A Sound Investment:
The Northwest Straits Initiative

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marine conservation initiative

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Northwest Straits Marine Conservation Initiative

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Chapter I ~ Introduction

Born out of conflict in 1998, the Northwest Straits Marine Conservation Initiative is a unique combination of local people, a regional framework, strategic partnerships and federal support. While much work remains to reach the long-term goal of a healthy marine ecosystem, the Initiative is already a model of action, collaboration and participation. Conservation projects—ranging from derelict fishing gear removal to eelgrass protection zones—are addressing specific threats to ecosystem health. Cooperation among scientists, agencies and citizens in data-gathering and resource inventories —such as identifying the beaches where forage fish spawn—are dramatically increasing the knowledge on which effective action is based. Outreach and volunteer projects—such as stewardship programs for shoreline property owners—are educating and involving local people whose own attitudes and actions are key to the region's future.

This report describes the rationale for creating the Initiative and takes stock of the Initiative's first five years; what has been accomplished, what has been learned and what lies ahead.

The Northwest Straits

The Northwest Straits includes the U.S. marine waters of the Strait of Juan de Fuca, the San Juan Islands and northern Puget Sound reaching from the southern borders of Snohomish and Jefferson counties to the Canadian border. Seven counties, 15 tribes, many cities and other local governments have jurisdiction in the region.

This spectacular stretch of marine waters provides a great variety of productive habitats, including kelp forests, eelgrass beds, mudflats, rocky reefs, tide pools teeming with life, and vast stretches of open water. These habitats provide essential feeding and breeding grounds for a wealth of fish, birds and mammals, migratory corridors for salmon and the region is home to the southern resident population of orcas. While this region is well known for its rugged coastline and beauty, in the past 20 years, the marine resources of the Northwest Straits have shown indications of serious environmental problems.

For example, many marine species have declined in abundance, and marine habitats have been altered and degraded in many areas. Instances of significant declines occur in diverse species. The spawning potential of some rockfish species has decreased by 75 percent in northern Puget Sound (PSAT, 2002). The Cherry Point herring stock, historically the largest of the herring stocks in Puget Sound, declined 90 percent since the 1970's (DNR, 2000). After years of declining numbers, Chinook salmon were added to the endangered species list in 1999. Many shellfish beds are closed due to contamination. Seabirds and some species of marine mammals are also declining. The population declines for the western grebe and marbled murrelet are 95 and 96 percent respectively, over the past 20 years (PSAT, 2002). The population of resident killer whales (*Orcinus orca*) fluctuated significantly between 1974 and 2001 but a 20 percent decline in the last five years of that time period has generated additional scientific concern and scrutiny (Krahn et al., 2002).

The causes of the declines in marine life are known for some species but not for all. Overfishing is thought to be the primary cause of some rockfish species declines (Stout et al., 2001). There is no clear understanding of the causes of the dramatic declines in Cherry Point herring. Scientists are debating the causes of decline in species such as killer whales. The primary risk factors for orcas found by the National Marine Fisheries Service are high levels of contaminants, noise generated by whale watching vessels, disease and parasites, declines in prey species, and environmental catastrophes (Krahn et al., 2002).

Human population and its associated development continue to put additional stress on remaining habitat. Five of the seven Northwest Straits counties were in the top-ten highest growth counties in Washington from 1990 to 2000

(OFM, 2003). In fact, the population of San Juan County had the overall highest population growth at 40 percent during that decade (OFM, 2003). The Northwest Straits waters are also used by a variety of industries. Marine vessels travel extensively from the Pacific Ocean to cities in Puget Sound and southern British Columbia. Tankers deliver crude oil to several refineries in Skagit and Whatcom counties and carry out refined products. In 2000, there were over 10,000 marine vessel trips[1] in visiting U.S. and Canada ports in the Northwest Straits region, and nearly 4,000 tank barge transits within Puget Sound (Department of Ecology, 2000).

The Sanctuary Proposal

Recognizing the national and international environmental significance of the area and the environmental degradation that was occurring, Congress authorized a study of the Northwest Straits region in the mid-1980s for potential inclusion in the National Marine Sanctuary system. Some believed that a sanctuary designation could offer increased federal protection to the waters.

From the beginning, the sanctuary proposal was met with mixed regional support and strong resistance in many local areas. Residents of the San Juan Islands, the focal point of the proposal, had previously fought off attempts to become a National Park, and many there received the sanctuary proposal with similar skepticism. During public meetings, citizens voiced their concerns that a sanctuary would be administered in a "top-down" fashion, with staff in Washington D.C. making decisions without local input.

In 1994, all seven of the county legislative authorities voiced formal, strong opposition to the sanctuary proposal, and the study was officially terminated in 1996. Resistance to the proposal was clearly linked to fears that as a federally administered program, a sanctuary program would not meaningfully engage the community or respond to local needs. In the aftermath of the proposal's demise, there however remained a commitment among many diverse leaders to create a new and different program that could help restore and protect the marine resources of the Northwest Straits.

At that time, there were several programs and resources in place to enable such a new program to succeed. Puget Sound already enjoyed increased attention and protection as an estuary of national significance through the National Estuary Program, administered by the Puget Sound Action Team (formerly Puget Sound Water Quality Authority, which wrote the first Puget Sound Water Quality Management Plan in 1987). Many federal agencies have regional offices in the Seattle area and provide technical expertise and funding to help Puget Sound. Several conservation organizations focus on protecting Puget Sound and provide a strong voice for increased protection. What was missing in 1998 was a way to harness the energy and expertise of local citizens and provide them with opportunities to actively protect and restore the marine resources.

[1] cargo and passenger vessels, tankers and commercial fishing vessels, not including ferry traffic

The Murray-Metcalf Commission

In 1997, U.S. Senator Patty Murray and U.S. Representative Jack Metcalf established a blue-ribbon committee (known as the Murray-Metcalf Commission) to explore alternative models for protecting and restoring marine resources in the Northwest Straits. The Murray-Metcalf Commission unanimously agreed that the Northwest Straits marine ecosystem and its marine resources were in serious trouble. Specifically called out in the "Commission's Report to the Convenors" were the declining populations of bottomfish, sea birds, invertebrates, salmon and some populations of marine mammals (Murray-Metcalf Commission, 1998). The Murray-Metcalf Commission developed the Northwest Straits Marine Conservation Initiative (the Initiative). It would be a "bottom-up" program allowing residents to set priorities and goals for restoring ecosystem health, as well as initiate and carry out projects within a regional framework.

The Initiative called for the seven counties of the Northwest Straits region to form local Marine Resources Committees (MRCs). A 13-person Northwest Straits Commission (the Commission) was established to provide a regional ecosystem-wide perspective, to coordinate county-level efforts, and to link Initiative work with other agencies and regional activities. The Commission is comprised of one representative from each of the seven MRCs, a tribal representative appointed by the Secretary of the Interior, and five gubernatorial appointees -- one from the Puget Sound Action Team (a program in the Governor's office) and the others from outside government. By design, the Commission would not be dominated by government agencies, but would be well equipped to lead the MRCs to achieve meaningful improvements in the Northwest Straits ecosystem.

In 1998, the Northwest Straits Marine Conservation Initiative was approved by Congress. The legislation called for the Director of the Padilla Bay National Estuarine Research Reserve to provide administrative oversight.

The Initiative was a bold and creative endeavor. Nothing like it existed, and even members of the Murray-Metcalf Commission were uncertain as to whether citizens could make progress on the Initiative's challenging benchmarks.

Encouraging Action through Benchmarks

The Murray-Metcalf Commission adopted eight performance benchmarks to focus the work of the Initiative and to produce measurable results. The Commission and the MRCs measure success by these benchmarks:

1. Obtain broad county participation in the Marine Resources Committees (MRCs).
2. Achieve a science-based, regional system of marine protected areas.
3. Demonstrate a net gain in highly ecologically productive

nearshore, intertidal and estuarine habitat in the Northwest Straits, with no significant loss of existing, high-value habitat. Improve state, tribal and local tools to map, assess and protect nearshore habitat. Prevent harm from upland activities.

4. Show a net reduction in shellfish harvest areas closed due to contamination.
5. Exhibit measurable increases in factors supporting recovery of bottomfish (such as rockfish) - including numbers of fish of brood stock size and age, average fish size and abundance of prey species - as well as sufficient amounts and quality of protected habitat.
6. Demonstrate increases in other key marine indicator species (including those identified in the 1997 West report on Puget Sound marine resources).
7. Initiate coordination of scientific data (for example, through the Puget Sound Ambient Monitoring Program), including a scientific baseline, common protocols, unified GIS, and sharing of ecosystem assessments and research.
8. Coordinate with the Puget Sound Action Team and other entities on an effective outreach and education effort with measurements of the numbers of people contacted as well as changes in behavior.

Marine Resource Management in Puget Sound

The management structure of Puget Sound is like nowhere else in the world. A landmark court decision in 1974 upheld the treaty rights of Puget Sound tribes to share the marine resources in a fifty-fifty split with non-tribal residents. Puget Sound treaty tribes are co-managers with the state of Washington for management of fisheries and the habitat upon which these species rely. Harvest regulations occur through a co-management process. The Washington Department of Fish and Wildlife (WDFW) and the Northwest Indian Fisheries Commission (NWIFC) set harvest levels and separately administer the regulations to non-tribal and tribal fishermen.

The Murray-Metcalf report identified many immediate partners for the Initiative, including the Puget Sound Action Team, the Puget Sound Ambient Monitoring Program, the Washington Department of Ecology, Washington Sea Grant Program and the Puget Sound/Georgia Basin International Task Force. Citizen groups such as People For Puget Sound and Friends of the San Juans were also partners from the outset, having served on the Murray-Metcalf Commission. The report also called for partnership with all seven county governments, and indeed, the first work of the Northwest Straits Commission was to get individual counties engaged and interested in forming MRCs. The next steps were to form partnerships with the agencies, scientists, advocates, citizen organizations and businesses in the region.

Five-Year Summary

Once established, the MRCs forged ahead with action oriented projects focused on priority benchmarks. As the MRCs created work plans and established priorities, it became evident that they needed to fill data gaps about local marine resources. Different inventory projects emerged, some that trained volunteers to walk the shoreline, others focused on gaining comprehensive data on a specific resource such as eelgrass beds. The need for comprehensive data to identify forage fish spawning beaches was a high priority and the Initiative framework became a platform for a regional forage fish spawning identification project. Other data collection efforts included local bottomfish surveys to complement the efforts of state resource agencies. Whenever necessary, protocols were developed for the projects using best available science and in a format compatible with state and local resource agencies. In several counties, shoreline data collected by the MRC is already being used by regulatory agencies.

Once the MRCs had better documentation of their local resources, they looked to protect and restore sites where possible. Restoration took many forms such as re-introducing native oysters, removing creosote-laden logs, digging up invasive plant species and restoring native vegetation. Projects were identified and developed separately, but information and methodologies were shared among MRCs. In some cases, county projects evolved into regional projects, as with the forage fish spawning surveys. Other projects such as derelict fishing fear removal and nearshore habitat database were developed by the Commission to provide regional coverage.

Resource protection came about in new and creative ways. Jefferson County decided to propose "no-anchor" zones to protect eelgrass beds, Snohomish County wrote a plan to better protect Dungeness crab and Clallam county MRC members began to monitor for invasive green crabs.

All throughout their work, MRCs had a strong interest and ability to engage local citizens in discussions and workshops. MRCs developed speakers' bureaus to visit schools and community groups. Public meetings allowed residents to learn more about the Initiative and the current work projects. These meetings also offered an opportunity for residents to provide feedback on existing projects and ideas for new ones. Other learning occurred at beach events, Rotary meetings, marine summits, volunteer trainings and boat tours. The level of discussion on marine resource issues increased dramatically over the last five years.

The following chapter provides an overview of specific MRCs and Commission projects that collectively make progress toward the benchmarks. Much of the work was accomplished with Initiative funding and some was matched by other sources. Enormous contributions of volunteer labor were donated by MRC members and others. Chapter 3 provides information about relationships forged with decision makers, partner groups, local communities, and resource agencies and additional Initiative accomplishments that go beyond the Benchmarks. Chapter 4 describes future benefits and needs of the Initiative.

Chapter 2 ~ Working Towards Benchmarks

This chapter provides a summary of Marine Resources Committee (MRC) and Northwest Straits Commission (Commission) projects and accomplishments. Each project is described briefly under the benchmark that it most closely fits. There is overlap among the benchmarks and many activities could be listed under several benchmarks, but in most cases, a project is listed under just one benchmark. Large projects with multiple components have been split to acknowledge separate outcomes that logically fall into separate benchmarks. This summary is meant to be comprehensive, but not exhaustive. The status of marine conservation in the northwest straits area before and after the formation of the Initiative is discussed as it is relevant to the benchmark progress.

BENCHMARK I

Broad County Participation in Marine Resource Committees

When the Initiative was first created, it was not clear that all seven counties would participate. The Murray-Metcalf Commission crafted the first benchmark to get all the counties on board with the Initiative. After achieving the full participation of the seven counties, the MRCs and the Commission carried the spirit of the benchmark even further and encouraged broad and diverse participation in their membership and activities.

Pre-Initiative Conditions

San Juan County formed a marine resources committee in 1996, prior to the Initiative, under the direction of the Board of County Commissioners. The San Juan MRC was considered a model for the Initiative, as no equivalent committee existed in other Northwest Straits counties.

Achievements towards this Benchmark

This benchmark was achieved early in the process. Each of the seven counties received information about the new program and was invited to participate in the Initiative. All seven counties joined the Initiative in 1999 by passing legislation pledging to work toward the benchmarks and to establish MRCs. The counties were directed to find MRC members who would represent different segments of the local community, with varied areas of expertise and interest. Individual counties were left to interpret these needs and establish members as best fit their needs. The list below describes some of the variations in membership and project involvement.

Tribal participation - Ten different tribes[2] have a staff member assigned to an MRC. The Tulalip Tribes provide staff to the San Juan and Snohomish MRCs and also serve on the Northwest Straits Commission. Several other tribes regularly participate in MRC meetings and events. Tribal reservations occur in five counties, but their usual and accustomed fishing areas extend throughout the Northwest Straits.

Business and industry participation – Businesses and economic interests are represented in each MRC. Businesses also donate labor, in-kind services and funding for Initiative projects. The industries involved are diverse and include commercial fishing, a dive shop owner, oil refineries and agriculture.

Recreation - MRCs generally have someone involved with marine recreation, such as sports fishing and underwater diving.

Conservation organizations – Conservation groups are represented in MRCs and also are frequent project partners. Some conservation groups involved are People For Puget Sound, local chapters of the National Audubon Society, Beachwatchers, Surfrider Foundation, RE Sources, Friends of the San Juans, and Orca Trust.

Science –Every MRC has one or more member with scientific expertise. The University of Washington's Friday Harbor Laboratories' involvement in the San Juan MRC is an excellent example of a cooperative partnership that benefits both parties. The lab director is a member of the MRC, and students and faculty are frequently at MRC meetings learning about ongoing marine issues. They also provide volunteer labor for studies and scientific research. A research scientist from Shannon Point Marine Laboratory is a Skagit County MRC member, and provides research and scientific support to that committee.

Ports – Most MRCs have active participation from local port commissioners and/or staff, either as regular MRC members or in ex-officio capacities.

Local government support –An elected county commissioner or county council member participates on each MRC as a member or liaison. A few MRCs have designed ex-officio membership for a city staff person to participate in the MRCs. This provides an important linkage to relevant city projects.

The seven counties also each assign a staff person to their respective MRCs. The amount of time provided by county staff to work with the MRCs varies, but in most cases the staff time exceeds that which is paid for with Commission funds.

[2] Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Makah, Nooksack, Samish, Sauk-Suiattle, Stillaguamish, Swinomish and Tulalip Tribes

BENCHMARK 2

Achieve a science-based, regional system of marine protected areas (MPAs)

The term MPA refers to any marine area that has a special management or regulatory designation that is in place year-round. Some examples include underwater dive parks, no-anchoring zones, no-harvest areas, and scientific research areas.

Pre-Initiative Conditions

In 1993, the British Columbia/Washington Environmental Cooperation Council appointed a Marine Science Panel to make recommendations regarding the management of the Puget Sound and Georgia Basin marine waters. The panel, comprised of six university and government marine scientists from both countries, determined that the establishment of a network of marine protected areas was one of the highest priorities (PS/GB ITF, 2000). Work groups were established in both British Columbia and Washington state to develop an implementation plan. An inventory of Puget Sound MPAs was conducted for the Task Force to identify and provide information on existing sites (Murray, 1998).

Eight small bottomfish recovery zones were established by San Juan County in 1997 on the recommendation of the San Juan MRC. These sites were the first of their kind, relying on education and peer pressure rather than regulations to discourage the harvest of bottomfish. The eight rockfish nursery sites were identified through a community project as areas where bottomfish were once abundant but no longer could be found. The sites are marked with signage and the MRC annually buys ad space in the Washington Department of Fish and Wildlife sportsfishing guidelines to inform fishermen about the areas.

Achievements towards this Benchmark

The San Juan Board of County Commissioners, Islands Trust delegates (the local government counterpart in the Gulf Islands of British Columbia, Canada) and non-governmental organizations on both sides of the border signed a joint agreement to designate a transboundary marine stewardship area (San Juan County and Islands Trust, 2000). The San Juan MRC members participated in a joint workgroup to develop the language for the transboundary agreement and worked in an advisory capacity to the Board of County Commissioners. The MRC followed up on the agreement with these specific actions:

- Brochures and press packets about the stewardship area were created and distributed.
- The MRC hosted public meetings all around San Juan County.
- San Juan County and Islands Trust created an MPA workbook about good stewardship practices in the area and distributed it to residents (Islands Trust and San Juan County, 2001).
- San Juan County adopted a shoreline master program overlay designation for MPAs and applied it to a site in Orcas Bay.
- A San Juan County commissioner visited every tribal government with usual and accustomed fishing areas in the county to begin dialogue about improving marine protection in county waters.

The Jefferson MRC held several meetings about the potential development of marine protected areas in the community. The MRC identified boat anchors as a threat to the long-term health of the eelgrass beds, which led to the development of a new concept for the region. A voluntary "no-anchor zone" would help protect known eelgrass beds, which exist extensively in the in Port Townsend Bay, along the town's waterfront. The MRC enlisted the support and involvement of community groups such as Rotary and the Chamber of Commerce, the Maritime Center, marine trades, the local yacht club, City Council, the Port of Port Townsend, the Board of County Commissioners, and boaters. Seasonal marker buoys are being designed and will be installed just beyond the outer edge of the eelgrass meadows in Port Townsend Bay to identify the area as a voluntary anchor-free zone.

In Skagit County, important rocky reef habitat that provides nursery areas for dwindling rockfish species was identified as a priority for increased protection and possible reserve status. The Skagit MRC did extensive public outreach and technical work to identify sites where rockfish once were abundant, but no longer exist in large numbers. The details of this work are described under benchmark #5.

The establishment of this benchmark and work of the MRCs created an increased awareness within natural resource agencies of the local interest and support for improving the level of protection in the marine environment. Discussions within MRCs and at Northwest Straits Commission meetings informed agencies of the diversity of opinions and considerations for establishing MPAs. MRC and Commission meetings became an important place to discuss MPA science and policy.

- MRC members and Commission representatives attended regional and national MPA meetings to make connections between local projects and regional efforts.
- The Commission conducted an inventory of MPAs in the Northwest Straits region (Smukler, 2002).
- Whatcom MRC hosted a community discussion on the Cherry Point aquatic reserve.
- State agency staff made presentations to the Commission to provide updates on MPA-related programs.

- Staff from several tribes in the region spoke to the MRC and Commission members about tribal issues and concerns related to MPAs at the 2002 Annual MRC training.

The Commission took on an even more significant role in marine protected area work when it received funding from the Russell Family Foundation in 2003. This funding allows commission staff to work on several projects related to marine protected are designations. In 2003, the Commission co-hosted with the SeaDoc Society a regional MPA science work-group meeting where 25 scientists met to discuss the science needs of current marine conservation programs within agencies and non-governmental organizations. The commission staff is also working with DNR on the development of management plans for new aquatic reserves.

Other Regional Activities and Accomplishments Related to Benchmark 2

By 1999, 67 marine protected areas existed within the Northwest Straits area (Smukler, 2001). These MPAs were established by state and federal resource agencies, private conservancy groups, universities and local governments for a variety of reasons, usually based on one agency's specific authority. There has not been a systematic, scientific approach to design or establish a regional network.

The majority of existing MPA sites have little or no regulations in place. They also lack enforcement, monitoring programs, baseline data, educational programs and management plans. Half the 67 sites prohibit the collection of unclassified marine invertebrates, but have no other protective regulation in place. Ten of these sites prohibit harvest and public access in order to protect fish and wildlife species.

The Department of Natural Resources (DNR) has proprietary authority over the state's aquatic bedlands. In 1999, the Commissioner of Public Lands announced the designation of six aquatic reserves to be withdrawn from commercial leasing opportunities. In 2000, DNR staff began to develop criteria to evaluate and designate future aquatic reserves. No harvest restrictions are associated with the designations.

In early 2000, the Washington Department of Fish and Wildlife proposed five new marine reserves in Puget Sound in an effort to provide additional protection to bottomfish and rocky reef habitat. Three of the proposed sites were approved after a public review process. These reserves prohibit bottomfishing by non-tribal fishermen, but none of the sites are formally recognized in tribal regulations.

Benchmark Progress and Challenges

For several MRCs and the Commission itself, Benchmark #2 was the most hotly debated benchmark. The discussions allowed communities to consider different opinions about current threats to marine resources, as well as explore the efficacy of marine protected area designations as a management tool. The debate and discussions helped to persuade the NWIFC in June 2003 to develop an MPA policy for Puget Sound treaty tribes (NWIFC, 2003).

Existing MPAs lack enforcement and active management policies. Commission staff will continue to work with MRCs and other regional partners to improve the level of protection of existing protected areas, and to propose new ones. MRCs will continue to play an important role in developing useful research with regards to MPAs and the habitats and species that they affect, and are an important place for citizen-based dialogue among diverse user groups with diverging opinions.

Several MRCs took on extensive inventory and mapping projects in order to better understand their local marine resources. That work is discussed in Benchmark #3 but has some relevance to MPAs because the MRCs needed better data on local marine resources before considering new management measures.

BENCHMARK 3

Demonstrate a net gain in highly ecologically productive nearshore, intertidal and estuarine habitat in the Northwest Straits, and no significant loss of existing, high-value habitat; improve state, tribal, and local tools to map, assess, and protect nearshore habitat and prevent harm from upland activities.

In 1994, the British Columbia/Washington Environmental Cooperation Council's Marine Science Panel stated that the loss of nearshore habitat was the most significant concern in the region. A report written for the International Task Force on the state of the nearshore environment found that in spite of the ecological significance of the nearshore, protection of this zone was limited and scattered among over 100 different jurisdictions (Broadhurst, 1998).

Nearshore habitat supports highly productive communities of marine and migratory organisms. The nearshore provides an important migratory corridor for juvenile salmon to feed, rest and hide from predators as they migrate from the rivers in the Puget Sound region to the Pacific Ocean. Shoreline development and adjacent upland activities, including industrial and residential actions, have degraded and destroyed the nearshore in many areas of Puget Sound.

This is a challenging and broad-sweeping benchmark that must be addressed locally by individual MRCs as well as at the ecosystem level. Pre-initiative conditions for this benchmark are complex and far-reaching. They will be discussed under each of the major project areas below.

Achievements towards this Benchmark

Commission and MRC project work is divided among the three major aspects of this benchmark. The first section describes projects which resulted in net habitat gains, the second section describes projects focused on identifying loss of habitat, and the third section describes projects which provided maps and tools to further protect the nearshore environment.

Nearshore, Intertidal and Estuarine Habitat Gains

Shoreline Restoration

Island MRC worked in partnership with many groups, including Washington State Parks and the Wooden Boat Foundation, to restore a beach at Cama State Park.

- A 100-by 25-foot concrete boat ramp was removed from the beach. The ramp had been in place for approximately 30 years in the midst of forage fish spawning habitat.
- The Wooden Boat Foundation is providing $300,000 to build an environmentally friendly low-impact boat ramp.
- Native plants are being planted at the south end of Cama State Park in partnership with Washington State Parks.

Snohomish MRC worked with county staff on several shoreline restoration projects. At Kayak Point County Park, non-native plants were removed and native nearshore vegetation was planted along the backshore. Interpretive signs about nearshore habitat, the MRC and the demonstration project will be installed. Volunteers did most of the site preparation, planting, and maintenance.

Snohomish MRC is evaluating methods such as technical assistance and incentive programs to restore nearshore habitat on approximately 500 feet of privately owned lands. The county will provide landowners with information about soft armoring, as well as develop criteria and establish a review committee to identify which sites are appropriate for the program. Staff anticipates that the county will reimburse landowners for at least 20 percent of the cost of the restoration work.

Snohomish MRC is also working to identify candidate shoreline restoration sites. County staff compiled and completed a preliminary analysis of existing and new data, and developed a science-based, collaborative methodology in support of the MRC's decision-making process for selecting candidate sites. In its advisory capacity, the MRC provided input on the criteria and methodology. The final product will be a prioritized list of protection, restoration, and research projects along the entire Snohomish County marine shoreline (approximately 80 miles), not including the Snohomish River and Stillaguamish River estuaries. Local property owners will be involved in the description and prioritization of projects on or near their land.

Spartina Removal

Spartina is an aggressive, invasive cordgrass that has infested tideflats in Puget Sound and estuaries along the coast of Washington. Once it begins growing in an area, it spreads rapidly and significantly changes the habitat of the shoreline. Approximately 700 acres of *Spartina* occur in Puget Sound (Murphy, 2002). The majority of the infestation occurs in Skagit, Snohomish and Island counties. The Washington departments of Fish and Wildlife and Agriculture are working with local noxious weed boards to treat large areas with a combination of digging, mowing and herbicide spray. The

MRCs have demonstrated a useful role in expanding the removal and in education efforts.

Two MRCs organized Spartina removal projects that successfully reduced the coverage of *Spartina* and prevented its further spread.

- *Spartina* infestations were identified and mapped at March Point, Padilla Bay and Swinomish Slough. The Skagit MRC hosted 2 annual "dig days" where MRC volunteers and citizens from around the county used shovels to dig up *Spartina* plants and roots from the beach. A newly trained crew of volunteers helps prevent further invasions.
- Island MRC worked in partnership with the Langley Middle School to conduct a week-long Spartina digging event in Penn Cove and Holmes Harbor during the school's spring break.

Creosote Log Removal

Creosote-laden wood has been used for decades to build docks, piers, over-water building supports and railroad ties. As structures break apart, the logs drift and land on beaches. Railroad tie cast- offs also have been found extensively on the upper beaches of northern Puget Sound.

The creosote in logs and timbers contaminates water and can kill marine animals. In the marine environment, as little as 50 parts per billion of creosote is lethal to herring eggs and larvae. Human exposure to creosote is also potentially harmful.

The Whatcom MRC used its funding to work with the City of Bellingham and Washington Department of Ecology to inventory and remove creosote-laden logs from Whatcom County beaches. This project demonstrated that log removal can be safely accomplished with beneficial results for wildlife and humans. The removal project team had a diverse set of partners that included local environmental groups, the city and county governments, the Port of Bellingham and several businesses.

- The entire Whatcom County shoreline was inventoried for creosote materials. Every creosote log was tagged, and all locations were entered into a database.
- The inventory allowed project staff to quantify existing logs and measure the level of influx of new rogue logs.
- Seventy-seven tons of creosote-treated material were removed from Whatcom County and disposed of in a hazardous waste landfill.
- An immeasurable amount of nearshore habitat was cleared of toxic contaminants, preventing future leaching.

Future work in creosote log removal: Although creosote is no longer allowed to be used in the marine environment, innumerable structures exist that will dislodge over time and drift with the currents. Rogue creosote logs will continue to drift and land on the beaches throughout the Northwest Straits region.

Derelict Fishing Gear Removal Project

There are hundreds of tons of derelict fishing gear in Puget Sound, including nets, lines and pots that have been lost and abandoned in Puget Sound over the past decades. The gear has accumulated in bays and inlets, and deep water of the Sound, drifting with the currents and in many cases, continuing to indiscriminately capture fish and shellfish. There was no mechanism in place for people to report lost fishing gear, no official database of known derelict gear, and no agency with a mission or budget to recover lost gear until the Commission initiated the derelict fishing gear removal project. The Commission received funding through the National Oceanic and Atmospheric Administration's (NOAA) Community Restoration Program to begin to tackle this enormous problem. Partners on this project included state natural resource agencies, Washington Sea Grant Program, Tulalip Tribes and all seven MRCs.

The Commission derelict fishing gear removal program has been successful in a number of areas – it facilitated the removal of large amounts of gear, freed up marine habitats, built partnerships among agencies, changed state law and established an infrastructure to facilitate continued gear removal. Because this project has so many components, the outcomes are separated into different benchmarks. Only the outcomes related to habitat gains are reported under this benchmark. Effects on indicator species are described in Benchmark #6, protocol development and database outcomes are reported under Benchmark #7, and public education is described in Benchmark #8.

Three pilot gear removals were conducted. In the first pilot, a two-day removal operation in San Juan County, more than 400 feet of derelict commercial purse seine net were removed from underwater rocky reef habitat. In the second pilot operation, conducted near Lummi Island, 292 derelict crab pots and over one linear mile of derelict gillnet were removed. A third pilot, conducted to test high priority emergency response, removed two separate nets that posed a risk to threatened species. In all cases, the gear contained a variety of dead and live marine life.

The Commission contracted for a side-scan sonar inventory to identify derelict gear in a few discrete areas. The 2003 inventory was conducted in portions of Boundary Bay and Bellingham Bay in Whatcom County, north Samish Bay in Skagit County and Port Susan in Snohomish County in order to get an estimate of abandoned crab pots in these areas. This initial small-sample survey identified over 500 crab pots. One 100-meter linear scan in Boundary Bay showed 100 derelict crab pots, or one pot every meter. Similar densities of lost pots were found in Clallam County during an inventory by the Clallam MRC.

The Clallam MRC led a derelict gear removal project to inventory and retrieve derelict gear in its county waters. This effort removed 52 crab pots (20 commercial and 32 sport pots), seven shrimp pots (all commercial) and 11 octopus tire traps (all commercial). Of the total 52 pots recovered, 28 were still actively fishing.

The derelict gear reporting system was put to the test in 2003 when residents of San Juan County reported a derelict net floating in San Juan Channel. Washington Department of Natural Resources divers removed a 400- by 600-foot gill net that had the remains of birds, river otters, salmon and other marine species throughout its length.

The full environmental and safety benefits from these removal actions are incalculable. The removal of each piece of gear has multiple benefits. The most obvious is that the gear is no longer actively and indiscriminately fishing. Secondly, the gear is no longer blocking access to underwater marine habitat. Lastly, the gear is no longer posing a navigation or safety hazard for people in boats or underwater divers.

Future work in derelict gear removal: The Commission and the Northwest Straits Foundation secured over $300,000 in additional grants for derelict fishing gear removal in 2003-2004. A portion of the funds will be spent removing derelict gear in known salmon corridors. With an infrastructure now in place to allow efficient reporting and response to derelict fishing gear, future project work will be focused directly on gear removal. Initial removal efforts will be focused on Whatcom, San Juan and Clallam counties.

No significant loss of existing, high value habitat

All seven counties are mapping surf smelt and sand lance spawning habitat, and two counties are mapping eelgrass beds. The data from these projects will go directly into the local permit center to help regulators determine the appropriateness of proposed shoreline projects. Data are already being used by permit centers in San Juan, Island and Clallam counties.

The Skagit MRC worked in conjunction with Skagit County Planning and Permit Center to examine individual shoreline permits. A map was generated that showed the concentration of shoreline variances and indicated areas of high growth. The MRC found that it would be beneficial for permits to include habitat loss information so that the data could be tracked more accurately.

Tools to map, assess and protect the nearshore

Protection of the nearshore ecosystem depends upon accurate and up-to-date tools to identify the marine life that exists in the nearshore. The projects described below are an important step to help state and local agencies recognize and protect the nearshore.

Nearshore Habitat Mapping

Eelgrass beds grow in the intertidal and subtidal areas of Puget Sound and the Northwest Straits region. They provide important habitat to many species. Comprehensive eelgrass mapping is occurring in Island and San Juan counties through underwater videography. All 212 miles of shoreline in Island County are inventoried and progress is well underway in San Juan County. The Salmon Recovery Funding Board (SRFB) is providing funds for both projects, and consistent protocols developed with Initiative funds are being used in both instances. In San Juan County the project is managed by Friends of the San Juans with the MRC acting in an advisory capacity. The eelgrass survey in Island County is being managed by the Island MRC. The surveys will provide new information on eelgrass density, the eelgrass area and its outer limits. The methodology for data collection is consistent for both counties and data are provided to state and local permitting agencies in a useable format.

These projects have already changed scientists' understanding of the extent of eelgrass habitats in the region and will allow for additional protection with existing regulations for newly identified eelgrass beds. The eelgrass maps complement work done by state agencies and other local mapping projects which have identified artificial shoreline structures (armoring) and natural geologic features (e.g. feeder bluffs, accretion beaches).

- Rapid Shoreline Inventories (RSI) were conducted by Skagit, Whatcom and San Juan MRCs for segments of their shorelines. The RSI methodology, developed by People For Puget Sound, provides an overview of the intertidal habitats.
- Volunteers were trained to collect data on eelgrass coverage, algae coverage, adjacent land use, upper and lower intertidal substrate, invasive species, overhanging vegetation, and trails and access points. Other observations, such as pipe outfalls, were also documented.
- Skagit MRC also used assessment criteria, developed by People For Puget Sound, to use the RSI maps to prioritize future restoration projects.

Forage fish-spawning area mapping is being done extensively in the Northwest Straits region. Refer to Benchmark #6 for discussion and details on that mapping work.

See Benchmark 7 for other data gathering efforts related to the nearshore.

Other Regional Activities and Accomplishments Related to Benchmark 3

The Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) is a regional partnership of federal, state, local, tribal and nongovernmental organizations that began in 1999. The Commission is a partner in PSNERP and a member of the steering committee. PSNERP was established to identify significant ecosystem problems in the Puget Sound Basin, evaluate potential solutions, and restore and preserve critical nearshore habitat. The PSNERP outreach team is working with MRCs to discuss local restoration projects and potential partnerships.

Millions of dollars have been spent in the last five years to restore salmon habitat, with the majority of projects funded through the Washington State Salmon Recovery Funding Board. Initially, all restoration projects were focused on freshwater salmon habitats. However, MRC projects to inventory forage fish spawning habitat (salmon prey) and eelgrass habitat have helped demonstrate the critical role the nearshore plays in the salmon life cycle. The Salmon Recovery Funding Board provided significant funding for the inventory projects and improved its policies to better address the importance of nearshore restoration projects.

Benchmark Progress and Challenges

Since the start of the Initiative in 1999, there has been a significant increase in nearshore project work focused on better understanding of the marine life that depends on the nearshore, habitat restoration, inventories and maps. The MRCs have played an important leadership role on this front, particularly in regards to mapping, inventory and public education efforts.

BENCHMARK 4

Show a net reduction in shellfish areas closed due to pollution

Pre-initiative conditions

In 1999, beaches in six of the seven counties in the Northwest Straits region were closed to recreational shellfish harvest due to contamination. Of the 147 recreational shellfish areas in the seven counties, 40 were open, 20 were closed and nine were open conditionally. The remaining 78 were not monitored and therefore are "unclassified" (PSAT, 2003).

Thirty-five commercial shellfish growing areas are located in the Northwest Straits region. Seven of them were considered threatened by degrading water quality.

Upgraded: From 1998 to 2003, 5,365 acres of commercial shellfish beds in Sequim Bay (Clallam County), Duckabush (Jefferson County), and Samish Bay (Skagit County) were upgraded to allow harvest after monitoring showed water quality improvements (PSAT, 2003).

Downgraded: From 1998 to 2003, 1,470 acres of commercial shellfish beds in Dungeness Bay (Clallam County), Similk Bay (Skagit County), and Drayton Harbor and Portage Bay (Whatcom County) demonstrated water quality contamination and were downgraded to disallow harvest (PSAT, 2003).

These reclassifications resulted in a 3,895-acre net gain in commercial growing areas.

Threatened: In July 2003 the Washington Department of Health's Early Warning System identified six shellfish areas that are on the verge of failing public health standards, or where water quality is clearly deteriorating. This list is distributed so that water quality problems can be addressed before shellfish harvesting must be restricted. This year marks the first time that San Juan and Jefferson counties have had a threatened shellfish area (WDOH, 2003).

The threatened growing areas in the Northwest Straits region are:

Birch Bay in Whatcom County

Buck Bay in San Juan County

Dungeness Bay in Clallam County

Port Townsend Growing Area in Jefferson County

Portage Bay in Whatcom County

South Skagit Bay in Island and Snohomish Counties

Achievements towards this Benchmark

The Whatcom MRC shellfish subcommittee is coordinating a joint project with the Port of Bellingham and the Shellfish Protection District. County staff and volunteers will observe and evaluate rat and bird populations at the Blaine marina that may be contributing fecal coliform to Drayton Harbor waters. The MRC will work with the Port and the Shellfish Protection District to select management options to reduce the impacts of these populations on water quality.

The Island MRC's Shore Steward Program produced a booklet to explain shoreline stewardship to landowners, including information about maintaining on-site septic systems which are important to maintaining healthy shellfish beds.

In 2001, increased levels of fecal coliform caused a shellfish bed closure in Dungeness Bay in Clallam County. Clallam County Commissioners created a Clean Water District in the Dungeness Watershed in response to the closure. The goal of the District is to recommend appropriate actions to reduce fecal coliform levels. The MRC regularly participates in the meetings and activities of the District.

Clallam County MRC members also took the lead in monitoring for paralytic shellfish poisoning (PSP) for the Washington Department of Health (see discussion of this in Benchmark #7).

Skagit MRC identified a popular state park with deteriorating water quality due to a variety of nonpoint pollution sources. The Skagit MRC and local volunteers planted an oyster garden in this park where oysters have traditionally been grown and harvested by residents. The garden is a symbol of the community's commitment to restore water quality to previous levels. It also serves as a tool to educate residents about how human activities contribute to poor water quality.

Benchmark Progress and Challenges

Shellfish harvest is regulated by Washington Department of Health. Land use and development patterns have tremendous impact on water quality.

Three MRCs developed shellfish benchmark projects. MRC interest is also focused on restoring native species (described in Benchmark #6) and ensuring shellfish harvest opportunities.

BENCHMARK 5

Exhibit measurable increases in factors supporting recovery of bottomfish - including numbers of fish of brood stock size and age, average fish size, and abundance of prey species - as well as sufficient amounts and quality of protected habitat.

Bottomfish are legally defined (WAC 220-16-340) as a category of groundfish. Bottomfish are Pacific cod, Pacific tomcod, Pacific whiting, walleye pollock, all species of dabs, sole and flounder, greenling, lingcod, ratfish, sablefish, cabezon, sculpin, all species of sharks and rays, all species of rockfish and surf perches except shiner perch.

Pre-Initiative Conditions

In February 1999 a petition was sent to National Marine Fisheries Service (NMFS) requesting that 18 species of marine fish found in Puget Sound be listed for protection under the Endangered Species Act (ESA). The NMFS responded to the petition, but limited their review to seven species for which there was enough biological data to write a biological opinion. Six of the seven species are bottomfish: copper, brown, quillback and black rockfish; Pacific cod; Walleye pollock; and Pacific hake. These same species were identified by the American Fisheries Society as "vulnerable" and in the case of Walleye pollock, "endangered" (Musick et al., 2000). NMFS declared that none of the bottomfish species warranted listing under ESA because the fish were found to be part of larger Pacific populations, not distinct to Puget Sound. The technical review team acknowledged that declines in these fish populations needed further study to determine the overall significance of the apparent ecosystem-wide changes.

In August 2000, Washington Department of Fish and Wildlife produced a draft Conservation Plan for Groundfish Resources and Fisheries in Puget Sound that proposed using the precautionary approach to groundfish management. The plan has not yet been completed, and the co-managers are continuing to develop a more protective approach to groundfish management.

Achievements towards this Benchmark

Whatcom MRC developed a program to increase community awareness of the status of bottomfish and to explore potential local projects that might assist in recovering bottomfish. The MRC hosted three community workshops to discuss local bottomfish resources and the status of these populations. Approximately 50 people attended the workshops to share their knowledge and concerns. Based on those community discussions, the Whatcom MRC submitted recommendations to the WDFW to make changes to sports fishing regulations to be more protective of bottomfish.

Skagit MRC recognized significant bottomfish habitat within their county waters and enlisted the local community to help.

- Phase I (2000-2001) – Presentation and display materials and brochures were produced explaining the status of rocky reef bottomfish and the potential use of reserves for restoring those populations. A draft report on rocky reef bottomfish was presented at five public meetings. Approximately 179 people attended the five public meetings. Presentations were also given to Puget Sound Anglers (Anacortes), Skagit Audubon Society, Arlington Rotary, and a local diver group. Out of those discussions, eight sites were identified as potential marine reserves. A final report was presented to the Commission in 2001 (McConnell et al., 2001).
- Phase II (2002-2003) – A technical review workshop was held with agency biologists, regional experts and MRC members to complete a biological scoring matrix of the eight rocky reef sites. A public meeting and questionnaire were used to get additional input on the matrix. A Phase II report was published that provided assessments and recommendations for the sites (McConnell and Dinnel, 2002). The report was presented at the Science and Management of Protected Areas Association Conference in Victoria, British Columbia in May 2003. Deep-water surveys of the eight candidate marine reserve sites were also conducted using a remotely operated vehicle as part of Phase II. These surveys provided deep-water baseline data on habitats and bottomfish in areas deeper than will be surveyed by divers during Phase III.

San Juan MRC monitors bottomfish movement in the eight bottomfish recovery zones to track the fish within these areas. The MRC also partners with the Friday Harbor Whale Museum's Soundwatch program to monitor fishing activity in the zones and to educate fishermen at the sites about the voluntary no-take areas. The program has also inspired additional student research. Specific work products include:

- Dive survey protocols were developed and utilized for a monitoring program that looked at three of the eight bottomfish recovery zones and three control sites. Data from the surveys provide baseline information on size and density of fish species.
- Acoustic tagging and monitoring of lingcod at Lime Kiln bottomfish recovery zone, which is providing new information about the movement of ling cod over time (Eisenhardt, 2002).
- Monitoring protocol for measuring rockfish larval production was developed and utilized in the bottomfish recovery zones (Weis and Miller, 2003).
- In 2003, San Juan County organized a symposium to discuss scientific information and management strategies to protect rockfish species. Twenty-five fish biologists from agencies, universities and tribes attended.

Some MRC projects to protect bottomfish overlaps with projects reported under Benchmark #2 in the context of marine protected areas.

Other Regional Activities and Accomplishments Related to Benchmark 5

The Washington Department of Fish and Wildlife developed two marine reserves in Island County in 2000. One is specifically designed to benefit bottomfish (see also Benchmark #2). The department also worked with the City of Edmonds in 2000 to formally adopt a no-fishing regulation in the city's underwater dive park adjacent to the Washington State Ferries dock. This site has some of the largest lingcod and rockfish species in the region due to a locally enacted no-fishing ordinance adopted in 1970.

Benchmark Progress and Challenges

Harvest of bottomfish is managed by the Washington Department of Fish and Wildlife and the treaty tribes of Washington. MRCs don't have regulatory authority to control fish harvest, but the MRCs have taken advantage of opportunities to collect information about local bottomfish populations and to inform the public about threats to these species.

Several MRCs made significant contributions to the state of scientific knowledge regarding bottomfish in specific locations. Scientists from Skagit and San Juan counties gave presentations at the Puget Sound/Georgia Basin Research conference on bottomfish research.

BENCHMARK 6

Demonstrate increases in other key marine indicator species (including those identified in the Protection and Restoration of Marine Life in the Inland Waters of Washington State report).

Pre-Initiative conditions

The species identified in the "Protection and Restoration of Marine Life in the Inland Waters of Washington State" report (West, 1997) as "having undergone substantial declines in regional populations abundance in recent years" are: pinto abalone, marbled murrelet, Olympia oyster, tufted puffin, harbor porpoise, unidentified marine invertebrates, Pacific herring, Pacific cod, Pacific hake, walleye pollock, quillback, copper and brown rockfish, and lingcod. More recent information suggests that the list could be expanded to include Puget Sound Chinook and southern resident orcas.

Achievements towards this Benchmark

Forage Fish Spawning Inventory and Mapping

Surf smelt, sand lance and herring are collectively known as forage fish or baitfish. These fish are prey species for salmon, marine fishes, birds and marine mammals and are thought to be indicators of nearshore health. The health of salmon and other marine life depends on healthy forage fish.

Surf smelt and sand lance spawn high on the beach, in a particular mix of gravel and sand, and the location and timing of spawn varies by species and year (Penttila, 1995a). This reproductive behavior puts the forage fish eggs at risk from changes that may occur on the beach from shoreline development. Their survival also seems to depend on shade provided by shoreline vegetation (Penttila, 1995b). Development activities can result in changes in beach substrate and removal of shoreline vegetation (Macdonald, 1995).

Shoreline permits for residential, commercial and industrial development are often issued without knowledge of whether forage fish utilize the adjacent beach for spawning activity. In the absence of this information, permit writers cannot make any specific requirements or permit conditions to protect forage fish habitat.

From the early 1970's to 1992, forage fish surveys were carried out by WDFW staff on a limited number of Puget Sound beaches. The program was prematurely terminated in 1992 due to agency budget cuts. The Commission took a leadership role in getting forage fish spawning surveys completed for the Northwest Straits region. This project blossomed into a regional effort that involved all seven MRCs. There are many facets to the project. The majority of the work is described in this benchmark, while the development of protocols is referenced in Benchmark #7, the public involvement component is listed in Benchmark #8, and the maps that are developed as a finished end product of the surveys described in Benchmarks #3 and #7.

In 1998, San Juan MRC developed protocols to survey forage fish spawning sites. These protocols are now in use by all seven MRCs and other groups outside the Northwest Straits. Initiative funding has supported three full-time fisheries biologists at WDFW to survey and map forage fish spawning beaches. Some of the funds are also being used to digitize older survey data to use as baseline for current mapping efforts.

The number of beaches surveyed by WDFW prior to the Initiative is shown in the second column in Table #1. Beaches surveyed by MRCs using protocols developed by the San Juan MRC are the third column in Table #1. Volunteers and other professional staff were trained and utilized to significantly expand the survey work. Their contribution is provided in the fourth and fifth columns.

Since June 2001, forage fish surveys occurred in all Northwest Straits counties and two other Puget Sound counties. This coordinated effort offers significant economies of scale through the utilization of uniform protocols, centralized data management, consistent lab techniques and seamless GIS mapping.

This multi-county survey work will be completed in 2004. In its first two years the assessments resulted in the discovery of

Table I Beaches Surveyed by MRCs for Forage Fish Spawn

County	*Pre-Initiative # stations surveyed*	*Additional stations currently surveyed through MRC work*	*Volunteers trained*	*Volunteer hours*
Clallam	552	300 on-going	20	400+
Island	1,138	1,700 on-going	60	694
Jefferson	890	600 on-going	74	907
San Juan	522	1,400 on-going	40+	400+
Skagit	2,025	200 on-going	20	100
Snohomish	106	200 on-going	13	48
Whatcom	1,223	200 on-going	50	174

22 miles in Island County and 10.5 miles in Jefferson County of previously unreported and unmapped habitats. Once a forage fish spawning beach is mapped, the map is provided to both the local county government and WDFW for use in shoreline permitting. This documentation triggers protection under Washington state's Hydraulic Code and permit process. This law requires WDFW regulatory staff to deny or condition shoreline permits to protect the habitat.

This project constitutes the largest-scale mapping survey of forage fish spawning beaches undertaken anywhere. Nine counties, three tribes, two environmental groups, seven Marine Resources Committees, two universities, hundreds of volunteers and WDFW staff collaborate in the effort. This project also demonstrates that geographic spillover can and will occur for successful projects in the Northwest Straits region.

Future forage fish work:

Comprehensive countywide maps of surf smelt and sand lance spawning areas will be complete for the region by 2004. Pacific herring spawning sites are being surveyed in Island and San Juan counties.

Skagit MRC is exploring opportunities to restore beaches to improve forage fish habitat on beaches through beach nourishment and shade tree planting.

Kelp Habitat Research

Clallam County studied nearshore kelp beds to better understand how juvenile salmon, surf smelt and sand lance use these habitats. Findings from the study indicate that each species has different behaviors and usage of kelp (Shaffer, 2003). This information has added to the knowledge base kelp habitat and was presented at the 2003 Puget Sound/Georgia Basin Research Conference.

Olympia Oyster Seeding

Olympia oysters (Ostrea conchaphila) are the only oyster species native to Puget Sound. It is small, occurs in inland and marine waters of Washington and is prized for its edibility. It was once abundant and was harvested commercially and recreationally throughout its range. Poor water quality, habitat loss, overharvest and competition from the larger, non-native Pacific oyster all contributed to a large decline in the native Olympia. Current distribution of the Olympia oyster is patchy and scarce except in the south Puget Sound (West, 1997 and Fagergren, 2003).

Olympia oyster seeding occurred in three counties through joint efforts among the Clallam, Jefferson and Skagit MRCs and the Puget Sound Restoration Fund, which provided technical expertise on the seeding of the Olympias. Each seeding project required initial habitat assessments to identify growing areas with the greatest likelihood of success for the oysters. Monitoring plans are established for all sites to measure growth and mortality.

The Jefferson MRC and the Puget Sound Restoration Fund partnered with local property owners and volunteers to plant 25,000 juvenile Olympia oysters at three sites along the shoreline of Discovery Bay in 2002. The Jamestown S'Klallam tribe conducted monitoring. There was a 75.6 percent survival rate and the oysters had doubled in size over the year. In 2003, an additional 200,000 Olympia oyster seeds were planted at seven new sites.

The Clallam MRC, assisted by the Puget Sound Restoration Fund, investigated the success of seed bags planted by the Jamestown S'Klallam Tribe in 2002 at three sites in Sequim and Dungeness Bays. Six sites with the best potential for survival and growth were planted with seed in July of 2003. Clallam MRC members transported the seed from the Lummi hatchery and distributed the seed bags. Private tideland owners contributed labor and material costs. The Jamestown S'Klallam Tribe will monitor future growth.

In April 2002, the Skagit MRC worked with the Puget Sound Restoration Fund to plant 20,000 juvenile Olympia oysters in tidelands owned by the City of Anacortes. Shell Puget Sound Refinery, NOAA and the Skagit Systems Cooperative provided funds. This planting had extremely low mortality (Robinette and Dinnel, 2003). The Swinomish Tribe, Anacortes Aquaculture, Washington Department of Natural Resources, Shannon Point Marine Center, Taylor Shellfish and the Skagit MRC participated in the project. In 2003, more Olympia oyster seed were planted by the Skagit MRC at a county beach in coordination with the Puget Sound Restoration Fund with similar success rates.

Future work in Olympia oyster restoration:

The three counties that embarked on Olympia oyster seeding started what could lead to permanent re-establishment of Olympia oysters. Initial plantings monitored by the MRCs and Puget Sound Restoration Fund demonstrated excellent growth and minimal mortality. There is high potential that suitable habitat exists in the other four counties.

Table 2 Oyster Seeding Projects in 2002 and 2003

County	*2002 number of oysters planted*	*Sites planted*	*2003 of oysters number of oysters planted*	*Sites planted*
Clallam	9,750	3	240,000	6
Jefferson	25,000	3	200,000	7
Skagit	20,000	1	120,000	1

Derelict Fishing Gear Removal

The derelict fishing gear removal project described in Benchmark #3 benefited many indicator species and established a system where additional removal work can be accomplished. Species found entangled in one 1,300-foot section of net included: 150 dead salmon, several hundred dead Dungeness crab, several dogfish and a shore bird skeleton. Other removal efforts found river otters and birds in addition to fish and shellfish.

Salmon

The Jefferson MRC worked with the Northwest Watershed Institute to create a fish survey program. Volunteers organized by the Port Townsend Marine Science Center, working alongside scientists, were trained on sampling methods and species identification. The surveys revealed important new information about chum, coho and Chinook salmon in Tarboo Bay. The survey results documented for the first time, that Tarboo Bay, with its extensive and diverse saltmarsh and mudflat habitats, provides important nursery habitat for juvenile salmon, including two federally threatened species, and a diversity other marine fish. Volunteers contributed 115 volunteer hours to the project.

Orca Protection

The San Juan MRC collected information and facilitated dialogue with the local community and the whale watching industry regarding the status of resident orcas and possible needs for further protection of the species. The MRC sponsored a day-long whale watching workshop that brought together the industry and concerned community members. The MRC's efforts resulted in the local Tour Boat Operator Association endorsing a voluntary 200-yard limit to avoid harassing whales. The MRC also facilitated extensive discussions at MRC meetings about the proposed surveillance system at Limekiln Park by the Whale Museum and other issues of local concern.

Sonar

The Commission and the San Juan County Commissioners, following the advice of the San Juan MRC, contacted the U.S. Navy to express concerns regarding the Navy's use of sonar in water frequented by orcas. They urged that a precautionary approach be used in future sonar operations until further assessment of potential effects on marine mammals could be evaluated.

Dungeness Crab

The Snohomish MRC developed a Dungeness Crab Stewardship Plan in response to concern by local residents that the crab harvest was increasing to levels that seemed unsustainable as other fishing and shellfishing opportunities decreased. There is concern regarding the lack of harvest enforcement as well as observations that many people catch more than their limit. Although the county has no authority to regulate harvest, the MRC recognized that a stewardship plan could provide needed information to allow the county to be more proactive in protecting the species.

Other Regional Activities and Accomplishments related to Benchmark 6

In November 2000, Fisheries, the scientific publication of the American Fisheries Society, featured an extensive article on endangered fish stocks in North America. Eight species were found to be at risk in Puget Sound, the same seven as cited in the petition and one additional species of rockfish. The article states that "the management challenges to the recovery of fish stocks at risk in Puget Sound appear to be the most complex in North America" (Musick et al., 2000).

In 2001, the Center for Biological Diversity and 10 co-petitioners sent a petition to National Marine Fisheries Service requesting that southern resident orcas be listed under the Endangered Species Act (ESA) due to recent population declines. A Biological Review Team conducted a status review of orcas. The Service cites many risk factors for the orcas but declined to list them under ESA (Krahn et al., 2002).

In March 1999, National Marine Fisheries Service listed Puget Sound Chinook salmon as threatened under ESA. No other marine fish or whale species have been listed under ESA to date. NMFS acknowledged in its technical documents that there are ecological problems in Puget Sound that are not well understood and in many cases there are not enough data to make adequate biological determinations on the status of fish populations. WDFW instituted new regulations on the harvest of unclassified marine invertebrates after the West report was released.

Benchmark Progress and Challenges

Many indicator species in the Northwest Straits region face a complexity of threatening factors. The MRCs effectively demonstrated that specific local projects are an important complement to regional marine species protection programs. Documenting forage fish spawning beaches, removing derelict fishing gear, seeding Olympia oysters and working with local communities to encourage individual actions to prevent species declines are significant contributions towards this benchmark.

BENCHMARK 7

Initiate coordination of scientific data (for example, through PSAMP) including a scientific baseline, common protocols, unified GIS, and sharing of ecosystem assessments and research.

Pre-Initiative Conditions

Natural resource data is collected in Puget Sound by a variety of agencies and programs. Some coordination of ambient monitoring occurs through the Puget Sound Ambient Monitoring Program.

Achievements towards this Benchmark

Work on this benchmark took many different forms. MRCs collected data using established protocols, or in cases where protocols are not available, the MRCs have developed new protocols in concert with agency staff and appropriate scientists. The data are made available to natural resource managers and other interested parties.

Protocol Development

The San Juan MRC contracted with Dr. Laurence Moulton, MJM Research, and Dan Penttila, WDFW, to develop protocols for sampling forage fish spawning sites in intertidal and nearshore areas. The protocols were completed in June 2000 and are now being used by volunteers under the supervision of WDFW to collect consistent and accurate data for forage fish spawn (Moulton and Penttila, 2000). WDFW adopted the protocols for their own use.

Initiative funds paid for eelgrass survey protocols to be developed by Dr. James Norris of Marine Resources Consultants for full spatial eelgrass surveys. The protocols were used in Island and San Juan counties. The new protocol allows scientists to use videography to collect information on eelgrass density, area and outer limits expands upon existing eelgrass protocols used by the Washington Department of Natural Resources.

The Commission contracted with Natural Resource Consultants to develop derelict fishing gear removal and disposal protocols with the help of a technical committee. Protocols were completed and published in November 2002. They address diver safety, boat handling, methods for disposal of derelict gear and GIS-based data collection. The Commission also worked with state legislators to ensure that the protocols were recognized in statute. Senate Bill 6313 formally adopts the protocols as guidelines and exempts derelict fishing gear removal efforts that comply with the guidelines from a state hydraulics permit process. Other details of SB 6313 are discussed in Chapter 3.

Paralytic Shellfish Poisoning Database

Clallam MRC members regularly monitor Clallam County beaches for paralytic shellfish poisoning (PSP) according to Washington Department of Health (WDOH) protocols. MRC members were trained for the monitoring and developed a system to send data to WDOH.

As a result of the monitoring 48 miles of beach were opened for recreational harvest. The new monitoring program initiated a regular source of PSP data for WDOH and opened the door for other volunteer monitoring to occur elsewhere.

Data Coordination

In 1999, the Commission organized a "Science Gaps" workshop to bring together 50 scientists to identify the most significant data gaps currently hampering marine resources management and protection efforts. Washington Sea Grant Program produced a workshop summary report in 2000 (WSGP, 2000).

The Commission, along with many partnering agencies, also organized a "Show Me The Data" workshop to assist MRCs in understanding and locating data sources that relate to Northwest Straits benchmarks. Eighty-seven people attended the workshop.

The Commission hired Anchor Environmental consultants to develop a Northwest Straits Nearshore Habitat Evaluation. By compiling all available geographic data on nearshore habitat, the report provides a comprehensive nearshore habitat dataset that lays the groundwork for the MRCs to better assess nearshore conditions and identify restoration and/or conservation potential. The dataset was distributed to all MRCs and county planning departments on CD-ROM (Anchor Environmental and People For Puget Sound, 2002). It includes GIS-based maps of intertidal and sub-tidal vegetation; substrate and shoreline modifications; forage fish spawning areas; tributary streams; shellfish closure areas; and distribution of fish, shellfish and marine mammals.

After the initial work was done, the Whatcom MRC hired Anchor Environmental to compile additional Whatcom County nearshore data to expand the original dataset. This report provided information to develop a useable multi-layered marine data-map series. The layers include bathymetry and drift cells, substrates, intertidal vegetation, shellfish beds, shellfish closures, crab and shrimp habitat, bottomfish habitat, groundfish habitat, forage fish spawning areas, salmon fishing areas, marine mammal occurrences, creosote pilings, county shoreline zoning. It is viewable online at Whatcom MRC's website (www.whatcom-mrc.wsu.edu/MRC/index.htm).

Clallam County MRC sponsored a series of workshops entitled "Nearshore Habitats of Clallam County – How We Interact." The focus of these workshops was to catalog both regional and local knowledge of nearshore habitats and

resources, and to identify priority species and geographic areas of interest. The results are outlined in a comprehensive report (Clallam MRC, 2000).

Species Research

New information was collected on a number of different species. In Skagit County, the MRC developed a project to research Olympia oysters in coordination with the oyster planting project. The MRC developed an agreement with the Samish Nation to conduct experiments during seeding to determine the best practicable conditions and limiting factors for Olympia oyster, and to determine the most likely causes of juvenile mortality after seeding. The results will provide useful information for future seeding work.

The forage fish spawning project is described in Benchmark #6. Because the lack of forage fish data was a major impediment to understanding and properly managing this important prey species, the data collection effort should be recognized as a significant element under this benchmark.

New information was collected on the occurrence of three different species of salmon in Tarboo Bay, Jefferson County (see Benchmark #6 for project description).

Gray Literature

The research and project activities of the MRCs have contributed large amounts of new information and data to the Northwest Straits region. Most are available as technical reports, and much of the information has been distributed through Websites and public conferences. Peer reviewed publications are beginning to emerge in some areas. A full bibliography is available on the Commission's website (www.nwstraits.org).

Maps

Many linkages exist between this benchmark and Benchmark 3. MRCs developed maps and data specific to the nearshore environment. These data, collected locally, were provided to local governments and state agencies, helping to fill in significant regional data gaps.

Other Regional Activities and Accomplishments related to Benchmark 7

The Puget Sound Ambient Monitoring Program continues to monitor ambient conditions in Puget Sound. The most current data are published in the Puget Sound Update 2002 (PSAT, 2002). Tribes, academic institutions and agencies conduct other scientific monitoring and research in Puget Sound. Much of the current scientific research was presented at the Puget Sound/Georgia Basin Research Conference held in Vancouver, B.C. in 2003. Proceedings from that conference are available online at the Puget Sound Action Team's website (www.psat.wa.gov).

Benchmark Progress and Challenges

The MRCs and the Commission played an important role in developing new and relevant datasets and putting the data into the hands of others. The Commission provided a forum to gather scientists together to discuss data gaps. The Commission also brought MRC members and scientists together to provide a forum to share data and to prevent duplicative data gathering projects.

BENCHMARK 8

Coordinate with Puget Sound Action Team and other entities on an effective outreach and education effort with measurements of the numbers of people contacted as well as changes in behavior.

Pre-Initiative Conditions

In 1999, environmental outreach and education occurred through state agencies, environmental organizations, local governments and university programs. Marine science centers such as Padilla Bay National Estuarine Research Reserve, the Port Townsend Marine Science Center, the Port of Bellingham Marine Life Center and others provided marine resource information to the general public and school groups. These programs still exist and frequently partner with the commission on various projects.

Achievements towards this Benchmark

All seven MRCs undertook education and outreach projects with a three-pronged approach: MRCs first educated themselves about the variety of marine resource issues in their local area. Scientists, agency staff and local experts were invited to speak at MRC meetings.

Second, the MRCs helped agencies, tribes and others understand the role and abilities of the MRCs. Puget Sound Action Team (PSAT) organized regular meetings of agency staff who were most likely to be working with MRCs to ensure that adequate staff time was allotted to the Initiative by state natural resource agencies.

Lastly, the MRCs targeted education programs about marine issues of concern to local residents. The MRCs also used these opportunities to listen to the concerns of residents.

All the MRCs are doing extensive work on education and outreach that allows for a much greater public awareness and discussion of marine resource issues. Some public workshops were designed as a venue for dispensing information about project activities. More often, public meetings are used as a

Table 3 Examples of Public Education Events and Activities by County

County	*Examples of public education events and activities (not exhaustive)*	*Volunteer trainings and work projects*
Clallam	Six public meetings on different marine topics offered an educational focus with opportunities for discussion and feedback on priorities (298 people attended); Eight-page color insert titled "What Lies Beneath" placed in local newspaper	Forage fish surveys, green crab identification, paralytic shellfish poisoning monitoring
Island	Sound Waters Workshop, (245 participants annually), Water Festival, MRC speakers' bureau regularly makes presentations around the county to local groups, county-wide eelgrass survey, Shore Steward Program	Forage fish surveys, Shore Steward Program
Jefferson	Habitat stewardship technical meetings at four different communities, emergency response workshop, four-page color insert on Olympia oysters in the local newspaper, two permanent interpretive signs installed on Olympia oysters, eelgrass protection signage	Forage fish surveys; Olympia oyster planting; eelgrass protection area education
San Juan	Marine stewardship meetings; outreach to shoreline landowners for forage fish survey; forage fish classroom presentation at six different schools; whale watch and bottomfish workshops; education program at fish derby; bottomfish recovery education program	Forage fish surveys (over 40 volunteers), Rapid Shoreline Inventory
Skagit	Rocky reef habitat protection meetings reached 179 people throughout the county, six public outreach meetings on derelict gear project (230 people) brochure and article in national dive magazine	Forage fish surveys, Rapid Shoreline Inventory (61 volunteers) Olympia oyster planting, Spartina "dig days"
Snohomish	Beach expos (400-500 people per summer), public meetings, educational boat cruise	Forage fish surveys
Whatcom	Marine summits, MRC open houses, Drayton Harbor open houses, annual Salmon Summit (300 people each year), bottomfish meetings, forage fish video played on public access channel	Forage fish surveys, Rapid Shoreline Inventory
NWSC	Derelict gear project video and public information materials	Annual MRC trainings

means to discuss marine issues, get feedback on priorities and gauge public interest in the benchmarks.

Volunteers were trained and used extensively in project activities described in other benchmarks. Most notably, volunteers played a significant role in the forage fish spawning surveys, *Spartina* removal, shoreline inventories and oyster plantings.

A sample of public involvement opportunities and events in the different counties is described in Table 3.

Benchmark Progress and Challenges

All seven MRCs have been enormously active in their education and outreach efforts. Public education and involvement is the foundation of their work. More events and projects occurred than could be reasonably listed in this report. Community forums on marine issues were integral to the MRCs early work and helped introduce them into their communities. The training and use of volunteers, community participation at MRC meetings, the occurrence of marine issues in the local newspapers and radio stations and the opportunities for people to learn marine resource issues is at an all-time high.

Chapter 3 ~ Initiative Accomplishments Beyond the Benchmarks

The Coastal America Award

In September 2003, the Northwest Straits Commission was presented with the Coastal America award in recognition of the extraordinary accomplishments of the derelict fishing gear removal project and the Commission's ability to develop effective partnerships with many federal, state, tribal and local organizations. Timothy R.E. Keeney, deputy assistant secretary of commerce for Oceans and Atmosphere, presented the award to the Commission at the 2003 Estuarine Research Federation Conference.

In a congratulatory letter, President George W. Bush stated:

"The partnership you forged has brought together Federal, State, Tribal, local agencies and organizations to develop a comprehensive plan to begin a massive undertaking to remove derelict fishing gear from Puget Sound. Through your efforts, the habitats in Northern Puget Sound are safer for people, marine mammals, fish and sea birds. My Administration strongly supports such efforts to bring together collective resources to meet common goals and better our environment."

Integration into Existing Local and Regional Management Structures

MRC meetings provide a consistent forum for local discussion of marine resource issues and local implementation of restoration efforts. This is key to the success of the Initiative, but it serves an important function for other partners as well. State agencies and other regional groups can now communicate more effectively at the local level by utilizing time at MRC meetings. Examples abound of how agencies and MRCs have benefited from these forums.

DNR staff spoke to the MRCs and the Commission about the aquatic reserve designation process and is working with the Whatcom MRCs to develop management plans for the Cherry Point Aquatic Reserve.

Staff representatives for the Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) visited MRCs meetings to present project information to the community in hopes that local residents will better understand the importance of the nearshore and will help to identify restoration needs.

PSAT local liaisons regularly participate in MRC meetings. They provide information to the MRC on upcoming events and agency projects, get feedback from the MRC for the development of PSATs work plan and other planning processes, and work with the MRC to better understand local needs and concerns.

In 2000, Island County residents worked with the Washington Department of Fish and Wildlife (WDFW) and anglers to assist with comments and advice on proposed marine reserves off Whidbey Island. The MRC organized four public meetings, which were attended by WDFW staff along with many local residents. These were the only local forums on the proposed reserves. Based on information, comments and discussions from those meetings, the Island MRC provided formal comments to WDFW. The agency then adopted two reserves instead of three, and corrected boundary information on one of the reserves based on the MRCs input.

The Whatcom MRC helps coordinate a Salmon Summit that attracts over 300 people per year. The role of the MRC has been to organize sessions at the conference that provide information about the significance of the nearshore to salmon. These sessions also provide an opportunity for the MRC to share information about local nearshore restoration projects. The MRC's involvement in the conference has demonstrated the its significance in the community as the hub of local knowledge regarding the nearshore environment.

The Initiative benefits from the respect the MRCs have earned with their local governments. Since 1999, MRC members have become increasingly knowledgeable on local marine resources and related issues, and many now are asked to advise County commissioners and councils on marine and nearshore issues.

Some specific examples of the local advisory role include:

- San Juan County Board of County Commissioners regularly uses the MRC in an advisory capacity and took guidance from the MRC on issues regarding the Georgia Straits pipeline-crossing project, whale-watching guidelines and a ban on personal watercraft.
- Island MRC is working with county government to designate kelp and eelgrass beds and commercial shellfish areas as Habitat Conservation Areas within the county's critical areas ordinance.

- Clallam MRC advised the Clallam Board of County Commissioners on making a formal request to the federal government to concurrently remove dams on the Elwha River to minimize environmental damage to the nearshore.
- The Whatcom County Council adopted a resolution to prohibit the use of net pens in Whatcom County waters based on research and advice from the MRC.
- All MRCs provide regular briefings to their county elected officials.

The Commission's monthly meetings rotate among the seven counties. Meetings provide time for the Commission to conduct business, share information about MRC and ecosystem projects, hear speaker presentations, and interact with the public. The Commission has had many agency staff report on important issues such as the status of the Puget Sound groundfish recovery plan, oil-spill response programs, the creation of salmon recovery plans, development of a state-wide marine protected area inventory, and progress on the state aquatic reserve program.

In 2002, the Commission hosted Billy Frank Jr., chair of the Northwest Indian Fisheries Commission, and Dr. Jeff Koenings, director of WDFW, to discuss co-management issues related to bottomfish recovery. The meeting provided a lively discussion and opportunity for questions. Both managers pledged to continue to work together, expressed gratitude to the Commission for providing a constructive forum for discussion, and asked to come back to continue the dialogue.

Effective Partnerships with Puget Sound Tribes

Recognizing the challenge that existed for tribal staff to participate and track the work of the Initiative, the Northwest Straits Commission worked with the Northwest Indian Fisheries Commission to hire a tribal liaison to work throughout the seven counties. The liaison worked to improve communication and understanding between individual MRCs and tribes. After two years, more effective communication and partnerships were established, and the Commission's tribal committee decided to use available funds to pay for specific action projects requested by tribes. The Commission also has provided some funding to pay travel and staff time for tribal staff to participate in work of the Initiative.

The Commission has organized several meetings specifically focused on tribal sovereignty, treaty rights and other relevant tribal issues. Over time, MRC members and Commissioners have learned how to work more effectively with tribes, and tribal staffs have gained a better understanding of the MRCs and the work that they are doing.

Partnerships and joint projects between tribes and MRCs have increased. Examples of tribal commitments to work with MRCs and share common goals are evident in the following projects:

- The Snohomish MRC worked with the Tulalip Tribes to develop a Dungeness Crab Stewardship Plan.
- The Skagit MRC partnered with the Swinomish Tribe and the Samish Tribe on Olympia oyster seeding, Pacific oyster seeding and Spartina removal.
- The lead for the Clallam MRC's Olympia oyster seeding project is the Jamestown S'Klallam tribe.
- The Tulalip Tribes contributed funding to the Commission for the derelict fishing gear removal project.
- The Skagit MRC teamed with the Upper Skagit, Swinomish and Samish Tribes on Pacific oyster enhancement and Pacific oyster garden.
- The Stillaguamish Tribe organized and funded a project to remove derelict crab pots in Port Susan Bay.

It's also significant that some important projects have been delayed or abandoned after communication with local tribes.

- The Skagit MRC did not establish voluntary marine reserves for bottomfish species out of consideration for concerns expressed by local tribes.
- The San Juan MRC delayed work to establish a stewardship area in order to more fully engage the tribes in the discussion and to allow time to further define the objectives of a stewardship area.
- The Commission deferred endorsement of the Orca Pass Stewardship Area until tribal concerns can be resolved.

Commission Participation and Representation in Regional Initiatives

Commission members and staff are well integrated into regional marine programs. The Commission is represented on steering committees for the Puget Sound Nearshore Ecosystem Restoration Program, the Puget Sound/Georgia Basin International Task Force, and the SeaDoc Society. The Commission also is actively working with the Association of Counties, Puget Sound Shared Strategy, the Fish and Wildlife Commission and the Salmon Recovery Funding Board. In each of these partnerships, the Commission provides information and expertise so that the goals of the Initiative are well integrated into regional programs.

The Initiative has also demonstrated success in creating new legislation. In the course of developing the derelict fishing gear removal project Commission staff, working closely with Senator Bob Oke and other state officials, created Senate Bill 6313 which recognizes the protocols developed by the Commission and technical committee. It also exempts derelict gear removal efforts from the state hydraulics permit process. The bill added language into state statute to recognize the harmful nature of derelict fishing gear, to recognize the

Commission and its role in writing the protocols, and to require that a database be created and maintained on derelict gear. Lastly, the bill directed WDFW and tribes to make recommendations to the Legislature for actions that need to be taken to prevent future derelict fishing gear losses.

Forging Partnerships with the Scientific Community

The Commission and the MRCs needs the scientific expertise and experience of agency staff, university scientists and other professionals working in the region. The Commission hosted science focused workshops, invited scientists to MRC training sessions and with assistance from others, provided funding for MRC members to attend scientific conferences.

The MRCs invited scientists and agency staff to present information at MRC meetings and train their members. MRCs organized science-focused workshops for the public with help from technical experts who share their knowledge with the local community. These events have been highly successful and have allowed agency scientists to develop partnerships and to gain insights into local issues. Each MRC also has at least one member who is experienced with marine science and technical issues. The structure to ensure that MRC projects are firmly rooted in science appears to be working.

Oil-spill Prevention

The Murray-Metcalf Commission recognized that oil spills are a tremendous threat and additional prevention is needed. This topic was not included as an Initiative benchmark, however. Yet oil-spill prevention is an area of great interest to the Northwest Straits Commission. In 2001, the Commission adopted a resolution calling for the establishment of an oil-spill citizen advisory committee. This resolution sparked further interest in creating an advisory group and studying potential response systems. The Commission regularly receives updates from the Washington Department of Ecology's oil-spill response team, and has written letters to the Washington State Legislature to request full funding for a rescue tug stationed at Neah Bay, the entrance to the Straits of Juan de Fuca. In 2003, the Commission was asked by Department of Ecology to participate in a steering committee for a study that will evaluate tug escort requirements for laden tankers in Puget Sound.

Chapter 4 ~ The Future

The Initiative as a Model

The Commission has been asked whether the Initiative is a model that would be useful to apply in other regions of the United States and elsewhere. The following account from California provides some insights to this question.

In 1999, Congress authorized the National Park Service to consider designating the Gaviota Coast in California as a National Seashore. As had happened in the Northwest Straits region during the sanctuary proposal, a backlash occurred in that region among the residents. Recognizing that the Northwest Straits Initiative provided a new and effective model for creating federal and local partnerships, Assistant Secretary of the Interior Lynn Scarlett asked the Commission's director to speak and participate in the Gaviota Coastal Forum in 2002. Ms. Scarlett and others felt that consideration of an alternate model might help to diffuse some of the tensions with the National Seashore proposal. At this point in time, no decisions have been made, but the Gaviota Coastal leaders are considering importing elements of the Northwest Straits model.

Given the growth of the human population in coastal areas and the corresponding environmental concerns, the Initiative is a model that is clearly transportable and adaptable to other regions facing similar issues.

Model Projects

There are many opportunities to use and expand upon the work already done through the Initiative. Many of the projects listed below are models of efficient and effective infrastructure (methods, protocols and materials) that could easily transfer to other Puget Sound counties. Indeed, forage fish spawning inventory methods and protocols developed by the MRCs have already been put to use in Thurston and Mason counties in south Puget Sound. Some project models are exportable outside the region.

Derelict fishing gear survey and removal – Derelict fishing gear exists throughout the world. The Commission has received numerous inquiries about the project. The protocols for removal and inventory methods could be adapted to other regions. The derelict gear project also had a public outreach program that might prove useful to others.

Eelgrass surveys – San Juan and Island counties eelgrass surveys used underwater videography and a methodology that provides a more comprehensive and quantitative analysis than previously done elsewhere in Puget Sound. Initiative funds paid for development of a more detailed protocol that is consistent with one used by Department of Natural Resources. These surveys could be combined with a herring spawn survey and extended into the entire Northwest Straits region and the rest of Puget Sound.

Shoreline surveys - Island MRC developed shoreline surveys to identify developed features such as armoring (bulkheads) and natural features such as feeder bluffs and accretion beaches. These surveys provide important information for county shoreline managers to use during permit reviews and enable landowners to better understand the landscape around their own property. These projects could be transferred to the rest of the Northwest Straits region and throughout Puget Sound.

Creosote log inventory and removal – Creosote logs occur throughout Puget Sound, the coast of Washington and around the country. The Whatcom MRC inventory and removal project is currently being considered for a more regional project in the Northwest Straits region and might be useful elsewhere.

Eelgrass protection zone –The eelgrass protection project in Jefferson County demonstrates the ability of local residents to educate boaters about better anchoring practices. In Jefferson County the eelgrass is being protected, but elsewhere there are other sensitive bottom features that are harmed by recurring anchoring. The number of recreational boats is increasing all over Puget Sound. The "no-anchor zone" concept may be useful to consider in other counties.

Shore Stewards – This program seeks to engage and educate landowners to be more responsible on their property while helping them to increase the value of their land. The program will be applicable to many regions of the country. The Shore Steward guidebook could be adapted to other regions.

Olympia oyster restoration – Olympia oyster seeding has taken place in three Northwest Straits counties and is well suited to occur in all Northwest Straits counties given good habitat availability.

Economic Measures

Developing better economic measures of the costs of ecosystem degradation and environmental protection was of great interest to the Murray-Metcalf Commission but was not included as a benchmark. The Commission discussed methods to develop economic measures and formed a committee to further investigate this issue. The cost estimates to properly take on the project were well beyond funds available. Little tangible progress was made in quantifying economic costs and impacts. The Commission is committed to pursuing appropriate fundraising to make progress on this task.

Emerging Environmental Issues

Environmental issues are dynamic and unpredictable. Factors such as climate change, sea level rise, tsunamis, and invasive species challenge any management structure. The fact that the Northwest Straits region has a legion of stewards in place looking at local problems and identifying and surveying the marine resources with regularity makes the region better prepared to face new emerging issues. The region now has the infrastructure and processes in place to allow for productive dialogue and effective action.

Funding Needs

The Initiative was created with Congressional funds and has largely supported its activities with the annual federal grant. It was evident at the outset, however, that in order to make substantial progress on the performance benchmarks, significant additional funding would be needed.

The Commission did three things to address this issue. It established a fundraising committee to actively pursue competitive grant opportunities. It encouraged MRCs to leverage additional grant funds and look for partner organizations to leverage Initiative resources and contribute in-kind services. The Commission also created the Northwest Straits Marine Conservation Foundation as a tax-exempt 501(c)(3) corporation to assist with additional fundraising.

As a result of these efforts, the Commission and MRCs have received numerous grants and partnered with many agencies and organizations that have contributed money and in-kind services. The Island MRC has used Commission funding to leverage significant outside funding sources. No other MRC has garnered significant outside grants, but the example set by the Island MRC demonstrates the potential. The Foundation raised over $250,000 for projects in 2003.

Congressional base funding is critically important to leveraging other funds and supporting basic activities of the Commission and MRCs. Competitive grants from government agencies and private organizations are used almost exclusively for project work. Annual congressional funding of $1.2 million is essential to support the administration, organizational and program development activities of the Commission and MRCs.

Conclusions

In its first five years, the Initiative has received the full support and participation from all seven Northwest Straits counties. All Initiative commissioners have been appointed, more than 100 MRC members have been recruited and trained, numerous action grants have been funded, and significant outside funding has been leveraged. Positive partnerships have been forged with a diverse mix of people from tribal governments, state and federal agencies, citizen groups, and businesses and science organizations. Locally based MRCs have demonstrated their effectiveness within their communities and the region, and are now well entrenched in local planning and policy-making efforts.

Some cornerstone projects such as forage fish spawning surveys and derelict fishing gear removal showed not only the scientific integrity of the Initiative but also a dedication to working efficiently. The volunteer-based forage fish spawning surveys will have a long-lasting impact to the protection of forage fish spawning beaches through additional protection gained in existing laws. The derelict fishing gear removal involved educating managers about the problems of derelict fishing gear, changing state law, developing new technical protocols, working with multiple resource agencies, developing a reporting hotline and database and finally, removing tons of fishing gear from the waters.

The implications of the projects are far reaching, but the power of the work lies with the hundreds of people who've been involved in the Initiative. Local people with diverse backgrounds and opinions have been working together and solving marine resource problems in an effective and efficient manner. The Initiative has provided a meaningful way to merge energetic citizens rich with local knowledge with Commission members involved with regional conservation work in universities, agencies, tribes and conservation organizations. The unifying force has been to find and act on solutions that improve the Northwest Straits marine resources. The work of the Initiative is permeating the region with positive success stories. It provides fresh thinking and new solutions to old problems. Much remains to be done.

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Appendix A

Northwest Straits Marine Conservation Initiative • Marine Resources Committee Members

Clallam

Herb Balch..... Citizen
Ralph Bauman ..... Citizen
Ed Bowlby ..... Scientific
Brad Collins ..... Local government
Chuck Faires..... Ports
Cameron Field ..... Economic
Chuck Lockhart ..... Citizen
Lyn Muench ..... Tribal
Joe Schmitt ..... Citizen
Anne Shaffer..... Ex officio
Jack Word ..... Scientific

Island

Martin Behr..... Commercial fishing
Hi Bronson..... Planning
Tom Campbell ..... Recreation
Sayed El Sayed..... Scientific
Mike Gallion ..... Recreational
Phyllis Kind..... Citizen
Rolf Seitle ..... Ports
Roger Sherman ..... Agriculture
Jeff Tate..... Planning
Dick Toft..... Military
Benye Weber..... Ports
Gary Wood ..... Executive Director

Jefferson

Clair Candler..... Recreation
Larry Crockett..... Ex officio
Judy D'Amore ..... Citizen
Jeff Gallant..... Citizen
Spike Hall ..... Citizen
Bill Kalina ..... Ex officio
Gabrielle LaRoche..... Scientific
Anne Murphy..... Citizen
Andy Palmer..... Citizen
Judy Surber..... Local government
Dan Titterness..... Ex officio

San Juan

Kelley Balcomb-Bartok ..... Environment
Mike Bertrand..... Planning
Brian Calvert ..... Ports
Tim Carpenter ..... Scientific
Peter Fromm ..... Citizen
David Hoopes ..... Scientific
Terrie Klinger ..... Scientific
David Loyd..... Citizen
Mary Masters ..... Scientific
Kevin Ranker..... Environment
Kit Rawson ..... Tribal
Jim Slocomb..... Local government
Dennis Willows..... Scientific

Skagit

Russel Barsh ..... Tribal
Paul Dinnel..... Scientific
Ivar Dolph ..... Citizen
Polly Fischer ..... Recreational
John Giboney ..... Economic
Lawrence Joseph ..... Tribal
Robert Knowles..... Citizen
Lori Kyle ..... Commercial fishing
Larry Larsen ..... Citizen
Charles O'Hara ..... Tribal
Jim Ramaglia..... Recreation
Jeanne Robinette..... Citizen
Mike Sato..... Environment
Margaret Schwertner . Ports
Kendra Smith ..... Planning

Snohomish

Larry Adamson ..... Planning
John Davis ..... Citizen
Ed Goodridge, Sr..... Tribal
Liz Greenhagen ..... Local government
Kirby Johnson ..... Citizen
Charlie LaNasa ..... Citizen
Dawn Lawrence..... Citizen
Heather McCartney... Planning
Alan Mearns..... Scientific
Paul Roberts..... Planning
Kent Scudder..... Citizen
Jen Sevigny ..... Tribal
Sally Van Niel ..... Environment
Daryl Williams..... Tribal

Whatcom

Ron Akeson ..... Recreation
Robert Cecile ..... Citizen
Michelle Evans ..... Scientific
Chris Fairbanks..... Scientific
Clare Fogelsong..... Ex officio
Bob Kelly Jr ..... Tribal
Amy Krahan..... Citizen
Gerald Larson ..... Recreation
Scott McCreery ..... Economic
Buck Meloy ..... Commercial fishing
Andrea Olah..... Environment
Sharon Roy ..... Ex officio
Barbara Ryan..... Ex officio
Jon-Paul Shannahan Environment
Wendy Steffensen ..... Environment
Mike Stoner..... Ports

Staff

Pat Crain ..... Clallam
Don Meehan ..... Island
Pat Pearson ..... Jefferson
Joseph McKenna-Smith San Juan
Sean Edwards ..... Snohomish
Rick Boge ..... Skagit
Erika Stroebel ..... Whatcom

Appendix B

List of MRC programs and projects by county.

This list is focused on projects developed through Initiative funding and does not include many MRC and Commission educational and outreach activities that occurred over the course of normal business.

Clallam MRC

- Six public workshops on coastal erosion processes, shellfish and water quality, oceanography of the Strait of Juan de Fuca, forage fish, nearshore marine habitat and rockfish.
- Forage fish spawning area survey and mapping.
- Preferential use of nearshore kelp habitats by juvenile salmon and forage fish study (Shaffer, 2003).
- Marine resources of the Strait of Juan de Fuca: How we interact.
- Green crab identification training and monitoring.
- Paralytic shellfish poisoning monitoring program.
- Derelict fishing gear survey and removal
- Olympia oyster seed planting
- Clallam MRC newspaper inserts: What Lies Beneath and As the River Runs – from ice fields to ocean
- Website: www.clallam-naturalresources.org/CNR/

Island MRC

- Eelgrass survey of waterfront landowners (Holmes and Meehan, 2000)
- County-wide eelgrass mapped using underwater videography (Norris and Wyllie-Echeverria, 2001)
- County-wide hardened shoreline features map and field notes (http://www.island.wsu.edu/camano/harden/)
- County-wide surf smelt and sand lance spawning areas survey and maps
- Feeder bluff and accretion zone maps (in progress)
- Shore steward program initiated and guidebook produced.
- Spartina pulling events with school children
- Cama beach restoration project
- Website: www.islandcountymrc.org/

Jefferson MRC

- Emergency response workshop
- Jefferson County marine resources bibliography (http://mrc.co.jefferson.wa.us/Biblio1.htm)
- Summary Report from a Literature and Data Search on the Status of Marine Resources in Jefferson County (Nightingale, 2000)
- Six public meetings on marine resource issues
- Marine protected area brochure
- Four technical meetings with scientists and managers at priority sites
- Four page color newspaper insert titled "Assessing our Marine Resources: Planning for the Future"
- Olympia oyster seeding in Discovery Bay
- Four page color newspaper insert on Olympia inserted in the Port Townsend Leader and The Peninsula Daily News newspapers (Thielk and Nightingale, 2001)
- Two permanent educational signs about Olympia oysters
- Jefferson County Priority Habitat Study
- Forage fish spawning survey and mapping
- Tarboo and Dabob Bay fish surveys
- Discovery Bay habitat stewardship project
- No-anchor zone project
- Website: http://mrc.co.jefferson.wa.us/

San Juan MRC

- Voluntary No-Take Zones maps (http://www.co.san-juan.wa.us/mrc/ntz.html)
- Bottomfish recovery zone research and monitoring (Eisenhardt, 2002)
- Forage fish spawn survey protocols (Moulton and Penttila, 2000)
- Forage fish spawning survey and mapping (Moulton and Penttila, 2001)
- Protocol agreement on Transboundary Marine Protection Area (Islands Trust Council and San Juan County, 2000)
- Marine stewardship area workbook (Islands Trust Council and San Juan County, 2001)
- Whale watching guidelines and workshop (San Juan MRC, 2001)
- Marine stewardship area project and community workshops (on-going)
- Rockfish workshop (2003)
- Website: www.sjcmrc.org/

Skagit MRC

- Rocky reef bottomfish project phases I (McConnell et al., 2001) and II (McConnell and Dinnel, 2002)
- Similk Bay shellfish bed closure report
- Spartina identification and dig days at March Point, Padilla Bay and Swinomish Slough (2002-2003)
- Rapid shoreline inventory at March Point on Fidalgo Island (People For Puget Sound, 2001a) and Samish Island (Bloch et al., 2002)
- Public presentations and outreach on derelict fishing gear (2001-2003)
- Forage fish spawning area survey and maps
- Olympia oyster seeding in Fidalgo Bay (Dinnel and Robinette, 2003)
- Pacific oyster seeding at Bayview State Park and March Point (2003)
- Olympia oyster restoration ecology study (in progress)
- Nearshore restoration feasibility project (in progress)
- Website: www.skagitcounty.net/SMRC

Snohomish MRC

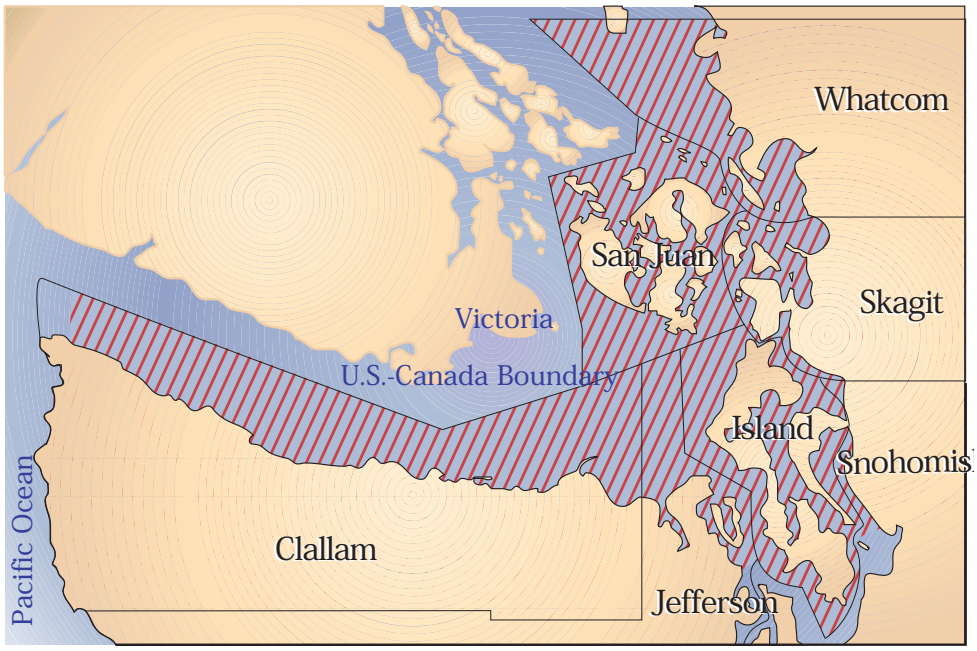
- Five marine shoreline overflights
- Interactive public education events at county beaches
- Dungeness crab stewardship plan (http://www.co.snohomish.wa.us/publicwk/swm/mrc/)
- Eelgrass, forage fish and Dungeness Crab fact sheets (http://www.co.snohomish.wa.us/publicwk/swm/mrc/)
- County-wide shoreline inventory of armoring, banks and bluffs, invasive species (vegetation), pipes, ramps and launches and riparian vegetation (http://www.co.snohomish.wa.us/publicwk/swm/mrc/)
- Forage fish spawning survey and mapping.
- Nearshore restoration blueprint to identify potential restoration sites
- Deep water observation cruise with a remotely operated vehicle
- Kayak Point County Park restoration (in progress)
- Shoreline enhancement incentive program (in progress)
- Website: www.co.snohomish.wa.us/publicwk/swm/mrc/

Whatcom

- Marine summits in 2001 and 2003 (Crossroads Consulting, 2003)
- Anchor Environmental report on marine resource data (Anchor Environmental, 2001)
- Nearshore session for the annual Salmon Summit (day long conference) which attracts 300 people
- Rapid shoreline inventory at Drayton Harbor and Birch Bay State Park (People For Puget Sound, 2001b)
- Creosote logs inventory and removal
- Forage fish spawning area survey and mapping
- Forage fish video
- Nuisance species survey at Drayton Harbor
- Eelgrass, Pacific oyster, rockfish, forage fish, ling cod, flounder and sole, orcas, bald eagle and Dungeness crab fact sheets
- Literature review and draft resolution for the Whatcom County Council regarding salmon net pens
- Bottomfish project and community meetings (People For Puget Sound, 2003)
- Multi-layered marine data map series compiled and provided on-line
- Website: www.whatcom-mrc.wsu.edu/MRC/index.htm#

Northwest Straits Commission

- Data gaps workshop 1999. (WSGP, 2000)
- Show me the data workshop
- MRC annual trainings 1999 - 2003
- Marine protected area report (Smukler, 2002)
- Nearshore habitat database (Anchor Environmental and People For Puget Sound, 2002)
- Mid-Term Report (NWSC, 2003)
- Derelict fishing gear removal project video
- Derelict fishing gear removal project report (NWSC, 2003)
- Website: www.nwstraits.org



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