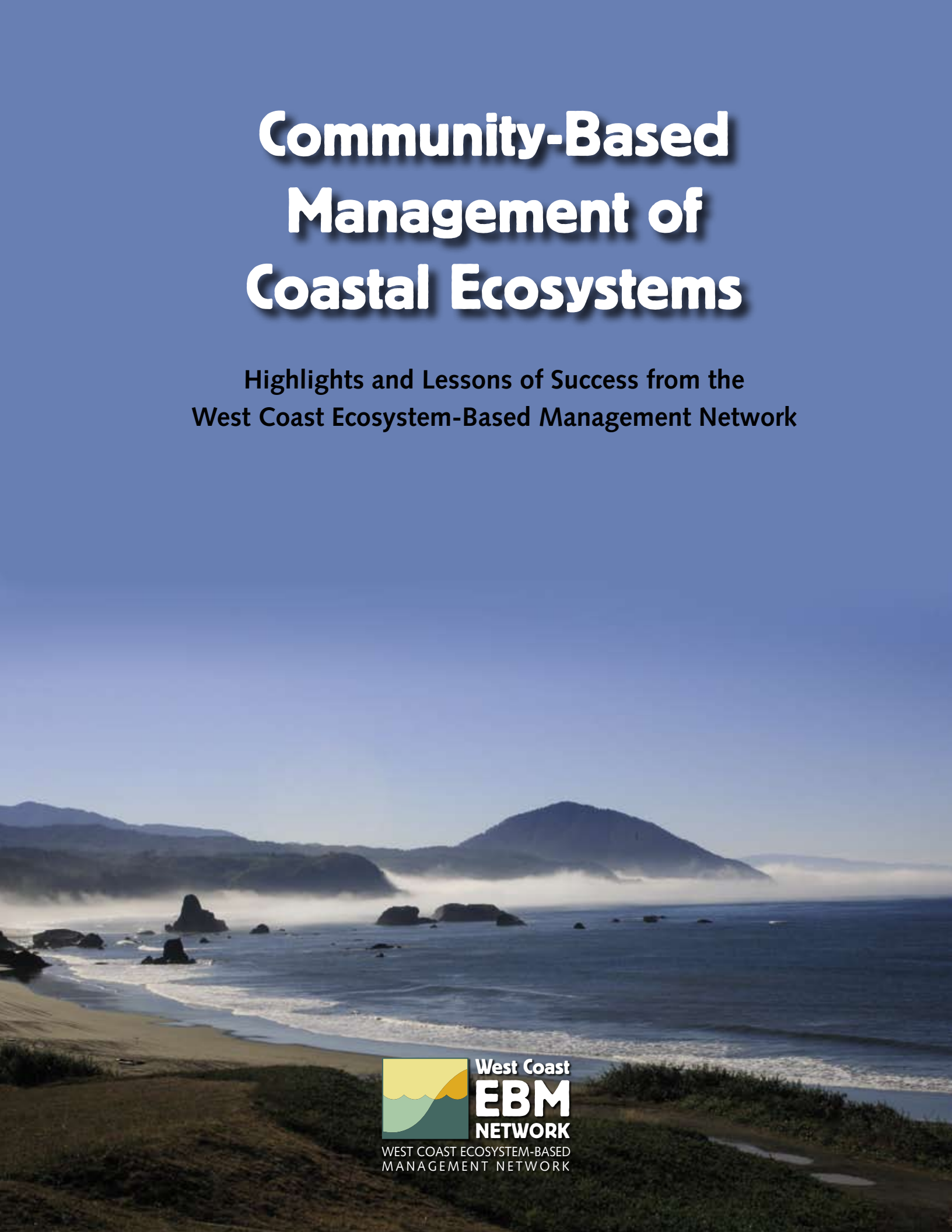
Community-Based Management of Coastal Ecosystems

Highlights and Lessons of Success from the West Coast Ecosystem-Based Management Network



West Coast EBM NETWORK
WEST COAST ECOSYSTEM-BASED MANAGEMENT NETWORK

WEST COAST GOVERNORS' AGREEMENT on OCEAN HEALTH
CALIFORNIA OREGON WASHINGTON

May 2010

Dear Friend of the Ocean,

When the West Coast Governors released their final Action Plan on ocean health in June 2008, they highlighted the effective implementation of ecosystem-based management (EBM) as a priority. The West Coast EBM Network was identified in the Action Plan under Action 3.1, which asked six community-based initiatives to encourage effective ecosystem management efforts across the West Coast by participating in an information-sharing network that would provide insight on putting ecosystem principles into practice. Network representatives convened to share lessons, approaches and tools with the ultimate vision of cultivating local, state and federal coordination for regional-level ecosystem management across the West Coast.

We recognize that implementing EBM is challenging. As the Governors' mention in the Action Plan, "transitioning to EBM is . . . complicated by the existing fragmented, single-issue approach to ocean management, budget constraints on state and federal agencies, gaps in data and information, and a lack of timely connections between research and management needs."

That is why the work conducted through the partnership of West Coast EBM initiatives is so valuable. This handbook represents a collection of on-the-ground activities occurring across the three states to pursue EBM. It provides a clear and concise picture of key, successful steps taken and real-world examples of approaches to challenges faced by these communities as they make progress toward effective management of coastal ecosystems.

Sharing these lessons learned on managing ecosystems is a regional achievement. The West Coast EBM Network's efforts are integral for accomplishing the Governors' goal of strengthening coastal communities' ability to understand and engage in ecosystem-based management. The Network may also help support progress on other aspects of the Governors' Action Plan by working with the Integrated Ecosystem Assessment Action Coordination Team (ACT) and Sustainable Communities ACT. We look forward to future collaboration with the Network on their continued efforts toward effective implementation of EBM on the West Coast.

We believe this handbook sheds light on how ecosystem-based management can be carried out at the community level. We hope that you find it helpful for your own efforts.

Sincerely,

Bob Nichols
Office of the Governor
of Washington

Jessica Hamilton Keys
Office of the Governor
of Oregon

Brian Baird
California Natural
Resources Agency

Introduction

Coastal areas and their surrounding communities face an increasing number of threats to the health of their environments and ways of life, including loss of marine habitat, water pollution and impacts from climate change. Managing these challenges can be complicated and often involve different decision makers, social institutions, government agencies and members of the public that all have a stake in the outcome.

In recent years, the proposed solutions to these management issues were approached on an ad-hoc basis that failed to recognize the full range of connections between physical and biological components of the ecosystem. If habitat was lost or water quality reduced, the resulting impacts to fisheries or marine organisms were not always fully appreciated. As these ecosystem relationships went underappreciated, so did the relationships between management entities. Instead of identifying overlapping issues and working toward common goals, agency efforts were often driven by individual mandates and uncoordinated activities that reduced efficiency and failed to respond to problems in a comprehensive way. Another obstacle was a lack of stakeholder input relating to management issues and processes to respond to those stakeholders. Members of the public that depend on coastal ecosystems for their way of life, such as fishermen, business owners and coastal residents, all have an immediate interest in how these areas are managed. When these parties are left out, it can result in negative impacts on management outcomes, ranging from public frustration and stalemates to formal legal action.

Ecosystem-based management (EBM) of the marine environment takes direct aim at overcoming these issues. EBM is an approach to managing ocean and coastal areas that involves the wide range of people and institutions with a stake in coastal resources, and considers all the different functions and relationships of a particular ecosystem area. It is driven by the integration of all types of knowledge, information and people to minimize conflict and comprehensively manage coastal areas to overcome management problems of the past.

What is Ecosystem-Based Management (EBM)?

The most widely accepted definition of EBM was published by the Communication Partnership for Science and the Sea (COMPASS) in 2005 and was signed by more than 200 scientists and ocean and coastal policy experts:

> **Ecosystem-based management** is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors. Specifically, ecosystem-based management:
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> - Emphasizes the protection of ecosystem structure, functioning, and key processes;
> - Is place-based in focusing on a specific ecosystem and the range of activities affecting it;
> - Explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species;
> - Acknowledges interconnectedness among systems, such as between air, land and sea; and
> - Integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependences.
>
> McLeod, K. L., J. Lubchenco, S. R. Palumbi, and A. A. Rosenberg. 2005. COMPASS Scientific Consensus Statement on Marine Ecosystem-Based Management.

What is the West Coast EBM Network?

The West Coast EBM Network is a partnership of six community-based initiatives focused on the successful implementation of EBM along the coasts of Washington, Oregon and California. The Network was formally organized in 2008 to facilitate the effective and efficient implementation of ecosystem-based management approaches along the West Coast of the United States, and to share its techniques and lessons learned with the broader community interested in effective ocean, coastal and coastal watershed management.

At the local level, the Network and its member projects strive to create the ideal circumstances for initiating an ecosystem-based approach to management. Through several different models, Network members are fully implementing the multiple facets of that approach, and sustaining effort over time to achieve tangible benefits to the ecosystem and human communities alike.

Network Project Sites on the West Coast

Within the broader community of marine ecosystem management, the Network is pursuing partnerships that are able to link multiple levels of governance and achieve fruitful policy discussions that expand the use of successful EBM approaches. Successful EBM approaches are those that result in real-world benefits to coastal ecosystems, and are enhanced by coordination between local efforts and policy development at the state, regional and national levels.

What is in this guide?

The West Coast EBM Network's member projects have begun to implement ecosystem-based approaches to management in real-world settings and have learned valuable lessons through their experiences. The following pages provide a unique glimpse into the efforts of these projects and share the stories of communities that have decided to take a pro-active approach to managing their coastal areas. This guide was developed to share these lessons and strategies, and to highlight those that are working in hopes of continuing to improve marine and coastal management on the West Coast of the U.S., throughout the country and around the world.

The guide is broken into the following sections:

- West Coast EBM Network Member Projects
- Five Steps Toward Implementing EBM
- EBM in Action: Network Member Project Examples
- What's Next?
- Resources

West Coast EBM Network Member Projects

Each of the six community-based projects in the West Coast EBM Network is described below. Included with each summary is an **EBM HIGHLIGHT**, which summarizes a unique activity or outcome that each project was able to achieve through their use of an ecosystem-based approach.

San Juan Initiative (Washington State)

Washington State's San Juan Islands rest in the heart of the Salish Sea, at the confluence of Canadian and American waters. This unique coastal area is an immensely popular recreation and tourist destination, as well as a home to an active and passionate permanent local population. In recent years, the islands' marine environment has faced a range of problems, including declines in important fish and whale populations and loss of critical coastal habitats. While there are numerous protective measures aimed at maintaining the health and function of the Puget Sound ecosystem, there has been no one entity responsible for tracking these efforts or ensuring overall success of protection.

Concerns about these environmental issues and the desire to comprehensively understand the effectiveness of current management and protection efforts drove the creation of the San Juan Initiative in 2007.

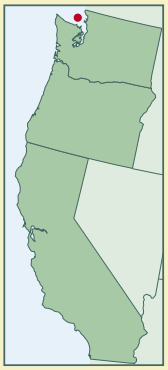
The San Juan Initiative (SJI) was created as a pilot project to assess and improve efforts to protect the coastal areas of the San Juan Islands. The project was a unique collaboration of local, state, federal and tribal representatives spearheaded by San Juan County, the Puget Sound Partnership and the Surfrider Foundation.

SJI embodied ecosystem-based management principles in its integrated, collaborative and science-based approach. The effort resulted in a range of products assessing the effectiveness of habitat conservation efforts while also providing robust recommendations for improving these efforts. SJI won broad community and agency support and was recognized by the state as a regional pilot for its importance in promoting and implementing EBM at the local level.

■ EBM HIGHLIGHT **SJI provided a novel approach for reviewing all coastal habitat protection measures underway throughout the San Juan Islands (such as regulations, community education and incentives for residents) and assessing the combined effectiveness of all of these efforts.**

San Juan Initiative

Duration: ***2007–2009***



Geographic Focus:

San Juan Islands, Washington (islands and nearshore areas)

Project Office:

Friday Harbor, Washington (100 mi northwest of Seattle, Washington)

Structure:

- **Policy Group**
- **State and Federal Agency Representatives**
- **Technical Advisory Committee**
- **Science Advisory Committee**

Key Partners and Support:

- **The Bullitt Foundation**
- **Community Salmon Fund**
- **National Fish and Wildlife Foundation**
- **The Puget Sound Partnership**
- **Washington State Recreation and Conservation Office's Salmon Recovery Funding Board**
- **San Juan County**
- **Surfrider Foundation**

Port Orford Ocean Resource Team (Oregon)

Port Orford is a small town on the southern Oregon coast with a rich fishing history and an economy that still largely relies on the local fishing fleet and the health of their nearshore fishing grounds. Roughly a decade ago, in the face of degrading West Coast fish stocks and decision-making processes that were out of their reach, local fishermen and concerned citizens recognized the need to actively address the long-term health of their fishery. In response, the Port Orford Ocean Resource Team (POORT) was established as a formal nonprofit organization, which organized around goals of promoting sustainable fishing practices, preventing the degradation of fish habitat and reducing bycatch, and allowing fishermen and the community to speak with a unified voice on management issues being discussed at state and federal levels.

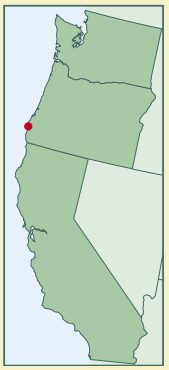
Toward achieving these goals, POORT developed a plan for a spatially-based "Community Stewardship Area" plan that incorporates the traditional fishing grounds of the Port Orford fleet based on input from local fishermen, as well as the upland watershed areas with the potential to impact water quality. The group has also developed a science and access plan that mirrors EBM principles and goals, and includes a summary of the additional research needed to create a more complete ecosystem-based fisheries management plan focused on long-term sustainability and access to the resource.

In recent years, POORT has evolved organically from its original focus on community-based fisheries management to a broader EBM approach. This evolution was encouraged by the State of Oregon's marine reserve planning process. Realizing the need to prepare their small coastal community for potential marine reserves, the group took proactive steps toward effectively managing their fishery and promoting their own reserve proposal. POORT board members participated in the state's process by providing input around their fishing grounds and adjacent watersheds, and developing a community-focused approach that incorporated EBM principles.

■ EBM HIGHLIGHT **POORT used ecosystem-scale planning and stakeholder engagement to form a "community stewardship area" based on historical fishing grounds and surrounding watersheds that will enhance protection of critical habitat and reduce fishery bycatch based on EBM principles.**

Port Orford Ocean Resource Team

Formed: ***1999***



Geographic Focus:

Port Orford, Oregon (Nearshore fishing grounds and surrounding watershed)

Project Office:

Port Orford, Oregon (270 mi southwest of Portland, Oregon)

Structure:

- **Fishermen's Board (five commercial fishermen)**
- **Community Advisory Board**
- **Executive Director and Staff**
- **Internship Program**

Key Partners and Support:

- **David and Lucile Packard Foundation**
- **Ecotrust**
- **Oregon Department of Fish and Wildlife**
- **Surfrider Foundation**

Humboldt Bay Initiative (California)

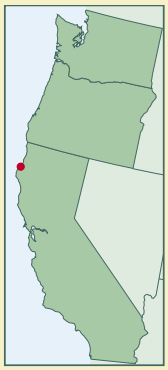
Humboldt Bay is California's second largest estuary, bordered by the cities of Eureka and Arcata with a population of roughly 80,000. The bay supports a rich diversity of bird and aquatic life, and is vital to the state of California, producing more than half of the oysters sold in the state and home to more than one-third of its eelgrass beds. However, like many other coastal regions, Humboldt Bay faces a number of threats from climate change and potential sea level rise to loss of ecosystem function due to invasive species.

The Humboldt Bay Initiative (HBI) was formed to bring together resource managers, scientists and community members to proactively address these threats by linking science and management for the entire Humboldt Bay ecosystem. Whether academic researchers at Humboldt State University, a concerned local elected official or representatives of a local timber company, HBI works to bring all interested parties together to coordinate and collaborate on a shared vision of a healthy ecosystem and ways to sustain the local communities that rely on said ecosystems.

Since the effort began in 2007, the group has grown to include more than 80 participants and made substantial progress in developing principles for implementing EBM in their local area.

■ EBM HIGHLIGHT **HBI is currently planning a coordinated response to climate change for the Humboldt Bay ecosystem. In early 2010, HBI organized a meeting of local, state and federal agencies, along with public stakeholders, to identify and inventory all climate change activities underway in Humboldt Bay in order to leverage common approaches, address gaps, and avoid redundancy in research and management efforts.**

Humboldt Bay Initiative



Formed: **2007**

Geographic Focus:

Humboldt Bay (including the surrounding watershed and nearshore ocean)

Project Office:

Eureka, California (270 mi north of San Francisco, California)

Structure:

- **Core Team (primary support)**
- **Workgroups (topic-focused)**
- **Project Team (larger group of interested parties)**

Key Partners and Support:

- **California Sea Grant**
- **California Coastal Conservancy**
- **David and Lucile Packard Foundation**
- **The Nature Conservancy**
- **NOAA**
- **U.S. Fish & Wildlife Service**

Elkhorn Slough (California)

Elkhorn Slough is an estuary located on Monterey Bay in central California. Part of the Monterey Bay National Marine Sanctuary, it hosts the largest expanses of salt marsh on the West Coast of the U.S. south of San Francisco Bay. It supports more than 750 species of animals, including a dozen rare, threatened or endangered species. Unfortunately, man-made changes to the mouth of the slough altered the flows of tidal waters such that 90 percent of the valuable salt marsh is predicted to disappear by 2050. Combined with ongoing erosion of soft mud habitats, this loss would exacerbate changes to water flows around the slough and impact a host of plant life and native animals, such as harbor seals and sea otters.

The Elkhorn Slough Tidal Wetland Project was initiated in 2004 in response to the threat of extensive habitat loss. This collaborative effort involves more than 100 coastal resource managers, scientific experts, key local government representatives, conservation organization leaders and community members.

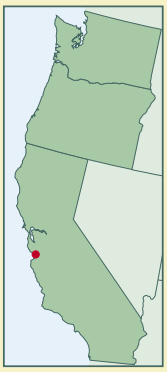
The effort is lead by the Elkhorn Slough National Estuarine Research Reserve, which is owned and managed by the California Department of Fish and Game and operated in partnership with the National Oceanic and Atmospheric Administration (NOAA). The nonprofit Elkhorn Slough Foundation is also a key partner, acting as fiscal agent for the project.

The project strives to understand the Elkhorn Slough ecosystem and pursue management actions that restore the processes that sustain the ecosystem, while minimizing risks to existing high-quality habitats. The project is evaluating several management scenarios that would restore historical patterns of tidal flow throughout the slough to bring it closer to its natural state and recover at-risk areas, while also preserving existing healthy habitats.

■ EBM HIGHLIGHT **Elkhorn Slough secured federal funding support for the Parsons Slough Restoration Project, which will construct a "low sill," similar to an underwater retaining wall, that will reduce the unnaturally high level of tidal flow in and out of the slough that has eroded valuable habitat and vegetation.**

Elkhorn Slough

Formed: ***2004***



Geographic Focus:

Elkhorn Slough (estuary on Monterey Bay, California)

Project Office:

Watsonville, California (27 mi north of Monterey, California)

Structure:

- **Strategic Planning Team**
- **Science Panel**
- **EBM Working Groups**

Key Partners and Support:

- **California Department of Fish and Game**
- **David and Lucile Packard Foundation**
- **Elkhorn Slough Foundation**
- **NOAA**

San Luis Obispo Science and Ecosystem Alliance (California)

The Morro Bay estuary and marine environments along the central California coast are some of the most ecologically important areas on the Pacific Coast and support local fishing and tourism industries. However, the health of these coastal areas faces a number of challenges. Runoff from farms and sewage is affecting the quality of water in coastal areas, and the addition of more public access points along the coast is hurting fragile intertidal areas and the arrival of non-native species, which is changing the estuary's ecosystem and impacting native species. Historically, separate agencies with individual jurisdictions and responsibilities have managed these coastal resources.

The San Luis Obispo Science and Ecosystem Alliance (SLOSEA) formed in 2006 to bring an EBM approach to the central coast of California. SLOSEA was originally formed through the partnership of a grassroots stakeholder group, the Marine Interests Group, the federally funded Morro Bay National Estuary Program and scientists at the Cal Poly Center for Coastal Marine Sciences.

The organization brings a science-based approach to management, working to connect research conducted at Cal Poly's Center for Coastal Marine Sciences to decisions about resource management and marine policy. SLOSEA developed partnerships with local, state and federal agencies as well as community members to form a diverse Advisory Committee that works with SLOSEA scientists to achieve conservation, policy and management goals.

SLOSEA is focused on six initiatives: guiding regional fisheries management; tracking key pollutants; studying the impact of climate change; protecting sensitive coastal areas; developing recommendations on management of marine invasive species; and ensuring a sustainable marine economy.

SLOSEA serves as a model for other coastal areas, both nationally and internationally, with its framework for ecosystem analysis and action.

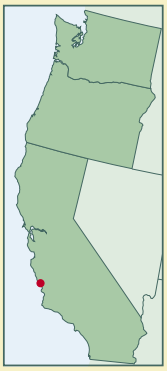
■ EBM HIGHLIGHT **The Joint Ocean Commission Initiative (JOCI) named SLOSEA a "Profile of Progress" and leader on the West Coast in finding effective solutions for coastal and ocean issues based on its EBM approach.**

San Luis Obispo Science and Ecosystem Alliance

Formed: ***2006***

Geographic Focus:

Morro Bay and 100 miles of the central California coast



Project Office:

San Luis Obispo, California (200 mi north of Los Angeles, California, and 230 mi south of San Francisco, California)

Structure:

- **Leadership Team (four people)**
- **Science Team (15–20 people including academic scientists, research technicians, graduate students, environmental/industry consultants)**
- **Advisory Committee (30 members including state and federal resource agencies, staff from non-governmental organizations, municipal and county government staff and elected officials, and academic scientists)**

Key Partners and Support:

- **California Coastal Conservancy**
- **California Ocean Protection Council**
- **Center for Coastal Marine Sciences, California Polytechnic State University, San Luis Obispo**
- **David and Lucile Packard Foundation**
- **Morro Bay National Estuary Program**
- **Resources Legacy Fund Foundation**
- **The Campbell Foundation**

The Ventura River Ecosystem Project (California)

The Ventura River extends over 30 miles from its upper reaches within the Los Padres National Forest to the Pacific Ocean. Historically, the 225 square mile watershed has provided habitat for a range of species, including steelhead trout and the California condor. However, alteration of the watershed over time, including construction of the Matilija Dam at the head of the river and urban development at the mouth of the river, has resulted in sustained negative impacts to habitat and water quality.

The Ventura River Ecosystem Project was started by the Surfrider Foundation in 2000 to involve a wide range of stakeholders, including local community and conservation groups, stakeholders, and local, state and federal government agencies.

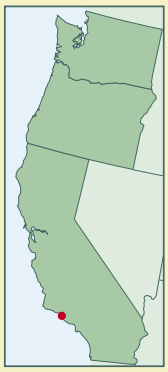
One of the primary goals of the EBM efforts for the Ventura River has been the removal of the Matilija Dam, which impedes the flow of the river and natural riverine processes. Removal of the dam will improve aquatic habitat for fish species and transport sediment in a more natural way to the coast. After more than a decade of collaboration and planning toward a completed feasibility plan, the Matilija Dam Ecosystem Restoration project received congressional authorization in 2007 and is currently in the final design process.

The Ventura River Ecosystem Project also promotes EBM principles such as community involvement and science-based management throughout the watershed. These include emerging urban watershed and integrated water management programs aimed at reducing harmful runoff, improving water quality and supply, and ongoing monitoring of water quality and fish populations. The project continues to pursue resources to implement plans associated with the projects highlighted above, and further develop and demonstrate the effectiveness of EBM within the Ventura River ecosystem.

■ EBM HIGHLIGHT **One initiative of the Ventura River Ecosystem Project, the Ventura Surfers' Point Managed Shoreline Retreat restoration project, is a local and state effort designed to restore a local beach area, maintain public access, implement low-impact development and provide protection from future erosion near the mouth of the Ventura River. Groundbreaking for this project is expected in fall 2010.**

The Ventura River Ecosystem Project

Formed: ***2000***



Geographic Focus:

Ventura River Watershed

Project Office:

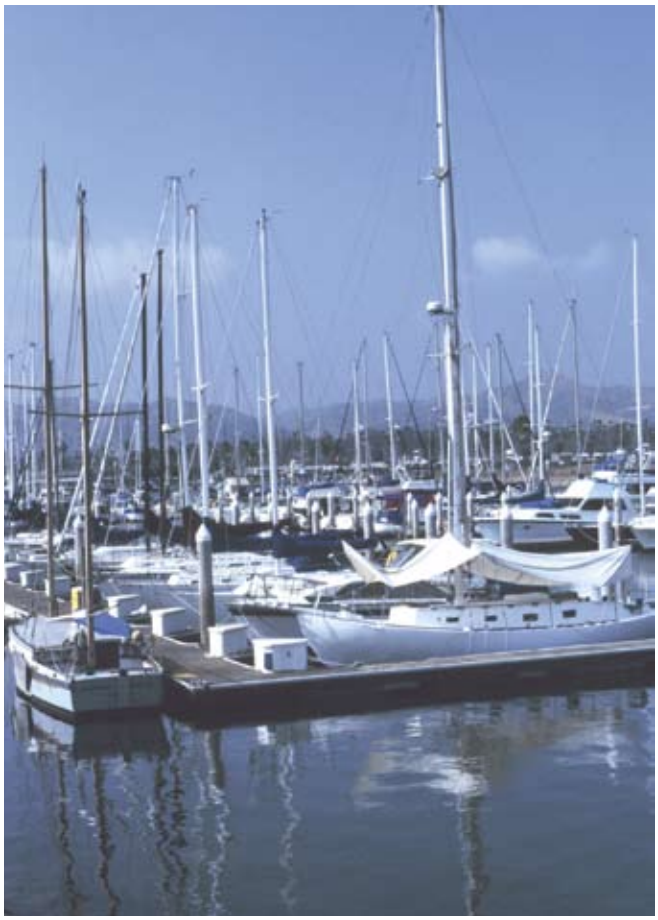
Ventura, California (28 mi south of Santa Barbara, California; 65 mi north of Los Angeles, California)

Structure:

- **Staff from the Surfrider Foundation leads advocacy efforts**

Key Partners and Support:

- **David and Lucile Packard Foundation**
- **Matilija Coalition**
- **Surfrider Foundation**
- **Ventura Stream Team**



Five Steps Toward Implementing EBM

EBM Network member projects are working to apply the concepts of ecosystem-based management to real-world settings. Although the specific approach to EBM is inherently unique and specific to the circumstances of the community and associated ecosystem area, there are some strategies that can be applied across the board to all Network member projects. These common steps are outlined below.

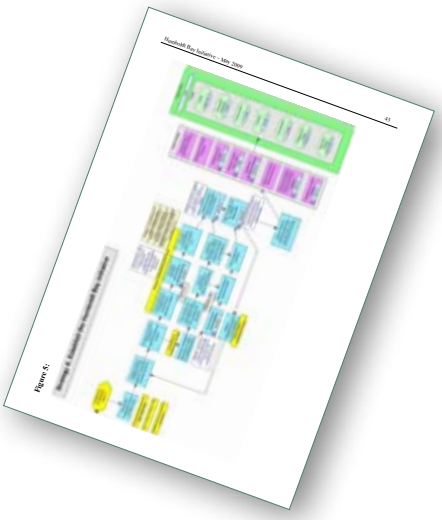
Five Steps Toward Community-Based EBM

Identify the Ecosystem Area

- Determine the most appropriate and effective geographic scale for ecosystem management approach
- Include relevant physical and human components within ecosystem area
- As appropriate for each coastal region, assess areas in both the marine environment (nearshore habitat, offshore fishing grounds, etc.) as well as terrestrial areas that may impact the coastal region, such as watersheds, for inclusion in the ecosystem area

Identify and Engage Stakeholders, Scientists and Managers

- Identify key groups and individuals involved in managing or using the ecosystem, including government agencies, academia, scientists, NGOs, Tribes, commercial businesses, recreational users and the general public
- Establish formal coordinating mechanisms to sustain long-term engagement of stakeholders
- Develop an integrated governance approach that fosters transparent coordination between all management authorities



Set Ecosystem Goals and Plan Action

- Foster collaboration among all stakeholders to identify and agree on goals for effectively managing the ecosystem
- Identify successful outcomes across a range of ecosystem services, including ecological and socioeconomic, while concurrently identifying key threats to achieving goals
- Once goals are identified, develop a substantive overarching strategy and discrete actions toward achieving those goals
- Within strategy for action, examine organizational design, detail tasks and responsibilities with associated timelines, and recognize funding and support needs

Monitor and Assess Ecosystem Status

- Develop a plan for monitoring status of key ecosystem health indicators, including physical, social and economic
- Develop research plans to better understand critical ecosystem mechanisms
- Monitor key ecosystem components for long-term changes
- Identify key interactions between ecosystem components and assess cumulative impacts
- Maintain constant awareness of progress toward previously established ecosystem goals

Manage Proactively and Flexibly

- Ensure management approach is adaptive to changing conditions over time
- Based on progress toward ecosystem goals, adapt approach to build on successful management techniques and minimize less-effective outcomes
- Identify new and emerging ecosystem uses and factor into long-term planning
- Pursue implementation of most effective management steps even in face of uncertainty

EBM in Action: Network Member Project Activities

The following section provides examples of how Network member projects have implemented the strategies outlined in the previous section. This guide only highlights two member projects under each step, but all the member projects have begun to address the full suite of the five steps toward community-based EBM.

Identify the Ecosystem Area

San Luis Obispo Science and Ecosystem Alliance (SLOSEA)

The SLOSEA ecosystem area is centered in the Morro Bay estuary and spans California's central coast through three different counties.

The SLOSEA Advisory Committee considered ecological, socioeconomic and jurisdictional factors in defining the limits of its coordination area. To the south, Point Conception was selected because it separates two areas with distinctly different native species of animals and plants, also known as bio-geographical provinces. Point Conception is also a boundary that separates local coastal fishing communities. Fishermen based in Port San Luis and Morro Bay harbors generally fish in areas to the north of Point Conception, whereas those from Ventura and Santa Barbara tend to remain south of Point Conception. Because there is no comparable, clear ecological boundary to the north, SLOSEA used the northern extent of the local fishing community to Point Lopez, which also serves as a state regulatory boundary.

The landward and seaward limits of SLOSEA's scope span from surrounding coastal watersheds inland, out to a depth of 100 fathoms in the nearshore ecosystem. The planning team included these upland watersheds because of the known connection between land-based activities and their influence on estuarine systems and nearshore environments. Rather than selecting an arbitrary distance from the shore, committee members used ecological considerations in selecting a depth of 100 fathoms. However, SLOSEA recognizes the need to encompass the state jurisdictional boundary of three miles when planning activities such as regional fisheries demonstration projects.

Port Orford Ocean Resource Team (POORT)

POORT's ecosystem area is roughly one-quarter land and three-quarters ocean. POORT based the marine portion of their ecosystem area on the historic fishing grounds of their local fishing fleet. POORT relied on the knowledge of local fishermen to identify the area of the ecosystem that was most relevant to their management goals. POORT has also included the land-based portions of their ecosystem, the town of Port Orford and the surrounding watershed, because of its impact on the coast.

The specific boundaries of their ecosystem area, which they've termed the "Community Stewardship Area," were based on input from public meetings and workshops in Port Orford. The primary considerations used to establish the boundaries were socioeconomic (e.g., historic fishing grounds) and political (e.g., north and south boundaries are halfway between adjacent ports). The Community Stewardship Area is biologically diverse and encompasses terrestrial, freshwater, intertidal and ocean environments. It covers roughly 1,320 square miles, and includes 385 square miles of terrestrial habitat and 935 square miles of ocean habitat. The area is 30 miles long (north to south), extends 18 miles offshore (west), and encompasses the Elk and Sixes River watersheds.

POORT established this explicit Stewardship Area to instill ownership and responsible fishing practices within the area designated by the local community; conserve the biological integrity of the area; maintain access for Port Orford fishermen; generate scientific research that supports management at a local level; and stabilize and sustain local fisheries.

Identify and Engage Stakeholders, Scientists and Managers

Ecosystem Management in Elkhorn Slough

The Tidal Wetland Project recognized early on that the scale and complexity of its management of estuarine would require significant input from scientific experts, resource managers and other key stakeholders. Elkhorn Slough also contains multiple jurisdictional boundaries that are managed by different agencies and nonprofit organizations.

The project designated a Strategic Planning Team to lead the efforts and act as the primary decision-making body. This team consists of more than 20 coastal resource managers, major land owners, representatives from key regulatory and jurisdictional entities, leaders of conservation organizations and scientists with experience in tidal wetland restoration planning.

The project also designated a Science Panel to provide technical advice to the Strategic Planning Team about existing conditions, historical trends and restoration opportunities based on the best available science. More than 30 scientists and resource managers with local or regional expertise in estuarine ecology, hydrology, water quality, restoration and geology were selected to be on the Science Panel.

The Strategic Planning Team implemented a consensus-based decision process to develop restoration goals and objectives. They also developed planning principles that defined the overall planning process and provide constraints on management strategies to ensure undesirable impacts are avoided. The Strategic Planning Team will continue to evaluate and prioritize the goals and objectives of the project. The Science Panel will continue to provide reviews of restoration strategies and identify adaptive management opportunities and monitoring activities. As specific topics arise, new scientists join the Science Panel and advise staff and decision makers.

Community input for the Tidal Wetland Project is encouraged and regarded as highly valuable for the success of future restoration efforts. Tidal Wetland Project methods for facilitating and encouraging community involvement include holding community forums and field tours, sending monthly community e-mail bulletins, providing an online form for comments, maintaining a contacts database, distributing fact sheets and giving presentations to individuals and community groups.

Humboldt Bay Initiative (HBI)

HBI formed a core team in December 2006 to serve as the project's steering committee. The Core Team appointed an Advisory Team whose members had scientific, management or business knowledge and experience working in the watershed and/or with bay resources. Members had to be willing to collaborate and to commit to one year of participation that included one three-hour meeting per month and approximately two hours per month of other project activity.

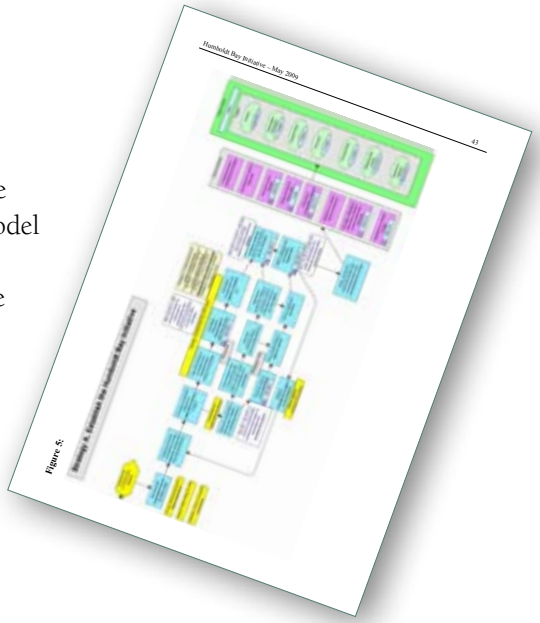
The full Advisory Team, which included the Core Team, developed a working definition of their EBM approach, including ecological boundaries and ground rules for a consensus-based decision-making process. HBI also includes work groups consisting of individuals focused on specific aspects of their EBM approach (climate change, invasive species, etc.) to meet as needed to develop projects and proposals. Through a second round of outreach, the Advisory Team expanded into the HBI Project Team, comprised of more than 50 people and numerous organizations with interest in the program, including active participants from the Work Groups, convened to implement specific HBI strategies. Project Team members who are not directly involved in the HBI strategies contribute ideas and advice.

For long-term formal coordination of HBI, the implementation committee has prepared a draft "Memorandum of Mutual Understanding" (MOMU), a mechanism establishing the formal agreement of management agencies and other entities to be a partner of the EBM efforts spearheaded by HBI. Currently, HBI is also pursuing the formation of a nonprofit organization that would oversee the EBM program, disseminate information and facilitate the sustained collaboration and coordination of local efforts.

Set Ecosystem Goals and Plan Action

San Luis Obispo Science and Ecosystem Alliance (SLOSEA)

One of the first activities of the SLOSEA Advisory Committee and Science Team was to create a conceptual model of the Morro Bay ecosystem. The model was focused on identifying key links within the ecosystem and defining the ecosystem boundaries, which was divided into three key components: the watershed; the estuary; and the coastal ocean. Connections between these components through species movements, freshwater input and tidal exchange provided the foundation for understanding the dynamics of the ecosystem in order to better define an EBM approach.



In 2008, SLOSEA realized the need to better define its ecosystem goals and went through a strategic planning process to identify key ecosystem components and desired outcomes of management. The SLOSEA Advisory Committee followed the steps outlined by the Open Standards for the Practice of Conservation, developed by the Conservation Measures Partnership. Through this process, SLOSEA identified eight conservation targets for their ecosystem, including watersheds, shoreline habitats, and a sustainable marine economy, among others. Building on these targets, the group identified 11 "human factors" that have a direct impact on these targets, such as water pollution, invasive species and climate change. Rather than terming these factors "threats" to the ecosystem, the group felt basing it on human activity was more neutral and more accurately reflected the role of humans as part of the ecosystem.

The outcome of this planning process was a detailed strategic plan that included both ecosystem goals and human factors, and clearly highlighted the relationships between them. The plan culminated with conclusions to illustrate any assumptions made about ecosystem relationships, the desired results of the group's work and details of the specific activities needed to undertake each strategy. These concepts have evolved into six key initiatives for the group's efforts: regional fisheries management; water quality; climate change adaptation; invasive species; sustainable marine economies; and protecting fragile coastal habitats.

San Juan Initiative (SJI)

The San Juan Initiative began by identifying the focus of ecosystem protection efforts through its three-year pilot project. Because of limits on time and budget, the group acknowledged that attempting to address all the issues affecting the San Juan ecosystem was not feasible.

To establish an appropriate scope, SJI's Policy Group examined potential areas of focus in which they could successfully analyze the protection programs in place, and develop recommendations that would result in improvements for the ecosystem and local community. First, they identified potential ecological and community changes that impacted the Islands' thriving natural and human communities. To support this, local and regional environmental managers and scientists reviewed a range of potential focus areas and ranked them using an agreed-upon set of criteria. After its review, the group placed the highest priority on improving protection of nearshore and terrestrial habitats, which the Policy Group then designated as the focus of the project.

Unlike most ecosystem-based management programs, SJI did not develop a broad suite of overarching ecosystem goals, choosing to instead focus on steps toward improving ecosystem protection. How best to do this was determined by the community, scientists and managers working in concert with each other. In the end, SJI's Policy Group further narrowed the group's focus to improving protection for two distinct ecosystem components: shoreline trees and ground cover, and natural erosion/accretion processes. These focal areas were chosen for two reasons: 1) the community clearly stated that current protection programs were difficult to understand and frustrating, resulting in minimal accountability and loss of ecological health and economic activity; and 2) these two ecosystem components are critical to the overall health of the marine shoreline and are not well protected under current policies, education or incentive programs.

Monitor and Assess Ecosystem Status

San Juan Initiative (SJI)

SJI developed a method to monitor and assess the effectiveness of ecosystem protection measures that built on an existing Marine Stewardship Area (MSA) Plan previously developed by the San Juan County Marine Resource Committee and other partners. The overall assessment of protection effectiveness gathered information from three sources: an ecological characterization of impacts, a policy and permit analysis, and a community assessment. The ecological characterization identified on-the-ground presence of ecosystem changes like shoreline forest change over the previous 30 years, presence of structures along the shorelines, presence of shoreline homes and setbacks from the water line. The assessment then overlaid these ecosystem changes with critical habitats such as eelgrass beds, fish spawning areas and kelp beds. The policy and permit assessment looked at several geographical areas in depth to see how existing protection programs, like regulations and incentive programs, worked to maintain the natural process and limit impacts in those areas. The community component involved more than 25 targeted workshops with key community constituencies: shoreline property owners; the building/real estate community; and the general public. By weaving these three information sources together, SJI was able to achieve broad consensus across the scientific, management and local resident communities for what was working and what was not for protecting the shoreline ecosystem. With this consensus, SJI developed a suite of recommendations based on science and the needs of managers and the community that are applicable both locally and regionally.

Moving forward, this characterization provides a model for how local and state governments, or other concerned organizations, can test the effectiveness of regulatory, education and incentive programs in place for their coastal ecosystem area and community.

For long-term management, SJI has supplied a very short list of monitoring indicators that includes ecological measures (e.g. how many miles of feeder bluff remain), local policy efforts (e.g. how many inspections have occurred) and community involvement (e.g. how many people are enrolled in a shoreline building incentive program), which will allow the county to efficiently track the progress of ecosystem protection that would not have otherwise been possible.

Ventura River Ecosystem Project

The Ventura River Ecosystem Project has focused on two initiatives to monitor key components of the ecosystem and its status. Formed through a partnership between Santa Barbara Channelkeeper and the Ventura Chapter of the Surfrider Foundation, the Ventura River Stream Team's volunteer monitoring program was brought together to engage the community and actively track water quality within the Ventura River and the surrounding watershed based on protocols from the State Water Resources Control Board. The group has operated successfully since 2001 and continues to regularly collect water quality data and make it easily accessible online. More recently, the project has also supported ongoing assessments of steelhead populations in the Ventura River to provide baseline data on the species and track variability over time in order to better understand its status, as well as its role as an indicator species for the health of the ecosystem.

Manage Proactively and Flexibly

Port Orford Ocean Resource Team (POORT)

Over the past 10 years, POORT has adapted its efforts to stay focused on the most pressing issues facing its ecosystem. Examples of this include:

- When faced with a new state marine reserve siting process, POORT facilitated the community's development of its own reserve proposal. POORT took this proactive action to protect and conserve critical habitat in their own fishing grounds and sustain the health of local rockfish populations. The designation also provides a framework for scientific research to advance the long-term understanding of how best to protect Port Orford's nearshore environment and the fisheries on which it relies.
- Realizing potential damage to the halibut fishery due to bycatch restrictions in their local sablefish fishery, POORT actively engaged the Pacific Fishery Management Council to work toward new management techniques that would allow fishermen to instead retain the bycatch in a responsible way, while still minimizing bycatch but avoiding wasteful discards.
- When assessing the potential impacts of land-based runoff on their fishing grounds, POORT recognized the need to update the local city stormwater ordinance to provide better protection for water quality. With support from the Surfrider Foundation, POORT signed a Memorandum of Understanding with the city to provide outreach and education as well as a technical grant, and later proposed a new stormwater ordinance that was fully supported and approved by Port Orford city government in 2009.

Ecosystem Management in Elkhorn Slough

Maintaining and expanding partnerships already being fostered by EBM approaches will be critical to implement and track estuarine habitat restoration in Elkhorn Slough. However, staff expect and are preparing for the structure and membership of the Tidal Wetland Project teams to change over time, especially as new priorities are identified or existing priorities shift to accommodate changing conditions in the field. In addition, increased input from community stakeholders are needed so that a broader array of human values associated with the estuary can be appropriately represented in the restoration planning process.

What's Next?

What have we begun to learn about community-based EBM?

The West Coast EBM Network has begun taking steps to initiate an EBM approach to coastal management. While each ecosystem is unique, there are three critical factors that have emerged toward successful implementation of community-based EBM:

- The ability to tailor your management approach to the specific aspects of your ecosystem and community, the existing management structure in place and goals of all stakeholders involved;
- The capacity and support to sustain all necessary aspects of an ecosystem-based approach, including support for management coordination, scientific study and public engagement; and
- The flexibility to adapt your management schemes to changing conditions, as new ecosystem goals, uses and threats arise.

Within the broader community of marine ecosystem management, the Network is pursuing partnerships that are able to link multiple levels of governance and achieve fruitful policy discussions that expand the use of successful EBM approaches. Successful EBM approaches are those that result in real-world benefits to coastal ecosystems, while enhanced by coordination between local efforts and policy development at the state, regional and national levels.

EBM on a Larger Scale

The good news for the members of the West Coast EBM Network and other local efforts is that momentum is building behind EBM approaches at the state, regional and federal levels. Network members have already begun to partner with state agencies interested in utilizing EBM approaches, and are actively pursuing new relationships with additional agencies to enhance their efforts. At the regional level, the Network is engaging with the West Coast Governors' Agreement on Ocean Health, a partnership between the three West Coast states that identified EBM implementation and coast-wide partnerships as a high priority. Finally, there has been a renewed spotlight on EBM at the national level, as the federal government and a new White House Ocean Policy TaskForce recently cited the need to have EBM as a core principle for all coastal management efforts taking place through federal entities. All of this combines to provide an exciting future for the continued development of successful approaches to managing coastal ecosystems and enhancing partnerships at all levels of management, research and public engagement.

The Network Wants to Work with You

If you are reading this guidebook, then you likely have some interest in enhancing the management of coastal ecosystems and sustaining the local communities that rely on them. Whether you are a concerned elected official, staff from a government agency or a local community member hoping to enhance the condition of your own coastal environment, the West Coast EBM Network is eager to connect with you. The Network and its member projects have a robust catalog of additional information about their efforts, and are excited to learn about other overlapping coastal management approaches. The Network encourages you to reach out to its member projects to learn more, and connect to the Network as a whole to identify common steps we can take together toward enhancing our coastal environments and the lives of those who value them.

Resources

Network and Member Project Contact Information

West Coast Ecosystem-Based Management Network
http://www.westcoastebm.org

Contact: John Hansen, Network Coordinator
john.hansen@westcoastebm.org
510-251-1260

San Juan Initiative
www.sanjuaninitiative.org
{Sunset 12/31/09}

Port Orford Ocean Resource Team
http://www.oceanresourceteam.org

Contact: Leesa Cobb, Executive Director
leesa@oceanresourceteam.org
541-332-0627

Humboldt Bay Initiative
http://groups.ucanr.org/HumboldtBayEBM/

Contact: Susan Schlosser, California Sea Grant
scschlosser@ucdavis.edu
707-443-8369

Elkhorn Slough Tidal Wetland Project
http://www.elkhornslough.org/tidalwetlandproject/index.html

Contact: Bryan Largay, Project Director
bryan@elkhornslough.org
831-234-1177

San Luis Obispo Science and Ecosystem Alliance
http://www.slosea.org

Contact: Dean Wendt, Program Director
dwendt@calpoly.edu
805-756-6068

Ventura River Ecosystem Project
http://www.venturariver.org

Contact: Paul Jenkin, Surfrider Foundation
pjenkin@sbcglobal.net
805-648-4005

Additional EBM Resources

Advancing Ecosystem-Based Management: A Decision Support Toolkit for Marine Managers
http://www.marineebm.org/

California Current Ecosystem-Based Management Initiative
http://ims.ucsc.edu/CCEBM/public_detailspage.html

Communications Partnership for Science and the Sea (COMPASS)
http://www.compassonline.org/marinescience/solutions_ecosystem.asp

Ecosystem-Based Management Tools Network
http://www.ebmtools.org/

Environmental Law Institute's Ocean Program
http://www.eli.org/Program_Areas/ocean_ebm.cfm

Marine Ecosystems and Management (MEAM)
http://depts.washington.edu/meam/index.html

National Center for Ecological Analysis and Synthesis: EBM of Coastal Marine Systems
http://www.nceas.ucsb.edu/ebm

National Oceanic Atmospheric Administration (NOAA)
http://www.noaa.gov

NOAA Coastal Services Center—West Coast Efforts
http://www.csc.noaa.gov/regions/westcoast.html

NOAA Integrated Ecosystem Assessments
http://ecowatch.ncddc.noaa.gov/iea.html

NatureServe: Tools for EBM of Coastal and Marine Environments
http://www.natureserve.org/prodServices/ebm/index_OLD.jsp

SeaWeb: EBM Resources
http://www.seaweb.org/resources/ebm.php