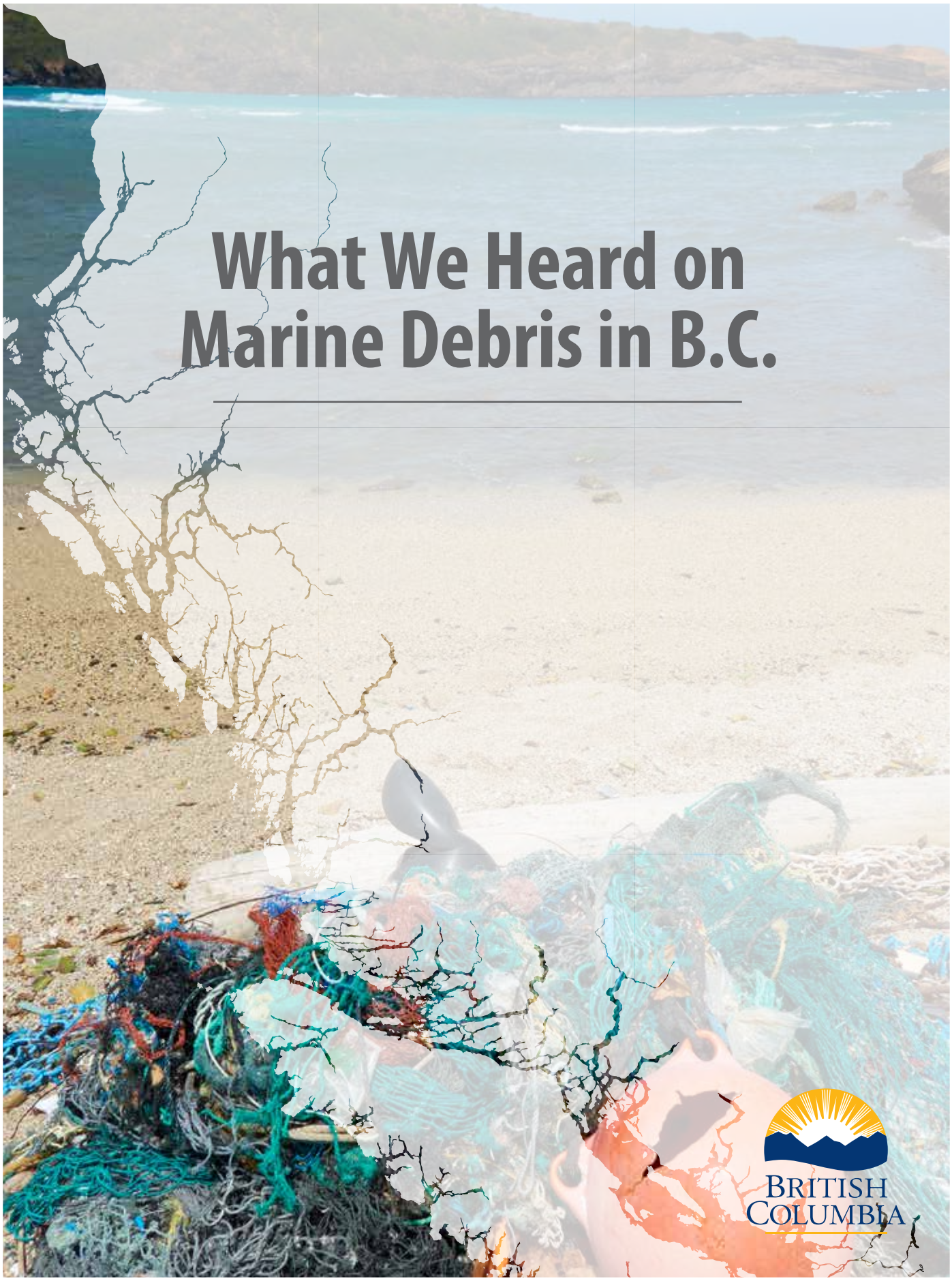
What We Heard on Marine Debris in B.C.



BRITISH COLUMBIA

Introduction

Abandoned boats and discarded plastics pollute our oceans and put coastal communities at risk. That's why, in April 2019, Premier Horgan asked Sheila Malcolmson, MLA for Nanaimo, Special Advisor for Marine Debris Protection and Parliamentary Secretary for Environment to find solutions to the issues of abandoned vessels, marine debris, and marine-sourced plastics. Parliamentary Secretary Malcolmson will present her findings and recommendations to George Heyman, Minister of Environment and Climate Change Strategy, in order to help him develop an action plan. See Appendix 1 for full Terms of Reference.

In order to fully understand the gaps, barriers and opportunities, Parliamentary Secretary Malcolmson met with interested parties affected by marine debris during the summer and early fall of 2019[1]. These groups included coastal governments, Indigenous Nations, industry, and environmental organizations. By listening to people who have been tackling these issues for years, she learned about the obstacles these groups face in relation to abandoned vessels, marine debris, and marine-sourced plastics. She also gathered ideas for addressing these obstacles and learned about the many innovative solutions and programs developed by local groups. This report is a summary of what she heard.

Additional details on the process for the meetings can be found in Appendix 2. A list of the organizations that met with Parliamentary Secretary Malcolmson is included in Appendix 3. Appendix 4 includes a summary of the problems, challenges/obstacles, potential solutions and success stories raised by different parties during meetings, which are described in more detail in the remainder of this report.

1 Note: Interested parties are also referred to as groups, organizations or participants throughout this report.

Summary of the source and nature of the problem

Guided conversations as well as comments from the public provided a broad picture of the problem of abandoned vessels and marine debris.

ABANDONED VESSELS

The abandonment of vessels causes both environmental and economic impacts. Environmental concerns include water contamination caused by fuels, oils and greases, anti-fouling paints and toxic materials found on boats.

Many participants spoke to the prevalence of abandoned vessels, describing how the low value of older boats combined with the high cost of proper disposal, and/or lack of disposal options, may result in older boats being sold for a low price or ultimately abandoned when they become too costly to maintain. Other factors contributing to vessel abandonment discussed include fishing license buybacks, high moorage costs, and lack of ownership accountability. Shellfish growers noted the financial impact to the quality and quantity of their product from oil leaking from abandoned vessels and associated clean up costs.

MOORING BUOYS

Several groups noted that the lack of regulation and enforcement of private mooring buoys (putting up a buoy for personal use) is contributing to the problem of abandoned vessels and associated marine debris (e.g. dock material, ropes, other debris). Private mooring buoys are creating more locations where older vessels can be moored and then abandoned when repair, maintenance, or disposal is too costly for the vessel owner. Vessels attached to mooring buoys may also act as unsafe accommodations during the housing crisis or be rented out as airbnbs. The increased density of private mooring buoys is said to be causing problems such as untreated sewage release as well as limiting access to safe anchorages in many small harbours. Participants also noted the environmental impact of mooring buoys on the seabed.

GHOST FISHING GEAR

Ghost fishing gear is gear that has been lost or abandoned in the marine environment; this includes nets, oyster traps, and long lines from the commercial fishery and aquaculture industry and debris from recreational activities such as crab and prawn traps and floats. The gear continues to capture fish and other animals, causing the death of marine life, destroying marine habitat, and causing a hazard to navigation by getting entangled in boat motors. Some types of plastic ghost gear may persist in the marine environment for hundreds of years before eventually breaking down into microplastics that can enter the food chain.

Ghost gear comprises a much larger percentage of remote beach clean-up debris over that in urban settings. Some participants estimated that fishing gear accounted for almost half of the marine debris collected by weight while others found only about a tenth of the debris was fishing gear.

AQUACULTURE DEBRIS

Several meeting participants highlighted aquaculture as a source of marine debris. Rope, anti-predator netting, buoy balls, plastic net bags, oyster trays, lead line (used to hold netting place) and PVC pipes (used in inter-tidal geoduck aquaculture) were identified as sources of marine debris, and particularly marine-sourced plastics. It has been noted that although new aquaculture tenures require holders to keep their gear in safe, clean and sanitary conditions, this is not always occurring. Further, once the gear has been washed off a licensee's site, it is difficult to trace back to the tenure holder. Many of the materials break down with saltwater and sun exposure, contributing to the problem of microplastics. Some forms of aquaculture debris, such as anti-predator netting, become ghost fishing gear. Aquaculture debris collected in beach cleanups can be complicated to recycle, as it's often contaminated by barnacles and seaweed. Some industry members welcome tighter regulation and enforcement of marine debris in their industry, to level the playing field between those operators who have voluntarily controlled plastic pollution and those who are giving the industry a bad reputation.

POLYSTYRENE FOAM

Many participants mentioned that polystyrene foam (known under the trademark name Styrofoam™) makes up a large proportion of marine debris. Polystyrene foam has been used as flotation for docks, floats, aquaculture facilities, and other marine infrastructure but breaks up easily in the marine environment into small pieces that can be ingested by wildlife and contribute to microplastics pollution. Combined with tiny pieces of plastic, polystyrene foam is the most common form of garbage found during the Great Canadian Shoreline clean-ups. Industry is moving towards alternatives to unprotected polystyrene docks; however, legacy issues of exposed Styrofoam™ remain even as new ones are being installed. The aquaculture industry alone has over 400 floats made from exposed Styrofoam™ that would need to be replaced and recycled in the coming years.

OTHER ISSUES RAISED THAT ARE OUTSIDE THE SCOPE OF THE REVIEW

Several participants highlighted single use plastics, including plastic bottles, straws, and plastic bags as a major source of marine plastics; however, single-use plastics are mostly from land-based sources and fall outside of the mandate of this work. In July, the Province released the *Plastics Action Plan – Policy Consultation Paper* and has been engaging on developing new policy options for single-use plastic items. Additional details on that process can be found at: *https://cleanbc.gov.bc.ca/plastics/*.

Microplastics are another major issue raised in the review. They result from the breakdown of marine debris such as single use plastics, ghost gear, and polystyrene foam. Microplastics may also absorb contaminants and introduce them into the food chain. Sewage was also identified as a source of microplastics, but being land-based, sewage is outside of the scope of the project.

What caused the problem

LACK OF OPTIONS FOR DISPOSAL AND RECYCLING

One of the main challenges to addressing both abandoned vessels and marine debris cited by many participants was the lack of options for disposal or recycling of vessels and marine debris, particularly polystyrene foam. Participants explained that vessel owners who wished to properly dispose of their boats had difficulty finding affordable local options. Those engaged in beach clean-ups described the challenge of transporting, sorting, and disposing of marine debris. Participants mentioned:

- *There are no recycling facilities available for fibreglass; as a result, vessel hulls are broken up and most materials are landfilled with less than 15% of the materials being recycled.*
- *Although a limited federal vessel removal program has removed some boats, it is not available for problem structures such as dock wreckage or abandoned boats on land. New disposal options have not been created.*
- *Many landfills will not accept polystyrene foam or fibreglass boats that are not broken down.*
- *Lack of capacity for foam recycling can seriously disrupt recycling efforts for shoreline clean up organizations.*
- *Netting used in aquaculture is very difficult to recycle; the nylon portions have some salvage value, but they need to be cleaned to be accepted for recycling.*
- *There are not enough facilities for garbage disposal or recycling of materials from private vessels when they reach the shore.*
- *Most large commercial metal vessels are not being dismantled and recycled in B.C. due to lack of boat breaking options and the cost of labour. These vessels are instead exported.*
- *There is a lack of sorting centres for marine debris; one marine debris sorting centre run by Ocean Legacy Foundation handles most marine debris in the Province.*
- *There is no formal retrieval program for fishing gear. Fisheries and Oceans Canada announced funding to find and retrieve ghost gear from the ocean and dispose of it properly; however, additional details of the funding are not yet available.*

ECONOMIC BARRIERS TO DISPOSAL AND RECYCLING

From a business perspective, participants described many obstacles to establishing recycling facilities for old vessels and marine debris, including:

- *Low economic value in the materials found in smaller boats (unlike the steel found in commercial vessels);*
- *Low quality of degraded ocean plastics, and inconsistent supply;*
- *High labour costs in B.C.;*
- *The potential for hazards such as asbestos or lead, and the special tasks involved in decommissioning vessels, e.g. removing hidden potential contaminants such as piping sludge and tank sludge;*
- *Few technical options for the recycling of fibreglass;*
- *Difficulty securing insurance for salvage/removal operations;*
- *Lack of capacity in current shipyards to take on ship breaking in addition to ship building and repair; and,*
- *Disposal and recycling work would need more government support, as it is not currently financially viable on its own.*

LACK OF FUNDING, INFRASTRUCTURE, AND WORKFORCE

Most of the examples of shoreline clean-up programs described by meeting participants were undertaken by non-profit organizations supported by volunteer labour. Groups highlighted the following challenges:

- *There is a lack of paid workers, or funds, to undertake marine debris clean-up.*
- *The amount of money available from Transport Canada for the removal of abandoned vessels is small relative to the scope of the problem.*
- *The supporting infrastructure is lacking; for example, even when marine debris has been collected through shoreline clean-ups, transporting the debris and finding recycling and disposal options can be overwhelmingly complex and costly.*
- *Addressing ghost fishing gear and sunken vessels is very technical, specialized, and potentially dangerous work, particularly in areas with rough weather.*

CRITIQUES OF REGULATIONS AND ENFORCEMENT

Several issues consistently came up during meetings: there is a confusing patchwork of regulatory authority; inadequate collaboration across levels of government; inadequate enforcement of both provincial and federal regulations; and several gaps that are contributing to the problems of abandoned vessels and marine debris. For example, groups mentioned:

- *If an abandoned vessel is moved to land, it is no longer eligible for Transport Canada funding for its disposal.*
- *Boats cannot be removed until they are abandoned, rather than before the abandonment occurs (but the risk is evident). Once a boat is abandoned, it can be very difficult to identify and locate the owner.*
- *Enforcement of vessel licensing requirements is incomplete. The Royal Canadian Mounted Police (RCMP), Fisheries and Oceans Canada and the Canadian Coast Guard have only a handful of employees patrolling the coast.*
- *Pleasure craft vessel licensing participation is low compared to commercial vessel registration, with many owners choosing not to license their pleasure craft in order to avoid sales tax.*
- *Removing a fishing net from the ocean is technically considered 'fishing', which has been a barrier for volunteers removing ghost gear, particularly in areas where fishing is not allowed.*
- *Enforcement authorities do not have the ability to look up boat ownership in real-time, making it challenging to enforce boat licensing requirements and find owners.*
- *There are too many rules and agencies involved in removing abandoned vessels; for example, a vessel sank in Stevenson Harbour while the paperwork was being completed to remove it.*

Participants noted that often if the problem is dealt with in one location (e.g. through an RCMP patrol), the problem may shift to another location due to gaps in regulation and challenges in coordination across regulatory authorities. It was also pointed out that marine debris coming from outside Canada cannot be easily addressed.

Summary of potential solutions

Multiple overlapping jurisdictions and mandates of federal, provincial, and local government combined with a lack of oversight and comprehensive approaches have created a complicated and complex patchwork that is hard to navigate. Participants identified the need for greater coordination between jurisdictions in order to address the problems of abandoned vessels and marine debris.

PLANNING AND INTER-JURISDICTIONAL COOPERATION

Many groups identified the need for greater cooperation among all levels of government and agencies responsible for addressing abandoned vessels and marine debris, including federal agencies, provincial agencies, Indigenous Nations organizations, municipalities and regional districts. A few groups recommended that a first step should be the development of a coast-wide strategy, or strategy for the Salish Sea. According to the participants, such a strategy could include marine zone plans, analogous to land use plans, and be enacted through supporting legislation.

Several participants felt that the best way to address challenges with coordination across regulatory authorities would be to make changes to those authorities such as:

- *The Province taking control of the seabed where Port Authority does not exist;*
- *Making it possible to get a purchase order to remove a boat when it's at risk, as is the practice in Washington State;*
- *Developing strong best practices for new and renewed foreshore structure leases using the latest information on the impacts of sea level rise and storm surges; and,*
- *Developing a regional-wide 'license of occupation' to prevent boats from moving from a jurisdiction where there is a municipal license of occupation to one that does not.*

INCREASE DISPOSAL AND RECYCLING CAPACITY

Many participants recommended that the province provide options for recycling or disposing of vessels and marine debris, at multiple locations coast-wide. They suggested that the province could do this by supporting the development of ship-breaking and recycling businesses in coastal communities. Other examples include: better plastic and battery recycling and garbage disposal options at small craft harbours; more options for disposal for gear found on beaches; and more options for fishers who have retrieved lost gear offshore to dispose/recycle it. Several groups emphasized the need to make proper disposal/recycling easier, and that the closer these options are found to ports, the more likely they are to be used.

In order to address some of the more difficult-to-recycle materials, participants recommended that the Province investigates new technologies and new end uses for these materials, providing examples from around the world. For example, participants recommended that the Province:

- *Invest in emerging technologies in fibreglass recovery and recycling;*
- *Investigates the use of recycled fibreglass in concrete;*
- *Examine gasification and/or pyrolysis to break down waste and generate electricity; and,*
- *Support the use of nylon in recycled products.*

ENABLE GOVERNMENT-FUNDED PROGRAMS

Many groups suggested that the province should fund and/or directly undertake removal of abandoned vessels and marine debris. Suggestions included:

- *Granting programs for regional districts for vessel removal;*
- *Funding or conducting shoreline and debris clean-ups, with more of a focus on remote locations;*
- *Funding or conducting sunken vessel and debris clean-up, including removal of ghost fishing gear; and,*
- *Investing money in Indigenous capacity as part of a long-term planning approach.*

Participants identified economic or policy tools to fund clean-up or prevent the problem at its source. These include requiring securities to cover the cost of clean-up when aquaculture tenures are issued, a tax or deposit on aquaculture equipment, a fine on abandoned vessels, using vessel registration and/or moorage fees, and a surtax on marine fuel sold in Canada.

Washington State's successful abandoned vessel prevention and response program has been operating for almost 15 years. It includes a vessel turn-in program to help prevent boats from being abandoned and potentially harming the environment and water quality, and threatening public safety. As there is a lot of interest in the program, the State prioritizes the vessels that are a biggest threat to the environment. The program is primarily funded through vessel registration fees. Although fees were increased in recent years, the boating community has tolerated these user fees because revenues are used to support abandoned vessel removal and prevention.

PILOT A VESSEL TURN-IN PROGRAM

Among the specific ideas for government-funded programs, many groups supported the idea of a vessel turn-in program (i.e. modelled on the successful B.C. vehicle 'cash-for-clunker' program) that would give boat owners an affordable way to deal with the boat at the end of its life rather than abandoning it. Local governments volunteered to be the pilot location for the program. The vessel turn-in program in Washington State was referenced as a good example to consider.

IMPROVE VESSEL LICENSING

Improving the effectiveness of vessel licensing was a common theme during discussions. Many groups asked that pleasure craft licensing be more stringent and should be associated with a fee to support vessel disposal. For example, groups recommended:

- *That an annual licensing fee could be used to fund disposal of old boats.*
- *That boaters could be required to register annually. The program in Washington state was cited as a good example of how this could work.*
- *Licensing requirements could be expanded to smaller vessels that are currently excluded.*
- *Licensing could be modelled after All Terrain Vehicles under the Off-Road Vehicle Act.*
- *Changes of ownership should be better tracked; the obligation should be on the seller to report.*
- *Enforcement of licensing requirements to prevent abandonment should be increased.*
- *Enforcing agencies should have access to the pleasure craft license database.*

Participants emphasized that licensing programs should be fair to all vessel owners, and could include incentives (for example, a fee reduction for insurance, or funding for more boat launches/ shoreline cleanups). Participants emphasized that they would like a level playing field for all vessels instead of the current system which includes some lifetime licenses and some that require renewal every 10 years. They also emphasized that pleasure craft funds should be used to address abandoned and wrecked pleasure crafts and not to subsidize the clean-up of commercial vessels.

IMPROVE PRIVATE MOORING

Despite the fact that moorage is a federal responsibility, several groups asked that the Province establish regulation and enforcement for private mooring buoys in order to reduce the abandonment of boats. A few different approaches were recommended, including:

- *A short-term moratorium on private mooring buoys, with over the longer term, the creation of a licensing scheme, and infrastructure requirements, including sewage pump-outs;*
- *Charging a fee with a time-limit for anchorage;*
- *Enforcement of foreshore leases associated with all anchorages and mooring;*
- *Expanding of the enforcement of the land act to apply to private mooring buoys, which would be allowed only if installed and used by owner;*
- *Applying an allocation and approval process for commercial mooring buoys; and,*
- *Enforcing and improving foreshore regulation to keep anchorage areas free for refuge (e.g. Boaters with motor troubles, safety from weather).*

PREVENT MARINE DEBRIS AT THE SOURCE

In order to get to the root of the problem of marine plastics and debris, several groups recommended phasing out the use of single use plastics, increasing recycled content of materials, and banning the use of certain materials, such as Styrofoam™, in the marine environment.

With respect to fishing and aquaculture gear, participants recommended:

- *Creating new requirements for the use of gear that is more durable, contains more recycled content, or is more recyclable;*
- *Creating a tagging system for aquaculture gear as a condition of licensing; fishing gear labelling programs; annual net collection programs; mandatory reporting of lost fishing gear; and a deposit on nets; and,*
- *Ensuring that any prevention measures be coupled with clean-up programs to remove sunken gear due to the legacy issue from earlier gear loss.*

One participant noted that it can be hard to make enough income on fishing alone, and that adding a collection program such as a barge-based annual collection system for nets could provide an economic development opportunity.

INCREASE EDUCATION AND OUTREACH CAMPAIGNS

Participants highlighted the need for awareness campaigns that would tackle the problems of abandoned vessels and marine debris. They suggested the use of photo, video, text, and social media campaigns, and working with private enterprises on joint campaigns. Several groups pointed to successful existing campaigns, and emphasized the importance of educating boaters, business, and youth. When the disposal options are clear, education can be very effective; participants pointed to Boating B.C.'s education campaign which has reached 13 million people in the Province.

Success stories

Many success stories were shared by members of the public. Highlights include:

- *Shoreline clean-up programs. Many of these are led by environmental non-profit organizations (ENGOs) staffed largely by volunteers (e.g. Great Canadian Shoreline Clean-ups; Living Oceans Society; Surfrider; Association of Denman Island Marine Stewards; B.C. Parks' partnership with Living Oceans Society in Cape Scott Provincial Park; B.C. Marine Trails; and, Clayoquot CleanUp).*
- *Licensing and abandoned vessel recycling programs from other jurisdictions, particularly in the United States. Although the States have more jurisdiction over vessels and the marine environment that the Provinces do, there are still learnings that can be shared.*
- *Innovative projects using materials from waste plastic or old fibreglass vessels in new or inventive applications, for example in composite lumber or concrete or gasifying waste to create alternative fuel.*
- *Adoption of best practices to reduce marine debris in the absence of regulation: for example, by installing catch-basins with oil-water separators on-shore; using plastic-encapsulated foam for dock construction; adopting a new aquaculture system for oysters to make gear last longer and prevents gear loss; increasing the re-use of materials in aquaculture operations; the Vancouver Aquarium's program to reduce plastics in its operations. Green certification programs can support these initiatives.*
- *Ghost gear retrieval programs, such as the Northwest Straits Foundation which has removed 5,800 fishing nets to date and Emerald Sea Protection Society's work with the Global Ghost Gear Initiative.*
- *Projects researching or tracking waste and pollution, e.g. Oceanwise's pollution tracker; Great Canadian Shoreline Clean-ups Dirty Dozen List; Oceanwise's joint research with Metro Vancouver and apparel companies on the source and fate of microplastics.*
- *Federal, provincial and local governments and port authority initiatives, such as the Transport Canada Abandoned Boats Program; B.C. Parks mooring buoys/arrangements with local communities to create anchorage zones; Nanaimo Port Authority's sunken vessel retrieval; the Capital Regional District's partnership with the Dead Boats Disposal Society, partially funded through the federal Abandoned Boats Program, to remove abandoned boats.*
- *Education campaigns including documentaries, social media, and texting campaigns, and emphasizing outreach to schools (e.g. Kids for a Plastics Free Canada and Boating B.C.).*

Thank you!

Coastal community visits, conversations, and communications received last summer provide a rich depth of information and a breadth of ideas for addressing abandoned vessels and marine debris. Many coastal organizations have been taking the initiative to tackle clean-up and to implement measures to reduce debris at its source. Overall, many success stories were identified and there was a high degree of convergence across organizations in how to further address the problem of abandoned vessels, marine debris, and marine-sourced plastics. Problems were characterized; challenges and obstacles were described; and potential solutions were recommended.

Meeting participants identified numerous ways in which the Province could act within its jurisdiction, and collaborate with other jurisdictions, to solve the problem of abandoned vessels, marine debris, and marine plastics. Five consistent themes emerged: provide dedicated funding, enhance prevention and reduction, increase recycling and disposal, tighten regulations and enforcement and foster education and outreach.

Parliamentary Secretary for Environment Sheila Malcolmson sincerely appreciates the time and effort devoted by many organizations and individuals to engage on abandoned vessels, marine debris, and marine plastics. The input provided will be integrated into recommendations that will be submitted to the Honourable George Heyman, Minister of Environment and Climate Change Strategy.

Appendix 1: Terms of Reference

The terms of reference for Parliamentary Secretary Malcolmson's work were to:

- *Make recommendations for a provincial action plan, in co-ordination with the federal government, to eliminate the environmental threats caused by abandoned vessels including but not limited to:*
  - *Building on existing work and partnerships, collaborate with the federal government on potential development of a boat-licensing program to aid enforcement of regulations for the management of abandoned boats;*
  - *The feasibility of an environmental stewardship program to manage the end-of-life recycling of boats and marine infrastructure, as well as fibreglass and other elements of abandoned boats;*
  - *The feasibility of a "cash for clunkers" program for abandoned vessels or those at the end of their useful life; and*
  - *What lessons can be learned from the Washington state program for this problem.*
- *Make recommendations for provincial action to curb the disposal of plastics in the marine environment.*

Appendix 2: Process for Meetings

In addition to the direct engagement meetings held by the Parliamentary Secretary, staff level meetings were conducted by Ministry of Environment and Climate Change Strategy (ENV) staff and interested parties. Email submissions were also invited via ENV's website (*gov.bc.ca/MarineDebrisProtection*) from the beginning of July 2019 through September 6, 2019. The meetings were targeted within coastal British Columbia and the assignment timeline was very short so full province-wide consultation could not be undertaken. Consultation on specific actions may be required during the implementation phase.

Groups participating in meetings were asked a series of questions which included:

- *On the subject of abandoned vessels, what involvement would you like to see from the Province (e.g. vessel licensing, boat dismantling infrastructure, vessel turn-in program or funding)?*
- *When looking at boat (and marine debris) recycling, what could the Province do to advance this and find new solutions?*
- *On average, how much of your operational time is spent on abandoned vessels (and marine debris)?*
- *When thinking more broadly on marine debris, what kind of awareness campaigns do you think would be the most successful? or: When thinking more broadly on marine debris, what other materials should be targeted in the prevention/reuse side?*
- *What success stories do you wish to share?*
- *What barriers do you see to finding solutions?*
- *What is the single most important thing that you think the B.C. Government can do to improve the situation to create lasting solutions?*

Approximately 40 organizations met directly (in person or by phone) with the Parliamentary Secretary and/or ENV staff. Many of these organizations provided additional information such as summaries of their recommendations, reports, presentations, and suggestions of other parties to engage to inform the Parliamentary Secretary's work. In addition, roughly 20 submissions to the Marine Debris Advisor e-mail address are reflected in the relevant sections of this report.

Appendix 3: Organizations involved in direct meetings

ORGANIZATION	WEBSITE
Association for Denman Island Marine Stewards	www.adims.ca
BC Ferries	https://www.bcferries.com/
BC Marine Parks Forever Society	https://www.bcmpfs.ca/
BC Shellfish Growers Association	http://bcsga.ca/contact/
Boating BC Association	https://www.boatingbc.ca/cpages/home2
Canadian Parks and Wilderness Society	https://cpaws.org/
Capital Regional District	https://www.crd.bc.ca/
Council of BC Yacht Clubs	https://www.cbcyachtclubs.ca/
Dead Boat Disposal Society	https://www.facebook.com/DBDSBC/
Fisheries and Oceans Canada	
District of Sechelt	https://www.sechelt.ca/
District of Tofino	http://www.tofino.ca/home
District of Ucluelet	https://ucluelet.ca/
Emerald Sea Protection Society	https://www.emeraldseasociety.ca
First Nations Fisheries Council	https://www.fnfisheriescouncil.ca/
Global Ghost Gear Initiative	www.ghostgear.org
Indigenous Zero Waste Technical Advisory Group	
Islands Trust	http://www.islandstrust.bc.ca/trust-council/advocacy/marine-environment/abandoned-and-derelict-vessels-advocacy/
Kids For a Plastic Free Canada	https://www.facebook.com/plasticfreekids/
Marine Recycling Corporation	www.marinerecycling.ca
Nanaimo Port Authority	https://portauthority.npa.ca/en
National Marine Manufacturers Association	https://www.nmma.ca/
Nuu-chah-nulth Tribal Council	https://nuuchahnulth.org/services/education
Oak Bay Marine Group	https://obmg.com/contact-us/
Ocean Legacy Foundation	https://oceanlegacy.ca/
Ocean Watch Task Force	http://oceanwatch.ca/howesound/

Appendix 3: Organizations involved in direct meetings (*continued*)

ORGANIZATION	WEBSITE
Pender Harbour and Area Residents Association	https://www.phara.ca/
Plastic Oceans Canada	https://plasticoceans.ca/
Ralmax/Salish Sea Industrial Services Ltd.	www.ralmax.com
RCMP West Coast Marine Services	
Sea Grant Washington	https://wsg.washington.edu/
Seaspan	https://www.seaspan.com/
Shift Environmental	https://shiftenvironmental.com/
shíshálh Nation (Sechelt)	https://shishalh.com/
Sunshine Coast Regional District	https://www.scrd.ca/
Surfrider Pacific Rim Chapter	https://pacificrim.surfrider.org/
Transport Canada	
Tsehum Harbour Task Force	
Tsleil-Waututh Nation	https://twnation.ca/
Ucluelet Aquarium	https://uclueletaquarium.org/
Union of BC Municipalities	https://www.ubcm.ca/
Vancouver Aquarium/Oceanwise	https://www.shorelinecleanup.ca/
Vancouver Island Marine Debris Working Group	https://www.bcmarinetrails.org/77-bcmtna-news/2658-vancouver-island-marine-debris-working-group
Vard Marine Inc.	https://vardmarine.com/
Washington State Department of Natural Resources	https://www.dnr.wa.gov/derelict-vessels
West Coast Environmental Law	https://www.wcel.org/

Appendix 4: Summary of issues raised by different parties

The below table provides an at-a-glance summary of the problems, challenges, and potential solutions raised by different parties during direct engagement meetings.

	GOVERNMENT	INDUSTRY	ENGOS*	CITIZEN GROUPS	BOATER GROUPS
PROBLEM					
Abandoned vessels	X	X		X	X
Mooring buoys	X			X	X
Ghost fishing gear	X		X		
Aquaculture debris		X	X	X	X
Polystyrene foam	X	X	X	X	X
PROBLEM – OUT OF SCOPE					
Single use plastics			X	X	
Sewage/Microplastics in sewage	X	X		X	
CHALLENGES					
Lack of options/economic challenges for disposal/recycling	X	X	X	X	X
Lack of funding, infrastructure, and workforce	X	X	X	X	
Critiques of regulations and enforcement			X	X	
SOLUTIONS					
Planning and inter-jurisdictional cooperation	X		X	X	X
Provide disposal and recycling options	X	X	X	X	X
Province-funded programs	X	X	X	X	X
Vessel turn-in program	X	X			X
Vessel licensing	X			X	X
Private mooring	X			X	X
Addressing marine debris at the source			X		X
Education and outreach campaigns		X	X	X	X

**(Environmental Non-Governmental Organizations)*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