementation strategies to achieve goals and indicators for measuring progress
- Working with state and federal agencies, as well as nongovernmental organizations and local businesses, that are often willing to coordinate with local leaders to achieve community goals

Most local leaders face a range of competing pressures about uses of coastal lands and waters, and the political and legal processes used to resolve disputes can be costly and time consuming. To help address this, many local communities undergo comprehensive planning that includes setting broad community goals. However, these goals sometimes contradict one another, are rarely specific enough to allow for evaluation of meaningful progress, and are often not prioritized. They also rarely reflect the interconnections among various parts of the ecosystem, complicating progress toward any one goal.

Explicitly prioritizing measurable goals through a community process can provide greater clarity in decision making when activities conflict with one another, when amending local codes to provide incentives for certain activities, and when designing budgets and implementation strategies. For example, if a community has determined that it is more important to revitalize working waterfronts and fisheries than increase residential home construction along the coast, this prioritization should be reflected in its zoning and regulations and clearly guide individual permit and enforcement decisions.

Communities should be proactive in protecting and restoring the health of coastal and ocean ecosystems and the economies that depend on them, taking advantage of opportunities to address issues before they reach a point of crisis. On key emerging issues, like the siting of alternative offshore energy facilities or marine protected areas in adjacent coastal waters, communities should take initiative in identifying areas where specific activities would fit within their goals and engage industries and regulators directly and early, rather than simply react to proposed plans. Adjacent communities that coordinate on such proactive measures can increase their influence on these processes.

BEING PROACTIVE: REEDSPORT SETTLEMENT GROUP, CENTRAL COAST OF OREGON

The Reedsport Wave Energy Project is installing a series of wave energy buoys off the central coast of Oregon. Community leaders, agencies, stakeholders, and the developer have established a proactive, inclusive, and collaborative process to address a range of concerns. The goal is to produce a Settlement Agreement that would become part of the developer's license application to the Federal Energy Regulatory Commission. The Agreement will reflect consensus on potential effects to the environment and local community, necessary studies to be conducted to characterize these effects, and terms of an adaptive management program to ensure that the project minimizes negative socioeconomic and ecological impacts over time.

2. UNDERSTAND AND MONITOR ECOSYSTEM HEALTH. Collaborate with managers, scientists, and citizens to assemble information about the condition of coastal and ocean resources and the local economy that depends on them. Use that information to manage adaptively, particularly in light of climate change.

Local officials need good information to make sound decisions. In particular, when making decisions that impact the health of coastal and ocean ecosystems, they need good information about:

- The condition of coastal and ocean resources and the local economy that depends on those resources
- Key interactions within the ecosystem that need to be considered when making decisions about updating zoning schemes, amending codes and regulations, and considering individual permits for coastal development and other activities

For example, when considering a development proposal, it may be important to take into account the potential impacts on adjacent nearshore habitat for important fish species. Information helpful in doing this includes the location and description of those key habitat areas; the importance of the species that live there to the local fishing industry, tourism-related businesses, and quality of life of local citizens; and how the proposed development might affect the ability of those habitat areas to support life. The following passages outline the steps a local community might undertake to better understand its ecosystem.

(a) Develop a simple model. Local governments cannot collect and analyze every possible piece of information when making decisions. In order to identify what is more important, local leaders should facilitate development of simple visual models of the local ecosystem. These models can demonstrate how key parts of the ecosystem are interconnected and how the local economy and quality of life depend on those parts. For example, local decision makers might need to know the location of important rockfish nursing grounds, the major

sources of water pollution, how various uses of the coast by local citizens and visitors contribute to the local economy, or what factors are leading to decline of the local waterfront. The process of developing a simple ecosystem model to identify key interconnections should engage local experts, academic and government scientists, and stakeholders, and bring in outside expertise as needed.

(b) Gather data from a range of sources. Local governments have access to a wide range of data that is already being collected by state and federal agencies and can be useful for local decision making on coastal issues. In addition to this existing government data, a diversity of additional sources, including academic scientists, resource users (like fishermen and kayakers), business people, and nonprofit groups can provide high quality information. Local people who live and work in a community and depend on the ecosystem for livelihood and quality of life often have detailed knowledge that is critical to capture and incorporate. Much of the information is only provided to local communities when they request it, and when it is, it is often not presented in a form useful in local decision making. Nevertheless, gathering and understanding this existing information need not be complex or expensive. Gathering the information may require hiring one person, whose services and salary could be shared among neighboring jurisdictions in a watershed, to gather and analyze data. Or communities can work with partner organizations, such as local and regional nongovernmental organizations that are sometimes willing to provide staff time to help gather existing information and to work with decision makers to present it in a way that is useful to them. In addition, private entities often have important information that can be useful for decision making; nongovernmental organizations in particular can be excellent sources of information on the natural environment.

(c) Consider collaborative approaches to collect new data. State and federal agencies and nongovernmental organizations sometimes do not have the information needed or do not collect it at the right scale for local decision making. In these cases, local communities can combine resources with neighboring jurisdictions to share the burden of collecting new data on environmental and socioeconomic conditions in the ecosystem. An increasingly popular alternative is partnering with volunteers, fishermen, universities, and nongovernmental organizations to engage in collaborative research. Recreational and commercial fishermen, bird and wildlife enthusiasts, local property owners, businesses, students, and other citizens are collecting valuable ecosystem information in places along the West Coast under such programs. Not only does collaborative research help the community design, acquire, and interpret needed science, it fosters greater understanding among resource users and scientists, leads to confidence in the science, and supplements the income of off-season fishermen and other skilled local people. Finally, federal and state natural resources agencies may be conducting research nearby in state and federal parks, National Estuarine Research Reserves or National Estuary Programs. Some may be eager to partner with communities on specific research questions that can lead to more informed decision making.

PORT ORFORD, OREGON: PARTNERING TO UNDERSTAND THE LOCAL ECOSYSTEM AND ECONOMY

The town of Port Orford, Oregon is striving toward a more integrated approach to managing its ocean and coastal resources because its local economy and heritage is grounded in fishing, an activity that is intricately connected to long-term ocean and coastal ecosystem health. A commitment to sustainable use of the resource has led the local fishing fleet to adopt voluntary restrictions to protect spawning fish, work to achieve more coordinated and finer scale management, and take ocean impacts into account in land use planning. To increase their understanding of the ocean ecosystem they depend on, citizens of Port Orford are working with a range of local, state, and national agencies and organizations in conducting important local-scale ocean and coastal research. Efforts include:

- Defining boundaries for a Stewardship Area based on ecological and human use considerations
- Implementing community education and outreach initiatives on ocean science, water quality, and citizen involvement opportunities
- Establishing a Community Advisory Board to bring together local leaders and stakeholder groups
- Partnering with agencies, nongovernmental organizations, and local ocean users on collaborative research
- Securing resolutions from the city council in support of the community process and recognizing goals for the Stewardship Area
- Researching opportunities to improve stream and nearshore water quality through updated land use policies and practices

Coordination of these efforts is conducted by the Port Orford Ocean Resource Team (POORT), a local nonprofit that is staffed by local citizens and supported in part by a private foundation. The group's efforts to better understand the important interconnections in their ecosystem and community have led to improved communication with state agency staff. In fact, POORT and the Oregon Department of Fish and Wildlife recently signed a Memorandum of Understanding recognizing Port Orford as a pilot project for ecosystem-based management and committing to improved coordination on research and decision making between the agency and community.

In addition to better understanding the conditions and interconnections of ecosystems, communities should monitor progress toward goals by collecting information about key ecological and socioeconomic indicators over time. Local officials should provide the leadership necessary to guide their governments, in cooperation with neighboring jurisdictions and partner organizations as appropriate, to develop and measure key indicators of coastal ecosystem health, as well as the status of those local jobs, businesses, and aspects of human well-being that depend on a healthy coastal ecosystem. It is important to use two kinds of indicators in this effort:

- Indicators of changes in the coastal environment and how they are affecting communities (like canaries in the coal mine)
- Performance indicators to test whether management strategies and implementation are making progress toward goals

Monitoring should increase local leaders' understanding of whether policies are achieving both specific and measurable intermediate objectives, as well as longer-term ecological and socioeconomic goals. For example, if a community is managing riparian areas, it should monitor to ensure that current policies and laws are resulting in larger and more densely vegetated buffers along rivers and streams. However, it should also determine that these buffers are actually leading to better water quality, improved salmon habitat, or whatever the ultimate goals may be. If a community determines that the answers to these questions are yes, it can proceed with confidence under current strategies and have a strong argument for additional resources being allocated toward a successful approach. If not, the monitoring results might provide insights about actions that need to be taken in addition to or instead of current approaches.

All communities should engage partners, stakeholders, and the public in the design, execution, and interpretation of monitoring data to ensure that local knowledge is captured and that the community is invested and confident in the science. Many communities on the West Coast are already partnering with state agencies, universities, and nongovernmental organizations to provide the technical expertise, staff, and funding needed to carry out successful monitoring. Volunteers from the local community, including students, are often contributing by conducting activities such as water quality testing and counting of particular animal and plant species. In addition to providing valuable manpower in the monitoring effort, these volunteers have the potential to become dedicated and knowledgeable advocates for protecting and restoring ecosystem health.

LOCAL VOLUNTEERS CONDUCT ECOSYSTEM MONITORING

The Monterey Bay Sanctuary Citizen Watershed Monitoring Network in California coordinates, trains, and equips citizen volunteers across watersheds that feed into Monterey Bay to conduct monitoring. The network works with agencies to ensure that the data is useful and used in decision making.

King County, Washington engages local volunteers in conducting research on salmon returns every year as a way to collect data and build public support for salmon recovery. The county then makes the outcomes of this research available on the web and at public workshops, and provides technical assistance to neighboring jurisdictions to conduct similar research.

GETTING AND USING SOCIOECONOMIC INFORMATION

A business manager would never expect to run their enterprise successfully without a good accounting of inventory or without knowing who the customers are. Nevertheless, this is the situation many coastal municipalities and counties find themselves in as they work to incorporate into decision making consideration of the goods and services provided by coastal and ocean resources. Historically, economic data on coastal activities has focused on commercial fishing and some forms of tourism. New research, though, shows that other types of coastal uses including bird watching, surfing, diving, and kayaking also generate tremendous economic value, both to local participants and to the local industries that support the hospitality services used by tourists that participate in these activities.

Experts have developed methods to estimate the value to users of accessing coastal resources at little or no direct cost (e.g. the benefits gained by local day visitors and homeowners) and even benefits that accrue to society at large (e.g. benefits related to cultural heritage and quality of life). A recent report by Restore America's Estuaries*, The Economic and Market Value of Coasts and Estuaries: What's At Stake,* demonstrates that coastal health contributes directly to home values, recreational benefits, the protection of critical energy infrastructure, and even serves to keep waterways open for important maritime trade, all of this in addition to the traditional economic benefits often associated with commercial and charter boat fishing. Leaders need this information to understand what is at stake when tradeoffs between the use and the protection of coastal resources are made and, ultimately, how those decisions impact people.

States should develop simple, broadly applicable tools to measure and track the economic value and use of the goods and services provided by coastal resources. Simple tools could be developed for use by local governments along the West Coast based primarily on commonly available data. These tools, information, and guidance about how to interpret and use these tools should be publicly accessible (ideally online) and free.

Since data often are collected at state and regional scales and the interpretation of local indicator information requires a comparison with similar data from nearby coastal areas, a regional approach is called for. A pilot approach in Central and Southern California by the Coastal Ocean Values Center requires just one person to collect and analyze a core of economic indicators for areas from Monterey Bay to Santa Monica, demonstrating that similar projects could be conducted all along the West Coast with minimal government investment.

Create accountability for progress toward goals by periodically reporting monitoring results to the public. Using a small percentage of a total investment in an ecosystem protection or restoration initiative for monitoring that ensures the investment is sound not only makes common sense, but makes certain that limited public resources are spent wisely and provides taxpayers and other funders confidence that their investments are achieving results. Some regions use report cards or other reports on the state of the ecosystem to provide citizens, stakeholders, and public officials information about progress being made toward goals. In addition to reporting progress, publicizing results is also important to recognize local successes and the organizations and individuals who have made them possible.

3. ESTABLISH COORDINATING MECHANISMS. Coordinate citizens, agencies, and stakeholders across jurisdictions and sectors in identifying and implementing strategies to achieve multiple ecosystem goals.

In order to design and implement effective strategies that will achieve multiple goals, communities need to coordinate on ecosystem scales, across sectors and jurisdictions, and with the various agencies, departments, ocean users, and local citizens that can impact whether goals will be achieved. This can be done within existing regulatory frameworks and, of course, must occur in a way that is effective without prohibitively slowing decision making or increasing operating costs.

Local leaders should develop interagency and cross-jurisdictional mechanisms, such as regional councils or other structures, to coordinate key decisions and activities within coordination areas. These mechanisms should coordinate the efforts of heads of relevant local agencies with responsibility for public works, environmental protection, transportation, economic development, land use planning, administration, engineering, and public health and safety, as well as local citizens who represent a diverse and balanced range of interests. It is particularly important to include any party that can effectively bring a strategy to a halt so that major issues can be resolved, or at least taken into account, from the outset of a coordination process.

> "Collaboration is powerful. It requires communication, communication, communication."
>
> *—The Honorable Mark Wheetley, Mayor, Arcata, CA*

These coordination mechanisms should be established to develop and implement major local planning and policy initiatives, and integrate partnerships with state and federal agencies to coordinate actions that impact local communities. Initiatives may focus on addressing such topics as environmental protection, land conservation, housing and commercial development, transportation and infrastructure planning, and other important areas of public policy that affect the coastal ecosystem and economy. Coordination of efforts that address these varied topics will be particularly important in light of climate change

COLLABORATIVE EFFORTS IN WASHINGTON

Important collaborative ecosystem restoration efforts are underway in Washington. Both watershed-based salmon recovery efforts and Marine Resources Committees established to protect the nearshore areas of Puget Sound embody the principles of greater coordination and inclusiveness recommended in this report. The key strength of these projects is that they are grounded in collaboration among stakeholders, citizens and local, state, and federal agencies. In addition, they focus on tangible outcomes in specific locations, stimulating strong volunteerism and community support. Inspired by the success of these initiatives around Puget Sound, salmon recovery efforts have become a cornerstone of the Puget Sound Partnership's December 2008 Action Agenda, and the Washington legislature authorized in 2007 the development of additional Marine Resources Committees bordering the Puget Sound and the Pacific Ocean and provided state funding to help them get started. Grays Harbor County, Washington is exploring the establishment of the first of these Coastal Marine Resources Committees.

and the need for local communities to adapt to its impacts. Improved coordination can have tangible results, such as:

- Reduced confusion, conflict, cost, and duplication of agency responsibilities
- Better leveraging of limited resources as communities work together to maximize funds, information, and staff time
- Successful forums for addressing conflicts among management entities with different mandates and among users vying for a share of public resources
- Greater sense of stewardship by government agencies, citizens, and businesses that are operating in the community
- Increased ability to assess and manage the cumulative impacts of many different activities whose combined impacts on the ecosystem over time are often much greater than the sum of many small and separate actions

In some cases, these coordinating councils can be built on existing initiatives, such as watershed councils and conservation districts, which often have successful coordination, advisory, and community outreach processes underway. Coordinating across jurisdictions might require just one person or a small staff to assist in information exchange. Councils should also take advantage of existing public-private partnerships for funding, in-kind support, and better coordination with the work of nongovernmental organizations, businesses, community foundations, and private landowners.

Strong leadership is critical to the coordination and collaboration that is at the heart of an integrated approach. The leadership of a respected and trusted public figure who can unite competing factions in finding solutions is often critical to keeping competing parties at the table and encouraging them to continue negotiations through early difficulties in collaborative processes.

> "We govern by leadership or by crisis."
>
> *—The Honorable Leon E. Panetta, Co-Chair, Joint Ocean Commission Initiative*

4. MAKE THE LAND-SEA CONNECTION. Ensure that existing codes and ordinances adequately protect the health of coastal and ocean ecosystems, focusing in particular on reducing the impact of land uses and development on water quality.

Some land-based activities can cause detrimental impacts to coastal and ocean ecosystems and communities, including loss of wildlife habitat from inappropriately sited development, changes to community character and quality of life of citizens from sprawling growth, and loss of valuable top-soils from erosion. However, the most damaging impacts on West Coast marine ecosystems may come from land-based pollution of coastal and ocean waters.

Feasible and effective solutions to many coastal water quality problems have been developed. Unfortunately, there are many examples along the West Coast of local codes that do not allow, let alone encourage, developers and property owners to conduct innovative and beneficial activities. Comprehensive plans, zoning maps and codes, and local regulations should encourage concentration of new development in existing urban centers and away from key ecosystem features, promote clean marina and plastics recycling programs, and require Low Impact Development to allow water to filter naturally, among other activities. It is also important for metropolitan planning organizations and other state and local entities with responsibility for transportation planning to account for impacts on ocean and coastal health when making a range of decisions that affect coastal land uses, air and water quality, and other important elements. Not only will these actions protect and restore water quality, they can help communities achieve other goals as well, such as preserving valuable farm and conservation land; reducing traffic, commute times, and gasoline use; increasing a sense of community and neighborhood safety; and preserving habitat in natural areas that contribute to high quality of life for families.

Reducing land-based coastal water pollution may be local leaders' most important contribution to the health of coastal and ocean ecosystems and to the protection of tourism, fishing, recreation and other activities that depend on clean coastal waters. It is also one of the most challenging authorities to exercise because it calls for influencing activities on private property. Key issues related to coastal water quality that local and state leaders should address include polluted storm water runoff, inadequate waste treatment systems, and marine debris including abandoned fishing gear and trash.

To address polluted storm water runoff into rivers and coastal waters, local leaders should:

- **Protect key natural features, such as wetlands, that filter storm water naturally** by establishing and enforcing strong rules and providing compelling incentives, such as urban growth boundaries and in-lieu fee conservation programs, that encourage new development to occur in appropriate areas.
- **Require the use of Low Impact Development techniques** where feasible in all new development. Implementation of Low Impact Development is also advocated in the 2008 *Action Plan of the West Coast Governors' Agreement on Ocean Health,* is being examined for more widespread application by the California Ocean Protection Council, and was recently ordered by Washington's Pollutions Control Hearings Board to be implemented by that state's largest local governments.
- **Work with landowners, farmers, and businesses to implement best management practices for water quality protection.** State and federal agencies and nongovernmental organizations have developed a detailed body of best management practices (BMPs) for water quality protection for a broad range of land use activities. Local leaders are uniquely positioned to create incentives for and/or require widespread implementation of these BMPs in their communities.

To address inadequate wastewater systems, local leaders should:

- **Ensure that septic systems are functioning properly,** tapping into citizen concerns about water quality to motivate action. Local leaders in many places on the West Coast have developed innovative, citizen-led initiatives that provide education and assistance to property owners whose septic systems require repair and updating.
- **Address the problem of combined sewer overflow systems** that inject large amounts of waste into water bodies during storm events. Many cities on the West Coast are struggling with outdated sewer systems, a challenge that can be addressed with strong local leadership.

To address marine debris, local leaders should:

- **Reduce the amount of trash that enters coastal waters** by enhancing recycling programs, enforcing litter laws, and discouraging consumption of single-use plastics through public outreach, education, and incentives.
- **Establish clean marina programs** and reduce derelict fishing gear through programs for recycling gear and fishing lines.

ECOSYSTEM EDUCATION FOR LOCAL LEADERS

Local leaders can learn about specific solutions to common coastal challenges through a range of free workshops offered by federal agencies. Universities, state agencies, and nonprofit organizations also often provide training and seminars on these topics. Some examples include:

- National Nonpoint Education for Municipal Officials (NEMO) Network, which provides information to elected officials on improving land use plans and regulations, establishing better decision making processes, and acquiring needed data to address nonpoint source pollution.
- National Estuarine Research Reserves have established Coastal Training Programs on topics such as coastal habitat conservation and restoration, biodiversity, water quality, and sustainable resource management.
- NOAA's Coastal Services Center and many state Sea Grant College Programs offer courses that can help elected officials acquire the information they need to make decisions for healthy coastal and ocean ecosystems and economies.

State legislatures should require and fund agencies to provide additional workshops and trainings for local decision makers about innovative tools for addressing coastal challenges. These might include workshops on actions that can be taken for salmon restoration, siting of wave and tidal energy facilities, innovative comprehensive planning tools and strategies, climate change adaptation, implementation of Low Impact Development to address nonpoint source pollution, and conducting code audits and monitoring at the local level.

Integrating Decision Making: Recommendations for State Legislatures

State legislatures play an important role in advancing an integrated approach at the local level through their ability to require and fund state agencies to provide the information and incentives that will help local communities make informed decisions about use and protection of coastal resources. States, of course, also have direct authorities over use of land and water and a responsibility to ensure that an integrated, coordinated approach is being taken at the state level as well. The recommendations here are focused specifically on how these authorities and responsibilities can be used to facilitate local decision making that leads to healthy coastal ecosystems and economies.

5. COLLECT AND INTEGRATE LOCALLY-RELEVANT INFORMATION.

Facilitate the collection and integration of high quality coastal and ocean information that is critical for informed local decision making.

State agencies should collect information about the condition of coastal and ocean resources at a scale that is useful for making decisions at the local level, as well as monitoring of the effectiveness of policies and regulations and the effects of those policies on the health of coastal ecosystems and local economies. The kind of information needed includes:

- **Updated high resolution seafloor and coastal land mapping** (both bathymetry and LIDAR) and local-scale models for inundation and storm surge from sea level rise and other impacts of climate change, tsunamis, and other coastal hazards
- **Information about key natural features that must be protected for proper functioning of ecosystems,** including coastal and nearshore habitats for both target and forage species of fish and other wildlife
- **Information about regional-scale movement of sediment** so that governments are able to better manage shorelines by protecting feeder bluffs and other natural sources of sand for beaches and important nearshore habitats
- **Socioeconomic data about coastal and ocean uses** that go beyond just the extractive industries, including recreational boating and fishing, beach going, bird watching, and other activities that contribute significantly to local coastal economies, but are often under-considered in decision making

State legislatures should establish and fund forums along the West Coast for ecosystem-scale integration of research and develop mechanisms for delivering the information to local governments in forms that help them account for ecosystem interactions in decision making. States could do this by funding positions for coordinators of ecosystem information whose sole task it is to gather, synthesize, translate, and deliver needed ecosystem data to local leaders. The results should also be made available through a centralized clearinghouse of free, easily accessible information for local planning and decision making. The research to be integrated should come from governmental, academic, private sector, and nongovernmental sources. A current effort by Sea Grant College Programs on the West Coast to develop a Regional Research and Information Plan for the California Current Large Marine Ecosystem is an important step toward a more integrated research enterprise on the West Coast.

State legislatures should endorse and support the Integrated Ocean Observing System, in particular its regional West Coast component. The Integrated Ocean Observing System (IOOS) is the domestic ocean-focused element of an important global earth observing system. IOOS provides the infrastructure and tools to collect, monitor, model, analyze, and translate ocean science into products and services needed by

decision makers. An important part of IOOS focused on the U.S. West Coast, the Pacific Ocean Observing System is being developed by the National Oceanic and Atmospheric Administration, state agencies, universities, foundations, and others to collect vital information about the California Current Large Marine Ecosystem, which connects and drives the coastal waters off of California, Oregon, and Washington. Among a multitude of benefits, this ocean observation system will have important implications for many critical activities of the West Coast states and the federal government, including:

- Management of fisheries, alternative offshore energy facilities, oil spill responses, and climate change impacts
- Prediction and response to toxic and harmful algal blooms and climate change impacts, such as sea level rise
- Warning and preparation for tsunamis, storms, and other coastal hazards and security and human health threats

While the federal government has primary responsibility for funding and overseeing the IOOS, the *Action Plan of the West Coast Governors' Agreement on Ocean Health* has called for greater state involvement in supporting this important initiative and state legislators play a key role in ensuring state agencies are actively engaged. In addition, because the benefits of this system extend well beyond the public sector, and will provide information critical to industries such as marine transportation, agriculture, water management, and coastal development, state legislatures on the West Coast should encourage collaboration with the private sector in development and operation of IOOS systems and the Pacific component in particular.

State legislatures should support the coordinated preparation of integrated ecosystem assessments that is beginning to take place along the West Coast through efforts of the National Oceanic and Atmospheric Administration. An integrated ecosystem assessment is a comprehensive study of environmental, cultural, and economic characteristics in an ecosystem area. In addition to informing decision making, regularly updated and high quality integrated ecosystem assessments have the potential to streamline processes under laws requiring environmental impact review, such as the California Environmental Quality Act and Washington's State Environmental Policy Act, if these integrated assessments are used as a basis for environmental impact statements. State leaders should express to their representatives in Congress their support for federal leadership and financial and technical assistance in conducting comprehensive integrated ecosystem assessments and encourage state agencies to contribute to these important initiatives.

6. SUPPORT INTEGRATED, ECOSYSTEM-BASED APPROACHES, PARTICULAR AT THE LOCAL LEVEL. Pass legislation that supports integrated, ecosystem-based approaches to management, in particular providing incentives and support for local communities to coordinate at ecosystem scales and address coastal and ocean issues proactively.

State legislatures should recognize communities committed to taking an integrated, ecosystem-based approach, designate some as pilot projects with priority status for certain state grants, require improved state agency coordination with them, and provide them training and resources to use innovative management tools. Examples of the kind of community projects ripe for designation as pilot projects for ecosystem-based management are provided throughout this report, including in the box below and the *Profiles of Progress* section of this report.

State legislatures should support and adequately fund efforts to address shared West Coast issues that are outlined in the *Action Plan of the West Coast Governors' Agreement on Ocean Health* and ensure that local governments have the incentives and support they need to contribute to this important initiative. Regional cooperation and collaboration is a key priority for integrated management of ocean and coastal resources and action at the local level will be critical to success.

7. CONSIDER MARINE SPATIAL PLANNING. Consider comprehensive spatial planning for marine areas whose management is complicated by several conflicting uses.

Coastal oceans are complex, productive, and heavily used places that are being managed spatially to some extent already through time and area closures for fisheries, marine protected areas, designated shipping lanes, and other restrictions on where and when humans can take specific actions. Unfortunately, this system is uncoordinated and piecemeal with various agencies making independent decisions with little consideration for ecosystem interactions or cumulative impacts. It is largely inadequate to address the increasingly complex range of ocean uses in the 21st century.

State legislatures should consider comprehensive marine spatial planning, a promising tool for integrated management that can be implemented in various ways. Such an approach could specify general levels of acceptable human impacts for particular geographic areas in the ocean in order to reduce conflicts, provide greater clarity and predictability for ocean users, take into account cumulative impacts on ecosystem health, and achieve specific ecological, economic, and societal goals.

WEST COAST ECOSYSTEM-BASED MANAGEMENT NETWORK

Along the West Coast projects in several communities are actively working to put integrated, ecosystem-based approaches into practice in the management of ocean and coastal resources they depend on for high quality of life and a vibrant coastal economy. These independent projects are occurring in a diversity of ecosystems and communities and therefore vary in the coastal and ocean issues they have prioritized and the actions they are taking to address them. Each project employs a set of tools and strategies for protecting and restoring ecosystem health that is best suited to its unique circumstance. In 2008, six of these projects formed the West Coast Ecosystem-Based Management Network to share information and learn from each other's experiences. The projects participating in the Network are located in the following places along the West Coast:

- San Juan County, Washington
- Port Orford, Oregon
- Humboldt Bay, California
- Elkhorn Slough, California
- Morro Bay, California
- Ventura, California

These projects demonstrate progress toward using an integrated, ecosystem-based approach to protect the health of coastal and ocean ecosystems, but nonetheless face implementation challenges that could be overcome with stronger support from local, state, and federal leaders. Elected leaders should champion these projects by taking the following actions:

- Acknowledging and publicly supporting the projects underway in these communities
- Seeking stable sources of funding for project implementation
- Facilitating greater coordination among state and local agencies in support of project and community goals

This approach can complement existing regulatory schemes, enable more effective use of fiscal and scientific management resources, and be adapted and improved from spatial planning tools already extensively applied on land. Marine spatial approaches are already being successfully implemented in many places, including several nations around the world. In the United States, Massachusetts has taken a leadership role by passing legislation for comprehensive ocean planning in May 2008 and moving forward with development of a spatially-explicit, comprehensive ocean management plan.

An approach that may be appropriate for states on the West Coast includes the following steps, each of which should incorporate robust citizen and stakeholder participation:

- Defining the area to be managed based on ecological criteria, and creating an interagency group to lead the planning effort

- Mapping the living and nonliving resources in the area and, importantly, also the human dimensions (i.e. links between ocean and coastal resources and human needs and quality of life)
- Developing a science-based plan that sets priorities and measurable objectives
- Designating geographic zones to site desired human uses in space and time and formulating rules and enforcement mechanisms, as well as permitting, decision making, and conflict resolution structures for those zones
- Establishing monitoring programs and mechanisms to periodically review and adjust the system based on new information, particularly important in light of climate change

Addressing Climate Change Impacts: An Overarching Issue

Climate change is a global problem that is impacting the Pacific Ocean and West Coast communities in significant ways. In response, California, Oregon, and Washington each have set state-level targets for reducing greenhouse gas emissions, with California taking a leadership role in passing landmark legislation for emission reduction in 2006. In addition, the three states are members of the Western Climate Initiative to establish a regional cap-and-trade system. Mitigation efforts by the states are important and there are many ways local governments can and should contribute to increasing energy efficiency and reducing carbon emissions. There are numerous sources of information on specific actions local leaders can take, including the *Playbook for Green Buildings and Neighborhoods*, which aims to promote the goals of the U.S. Conference of Mayors Climate Protection Agreement.

"The impacts of climate change are already threatening coastal economies and marine ecosystems along the West Coast. Aggressive action must be taken immediately to improve our understanding of the ocean's role in climate change and minimize the economic, ecological, and social costs associated with these threats."

—Admiral James D. Watkins (U.S. Navy, Ret.), Co-Chair, Joint Ocean Commission Initiative

Unfortunately, coastal areas are already experiencing impacts from climate change and so it is becoming critical for local communities to prepare and adapt to further and more dramatic impacts and for states to help them do so. Coastal impacts for which communities should be preparing include stronger and more frequent coastal storms and flooding, sea level rise that may lead to increased erosion and inundation of freshwater aquifers, migration and changes in the life cycles and survival of marine life, acidification of ocean waters, and increasing air and water temperatures and human health impacts that may result from it. Scientists are working to understand many additional, secondary, and cumulative impacts and to provide information at smaller scales for local decision making. This information will be critical for protecting human health and safety and the economic vitality and quality of life of coastal communities. Local and state leaders should support increased funding for coordinated climate science that is useful for community-level preparation and response to climate impacts.

8. PLAN FOR CLIMATE CHANGE IMPACTS AT ALL LEVELS OF GOVERNMENT.

Require the coordinated development of local and state climate change adaptation plans to prepare coastal communities and ecosystems for sea level rise, changes in the habitat and life cycles of marine life, and increasing frequency and intensity of coastal hazards, and other impacts.

California, Oregon, and Washington are in various stages of planning for climate change adaptation. In November 2008 California's Governor Schwarzenegger issued an Executive Order requiring state agencies to plan for sea level rise and other climate impacts and develop a comprehensive climate adaptation strategy. Local leaders in several places on the West Coast are also making important progress on preparing for climate change, including King County and Seattle, Washington and San Francisco and Berkeley, California.

To prepare for climate impacts, local leaders should:

- **Call on members of Congress** to provide federal funding and technical assistance for local climate adaptation measures.
- **Consider best available predictions for local and regional impacts when reviewing and amending comprehensive plans,** as well as sector-specific plans such as those that address shoreline management, transportation, and hazard and flood preparedness.
- **Audit and amend local codes and ordinances** to: (a) discourage building in areas that may be increasingly susceptible to inundation, flooding, erosion, and other hazards as sea level rises and storms increase, and explore managed shoreline retreat options for existing structures deemed to be in harm's way, (b) require all development projects with a twenty year or longer lifespan to factor climate impacts into their siting and design, and (c) provide incentives for energy efficiency and climate-ready development such as fee discounts, density bonuses, and priority permit processing.
- **Work cooperatively across jurisdictions to create protected area networks** on land and sea that span zones of elevation/bathymetry and latitude to allow wildlife to migrate as temperatures change, particularly working to protect areas of high biological diversity.
- **Identify and protect coastal features that offer natural protection from climate impacts,** such as wetlands, dunes, coastal forests, and vegetated stream buffers.
- **Identify and develop strategies to protect important cultural, historic, and archeological resources** from likely climate impacts.
- **Look for the economic opportunities** that may arise as a national response to climate change accelerates. There may be available to communities new government grants and incentives for taking action and opportunities that come with new climate-ready crop varieties and agricultural techniques, changes to public infrastructure, energy production technologies, and energy efficiency standards for buildings and transportation systems that may create new "green" jobs.

State legislatures have key responsibilities in helping local communities prepare for climate change, including:

- **Call on members of Congress** to provide federal funding and technical assistance for state and local climate adaptation measures, as well as enhanced science and information about local-scale impacts needed to make sound adaptation decisions.
- **Require agencies to coordinate across state lines** and with federal agencies to conduct research on climate change impacts and provide that information to local decision makers. The Governors of California, Oregon, and Washington have agreed to collaborate on a West-Coast wide assessment of shoreline changes and anticipated coastal impacts from climate change and state legislators should support such efforts.
- **Establish an interagency process for developing a climate change mitigation and adaptation plan in each state.** Leadership should come from agency heads who meet periodically to coordinate implementation actions and adapt the plan as new information about climate change comes to light.
- **Provide trainings and a clearinghouse for information sharing for coastal communities** on how to assess vulnerability to climate impacts, update comprehensive plans to take impacts into account, and implement actions to reduce community vulnerability and increase energy efficiency.

Additional information on specific actions that local and state leaders can take can be found through numerous organizations working to provide local and state governments with energy efficiency and climate preparedness information. King County, Washington and ICLEI Local Governments for Sustainability have developed *Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments,* which may be a good place to start.

Acquiring Resources to Implement an Integrated Approach

Local and state leaders striving to protect and restore coastal ecosystems and the economies that depend on them need resources to do so. These leaders are well aware of traditional sources of state and local government funding that can be used for ecosystem protection and restoration activities, including general obligation and revenue bonds, certificates of participation, intergovernmental transfers and assistance, leases of lands and waters, special tax districts, and mitigation and use fees.

Many local communities and states will need additional resources to implement an integrated approach for coastal and ocean management and may look to the federal government for assistance. Despite the efforts of Congress, competing national priorities have led to only very modest increases in funding for key ocean agencies, such as National Oceanic and Atmospheric Administration. Both local and state leaders should raise their voices in support of strong federal funding for ocean and coastal science and management,

and to ensure that the needs of coastal communities to adapt to climate change and address other critical challenges are taken into account as federal priorities. Raising awareness is particularly important in light of the current financial crisis and the potential for cuts in funding for existing ocean and coastal programs. In addition, now more than ever, leaders at the local and state levels will need to be creative with existing resources and defend current funding for coastal and ocean ecosystem protection programs.

9. MAINTAIN OR ENHANCE FUNDING FOR CORE COASTAL AND OCEAN PROGRAMS.

In this time of economic slowdown, it is particularly important for leaders at all levels of government to vigilantly ensure that the core coastal and ocean programs so important to protecting ecosystem health maintain current funding levels, and are enhanced where possible.

Adequately funded environmental protection and natural resources management programs at all levels of government are essential for supporting ocean ecosystem health and the vitality of coastal economies.

10. SEND A CLEAR MESSAGE TO CONGRESS AND THE ADMINISTRATION.

Local and state leaders should call on Congress and the incoming Obama Administration to establish a national ocean trust fund and increase funding to address critical coastal and ocean issues important to the nation.

To address a shortage of federal funding, the Joint Initiative recommends the establishment of a national ocean trust based on a dedicated source of revenues for the improved management and understanding of coastal and ocean resources. A portion of the fund should be shared with all coastal states to support their efforts at sustainable management of coastal lands and waters. The Governors of California, Oregon, and Washington have stated their strong support for creation of a national ocean trust fund in the *Action Plan of the West Coast Governors' Agreement on Ocean Health.* Local and state elected leaders who are concerned about the lack of funding for addressing coastal and ocean issues are encouraged to express their support for the creation of an ocean trust fund to their representatives in Congress.

Local and state leaders should call on Congress and the new Administration to increase funding to address critical coastal and ocean issues that are important to the nation.
The Joint Initiative urges Congress to include funding and technical assistance to coastal states and communities for adaptation and mitigation in any future climate change legislation. The passage of other federal legislation, such as reauthorization of the Coastal Zone Management Act should include an increase in funding for state and local efforts to address important coastal issues such as nonpoint source pollution and coastal habitat protection.

11. CREATIVELY CONSOLIDATE OR REALLOCATE EXISTING RESOURCES.

Local leaders should ensure they are taking advantage of the full range of grants for conducting coastal research, protection, and restoration that are offered by federal and state agencies.

Examples of federal sources of funds include: transportation enhancement grants that can be used for land conservation; programs of the National Oceanic and Atmospheric Administration such as the National Estuarine Research Reserve System, and in particular grant programs under the Coastal Zone Management Act such as coastal enhancement grants, Special Area Management Plans, and the Coastal and Estuarine Land Conservation Program; Federal Emergency Management Agency Hazard Mitigation and Pre-Disaster Mitigation grant programs; U.S. Department of Agriculture grant programs such as the Environmental Quality Incentives Program and the Conservation Security Program; Department of the Interior programs that address coastal and ocean issues, such as the U.S. Geological Survey and the Coastal Program of the U.S Fish and Wildlife Service; and the Environmental Protection Agency's National Estuary Program, among others.

Local leaders should leverage resources with other jurisdictions in their watershed or other coordination area to address shared priorities and fund projects that have the greatest positive impact. Adjacent communities can find creative ways to leverage non-monetary resources by sharing scientific information and join forces in hiring experts and staffing coordinated efforts. They can also collaborate in reaching out to the private sector and state and federal agencies for support and in mobilizing local volunteers. Such cross-jurisdictional efforts can enhance already effective programs by leveraging limited resources and lead to new programs that are effective and efficient. For example, establishing multi-jurisdictional in-lieu fee mitigation programs may be more effective and less costly than relying solely on traditional wetlands mitigation programs.

Local leaders should build on existing progress being made by watershed councils, conservation districts, and other local mechanisms that are currently working to coordinate and implement actions to protect and restore coastal resources in many places on the West Coast. These initiatives often have valuable knowledge and experience, relationships with partners, volunteers, and citizens, and resource channels. In addition, federal and state protected or research areas, such as the National Estuary Programs or the National Estuarine Research Reserves, are often eager to engage with local communities and form partnerships to expand science, protection, and restoration efforts outside of their boundaries.

State legislatures should establish programs to formally recognize and give priority status for state grants and other funding to local communities that demonstrate a commitment to an integrated, ecosystem-based approach and that need funding for implementation. To assist communities in making informed decisions about coastal issues, states should provide increased technical assistance, funding, and staff for locally-relevant scientific research, public education, updating of local codes and regulations, effective enforcement, and adaptive management. Communities committed to taking an integrated approach to protecting coastal resources should be given priority for some of these state resources.

12. ESTABLISH PUBLIC-PRIVATE PARTNERSHIPS FOR FUNDING AND IN-KIND RESOURCES. Local leaders should consider establishing public-private partnerships to develop and implement strategies for coastal and ocean health.

Private foundations, businesses operating in the area, and national, regional, state, and local environmental advocacy groups can provide assistance for ecosystem restoration and protection projects in the form of funding and in-kind services. Community foundations are likely candidates, as are individual corporations' giving programs, and high net worth individuals interested in local ecosystems. Chambers of Commerce and faith-based institutions may also meet their objectives through assisting local government with coastal protection and restoration efforts. Manufacturers of software and other management tools might be willing to engage in local pilot projects that can benefit both the company and the community.

Leaders of local communities that are coordinating in a watershed or other ecosystem area should consider forming coalitions with other watershed or ecosystem-scale groups to increase their visibility and effectiveness in seeking funds from government agencies and private foundations, which are sometimes reluctant to funding one small watershed group at a time.

THE OREGON WATERSHED ENHANCEMENT BOARD SUPPORTS LOCAL WATERSHED GROUPS

The Oregon Watershed Enhancement Board is a state agency that officially recognizes and provides state funds for local watershed councils in Oregon. These watershed councils are locally organized, voluntary, non-regulatory groups established to improve the conditions of watersheds in their local area. They are required to represent a balanced range of interests and could provide a jumping-off point for even more robust coordination among adjacent local jurisdictions at ecosystem scales. The funding the Oregon Watershed Enhancement Board provides to support the work of the watershed councils comes mainly from special license plates and lottery proceeds. The councils are working to collaborate more closely under the Oregon Network of Watershed Councils in order to share information and leverage their ability to attract resources.

PROFILES OF PROGRESS

Many state and local initiatives on the West Coast are using collaboration and coordination to take into account interactions within ecosystems and implement effective solutions for coastal and ocean issues. These efforts are achieving protection and restoration of the natural environment through actions that also contribute to reaching social and economic goals. There are a number of initiatives that are making progress toward an integrated approach on the West Coast. These include independent projects of the West Coast Ecosystem-Based Management Network, the National Estuary Programs, the Klamath Basin Restoration Agreement process, the effort to establish a network of marine reserves in Oregon, salmon recovery efforts along the West Coast, the Southern California Wetlands Recovery Project and Southern California Coastal Water Research Project, the California Current Ecosystem-Based Management Initiative, sustainability efforts of the Sonoma County Water Agency, the Lower Columbia Solutions Group, the California Ocean Protection Council and Ocean Science Trust, and many others.

These efforts and others like them are excellent examples of progress toward integrated management: they are restoring and protecting important ecosystem functions, increasing coordination and collaboration across jurisdictions and interests, and taking into account the multiple goals of communities—environmental, economic, social, and cultural. Two initiatives below, the Puget Sound Partnership and San Luis Obispo Science and Ecosystem Alliance, are highlighted in greater depth in order to demonstrate some ways in which the recommendations in this report are being implemented currently at local and state levels.

Puget Sound Partnership

In 2007, Washington's Governor Christine Gregoire and the Washington Legislature created the Puget Sound Partnership to develop and implement an ambitious strategy to protect and restore the health of Puget Sound by 2020. On December 1, 2008, the Partnership adopted its science-based strategy, called the Action Agenda, which lays out the following important components of an integrated approach to ecosystem protection and restoration:

- Defines what a healthy Puget Sound would look like
- Describes the current status of Puget Sound's health and the biggest threats to it
- Identifies strategic priorities with associated near-term actions and implementation responsibilities

The identified actions span the authorities of the full range of federal, state, tribal, and local entities, as well as collaborative groups whose activities both impact and can protect the health of the ecosystem. In creating the Action Agenda, the Partnership collaborated with thousands of affected parties, used the expertise of regional agencies, and involved local communities and scientists in crafting solutions. Specific actions that are consistent with the integrated, ecosystem-based approach recommended in this report include:

"[It is our task] to ensure that the Puget Sound forever will be a thriving natural system, with clean marine and freshwaters, healthy and abundant native species, natural shorelines and places for public enjoyment, and a vibrant economy that prospers in productive harmony with a healthy Sound."

—The Honorable Christine Gregoire, Governor of Washington

Identifying a coordination area and engaging stakeholders

The Legislature charged the Partnership with addressing the health of Puget Sound as a whole, "from the crest of the Cascades and Olympics to the waters of the Straight of Juan de Fuca and Hood Canal." This area encompasses the United States' portion of the Puget Sound-Georgia Basin watershed. The Partnership's enabling statute established seven sub-regional action areas, which are delineated according to physical characteristics, water flows, and common issues and interests of participating entities. Nested within these action areas, collaborative local watershed groups and organizations help with specific activities, often doing so across jurisdictional boundaries. Existing watershed plans and programs within the action areas were integrated into the Action Agenda. Coordination with Canada and its Province of British Columbia is helping to address ecosystem issues that span the international border.

Understanding and monitoring ecosystem health

An important strategic priority in the Action Agenda is building a monitoring and accountability system. An important part of this system is the continual improvement of the scientific bases for management actions through a comprehensive and prioritized regional science program, a Biennial Science Work Plan, development of an Integrated

Ecosystem Assessment, and a biennial Puget Sound-Georgia Basin Resource Conference that facilitates information sharing with Canadian counterparts. In addition, the Action Agenda identifies collaborative citizen science as an important way to engage communities and people in the region.

Accountability is at the heart of the Partnership's charge, and will be carried out through a system where goals, outcomes, indicators and benchmarks are linked to strategies and actions. The Partnership's enabling statute requires periodic review of the Action Agenda, and relevant public outreach, ecosystem monitoring, targeted scientific investigations, and accountability for implementation and financal data will inform the Partnership's evaluation of actions.

Getting and using socioeconomic information

One of the Partnership's six goals is "a quality of human life that is sustained by a functioning Puget Sound ecosystem." The Action Agenda lays out initial outcomes and measures for human well-being that include aesthetic values, opportunities for recreation and access, adequate upland and marine resources to sustain tribal treaty rights and needs, thriving natural resource and marine industries, and economic prosperity that is supported by and compatible with ecosystem protection and restoration. The Partnership is currently working to identify specific measures and targets for human well-being.

Establishing coordinating mechanisms

One of the Partnership's strategic priorities is to work effectively and efficiently across jurisdictions and sectors on priority actions. This includes planning, implementing and decision-making in an integrated way with an ecosystem perspective, building and sustaining the long-term capacity of partners to effectively and efficiently implement the Action Agenda, and reforming the environmental regulatory system, including aligning regulatory programs. The coordinating structure of the Partnership includes a seven-member, governor-appointed Leadership Council that governs the Partnership and an Ecosystem Coordination Board that advises the Leadership Council on implementation issues. The Ecosystem Coordination Board includes representatives from federal, state, tribal, county and local governments; each of the action areas; and business and environmental interests.

Making the land-sea connection

Several Action Agenda strategic priorities address the need to reduce the impact of land use and development on the quality of marine and freshwater. These priorities include protecting and restoring ecosystem processes, structures and functions, reducing sources of water pollution, and working effectively and efficiently with partners. Specific highlights of this work include:

- Focusing growth away from ecologically important and sensitive areas by encouraging compact cities, vital rural communities, and protected areas

- Preventing pollutants from being introduced into the ecosystem and reforming specific regulations to better protect land at an ecosystem scale
- Using a comprehensive approach to managing urban stormwater and rural surface water runoff, including the use of Low Impact Development techniques

Cities and counties will be responsible for much of the land protection and stormwater management outlined in the Action Agenda, which calls on the states to help local governments to complete regulatory updates, implement programs and regulations, and assist with permit implementation under the federal Clean Water Act.

Using existing resources creatively

The Action Agenda identifies the need to provide sufficient, stable funding and ensure funding is focused on priority actions to increase efficiency and effectiveness. A key step in this direction would include implementing the Partnership's recommendation to align federal, state and local funding to address the Action Agenda's priority issues and conducting targeted procurement toward desired outcomes rather than broad solicitations. The Partnership's enabling statute provides it significant authority to work with state agencies on budget alignment. In addition, federal agencies have identified the need to coordinate grant funding and identify a common federal work plan to improve efficiency in support of the Partnership's work.

Addressing climate change impacts

The Action Agenda specifically calls for support, development, and integration of climate change programs, including mitigation and adaptation strategies to improve local and regional readiness for anticipated impacts. Action Agenda-based watershed assessments and the development of regional and local protection and restoration strategies will include plans for climate adaptation and responsiveness.

San Luis Obispo Science and Ecosystem Alliance

The San Luis Obispo Science & Ecosystem Alliance (SLOSEA) has been working since 2005 to bring integrated, ecosystem-based approaches to the management of marine resources in the area around Morro Bay in San Luis Obispo County. The program was developed to address the fundamental challenge, recognized in this report, that efforts to conduct science and manage marine resources are often fragmented and driven by isolated institutions. SLOSEA is overcoming these challenges by creating a collaborative management entity that consists of resource managers from state and federal agencies, public officials from local municipalities, stakeholders that live and work in the ecosystem, and scientists that study it. Specific SLOSEA activities that are consistent with the recommendations in this report include:

Identifying a coordination area and engaging stakeholders in setting goals

SLOSEA considered ecological, socioeconomic, and jurisdictional factors in defining a coordination area that encompasses three counties. The landward and seaward limits of the area are based on ecology and span from the boundaries of coastal watersheds out to a depth of 100 fathoms. SLOSEA defined the southern extent of the coordination area as Point Conception, a biogeographic boundary that is also the southern edge of the local fishing fleet's range. Because there is no clear ecological boundary to the north, SLOSEA used the northern extent of the local fishing community, which is also an existing regulatory boundary of the California Department of Fish and Game.

Within this area, the program created the SLOSEA Advisory Committee, a group of people whose interests span jurisdictional and sectoral boundaries. It includes local citizens and stakeholders, managers from agencies at the local, state, and federal levels, and academic and agency scientists. The group meets regularly to share knowledge, identify key needs, and plan actions that affect ecosystem health. A key accomplishment of the group is the setting of management and conservation "targets" that include ecologically important places, as well as culturally and economically important features, such as working waterfronts and marine economy. The group then identified the human factors impacting these "targets" and which of those factors, if changed, could have the most positive impact, as well as which of those changes would be most feasible for achieving success. They used this information to create a strategic plan that describes actions to be taken, such as addressing key pollutant sources, detecting and controlling invasive species, informing decision-making about the marine economy, and addressing impacts of climate change on the local community.

Understanding and monitoring ecosystem health

SLOSEA is a science-based program that has made significant strides to increase understanding of local ecosystem dynamics and processes, including how people interact

and use the ecosystem. To accomplish this, SLOSEA developed a conceptual model of the ecosystem with the help of local stakeholders, university and agency scientists, resource managers, and local public officials. The conceptual model allowed them to indentify potential linkages that should be considered in decision-making and identify the geographic coordination area described above. SLOSEA now conducts research and monitoring on fish populations, coastal water quality, invasive species, human access to the coastline, and the social and economic value of coastal resources to the community. A particular focus for their research is determining whether marine protected areas established nearby under the California Marine Life Protection Act Initiative are affecting the health of fish populations.

SLOSEA also started the California Collaborative Fisheries Research Program, which engages local recreational and commercial fishermen who contribute their time, gear, and knowledge to the research. Their work has resulted in peer-reviewed publications that have improved nearshore fisheries management, identified critical threats to intertidal areas, and discovered key pollutants affecting the ecosystem and food chain. All of this is leading to better information for protecting key ecosystem functioning, increasing understanding and trust among scientists and resources users, and engaging state and federal agencies in constructive collaboration.

Getting and using socioeconomic information

SLOSEA is working to increase understanding of the marine economy and human activities within the ecosystem. Specifically, SLOSEA is studying what activities people engage in, the perspective of residents and visitors relative to other areas in California, and conduct an analysis of the economic contribution associated with different human activities and how ecosystem conditions affect these activities.

Establishing coordinating mechanisms

SLOSEA's diverse and balanced Advisory Committee identifies actions that local, state, and federal agencies can take to help the community reach its goals. In addition, the Advisory Committee vets research projects to ensure that they are useful to management agencies. Data are then made freely available to the agencies, giving them a clear and concrete benefit to staying at the table. SLOSEA also creates Management Action Memos that suggest how agencies can coordinate and ways they can take action to improve marine resources.

SLOSEA is developing partnerships with local, state, and federal agencies to build a formal Regional Stewardship Council that would conduct finer scale management of local resources, including fisheries, and lead to more coordinated agency actions. Because of SLOSEA's work, fragmented agencies are now discussing how best to coordinate their efforts to achieve common goals for the ecosystem and working together to develop an ecosystem plan that would improve management outcomes.

Establishing public-private partnerships and using existing resources creatively

SLOSEA has reached out to a broad range of sources to secure the resources needed to conduct their work. Federal and state agencies provide in-kind services to assist the effort, nongovernmental organizations and private foundation have provided millions of dollars in direct funding, and additional valuable support has come from university and other institutional collaborations. In addition, SLOSEA has received thousands of hours of in-kind contributions of insights and expertise from more than 100 active participants in the program.

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