2021 ANNUAL REPORT

Northwest Straits INITIATIVE

Who we are

2021 Northwest Straits Commission members

Elsa Schwartz, Chair	Island Marine Resources Committee
Laura Blackmore	Puget Sound Partnership
Chris Castner	Governor's Appointee
Bob Cecile	Whatcom Marine Resources Committee
Alan Clark	Clallam Marine Resources Committee
Tom Cowan, Vice Chair	Governor's Appointee
Tim Ellis	Snohomish Marine Resources Committee
Cecilia Gobin	Tulalip Tribes
Pete Haase	Skagit Marine Resources Committee
Christina Koons	San Juan Marine Resources Committee
Nan McKay	Governor's Appointee
Julia Parrish	Governor's Appointee
Jeff Taylor	Jefferson Marine Resources Committee

2021 Commission staff

Jonathan Hallenback, Marine/Nearshore Project Technician/Veterans Conservation Corps
Lucas Hart, Ph. D., Director
Sasha Horst, Operations Manager
Antonio Jones, Marine/Nearshore Project Technician/Veterans Conservation Corps
Dana Oster, Marine Program Manager
Leah Robison, Ecosystem Project Assistant
Suzanne Shull, GIS Analyst Padilla Bay National Estuarine Research Reserve
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About the Northwest Straits Initiative

The Northwest Straits (NWS) Initiative continues progress on our 2019-23 Strategic Plan. The plan is made up of insights from Marine Resources Committees (MRCs), Northwest Straits Initiative boards, staff, and partners. Six themes were identified, and each theme is supported by goals and objectives that guide us toward desired results. The objectives are broad to accommodate the grass-roots nature of the Northwest Straits Initiative.

Mission

To protect and restore the marine waters, habitats and species of the Northwest Straits region to achieve ecosystem health and sustainable re-source use.

Vision

We envision a thriving, resilient, and healthy Salish sea, where individuals are engaged in the health of their local ecosystems.

Goals

- Stewardship: Forge new paths to advance Northwest Straits recovery and complement the work of regional planning efforts.

- Long-term stable funding: Provide organizational stability that allows the Initiative to focus more on advancing its mission.

- Structural support to MRCs: The Northwest Straits Initiative strengthens MRC capacity and presence within counties and across the Northwest Straits region and ensures the Northwest Straits are protected and restored.

- Engagement and partnerships: Represent a broad range of interests in the Northwest Straits.

- Measuring progress: Quantify Initiative progress to support communications.

- Messaging: Clearly distinguish the Initiative from the work of other organizations.

Tribal Acknowledgement

We acknowledge the lands we're on today are the ancestral and current homelands of Indigenous Nations who have stewarded them since time immemorial. We respect their sovereignty, support their Treaty rights, their right to self-determination, and we honor their sacred spiritual connection with the land and water. These Indigenous Nations include the Jamestown S'Klallam, Lower Elwha Klallam, Lummi, Makah, Nooksack, Port Gamble S'Klallam, Samish, Stillaguamish, Swinomish, and Tulalip Tribes.

Our work: 2021 highlights

This report features a summary of our work in 2021 on projects at both the local and regional level, as well as transboundary efforts to benefit the Salish Sea ecosystem. Additional project materials and reports are available on our website Resource Library.

European green crab

The Northwest Straits Commission continued to work in partnership with WA Dept of Fish and Wildlife to address the invasive green crab problem in Drayton Harbor. Despite restrictions on volunteer participation due to COVID, staff, and Veterans Conservation Corps interns maintained trapping efforts from early April through early October 2021.

Trapping locations included a group of core sites, where dedicated removal efforts were ongoing, as well as systematic trapping in hotspots as often as possible. In addition to the core sites, trapping at index sites increased understanding of how green crabs are using the local creek systems. A total effort of 5,398 trap nights resulted in 146 crabs caught, a catch rate of 2.7 crabs per 100 trap sets.

An intensive grid survey trapping effort was also completed throughout Drayton Harbor in intertidal, deep intertidal, subtidal and creek zones. The grid survey found 11 green crabs in Dakota Creek and all were caught in shrimp traps, resulting in an increased use of shrimp traps at core sites.

Volunteers were able to participate in outreach efforts, engaging with members of the public at a booth set up during the grid survey event, and partners sent an educational mailer to over 1,000 Blaine residents.

In addition to the Drayton Harbor efforts, Northwest Straits Commission staff provided support for green crab trapping at Lummi Bay, Samish Bay and Padilla Bay, and future efforts will include both Skagit and Whatcom sites. Track our progress at https://www.nwstraits.org/our-work/european-green-crab/.

VCC intern conducting green crab trapping in Drayton Harbor. Photo: Allie Simpson

Veterans Conservation Corps

The NOAA/WA Dept of Veterans Affairs Veterans Conservation Corps Fisheries Internship Program is a Washington-based internship focused on marine science and stewardship of coastal resources. In 2021, Northwest Straits hosted two interns through the program, focused on trapping and removal of European green crab in Drayton Harbor in Blaine, WA.

The two interns contributed to a community based effort to protect native species and habitat from an invasive threat, learning invasive species control strategies, native species identification, and community approaches to conservation. The majority of their time was spent in the field, placing and retrieving traps, and conducting species identification and field data recording. Late season activities included data reporting, processing, and communicating results.

This successful partnership with the Washington Department of Veterans Affairs is expected to continue in 2022 as we expand our efforts to address invasive green crab.

Bull Kelp Monitoring

MRC volunteers surveying kelp beds in Skagit County. Photo: Skagit MRC

In 2021, six MRCs - Whatcom, Skagit, Snohomish, Island, Jefferson, and Clallam - completed their eighth year of kayak-based bull kelp monitoring to provide invaluable long-term data on kelp abundance and trends in the region. During the 2021 kelp kayak survey efforts, 54 volunteers participated and surveyed 21 different kelp beds. In total, the volunteers surveyed over 400 acres of kelp forest at its peak in the Salish Sea. Volunteers continued using the KoBoToolbox data collector. The compiled data was posted to our SoundIQ web-based data platform.

The Northwest Straits Commission hosted two workshops focused on MRC engagement with the kelp monitoring program. Over 50 community volunteers and partners attended each workshop. The first workshop highlighted data the MRCs collected for the 2020 monitoring season, and the second focused on data collection and safety for the 2021 season.

Mapping bull kelp forest canopies with aerial imagery

A collaborative project between WA State Department of Natural Resources and the Northwest Straits Commission

Many incredible projects are being conducted to monitor the distribution of kelp forests around Puget Sound, however additional data is needed to achieve the complete Sound-wide assessment necessary to discern long-term trends and identify areas that are declining and/or at the highest risk.

In 2021, Northwest Straits collaborated with the WA State Department of Natural Resources using state funding to explore the use of aerial imagery to map bull kelp forest canopies and fill gaps in Sound-wide data to enhance our existing monitoring efforts. The resulting StoryMap is about a project designed to assess whether drones and fixed-wing aerial imaging platforms would be suitable to complement the work of the volunteer kayak-based kelp survey program led by the MRCs.

Click here to view the StoryMap produced by WA DNR staff.

The kelp survey work led by MRCs was highlighted regionally in a variety of ways. Reporters for local newspapers joined Whatcom and Skagit MRC's kelp surveys and a councilmember joined a Snohomish MRC kelp survey. Clallam and Jefferson MRCs participated in Puget Sound Restoration Fund's Kelp Expedition and the WA Department of Natural Resources worked with kelp kayakers from each participating MRC to take aerial imagery of the kelp beds that volunteers surveyed.

Information about our kelp recovery work can be found at www.nwstraits.org/our-work/kelp-recovery.

Puget Sound Kelp Conservation and Recovery Plan

The Puget Sound Kelp Conservation and Recovery Plan (Kelp Plan), originally published in 2020, is a collaborative framework built around six goals and their respective actions to advance kelp conservation and recovery in Puget Sound.

In 2021, Northwest Straits engaged in a series of Kelp Plan actions, including:

Participation in an interagency Puget Sound Kelp Research and Monitoring Workgroup (Puget Sound Kelp Research and Monitoring Workgroup | WA - DNR), established to increase collaboration and information sharing across organizations.

Leading an interagency kelp policy workgroup to increase collaboration and information sharing across management organizations, with a goal to improve implementation and address policy gaps.

Northwest Straits and MRC participants joined a kelp expedition through Puget Sound to promote awareness, engagement, and support for Puget Sound kelp forests and the Kelp Plan. Beginning on July 15, the 8-day outreach and research event was held at multiple sites throughout the Puget Sound and connected researchers, policy makers, and the public to highlight the importance of kelp forests and facilitate collaborative research efforts (Exploring Puget Sound's Kelp Forests)

At the end of 2021, the Commission hired a Project Coordinator for the Kelp Plan to help monitor, assess, and advance the actions of the Kelp Plan, connect researchers, policy makers, and the public, and integrate the Kelp Plan into other recovery plans and projects. Watch for updates on this effort on our website at https://www.nwstraits.org/our-work/kelp/

Kelp in the News - 2021

Local bull kelp monitoring helps researchers restore species – Bellingham Herald

Why is it important to monitor Puget Sound Kelp Health? – Bellingham Herald

An ambitious new alliance works to identify what's happening to our crucial kelp forests in order to protect – and, hopefully, restore – them – Seattle Times

Volunteers fill important role in bull kelp research – Skagit Valley Herald

An Amazon rainforest of the sea fights for survival beneath Puget Sound – KING 5

Volunteers Protect Kelp in Puget Sound – National Estuarine Research Reserve Association

MyCoast

The Northwest Straits Commission and MRCs are partners with the WA Dept of Natural Resources, Washington Sea Grant, and US Geological Survey in the statewide reporting system called MyCoast. The web-based tool is a portal for people who visit the beach to catalog shoreline photos and observations to guide future restoration and protection efforts.

Large marine debris reporting via the MyCoast app.

In 2021, over 2,100 local users throughout the region participated, a 60% increase over the previous year. Nearly 350 reports in 2021 included local observations on king tides, storm surge, derelict boats, creosote debris and a take a beach photo option to contribute to a time-lapse photo series of selected beaches.

The app is available for download on Google Play or the iPhone app store, and reports are visible online at https://mycoast.org/wa.

Voluntary No-Anchor Zones for Eelgrass Protection

Jefferson MRC established and has maintained a voluntary no-anchor zone in Port Townsend since 2004, which has successfully limited the number of vessels anchoring in critical eelgrass habitat. Building on that success, MRCs in San Juan, Whatcom, Island, and Skagit counties proposed multiple sites to be included in a regional eelgrass voluntary no-anchor zone project.

In 2021, Northwest Straits Commission staff worked with MRCs to collect vital information from stakeholders for each proposed site, gather data on presence and area of eelgrass, test newly developed protocols for vessel monitoring, and take photos of proposed sites when vessels are anchored.

The Northwest Straits Commission also established a transboundary workgroup, hosting monthly meetings with Canadian and WA state partners to ensure that existing and future no-anchor zones are branded consistently across each proposed and installed site.

In 2022 the permitting process for this project will begin with funds from the US Fish and Wildlife Service.

Olympia Oyster Restoration

Northwest Straits is a partner in the long-term regional effort to restore native Olympia oysters, which create complex habitat important to invertebrates and small fish and improve water quality by removing pollutants and nutrients. With the support of many volunteers and students from Bellingham Technical College, four MRCs (Whatcom, Skagit, Jefferson, and Clallam) maintained Olympia oyster restoration projects in 2021.

MRC monitoring data on the survival, population growth, and overall success of previously-planted oyster seed was particularly important when a heat wave descended on Western Washington and the waters of the Salish Sea in late June. Low tides combined with hot air temperatures resulted in the water temperature reaching over 80°F some locations. Jefferson MRC noted their plots fared well through the heat wave compared to other areas in the region, like Sequim Bay, where approximately half the oyster population perished. The full scope of the damage to Clallam MRC's Sequim Bay Olympia oyster population won't be realized after conducting the 2022 surveys. Skagit MRC recorded about 14% mortality of Olympia oyster due to the heat wave. These setbacks are important lessons on restoring native Olympia oysters considering future climate conditions.

In addition to monitoring populations and surveying larvae settlement, MRCs together added over 400 bags - 10.3 cubic yards - of oyster cultch to their restoration areas, providing suitable substrate for new oyster larvae to settle on. In Whatcom County, their efforts were supported by the donation of twelve bags of seasoned Pacific oyster shell donated by Taylor Shellfish that were placed in the restoration plots.

Learn more about Olympia oyster restoration at http://www.nwstraits.org/our-work/olympia-oyster-restoration/.

Clean oyster shell from Taylor Shellfish ready for distribution as substrate in Discovery Bay. Photo: Gordon King

Forage Fish Spawning Surveys

Forage fish are a critical species in the marine food web in the Salish Sea, and the Northwest Straits Commission contributes to research and monitoring efforts in partnership with the WA Department of Fish and Wildlife, locating forage fish spawning areas on local beaches. This monitoring is done at index sites as well as a number of restoration sites to evaluate the effectiveness of restoration efforts.

In 2021, volunteers collected beach sediment samples for forage fish spawn at 32 locations. Seventy volunteers contributed approximately 950 volunteer hours surveying at index sites, collecting over 450 samples in 2021! Surf smelt eggs were present in 32% of the samples, and over 10,200 eggs were counted in the samples analyzed (January-October 2021). These survey results are entered into WA Department of Fish and Wildlife's long-term monitoring database and used on the Forage Fish Spawning Map.

In addition to beach surveys, Northwest Straits hosted a workshop with the WA Department of Fish and Wildlife Washington Conservation Corps (WCC) crew that processes the MRCs' forage fish samples. Forty-one participants, mainly MRC project volunteers, joined to hear the WCC crew members share stories about their experience, what they learned, and the various important projects they contributed to during their service year. As a follow up, an MRC-led group developed an outreach graphic and a letter in support of continuing this WCC crew.

Northwest Straits also hosted a survey training for fourteen volunteers and staff taught by WA Department of Fish and Wildlife at Padilla Bay in December 2021 to ensure volunteers are trained and ready for surveys in 2022.

These forage fish surveys by trained community scientists contribute important baseline data on spatial and temporal distributions and trends of these critical fish in the food web. Learn more about our Forage Fish Program at www.nwstraits.org/our-work/forage-fish.

Left: Volunteers at forage fish training event. Photo: Leah Robison
Right: Forage fish eggs remaining in a container after filtering out sand and gravel. Photo: Tom Flanagan

Education, Communications and Outreach

The Northwest Straits Initiative hosts an annual conference for members of the MRCs. In a typical year the event is held in person, but with the ongoing restrictions due to COVID-19, the annual conference was adapted into a symposium series focused on climate change in the Salish Sea. The first two sessions held in November and December 2021 had an emphasis on recreation and coastal resilience respectively.

Continuing to maintain outreach strategies that are effective in a remote world, the monthly Northwest Straits newsletter reached our established mailing list and featured projects and information from all seven MRCs and regional programs. Links to all of the 2021 newsletters are available online. In addition, the Northwest Straits contributed to various other publications, such as the Puget Sound Partnership's Making Waves and the Padilla Bay NERR newsletter.

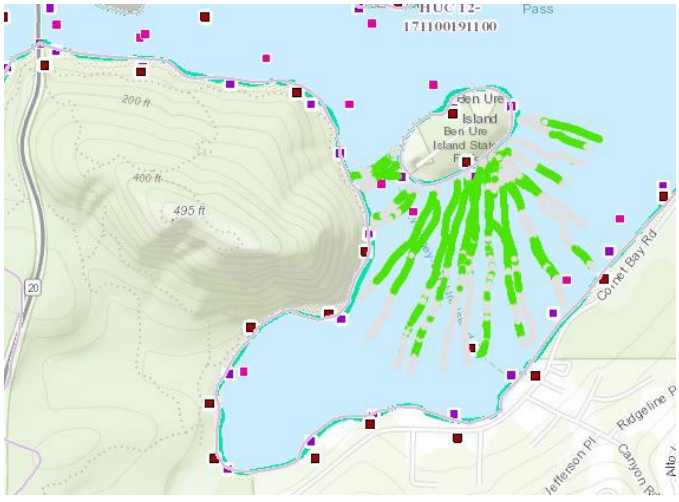
In 2021, MRCs and the Northwest Straits were included or featured in various articles published by local media throughout the region. Topics ranged from invasive green crab and Southern Resident killer whale protection to beach cleanup and derelict vessel removal.

The Northwest Straits Commission continued to maintain websites for each of the MRCs and the Commission (www.nwstraits.org). The NW Straits Foundation maintains a separate site for its activities and fundraising.

SoundIQ

The Northwest Straits Commission has an ongoing partnership with the City of Bellingham to host and maintain our web-based platform for geospatial data. The Geocortex-based system, called SoundIQ, allows MRC data to be accessible in a map format and viewed with other complementary data from the Northwest Straits Commission and other sources, such as the Washington Coastal Atlas.

SoundIQ data, such as forage fish, eelgrass, and kelp layers, can be downloaded for external uses. County planners and other resource managers and consultants can use the data to benefit their projects, such as helping to assess the possible environmental effects of nearshore development and assisting in updating shoreline master program plans. Learn more and explore SoundIQ at www.nwstraits.org/our-work/soundiq/.



Sample screenshot of SoundIQ with Cornet Bay eelgrass beds viewed in conjunction with Coastal Atlas data layers.

Marine Resources Committees

MRC volunteers surveying bull kelp by kayak near Shannon Point in Skagit County. Photo: Skagit MRC

Marine Resources Committees mobilize community support for marine conservation. With support and funding through the Northwest Straits Commission, they identify and carry out marine conservation projects identified. MRCs also serve as an advisory body to their county government on marine issues.

The volunteers that make up the MRCs bring a wide range of skills and interests, along with energy and enthusiasm to improve the marine ecosystem. They contribute thousands of hours each year to benefit the Salish Sea.

Clallam Marine Resources Committee

www.clallamcountymrc.org

Education and outreach – In 2021 the Clallam MRC sponsored three interns. One assisted with Green Crab eradication efforts with the Makah Tribe. One worked the Tumwater Fence weir with Lower Elwha Klallam Tribe and the third developed Education and Outreach materials. As the spring progressed it became apparent that Covid-19 was going to impact the summer internships. The Clallam MRC extended their fellowship to focus on supporting the bull kelp and the pigeon guillemot monitoring projects. The interns presented their projects and findings at the MRC Intern celebration in August. The MRC also performed crabber outreach about proper and safe crabbing practices through local retailers.

Clallam MRC intern Vita Olson at the Tumwater Creek weir. Photo: Clallam MRC

Forage fish spawning surveys – Clallam MRC conducted forage fish surveys at Cline Spit, Ediz Hook and also began surveys at the East Elwha Beach in June 2021. The collected samples are sent to WA Department of Fish and Wildlife for analysis.

Olympia oyster restoration – The Clallam MRC continued to work in collaboration with the Jamestown S'Klallam Tribe on restoration of Olympia oysters. The effort was part of a larger goal to restore 100 acres of Olympia oyster habitat in the Puget Sound area by 2020. The goal was met and now extended to look at restoring 50 more acres in 5 years. In 2021 population surveys were conducted at the two established restoration sites.

Shellfish biotoxin monitoring – Clallam MRC performed shellfish biotoxin monitoring at Pillar Point between June and September, 2021. The monitoring efforts consisted of shellfish sampling for biotoxin every two weeks and monitoring the sanitary conditions of the beach and other beach characteristics. The samples were shipped to the WA Department of Health lab for analysis and results were provided to Clallam County Environmental Health.

Bull kelp monitoring – Clallam MRC volunteers surveyed one kelp bed in Clallam Bay during the summer growing season for 2021. All the survey data was submitted to the Northwest Straits Commission and compiled with data from other counties for a regional dataset. In addition, Clallam MRC hosted a workshop on kelp that was well attended by local community members.

Pigeon guillemot monitoring – Clallam MRC collaborated on surveying local pigeon guillemot populations throughout the summer months. MRC members and 20 community volunteers surveyed 14 sites every other week. Survey data was entered into a regional database available to the public.

Clallam MRC member Ed Bowlby at the Port Williams pigeon guillemot survey location, showing signage informing beach visitors how to avoid disturbing the birds. Photo: Clallam MRC

Island Marine Resources Committee

www.islandcountymrc.org

Forage fish spawning surveys – Island MRC participated in regional forage fish spawning surveys, conducting surveys at two index sites at Glendale and Maple Grove. In addition to index site surveys, they conducted surveys at three restoration sites: Hoypus Point (pre-restoration), Cornet Bay (post-restoration), and Hidden Beach (pre-restoration). They also began surveys at a new restoration site, post-restoration at Sunlight Shores. Several new volunteers received training to continue this ongoing program, and volunteers used WA Dept of Fish and Wildlife's new iForms app to submit data electronically.

Bull kelp monitoring – Island MRC contributed to the regional dataset for bull kelp in Puget Sound, conducting kayak surveys at five beds around Island County during the summer growing season. In 2021 they added a new site at Hoypus Point to improve geographic coverage of their surveys throughout the County. This was a transition year for the program lead and participating volunteers. In addition to the kelp surveys, volunteers deployed temperature loggers to measure temperatures across multiple depths and collected images of plants and animals within kelp beds during their surveys.

Cornet Bay Restoration stewardship – Island MRC has an ongoing partnership with the Northwest Straits Foundation, Washington State Parks, Skagit Fisheries Enhancement Group, and additional partners to restore shoreline habitat at Cornet Bay in Deception Pass State Park. The first phase of restoration occurred in October 2012, and included removing a creosote-treated bulkhead, re-grading the beach to a natural slope, and planting native vegetation. The next phase of restoration occurred in November 2015 and included removing fill along the shoreline, re-grading the slope, expanding the salt marsh area, and planting native vegetation. In 2021, the MRC focused on continuing to establish native vegetation, spreading 19 yards of mulch at a spring volunteer event and planting more than 620 plants and carrying out bi-weekly weeding and watering throughout the summer months.

Hoypus Point restoration – Island MRC continued its partnership with the Northwest Straits Foundation and Washington State Parks for a restoration project at Hoypus Point in Deception Pass State Park, where a feasibility study and conceptual design completed in 2020 recommended the removal of approximately 350 feet of shoreline armor, including large rock and concrete debris. The design also included removal of fill, re-grading the shoreline to a natural slope, placement of appropriate beach substrate, and installation of native vegetation. The project will restore a bluff-backed beach and the marine riparian connection. In 2021 the MRC worked with partners to move the project

Shoreline armoring at Hoypus Point. Photo: Island MRC

forward into final design and permitting. Northwest Straits Foundation will lead the project construction as the MRC continues to partner in restoration and monitoring.

Education and outreach – In 2021 Island MRC continued to adapt education and outreach efforts for the virtual environment. Their web-based Eelgrass StoryMap delves into eelgrass and its role in our ecosystem, eelgrass research that was conducted by a community science team in Island County, the MRC, and ways that community members can help protect this critical habitat. It features stunning photography and relatable science in an immersive platform. After interacting with the StoryMap, viewers were encouraged to fill out a learning assessment. The results showed that the StoryMap was an effective educational tool, and increased respondents' understanding of eelgrass and its role in the ecosystem.

Island MRC conducted a needs assessment in winter 2021 to identify pressing and emerging marine resource issues in Island County and to learn what MRC roles and projects are most valued. After conducting interviews with community partners and County leadership, the MRC condensed the information into a short overview that was presented to the Board of Island County Commissioners and distributed to stakeholders.

Island MRC engaged in several outreach community efforts throughout the year. Outreach is an integral part of each MRC project. The MRC adapted creatively to meet COVID-19 guidelines, making adjustments to its outreach efforts, such as making more resources available virtually and social distancing during events. Virtual outreach events and workshops included a training on the MyCoast app and hosting Shore Friendly workshops with partners; contributing to the monthly Island County Natural Resources newsletter, making presentations to local and regional groups, and participating in Orca Recovery Day, Sound Waters University, and Island County Natural Resources Symposium. The MRC also emphasized best practices for recreational crabbers by distribution of crab gauges, rot cord, and educational handouts.

Jefferson Marine Resources Committee

www.jeffersonmrc.org

Rain gardens and stormwater – In 2021, Jefferson MRC co-sponsored rain garden installations at Quilcene School and at the corner of Franklin and Adams Streets in Port Townsend. The Quilcene School rain garden was a second rain garden installation to more effectively capture stormwater from Highway 101 and the large school parking lot. The Quilcene School rain garden engaged a total of 121 students from grades K-8. The Port Townsend rain garden engaged nine community volunteers. The MRC also co-sponsored a rehabilitation project of the rain garden previously installed at the corner of Water and Monroe Streets, fronting the NW Maritime Center, which engaged seven students from the NW Maritime Discovery School's BRAVO program. Rain gardens were installed or rehabilitated in close partnership with many partners, including WSU Jefferson County Extension, Native Plant Salvage Foundation, the City of Port Townsend, Quilcene School, NW Maritime Center, Main Street Association, WSU Master Gardeners, Mahan Log and Lumber, Cape George Community Association, and homeowners.

Students at Quilcene School readying their plants for a rain garden. Photo: Jefferson MRC

Eelgrass and shellfish voluntary no-anchor zones – Jefferson MRC continued to maintain their three eelgrass and shellfish voluntary no-anchor zones. In 2021 they combined and renewed the Aquatic Lands Conservation Lease for all areas in Port Townsend Bay and Mystery Bay. Liability concerns around volunteer divers emerged in 2020 leading the MRC to develop its own dive safety manual and program, which was adopted in September 2021. Divers swapped the Port Townsend summer buoys with winter floats and repaired underwater hardware along the waterfront, as well as repaired any underwater hardware at the Port Hadlock buoy field, and then MRC volunteers were able to swap them back in May 2021. Randomized monitoring of boater compliance across the summer boating seasons found 100% compliance in 2021.

Bull kelp monitoring – Jefferson MRC completed site-specific monitoring data as part of long-term regional monitoring efforts for bull kelp. In summer 2021 MRC and community volunteers completed summer monitoring activities at North Beach and compiled data with the Northwest Straits Commission's regional dataset.

Forage fish spawning surveys – Jefferson MRC completed monthly monitoring at their Adelma Beach index site, as well as seasonal monthly monitoring at the Fort Townsend restoration site. Samples collected by the MRC are analyzed by partners with Point No Point Treaty Council. In 2021 the MRC added a third forage fish site to monitor monthly at Dabob Bay as their second index site.

Education and outreach – Jefferson MRC developed its outreach plan focused on water quality, sustainable shellfish and seaweed harvesting practices, and fostering value for nearshore habitats and resources. The MRC successfully adapted outreach efforts as COVID guidelines changed. In 2021, the MRC invested in educational ads and launched a new educational series coupling presentations with in-person activities, in partnership with the Port Townsend Marine Science Center. The MRC recorded 119 direct contacts through engaging passersby in rain garden installations, a co-hosted speaker event focused on microplastics, and a beach clean-up event. The MRC also supported "Catch More Crab" and shoreline landowner outreach efforts on a more regional scale in partnership with the NW Straits Foundation in 2021.

Olympia oyster restoration – Jefferson MRC continued its Olympia oyster habitat enhancement efforts at Discovery Bay, through spreading clean shell at the two sites, known as the "Lagoon" and "Powerlines" sites. The MRC also conducted population surveys at the Powerlines site in 2021. The MRC Coordinator and 11 community volunteers spread clean cultch at their Lagoon restoration site and 12 community volunteers and the MRC Coordinator conducted monitoring at the Powerlines site.

Jefferson MRC volunteers hauling clean shell to spread at the Discovery Bay restoration site.
Photo: Monica Montgomery

San Juan Marine Resources Committee

www.sjcmrc.org

Southern Resident Killer Whale Outreach – San Juan MRC continued its ongoing outreach efforts around Southern Resident Killer Whales, during a time of significant increase in local recreational boater activity. In 2021, they partnered with the Killer Whale Tales program to provide environmental education to 140 grade 5 students in San Juan County. They created a boater safety Be Whale Wise kiosk at the Odlin County Park on Lopez Island, and amplified Be Whale Wise best boating practices and the Whale Warning Flag through MRC and County social media and in partnership with the Northwest Marine Trade Association.

San Juan 5th grade student pledge from Killer Whale Tales program.

The MRC and the County also partnered to distribute Be Whale Wise posters and brochures in areas beyond the county borders, including Clallam County boat launches and marinas, businesses in the Puget Sound region, and in British Columbia, Canada for a transboundary reach. Nearly a thousand brochures and fifty posters were shared with target audiences. In addition, almost 400 whale warning flags were distributed in 2021, including another 50 to British Columbia allowing the flag to become more readily available to boaters across the border.

Southern Resident Killer Whale marine spatial planning – Continuing an effort started in 2019, San Juan MRC partnered with the County's Marine Program to identify innovative actions to protect Southern Resident killer whale core foraging habitat while integrating local community values. Final reports detailing the results of acoustic monitoring, SRKW foraging behavior analysis, and social user group data collection were presented to a selection of core stakeholders and made available via a dedicated webpage and prerecorded presentations.

Plastic Free Salish Sea – After launching the Plastic Free Salish Sea website, creating outreach videos and associated toolkits and other materials, San Juan MRC continued this program in 2021 with the creation of a local adopt-a-beach program. They also established a greater online presence on social media through a program-specific Facebook page. On-the-ground activities included participation in Plastic Free July, hosting and participating in beach clean-ups and the twice-annual Great Islands Clean-up, and installing and conducting the first SeaBin trial in the Northwest Straits region. The SeaBin is a floating trash skimmer installed at a local marina to collect floating debris, macro and micro plastics. It is also equipped with oil absorbent pads to absorb petroleum-based surface oils and detergents.

Marine Stewardship Area Plan – San Juan MRC continues to make progress on their update of the San Juan County Marine Stewardship Area (MSA) Plan. In 2021, five updated or new chapters were drafted and a status review of the strategic actions completed. The MRC developed new chapters, including one on critical habitats and protected areas and another on relevant management plans. These key components were not part of the original MSA Plan. In addition, the biodiversity targets were updated. Progress on updating the MSA Plan will continue into 2022.

Voluntary Eelgrass No-Anchor Zone – In 2021, San Juan MRC took on the installation of an anchor out eelgrass protection zone for the County at Odlin County Park. Targeted boater outreach included eelgrass and anchor out zone information on their boater information kiosk at the park. MRC members initiated a multi-year vessel compliance monitoring effort at four sites on San Juan, Lopez and Orcas islands. The Lopez Island site at Odlin County Park was the only site with an Anchor Out Zone. Reporting for the site included counts of the numbers of boats inside and outside the zone. Future anchor out zones will be placed at the remaining sites.

Odlin County Park voluntary no-anchor zone. Photo: San Juan MRC

Advisory – San Juan MRC serves in a key advisory role to the County. In 2021, the MRC continued to provide guidance to the County Marine Program and the county council on policy issues related to species critical habitat, oil spill prevention, aquaculture net pens, and species status. The MRC also co-hosted a symposium on the impacts of navy jet noise on the marine and terrestrial environments of the northern straits with Western Washington University.

Orcas Landing

San Juan MRC was a partner on the Orcas Landing Marine Interpretive Overlook that was completed in May 2021 with a grand opening event. The event included the unveiling of a mural created by a team of young Coast Salish Artists from the Samish, Port Gamble, and Cowlitz Tribes, as well as interpretive signage developed by the MRC with guidance from Patti Gobin of the Tulalip Tribes.

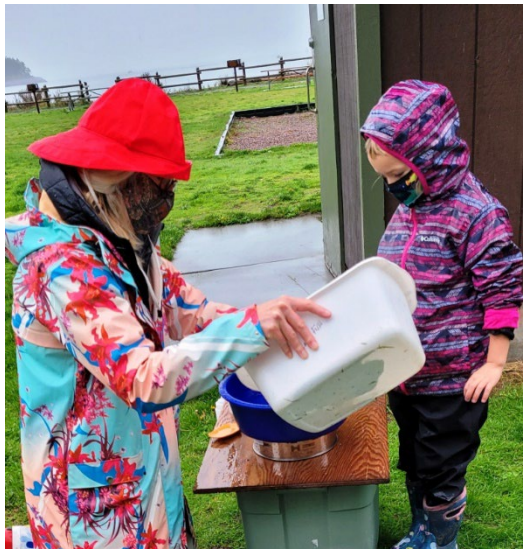
Attended by tribal representatives from the Samish Indian Nation, Tulalip Tribes and Lummi Nation, WA State Representative Debra Lekanoff led portions of the event in partnership with San Juan County Council Chairperson Jamie Stephens.

Frances Robertson and Patti Gobin with Orcas Landing interpretive signage. Photo: Tom DiChiara

Skagit Marine Resources Committee

www.skagitmrc.org

Salish Sea Stewards – This volunteer training program offers approximately 40 hours of training from local experts about the marine environment. Volunteers commit to 40 hours of service on Skagit MRC or other partner organization projects. Skagit MRC partnered with Padilla Bay Reserve to administer the program in 2021, which was once again held virtually due to the ongoing pandemic. Sessions were held February to June, and this year 37 participants completed the program. A bimonthly electronic newsletter, The WAVE, was sent to around 550 subscribers to connect volunteers with volunteer opportunities.



Salish Sea Steward volunteer showing a young beach enthusiast how to look for forage fish eggs. Photo: Pete Haase

Fidalgo Bay Day – Fidalgo Bay Day is an educational event that helps increase public awareness of the marine environment and the creatures that live there, fosters good stewardship of Fidalgo Bay and the Salish Sea, builds partnerships, and increases visibility of the Skagit MRC. The COVID-19 pandemic forced cancellation of the 2021. Instead, the MRC focused their efforts on preparing materials and activities for future events. They created a new exhibit booth highlighting the work of the MRC along with associated activities that include questions and answers about the marine environment.

Bowman Bay restoration – In 2021 Skagit MRC continued its partnership with Skagit Fisheries Enhancement Group to maintain riparian vegetation at the Bowman Bay Restoration site. Volunteers planted and maintained the beach vegetation on a monthly basis during the summer months with a goal of the plants becoming self-sustaining. In 2021, the MRC hosted four volunteer work parties with 40 volunteers contributing their time. Work parties included training on plant identification and maintenance, weeding, watering, mulching, and planting. The County provided a 500-gallon water truck to water the plants. The MRC updated their 2020 how-to guide to a more user-friendly format with large cards that can be used to label plants during volunteer work parties.

Kids on the Beach – Skagit MRC's Kids on the Beach program increases literacy in marine science in Skagit County middle-schools using real, relevant, local experience in marine science and restoration. The program provides a variety of hands-on authentic marine conservation research in the classroom and on the beach. Skagit MRC partnered with Padilla Bay Reserve to administer the program in 2021, with four schools and 204 students participating in the spring program. The 2021 program combined virtual synchronous programs in the classroom including virtual field research facilitated by Padilla Bay Reserve staff. Field research focused on forage fish and nearshore fish. Students examined forage fish eggs in their classrooms, and learned how to make graphs, and analyze and present their data.

Forage fish spawning surveys – Skagit MRC collects forage fish spawning data at index sites identified by WA Department of Fish and Wildlife to look at annual variations in spawning activity of the forage fish population and to identify potential trends. Their sites in 2021 included index sites at Ship Harbor/Guemes Channel, Similk Bay and Samish Island, as well as sampling at restoration sites at March Point, Bowman Bay and Kukutali Preserve. Trained volunteers identify and stage the eggs under a microscope, and then the samples are sent to WA Dept of Fish and Wildlife for confirmation.

Pinto abalone restoration – In an ongoing collaborative effort between multiple partners, Skagit MRC continued their efforts to restore pinto abalone at eight rocky reef sites in County waters. In 2021 this included support for ongoing hatchery work to raise juvenile abalone from select broodstock and outplanting of a third of the 2020 hatchery cohort of juvenile abalone. Nearly 4,300 abalone were seeded to four sites in PVC outplant tubes secured within the substrate. Non-invasive dive surveys conducted at 7 of the 8 county sites investigated survival, growth, and emergence of hatchery-reared abalone. At two sites that were previously thought to have low survival rates, divers observed 44 adult pinto abalone that had emigrated off the plot.

Divers prepare to jump into the water with outplant tubes filled with juvenile pinto abalone. Photo: PS Restoration Fund

Olympia oyster restoration – Skagit MRC works collaboratively with many partners and community members to establish self-sustaining Olympia oyster populations. Some of the oyster seed produced in Fidalgo Bay is now being used to help establish oysters in other areas where they were once historically located. In 2021, Skagit MRC volunteers monitored three sites in Fidalgo Bay, collecting bags of shell that were distributed in 2020 to monitor oyster settlement and replaced the bags with new ones to monitor new settlement next year. In addition to shell settlement, deployed stacks of ceramic tile were monitored at two-week intervals throughout the summer, which found lots of oyster settlement. The Skagit MRC Olympia oyster restoration project was featured in a video by the NW Straits Foundation.

Bull kelp monitoring – Skagit MRC is also a participant in the regional bull kelp monitoring surveys. Nearly a dozen volunteers completed summer monitoring activities at three locations – Coffin Rocks, Biz Point and Shannon Point. Their data is compiled with data from other MRCs into a Northwest Straits Commission regional dataset.

Snohomish Marine Resources Committee

www.snocomrc.org

Snohomish Estuary Piling Removal – Independent pilings are single or clustered pilings in the estuary that are not associated with a dock, marina, or bulkhead. The MRC is interested in facilitating piling removal to improve water quality and habitat conditions in the estuary. Removal of creosote-treated pilings is a primary interest of the MRC due to the contaminants released into water and sediments, which can negatively impact the marine food web.

In the first phase of the project in 2020, the MRC worked with consultant Environmental Science Associates (ESA) to inventory and prioritize pilings in the estuary downstream (north) of Highway 2. In the second phase, carried out in 2021, the MRC met with public agencies and tribal stakeholders who own pilings to discuss removal of unused pilings. Landowner participation in piling removal is entirely voluntary. The MRC aims to provide landowners with information that helps them create opportunities to remove pilings on their properties.

- **15,564** Pilings were **identified and prioritized** for removal based on the amount of ecological benefit
- **2,456** Pilings were **creosote-treated**
- **6,982** Pilings were identified as **high priority** for removal

Derelict vessel removal – Snohomish MRC is a partner in a county program to remove derelict vessels from local shorelines. In 2021, four vessels were removed in late summer with funding support from a private donor through the Northwest Straits Foundation.

Derelict vessel in the Snohomish Estuary. Photo from MyCoast

Forage fish spawning surveys – Snohomish MRC has monitored beaches for forage fish spawning in Snohomish County for over a decade. In 2021 they continued this ongoing program, taking monthly samples at Howarth Park, Meadowdale, and Picnic Point.

Recreational crabber outreach – Snohomish MRC conducted outreach to recreational crabbers to promote best practices to reduce the number of lost pots in Puget Sound. Over the opening weekend of crabbing season in early July, volunteers stationed at the 10th street boat launch in Everett reached more than 1,000 crabbers in three days.

Beach cleanup – Snohomish MRC partnered with WSU Snohomish County Waste Warriors on Earth Day for a shoreline cleanup that collected over 554 pounds of litter from local shoreline parks. Trash was sorted by the volunteers to document how it is impacting our waterways. The

MRC co-hosted a second beach cleanup event at Kayak Point County Park in September for International Coastal Cleanup Day using EPA's Escaped Trash Assessment Protocol for cleaning up and assessing the impact of trash on the beach. Nearly 40 volunteers carefully scanned 68,000 square feet for marine debris, collecting and documenting more than 1,300 marine debris objects.

Bull kelp Monitoring – Snohomish MRC participates in the regional kelp monitoring program, in coordination with other MRCs and the Northwest Straits Commission. In 2021, MRC volunteers maintained their surveys at four areas, including Hat Island, Mukilteo, Meadowdale and Edmonds. Data collected was compiled into a regional dataset.

Snohomish MRC Kelp Team joined by County Council Member Megan Dunn preparing to monitor kelp at Edmonds. Photo: Snohomish MRC

Mussel Watch – Coordinated by the WA Department of Fish and Wildlife to monitor nearshore contamination in Puget Sound, the Mussel Watch Program involves placing cages of mussels at monitoring locations, allowing them to feed for several months, and then retrieving them for contaminant analysis. Results are used to determine hot spots for certain contaminants and the effectiveness of contaminant reduction techniques. Snohomish MRC, in partnership with Tulalip Tribes and the Stillaguamish Tribe, served as community partners to deploy mussel watch cages at seven sites in Snohomish County in 2021.

Whatcom Marine Resources Committee

www.whatcomcountymrc.org

European green crab outreach – Whatcom MRC worked with partners to develop targeted outreach focused on green crab identification, informing landowners about the implications of an established green crab population, and the trapping efforts scheduled for summer 2021. The MRC distributed an informational mailer to over 1,000 households, shared information in the form of a brochure with almost 30 local businesses, and staffed an outreach booth during the grid survey event, reaching 140+ local community members.

Green crab outreach booth in Blaine. Photo: Allie Simpson

Bull kelp monitoring – In 2021, Whatcom MRC monitored floating bull kelp beds at five locations in Whatcom County: SW Lummi Island, Aiston Preserve, Cherry Point/Gulf Rd, Alden Bank, and Point Whitehorn to provide information on the status (presence, size, and health) of floating kelp communities.

Forage fish spawning surveys – Through volunteer support and a program intern, Whatcom MRC surveyed two priority beaches along Bellingham Bay for forage fish spawning activity: Marine Park and Little Squalicum Estuary. These index sites were identified by WA Dept of Fish and Wildlife as part of their regional program. The MRC also conducted monthly forage fish surveys at Aiston Preserve on Lummi Island, a restoration site at a former quarry where the MRC is working with a number of partners to restore the areas impacted by years of gravel mining. The MRC gathered baseline forage fish spawning data during this period inside and outside of the restoration project area.

Public speaker series – Whatcom MRC hosted four community outreach speaker series events in 2021, held virtually as they continued to adapt to COVID restrictions. Topics included CoSMoS modelling for Whatcom County, new research on car tires killing coho, tribal Fishing Culture with perspectives from Lummi Nation and Nooksack Tribe presenters, and seabed mining. Recordings and materials from the events were posted to the MRC website as an ongoing resource.

Beach cleanup – The MRC worked with local partners to host beach cleanups at three different locations in Whatcom County: Locust Beach, Marine Park, and the I&J Waterway in downtown Bellingham. These beach cleanups coincided with the International Coastal Cleanup – a day when communities come together to collect and document the trash littering their shorelines – as well as the local Whatcom Water Week events. The MRC-hosted location at Locust Beach drew 28 participants and resulted in the removal of 300-400lbs of trash removed from the shoreline.

Chuckanut Bay Pollution Identification and Correction – North Chuckanut Bay is a recreational shellfish harvesting area that has been closed to harvest since 1994. Whatcom MRC has been a partner in the county wide Pollution Identification and Correction (PIC) project since 2014, focusing their efforts in North Chuckanut Bay. In 2021, the MRC completed water quality sampling once or twice per month at 7 freshwater sites and 6 marine sites. The MRC water quality data is currently under review by the Washington Department of Health and there is potential for the recreational shellfish harvest area to open.

Olympia oyster restoration – Whatcom MRC continued a pilot project to establish a self-sustaining population of Olympia oysters in North Chuckanut Bay. Following the planting of oyster seed in pilot restoration plots in 2018, the MRC annually surveys the plots to assess abundance, recruitment, and live oyster size distribution. The MRC conducted their annual Olympia oyster population surveys in May 2021, with help from Bellingham Technical College Fisheries and Aquaculture Program students. Also in 2021, the MRC placed bags of seasoned Pacific oyster shell that will be assessed next year for larvae recruitment. Students assessed the shell placed in 2020 for larvae recruitment, although they found no evidence of larvae recruitment yet. Whatcom MRC also piloted the use of ceramic tiles that collect biweekly Olympia oyster larvae, deploying and retrieving the tile collectors and assessing them for settlement of larvae.

Monitoring oyster growth in Chuckanut Bay. Photo: Austin Rose

North Sound Stewards – Created by the Whatcom MRC and RE Sources for Sustainable Communities to support volunteer community scientists who contribute to research for the health of the Salish Sea, the North Sound Stewards Program aims to increase public awareness of the issues impacting the Salish Sea and its inhabitants, foster stewardship, and build a strong volunteer base to support the Whatcom MRC and other partner organizations. In 2021, the MRC engaged an intern who served as a program coordinator and assisted with recruiting volunteers and connecting them to local marine focused volunteer opportunities.