

CITIZEN-BASED MARINE RESTORATION AND PROTECTION IN ACTION

A PROGRESS REPORT FROM THE NORTHWEST STRAITS INITIATIVE

Prepared for the Northwest Straits Commission
by David G. Gordon, Washington Sea Grant Program,
University of Washington





NORTHWEST STRAITS
marine conservation initiative

NWSC Contact info:
10441 Bayview-Edison Road
Mount Vernon, WA 98273
360-428-1084
www.nwstraits.org/

Marine Resources Committee Representatives:

Paul Dinnel - Skagit
Kirby Johnson - Snohomish
Anne Murphy - Jefferson
Buck Meloy - Whatcom
Kevin Ranker - San Juan
Joe Schmitt - Clallam
Gary Wood - Island

Governor's Appointees:

Dave Anderson
Andrea Copping
Duane Fagergren
Kathy Fletcher
Michael Stoner

Secretary of the Interior Appointee:

Terry Williams

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2003

Restoration Activities: Three Representative Projects

Shellfish Plantings

Once plentiful in bays and inlets of the Northwest Straits, native Olympia oysters have been decimated by overharvesting and habitat degradation. With their demise have gone many of the benefits these native shellfish once provided: food for people and waterfowl, habitat for shrimp and crabs, and cultural continuity for Northwest tribes, whose ancestors have harvested oysters and clams for thousands of years.

In April 2002, the Skagit MRC helped plant 20,000 juvenile Olympia oysters in tidelands under an abandoned railroad trestle in Fidalgo Bay. For this effort, they were guided by staff of the nonprofit Puget Sound Restoration Fund, with funding from the Shell Puget Sound Refinery and NOAA's Community-Based Restoration Program. Further aid came from the Skagit Systems Cooperative—a natural resources consortium of the Upper Skagit, Sauk-Suiattle and Swinomish tribes. The City of Anacortes owns the property beneath the trestle.

The Jefferson MRC recently followed suit, joining forces with the Jamestown S'Klallam Tribe and three waterfront property owners to plant 25,000 juvenile Olympia oysters along the shoreline of Discovery Bay. This embayment has been cited as a priority area for reseeding under the state Department of Fish and Wildlife's Olympia Oyster Stock Rebuilding Plan. The Clallam County MRC is also working with the Jamestown S'Klallam Tribe and the Washington Department of Fish and Wildlife (WDFW) to select sites for future Olympia oyster replantings.

"Shellfish restoration projects are wonderful opportunities for MRCs to work closely with the tribes to achieve common goals," says Betsy Peabody, the Puget Sound Restoration Fund's Executive Director.

Although it will take several years for the oysters to mature, the planting effort has already had sizeable community-building effects, according to Jeanne Robinette, current Chair of the Skagit MRC. "We've learned that citizens are greatly encouraged by the positive impacts of a restoration project," Robinette notes. Members of the press were equally enthusiastic, she says. "There's no better sight than a bunch of reporters in hip boots, holding microphones to interview our oyster planters."

Members of the Clallam MRC are also assisting the Washington Department of Health (WDOH) to monitor area shellfish beds for paralytic shellfish poisoning and other health-threatening effects of harmful algal blooms along the Strait of Juan de Fuca. Their data will support WDOH's decision

to lift its blanket closure of over 48 miles of high-quality clamming beaches—a closure to public shellfishing that was maintained for more than four decades.

Community Shellfish Farms

Whatcom MRC is an important partner in the Drayton Harbor Community Oyster Farm, an innovative project designed to introduce citizens to the art of oystering and gain new recruits in the war against shellfish-fouling water pollution. By planting oysters in the harbor, which is currently closed to shellfish harvesting, this project has established a timeline for measuring progress towards cleaning up the bay. The group, with the help of other organizations and agencies, now has until Spring 2004—the time that oyster seed planted in June 2001 will have grown to harvestable size—to create a clean environment in the bay that will allow for the shellfish's harvest.

To help achieve this objective, the MRC has distributed fact sheets and other information to commercial tenants of the Drayton Harbor marina and other affected parties. Its members have also investigated the fecal coliform bacteria contributions of rats, pigeons and other non-native species to the bay's pollutant load.

Partnering with the Swinomish Tribe in 2003, the Skagit County MRC will enhance Pacific oyster populations at Bayview State Park on Padilla Bay. As in Drayton Harbor, Bayview State Park's oyster beds are closed to recreational harvesting because of pollution. Volunteers will tend the park's newly planted "oyster garden," with the goal of raising community awareness about pollution problems that have prevented people from harvesting and eating the cultivated crop. If all goes as planned, the oysters will be harvested by the public within four years.

Beach Restorations

The unintended effects of human activity have left their marks on coastal beaches. Habitats have been degraded, aesthetic values have been compromised and recreational opportunities have been lost along many shorelines within the Northwest Straits. Several MRCs have made it a priority to undo the damage and monitor sites to prevent further degradation.

With important allies in the Swinomish Tribe, Skagit County Noxious Weed Board and the non-profits People For Puget Sound, The Nature Conservancy and Skagit County Fisheries Enhancement Group, the Skagit County MRC is taking steps to halt the colonization of coastal habitats by *Spartina anglica*, an invasive non-native cordgrass. Introduced into Puget Sound in the previous century, *Spartina* is swiftly altering shoreline areas throughout western Washington. As it proliferates, its roots and stems trap sediment, raising the elevation of the land and converting mud flats into salt marshes. Many rich and productive habitats for shellfish, fish, birds and native grasses are now threatened by *S. anglica's* spread.

Throughout 2003, the Skagit MRC will host *Spartina* surveying and marking trips, along with at least one volunteer work party to remove any clumps of plants identified through this process. Education and outreach activities have also been scheduled. The Skagit MRC co-sponsored a *Spartina* Dig Day in July 2002 with the same partners. MRC members labored alongside more than 50 volunteers, hand-pulling clumps of *S. anglica* from saltwater wetlands near the Swinomish Casino.

In 2003, the Island County MRC will be conducting a *Spartina* inventory and removal project in Penn Cove, a historically productive shellfish aquaculture site. As part of this project, a map of *S. anglica* sites in Penn Cove will be produced. The subcontractor hired to perform these tasks will communicate with the Washington Department of Agriculture's *Spartina* Coordinator and the Island County Noxious Weed Control Board to ensure that all eradication methods are adequate, permitted and coordinated with other efforts in north Puget Sound.

Other coastal restoration efforts are also producing tangible benefits. The Whatcom County MRC has partnered with the City of Bellingham to remove so-called rogue logs and other creosoted materials from shorelines throughout the county. An oil-based wood preservative, creosote contains polycyclic aromatic hydrocarbons (or PAHs) that are toxic to aquatic organisms at low concentrations. The creosote on treated pilings is lethal to herring eggs. By eating PAH-laden prey items, salmon can accumulate exceptionally high levels of PAHs.

Equipped with chainsaws, power winches and other logging gear, the Washington Conservation Corps recently removed 65 tons of creosoted wood from Whatcom County beaches in June 2002. This material was loaded into trucks and taken to a hazardous waste facility for safe disposal.

Prior to the June cleanup, MRC members assisted city staff in conducting an inventory of creosoted wood debris on county beaches. As many as 200 items have been documented within Bellingham Bay alone. Next, the MRC plans to conduct a second inventory to determine how much new material is deposited along the same shorelines. Project partners are also exploring the possibility of expanding the project to include a total of four counties and, through expanded outreach efforts, to provide educators and others with information materials about the hazards posed by creosoted logs.

The Snohomish County MRC has been funded to implement a beach enhancement pilot project at Kayak Point Park in cooperation with County park staff in 2003. The efforts will focus on pulling a park road back from the shoreline, clearing out invasive species and replanting native shoreline vegetation. This will be one of the first efforts by an MRC to begin this process and they will be monitoring results to assist future restoration efforts throughout Puget Sound.

Derelict Fishing Gear Removal Project

Lost or abandoned fishing nets, crab and shrimp pots and other commercial or recreational fishing debris are collectively known as derelict fishing gear. This debris has been identified as one of the major degraders of reef habitats and destroyers of marine fish, birds and mammals in the Northwest Straits.

With a grant from the National Oceanic and Atmospheric Administration and statutory help from the Washington State Legislature (Senate Bill 6313, January 2002), the NWSC initiated the Derelict Fishing Gear Removal Project, charged with the task of crafting protocols for removal and disposal of the hundreds of tons of this debris. With assistance from Natural Resources Consultants, Inc., of Seattle, the NWSC made considerable progress on this front in 2002. Final protocols were adopted by WDFW in November. They are now guiding commercial divers and vessel operators in their efforts to remove derelict gear without harming the environment or endangering themselves.

“There have been several hit-or-miss efforts to find and remove derelict gear in the past,” says Tom Cowan. “However, we wanted a more comprehensive project, hence our emphasis on developing protocols and establishing databases — tools for managing gear removal over the long-term.”

The NWSC also worked with WDFW to create a database of known sites with derelict gear, ensuring that it meets the state’s shared-agency database standards. A toll-free hotline was implemented for reporting derelict gear and a reporting form was made available on the WDFW Web site.

Additional project components have included the creation of a poster, brochure and other public outreach materials for distribution by the seven MRCs, the NWSC and several state agency partners (WDFW), Washington Department of Natural Resources (WDNR), Puget Sound Action Team, Washington Sea Grant Program, the Tulalip Tribes and other project partners. The materials have been posted at Fishermen’s Terminal in Seattle, and additional postings are planned at marinas throughout the Northwest Straits region. A PowerPoint presentation was also developed, for presentations at MRC meetings and at environmental and sports club gatherings. Information is also available on the Northwest Straits Marine Conservation Initiative Web site (www.nwstraits.org/derelict_gear.html).

An initial test of derelict gear removal, conducted by WDNR near San Juan County’s Stuart Island, resulted in the removal of a 300- to 400-foot chunk of a purse seine net. “There are literally hundreds of tons of derelict fishing gear in Puget Sound,” said Cowan in a June 21, 2002 *Seattle Times* article describing the event. Since then, several other gear-removal exercises have been conducted in Whatcom and Skagit county waters, nabbing a total of 22,000 pounds of abandoned gear and over one mile of lethal derelict gill net.

The protocols are critically important for all future efforts to remove derelict gear in the Northwest Straits and other coastal waters. Nearly as valuable has been the collaborative spirit of problem solving among state and federal agency staff and industry groups. Individual tribal and non-tribal fishermen have also stepped forward as important allies in the struggle to recover derelict gear.

“The scientific experts and government agency staff are not the ones who know where to find gear,” offers Joe Schmitt of the NWSC and Clallam MRC. “Rather, it’s the local fishers, divers and the public. Citizen-based MRCs are effective entities for reaching these people and garnering broad support for the Derelict Fishing Gear Removal Project.”

“It’s a win-win situation,” suggests Jeff June of NRC. “Everybody’s in favor of removing derelict gear. And there are immediate positive effects. By removing the gear, you’re reducing animal mortalities and increasing the availability of high-quality undersea habitat.”

Furthermore, June points out, due to reduced commercial fishing, there’s much less gear being lost now than in previous decades. This means that by removing or disabling gear from the Northwest Straits’ submerged reefs, shoals and pinnacles, there’s less likelihood of those habitats being fouled anew.

Protection Activities

Forage Fish Spawning Habitat Survey

Stocks of Pacific herring, Pacific sandlance, surf smelt and several other forage fish species are important prey items on which numerous aquatic predators depend. However, many forage fish stocks have declined in recent years, with noticeable effects on already beleaguered salmon, seabirds and marine mammals in the Northwest Straits and the rest of Puget Sound.

In order to identify and document forage fish spawning locations, MRCs have conducted surveys and inventories of nearshore and intertidal habitat. Identification of such sites as spawning areas triggers automatic protection to them under the state's Hydraulic Protection Approval code and local government's Shoreline Master Programs. Often, the surveys have been coordinated or combined with assessments of submerged vegetation and shoreline development, giving a more rounded portrait of the factors that directly and indirectly limit forage fish abundance.

Before the MRCs began surveying these habitats, there was scant information on where many forage fish species were breeding in the Northwest Straits area. "The MRCs have played a major role in filling the gaps in our understanding," says Tom Cowan.

"In the first year of the Initiative, two MRCs were actively involved in this," he says. "Soon the idea spread to two more, and by the third year, all seven counties were participating in this activity." Data are now being gathered by workers in Thurston and Mason counties, whose shores lie outside of the Northwest Straits.

To encourage consistent collection of data and reporting of results, the NWSC funded an MRC project to establish protocols for field and laboratory work. This ensured that any information gathered by volunteers could be incorporated into state-maintained databases and would be legally defensible if presented in court. Data are now being kept in a single repository, funded by the NWSC, the state's Salmon Recovery Funding (SRF) Board and the National Fish and Wildlife Foundation. As of this writing, many miles of previously undocumented habitat have been added to the inventory, along with confirmations of many previously documented sites. "With the help of the MRCs, we've compiled the world's most comprehensive and complete inventories on forage fish," says WDFW's Daniel Penttila, the foremost authority on forage fish in the Pacific Northwest.

"It's been a fascinating experience — MRC volunteers supported by multiple funding sources, working with the same data protocols and standards," adds Gary Wood, executive director of the Island County MRC and Forage Fish Coordinator for all nine participating counties.

Related outreach efforts are aiding shoreline property owners to identify future projects and stewardship practices for protecting nearshore habitat. Information from these studies will help the MRCs advise local government to develop shoreline conservation strategies and identify new sites for protection and restoration.

Finding previously undocumented spawning habitat is exciting, according to Sasha Horst, Project Specialist with the NWSC. "Every time the MRCs report newly identified sites, their sentences end with exclamation points," she offers.

Eelgrass Survey

An innovative survey by the Island County MRC asked Whidbey Island residents to locate and describe the eelgrass beds off their waterfront property. Those surveyed were also asked to identify other types of marine plants at these sites and to characterize the composition of the upper, middle and lower beach. This extra information would prove useful in later projects coordinated by the MRC.

The survey was mailed to 4,500 property owners in June 2000, garnering 560 responses. In many instances, property owners identified previously unknown patches of eelgrass, adding significantly to the overall eelgrass mapping efforts of WDNR and other state and federal agencies.

A second MRC-sponsored effort involved underwater video mapping of eelgrass beds in five priority locales of Island County's nearshore area. Data from the videotapes were later mapped with Geographic Information Systems (GIS) technology, to be used as benchmark information for assessing the health and vitality of eelgrass beds over time.

Together, the two components of Island County MRC's Eelgrass Project will greatly enhance our understanding of this historically overlooked resource and its importance to juvenile and adult marine invertebrates, fish, birds and other inhabitants in the Northwest Straits' nearshore areas.

Protection

Marine Protected Areas

Marine Protected Areas (or MPAs) can enhance biodiversity and productivity of many commercially important and aesthetically valuable plant and animal species and the habitat on which they depend. They also serve as reference sites for research, ultimately furthering our understanding of marine resources and how to manage them. Many offer opportunities for fostering stewardship of the marine environment among school groups and community organizations.

Despite the benefits, numerous organizations and tribes have been opposed to the creation of new MPAs. For this reason, the NWSC and the seven MRCs have taken a cautious approach to recommending new MPAs or enhancing protections at existing ones. The NWSC is committed to working cooperatively with the tribes, many of whom are in the process of developing policies on MPAs, to resolve this potentially thorny issue.

Terminology has emerged as a key obstacle to overcome. “Marine Protected Areas” are interpreted by some as a blanket prohibition on harvesting resources. Others use the term generally to mean any special designation, protective or not, in the marine environment. Because protection and restoration of the marine ecosystem is the core mission of the Northwest Straits Initiative, MRCs and the Commission have found that it is more important to discuss specific protection strategies than to get lost in an abstract discussion.

Several success stories have already emerged. For example, throughout most of the Northwest Straits ecosystem, MRCs are working to identify forage fish spawning areas. Once identified, these spots must be protected from damaging shoreline uses. Whether such protection is labeled an MPA is less important than making sure that the forage fish have protected places to spawn. County planning agencies receive the information so that they can use it in assessing permit decisions. State fisheries regulators also use this site-specific information.

Early in the process, members of the San Juan County MRC have worked with fishermen to identify voluntary “no-catch” zones at locales where bottomfish stocks were in noticeable decline. These very long-lived fish need long-term protection to recover.

“It was fairly easy to gain support for our efforts,” says MRC member Brian Calvert. “That’s because we weren’t asking anyone to give up anything — the fishing had already deteriorated at these sites. Local citizens saw our bottomfish recovery zones as ways to restore what had been lost.”

Informational signage now communicates the philosophy of this community-driven effort. “And I’ve found that our fishermen are eager to spread the word, explaining to newcomers why they need to respect the no-take restriction,” says Calvert.

More recently, the San Juan County MRC has conducted a series of dive surveys at three target bottomfish reserves, gathering data on fish abundance, habitat types, macroinvertebrate diversities and other characteristics of these sites. This information will become the baseline for future monitoring and analysis of trends over the next decade. The MRC has also collaborated with the University of Washington’s Friday Harbor Laboratories to tag adult lingcod and monitor their movements within the reserves. While these fish appear to be sedentary bottom-dwellers, there is some evidence of long-range movements, possibly a pattern of inshore-offshore migration. A deeper understanding of this phenomenon could be helpful in drafting future plans for bottomfish recovery.

The San Juan County MRC has found extra benefits from its survey data and tagging studies. By offering tours of the acoustic research facility at Lime Kiln Lighthouse, sharing survey information on its Web site and co-hosting public education activities at the Whale Museum in Friday Harbor, the MRC is fostering public involvement and broad support for the project.

Inspired by the successes in San Juan County, other MRCs are investigating options for MPAs in their local waters. For example, working closely with its constituents, the Skagit MRC identified eight potential sites for rocky reef bottomfish reserves. They’ve since narrowed the field to two to four candidate sites, and are now requesting that these sites be evaluated by resource managers and the treaty tribes. Site selection is being guided in part by an interest in enhancing the functions of nearby MPAs in San Juan County.

Proactive Protection for Dungeness Crabs

The Dungeness Crab Stewardship Plan is a proactive, community-based effort to conserve Snohomish County's valuable crab resource. Dungeness crab is an important economic and cultural resource for commercial, recreational and tribal fishers. Fueled in large part by recent declines in other fisheries, local harvests of Dungeness crab have rapidly increased. MRC members have expressed concern that the new, increased harvest rates may not be sustainable.

Inspired by a successful collaborative initiative on the East Coast to conserve equally exploitable horseshoe crabs, the MRC has partnered with state and tribal co-managers and local government to draft a stewardship plan for local Dungeness crab stocks. For this plan, MRC members will work with project partners to identify biological needs of the species in Snohomish County's nearshore waters, identify critical habitats and environmental factors that limit productivity and establish environmental quality standards for the long-term maintenance of crab stocks.

Such groundwork will help shape the creation of the final stewardship plan and a handbook for its implementation. MRC members estimate that this process will be completed within two years, conferring extra protection on the county's most sought-after crustacean.

"That's the value of creating a network, as opposed to a series of isolated MPAs," says the Skagit MRC's Paul Dinnel. The possible synergistic effects of these protected areas may have even greater benefits for fisheries and scientific research in future years, he maintains.

Dinnel's assertion is supported by the findings of Kate Smukler, a University of Washington graduate student who, in 2002, conducted an assessment of existing MPAs as an intern for the Northwest Straits Commission. Smukler identified what she termed a "de facto network" of 107 existing MPAs, offering limited protection for marine organisms and habitats. For this informal network to confer full protections, the network must be strengthened, she concluded. This would involve increasing the size of existing MPAs, improving or creating management plans and coordinating efforts to manage MPAs among property owners, county MRCs and state resource co-managers.

Education And Outreach

Informing the public about the activities of the seven MRCs, soliciting input from commercial fishermen, recreationists and other key constituents and sharing the results of research and data-gathering — these have been the major components of education and outreach plans for the Northwest Straits.

During the first two years of the Northwest Straits Marine Conservation Initiative, MRCs were encouraged to conduct these activities, often as stand-alone activities such as beach walks, open houses and community meetings. In this way, the newly formed MRCs could introduce themselves and their goals to the public at large. However by the third year, many MRCs were engaged in habitat restoration and resource protection projects, with outreach and education efforts in support of these larger-scale activities.

In 2003, education and outreach components are being funded as a part of restoration and protection efforts. This reflects the growing recognition that the two kinds of activities must reinforce each other. Projects that recruit and train volunteers to pull *Spartina* or plant shellfish are good examples of this synergistic approach. Habitats and resources get direct benefits from this, as do the volunteer stewards who receive instruction and hands-on training from the MRCs.

In January 2003, the Whatcom County MRC hosted a Marine Summit to help the MRC members identify community needs for marine protection and restoration efforts. "About 70 or 80 people attended this year's summit, primarily to discuss themes of shellfish and habitat protection," says Erika Stroebel, Resources Planner for the County and Lead Staff for the MRC. "It was great to have such active discussions with representatives from so many agencies and interests."

The well-attended event was modeled after an earlier MRC-sponsored summit, held in May 2001. This one-day event included a keynote presentation by Andrea Copping, Assistant Director of Washington Sea Grant Program and past Chair of the NWSC, as well as panel discussions and breakout sessions for community outreach, research, monitoring and restoration projects. Over 50 participants from the U.S. and Canada helped to identify primary needs for future efforts: increased coordination among local groups, improved protocols for data-sharing and additional efforts at community outreach.

The NWSC has also hosted similar workshops specifically for MRC members. At these weekend conferences, participants have been given opportunities for training and technical assistance on key topics such as the marine science of the Northwest Straits area and how to communicate results through the media. At the 2002 gathering, workshops and breakout sessions focused primarily on working more effectively with Washington's tribes and also on issues associated with the creation of MPAs. "The afternoon sessions reinforced what we've known all along — that responsible citizens can analyze a problem and move toward a solution," says Jeanne Robinette of the Skagit MRC.

Planning For The Future

The framers of the Northwest Straits Marine Conservation Initiative should be proud of the considerable progress that has been made to date to achieve the performance benchmarks. “Instead of creating a National Marine Sanctuary, we designed an experiment – to see if a more locally-based approach could lead to effective protection and recovery of our sadly diminished marine ecosystem,” says Kathy Fletcher, Executive Director of People For Puget Sound and member of the Northwest Straits Commission. “The jury is still out, but we’ve accomplished a great deal in a few short years.” Yet much remains to be done. Additional projects must be launched and actions undertaken to restore species and habitats in the Northwest Straits and to safeguard the ecosystem from resource depletion, habitat degradation and other threats.

“To achieve further progress, it’s important that continued support of MRC projects be available in the form of grants,” maintains Tom Cowan. “It’s exciting to see how projects have changed, from data-gathering and education activities to resource and habitat protection and restoration efforts that will produce tangible results.”

The NWSC must also continue to undertake regional projects, aimed at restoration and preservation goals. Collaborations with tribal groups on projects that achieve mutually beneficial results must also be encouraged. Because nature recognizes no boundaries, partnerships must also be forged with British Columbia and Canadian agencies and organizations.

Congressional funding support, led by Senator Patty Murray and Congressman Rick Larsen and other members of the Washington Congressional delegation, has been fundamental to the success of the Initiative. Senator Murray recently said, “The Commission represents exactly the type of grassroots, collaborative effort needed to restore salmon and other declining fisheries while improving Washington’s pristine coastline.”

However, the cost of achieving the performance benchmarks will be significant, and the effort must be long-term. To ensure that research and other efforts can expand, the Northwest Straits Commission created the Northwest Straits Foundation in 2001. In the words of its bylaws, this non-profit corporation will:

support research, monitoring, restoration, stewardship and education programs and activities about Northwest Straits marine resources, both at a local and ecosystem level.

At Last: a Centralized Database

Completion of the Northwest Straits Nearshore Habitat Evaluation in January 2002 marked an important milestone for the NWSC. For the first time, all available data on nearshore habitat types were compiled and organized in one centralized dataset. With this information, MRCs will assess nearshore habitat conditions and identify priority restoration and conservation sites within their counties. Data gaps were also identified to guide new data collection efforts by MRCs as they seek to enhance and expand the existing knowledge base.

Developed under contract to the NWSC by Anchor Environmental and People For Puget Sound, the evaluation includes GIS maps of intertidal and subtidal vegetation, substrate and shoreline modifications, forage fish spawning areas, tributary streams, shellfish bed closure areas and distributions of fish, shellfish and marine mammals in the Northwest Straits. This information was distributed to all seven MRCs as a final report with a set of dataset documents on CD-ROM.

The Foundation solicits grants, gifts and contributions of money and in-kind services for the promotion of these purposes. With support from outside sources, new projects can be conceived, implemented and assessed, and federal dollars are leveraged for maximum effectiveness. This effort will be a priority in the upcoming year. The NWSC will also be active in supporting federal, state and local legislation and budget requests to help other agencies and organizations fulfill common objectives.

The Northwest Straits Marine Conservation Initiative has forged partnerships with federal, tribal, state and local governments, the scientific and education communities, conservation organizations, private foundations, fishing interests and industry. The MRCs and Northwest Straits Commission are now in a leadership position to carry out many of the actions necessary to reverse the serious decline of marine resources. Scientists and resource manag-

ers agree that it took many years for local marine resources and habitats to decline to the current level of degradation; significant recovery won't be demonstrated in the short, five-year timeframe for which the Initiative is authorized. However, under

this citizen-based model, measurable progress has been substantial. With continued support, progress will continue and the performance benchmarks will be achieved.

CLALLAM MRC

www.nwstraits.org/clallam.html

Marine Resources of the Strait of Juan de Fuca: How We Interact

Nearshore Habitat Mapping of the Central and Western Strait of Juan de Fuca: Surf Smelt Spawning Habitat

Nearshore Habitat Mapping of the Central and Western Strait of Juan de Fuca: Pacific Sand Lance Spawning Habitat

Nearshore Habitat Mapping of the Central and Western Strait of Juan de Fuca: Preferential use of nearshore kelp habitats by juvenile salmon and forage fish

Nearshore Habitat Mapping of the Central and Western Strait of Juan de Fuca: Pacific Herring Spawning Surveys

Nearshore Mapping of the Central and Western Strait of Juan de Fuca

Clallam MRC newspaper insert: What Lies Beneath (8 page color insert)

ISLAND MRC

www.islandcountymrc.org

Island County Eelgrass Survey Final Report

Videographic Eelgrass Survey of Island County Selected Areas

Island County Bulkhead Map

Island County Forage Fish Spawning Habitat Assessments

Survey of Shoreline Armoring in Island County: A Protocol for Volunteers

Island MRC Outreach and Education: PowerPoint presentations, educational display

JEFFERSON MRC

www.mrc.co.jefferson.wa.us

Jefferson County Action Grant Report

Jefferson County Marine Protected Area Brochure

An Annotated Bibliography on the Status of Marine Resources in Jefferson County

Summary Report From a Literature and Data Search On the Status of Marine Resources in Jefferson County

Assessing our Marine Resources - Planning for the Future: 4-page color newspaper insert on the history and future of Jefferson County marine resources

Jefferson County Forage Fish Brochure to Shoreline Property Owners

SAN JUAN MRC

www.co.san-juan.wa.us/mrc/index.html

San Juan County "Forage Fish Spawning Distribution"

San Juan County Protocols for Sampling

San Juan County Action Grant Report (Bottomfish) and Brochure

San Juan County Bottomfish Recovery Program 2001 Biological Assessment Final Report

Distribution of Potential Surf Smelt & Pacific Sandlance Spawning Habitat in San Juan County

Documented Spawning Areas of the Pacific Herring, Surf Smelt, and Pacific Sand Lance in San Juan County, Washington

Forage Fish Spawning Distribution in San Juan County and Protocols for Sampling Intertidal and Nearshore Region

San Juan County Forage Fish Data Distribution #1

San Juan County Agreement with Islands Trust

SKAGIT MRC www.skagitcounty.net

Samish Island Rapid Shoreline Inventory, Skagit County, Washington

Skagit: March Point Outfalls Inventory

March Point Rapid Shoreline Inventory, Skagit County, Washington: Appendix A, Conservation and Restoration Recommendation Maps

March Point Rapid Shoreline Inventory, Skagit County, Washington

Rocky Reef Bottomfish Recovery in Skagit County Phase I Final Report: Marine Protected Areas - Preliminary Assessment and Public Input

Rocky Reef Bottomfish Recovery in Skagit County Phase II Final Report: Assessment of Eight Potential Marine Reserve Sites and Final Site Recommendations

Assessment of Rocky Reef Bottomfishes within Potential Marine Reserves in Skagit County

Rocky Reef Bottomfish Recovery in Skagit County: Brochure

Olympia Oysters in Fidalgo Bay: Report on Research, Planting and Monitoring

Rocky reef fish restoration in Skagit County. A Power Point presentation

SNOHOMISH MRC www.co.snohomish.wa.us/publicwk/swm/mrc

Snohomish County Coastal Zone Management Report

Snohomish County Brochure Insert and Fact Sheets

Snohomish County Marine Resources Advisory Committee Member Handbook

Snohomish County Marine Resources/A Community Outreach and Education Program: Beach EXPOs, Classroom field trips, resource truck

Snohomish Crab Stewardship handbook

Snohomish County MRC Nearshore Habitat Mapping and Forage fish survey

Snohomish County MRC Priority Habitat Ranking Process

Snohomish Crab Stewardship Plan (Draft)

Snohomish County MRC Beach Enhancement Pilot Project at Kayak Point Park

WHATCOM MRC www.whatcom-mrc.wsu.edu

Whatcom County Action Grant Report

Marine Resources of Whatcom County

Whatcom County Marine Summit Report – 2001

Whatcom County Marine Summit Report – 2003

Creosote Log Removal Project Report

Bottomfish Brochure

Rapid Shoreline Inventory

Feasibility Study for Backyard Habitat Sanctuary

Whatcom County Outreach and Education: MRC Brochure, two educational displays, fact sheets (eelgrass, forage fish, pacific oysters, lingcod, rockfish, sole and flounder)

NORTHWEST STRAITS COMMISSION www.nwstraits.org

Northwest Straits Area Map

Murray–Metcalf Northwest Straits Citizens Advisory Commission Report to the Convenors

Northwest Straits Commission Work Plan and Budget

Seven County Resolutions Joining the Initiative and Establishing MRCs

Marine Resource Committee Training Conference Agendas

Northwest Straits Brochure

Northwest Straits Initiative fact sheet, display

Marine Resource Committee Fact Sheets

Derelict Fishing Gear project fact sheet, brochure, poster, logo, display, database, reporting form

Northwest Straits News: newsletter publications (2)

Achieving a Scientifically-Based Regional System of Marine Protected Areas in the Northwest Straits: A Nearshore Perspective

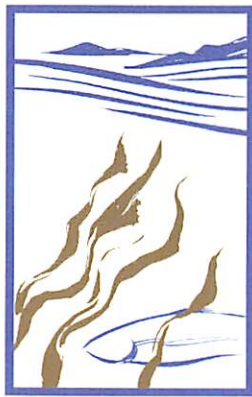
Northwest Straits Nearshore Habitat Inventory

Northwest Straits Nearshore Habitat Inventory: GIS data

Northwest Straits Overview, A Science Gap Report

Report From the NW Straits Workshop to Identify Data Gaps and Information Needs - Draft: The State of the Strait, A Science Gap Report

Measures of Success: Performance Benchmarks, the status from the start



NORTHWEST STRAITS
marine conservation initiative

NWSC Contact info:
10441 Bayview-Edison Road
Mount Vernon, WA 98273
360.428.1084
www.nwstraits.org/

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