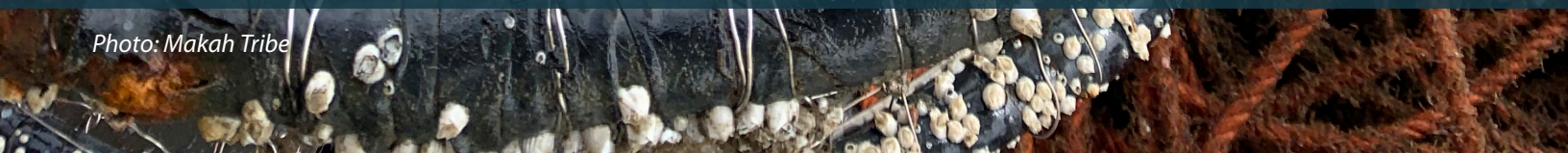


2021 Washington Marine Debris Action Plan

October 2021

Photo: Makah Tribe



2021 Washington Marine Debris Action Plan

October 2021

Acknowledgements

The Washington Marine Debris Action Plan is the result of a productive and collaborative effort. Many thanks go to the participants of the 2020 virtual workshop, as well as other regional partners, who provided the content of this plan; to the planning and support teams for the preparation and execution of the workshops; and to the National Oceanic and Atmospheric Administration Marine Debris Program for supporting and facilitating the creation of the plan.

For citation purposes, please use:

National Oceanic and Atmospheric Administration Marine Debris Program (2021). 2021 Washington Marine Debris Action Plan. Silver Spring, MD: National Oceanic and Atmospheric Administration Marine Debris Program.

For more information, please contact:

NOAA Marine Debris Program
Office of Response and Restoration
National Ocean Service
NOAA Western Regional Center
7600 Sand Point Way NE Bldg. 3
Seattle, WA 98115
<https://MarineDebris.noaa.gov/>

Andrew Mason, Pacific Northwest Regional Coordinator
andrew.mason@noaa.gov

This publication does not constitute an endorsement of any commercial product or intend to be an opinion beyond scientific or other results obtained by the National Oceanic and Atmospheric Administration (NOAA). No reference shall be made to NOAA, or this publication furnished by NOAA, to any advertising or sales promotion which would indicate or imply that NOAA recommends or endorses any proprietary product mentioned herein, or which has as its purpose an interest to cause the advertised product to be used or purchased because of this publication.

Several actions contained herein reference potential legislative changes. These actions will be carried out by interested partner organizations and are not affiliated with NOAA or the Marine Debris Program.

Table of Contents

List of Acronyms	4
Introduction	5
Action Plan Purpose	5
Action Plan Process	5
Action Plan Terms	6
Action Plan Considerations	6
Marine Debris Goals, Strategies, and Actions	6
Goal 1: Prevention	8
Goal 2: Removal	15
Goal 3: Research	22
Goal 4: Coordination	29
Appendix I: Additional Actions	33
Appendix II: List of Participants	35
Appendix III: Completed Actions	38
Appendix IV: 2018–2020 Accomplishments	40

List of Acronyms

ADV	Abandoned and derelict vessel
ALD	Abandoned, lost, or otherwise discarded
COASST	Coastal Observation and Seabird Survey Team
EPA	Environmental Protection Agency
ETAP	Escaped Trash Assessment Protocol
Esri ArcGIS	Environmental Systems Research Institute geographic information system
EPS	Expanded polystyrene
MDAP	Marine Debris Action Plan
MRC	Marine Resources Committee
NERR	National Estuarine Research Reserve
NGO	Non-governmental organization
NOAA MDP	National Oceanic and Atmospheric Administration Marine Debris Program
NPS	National Park Service
OCNMS	Olympic Coast National Marine Sanctuary
PCSGA	Pacific Coast Shellfish Growers Association
RCW	Revised Code of Washington
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
UW	University of Washington
WashPIRG	Washington Public Interest Research Group
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WDOL	Washington Department of Licensing

Introduction

Marine debris such as derelict fishing gear, abandoned and derelict vessels, creosote waste, consumer products, and microplastics, commonly pollute the waterways of Washington State. For the last fifty years, dedicated and passionate regional organizations have worked to remove and prevent marine debris. These groups continue this legacy of stewardship today and the Washington Marine Debris Action Plan is but one expression of it.

The 2018 Washington Marine Debris Action Plan began the first two-year operational cycle of the six-year plan. It contained 172 actions, 10 of which were completed and 46 that are currently in progress. The 2021 Washington Marine Debris Action Plan (Action Plan) is the first update of the original 2018 Action Plan, as laid out in the Action Plan Terms that follow, and focuses on marine debris activities in the areas of prevention, removal, research, and coordination. It contains 169 actions across four goal areas and twenty strategies. The prevention of marine debris is the primary goal of this Action Plan, with a special focus on outreach and education efforts to reduce the influx of marine debris into the environment.

Action Plan Purpose

The purpose of the Washington Marine Debris Action Plan is to provide a strategic framework to facilitate and track actions in support of the identified strategies that prevent and reduce marine debris throughout Washington State, including the Puget Sound, the Northwest Straits, Washington's Pacific Coast, the Columbia River estuary, and inland sources.

Action Plan Process

The process of creating the Action Plan began in 2017 and, after a tremendous amount of input from the community, resulted in the publication of the 2018 Action Plan. The Action Plan Terms, listed below, lay out a two-year operational cycle wherein partners meet at a workshop to update the Action Plan. This operational cycle was partially delayed in 2020 due to the global pandemic, but was converted into a virtual event in an effort to adhere to the Action Plan Terms. Through partner feedback and one-on-one planning calls, the Washington marine debris community helped to determine the format and scope of the virtual workshop. On December 7 and 8, 2020, the virtual workshop was held to provide updates on the progress made towards the 2018 goals and strategies, and to review and update the Action Plan. Virtual breakout groups provided an opportunity for workshop participants to provide immediate feedback on actions. Additionally, written comments from partners were integrated into a draft version of the updated Action Plan for review and comment. Over 50 Washington marine debris stakeholders, representing federal and state governments, tribes, non-governmental organizations, industry, and academia, provided updates to the 2021 Action Plan.

Action Plan Terms

Washington Marine Debris Action Plan partners have agreed on the following terms:

- **Overall Action Plan duration:** The overall Action Plan duration is six years (2018–2024). After six years, the Action Plan will be thoroughly evaluated and modified as needed.
- **Action Plan operational cycle:** The Action Plan operational cycle is two years. At the end of an operational cycle, partners will meet at a workshop to update the Action Plan.
- **Communication:** A newsletter detailing Action Plan progress will be drafted approximately every six months with content provided by the participating entities.

Action Plan Considerations

As determined in 2018, and reaffirmed in 2020, partners expressed the need to highlight the following considerations when applying the Action Plan:

- Respect for tribal treaty rights;
- the importance of community-based science, where any member of the community may participate; and
- consideration of environmental justice, equity, diversity, and inclusion.

Marine debris and plastic pollution is a complex challenge that impacts diverse communities in Washington and around the world. Considering that marine debris can impact some communities or ethnicities more than others, it is critical to seek diverse collaborators in developing solutions, participating in actions, and doing so in culturally competent ways, including language considerations and materials best suited for different communities. This includes lower-income communities; black, indigenous and people of color (BIPOC); and communities of various ethnicities, whose voices and ideas are important to implementing holistic and effective marine debris prevention and reduction measures.

Marine Debris Goals, Strategies, and Actions

The tables below are the core of the Action Plan. They list goals, strategies, and ongoing and future actions that contribute to achieving the Action Plan’s goals. Marine debris is a complex issue, not readily amenable to neat categories and clear-cut delineation. Action Plan partners recognize that there is no perfect way to organize the plan, and some of the actions may overlap or fit into more than one goal or strategy. Facilitating the execution of the actions to address marine debris is the primary purpose of this Action Plan.

Goals

Partners agreed on four goals for the Washington Marine Debris Action Plan:

Goal 1: Prevention

Prevent the generation of marine debris through coordinated actions that include community engagement, policy changes, best management practices, and incentive programs.

Goal 2: Removal

Locate, identify, remove, and recycle or dispose of land- and ocean-based marine debris from Washington's shorelines and waters.

Goal 3: Research

Conduct coordinated, high-quality research to inform actions that reduce the adverse impacts of marine debris.

Goal 4: Coordination

Coordinate marine debris actions effectively throughout Washington State.

Strategies

In the context of this Action Plan, the strategies define how each goal will be achieved. Typically, there are several strategies per goal.

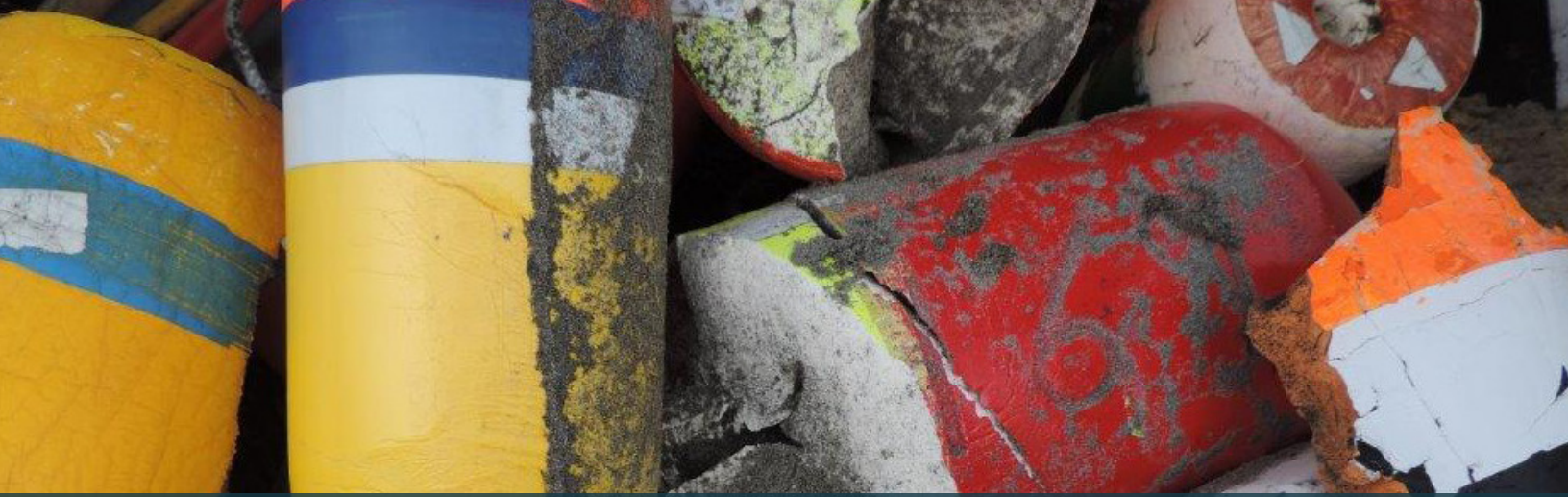
Actions

Actions are projects and activities supporting a strategy, undertaken to achieve the associated goal. Current/ongoing and future actions are listed for each goal.

In this Action Plan, Leads and Partners are entities that have volunteered to carry out a given action, pending the availability of resources (funding, staff, time, materials, etc.). **Leads**, when listed, are represented in **bold letters**.

Actions labelled with "†" are also found in [Northwest Straits Foundation Puget Sound Lost Crab Pot Prevention Plan](#).

It is important to note that listing leads and partners for actions in this plan does not limit other organizations from becoming involved in an action, and as this plan evolves, there will be more opportunities for new partners to participate in these efforts.



Goal 1: Prevention

Prevent generation of marine debris through coordinated actions that include community engagement, policy changes, best management practices, and incentive programs.

Recovered buoys from the Washington coast (Photo: GrassRoots Garbage Gang).

Strategy 1.1. Change individual behavior through community engagement and public education.

Current/Ongoing Actions

Action	Lead and Partners
1.1.1. Conduct outreach and education around the prevention of marine debris through public presentations, traveling exhibits, volunteer outreach, citizen/community debris-monitoring programs and science trainings, university courses, waste prevention and recycling initiatives, and hands-on beach cleanups.	CoastSavers, COASST, Lions Clubs International, Northwest Straits Foundation, OCNMS, Pacific Shellfish Institute, PCSGA, Puget Soundkeeper, Sound Water Stewards, UW Tacoma, USFWS, Zero Waste Washington, Environment WA, WashPIRG, Surfrider Foundation, Washington Environmental Council, WDNR Aquatic Reserves, NPS, Padilla Bay NERR, NOAA MDP, Seattle Aquarium, Twin Harbor Waterkeepers, Washington Sea Grant
1.1.2. Implement a curriculum for 4th–8th grade students: Beach Sweepers - Keeping Debris Out of the Sea.	Pacific Shellfish Institute
1.1.3. Implement the Marine Debris Monitoring Toolkit for Educators within existing outreach curriculum.	Stillaguamish Tribe of Indians

Strategy 1.1. Change individual behavior through community engagement and public education.

Current/Ongoing Actions

Action	Lead and Partners
1.1.4. Support educational display and program development at the Padilla Bay NERR that includes marine debris prevention topics.	Padilla Bay NERR, NOAA MDP
1.1.5. Use websites, social media, blogs, and e-newsletters to educate a broad audience/ general public on marine debris science, issues, and actions that can be taken to prevent marine debris.	NOAA MDP, CoastSavers, COASST, UW Tacoma, Puget Sound Partnership, Puget Soundkeeper, Sound Water Stewards, WashPIRG, Environment WA, Surfrider Foundation, Washington Environmental Council, Zero Waste Washington, Lions Clubs International, OCNMS, WDNR Aquatic Reserve, NPS, Seattle Aquarium
1.1.6. Distribute outreach materials through program volunteers to local communities and curious beachgoers who have observed monitoring activities.	COASST, WDNR Aquatic Reserve, Lower Columbia Estuary Partnership, MRCs, NPS
1.1.7. Conduct on-scene outreach with landowners and the public during marine debris removal activities.	WDNR, Samish Indian Nation
1.1.8. Give public presentations of marine debris and creosote piling removal at regional and international conferences.	Samish Indian Nation, NPS
1.1.9. Conduct public education on how to prevent losing crab and shrimp traps through the Puget Sound Plan, an online instructional video, direct contact with the public at access points, and during trap processing.	WDFW, Northwest Straits Foundation, MRCs
1.1.10. Share widely the Esri ArcGIS Story Map titled " Marine Debris Cleanup in Samish Traditional Territory " as a public education effort.	Samish Indian Nation, WDNR
1.1.11. Provide training to volunteers and members of the public through several training programs to help create a sustainable Puget Sound.	Sound Water Stewards, WDNR
1.1.12. Provide geographically tailored marine debris source and prevention messaging to community partners.	Zero Waste Washington

Strategy 1.1. Change individual behavior through community engagement and public education.

Current/Ongoing Actions

Action	Lead and Partners
1.1.13. Implement watershed education and stewardship programs, including education and training for beach monitoring and cleanups.	Washington Sea Grant, UW Tacoma, Nisqually Tribe Environmental Team, Zero Waste Washington, CoastSavers, Puget Soundkeeper, Lower Columbia Estuary Partnership, OCNMS, EPA, Whatcom MRC, Grays Harbor Stream Team
1.1.14. Continue working with property owners and state-owned aquatic lands lessees in ways that eliminate and reduce the presence of derelict over-water structures throughout Salish Sea, including the Dickman Mill, High-Tide Seafood, and other shoreline restoration and removal projects.	WDNR
1.1.15. Establish a coordinated effort to expand, gauge efficacy, raise awareness, and effectively monitor the Monofilament Recycling and Recovery projects.	Net Your Problem
1.1.16. Raise awareness of alternatives to single-use plastic and promote reduction.	Seattle Aquarium, Zero Waste Washington, Seattle Public Utilities, Surfrider Foundation, Puget Soundkeeper, Sound Water Stewards
1.1.17. Assess effectiveness of outreach tools, including Esri ArcGIS Story Maps, pamphlets, websites, and curricula.	Samish Indian Nation
1.1.18. Create at least one coordinated outreach campaign about creosote debris to target private home owners and the public about the issue and solutions.	WA DNR

Future Actions

Action	Lead and Partners
1.1.19. Develop and update existing statewide environmental education curricula (NOAA and others) on marine debris (K-12).	Pacific Shellfish Institute, UW Tacoma, Seattle Aquarium
1.1.20. Create unified messaging and defined terms based on litter data.	Zero Waste Washington

Strategy 1.1. Change individual behavior through community engagement and public education.

Future Actions

Action	Lead and Partners
1.1.21. Create a community-based fireworks task force in impacted coastal and inland communities.	Surfrider Foundation, GrassRoots Garbage Gang, Puget Sound Partnership
1.1.22. Host a summit on marine debris education for marine debris, waste prevention, recycling, and environmental educators; promote new marine debris education sessions at existing conferences; and potentially create a new conference/webinar series for educators on marine debris. Include the broader network of waste prevention, recycling and environmental educators, where applicable, as key educational stakeholders.	OCNMS, CoastSavers, Lions Clubs International, NOAA MDP
1.1.23. Develop an outreach toolkit related to preventing marine debris from non-food sources of expanded polystyrene (EPS) foam products, such as marine floats and buoys, coolers, and packing containers.	WDNR
1.1.24. Encourage behavior change via tap water promotional campaigns, including the installation of water refilling stations, receptacles, and other physical infrastructure targeted at preventing marine debris.	Zero Waste Washington, EPA
1.1.25. Add a non-plastic bag or other collection receptacle with fireworks sales to encourage the collection of debris.	Surfrider Foundation
1.1.26. Conduct targeted marine debris prevention outreach to marinas, yacht clubs, boaters, and ports.	Washington Sea Grant, MRCs, Puget Soundkeeper, Lower Columbia Estuary Partnership
1.1.27. Increase public involvement in plastic reduction campaigns.	Surfrider Foundation, Zero Waste Washington, Puget Soundkeeper, Washington Environmental Council
1.1.28. Raise awareness of microplastics and microfibers from clothing and textiles in wastewater.	Zero Waste Washington, Puget Soundkeeper, UW Tacoma

Strategy 1.2. Develop and promote local and strategic public policies that enhance marine debris prevention.

Current/Ongoing Actions

Action	Lead and Partners
1.2.1. Collaborate with tribes on tribal guidelines to prevent derelict crab pot accumulation and implement marine debris outreach and education on the Washington coast.	The Nature Conservancy, Quinault Indian Nation
1.2.2. Implement single-use plastic reduction and reuse policy initiatives focused on products, such as EPS and other take-out containers, cutlery, cups, bags, straws, bottles, etc.	Surfrider Foundation, Zero Waste Washington, Environment Washington, Seattle Public Utilities
1.2.3. Expand on the crab pot escapement study, using existing research to influence policy change.†	Northwest Straits Foundation
1.2.4. Build public support for a state-wide “bring your own bag” bill in Washington and other waste prevention legislation.	Surfrider Foundation, Zero Waste Washington, Environment WA, WashPIRG, Washington Environmental Council

Future Actions

Action	Lead and Partners
1.2.5. Develop and distribute white papers to support legislative action, such as funding Washington State RCW 79.145 Marine Plastic Debris.	Zero Waste Washington
1.2.6. Explore low-cost methods to mark and track the position of static fishing gear and marine debris in order to locate it if it moves from its deployed position.	WDNR, Quinault Indian Nation
1.2.7. Explore the feasibility of implementing requirements for recreational fishing gear, including marking nets on float lines, pots, and lead lines, in order to identify the owner should the gear become lost.	WDFW
1.2.8. Develop policies that reduce/eliminate fireworks entering the marine environment.	Surfrider Foundation, Zero Waste Washington, Washington Environmental Council

Strategy 1.3. Engage the producers and end-users (commercial/industrial) of high-priority debris sources in developing and adopting best management practices, and encourage business innovation to prevent their products from becoming marine debris.

Current/Ongoing Actions

Action	Lead and Partners
1.3.1. Conduct outreach and education to user groups about derelict fishing gear in the Puget Sound.	Northwest Straits Foundation, Stillaguamish Tribe of Indians, Skagit MRC
1.3.2. Encourage the reporting of newly lost fishing nets through the Puget Sound Newly Lost Net Reporting, Response, and Retrieval Program .	Northwest Straits Foundation, Natural Resources Consultants
1.3.3. Conduct outreach and communication to commercial shellfish growers throughout the state on the types of gear that are escaping from farms into marine systems and are found in beach cleanup data.	PCSGA
1.3.4. Develop changes to environmental best practices and provide technical assistance for the shellfish aquaculture industry to prevent aquaculture gear from becoming marine debris.	Washington Sea Grant, Willapa Grays Harbor Oyster Growers Association, Pacific Shellfish Institute, PCSGA
1.3.5. Broker lane agreements between crabbers and towboat operators in order to reduce conflicts that otherwise result in derelict fishing gear and ship repairs.	Washington Sea Grant
1.3.6. Develop infrastructure to support the implementation of technology for businesses and systems needed to replace single-use plastics and other single-use items with durable, reusable, and refillable alternatives.	Seattle Public Utilities

Future Actions

Action	Lead and Partners
1.3.7. Develop shared business commitments (i.e., Strawless in Seattle campaign) and reach out to restaurants and green sports alliances to establish new ideas related to single-use plastics in to-go orders, EPS containers, and coffee cups.	Seattle Aquarium, Zero Waste Washington, Environment WA
1.3.8. Engage fireworks sellers collectively to influence manufacturers and consumers to actively clean up and prevent fireworks debris.	MRCs

Strategy 1.3. Engage the producers and end-users (commercial/industrial) of high-priority debris sources in developing and adopting best management practices, and encourage business innovation to prevent their products from becoming marine debris.

Future Actions

Action	Lead and Partners
1.3.9. Investigate the feasibility of developing tow lanes in the Puget Sound to reduce gear losses and build upon lessons learned on the Washington coast.†	Washington Sea Grant
1.3.10. Develop extended producer responsibility policy approaches, including end-of-life management and ensured recyclability, for key materials of concerns, such as single-use plastics, fireworks, cigarette butts, plastic fishing gear, and other products.	Northwest Product Stewardship Council, Zero Waste Washington, Natural Resources Consultants, Washington Environmental Council, Net Your Problem
1.3.11. Promote and coordinate fiberglass recycling options at the state, regional, national, and international levels.	Washington Sea Grant, NOAA MDP

Strategy 1.4. Identify, create, and promote marine debris reduction incentives for individuals and businesses.

Current/Ongoing Actions

Action	Lead and Partners
1.4.1. Carry out education, business outreach, and change in business operations in National Parks (including work done by contractors).	NPS
1.4.2. Promote participation and registration in the Ocean Friendly Restaurant program.	Surfrider Foundation

Future Actions

Action	Lead and Partners
1.4.3. Approach firework retailers with potential incentive ideas.	Surfrider Foundation



Goal 2: Removal

Locate, identify, remove, and recycle or dispose of land- and ocean-based marine debris from Washington’s shorelines and waters.

A cleanup volunteer enjoys the view at First Beach, Washington (Photo: NOAA).

Strategy 2.1. Support and increase response and disposal capacity to remove marine debris in Washington.

Current/Ongoing Actions

Action	Lead and Partners
2.1.1. Provide cleanup supplies and dumpsters during the Independence Day holiday at State Park beach access points.	CoastSavers, GrassRoots Garbage Gang, Surfrider Foundation, Washington State Parks
2.1.2. Coordinate and conduct large and small cleanups throughout Washington, including the Puget Sound, the Strait of Juan de Fuca, the Pacific Coast and the Columbia River Estuary; mobilize volunteers; and track and share results.	CoastSavers, COASST, PCSGA, GrassRoots Garbage Gang, Lions Clubs International, MRCs, Pacific Shellfish Institute, USFWS, Samish Indian Nation, Sound Water Stewards, Quinault Indian Nation, Stillaguamish Tribe of Indians, Suquamish Tribe, Surfrider Foundation, Zero Waste Washington, Washington State Parks, Lower Columbia Estuary Partnership, WDNR Aquatic Reserve
2.1.3. Train and support volunteers to survey and collect marine debris on local beaches, and report large and/or hazardous waste to appropriate authorities.	COASST, UW Tacoma, OCNMS

Strategy 2.1. Support and increase response and disposal capacity to remove marine debris in Washington.

Current/Ongoing Actions

Action	Lead and Partners
2.1.4. Locate and remove creosote-treated wood and other diffuse creosote waste, including rogue pilings and construction waste, from state-owned aquatic land and other beaches.	WDNR , Samish Indian Nation, Stillaguamish Tribe, Suquamish Tribe, EPA
2.1.5. Document and remove incidental marine debris encountered during on-water or shoreline research.	Stillaguamish Tribe
2.1.6. Work with private tideland owners, homeowners associations, and other privately held and ecologically sensitive shorelines to remove creosote-treated wood that has washed up on beaches and in tidelands.	WDNR

Future Actions

Action	Lead and Partners
2.1.7. Develop removal and safety best management practices for both public and private debris removal efforts that minimize adverse environmental, health, and cultural effects and mitigate impacts to coastal economies. Work with disposal companies to install proper disposal sites and ensure collected marine debris is appropriately managed.	CoastSavers, PCSGA, Surfrider Foundation, WDNR
2.1.8. Develop cleanup protocols for wilderness and remote beaches.	CoastSavers, WDNR, USFWS, Lower Columbia Estuary Partnership
2.1.9. Develop an Adopt-A-Beach Program and Adopt-A-River Program in Washington.	CoastSavers, Washington Department of Ecology, Surfrider Foundation
2.1.10. Explore opportunities to work with Washington State Corrections to expand cleanup efforts.	Washington Department of Ecology , WDNR
2.1.11. Establish pilot projects for marine debris collection sites at public beaches (e.g., wooden box with bags inside, information about marine debris inside, provide collection and drop off location).	CoastSavers, WDNR (state-owned aquatic lands)
2.1.12. Explore means to reduce the contributions of cleanup debris to landfills.	CoastSavers, Net Your Problem

Strategy 2.2. Locate, document, and remove abandoned, lost, or otherwise discarded fishing gear.

Current/Ongoing Actions

Action	Lead and Partners
2.2.1. Coordinate and support derelict fishing gear survey and removal, including crab pots, lines, and fishing nets, in high-density areas along the Pacific Coast, Lower Columbia River, and the Puget Sound.†	Natural Resources Consultants, Northwest Straits Foundation, Stillaguamish Tribe of Indians, Nisqually Tribe Natural Resources Department Marine Services Division, The Nature Conservancy, Quileute Tribe, Quinault Indian Nation, Lower Columbia Estuary Partnership
2.2.2. Manage the Puget Sound Newly Lost Net Reporting, Response, and Retrieval Program , and remove newly lost nets reported to the Program.	Natural Resources Consultants, Northwest Straits Foundation, WDFW
2.2.3. Remove deep water (beyond 105 feet deep) derelict nets in the Puget Sound.	Natural Resources Consultants, WDNR
2.2.4. Through enforcement sweeps, remove lost or illegal crab and shrimp traps with buoys on the surface when fisheries are closed.†	WDFW
2.2.5. Promote owner accountability and reporting of ALD fishing gear.	WDFW, Natural Resources Consultants
2.2.6. Promote the use of line cutters on the outer coast in appropriate circumstances for pots embedded in sediment.	Natural Resources Consultants, Quinault Indian Nation

Future Actions

Action	Lead and Partners
2.2.7. Explore the coordination of current reporting systems for the Washington Department of Fish and Wildlife lost crab and shrimp fishing gear reporting tool and the Northwest Straits Foundation reporting system.	WDFW, Northwest Straits Foundation
2.2.8. Further develop and identify routine funding to support tribal programs for the removal of crab pots.	Quileute Tribe, Quinault Indian Nation, Nisqually Tribe Environmental Team

Strategy 2.3. Implement a network of collection/storage sites for derelict fishing gear related marine debris that can be traced to an owner and that cannot be traced to an owner.

Current/Ongoing Actions

Action	Lead and Partners
2.3.1. Identify staff to coordinate the holding and dispersing of recovered gear to respective stakeholders.	WDFW
2.3.2. Identify waste streams for marine debris, such as recycling and energy generation, to create incentives for removal, including the Fishing for Energy program, and identify barriers to those waste streams.	Net Your Problem

Future Actions

Action	Lead and Partners
2.3.3. Secure holding sites accessible to enforcement groups and meet needs by region.	WDFW, Quinault Indian Nation

Strategy 2.4. Prevent, inventory, and remove derelict vessels.

Current/Ongoing Actions

Action	Lead and Partners
2.4.1. Remove ADVs from Port Neah Bay marinas and private lands, and conduct outreach to prevent future ADVs on tribal and non-tribal land.	Makah Tribe
2.4.2. Continue removal of derelict vessels on the Washington Department of Natural Resources priority list.	WDNR Derelict Vessel Removal Program
2.4.3. Promote the use of the Vessel Turn-In Program by vessel owners and encourage donations.	WDNR Derelict Vessel Removal Program
2.4.4. Increase reporting of ADVs to include in the Washington Department of Natural Resources database.	WDNR Derelict Vessel Removal Program
2.4.5. Explore additional funds for derelict vessel removal.	WDNR Derelict Vessel Removal Program

Strategy 2.4. Prevent, inventory, and remove derelict vessels.

Future Actions

Action	Lead and Partners
2.4.6. Compile a clear set of existing responsibilities and capabilities for agencies addressing derelict vessels and share publicly.	WDNR Derelict Vessel Removal Program, NOAA MDP
2.4.7. Explore methods to integrate tribes for eligibility within the Washington Department of Natural Resources derelict vessel removal program.	WDNR Derelict Vessel Removal Program
2.4.8. Support collaboration of derelict vessel removals with authorized public entities and tribes.	WDNR Derelict Vessel Removal Program, Lower Columbia Estuary Partnership

Strategy 2.5. Encourage industry responsibility to address marine debris resulting from industry activities.

Current/Ongoing Actions

Action	Lead and Partners
2.5.1. Continue support for use of the derelict shellfish gear removal portion of the recreational crab endorsement fee for recreational crab pot removal.	WDFW
2.5.2. Explore adding a removal surcharge to commercial fishing license fees to be applied toward commercial fishing gear removal efforts.	Net Your Problem
2.5.3. Continue to promote responsible aquaculture farming through cleanups, retrieval of lost gear, and implementation of best practices.	PCSGA, Pacific Shellfish Institute

Strategy 2.6. Encourage commercial and recreational boaters to report and/or remove floating marine debris.

Current/Ongoing Actions

Action	Lead and Partners
2.6.1. Continue to promote reporting of lost fishing nets through the Puget Sound Newly Lost Net Reporting, Response, and Retrieval Program .	Northwest Straits Foundation
2.6.2. Compile and develop guidance and/or tools for boaters on how to report, remove, and dispose of marine debris.	WDNR, MRCs, Northwest Straits Commission

Future Actions

Action	Lead and Partners
2.6.3. Educate boaters on marine debris removal.	MRCs, Puget Soundkeeper

Strategy 2.7. Remove relic tire reef installations.

Current/Ongoing Actions

Action	Lead and Partners
2.7.1. Identify and confirm locations of tire reefs, explore feasibility of tire reef removal (including habitat replacement), and remove the highest priority tire reefs.	Natural Resources Consultants, WDFW, WDNR, Washington Department of Ecology

Future Actions

Action	Lead and Partners
2.7.2. Coordinate with tribes and learn from the experience of the Nisqually Tribe's tire reef removal activities.	WDNR, WDFW, Washington Department of Ecology, Natural Resources Consultants
2.7.3. Explore using the state tire fund to support tire reef removal.	WDNR, WDFW, Washington Department of Ecology, Natural Resources Consultants, Zero Waste Washington, Washington Environmental Council

Strategy 2.8. Revise statutes and legislation to facilitate increased marine debris removal.

Current/Ongoing Actions

Action	Lead and Partners
2.8.1. Engage recreational and commercial fishers to increase compliance with current rules to minimize loss of crab pots.	WDFW

Future Actions

Action	Lead and Partners
2.8.2. Modify Junk Vehicle Affidavit on private property to allow derelict vessel removal by owners.	WDNR Derelict Vessel Removal Program
2.8.3. Combine report of sale with bill of sale for the transfer of vessel ownership.	WDNR Derelict Vessel Removal Program
2.8.4. Encourage Washington Department of Licensing to keep records on vessels and vehicles until they are destroyed (currently records are maintained for six years).	WDNR Derelict Vessel Removal Program
2.8.5. Improve ability to delegate the authority to remove ALD crab pots with buoys attached on off fishing days.†	Natural Resources Consultants
2.8.6. Improve state and tribal fishing net identification	WDFW
2.8.7. Explore options for better incentives/ disincentives to improve compliance with fishing regulations, including increased penalties for not reporting lost fishing nets	WDFW, Washington Environmental Council
2.8.8. Explore options to improve the required crab pot configuration, including changes to crab pot weight, reduction in rot cord diameter, and the elimination of surface floating line.†	WDFW
2.8.9. Explore the idea of a one-time mandatory online course for recreational crabbers.†	WDFW



Goal 3: Research

Conduct coordinated, high-quality research to inform actions that reduce the adverse impacts of marine debris.

COASST interns conducting a beach survey for small debris on Washington's outer coast (Photo: COASST).

Strategy 3.1. Advance the understanding of marine debris, including: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate.

Current/Ongoing Actions

Action	Lead and Partners
3.1.1. Continue GPS surveys of the San Juan Islands for marine debris and creosote before the summer removal season to increase the efficiency of removal.	WDNR, Samish Indian Nation, UW Tacoma
3.1.2. Conduct monthly shoreline surveys at two locations in the Dungeness National Wildlife Refuge.	USFWS
3.1.3. Continue studying the concentration of microplastics in beach sediment surrounding the Puget Sound, Hood Canal, Green-Duwamish River system, and the Dungeness National Wildlife Refuge.	Puget Soundkeeper, USFWS
3.1.4. Conduct derelict crab pot and beach use surveys through internships.	Lower Columbia Estuary Partnership

Strategy 3.1. Advance the understanding of marine debris, including: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate.

Current/Ongoing Actions

Action	Lead and Partners
3.1.5. Encourage volunteers to complete and submit debris data cards or use the Ocean Conservancy's app, CleanSwell, to record their findings during beach cleanups.	CoastSavers, UW Tacoma, NPS
3.1.6. Conduct aerial and boat surveys to identify lost pot concentrations and locate crab pots in the water after the end of the crab fishing season.	The Nature Conservancy, Quileute Tribe, Quinault Indian Nation
3.1.7. Coordinate and provide support to litter assessments (using EPA's ETAP) at cleanups by local volunteer organizations throughout the state, including training volunteers, assisting with data compilation into a new database, seeking feedback, and creating a baseline report.	EPA, Zero Waste Washington
3.1.8. Run a citizen science program that engages participants in monthly beach surveys of marine debris 2.5 millimeters and larger. Assessments target quantity, environmental threats, and source indicators.	COASST, Quinault Indian Nation

Future Actions

Action	Lead and Partners
3.1.9. Identify relationships between polymer type and debris behavior (e.g., transport).	UW Tacoma
3.1.10. Investigate the distribution of microplastics throughout the water column and sediments.	EPA, UW Tacoma, Seattle Aquarium, Pacific Shellfish Institute, Puget Soundkeeper
3.1.11. Compile existing data to track identifiable debris and determine location and drift patterns, including: <ul style="list-style-type: none"> • Risk assessment model to inform where to focus resources (Bayesian network relative risk assessment model). • Marine debris deposition rate studies on selected beaches. 	Samish Indian Nation, WDNR, EPA, COASST, UW Tacoma
3.1.12. Identify patterns of deposition by analyzing existing monitoring data. Integrate patterns with ocean circulation models.	UW Tacoma, COASST

Strategy 3.1. Advance the understanding of marine debris, including: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate.

Future Actions

Action	Lead and Partners
3.1.13. Study the breakdown of plastics into secondary microplastics (e.g., timelines).	UW Tacoma
3.1.14. Determine the contribution of consumer products, agriculture, and waste management practices (including wastewater treatment and biosolids) to microplastic distribution and concentration.	EPA, Vancouver Aquarium/OceanWise, Washington Department of Ecology, Zero Waste Washington, UW Tacoma
3.1.15. Identify patterns of sources by analyzing existing monitoring data, including analysis of citizen-collected data. Integrate with ocean circulation models.	COASST, UW Tacoma, Zero Waste Washington
3.1.16. Build capacity to analyze marine debris monitoring data.	Zero Waste Washington, WDNR
3.1.17. Bring marine debris monitoring entities together to map data for comparability and encourage coordination prior to standardizing methods.	COASST, Zero Waste Washington, Lower Columbia Estuary Partnership, NOAA MDP, EPA, Samish Indian Nation, OCNMS

Strategy 3.2. Improve data collection and analysis methods through standardization.

Current/Ongoing Actions

Action	Lead and Partners
3.2.1. Develop several methods for assessing macro- and microplastics, including standard laboratory procedures for microplastics extraction, and identifying and inventorying in various matrices, such as sediments and biosolids.	EPA, Zero Waste Washington, UW Tacoma
3.2.2. Use a marine debris survey protocol focusing on diffuse creosote and treated wood to determine highest concentrations and assess repopulation intervals.	Samish Indian Nation, UW Tacoma
3.2.3. Develop and implement publicly available marine debris survey methods that result in compatible and comparable data.	COASST, NOAA MDP, UW Tacoma, Zero Waste Washington

Strategy 3.2. Improve data collection and analysis methods through standardization.

Current/Ongoing Actions

Action	Lead and Partners
3.2.4. Continue debris loading and marine debris type monitoring/assessment by Olympic Coast National Marine Sanctuary volunteers.	COASST, NOAA MDP, OCNMS, UW Tacoma

Future Actions

Action	Lead and Partners
3.2.5. Standardize lab protocols for microplastic concentrations in sediment, water, invertebrates, etc. (<400 microns).	EPA, UW Tacoma, Seattle Aquarium
3.2.6. Communicate about standard protocols, potentially through a workshop to generate standardization/ harmonization frameworks.	WDNR, NOAA MDP
3.2.7. Develop standard microplastic and nanoplastic toxicity tests in ecologically relevant organisms and systems.	Seattle Aquarium

Strategy 3.3. Research the ecological, human health, economic, and cultural impacts of marine debris.

Current/Ongoing Actions

Action	Lead and Partners
3.3.1. Support surveys that identify the characteristics of debris fragments and their impact on birds and other wildlife.	COASST, Zero Waste Washington
3.3.2. Conduct marine debris impact studies to support the Rise Above Plastics campaign.	Surfrider Foundation
3.3.3. Update annually the models reported in 2011 to estimate crab pot loss, number of crabs killed, and the value of crabs killed in derelict pots in Puget Sound.	Natural Resources Consultants, Northwest Straits Foundation
3.3.4. Conduct annual survey and removal operations in the Port Gardner study area to study behavior regarding escape cord use, pot loss rates, and reasons for pot loss.	Natural Resources Consultants, Northwest Straits Foundation

Strategy 3.3. Research the ecological, human health, economic, and cultural impacts of marine debris.

Current/Ongoing Actions

Action	Lead and Partners
3.3.5. Use survey results to continue threat/risk assessments for seabirds and other wildlife.	COASST
3.3.6. Monitor the physical and biological changes occurring as a result of the Doe Kag Wats estuary creosote wood removal restoration project.	Suquamish Tribe
3.3.7. Conduct research to support water quality standards for microplastics, including human health and food web implications.	Seattle Aquarium

Future Actions

Actions	Lead and Partners
3.3.8. Research bioaccumulation and biomagnification of plastics.	Seattle Aquarium
3.3.9. Conduct a research/literature review to identify which types of marine debris are the most damaging to wildlife.	COASST, UW Tacoma
3.3.10. Conduct research on the cultural impacts, including on indigenous peoples and underserved communities, of marine debris.	Samish Tribe

Strategy 3.4. Research product design and technologies related to marine debris.

Current/Ongoing Actions

Action	Lead and Partners
3.4.1. Continue to study the characteristics of lost/closed season recreational crab gear in the Puget Sound (including buoy arrangement, added weights, line type, etc.) to potentially identify features which contribute to gear loss.	WDFW
3.4.2. Evaluate whether it is viable to recycle (not downcycle) plastic marine debris.	Net Your Problem

Strategy 3.4. Research product design and technologies related to marine debris.

Future Actions

Actions	Lead and Partners
3.4.3. Identify the most effective commercial crab pot configuration and style of disabling mechanisms that allow crabs to escape pots after the pot is disabled.	Natural Resources Consultants, Northwest Straits Foundation
3.4.4. Research the efficacy of existing U.S. Navy and other protocols to standardize plastics formulas for re-use or fuel conversion.	Lions Clubs International
3.4.5. Assess Washington State’s contribution to global marine debris, including end-of-life options and practices for existing plastic (e.g., recycling). Consider the impacts of shipping and the contribution to plastic pollution in other countries, domestic vs. overseas processing, and recycling vs. downcycling.	Lions Clubs International, Zero Waste Washington, Puget Soundkeeper
3.4.6. Explore fishing gear marking protocols (e.g., barcoding).	Natural Resources Consultants, Lions Clubs International
3.4.7. Research escapement rates with commercial style crab gear to determine pot styles that allow optimal escape to minimize wildlife impacts.	Natural Resources Consultants
3.4.8. Research the proper amount of weight needed for crab/shrimp pots to minimize lost pots.	Northwest Straits Foundation
3.4.9. Evaluate innovations in consumer materials and products that tend to become marine debris to increase recyclability, reduce environmental impacts, and prevent introduction.	Lions Clubs International

Strategy 3.5. Conduct social science research related to marine debris.

Current/Ongoing Actions

Action	Lead and Partners
3.5.1. Conduct social science research to determine public understanding and perspective of marine debris issues and their impacts, and identify motivators, barriers, and what the most effective outreach strategies are for reducing marine debris.	Zero Waste Washington
3.5.2. Research the efficacy of tax incentives for businesses to implement the use of plastic alternatives and/or producer or retailer take-back schemes.	Washington Environmental Council



Goal 4: Coordination

Coordinate marine debris actions effectively throughout Washington State.

Volunteers conduct a field trial to evaluate marine debris monitoring protocols at Carkeek Park, Washington (Photo: COASST).

Strategy 4.1. Create better communication and collaboration with local, regional, federal, tribal, and international stakeholders.

Current/Ongoing Actions

Action	Lead and Partners
4.1.1. Implement the actions identified in the Puget Sound Lost Crab Pot Prevention Plan .	Northwest Straits Foundation
4.1.2. Conduct a multi-agency mammal entanglement training at levels one and two for the Quileute, Quinault, and Hoh Tribes.	The Nature Conservancy
4.1.3. Coordinate with partners to reduce single-use plastic items.	Seattle Aquarium, Zero Waste Washington, Puget Soundkeeper
4.1.4. Continue promotion of the Pacific Basin Cleanup, an effort to inspire and coordinate Lions around the Pacific Basin to conduct cleanups and share information.	Lions Clubs International
4.1.5. Coordinate with local non-profit organizations to support shoreline cleanups and to submit cleanup data to Ocean Conservancy.	Pacific Shellfish Institute, Lower Columbia Estuary Partnership
4.1.6. Coordinate with teachers to perform outreach, education related to marine debris, and campus cleanups.	Pacific Shellfish Institute, Zero Waste Washington

Strategy 4.1. Create better communication and collaboration with local, regional, federal, tribal, and international stakeholders.

Current/Ongoing Actions

Action	Lead and Partners
4.1.7. Coordinate with the Washington Conservation Corps crew on creosote logs and marine debris removal, as well as with the United States Coast Guard to assist with post-cleanup removal of marine debris on Destruction Island.	Washington Department of Ecology, USFWS
4.1.8. Coordinate with the EarthCorps crew on creosote logs and marine debris removal in the San Juan Islands.	WDNR , Samish Indian Nation
4.1.9. Formalize local, regional, and statewide partnerships among local municipalities, counties, parks, private citizens, public lands, tribes, non-profits, and others to reduce marine debris more effectively.	CoastSavers, PCSGA, WDNR, Zero Waste Washington, Puget Sound Partnership, Northwest Straits Commission, Surfrider Foundation, Samish Indian Nation, Lower Columbia Estuary Partnership, Lions Clubs International
4.1.10. Expand relationships with federal agencies, including the Department of Defense, to collaborate on marine debris issues and projects.	WDNR, Puget Sound Partnership, EPA, Natural Resources Consultants, NOAA MDP

Future Actions

Action	Lead and Partners
4.1.11. Strengthen partnerships with Washington tribes to explore the impacts of marine debris on tribal communities and cultural activities, and share information and resources.	Nisqually Tribe Environmental Team , CoastSavers, NOAA MDP, Samish Indian Nation, Stillaguamish Tribe of Indians, Surfrider Foundation, WDNR, Zero Waste Washington, Puget Sound Partnership, EPA, Northwest Straits Commission, Washington State Parks
4.1.12. Identify stakeholders that have a desire and/or need for increased communication on marine debris.	NOAA MDP , CoastSavers, Washington State Parks, Zero Waste Washington, Puget Sound Partnership, Washington Environmental Council, EPA
4.1.13. Integrate the Washington and Oregon Marine Debris Action Plans and the California Ocean Litter Prevention Strategy with the efforts of the West Coast Marine Debris Alliance.	Stillaguamish Tribe of Indians , NOAA MDP, Washington Environmental Council

Strategy 4.2. Find long-term dedicated funding sources and other resources for implementing the Washington Marine Debris Action Plan.

Current/Ongoing Actions

Action	Lead and Partners
4.2.1. Fund and support various local, state, and tribal groups to aid in a variety of marine debris removal activities, including the removal of thousands of tons of creosote pilings from the shorelines of Puget Sound, Grays Harbor, Willapa, and other estuaries.	EPA
4.2.2. Fund local government efforts aimed at litter cleanup and prevention through the Community Litter Cleanup Grant Program.	Washington Department of Ecology
4.2.3. Research grants to address the sources and impacts of marine debris, and to evaluate education and citizen/community science approaches.	Washington Sea Grant
4.2.4. Explore charitable funds with solid waste management companies and other stakeholders, such as major retailers and manufacturers in Washington State.	CoastSavers, WDNR, Zero Waste Washington

Future Actions

Action	Lead and Partners
4.2.5. Clarify and disseminate the potential funding process through tribal communities with charitable funds.	CoastSavers, Stillaguamish Tribe of Indians, Nisqually Tribe Environmental Team
4.2.6. Pursue a line item in the state budget for a marine debris prevention/removal/disposal fund, beginning with Washington State litter law RCW 79.145 Marine Plastic Debris.	Surfrider Foundation, WDNR, Zero Waste Washington, Washington Environmental Council
4.2.7. Advertise additional funding through federal agencies.	NOAA MDP, EPA
4.2.8. Include Washington Marine Debris Action Plan partners in the 2022 Puget Sound Action Agenda priority development process to create an avenue for potential near term actions.	Puget Sound Partnership

Strategy 4.3. Develop a statewide sharing platform for the inventory of all marine debris data for widespread dissemination, including debris locations, removal efforts, amount removed, data-driven reporting, etc.

Current/Ongoing Actions

Action	Lead and Partners
4.3.1. Work on inventory and sharing platform for land-based sources of marine debris.	Zero Waste Washington
4.3.2. Ensure coordination and collaboration among researchers, and communicate results with stakeholders.	COASST, UW Tacoma, Pacific Shellfish Institute, Seattle Aquarium

Future Actions

Action	Lead and Partners
4.3.3. Develop and promote an online marine debris data portal for resources, protocols, evidence-based and vetted curriculum, uniform research, public reporting, and citizen engagement.	NOAA MDP, Lower Columbia Estuary Partnership, UW Tacoma
4.3.4. Develop effective methods of reporting on results and accomplishments, potentially through an annual marine debris report.	Stillaguamish Tribe of Indians , COASST, CoastSavers, NOAA MDP, PCSGA, Samish Indian Nation, Surfrider Foundation, WDNR, Puget Sound Partnership, Zero Waste Washington, UW Tacoma
4.3.5. Support the updating and maintenance of the Washington State Derelict Gear Database.	Northwest Straits Foundation, Natural Resources Consultants

Appendix I: Additional Actions

The actions below were suggested for inclusion in the document. They have equal merit and potential as other actions in this document, but presently have no entity to undertake them.

Goal 1: Prevention

Strategy 1.3.

- Develop a coordinated regional “bring your own” campaign to reduce the use of single-serve packaging and food service ware, bags, and other item.

Strategy 1.4.

- Encourage beverage industry involvement to establish partnerships or opportunities for collaboration.
- Work with retailers and producers to incentivize reduced-price coffee for reusable mugs.
- Develop a section of the online collaboration portal/listserv dedicated to information about incentives/opportunities that are more community-based.
- Develop branded recognition programs that include a criteria checklist, a nomination committee, and recognition measures and awards (e.g., Ocean Friendly Restaurants).

Goal 2: Removal

Strategy 2.4.

- Promote registration and boat owner responsibilities using marine debris boater education and tie in with the Clean Marina Initiative.

Strategy 2.6.

- Include guidance on how to report, remove, and dispose of marine debris in outreach to boat owners registering their boats.
- Include guidance on how to report, remove, and dispose of marine debris in USCG boater safety checks.

Strategy 2.8.

- Explore reciprocal information sharing with tribes and Washington Department of Licensing regarding vessel registration and ownership database.

Goal 3: Research

Strategy 3.2.

- Develop standard barcode methodology for in-water equipment.

Strategy 3.3.

- Assess the food web for impacts of non-plastic marine debris, including creosote, nets, etc.
- Conduct a human health risk assessment of ingested microplastic in seafood with a focus on subsistence harvests, emphasizing environmental justice.
- Conduct a cost-benefit analysis of marine debris and include externalities (e.g., environmental and human health impacts) represented as costs.

Strategy 3.4.

- Research alternative materials for common plastic products (e.g., straws, utensils) including biodegradables and how their use could save companies money.

Goal 4: Coordination**Strategy 4.1.**

- Organize a Washington State marine debris conference to present research from around the entire state, including cleanup data. Consider presentations/sessions at established conferences, such as the Salish Sea Ecosystem Conference.

Appendix II: List of Participants

List of 2020 Washington Marine Debris Action Plan virtual workshop participants.

Contact Name	Organization
Allen, Shayla	Washington Conservation Corps
Anderson, Evyn	Washington Conservation Corps
Antrim, Liam	Community member/Retired NOAA Olympic Coast National Marine Sanctuary
Barnett, Aaron	Washington Sea Grant
Beugli, David	Willapa Grays Harbor Oyster Growers Association
Brown, Alexa	Twin Harbors Waterkeeper
Burgess, Hillary	NOAA Marine Debris Program/Genwest
Bywater, Sara	Pacific Coast Shellfish Growers Association
Castle, Matt	Samish Indian Nation
Clark, Kristopher	Oceans Blue Corp
Colahan, Chandler	Padilla Bay National Estuarine Research Reserve
Dolovova, Xenia	Zero Waste Washington
Donahue, Charlie	Washington Conservation Corps
Drinkwin, Joan	Natural Resources Consultants
Flippo, Gillian	Puget Soundkeeper Alliance
Grant, Sara	Pacific Coast Shellfish Growers Association
Hacker, Andrew	Washington Conservation Corps
Harris, Lyda	Seattle Aquarium
Harris, Nicole	NOAA Olympic Coast National Marine Sanctuary
Holschbach, Kristin	Puget Soundkeeper
Jackson, Segó	Seattle Public Utilities
Jindrich, Nicolas	Washington Conservation Corps
Kaufer, Blair	University of Washington School of Marine and Environmental Affairs
Keedy, Holly	NOAA Olympic Coast National Marine Sanctuary
Kehoe, Christy	NOAA Marine Debris Program/Lynker Technologies Inc.
Larson, Shawn	Seattle Aquarium
Latshaw, Sarah	NOAA Marine Debris Program/Lynker Technologies Inc.
Lindsey, Jackie	Coastal Observation and Seabird Survey Team

Contact Name	Organization
Lipoti, Jill	Rutgers University
Lippiatt, Sherry	NOAA Marine Debris Program/Lynker Technologies Inc.
Looney, Samud (Ish)	United States Coast Guard Sector Puget Sound
Macduff, Sean	Washington Sea Grant
Manuel, Mark	NOAA Marine Debris Program/Lynker Technologies Inc.
Mason, Andrew	NOAA Marine Debris Program
Masura, Julie	University of Washington Tacoma
Mclvor, Jane	Association of Pacific Ports
Messmer, Nancy	Lions Clubs International
Moore, Tommy	Northwest Indian Fisheries Commission
Morgan, Jason	Northwest Straits Foundation
Morris, Roy	Community member/North Coast Marine Resources Committee
Naone, Shanelle	NOAA Marine Debris Program/Lynker Technologies Inc.
Norton, Jessica	Washington State Parks
Osias, Teesha	Tulalip Tribes of Washington
Otsuka, Karin	Nippon Foundation Ocean Nexus Center
Palmer-McGee, Casey	Samish Indian Nation
Palmo, Cheyenne	NOAA Olympic Coast National Marine Sanctuary
Perez, Franchesca	Stillaguamish Tribe of Indians
Potter, Jacob	Washington Conservation Corps
Robertson, Chris	Washington Department of Natural Resources, Marine Debris Removal
Roemers-Kleven, Karin	San Juan County Marine Resources Committee
Rose, Austin	Whatcom County Marine Resources Committee
Roubal, James	National Marine Sanctuaries Foundation/Washington CoastSavers
Schotman, Liz	Surfrider Foundation
Shaw, John	Westport Maritime Museum
Tollefson, Kristian	Washington Department of Natural Resources
Torres, Tanya	NOAA Marine Debris Program/California Sea Grant Marine Debris Extension Fellow
Trim, Heather	Zero Waste Washington
Webb, Kelly	Sound Water Stewards
Wood, Troy	Washington Department of Natural Resources

Contact Name	Organization
Woodard, Todd	Samish Indian Nation
Wu, Dana	Seattle Aquarium
Zupich, Kelly	Sound Water Stewards

Appendix III: Completed Actions

The following actions were completed during the Washington Marine Debris Action Plan's first operational cycle between 2018–2020.

Goal 1: Prevention	Lead and Partners
Coordinate support for legislation related to marine debris prevention with marine debris practitioners (e.g., joint letters of support) (previously 1.2.4.)	Zero Waste Washington, Environment WA, WashPIRG, Washington Environmental Council
Revive existing Washington State RCW 79.145 Marine Plastic Debris (previously 1.2.10.)	Zero Waste Washington, Surfrider Foundation, Washington Environmental Council
Explore the potential to improve Washington State litter law RCW 79.145 Marine Plastic Debris to better address marine debris and ensure funds can be used for marine debris (previously 1.2.11.)	Zero Waste Washington, Washington Environmental Council

Goal 2: Removal	Lead and Partners
Review and revise the Washington Marine Debris Coordination Plan, including the point of contact and hotlines for reporting marine debris of concern (previously 2.1.5.)	NOAA MDP, WDNR, Washington Department of Ecology, Washington State Parks, PCSGA

Goal 3: Research	Lead and Partners
Conduct monthly shoreline surveys at six locations on the outer coast and six on the Strait of Juan de Fuca (previously 3.1.9.)	OCNMS, NOAA MDP
Document the reaccumulation rates of newly lost fishing nets (previously 3.1.17.)	Natural Resources Consultants, WDNR, UW Tacoma
Investigate potential impacts to juvenile rockfish from derelict shrimp pots (previously 3.3.5.)	Natural Resources Consultants, Northwest Straits Foundation

Goal 4: Coordination	Lead and Partners
Develop a listserv for the Washington marine debris community (previously 4.1.9.)	Zero Waste Washington, Washington Sea Grant, Puget Sound Partnership
Explore Near Term Actions with Puget Sound Partnership (previously 4.2.5.)	EPA, Northwest Straits Commission, WDNR, Zero Waste Washington
Develop a marine debris reporting app for large debris so that citizens may report debris such as creosote and docks that agencies may remove (previously 4.3.3.)	WDNR, Lower Columbia Estuary Partnership, UW Tacoma

Appendix IV: 2018–2020 Accomplishments

During 2018–2020, partners made significant progress on actions within the Washington Marine Debris Action Plan. Partners provided accomplishments and updates for the first two-year cycle, which are compiled in the tables below.

Goal 1: Prevention

Strategy 1.1: Change individual behavior through community engagement and public education

Actions

- 1.1.1. Conduct outreach and education around the prevention of marine debris through public presentations, traveling exhibits, volunteer outreach, citizen science trainings, university courses, waste prevention and recycling initiatives, and hands-on beach cleanups
- **Northwest Straits Foundation:** In-Progress – Provided 15 presentations on derelict fishing gear reaching over 650 individuals including resource managers, researchers, and the general public.
 - **Zero Waste Washington:** In-Progress – Conducted a large number of presentations to community groups, high school green clubs, rotaries, and agency staff.
 - **Sound Water Stewards:** In-Progress – Planning began in 2020 to take up beach cleanups in Island County due to COVID shutting down other cleanups. Sound Water Stewards (SWS) will continue cleanups beyond 2020 and 2021. In addition to beach cleanups, SWS has planned a minimum of two brand audit beach cleanups in 2021 with the assistance of Zero Waste Washington. Additionally, the annual 100-hour SWS volunteer education program dedicates several hours to marine debris issues. The SWS monofilament line program is still working and has new volunteers as of the last quarter of 2020 and is trying to add more on-site information regarding the dangers and increasing involvement picking up monofilament line.
 - **Lions Clubs International:** In-Progress –
 - Lions Clubs International is a founding member of the Washington Clean Coast Alliance, also known as CoastSavers. Working as a team on outreach and education through newsletters, local media, and social media to share information and action reports. Coordinating Beach Cleanups, bringing volunteers to the coastlines of Washington State.
 - Outreach and education through Lions Clubs International media outlets. Featured in two major articles in Lion Magazine on water issues and partnerships. Circulation to 2.4 million Lions around the globe. Marine debris issues are now part of five major service causes for Lions around the world.
 - **NOAA MDP:** In-Progress – At least six public presentations per year on marine debris related issues at scientific conferences, for adult continuing education, high school students, and various workshops.
- 1.1.2. Implement a curriculum for 4th–8th grade students: Beach Sweepers - Keeping Debris Out of the Sea
- **No updates provided.**

Strategy 1.1: Change individual behavior through community engagement and public education

1.1.3. Implement the Marine Debris Educator Toolkit within existing outreach curriculum

- **No updates provided.**

1.1.4. Support educational display/program development at the Padilla Bay NERR, which includes marine debris prevention topics

- **NOAA MDP:** Completed/In-Progress – Supported the creation of a marine debris display at Padilla Bay NERR in 2018. Providing program development support through educational marine debris presentations by NOAA MDP staff for Padilla Bay NERR's Salish Sea Stewards program.

1.1.5. Use websites, social media, blogs, and e-newsletters to educate a broad audience/general public on marine debris science, issues, and actions that can be taken to prevent marine debris

- **Zero Waste Washington:** In-Progress – Worked with our partners to develop a Plastic-Free Washington website and Facebook page. Regularly post info on the Zero Waste Washington website.
- **Sound Water Stewards:** In-Progress – Marine debris is a feature in most, if not all, Sound Water Stewards (SWS) monthly newsletters and is frequently a topic of social media. SWS published the third edition of Getting to the Water's Edge (GTWE) in 2020. GTWE is a guidebook to Island County beaches and has several essays. Six essays in the book discuss marine debris and runoff issues and four of these essays are dedicated solely to marine debris issues.
- **Lions Clubs International:** In-Progress – Through Lions Clubs International social media channels, especially Facebook and Twitter, many regular postings about marine debris issues and Lions Service Projects in communities. Lions Environment Chairs in British Columbia, Canada, Washington, and North Idaho post monthly articles in regional and local Lions newsletters.
- **NOAA MDP:** In-Progress – Biannual e-newsletters coordinated and published by NOAA MDP along with an annual Pacific Northwest Regional Week series of blog posts.

1.1.6. Distribute outreach materials through program volunteers, to local communities and curious beachgoers who have observed monitoring activities

- **No updates provided.**

1.1.7. Conduct on-scene outreach with landowners and the public during marine debris removal activities

- **No updates provided.**

1.1.8. Give public presentations of marine debris and creosote piling removal at regional and international conferences

- **No updates provided.**

Strategy 1.1: Change individual behavior through community engagement and public education

1.1.9. Conduct public education on how to prevent losing crab and shrimp traps through the Puget Sound Plan, an online instructional video, direct contact with public at access points, and during trap processing

- **Northwest Straits Foundation:** In-Progress – Reached over 350,000 people annually through promotion of instructional videos and distributing outreach materials throughout the region.
- **Sound Water Stewards:** In-Progress – Operated an on-site crab trap education program, however it was suspended in 2020 due to COVID. It is planned to continue in 2021.

1.1.10. Share widely the Esri ArcGIS Story Map titled "Marine Debris Cleanup in Samish Traditional Territory" as a public education effort

- **No updates provided.**

1.1.11. Provide training to volunteers and members of the public through several training programs to help create a sustainable Puget Sound

- **Sound Water Stewards:** In-Progress – The annual 100-hour Sound Water Stewards (SWS) volunteer education program dedicates several hours to marine debris issues. SWS also provides continuing education through monthly educational presentations that occasionally focus on marine debris.

1.1.12. Provide geographically tailored marine debris source and prevention messaging to community partners

- **Zero Waste Washington:** In-Progress – Due to COVID-19, this task was slowed down.

1.1.13. Implement watershed education and stewardship programs, including education and training for beach monitoring and cleanups

- **Zero Waste Washington:** In-Progress – Currently convening partners to work collaboratively on cleanups during summer 2021.

1.1.14. Continue working with property owners and State-Owned Aquatic Lands Lessees in ways that eliminate and reduce the presence of derelict over-water structures throughout Salish Sea, including the Dickman Mill, High-Tide Seafood, and other shoreline restoration and removal projects

- **No updates provided.**

1.1.15. Develop and update existing (NOAA and others) statewide environmental education curriculums on marine debris (K-12)

- **No updates provided.**

1.1.16. Create unified messaging and defined terms based on litter data

- **Zero Waste Washington:** In-Progress – Due to COVID-19, this task was slowed down.

Strategy 1.1: Change individual behavior through community engagement and public education

1.1.17. Create a fireworks community-based task force in impacted coastal and inland communities

- **No updates provided.**

1.1.18. Host a summit on marine debris education for marine debris, waste prevention, recycling and environmental educators, promote new marine debris education sessions at existing conferences, and potentially create a new conference/webinar series for educators on marine debris. Include the broader network of waste prevention, recycling and environmental educators, where applicable, as key educational stakeholders

- **Lions Clubs International:** In-Progress – Lions Clubs International hosts Environmental Service workshops (featuring cleanups and marine debris issues) at existing conferences.

1.1.19. Develop an outreach toolkit related to preventing marine debris from non-food sources of expanded polystyrene (EPS) foam products, such as marine floats and buoys, coolers, and packing containers

- **No updates provided.**

1.1.20. Encourage behavior change via tap water promotional campaigns, including installation of water refilling stations, receptacles, and other physical infrastructure targeted at preventing marine debris

- **Zero Waste Washington:** In-Progress – Due to COVID-19, this task was slowed down. We were promoting a TAP (mobile app for finding water bottle refilling stations) project that got terminated by COVID-19. Have started a new project to provide mini-grants to install refill stations in Seattle.

1.1.21. Raise awareness of alternatives to single-use plastic and promote reduction

- **Zero Waste Washington:** In-Progress – With our partners, we have conducted significant outreach and awareness-raising on this topic.
- **Sound Water Stewards:** In-Progress – The annual 100-hour Sound Water Stewards (SWS) volunteer education program dedicates several hours to marine debris issues. SWS also provides continuing education through monthly educational presentations that occasionally focus on marine debris. SWS beach cleanups call attention to single-use plastics and in 2020, a plan was put together to create brand audits in 2021 to drive this issue home.
- **Seattle Aquarium:** In-Progress – Delivering messaging regarding actions visitors and program participants can take to reduce their use of single-use plastics and raise awareness of alternatives in all of our programs. These include interactions with Seattle Aquarium visitors—nearly 97,000 visitors in 2020, reduced due to the COVID-19 closures (open from July through November)—and in our Beach Naturalist program, with staff and volunteers having over 12,000 conversations with beach visitors on 15 low tide days. School programs include this messaging as well—distance learning classes were offered October through December and reached 234 students.

Strategy 1.1: Change individual behavior through community engagement and public education

1.1.22. Add a non-plastic bag or other collection receptacle with fireworks sales to encourage collection of debris

- **No updates provided.**

Future Actions

1.1.23. Conduct targeted marine debris prevention outreach to marinas, yacht clubs, boaters, and ports

- **No updates provided.**

1.1.24. Increase public involvement in plastic reduction campaigns

- **No updates provided.**

1.1.25. Raise awareness of microplastics and microfibers from clothing and textiles in wastewater

- **No updates provided.**

1.1.26. Assess effectiveness of outreach tools, including Esri Story Maps, pamphlets, websites, and curricula

- **No updates provided.**

Strategy 1.2: Develop and promote local and strategic public policies that enhance marine debris prevention

Actions

1.2.1. Collaborate with tribes on tribal guidelines to prevent derelict crab pot accumulation and implement marine debris outreach and education policy on the Washington Coast

- **No updates provided.**

1.2.2. Implement single-use plastic reduction policy initiatives focused on products, such as EPS and other take-out containers, cutlery, cups, bags, straws, bottles, etc.

- **Zero Waste Washington:** Completed/In-Progress – Helped get a single-use plastic carryout bag bill passed in 2020. Additionally in 2021, a bill to ban expanded polystyrene and require “on request” utensils, straws, cup lids, and condiments has passed both Houses and likely will be signed into law.
- **Lions Clubs International:** In-Progress –
 - Annually, Lions Clubs International partners with others in the Washington Clean Coast Alliance, also known as CoastSavers, to host two annual coast-wide cleanups, one in the springtime around Earth Day and the other on the third Saturday in September for the International Coastal Cleanup.
 - Additionally, the Clallam Bay Sekiu Lions host Western Strait Cleanups based from the Clallam Bay Visitor Center.
 - Initiative to encourage small group and family beach cleanups, more often, close to home, during pandemic and afterwards. Produced a [video](#) encouraging Lions to do Safe and Effective Beach Cleanups.
 - Engaging volunteers and youth groups to do cleanups and to sort, identify, count, and report the data. Encouraging development of media projects highlighting the issues and the work.

1.2.3. Expand on the [crab pot escapement study](#), using existing research to influence policy change†

- **Northwest Straits Foundation:** In-Progress – Produced a technical report evaluating potential impacts of proposed gear regulation changes.

Future Actions

1.2.4. Coordinate support for legislation related to marine debris prevention with marine debris practitioners (e.g., joint letters of support)

- **Zero Waste Washington:** Completed/In-Progress – See comment for 1.2.2. above.

1.2.5. Build public support for a state-wide “bring your own bag” bill in Washington and other waste prevention legislation

- **Zero Waste Washington:** Completed/In-Progress – See comment for 1.2.2. above.

Strategy 1.2: Develop and promote local and strategic public policies that enhance marine debris prevention

Future Actions

1.2.6. Develop and distribute white papers to support legislative action, such as funding Washington State RCW 79.145 Marine Plastic Debris

- **No updates provided.**

1.2.7. Explore low-cost methods to mark and track the position of static fishing gear and marine debris, in order to locate it if it moves from its deployed position

- **No updates provided.**

1.2.8. Explore feasibility of implementing requirements for recreational fishing gear, including marking of nets on float lines, pots, and lead lines in order to identify the owner should the gear become lost

- **No updates provided.**

1.2.9. Develop policies that reduce/eliminate fireworks entering the marine environment

- **No updates provided.**

1.2.10. Revive existing Washington State RCW 79.145 Marine Plastic Debris

- **Completed prior to 2018.**

1.2.11. Explore the potential to improve Washington State litter law RCW 79.145 Marine Plastic Debris to better address marine debris and ensure funds can be used for marine debris

- **Completed prior to 2018.**

Strategy 1.3: Engage the producers and end-users (commercial/industrial) of high-priority debris sources in developing and adopting best management practices, and encourage business innovation to prevent their products from becoming marine debris

Actions

1.3.1. Conduct outreach and education to user groups about derelict fishing gear in Puget Sound

- **Northwest Straits Foundation:** In-Progress – Reached over 350,000 individuals annually.

Strategy 1.3: Engage the producers and end-users (commercial/industrial) of high-priority debris sources in developing and adopting best management practices, and encourage business innovation to prevent their products from becoming marine debris

1.3.2. Encourage reporting of newly lost fishing nets through the [Puget Sound Newly Lost Net Reporting, Response, and Retrieval Program](#)

- **Natural Resources Consultants:** Completed – The Reporting, Response, and Retrieval (RRR) program is operational. The RRR program has received 115 reports of lost fishing gear in Puget Sound marine waters from 2012–2019. Sixty-four of those reports were verified as newly lost nets and 50 (78%) of those were successfully removed.
- **Northwest Straits Foundation:** In-Progress – Reached over 350,000 individuals annually.

1.3.3. Conduct outreach and communication to commercial shellfish growers throughout the state on the types of gear that are escaping from farms into marine systems and are found in beach cleanup data

- **No updates provided.**

1.3.4. Develop changes to Environmental Best Practices and provide technical assistance for the shellfish aquaculture industry to prevent aquaculture gear from becoming marine debris

- **No updates provided.**

1.3.5. Broker lane agreements between crabbers and towboat operators in order to reduce conflicts that otherwise result in derelict fishing gear and ship repairs

- **No updates provided.**

Future Actions

1.3.6. Develop shared business commitments (e.g., Strawless in Seattle campaign) and reach out to restaurants and green sports alliances to establish new ideas related to single-use plastics in to-go orders, EPS containers, and coffee cups

- **Seattle Aquarium:** In-Progress – Serving on the Steering Committee of The Wave, which is a coalition of >100 businesses and other organizations. The coalition’s objectives are to achieve scale and impact to advance sustainable development goals in four key areas through collective action: 100% clean energy, zero waste, clean transportation, and healthy and sustainable food. Due to the COVID-19 pandemic, The Wave redirected all of its efforts in 2020 toward advancing a healthy and sustainable food program to support Pacific Northwest communities in need.

1.3.7. Engage fireworks sellers collectively to influence manufacturers and consumers to actively clean up and prevent fireworks debris

- **No updates provided.**

Strategy 1.3: Engage the producers and end-users (commercial/industrial) of high-priority debris sources in developing and adopting best management practices, and encourage business innovation to prevent their products from becoming marine debris

Future Actions

1.3.8. Investigate the feasibility of developing tow lanes in the Puget Sound to reduce gear losses and build upon lessons learned on the Washington coast†

- **No updates provided.**

1.3.9. Develop extended producer responsibility policy approaches, including end-of-life management and ensured recyclability, for key materials of concerns, such as single-use plastics, fireworks, cigarette butts, plastic fishing gear, and other products

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions under way.

Strategy 1.4: Identify, create, and promote marine debris reduction incentives for individuals and businesses

Actions

1.4.1. Carry out education, business outreach, and change in business operations, as well as those of contractors in National Parks

- **No updates provided.**

1.4.2. Promote participation and registration in the Ocean Friendly Restaurant program

- **No updates provided.**

Future Actions

1.4.3. Approach firework retailers with potential incentive ideas

- **No updates provided.**

Goal 2: Removal

Strategy 2.1: Support and increase response and disposal capacity to remove marine debris in Washington

Actions

2.1.1. Provide cleanup supplies and dumpsters during the Independence Day holiday at State Park beach access points

- **No updates provided.**

Strategy 2.1: Support and increase response and disposal capacity to remove marine debris in Washington

2.1.2. Coordinate and conduct large and small cleanups throughout Washington, including the Puget Sound, the Strait of Juan de Fuca, the Pacific Coast and the Columbia River Estuary; mobilize volunteers; and track and share results

- **Sound Water Stewards:** In-Progress – 2020 was a planning year for rolling out new and expanded beach cleanups.
- **Zero Waste Washington:** In-Progress – Convening of partners under way.

2.1.3. Train and support volunteers to survey and collect marine debris on local beaches, and report large and/or hazardous waste to appropriate authorities

- **No updates provided.**

2.1.4. Remove creosote-treated wood and other diffuse creosote waste, including rogue pilings and construction waste, from state-owned aquatic land and other beaches

- **No updates provided.**

Future Actions

2.1.5. Review and revise the Washington Marine Debris Coordination Plan, including the point of contact and hotlines for reporting marine debris of concern

- **NOAA MDP:** Not Started – Incidence of large Japanese Tsunami related debris has declined and with it the imminent need to update and revise the Washington State Marine Debris Response Plan.

2.1.6. Develop removal and safety best management practices for both public and private debris removal efforts that minimize adverse environmental, health, and cultural effects and mitigate impacts to coastal economies. Work with disposal companies to install proper disposal sites and ensure collected marine debris is appropriately managed

- **No updates provided.**

2.1.7. Develop cleanup protocols for wilderness and remote beaches

- **No updates provided.**

2.1.8. Develop an Adopt-A-Beach Program and Adopt-A-River Program in Washington

- **No updates provided.**

2.1.9. Explore opportunities to work with Washington State Corrections to expand cleanup efforts

- **No updates provided.**

Strategy 2.1: Support and increase response and disposal capacity to remove marine debris in Washington

Future Actions

2.1.10. Work with private tideland owners, homeowners associations, and other privately held and ecologically sensitive shorelines to remove creosote-treated wood that has washed up on beaches and in tidelands

- **No updates provided.**

2.1.11. Establish pilot projects for marine debris collection sites at public beaches (e.g., wooden box with bags inside, information about marine debris inside, provide collection and drop off location)

- **No updates provided.**

2.1.12. Explore means to reduce contributions of cleanup debris to landfills

- **No updates provided.**

Strategy 2.2: Locate, document, and remove abandoned, lost or otherwise discarded (ALD) fishing gear

Actions

2.2.1. Coordinate and support derelict fishing gear survey and removal, including crab pots, lines, and fishing nets, in high-density areas along the Pacific Coast, Lower Columbia River, and the Puget Sound†

- **Natural Resources Consultants/Northwest Straits Foundation:** Completed/In-Progress – Located and removed 535 derelict crab pots from Port Townsend Bay and Dungeness Bay.

2.2.2. Manage the Puget Sound newly lost net Reporting, Response, and Retrieval Program, and remove newly lost nets reported to the Program

- **Natural Resources Consultants:** Completed – Reporting, Response, and Retrieval (RRR) program is operational. The RRR program has received 115 reports of lost fishing gear in Puget Sound marine waters from 2012-2019. Sixty-four were verified as newly lost nets and 50 (78%) of those were successfully removed.
- **Northwest Straits Foundation:** In-Progress – Responded to and investigated all reports, removed 24 newly lost nets.

2.2.3. Remove deep water (beyond 105 feet deep) derelict nets in the Puget Sound

- **Natural Resources Consultants:** Completed – Deep water gillnets removed in collaboration with WDNR and the U.S. Army in 2018 and 2019. Total of 17 nets were removed from deep water habitats along the west side of San Juan Island.

Strategy 2.2: Locate, document, and remove abandoned, lost or otherwise discarded (ALD) fishing gear

2.2.4. Through enforcement sweeps, remove lost or illegal crab and shrimp traps with buoys on the surface when fisheries are closed†

- **No updates provided.**

Future Actions

2.2.5. Promote owner accountability and reporting of ALD fishing gear

- **No updates provided.**

2.2.6. Explore coordination of current reporting systems for the WDFW lost crab and shrimp fishing gear reporting tool and the Northwest Straits Foundation reporting system

- **No updates provided.**

2.2.7. Further develop and identify routine funding to support tribal programs for the removal of crab pots

- **No updates provided.**

2.2.8. Explore development of a volunteer ALD crab and shrimp pot removal program and associated training program

- **Natural Resources Consultants:** Completed – This was explored and it was decided not to pursue the idea due to the complexity of coordination with volunteers and safety and training concerns.

2.2.9. Promote the use of line cutters on the outer coast in appropriate circumstances for pots embedded in the sediment

- **No updates provided.**

Strategy 2.3: Implement a network of collection/storage sites for marine debris that can be traced to an owner and derelict gear that cannot be traced to an owner

Actions

2.3.1. Identify staff to coordinate holding and dispersing of recovered gear to respective stakeholders

- **No updates provided.**

Future Actions

2.3.2. Secure holding sites accessible to enforcement groups and meet needs by region

- **No updates provided.**

Strategy 2.4: Prevent, inventory, and remove derelict vessels

Actions

2.4.1. Remove abandoned derelict vessels (ADVs) from Port Neah Bay marinas and private lands, and conduct outreach to prevent future ADVs on tribal and non-tribal land

- **No updates provided.**

2.4.2. Continue removal of derelict vessels on WDNR priority list

- **No updates provided.**

Future Actions

2.4.3. Compile a clear set of existing responsibilities and capabilities for agencies addressing derelict vessels and share publicly

- **No updates provided.**

2.4.4. Promote owner Vessel Turn-In Program and encourage donations

- **No updates provided.**

2.4.5. Increase reporting of ADVs to include in WDNR database

- **No updates provided.**

2.4.6. Explore additional funds for derelict vessel removal

- **No updates provided.**

2.4.7. Explore methods to integrate tribes for eligibility within WDNR derelict vessel removal program

- **No updates provided.**

2.4.8. Support collaboration of derelict vessel removals with authorized public entities and tribes

- **No updates provided.**

Strategy 2.5: Encourage industry responsibility to address marine debris resulting from industry activities

Actions

2.5.1. Continue support for use of the derelict shellfish gear removal portion of the recreational crab endorsement fee for recreational crab pot removal

- **No updates provided.**

Strategy 2.5: Encourage industry responsibility to address marine debris resulting from industry activities

Future Actions

2.5.2. Continue to promote responsible aquaculture farming through cleanups, retrieval of lost gear, and implementation of best practices

- **No updates provided.**

Strategy 2.6: Encourage commercial and recreational boaters to report and/or remove floating marine debris

Actions

2.6.1. Continue to promote reporting of lost fishing nets through the Puget Sound Newly Lost Net Reporting, Response, and Retrieval Program

- **No updates provided.**

Future Actions

2.6.2. Compile and develop guidance and/or tools for boaters on how to report, remove, and dispose of marine debris

- **No updates provided.**

2.6.3. Educate boaters on marine debris removal

- **No updates provided.**

Strategy 2.7: Remove relic tire reef installations

Future Actions

2.7.1. Identify and confirm locations of tire reefs, explore feasibility of tire reef removal (including habitat replacement), and remove highest priority tire reefs

- **Natural Resources Consultants:** In-Progress – Locations have been mapped.

2.7.2. Coordinate with tribes and learn from the experience of the Nisqually Tribe's tire reef removal activities

- **No updates provided.**

2.7.3. Explore using the state tire fund to support tire reef removal

- **No updates provided.**

Strategy 2.8: Revise statutes and legislation to facilitate increased marine debris removal

Actions

2.8.1. Engage recreational and commercial fishers to increase compliance with current rules to minimize loss of crab pots

- **No updates provided.**

Future Actions

2.8.2. Modify Junk Vehicle Affidavit on private property to allow derelict vessel removal by owners

- **No updates provided.**

2.8.3. Combine report of sale with bill of sale for the transfer of vessel ownership

- **No updates provided.**

2.8.4. Encourage WDOL to keep records on vessels and vehicles until destroyed (currently records are maintained for 6 years)

- **No updates provided.**

2.8.5. Improve ability to delegate the authority to remove ALD crab pots with buoys attached on off fishing days†

- **No updates provided.**

2.8.6. Improve state and tribal fishing net identification

- **No updates provided.**

2.8.7. Explore options for better incentives/disincentives to improve compliance with fishing regulations, including increased penalties for not reporting lost fishing nets

- **No updates provided.**

2.8.8. Explore options to improve the required crab pot configuration, including changes to crab pot weight, reduction in rot cord diameter, and elimination of surface floating line†

- **No updates provided.**

2.8.9. Explore the idea of a one-time mandatory online course for recreational crabber†

- **No updates provided.**

Goal 3: Research

Strategy 3.1: Advance the understanding of marine debris: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate

Actions

3.1.1. Continue GPS surveys of the San Juan Islands for marine debris and creosote before the summer removal season to increase the efficiency of removal

- **No updates provided.**

3.1.2. Conduct monthly shoreline surveys at two locations in the Dungeness National Wildlife Refuge

- **No updates provided.**

3.1.3. Continue studying the concentration of microplastics in beach sediment surrounding Puget Sound, Hood Canal, Green-Duwamish River system, and the Dungeness National Wildlife Refuge

- **No updates provided.**

3.1.4. Conduct derelict crab pot and beach use surveys through internships

- **No updates provided.**

3.1.5. Encourage volunteers to complete and submit debris data cards or use the Ocean Conservancy's app, CleanSwell, to record their findings during beach cleanups

- **No updates provided.**

3.1.6. Conduct aerial and boat surveys to identify lost pot concentrations, and locate crab pots in the water after the end of the crab fishing season

- **No updates provided.**

3.1.7. Coordinate and provide support to litter assessments (using EPA's draft protocol) at cleanups by local volunteer organizations throughout the state, including training volunteers, assisting with data compilation into a new database, seeking feedback, and creating a baseline report

- **Zero Waste Washington:** In-Progress – Working with partners to use ETAP litter assessment protocol (potentially refine it) and then create a joint data set and create a comprehensive way to report out and develop meaningful messaging.

3.1.8. Run a citizen science program that engages participants in monthly beach surveys of marine debris 2.5mm and larger. Assessments target quantity, environmental threats, and source indicators

- **No updates provided.**

Strategy 3.1: Advance the understanding of marine debris: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate

3.1.9. Conduct monthly shoreline surveys at 6 locations on the outer coast and 6 on the Strait of Juan de Fuca

- **NOAA MDP:** Completed – Monthly shoreline surveys were completed for all locations and data entered into the NOAA Marine Debris Monitoring and Assessment Project database. Project has ended due to lack of funding though we are now looking into restarting surveys at a less frequent time scale at some of the locations using volunteers.

Future Actions

3.1.10. Identify relationships between polymer type and debris behavior (e.g., transport)

- **No updates provided.**

3.1.11. Investigate the distribution of microplastics throughout the water column and sediments

- **Seattle Aquarium:** In-Progress – The Seattle Aquarium has been monitoring microscopic marine debris since January 2019. At present, the majority of our monitoring is focused on the temporal element of debris contamination, specifically the quantity in Elliot Bay, right below the Aquarium. The Seattle Aquarium measures marine debris through collecting 100 liters of seawater ~9 meters below the surface (Elliot Bay) as well as 1 liter grab samples of seawater throughout the Salish Sea. We are working with partners to chemically identify polymer types and are describing physical attributes of each particle we find. The Aquarium’s microplastic program is expanding sampling in April 2021 to include sediment samples from across Salish Sea beaches and benthic substrate. In the next year, we are expanding sampling sites and types to understand transport and accumulation rates. The Aquarium has not yet addressed the full life cycle or transport of marine debris.

3.1.12. Compile existing data to track identifiable debris and determine location and drift patterns, including:

- Risk assessment model to inform where to focus our resources (Bayesian network relative risk assessment model)
- Marine debris deposition rate studies on selected beaches

- **No updates provided.**

3.1.13. Identify patterns of deposition by analyzing existing monitoring data, including an analysis of citizen science data. Integrate patterns with ocean circulation models

- **No updates provided.**

3.1.14. Study the breakdown of plastics into secondary microplastics (timelines, etc.)

- **No updates provided.**

Strategy 3.1: Advance the understanding of marine debris: physical and chemical traits, full life cycle, transport, quantity, and accumulation rate

Future Actions

3.1.15. Determine the contribution of consumer products, agriculture, waste management practices (including wastewater treatment and biosolids) to microplastic distribution and concentration

- **No updates provided.**

3.1.16. Identify patterns of sources by analyzing existing monitoring data, including analysis of citizen-collected data. Integrate with ocean circulation models

- **No updates provided.**

3.1.17. Document the reaccumulation rates of newly lost fishing nets

- **Natural Resources Consultants:** Completed – A National Fish and Wildlife Foundation funded project was completed in 2019. The number of active gillnet fishers in Puget Sound from 2012 through 2019 ranged from 499 to 757 each year, with an average of 663. Based on this annual average and applying the established two to four percent loss rate, we estimate that 13.3 to 26.5 portions of gillnets were lost each year totaling from 106–212 gillnet portions lost from 2012–2019. Based on annual loss estimates and removal results, Natural Resources Consultants estimate that the derelict gillnet accumulation from 2012 through 2019 was 22–128 derelict gillnet portions.

3.1.18. Build capacity to analyze marine debris citizen science data

- **Zero Waste Washington:** In-Progress – Working with partners to use ETAP litter assessment protocol (potentially refine it) and then create a joint data set and create a comprehensive way to report out and develop meaningful messaging.

3.1.19. Bring marine debris monitoring entities together to map data for comparability and encourage coordination prior to standardizing methods

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions under way.

Strategy 3.2: Improve data collection and analysis methods through standardization

Actions

3.2.1. Develop several methods for assessing macro- and microplastics, including standard laboratory procedures for microplastics extraction, and identification and inventory in various matrices, such as sediments and biosolids

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions under way.

3.2.2. Use a marine debris survey protocol focusing on diffuse creosote and treated wood to determine highest concentrations and assess repopulation intervals

- **No updates provided.**

Strategy 3.2: Improve data collection and analysis methods through standardization

3.2.3. Develop and implement citizen science marine debris survey methods that result in compatible and comparable data

- **Zero Waste Washington:** In-Progress – Working with partners to use ETAP litter assessment protocol (potentially refine it) and then create a joint data set and create a comprehensive way to report out and develop meaningful messaging.
- **NOAA MDP:** Completed – NOAA MDP and COASST conducted dataset and protocol evaluations that identified areas where differing survey methods lead to different results, and factors that influence error and bias in the data. Insights were published in a report and informed updates to the NOAA Marine Debris Monitoring and Assessment Project protocol published in spring 2021.

3.2.4. Continue debris loading and marine debris type monitoring/assessment by OCNMS volunteers

- **NOAA MDP:** Completed – Volunteer monitoring and assessment by OCNMS volunteers provided valuable data that was used in developing long term marine debris trends in the Sanctuary. A scientific paper titled “Temporal trends and potential drivers of stranded marine debris on beaches within two US National Marine Sanctuaries using citizen science data” was created and published using this data among others. Efforts are beginning to extend this monitoring effort through new marine debris surveys in OCNMS led by volunteers.

Future Actions

3.2.5. Standardize lab protocols for microplastic concentrations in sediment, water, invertebrates, etc. (<400 microns)

- **Seattle Aquarium:** In-Progress – The Seattle Aquarium has updated microparticle extraction protocols to mirror recent and current studies conducted in the Salish Sea (and globally). As of 2021, our large volume water samples undergo chemical digestion (H₂O₂) while other types of samples (sediment, inverts, feces) undergo both chemical digestion (H₂O₂) as well as density separation. In May 2021, the Aquarium is hosting our second annual marine microplastics workshop to discuss current research in the region, as well as protocol standardization.

3.2.6. Cross-communicate about standard protocols, potentially through a workshop to generate standardization/ harmonization frameworks

- **No updates provided.**

3.2.7. Develop standard microplastic and nanoplastic toxicity tests in ecologically relevant organisms and systems

- **Seattle Aquarium:** Not Started – The Seattle Aquarium is not currently working on microplastic or nanoplastic toxicity tests nor are there plans to in the next year.

Strategy 3.3: Research the ecological, human health, economic, and cultural impacts of marine debris

Actions

3.3.1. Support surveys that identify the characteristics of debris fragments, and their impact on birds and other wildlife

- **Zero Waste Washington:** In-Progress – Working with partners to use ETAP litter assessment protocol (potentially refine it) and then create a joint data set and create a comprehensive way to report out and develop meaningful messaging.

3.3.2. Conduct marine debris impacts studies to support the Rise Above Plastics campaign

- **No updates provided.**

3.3.3. Update annually the models reported in 2011 to estimate crab pot loss, number of crabs killed, and the value of crabs killed in derelict pots in Puget Sound

- **No updates provided.**

3.3.4. Conduct annual survey and removal operations in the Port Gardner study area to study behavior regarding escape cord use, pot loss rates, and reasons for pot loss

- **No updates provided.**

3.3.5. Investigate potential impacts to juvenile rockfish from derelict shrimp pots

- **Natural Resources Consultants:** Completed – Remotely operated vehicle-based investigations and removal of derelict shrimp pots in summer 2019 found 33% of derelict shrimp pots contained ≥ 1 juvenile rockfish. Similar to other pot gear in Puget Sound, unobstructed egress routes created by escape cord degradation would ensure animal escapement from pots.

3.3.6. Use survey results to continue threat/risk assessments for seabirds and other wildlife

- **No updates provided.**

3.3.7. Monitor the physical and biological changes occurring as a result of the Doe Kag Wats estuary creosote wood removal restoration project

- **No updates provided.**

3.3.8. Conduct research to support water quality standards for microplastics including human health and food web implications

- **No updates provided.**

Strategy 3.3: Research the ecological, human health, economic, and cultural impacts of marine debris

Future Actions

3.3.9. Research bioaccumulation and biomagnification of plastics

- **Seattle Aquarium:** In-Progress – The Seattle Aquarium is examining the trophic transfer of microplastics in captive sea otters. We are measuring exhibit water contamination, diet contamination, and otter fecal contamination to create a “control” for wild otter populations.

3.3.10. Conduct research/literature review to identify which types of marine debris are the most damaging to wildlife

- **No updates provided.**

Strategy 3.4: Research product design and technologies related to marine debris

Actions

3.4.1. Continue study of the characteristics of lost/closed season recreational crab gear in Puget Sound including buoy arrangement, added weights, line type, etc. to potentially identify features which contribute to gear loss

- **No updates provided.**

3.4.2. Identify the most effective commercial crab pot configuration and style of disabling mechanisms that allow crabs to escape pots after the pot is disabled

- **Natural Resources Consultants:** Not Completed – Due to lack of funding.

Future Actions

3.4.3. Research efficacy of existing U.S. Navy and other protocols to standardize plastics formulas for re-use or fuel conversion

- **Lions Clubs International:** In-Progress – Lions are seeking advisement for contacts. Provide contact information to able@olympen.com.

3.4.4. Assess Washington State’s contribution to global marine debris, including end-of-life options and practices for existing plastic (e.g., recycling). Consider the impacts of shipping and the contribution to plastic pollution in other countries, domestic vs. overseas processing, and recycling vs. downcycling

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions under way.
- **Lions Clubs International:** In-Progress – Reaching out to partners for collaboration.

Strategy 3.4: Research product design and technologies related to marine debris

Future Actions

3.4.5. Explore fishing gear marking protocols (e.g., barcoding)

- **Natural Resources Consultants:** Not Completed – Due to lack of funding.
- **Lions Clubs International:** In-Progress – Lions conversations with WDFW and WDNR.

3.4.6. Research escapement rates with commercial style crab gear to determine pot styles that allow optimal escape to minimize wildlife impacts

- **Natural Resources Consultants:** Not Completed – Due to lack of funding.

3.4.7. Research the proper amount of weight needed for crab/shrimp pots to minimize lost pots

- **No updates provided.**

3.4.8. Evaluate innovations in consumer materials that tend to become marine debris and products to increase recyclability, reduce environmental impacts, and prevent introduction

- **Lions Clubs International:** In-Progress –
 - STOP the IN-FLOW Working Group formed to plan activities and conduct more research to use in information promotion efforts.
 - Conducted conversations with fishermen/clubs, fishing marinas, and tackle stores about marine debris prevention and recycling opportunities.

Strategy 3.5: Conduct social science research related to marine debris

Actions

3.5.1. Conduct social science research to determine public understanding and perspective of marine debris issues and their impacts, and identify motivators, barriers, and what the most effective outreach strategies are for reducing marine debris

- **Zero Waste Washington:** Not Completed – Due to lack of funding.

3.5.2. Research the efficacy of tax incentives for businesses to implement the use of plastic alternatives and/or producer or retailer take-back schemes

- **No updates provided.**

Goal 4: Coordination

Strategy 4.1: Create better communication and collaboration with local, regional, federal, tribal, and international stakeholders

Actions

4.1.1. Implement the actions identified in the [Puget Sound Lost Crab Pot Prevention Plan](#)

- **No updates provided.**

4.1.2. Conduct a multi-agency mammal entanglement training at levels 1 and 2 for the Quileute, Quinault, and Hoh Tribes

- **No updates provided.**

4.1.3. Coordination with partners to reduce single-use plastic items

- **Zero Waste Washington:** In-Progress – See 1.1.5 above.
- **Seattle Aquarium:** In-Progress – Along with Zero Waste Washington, Puget Soundkeeper, and other partners, the Seattle Aquarium continues to develop policies to reduce single-use plastics. In 2020, our coalition helped pass a ban on thin single-use plastic bags and also worked to develop proposed state legislation for 2021 (Senate Bill 5022, which includes a ban on selected single-use expanded polystyrene foam items as well as an opt-in requirement for single-use food service items like utensils).

4.1.4. Continue promotion of the Pacific Basin Cleanup, an effort to inspire and coordinate Lions around the Pacific Basin to conduct cleanups and share information

- **Lions Clubs International:** In-Progress – Working with Lions Clubs International (LCI) to connect Lions around the Pacific Rim, conducting and reporting cleanups, using LCI media channels and United Nations contacts.

4.1.5. Coordinate with local non-profit organizations to support shoreline cleanups and to submit cleanup data to Ocean Conservancy

- **No updates provided.**

4.1.6. Coordinate with teachers to perform outreach, education related to marine debris, and campus cleanups

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions underway around a youth led marine debris reduction project in the Duwamish Valley.

4.1.7. Coordinate with the Washington Conservation Corps crew on creosote logs and marine debris removal, as well as with the USCG to assist with post-cleanup removal of marine debris on Destruction Island

- **No updates provided.**

Strategy 4.1: Create better communication and collaboration with local, regional, federal, tribal, and international stakeholders

4.1.8. Coordinate with the EarthCorps crew on creosote logs and marine debris removal in the San Juan Islands

- **No updates provided.**

Future Actions

4.1.9. Develop a listserv for the Washington marine debris community

- **Zero Waste Washington:** Completed.

4.1.10. Strengthen partnerships with Washington tribes to explore the impacts of marine debris on tribal communities and cultural activities, and share information and resources

- **Zero Waste Washington:** Delayed.

4.1.11. Formalize local, regional and statewide partnerships among local municipalities, counties, parks, private citizens, public lands, tribes, non-profits, and others to reduce marine debris more effectively

- **Zero Waste Washington:** Delayed.
- **Lions Clubs International:** In-Progress –
 - Formalizing partnerships between Lions and various entities in each location. Coordinate Lions and other volunteers to conduct marine debris removal projects.
 - Presentations and surveys conducted throughout the 500+ Lions Clubs in British Columbia, Washington, and North Idaho.

4.1.12. Identify stakeholders that have a desire and/or need for increased communication on marine debris

- **Zero Waste Washington:** Delayed.
- **NOAA MDP:** In-Progress.

4.1.13. Expand relationships with federal agencies, including the Department of Defense, to collaborate on marine debris issues and projects

- **Natural Resources Consultants:** Completed – Successfully partnered with the Department of Defense to remove deep water derelict gillnets in the summer of 2018 and 2019 in collaboration with WDNR.

4.1.14. Integrate the Washington and Oregon MDAPs, and the California Ocean Litter Prevention Strategy, with the efforts of the West Coast Marine Debris Alliance

- **No updates provided.**

Strategy 4.2: Find long-term dedicated funding sources and other resources for implementing the Washington Marine Debris Action Plan

Actions

4.2.1. Fund and support various local, state, and tribal groups to aid in a variety of marine debris removal activities, including the removal of thousands of tons of creosote pilings from the shorelines of Puget Sound, Grays Harbor, Willapa, and other estuaries

- **No updates provided.**

4.2.2. Fund local government efforts aimed at litter cleanup and prevention through the Community Litter Cleanup Grant Program

- **No updates provided.**

4.2.3. Research grants to address the sources and impacts of marine debris, and to evaluate education and citizen science approaches

- **No updates provided.**

4.2.4. Explore charitable funds with solid waste management companies and other stakeholders, such as major retailers and manufacturers in Washington State

- **Zero Waste Washington:** Delayed.

4.2.5. Explore Near Term Actions with Puget Sound Partnership

- **Zero Waste Washington:** Completed.

Future Actions

4.2.6. Clarify and disseminate the potential funding process through tribal communities with charitable funds

- **No updates provided.**

4.2.7. Pursue a line item in the state budget for a marine debris prevention/removal/disposal fund, beginning with Washington State litter law RCW 79.145 Marine Plastic Debris

- **No updates provided.**

4.2.8. Advertise additional funding through federal agencies

- **NOAA MDP:** In-Progress – Email notifications sent out for NOAA MDP funding opportunities as they arise. Also share other funding opportunities as those are shared with NOAA.

Strategy 4.2: Find long-term dedicated funding sources and other resources for implementing the Washington Marine Debris Action Plan

4.2.9. Include WA MDAP partners in the 2022 Puget Sound Action Agenda priority development process to create an avenue for potential near term actions

- **No updates provided.**

Strategy 4.3: Develop a statewide sharing platform for inventory of all marine debris data for widespread dissemination, including debris locations, removal efforts, amount removed, data-driven reporting, etc.

Actions

4.3.1. Working on inventory and sharing platform for land-based sources of marine debris

- **Zero Waste Washington:** In-Progress – Significant stakeholder discussions under way.

Future Actions

4.3.2. Develop and promote an online marine debris data portal for resources, protocols, evidence based and vetted curriculum, uniform research, public reporting, and citizen engagement

- **NOAA MDP:** In-Progress – Online portal has been created and is available for use, but interest in participation has been limited based on portal capabilities.

4.3.3. Develop a marine debris reporting app for large debris so that citizens may report debris such as creosote and docks that agencies may remove

- **WDNR:** Completed – Using the MyCoast Application for reporting of large debris items.

4.3.4. Develop effective methods of reporting on results and accomplishments, potentially through an annual marine debris report

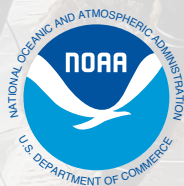
- **NOAA MDP:** In-Progress – During the 2020 virtual workshop, participants decided to add an annual virtual meeting to present accomplishments. Planning for a virtual Washington marine debris community meeting is underway with a target date of Fall/Winter.

4.3.5. Ensure coordination and collaboration among researchers, and communicate results with stakeholders

- **Seattle Aquarium:** In-Progress – To promote communication and partnerships among marine microplastics researchers, the Seattle Aquarium is hosting the second annual Pacific Northwest marine microplastics workshop on May 12. Further, we are partnered with a number of universities across the Pacific Northwest to collaborate on methods, research, and interpretation.

4.3.6. Support the updating and maintenance of the Washington State Derelict Gear Database

- **Zero Waste Washington:** Not Completed – Due to lack of funding.



Gina M. Raimondo
United States Secretary of Commerce

Dr. Richard W. Spinrad
Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator

Nicole R. LeBoeuf
Assistant Administrator for Ocean Services
and Coastal Zone Management