

NATIONAL VESSEL DUMPING ASSESSMENT II:

CHANGES IN SHIP OPERATIONAL WASTE IN CANADA'S
MARINE PROTECTED AREAS (2019-2022)

August 2026



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LIST OF ACRONYMS

<i>Arctic Shipping Safety and Pollution Prevention Regulations</i>	ASSPPR
<i>Arctic Waters Pollution Prevention Act</i>	AWPPA
Automatic identification system	AIS
<i>Canada Shipping Act, 2001</i>	CSA, 2001
Canadian Hydrographic Service	CHS
Convention on Biological Diversity	CBD
Electronic navigational charts	ENCs
Exclusive economic zone	EEZ
Heavy fuel oil	HFO
<i>International Convention for the Prevention of Pollution from Ships</i>	MARPOL
International Maritime Organization	IMO
Kunming-Montreal Global Biodiversity Framework	GBF
Liquefied natural gas	LNG
Marine protected area	MPA
National Marine Conservation Area	NMCAs
Nautical mile	nm
Other effective area-based conservation measures	OECMs
Particularly Sensitive Sea Areas	PSSAs
Parts per million	ppm
Polycyclic aromatic hydrocarbons	PAH
Refrigerated cargo ships	Reefers
Roll-on/roll off cargo ships	Ro-ros
Sulphur oxides	SOx
United Nations Convention on the Law of the Sea	UNCLOS
<i>Vessel Pollution and Dangerous Chemical Regulations</i>	VPDCR

NEARLY 27 BILLION LITRES OF HARMFUL SHIP WASTE IS DISCHARGED IN CANADA'S MARINE PROTECTED AREAS ANNUALLY — AN 83 PER CENT INCREASE FROM WWF-CANADA'S PREVIOUS ASSESSMENT

WWF-Canada's unprecedented National Vessel Dumping Assessment (2022) revealed that ships were discharging billions of litres of waste annually into Canada's marine protected areas (MPAs). Generated during routine operations, this waste — including greywater, sewage, oily bilge water and scrubber washwater — is harmful, even toxic, to the marine species these areas are established to protect.

Comparing ship waste data from 2019 and 2022, this updated National Vessel Dumping Assessment II (2026) finds that in the absence of adequate restrictions on discharging waste into oceans, the volume of waste being discharged is rapidly increasing, including in areas explicitly set aside for conservation.

Between 2019 and 2022, the share of Canada's oceans protected within MPAs increased from 13.7 per cent to 15.4 per cent. **Over the same period, the volume of waste generated in MPAs rose 83 per cent**, from 14.7 billion litres in 2019 to 27 billion litres in 2022.

The total amount of waste generated in Canadian waters increased 38 per cent during the same three-year study period, rising from 147.2 billion litres to 203.4 billion litres.

MORE SHIPS AND MORE SCRUBBERS CAUSE SURGE IN WASTE

The increase in harmful vessel discharges is partially driven by increased vessel activity. There were 500 more International Maritime Organization (IMO)-numbered ships operating in Canadian waters in 2022 than in 2019, a nine per cent increase led by bulk carriers and container ships.

But the widespread adoption of scrubbers is the primary contributor to increased waste. In 2019, one in eight vessels were equipped with scrubbers and by 2022 it jumped to one in five vessels, a 60 per cent increase. **Scrubber washwater accounted for 98 per cent of the waste generated in Canadian waters.**

Bulk carriers and container ships made up the majority of scrubber-equipped vessels in 2022, at 479 and 280 vessels respectively. While the number of Liquefied Natural Gas (LNG) vessels operating in Canada increased by 52 per cent, the number of LNG tankers with scrubbers rose by a staggering 420 per cent — the largest proportional uptake in scrubbers across vessel types.

Cruise ships, while making up just two per cent of the total fleet, were responsible for just over half of all operational waste produced in Canadian waters and nearly half of the waste produced in MPAs.

HOW CANADA CAN STOP THE FLOW OF SHIP WASTE IN PROTECTED AREAS

This surge in water pollution highlights the cost of continued inaction. First promised in 2019 and officially announced in February 2023, the federal government's MPA Protection Standard (the Standard) commits Canada to consistent protective measures across federally designated MPAs. This means oil and gas activities, bottom trawling and mining are prohibited in all MPAs designated since 2019. The Standard also set a federal policy commitment to pursue limitations or prohibitions on vessel discharges including greywater, scrubber washwater, sewage, food waste and oily bilge water in new and existing MPAs.

Canada has the authority to restrict or ban vessel discharges in MPAs within its expansive internal waters and territorial sea (0-12 nautical miles (nm)), and the MPA Protection Standard provides the policy direction to do so. Canada can also pursue stronger discharge restrictions in its exclusive economic zone (EEZ) (12 to 200 nm), which can be made mandatory for Canadian vessels and can become mandatory for international vessels if Canada works through the IMO.

Unfortunately, in the three years since the Standard was announced, enhanced discharge restrictions have still not been applied to new or existing MPAs. This delay has allowed an increasing volume of waste to be discharged into Canada's MPAs each year, undermining their crucial conservation role. **In 2022 alone, at least seven billion litres of the harmful waste discharged into these MPAs could have been avoided** had MPA discharge bans been in effect.

To safeguard sensitive marine ecosystems and species at risk, WWF-Canada is urging the federal government to **prohibit vessel discharges in all MPAs, without exceptions**, by:

- 1) Delivering on the federal policy commitment to pursue enhanced restrictions on vessel discharges in MPAs.
- 2) Working through the IMO to extend mandatory discharge restrictions to Canada's EEZ, where 79 per cent of MPAs are located.
- 3) Banning the use of scrubbers nationally while working through the IMO to advance international restrictions.

Without action, the volume of ship waste discharged in MPAs will continue to grow — threatening belugas, southern resident killer whales, sea birds and other species at risk — even as Canada moves toward its goal of protecting 30 per cent of its oceans by 2030.



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BIODIVERSITY AT RISK

From the Arctic to the Atlantic to the Pacific, Canada's ocean territory sustains us—providing food, regulating our climate, supporting our economy, connecting us to heritage, and grounding the cultural practices of Indigenous Peoples. Healthy oceans are essential to our wellbeing and that of future generations. Yet the marine biodiversity that makes these ecosystems so vital is increasingly at risk.

WWF's [Living Planet Report 2024](#) reveals a staggering 73 per cent decline in global wildlife populations from 1970 to 2020, with marine populations falling by 56 per cent in the same period.¹ This biodiversity crisis is driven by unsustainable levels of human activity resulting in habitat loss, overexploitation, pollution, and the accelerating impacts of climate change. The maritime industry, while central to the global economy, is a major source of chronic ocean pollution and poses a direct threat to biodiversity.

THE CASE FOR STRONG AND UNIFORM PROTECTION OF MARINE AREAS

WWF-Canada's [National Vessel Dumping Assessment](#) (2022) revealed that ships operating in Canadian waters produced and discharged more than 147 billion litres of operational waste in 2019 alone.² Operational waste refers to waste generated as part of normal vessel operations. While some operational waste can be temporarily stored and disposed of at land-based reception facilities, most of it is discharged into the sea.

The assessment also found that 10 per cent of operational waste was produced in marine protected areas (MPAs) and other effective area-based conservation measures (OECMs). This highlighted a troubling gap: areas set aside to safeguard biodiversity are not adequately protected from chronic shipping pollution. MPAs are among the most effective management tools for slowing and reversing biodiversity loss. They provide refuge for wildlife, enhance species recovery, and foster ecosystem resilience. Discharging operational waste into MPAs undermines their effectiveness, by degrading habitat quality and exposing species to harmful substances.

Canada recognizes the importance of MPAs as well as the harmful impacts of marine pollution. As a Party to the Convention on Biological Diversity (CBD) and a formal adopter of the Kunming-Montreal Global Biodiversity Framework (GBF), Canada is committed to implementing the GBF's four goals and 23 targets, including Target 3—protecting 30 per cent of land and ocean areas by 2030—in line with its national objectives. However, simply designating MPAs is insufficient to preserve protected areas.

To meaningfully address the biodiversity crisis, Canada must maximize the effectiveness of MPAs by enforcing strong and consistent protections, including uniform restrictions on operational discharges across its MPA network. This approach fosters biodiversity by reducing cumulative impacts, strengthening ecological connectivity, and building ecosystem resilience. These efforts can also support other GBF targets that Canada has committed to, including Target 7 (reducing pollution to levels not harmful to biodiversity and ecosystem functions), Target 18 (reducing pollution risks), and Targets 21 and 22 (recognizing Indigenous rights and ensuring equitable governance of biodiversity).

¹ WWF. (2024). Living Planet Report 2024 - A system in peril. Almond, R.E.A., Grooten M. and Petersen, T. (Eds). WWF, Gland, Switzerland. <https://livingplanet.panda.org/>

² WWF-Canada. (2022). National Vessel Dumping Assessment: Quantifying the threat of ship waste to Canada's marine protected areas. Prepared by Davin S., Saunders, S., Liang C., Merritt W. World Wildlife Fund Canada. Toronto, Canada. <https://www.wwf.ca/wp-content/uploads/2023/07/No-Dumping-Long-Technical-Report-R06-MAR01.pdf>

It should be noted that Canada regulates operational waste through various statutes, including the *Vessel Pollution and Dangerous Chemical Regulations* (VPDCRs) under the *Canada Shipping Act, 2001* (CSA, 2001), and the *Arctic Shipping Safety and Pollution Prevention Regulations* (ASSPPRs) under the *Arctic Waters Pollution Prevention Act* (AWPPA). But these have significant gaps and limitations, leading to the ongoing release of large volumes of untreated and undertreated waste into the ocean. Crucially, these rules were written for the general ocean context and permit levels of pollution incompatible with the conservation objectives of MPAs. To ensure meaningful protection, Canada must go beyond baseline rules and take deliberate action to safeguard MPAs from the harmful effects of operational discharges. To support compliance with future protection measures, Canada should also take steps to ensure ship operators have access to data products—such as the International Hydrographic Organization’s S-122 standard—so that MPAs can be readily integrated into electronic navigational charts (ENCs).

CANADA’S MPA PROTECTION STANDARD

Following public pressure, including a WWF-Canada campaign supported by nearly 23,000 Canadians, Canada introduced the MPA Protection Standard in February 2023.³ The standard is a federal policy commitment to safeguard MPAs from industry threats—such as oil and gas activities, mining, bottom trawling, and dumping—by applying consistent, minimum protection measures across MPAs. It applies to MPAs designated under the *Oceans Act*, National Marine Conservation Areas (NMCAs), and marine portions of National Parks, National Wildlife Areas, and Migratory Bird Sanctuaries.

A key element is its provision for enhanced restrictions on vessel discharges, specifically including oily bilge water, sewage, greywater, food waste, and scrubber washwater.

Exceptionally, enhanced discharge restrictions introduced under the standard can be applied to both new and existing MPAs. **However, Canada has yet to define or implement any such restrictions in practice.**

MARITIME ZONES

The MPA Protection Standard and its provision for enhanced vessel discharge restrictions is a promising tool for fighting biodiversity loss and reducing chronic ship-source pollution in MPAs. However, Canada’s ability to impose mandatory discharge restrictions on foreign vessels—which account for most ships operating in Canadian waters—is tempered by international maritime law, particularly the right of innocent passage and freedom of navigation.

The United Nations Convention on the Law of the Sea (UNCLOS) defines maritime zones and sets out the rights and responsibilities of States within each (Figure 1). These zones are measured from the coastal state’s baseline, which is typically the low-water line along the shore, as marked on official charts. The power of the coastal State over foreign vessels diminishes with distance from the baseline.

Canada claims all maritime zones recognized under international law, including internal waters, a 12-nautical mile (nm) territorial sea, a 200-nm exclusive economic zone (EEZ) and rights to its continental shelf. In its internal waters, Canada exercises full sovereignty and can regulate shipping entirely at its discretion. These waters are notably extensive, including but not limited to the Arctic Archipelago, the Gulf of Saint Lawrence, Hecate Strait, Queen Charlotte Sound, and the Strait of Georgia.

³ Government of Canada. (2023). “Marine Protected Areas (MPA) Protection Standard.” <https://www.dfo-mpo.gc.ca/oceans/mpa-zpm/protection-standard-norme-protection-eng.html>

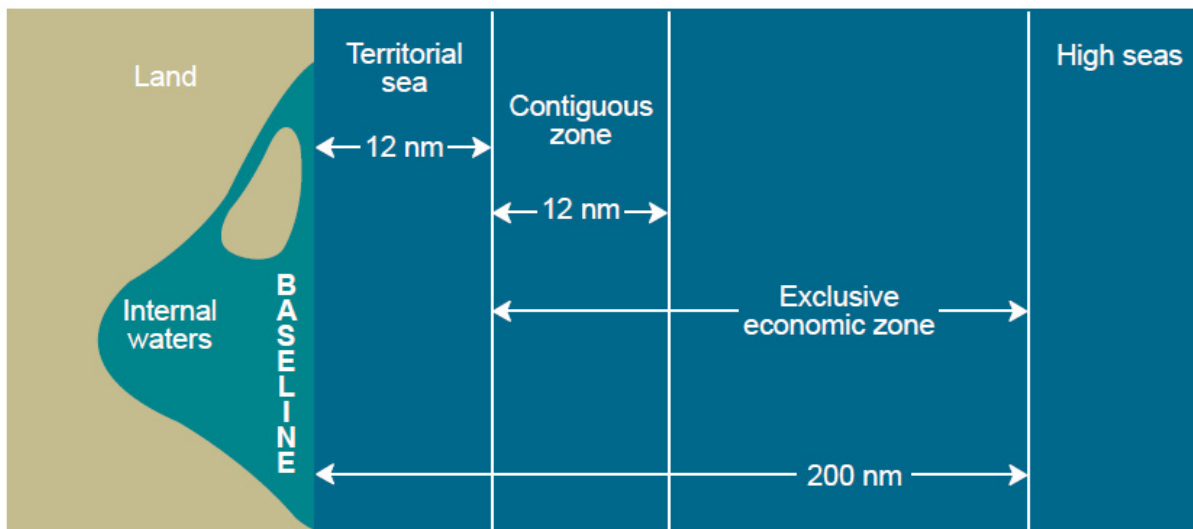
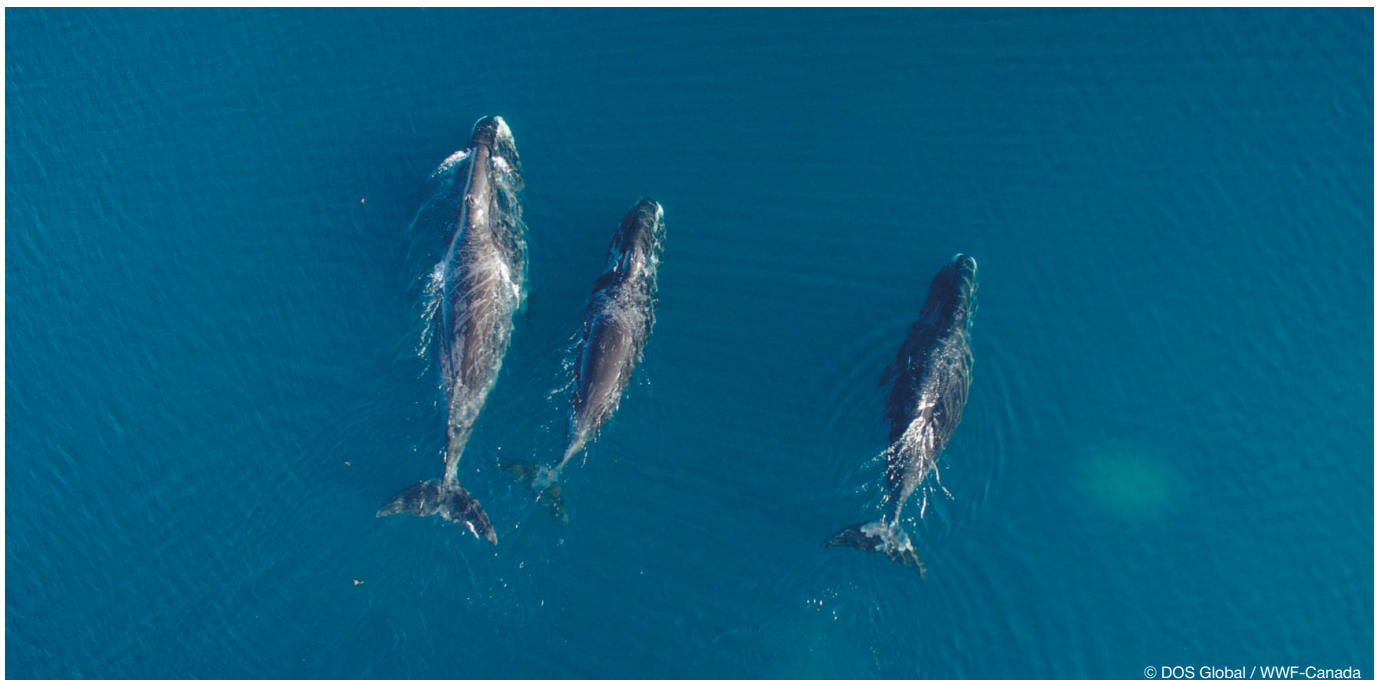


FIGURE 1. Canada's maritime zones. Maritime zones are defined by United Nations Convention on the Law of the Sea (UNCLOS) and are incorporated into Canadian law through the *Oceans Act*.

In its territorial sea, Canada maintains authority to regulate foreign ships, provided that restrictions are not prejudicial to the right of innocent passage. Within its EEZ, the freedom of navigation prevails and Canada's power over foreign ships is generally limited to enforcing internationally accepted rules and norms set out by the International Maritime Organization (IMO). This stands in contrast to Canada's broader powers within its internal waters and territorial sea, where it can unilaterally adopt and apply its own vessel pollution laws to foreign ships.

Canada's limited authority over foreign ships operating in its EEZ presents a challenge, because 79 per cent of Canada's MPAs, by area, are located within the EEZ. To ensure consistent and meaningful protection across all maritime zones, Canada should complement implementation of the MPA Protection Standard with international tools to enable enforceable restrictions on vessel discharges in the EEZ.



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SPOTLIGHT ON SCRUBBERS

Exhaust gas cleaning systems, commonly referred to as “scrubbers,” are devices installed on ships to reduce sulphur oxide (SOx) emissions. They serve as an alternative to cleaner compliant low-sulphur fuels that meet global emissions requirements. Scrubbers work by chemically removing SOx from engine and boiler exhaust gas before it is released into the atmosphere. Open-loop systems achieve this using large volumes of seawater, while closed-loop systems use water treated with alkaline chemicals. The resulting waste is then discharged to sea. In 2019, scrubber discharges accounted for 97 per cent of all waste produced and discharged by vessels in Canadian waters, despite only one in eight ships being equipped with a scrubber at the time.⁴

Scrubber discharges, whether from open-loop systems that release large volumes of waste (washwater) directly into the sea or from closed-loop systems that discharge smaller amounts of concentrated waste (bleed-off), contain persistent and bioaccumulative substances, including dissolved metals and polycyclic aromatic hydrocarbons (PAHs). Once released into the environment, these pollutants degrade water and sediment quality and can concentrate in marine species—including those harvested for human consumption—to levels that impair basic life functions.⁵

Laboratory studies have shown that scrubber waste causes toxic effects on marine life even at low concentrations. At just one part per million (ppm), exposure to scrubber wastewater significantly reduces sea urchin egg fertilization, and increased exposure at 10 ppm causes significant malformations in sea urchin, polychaete, and mussel larvae.⁶ Zooplankton exposed to undiluted scrubber waste can die within minutes, with some studies finding scrubber effluent more toxic to zooplankton than crude oil.^{7, 8}

Open-loop scrubber discharges are also strongly acidic and contribute to ocean acidification. In some regions, one year’s worth of scrubber discharges have the potential to cause acidification equivalent to decades’ worth of acidification from CO₂.⁹

Areas with limited water circulation or naturally low alkalinity, such as the Arctic and Salish Sea, are especially vulnerable.

Ocean acidification alters seawater chemistry, weakening ecosystems and threatening biodiversity. It harms species that rely on calcium to build shells or skeletons—such as corals, shellfish, and some plankton—making them more vulnerable to disease, predation, and other stressors. Habitat-forming species like cold-water corals are among those threatened by acidification. In Canada, these corals provide critical habitat for commercially valuable fish, meaning their loss could harm both marine ecosystems and the fishing economy.

Acidification also affects biodiversity and ecosystem health in less apparent ways. Acidic conditions affect the chemical form, mobility, toxicity, and bioavailability of metals, posing further risks to marine life. Scrubber-related acidification inhibits the ocean’s uptake of atmospheric CO₂ by altering the carbonate chemistry of seawater, undermining one of the ocean’s key roles in mitigating climate change.¹⁰

⁴ WWF-Canada. (2022). (n2).

⁵ International Council for the Exploration of the Sea (ICES). (2020). ICES Viewpoint: Ecosystem Overviews and Management Considerations. <https://doi.org/10.17895/ices.advice.7486>

⁶ Magnusson, K., & Granberg, M. (2022). "Report on scrubber water whole effluent toxicity testing, at different geographical regions." <https://www.ml.se/download/18.5ae47fd818530c6f06024d0a/1676036161374/D2.3>

⁷ ICES. (2020). (n5).

⁸ Thor, P. et al. (2021). "Severe toxic effects on pelagic copepods from maritime exhaust gas scrubber effluents." *Environmental science & technology* 55(9), 5826-5835. <https://doi.org/10.1021/acs.est.0c07805>.

⁹ Dulière, V. et al. (2020). "Potential impact of wash water effluents from scrubbers on water acidification in the southern North Sea." <https://doi.org/10.13140/RG.2.2.21935.76968>

¹⁰ Stips, A. et al. (2016). "Scoping report on the potential impact of on-board desulphurisation on the water quality in SOx Emission Control Areas." <https://dx.doi.org/10.2788/336630>

OBJECTIVES

WWF-Canada's groundbreaking [National Vessel Dumping Assessment](#) (2022) offered an alarming first look into the magnitude and scope of operational ship waste produced in Canadian waters in 2019, waters that include MPAs intended as vital refuges for wildlife.¹¹ This new report provides the results of an updated assessment of vessel discharges in Canada's ocean territory, MPAs and OECMs for 2022. By comparing the findings spanning three years, this report highlights the growing threat that operational discharges pose to marine life in Canada, and underscores the need to ensure MPAs are protected.

Our choices—how we interact with the environment, the policies we adopt, and the technologies we use—have a direct impact on biodiversity. Through this report, WWF-Canada urges action to define and implement the enhanced vessel-discharge restrictions in the MPA Protection Standard across all Canadian MPAs, without exceptions. It also calls on policymakers to adopt an international strategy to extend mandatory discharge restrictions to areas within Canada's EEZ.

METHODS

This study uses 2022 vessel attribute data acquired from Clarkson's Research in conjunction with a 2022 automatic identification system (AIS) dataset, provided by Spire Global, to estimate volumes and the geographic distribution of sewage, greywater, oily bilge water and scrubber washwater produced in Canada's ocean territory by ships with registered IMO numbers.

An IMO number is a permanent identifier assigned to sea-going ships of 100 gross tons and above, remaining with the vessel throughout its lifetime regardless of changes in flag, type, name or ownership. Some vessels—such as those without mechanical propulsion, pleasure yachts, ships engaged in special services (such as search and rescue vessels), hopper barges, floating docks, warships, and wooden ships (excluding fishing vessels)—are not required to have an IMO number. Consequently, ships under 100 gross tons were excluded from this analysis, and vessels exempt from IMO number requirements are underrepresented.

The analysis assumes that vessels are compliant with all relevant Canadian and international regulations as of 2022. The analysis does not account for voluntary practices, due to limited public information on operator policies and challenges in verifying adherence to voluntary measures. The analysis uses MPA boundaries current as of 2024.

For detailed methodology regarding the processing and analysis of vessel discharges, refer to WWF-Canada's [National Vessel Dumping Assessment](#) (2022).¹²

¹¹WWF-Canada. (2022). (n2)

¹²WWF-Canada. (2022). (n2).

RESULTS

VESSEL COUNT, TYPES AND FLAG DISTRIBUTION IN 2022

In 2022, a total of 6,057 unique vessels with IMO numbers operated in Canadian waters (Figure 2). Bulk carriers made up the largest share at 43 per cent, followed by container ships at 14 per cent and chemical tankers at 9 per cent. General cargo ships, fishing vessels, roll-on/roll-off (ro-ro) cargo ships, tug and towing vessels and oil tankers each accounted for about 5 per cent of the total. Liquid tankers represented 3 per cent, while liquefied natural gas (LNG) tankers and cruise ships each made up 2 per cent. Ferries, refrigerated cargo ships (reefers), and yachts together made up less than 3 per cent of the total.

Roughly 7 per cent of the 6,057 vessels were Canadian-flagged ($n = 398$). This included most passenger ferries (89 per cent), ro-pax ferries (87 per cent), nearly half of tug and towing vessels (47 per cent), and about a quarter of fishing vessels (26 per cent). All other vessel types were primarily or entirely registered to foreign flags. A full list of vessel flag states and counts is available in Appendix I.

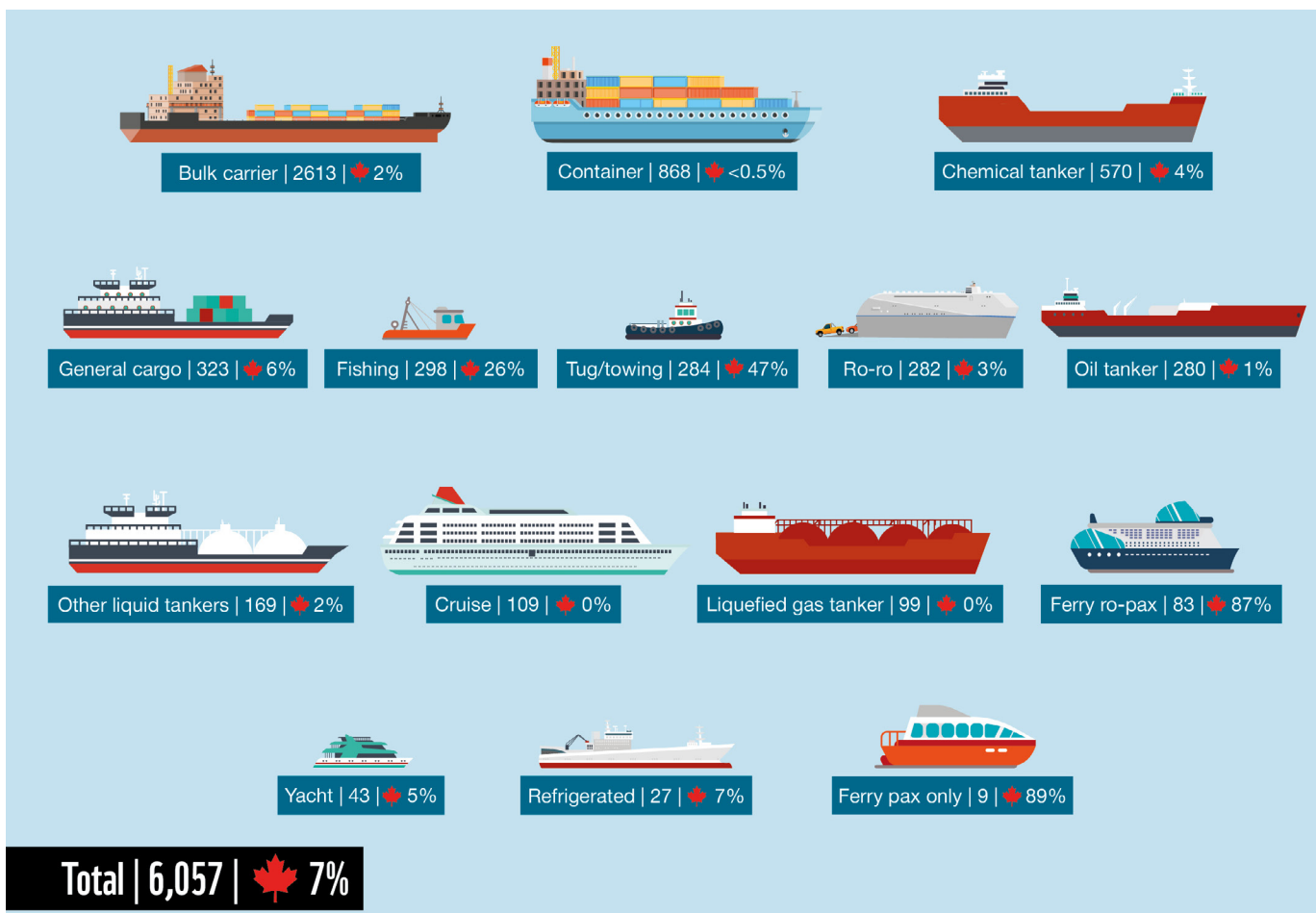


FIGURE 2. Number of ships of each ship type active in Canadian waters in 2022, including the percentage of Canadian flagged vessels.

VESSEL COUNT, TYPES AND FLAG DISTRIBUTION: 2019 COMPARISON

Compared to 2019, 511 more ships operated in Canadian waters, increasing from 5,546 to 6,057 vessels. This growth was driven largely by an increase in bulk carriers (+244) and container ships (+198). The number of vessels in other ship categories remained relatively stable over this period.

The proportion of Canadian-flagged vessels remained largely unchanged between 2019 and 2022. Most vessel types continued to be primarily registered under foreign flags, with little variation in flag distribution across the fleet. For a detailed comparison of vessel type and flag states between 2019 and 2022, refer to Appendix III.

SCRUBBER PREVALENCE IN 2022

One in five ships operating in Canadian waters in 2022 was equipped with a scrubber ($n = 1,183$). Of these, 75 per cent used open-loop scrubbers ($n = 887$). Another 19 per cent used hybrid scrubbers ($n = 227$), 1.4 per cent were closed-loop ($n = 16$), and one used a membrane scrubber. The type of scrubber was unknown for 52 vessels.

Bulk carriers accounted for the largest share of scrubber-equipped ships at 40 per cent ($n = 479$), followed by container ships at 24 per cent ($n = 280$) and chemical tankers at 10 per cent ($n = 120$ vessels).

Scrubber Prevalence: 2019 Comparison

The number of scrubber-equipped vessels rose significantly from 717 in 2019 to 1,183 in 2022, marking a 65 per cent increase. LNG tankers and oil tankers saw the greatest proportional growth in scrubber use, increasing by 420 per cent (+21 vessels) and 203 per cent (+59 vessels), respectively. However, bulk carriers and container ships remained the top users of scrubbers, with bulk carriers adding 188 scrubber-equipped ships (a 65 per cent increase) and container ships adding 120 (a 75 per cent increase).

VESSEL ACTIVITY IN 2022

In 2022, vessels traveled a combined 34.3 million kilometres through Canadian waters. This included 14.2 million kilometres along the Pacific Coast, 19.2 million kilometres along the Atlantic Coast, and about 1 million kilometres in the Arctic and Hudson's Bay regions (hereafter referred to as “the Arctic”).

The Atlantic and Pacific coasts saw the highest traffic, attributable to passenger vessels travelling on established cruise and ferry routes and merchant ships travelling to and from major ports (Figure 3).

Non-passenger vessels—including bulk carriers, container ships, ro-ro vessels, cargo ships, tankers, reefers, tug and towing vessels, and fishing vessels—made up 96 per cent of the fleet and accounted for 82 per cent of the total distance sailed, averaging 4,829 kilometres per vessel.

Passenger vessels—including cruise ships, ferries, and yachts—represented only 4 per cent of the

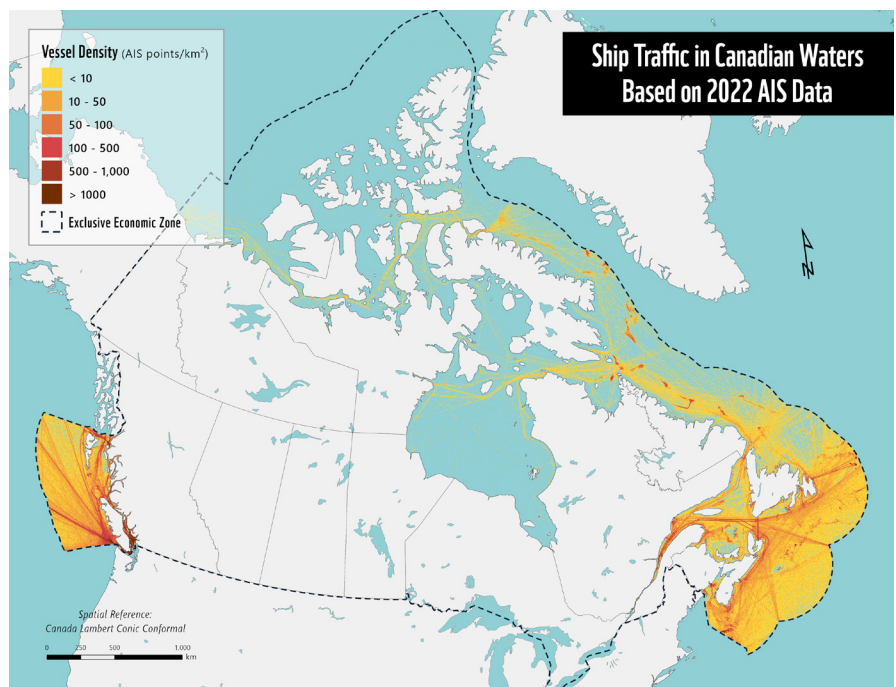


FIGURE 3. Ship traffic in Canadian waters in 2022, shown by vessel density (AIS points/km²).

fleet, but contributed 18 per cent of the total distance travelled. These vessels travelled extensively in Canada, averaging 25,516 kilometres per vessel, or about five times further than non-passenger vessels.

In total, ship activity in Canadian waters in 2022 generated an estimated 624.9 million people-hours at sea—the combined time passengers and crew spend aboard vessels. Passenger ships accounted for 92 per cent of this total (Table 1).

TABLE 1. Summary of 2022 ship activity.

Ship class	Number of Ships	Total distance sailed in 2022 (km)	Average distance sailed per vessel (km)	People Hours (hrs)
Bulk carrier	2,613	8,604,005	3,293	19,799,896
Chemical tanker	570	2,567,120	4,504	3,662,940
Container	868	4,886,367	5,629	8,582,692
Cruise	109	1,856,748	17,034	375,579,369
Ferry pax only	9	200,279	22,253	11,997,002
Ferry ro-pax	83	4,030,388	48,559	184,440,743
Fishing	298	2,870,056	9,631	3,429,208
General cargo	323	2,167,724	6,711	3,767,994
Liquefied gas tanker	99	267,159	2,699	502,106
Oil tanker	280	1,263,883	4,514	1,948,910
Other liquid tankers	169	582,006	3,444	1,042,759
Refrigerated	27	120,790	4,474	204,225
Ro-ro	282	1,730,040	6,135	4,182,827
Tug/towing	284	3,011,555	10,604	5,218,295
Yacht	43	138,483	3,221	560,278
Total	6,057	34,296,604	5,662	624,919,245

Vessel Activity: 2019 Comparison

Ships travelled 2 million more kilometres in Canadian waters—rising from 32.3 in 2019 to 34.3 million kilometres in 2022. Over the same period, people hours increased by more than 86 million hours, reaching 624.9 million in 2022.

LNG tankers experienced the most dramatic growth. Their prevalence increased by 52 per cent and the total distance they sailed more than doubled, increasing by nearly 142,000 kilometres and their people hours rose by roughly 307,000.

While LNG tankers showed the largest increases, smaller changes were also seen in the share of sailing distance and people hours among both passenger and non-passenger vessels.

Refer to Appendix III for a detailed comparison of vessel activity in 2019 and 2022.

TOTAL OPERATIONAL WASTE PRODUCTION IN 2022

In 2022, ships operating in Canadian waters produced an estimated 203.4 billion litres of operational waste—enough to fill approximately 81,340 Olympic-sized swimming pools.

The total includes:

- Greywater: 3.99 billion litres (~1,600 Olympic-sized pools)
- Sewage: 553.5 billion litres (~221 Olympic-sized pools)
- Oily bilge water: 84.6 billion litres (~34 Olympic-sized pools)
- Scrubber washwater: 198.7 billion litres (~79,486 Olympic-sized pools)

The Pacific Coast saw the highest volume of ship-generated waste, with 121.6 billion litres produced—nearly 60 per cent of the national total. The Atlantic Coast followed with 81.3 billion litres, and the Arctic with 522.3 million litres.

Scrubber washwater, including “bleed off” from closed-loop scrubbers, accounted for nearly 98 per cent of all waste by volume. This is more than 42 times the combined total of sewage, greywater, and oily bilge water (Table 2).

TABLE 2. Volume of ship operational waste (L) produced in Canadian waters and in Canada’s MPAs in 2022 and percent change from 2019.

	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)	Total volume (L)
Waste generated by ships in Canada’s oceans (L)	3,997,753,308 ↑ 12%	553,478,662 ↑ 1%	84,588,490 ↑ 9%	198,715,363,963 ↑ 39%	203,351,184,423 ↑ 38%
Waste generated by ships in Canada’s MPAs (L)	270,535,078 ↑ 15%	38,110,428 ↑ 9%	7,121,394 ↑ 31%	26,655,291,606 ↑ 84%	26,971,058,505 ↑ 83%
% of waste in MPAs	7% ↑ 4%	7% ↑ 9%	8% ↑ 20%	13% ↑ 32%	13 ↑ 32%

(Relative Per cent Change: ↑ = increase, ↓ = decrease)

Despite representing less than 2 per cent of the total fleet, cruise ships (n = 109) were the largest contributors to ship-generated waste, responsible for:

- 53 per cent of all operational waste,
- 64 per cent of greywater,
- 62 per cent of sewage,
- 26 per cent of oily bilge water, and
- 53 per cent of scrubber washwater.

Other major contributors included:

- Container ships (n = 868): 21 per cent of total waste
- Bulk carriers (n = 2,613): 11 per cent
- Ro-ro vessels (n = 282): 5 per cent
- Chemical tankers (n = 570): nearly 4 per cent

All other vessel types each contributed less than 2 per cent of the total waste volume. Refer to Figures 4a-d for a detailed summary of waste production by ship type.



FIGURES 4A-D. Proportional breakdown of waste streams by vessel type. Total waste volumes by vessel type are summarized in Table 3.



Total Operational Waste Production: 2019 Comparison

Between 2019 and 2022, operational waste production in Canadian waters increased by 38 per cent, rising from 147.2 billion litres to 203.4 billion litres (Figure 5). Cruise ships were the top producers of operational waste during both study years.

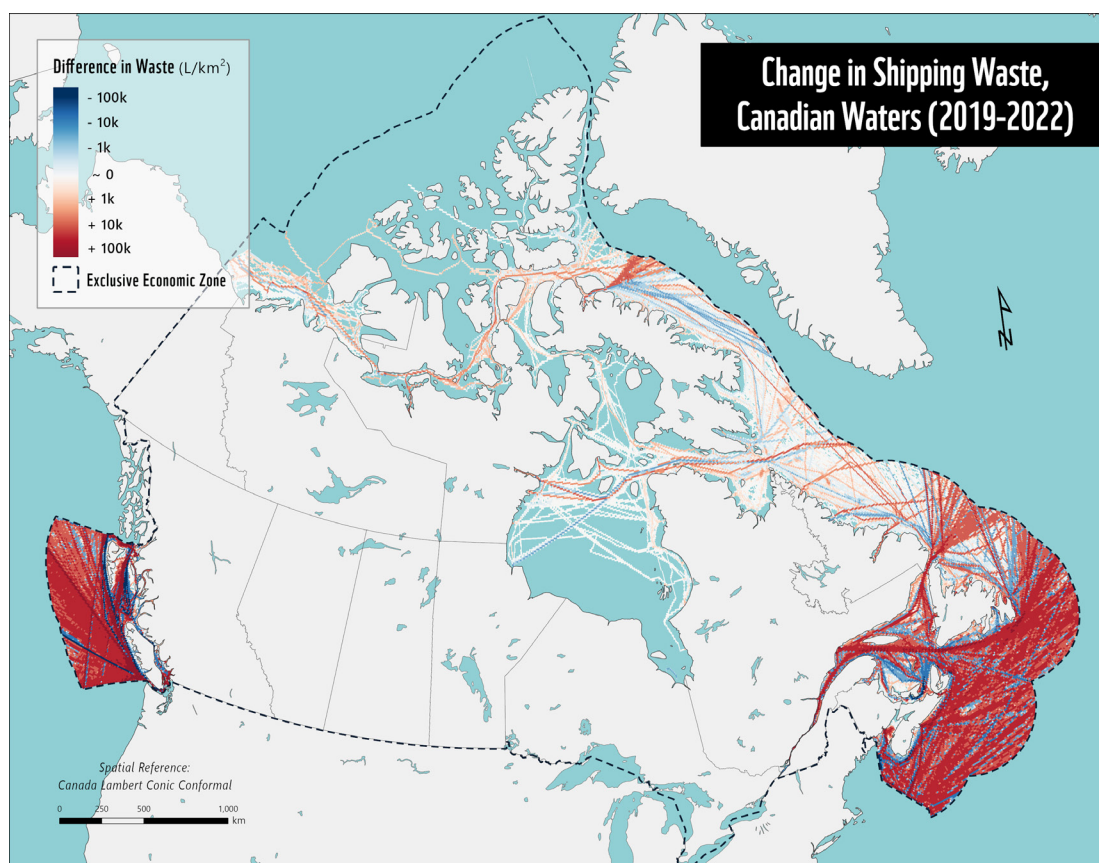


FIGURE 5. Difference in operational waste volume (L), 2019 to 2022.

Increases in waste production were observed on all three coasts (refer to Figure 6):

- Pacific: 37.1 per cent increase (+32.9 billion litres)
- Atlantic: 40 per cent increase (+23.2 billion litres)
- Arctic: 12.8 per cent increase (+59.6 million litres)

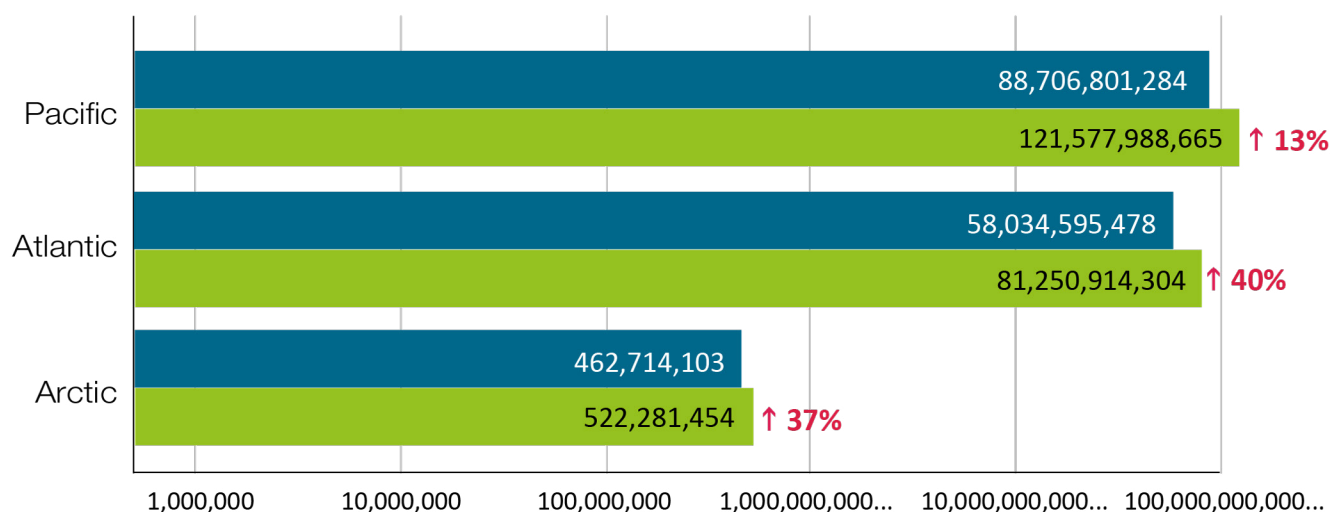


FIGURE 6. A comparison of the total volume (L) of waste produced on all three coasts in 2019 and 2022.

The volume of scrubber washwater increased significantly, from 143 billion litres in 2019 to more than 198 billion litres in 2022. It remained the largest waste stream by far, accounting for 97 per cent of waste by volume in 2019 and nearly 98 per cent in 2022. All four types of operational waste had volume increases over this period:

- Greywater: 12 per cent increase (+425.3 million litres)
- Sewage: 1 per cent increase (+3.7 million litres)
- Oily bilge water: 9 per cent increase (+7.1 million litres)
- Scrubber washwater: 39 per cent increase (+55.7 billion litres)

Among ship types, LNG tankers underwent the largest proportional increase in scrubber washwater production—1,448 per cent—equating to an additional 1.1 billion litres of waste.

Other significant increases in scrubber washwater production included:

- Container ships: 156 per cent increase (+26.2 billion litres)
- Bulk carriers: 119 per cent increase (+12.5 billion litres)
- Cruise ships: 11 per cent increase (+10.7 billion litres)

Refer to Table 3 for a detailed breakdown of waste production by ship type in 2019 and 2022.

TABLE 3. Volume (L) of operational waste produced in Canadian waters in 2022 by ship type and per cent change since 2019.

Ship Class	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)	Total (L)
Bulk carrier	95,299,470 ↑ 12%	19,059,894 ↑ 12%	11,272,365 ↑ 11%	23,025,130,899 ↑ 119%	23,150,762,628 ↑ 118%
Chemical tanker	17,724,945 ↓ -28%	3,544,989 ↓ -28%	2,351,022 ↓ -28%	7,716,223,470 ↑ 1%	7,739,844,426 ↑ 1%
Container	43,055,810 ↑ 9%	8,611,162 ↑ 9%	14,507,325 ↑ 8%	42,962,642,766 ↑ 157%	43,028,817,063 ↑ 156%
Cruise	2,574,072,874 ↑ 4%	345,922,837 ↑ 4%	22,036,273 ↓ -3%	105,113,294,896 ↑ 11%	108,055,326,880 ↑ 11%
Ferry pax only	40,116,264 ↑ 9%	5,391,119 ↓ -27%	341,193 ↑ 107%	N/A	45,848,576 ↑ 4%
Ferry ro-pax	1,134,633,420 ↑ 43%	152,480,381 ↓ -4%	18,707,393 ↑ 324%	N/A	1,305,821,194 ↑ 37%
Fishing	16,035,474 ↓ -27%	3,207,095 ↑ 8%	2,944,958 ↓ -67%	N/A	22,187,527 ↓ -35%
General cargo	19,978,157 ↑ 0%	3,995,631 ↑ 0%	1,708,912 ↓ -1%	3,859,700,369 28%	3,885,383,069 ↑ 28%
Liquefied gas tanker	2,295,212 ↑ 118%	459,042 ↑ 118%	314,871 ↑ 99%	1,165,687,100 ↑ 1448%	1,168,756,225 ↑ 1424%
Oil tanker	10,646,501 ↓ -1%	2,129,300 ↓ -1%	2,538,953 ↓ -1%	3,570,891,370 ↑ 129%	3,586,206,124 ↑ 128%
Other liquid tankers	4,879,707 -17%	975,941 -17%	781,834 -22%	1,148,728,948 ↑ 249%	1,155,366,430 ↑ 243%
Refrigerated	1,016,749 ↓ -11%	203,350 ↓ -11%	85,685 ↓ -12%	N/A	1,305,784 ↓ -11%
Ro-ro	18,135,273 ↓ -17%	3,627,055 ↓ -17%	1,871,27 ↓ -18%	10,153,064,146 ↑ 16%	10,176,698,001 ↑ 16%
Tug/towing	18,311,564 ↓ -20%	3,662,313 ↓ -20%	4,669,799 ↓ -24%	N/A	26,643,676 ↓ -21%
Yacht	1,551,889 ↑ 2%	208,554 ↑ 2%	456,381 ↑ 47%	N/A	2,216,824 ↑ 9%
Total	3,997,753,308 ↑ 12%	553,478,662 ↑ 1%	84,588,490 ↑ 9%	198,715,363,963 ↑ 39%	203,351,184,423 ↑ 33%

(Relative Per cent Change: ↑ = increase, ↓ = decrease)

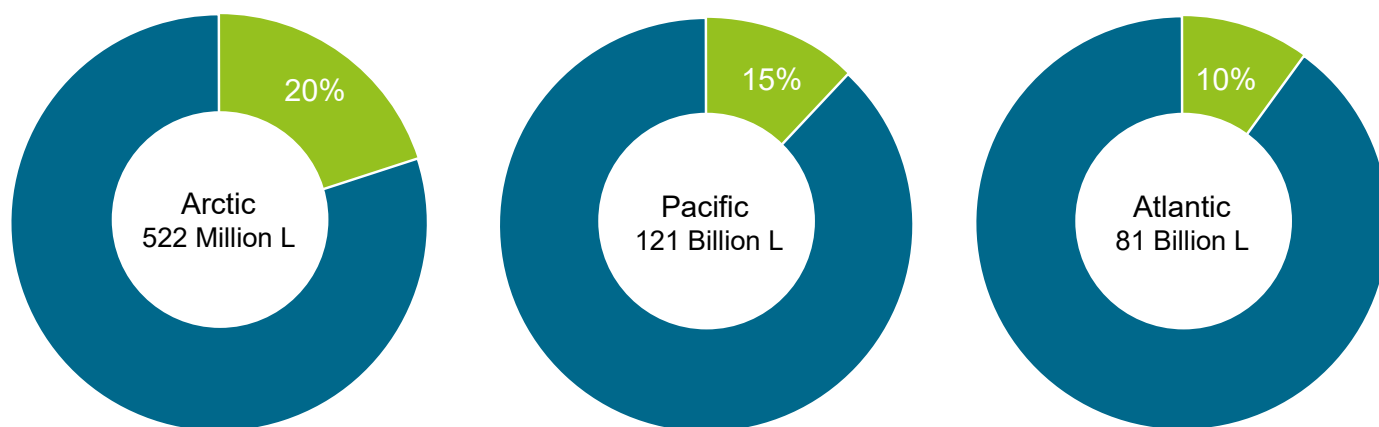
OPERATIONAL WASTE PRODUCTION IN MPAs IN 2022

In 2022, ships produced an estimated 27 billion litres of operational waste in Canada's MPAs. This represents 13 per cent of all waste produced in Canadian waters that year.

The waste produced in MPAs included:

- Greywater: 270 million litres (~108 Olympic-sized swimming pools)
- Sewage: 38 million litres (~15 Olympic-sized pools)
- Oily bilge water: 7 million litres (~3 Olympic-sized pools)
- Scrubber washwater: 26.6 billion litres (~10,662 Olympic-sized pools)

The Arctic had the highest proportion of ship waste occurring within MPAs, with 20 per cent of all waste produced in Arctic waters occurring in MPAs—compared to 15 per cent for the Pacific Coast and 11 per cent for the Atlantic (Figure 7).



Legend

- Waste generated in MPAs
- Waste generated outside of MPAs

FIGURE 7. Volume (L) of ship operational waste produced in each coast in 2022, and the proportion produced in marine protected areas.

As illustrated in Table 2 above, scrubber washwater accounted for nearly 99 per cent of the total volume of waste produced in MPAs.

Cruise ships were the primary producers of waste in MPAs, responsible for:

- 41 per cent of all operational waste,
- 76 per cent of greywater,
- 73 per cent of sewage,
- 25 per cent of bilge water, and
- 40 per cent of scrubber washwater.

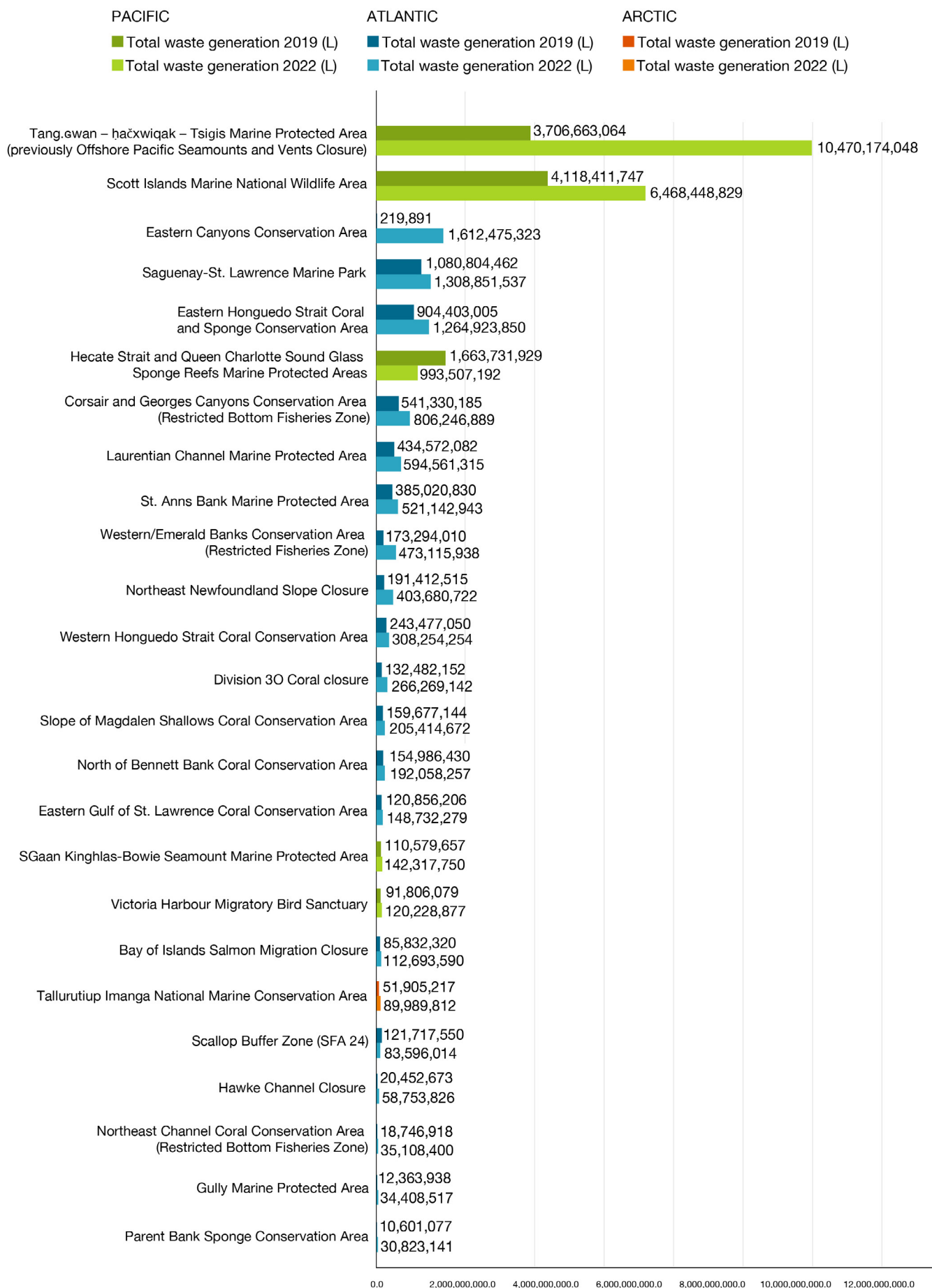


FIGURE 8. Top 25 MPAs ranked by volume of waste generated within their boundaries in 2022, with 2019 figures for comparison.

Figure 8 highlights the 25 MPAs where the greatest volumes of waste are estimated to have been produced. A full breakdown of waste by type and MPA is provided in Appendix II.

Operational Waste Production in MPAs: 2019 Comparison

Between 2019 and 2022, the total amount of waste produced in MPAs increased by 83 per cent, from 14.7 million litres in 2019 to 27 million litres in 2022. The proportion of waste produced in MPAs also increased, from 10 per cent of total waste in 2019 to 13.3 per cent in 2022 (Figure 9).

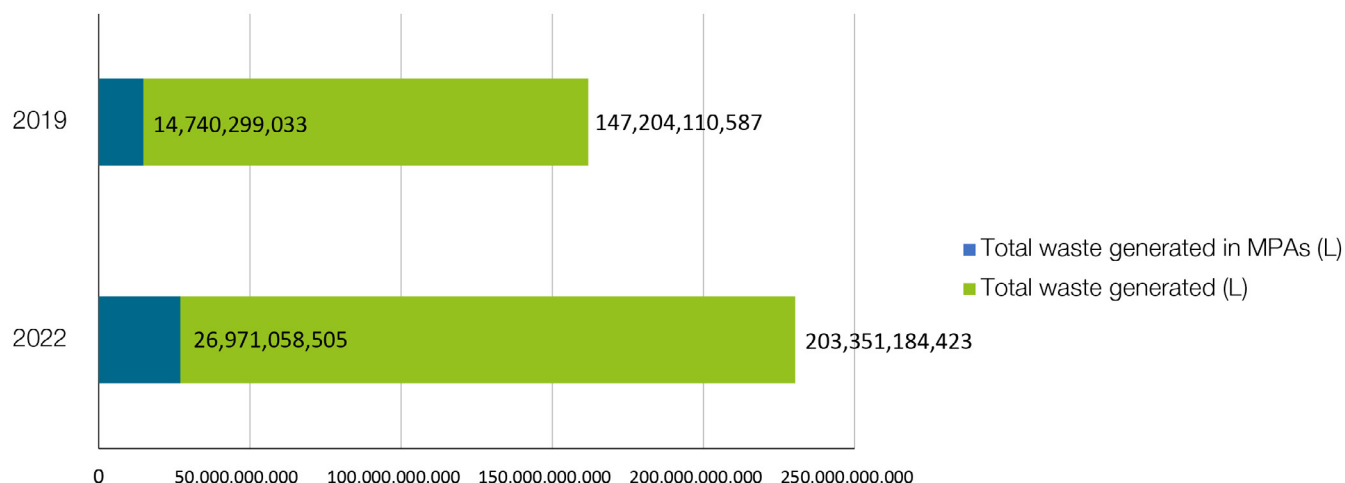
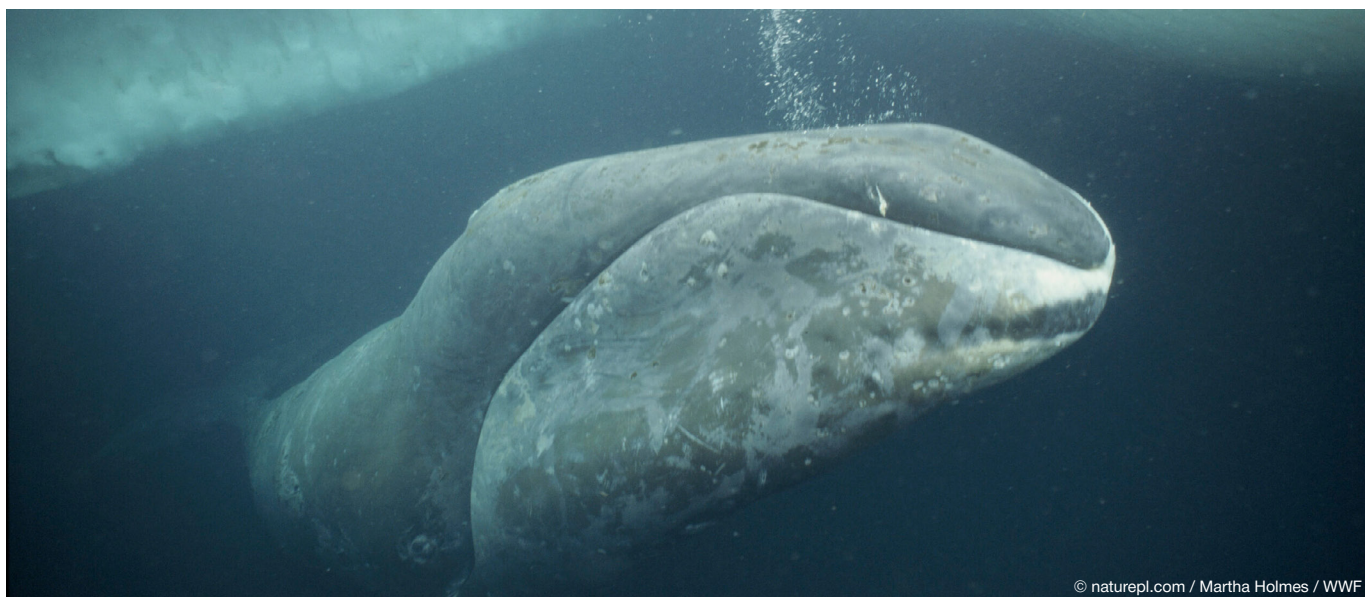


FIGURE 9. The volume (L) of waste produced in Canada and the volume (L) produced in MPAs in both 2019 and 2022.

Notable increases in MPA waste production occurred on each coast. Figure 10(a-c) illustrates the change over this period. The changes in volume are as follows:

- Pacific MPAs: 87 per cent increase (+8.5 billion litres)
- Atlantic MPAs: 75 per cent increase (+3.7 billion litres)
- Arctic MPAs: 40 per cent increase (+30.1 million litres)



© naturepl.com / Martha Holmes / WWF

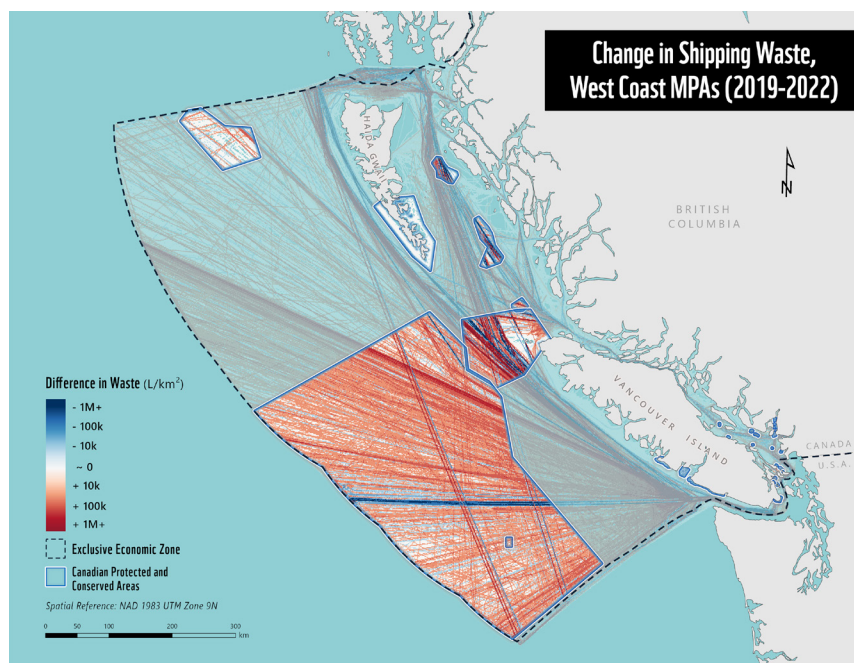


FIGURE 10A. The distribution and difference in waste production from 2019 to 2022 within MPAs on the Pacific coast.

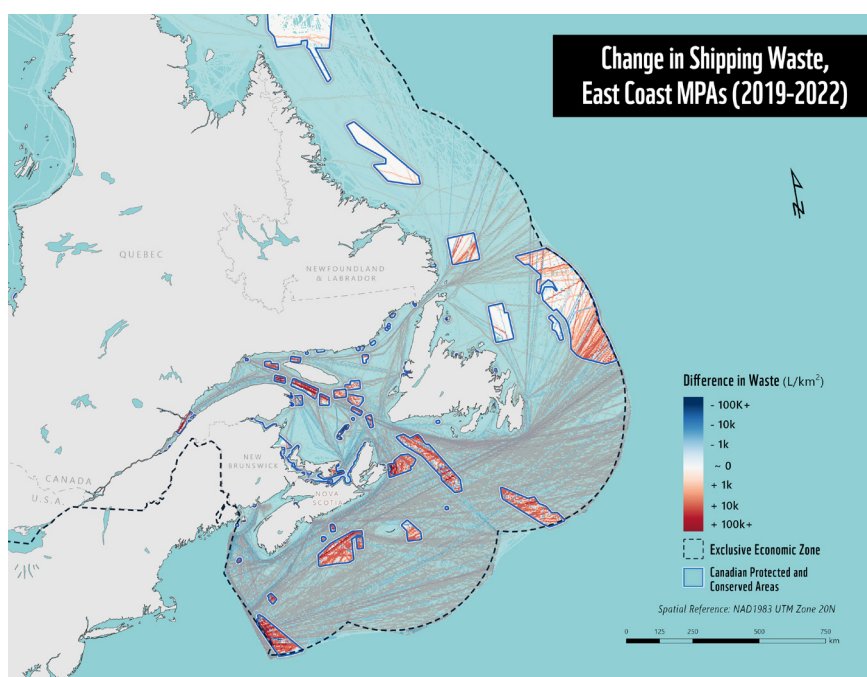


FIGURE 10B. The distribution and difference in waste production from 2019 to 2022 within MPAs on the Atlantic coast.

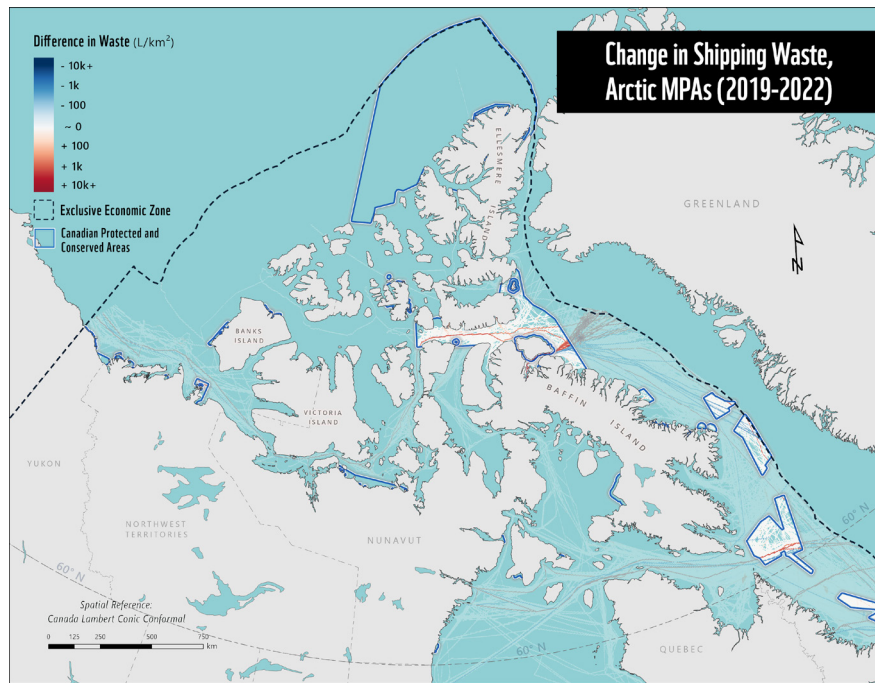
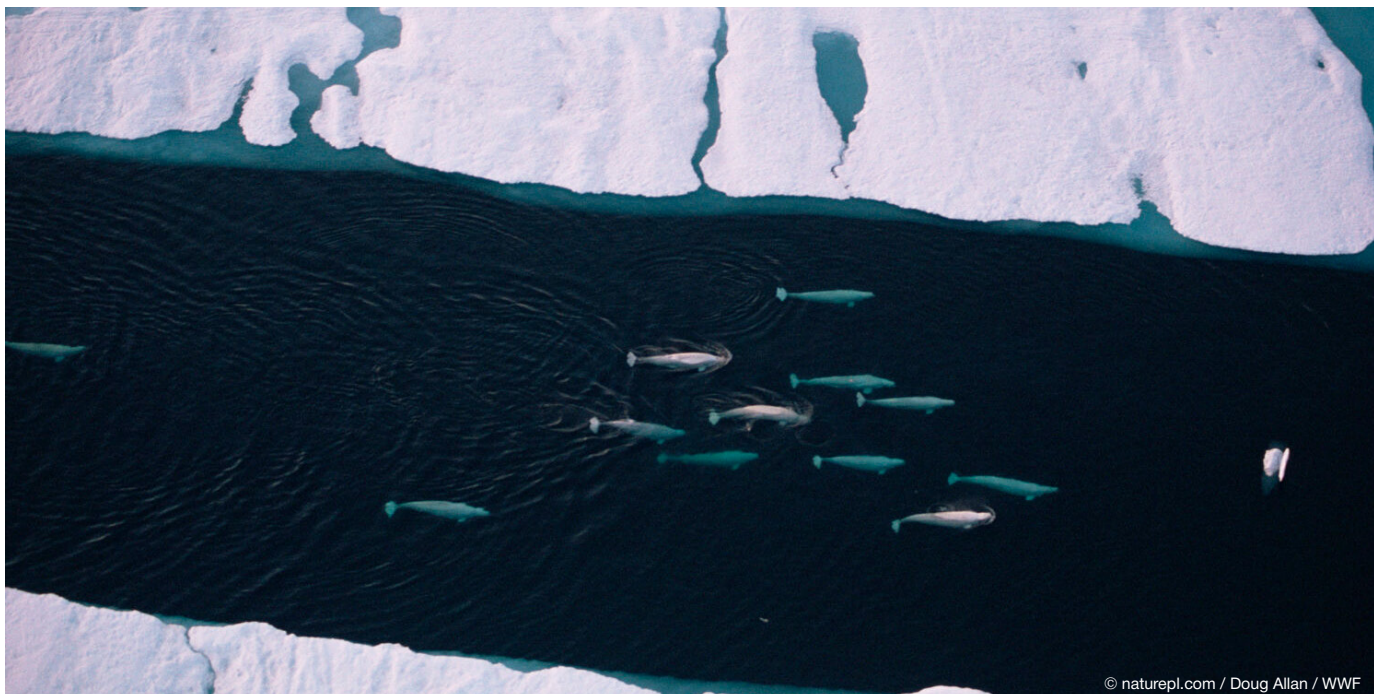


FIGURE 10C. The distribution and difference in waste production from 2019 to 2022 within MPAs on the Arctic coast.

Cruise ships continued to be the leading source of operational waste in MPAs in 2022, discharging 2 billion more litres in 2022 than in 2019 (+23 per cent). Volumes increased across all four waste types during this period:

- Greywater: 12 per cent increase (+22 million litres)
- Sewage: 12 per cent increase (+3 million litres)
- Oily bilge water: 0.3 per cent increase (+5,472 litres)
- Scrubber washwater: 24 per cent increase (+2 billion litres)



SURGING MPA POLLUTION ATTRIBUTABLE TO MORE SHIPS, MORE ACTIVITY, AND MORE SCRUBBERS

The 2022 results reveal that Canada's MPAs are experiencing a growing share of the country's ship-source pollution burden. Waste production in MPAs increased by 83 per cent compared to 2019, rising from 14.7 to 27 billion litres. As a proportion of national ship-generated waste, MPA discharges grew from 10 to over 13 per cent. Scrubber washwater and bleed-off alone made up nearly 99 per cent of this volume. Cruise ships produced more sewage, greywater, scrubber waste, and oily bilge water in MPAs than any other ship type—due in part to cruises seeking out MPAs for tourism purposes. This increase in waste production within areas intended for the long-term conservation of nature raises difficult questions about the adequacy of current safeguards and the effectiveness of Canada's MPA network in achieving its conservation objectives.

These MPA-specific trends occurred alongside broader trends of increased vessel traffic, activity, and pollution. In 2022, more ships operated in Canadian waters, travelled further, and collectively generated 38 per cent more operational waste than in 2019. Total distance sailed by ships in Canada rose by approximately 2 million kilometres, and time spent at sea—measured in people hours—increased by over 86 million hours. Cruise ships, while comprising less than 2 per cent of the fleet, were responsible for producing over half of all operational waste, including the majority of sewage, greywater, and scrubber waste.

The rising prevalence of ships fitted with scrubbers, particularly among cargo and tanker vessels, is troubling. Between 2019 and 2022, the number of scrubber-equipped vessels in Canadian waters rose by 65 per cent, driven by a surge in installations on cargo ships and tankers. LNG tankers saw the most dramatic uptake, with an elevenfold increase, while cruise ship adoption remained largely stable due to early adoption. This surge of scrubber fittings contributed to a 39 per cent increase in scrubber discharges between the study years.

The Arctic is disproportionately impacted. Although it sees a fraction of the vessel traffic compared to the Pacific and Atlantic, the Arctic had the highest proportion of its waste produced within MPAs—20 per cent. This is partially attributable to the high volume of ships transiting Tallurutiup Imanga National Marine Conservation Area including those servicing the Mary River Iron Mine via Milne Port. The large size of Tallurutiup Imanga, which spans Lancaster Sound and encompasses the eastern gateway to the Northwest Passage—a destination for Arctic cruises—is also a contributing factor.

Taken together, these results paint a picture of increasing maritime pressures on Canada's MPAs and broader ocean territory and reinforce the urgency of advancing stronger protections.

POLICY SOLUTIONS

LEVERAGING THE MPA PROTECTION STANDARD

Canada has both the tools and the responsibility to reduce marine pollution in MPAs and across its broader ocean territory. A key mechanism for doing so is the MPA Protection Standard, which provides a policy basis to apply stricter discharge controls within MPAs, particularly within internal waters and the territorial sea. While not legislation itself, the standard is implemented through regulatory instruments under existing laws, and is binding where its provisions are embedded in MPA management plans.

As a next step, Canada should move to implementation by defining and introducing “enhanced discharge restrictions” within federal MPAs. To fulfill the standard's purpose—ensuring consistent and effective

protection across Canada's federal MPAs—discharge restrictions should establish a uniform baseline of protection, ideally through a total prohibition on operational discharges in all MPAs. From this position, carefully defined exceptions could be applied in special circumstances to balance environmental protection with essential services—similar to the approach taken with the Arctic heavy fuel oil (HFO) ban, which includes exemptions for ships engaged in community resupply. Once these protections are in place, priority should be on establishing effective monitoring and enforcement responsibilities to ensure compliance.

INCORPORATING MPAS INTO ELECTRONIC NAVIGATIONAL CHARTS

To support industry compliance with new discharge restrictions and other conservation measures in MPAs, Canada should equip mariners with accurate, up-to-date information on MPA boundaries and associated requirements. Historically, MPAs have been absent from navigational charts used by mariners, leaving vessels unaware of their proximity to ecologically sensitive zones. This gap can be addressed through adoption of the International Hydrographic Organization's S-122 standard, which provides a structured format for encoding MPA boundaries and regulatory attributes within electronic navigational charts (ENCs). The Canadian Hydrographic Service (CHS), as the authoritative body for marine charting, is well positioned to develop and distribute S-122-compliant products. Doing so would not only promote regulatory compliance and reduce accidental harm to sensitive ecosystems, but also demonstrate Canada's leadership in modern, environmentally conscious navigation.

INTRODUCE A NATIONAL POSITION ON SCRUBBERS

In parallel to implementing enhanced discharge restrictions in MPAs, Canada should confront the issue of scrubbers. Though there are relatively few of them, ships with scrubbers are responsible for 98 per cent of discharges in Canadian waters, and 99 per cent of the waste discharges into Canadian MPAs.

While scrubbers offer economic benefits to industry, they do so at the expense of the environment, species, and human wellbeing, transferring pollution from air to water and exposing ecosystems and coastal communities to harmful contaminants. Aside from producing large volumes of liquid waste, ships with scrubbers emit 104 per cent more black carbon, or soot, than ships without, according to federal research.¹³ This harmful particulate matter is linked to premature deaths, cardiopulmonary disease, lung cancer and chronic respiratory ailments. It also accelerates snow and sea-ice melt, compounding the impacts of climate change.

There are several actions Canada can take to address scrubbers. First, Canada could restrict the use of scrubbers within its internal waters and territorial sea. This should be a total prohibition of discharges from both open- and closed-loop scrubbers. Canada claims expansive internal waters, and introducing such a restriction would have far-reaching impacts.

Canada would not be alone in taking federal action against scrubbers: to date, at least 47 nations have introduced bans or restrictions on scrubber discharges in some or all their waters, including China, the United States, France, Saudi Arabia, and Finland. Articulating a clear national position on scrubbers would also provide clarity and support for Canada's federal port authorities—nearly a third of which have already introduced scrubber restrictions of their own.

¹³ Canada. (2024). Air quality and health impacts of using EGCS (scrubbers) in Canadian waters. <https://cleanarctic.org/wp-content/uploads/2024/12/PPR-12-INF.15-Air-quality-and-health-impacts-of-using-EGCS-scrubbers-in-Canadian-waters-Canada.pdf>

Canada should stop approving scrubbers for use on Canadian ships. The use of scrubbers is predicated on the International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI Regulation 4, which enables flag states to approve alternatives to low-sulfur fuels. However, Regulation 4 is broadly worded and it neither recommends nor enshrines any specific alternative method. Regulation 4 also stipulates that alternative methods must be at least as effective as compliant fuels and must not impair the environment, human health, property or resources. Scrubbers clearly fail to meet these criteria.

International treaties are built on mutual commitments to protect shared resources and maintain global order. While it is Canada's prerogative to interpret its treaty obligations, allowing practices that defeat the object and purpose of treaties—such as permitting scrubbers on Canadian ships—erodes trust in international agreements and undermines social order.

AUGMENTING CANADA'S AUTHORITY WITH INTERNATIONAL TOOLS

Seventy-nine per cent of Canada's MPA area lies within the EEZ, where Canada's jurisdiction over foreign vessels is more limited. To ensure consistent and effective protection across all maritime zones, domestic implementation must be complemented by strategic use of international legal tools available through the IMO.

Several viable pathways exist for Canada to strengthen discharge protections in EEZ-based MPAs through the IMO:

- **Seek IMO approval to enforce national discharge requirements in EEZ MPAs:** Canada could enact special national laws for specific EEZ areas—aligned with MPA management objectives—and seek IMO authorization to apply these laws to foreign vessels. This would enable enforceable, site-specific restrictions consistent with the MPA Protection Standard.
- **Propose IMO designation of Canadian MPAs as PSSAs or Special Areas:** Designation of select EEZ MPAs as Particularly Sensitive Sea Areas (PSSAs) or Special Areas under MARPOL would establish a legal basis for imposing stricter discharge controls. This process involves submitting evidence to the IMO of the area's ecological or socio-economic importance, the risks posed by shipping, and proposed associated protective measures.

Similarly, addressing the broader issue of scrubbers within the EEZ can be achieved through coordinated IMO action:

- **Propose an IMO resolution discouraging scrubber discharges in protected areas:** Canada could introduce a resolution urging States and ship operators to avoid discharging scrubber washwater in national and international protected areas, including ecologically significant regions such as the Arctic. While non-binding, such resolutions often lay the groundwork for future regulatory action and signal international leadership.
- **Propose amendments to MARPOL Annex VI to prohibit scrubber use:** Recognizing that scrubber discharges are a major source of marine pollution (see *Spotlight on Scrubbers*), Canada could propose amendments to Annex VI of MARPOL to eliminate the use of scrubbers as an alternative means of sulphur compliance. This would help phase out a known pollution source, reduce transboundary impacts, and support the IMO's broader goals of marine pollution reduction and fuel transition.

KEY RECOMMENDATIONS

In 2023, Canada adopted WWF-Canada's recommendation to recognize operational discharges as a form of "dumping" under the MPA Protection Standard. We commend this important policy advancement and now encourage Canada to fulfill the intent of this commitment by implementing the remaining recommendations:

1. Implement and operationalize the MPA Protection Standard to provide uniform and comprehensive discharge restrictions in all MPAs and prioritize monitoring and enforcement responsibilities.
2. Support the maritime industry in integrating MPAs into electronic navigational charts to enhance awareness and compliance.
3. Prohibit scrubber discharges in Canada's jurisdictional waters and stop approving scrubbers for use on Canadian ships.
4. Supplement the MPA Protection Standard with international tools to extend enforceable protections to MPAs in the EEZ



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CONCLUSION

Since the release of WWF-Canada's groundbreaking National Vessel Dumping Assessment in 2022, vessel traffic and operational discharges have increased across Canada's waters, including within MPAs. With continued industrial development, global trade, and expanding access to Arctic routes, this trend is expected to persist. The pressures of ship-source pollution pose ongoing risks to Canada's marine ecosystems, particularly in areas designated for conservation.

WWF-Canada urges the federal government to act on the recommendations in this report to strengthen protections for ocean health and for the communities and species that depend on it.



APPENDIX I: SHIP TYPES AND COUNTRY FLAGS

TABLE I. A list of countries and number of corresponding flagged ships that sailed in Canadian waters in 2022
(*Note: Eight ships were missing flag data and are not represented in this list).

Country	Number of Ships	Country	Number of Ships
Alaska	32	Libya	0
Algeria	0	Luxembourg	7
Antigua and Barbuda	78	Madeira	143
Australia	0	Malaysia	2
Azores	45	Malta	296
Bahamas	225	Marshall Islands	919
Bangladesh	4	Mauritius	0
Barbados	16	Montenegro	2
Belgium	13	Netherlands	133
Belize	0	Netherlands Antilles	1
Bermuda	32	Northern Mariana	1
Brazil	1	Norway	113
Cameroon	1	Panama	860
Canada	398	Philippines	16
Cayman Islands	49	Portugal	8
China	44	Qatar	1
Cook Islands	2	Russian Federation	7
Croatia	3	Saint Kitts and Nevis	1
Cyprus	117	Saint Pierre and Miquelon	1
Denmark	88	Saint Vincent and the Grenadines	11
Estonia	1	Saudi Arabia	10
Faroe Islands	5	Seychelles	1
Finland	1	Singapore	347
France	13	South Korea	36
Germany	17	Spain	9
Gibraltar	4	Sri Lanka	0
Greece	86	Sweden	10
Greenland	11	Switzerland	6
Hong Kong	376	Taiwan	6
Iceland	0	Tanzania	0
India	8	Thailand	9
Ireland	1	Turkey	8
Israel	6	Tuvalu	1
Italy	26	UK	79
Jamaica	4	USA	364
Japan	78	Vanuatu	5
Jordan	0	Vietnam	1
Liberia	845	Wallis and Futuna Islands	5
		Total	6,049

APPENDIX II: SUMMARY OF CANADIAN MARINE PROTECTED AREAS

TABLE I. All Canadian marine protected areas, percentage within maritime zones, and ship waste produced therein in 2022, by waste stream.

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Ahiak Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	6,553.3	0	0	100	-	-	-	-
Akimiski Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Hudson Bay	1,472.3	0	0	100	-	-	-	-
Akpait National Wildlife Area	National Wildlife Area	Arctic	743.1	91.7	0	8.3	7,363	989	211	-
Anderson River Delta Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	160.8	0	0	100	-	-	-	-
Anguniaqvia Niqiqyuam Marine Protected Area	Marine Protected Area	Arctic	2,358.4	0	0	100	7,734	1,522	1,268	1,379,576
Aulavik National Park Of Canada	National Park	Arctic	97.0	0	0	100	-	-	-	-
Auyuittuq National Park Of Canada	National Park	Arctic	846.0	0	0	100	-	-	-	-
Baie de Brador Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	4.7	0	0	100	-	-	-	-
Baie des Loups Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	34.5	0	0	100	-	-	-	-
Banc-des-Américains Marine Protected Area	Marine Protected Area	Atlantic	1,000.1	0	0	100	626,791	89,558	14,483	25,831,288
Banks Island Migratory Bird Sanctuary No. 1	Migratory Bird Sanctuary	Arctic	826.4	0.2	0	99.8	-	-	-	-
Banks Island Migratory Bird Sanctuary No. 2	Migratory Bird Sanctuary	Arctic	33.3	0	0	100	-	-	-	-
Basin Head Marine Protected Area	Marine Protected Area	Atlantic	9.2	0	0	100	30,963	4,164	461	-

Name	Type	Region	Area in 2022 (km²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Bay of Islands Salmon Migration Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	217.5	0	0	100	5,203,744	723,211	113,413	106,653,223
Beaugé Bank Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	214.6	0	0	100	52,253	8,812	3,829	5,106,281
Betchouane Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	4.6	0	0	100	-	-	-	-
Big Glace Bay Lake Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	2.6	0	0	100	-	-	-	-
Boatswain Bay Migratory Bird Sanctuary	Migratory Bird Sanctuary	Hudson Bay	69.0	0	0	100	-	-	-	-
Bonaventure Island and Percé Rock Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	9.1	0	0	100	9,871	1,329	139	61
Boot Island National Wildlife Area	National Wildlife Area	Atlantic	0.9	2.5	0	97.5	-	-	-	-
Bylot Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	1,765.2	39	0	61	81,161	11,135	2,090	372,702
Cape Jourimain National Wildlife Area	National Wildlife Area	Atlantic	3.3	0	0	100	-	-	-	-
Cape Parry Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	1.3	0	0	100	383	77	85	-
Cap-Saint-Ignace Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	1.3	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Central Gulf of St. Lawrence Coral Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	1,284.2	0	0	100	45,815	8,946	5,976	24,080,122
Corsair and Georges Canyons Conservation Area (Restricted Bottom Fisheries Zone)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	8,797.3	0	99.7	0	4,266,645	622,408	191,501	801,166,336
Davis Strait Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Arctic	17,297.7	0	99.9	0	77,189	11,816	4,315	3,247,810
Dewey Soper Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	1,592.1	0	0	100	-	-	-	-
Disko Fan Conservation Area (portion closed to all bottom-contact fishing)	Other Effective Area-Based Conservation Measure (OECM)	Arctic	7,485.3	0	100	0	40,668	6,911	3,348	834,113
Division 30 Coral closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	10,421.6	0	99.9	0	714,165	106,057	30,871	265,418,049
East of Anticosti Island Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	939.4	0	0	100	105,398	15,332	3,592	17,020,715
Eastern Canyons Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	43,976.3	0	100	0	3,625,225	568,328	267,475	1,608,014,295

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Eastern Gulf of St. Lawrence Coral Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	422.5	0	0	100	977,461	153,208	53,569	147,548,041
Eastern Houguedo Strait Coral and Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	2,338.0	0	0	100	8,551,076	1,302,159	397,489	1,254,673,126
Eastport – Duck Island Marine Protected Area	Marine Protected Area	Atlantic	2.1	0	0	100	-	-	-	-
Emerald Basin Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	197.1	0	100	0	86,425	13,037	6,723	21,942,608
Endeavour Hydrothermal Vents Marine Protected Area	Marine Protected Area	Pacific	97.1	0	100	0	2,825	565	565	3,090,883
Esquimalt Lagoon Migratory Bird Sanctuary	Migratory Bird Sanctuary	Pacific	0.9	0	0	100	2	-	-	-
Forillon National Park Of Canada	National Park	Atlantic	3.9	0	0	100	-	-	-	-
Funk Island Deep Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	7,274.2	13.2	86.8	0	211,109	31,085	9,947	5,314,293
George C. Reifel Migratory Bird Sanctuary	Migratory Bird Sanctuary	Pacific	2.5	0	0	100	-	-	-	-
Gilbert Bay Marine Protected Area	Marine Protected Area	Atlantic	62.4	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Grand Manan Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	0.9	68.8	0	31.2	-	-	-	-
Gros-Mécatina Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	21.4	0	0	100	74	11	3	-
Gulf Islands National Park Reserve Of Canada	National Park	Pacific	6.0	0	0	100	641,104	86,207	10,828	-
Gully Marine Protected Area	Marine Protected Area	Atlantic	2,363.2	0	100	0	83,035	14,433	8,260	34,302,790
Gwaii Haanas National Marine Conservation Area Reserve & Haida Heritage Site	National Marine Conservation Area	Pacific	3,500.0	33.7	0	66.3	48,818	9,547	9,348	246,257
Hannah Bay Migratory Bird Sanctuary	Migratory Bird Sanctuary	Hudson Bay	60.7	0	0	100	-	-	-	-
Hatton Basin Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Arctic	42,459.2	0	100	0	241,918	37,046	15,695	8,166,252
Hawke Channel Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	8,836.6	0	100	0	1,005,240	139,367	17,825	57,591,394
Hecate Strait and Queen Charlotte Sound Glass Sponge Reefs Marine Protected Areas	Marine Protected Area	Pacific	2,409.9	0	0	100	15,733,237	2,118,636	164,229	975,491,089
Hopedale Saddle Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	15,410.9	0	100	0	164,643	27,211	15,183	4,442,523

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Ikattuaq Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	190.9	0	0	100	-	-	-	-
Île à la Brume Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	35.6	0	0	100	346	47	9	-
Île aux Basques Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	7.7	0	0	100	-	-	-	-
Île aux Canes Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	1.5	0	0	100	-	-	-	-
Île du Corossol Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	2.8	0	0	100	-	-	-	-
Ivvavik National Park Of Canada	National Park	Arctic	79.0	5.9	0	94.1	-	-	-	-
Jacques-Cartier Strait Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	345.5	0	0	100	270,399	42,074	13,464	23,594,316
John Lusby Marsh National Wildlife Area	National Wildlife Area	Atlantic	5.4	0.9	0	99.1	-	-	-	-
Jordan Basin Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	48.8	0	100	0	101,888	13,969	1,384	7,661,688
Kejimikujik National Park And National Historic Site Of Canada	National Park	Atlantic	1.3	72.6	0	27.4	-	-	-	-
Kendall Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	133.5	0	0	100	-	-	-	-
Kouchibouguac National Park Of Canada	National Park	Atlantic	42.2	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Laurentian Channel Marine Protected Area	Marine Protected Area	Atlantic	11,579.5	0	100	0	2,855,500	434,470	156,112	591,115,233
Les Demoiselles nursery (Plaisance Bay), Magdalen Islands Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.3	0	0	100	-	-	-	-
L'Islet Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	0.6	0	0	100	-	-	-	-
L'Isle-Verte Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	2.9	0	0	100	-	-	-	-
Lobster Area Closure (Gander Bay)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	76.4	0	0	100	-	-	-	-
Lobster Area Closure (Glovers Harbour)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.9	0	0	100	-	-	-	-
Lobster Area Closure (Gooseberry Island)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.0	0	0	100	-	-	-	-
Lobster Area Closure (Mouse Island)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.4	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Lobster Area Closure (Penguin Islands)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	15.5	66.7	0	33.3	44	9	7	-
Lobster Area Closure (Shoal Point)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.6	0	0	100	-	-	-	-
Lobster Area Closure (Trout River)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	0.6	0	0	100	-	-	-	-
Machias Seal Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	10.4	26	0	74	10,099	1,362	111	-
Magdalen Islands Lagoons Closures (6 Overlapping Closures)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	135.6	0	0	100	76,174	15,235	10,136	6,235,746
McConnell River Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	132.1	0	0	100	-	-	-	-
Miramichi Bay Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	1,468.4	0	0	100	72,364	10,240	1,637	2,821,687
Montmagny Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	1.2	0	0	100	-	-	-	-
Moose River Migratory Bird Sanctuary	Migratory Bird Sanctuary	Hudson Bay	5.4	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Musquash Estuary Marine Protected Area	Marine Protected Area	Atlantic	7.4	97.7	0	2.3	-	-	-	-
Nanuit Itillinga National Wildlife Area	National Wildlife Area	Arctic	214.8	0	0	100	-	-	-	-
Ninginganiq National Wildlife Area	National Wildlife Area	Arctic	2,834.3	34.6	0	65.4	114,200	15,358	1,414	-
Nirjutiqarvik National Wildlife Area	National Wildlife Area	Arctic	1,442.4	24.4	0	75.6	44	9	4	-
North of Bennett Bank Coral Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	821.1	0	0	100	1,309,743	201,853	64,644	190,482,017
Northeast Channel Coral Conservation Area (Restricted Bottom Fisheries Zone)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	390.9	0	100	0	264,526	37,031	5,752	34,801,091
Northeast Newfoundland Slope Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	55,353.0	0	100	0	2,045,685	300,848	69,059	401,265,130
Tang.əwan – ɥačxwiqak – Tsigis Marine Protected Area (previously Offshore Pacific Seamounts and Vents Closure)	Marine Protected Area	Pacific	133,017.0	0	99.6	0	36,706,073	5,687,562	2,505,761	10,425,274,652
Pacific Rim National Park Reserve Of Canada	National Park	Pacific	225.0	2.2	0	97.8	3,667	649	1,530	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Parent Bank Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	529.6	0	0	100	430,802	63,749	18,201	30,310,389
Pingo Canadian Landmark	Canadian Landmark	Arctic	5.2	0	0	100	-	-	-	-
Port Hebert Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	3.5	93.4	0	6.6	-	-	-	-
Port Joli Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	3.2	91	0	9	-	-	-	-
Prince Leopold Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	240.2	0	0	100	153,187	20,586	2,118	-
Qaqsauqtuuq Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	286.6	0	0	100	-	-	-	-
Qaulluit National Wildlife Area	National Wildlife Area	Arctic	396.2	88.7	0	11.3	5,479	736	103	-
Qausuittuq National Park Of Canada	National Park	Arctic	1,177.0	0	0	100	-	-	-	-
Quttinirpaaq National Park Of Canada	National Park	Arctic	2,391.0	16	0	84	-	-	-	-
Rochers aux Oiseaux Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	6.5	0	0	100	-	-	-	-
Sable River Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	2.7	91.9	0	8.1	-	-	-	-
Saguenay Fjord Upstream Closure	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	108.5	0	0	100	-	-	-	-
Saguenay-St. Lawrence Marine Park	Marine Park	Atlantic	1,246.0	0	0	100	43,026,422	5,993,186	894,639	1,258,937,291

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Saint-Augustin Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	49.2	0	0	100	8,731	1,178	235	-
Sainte-Marie Islands Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	36.5	0	0	100	1,177	202	114	-
Saint-Omer Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	0.5	0	0	100	-	-	-	-
Saint-Vallier Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	3.6	0	0	100	-	-	-	-
Sambro Bank Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	62.5	0	100	0	19,616	2,960	1,161	3,251,934
Sand Pond National Wildlife Area	National Wildlife Area	Atlantic	0.4	0	0	100				-
Scallop Buffer Zone (SFA 21)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	477.1	0	0	100	288,168	57,634	44,749	3,051,907
Scallop Buffer Zone (SFA 22)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	2,852.8	0	0	100	78,698	13,182	5,701	238,352
Scallop Buffer Zone (SFA 24)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	2,095.0	0	0	100	16,718,712	2,250,466	254,920	64,371,917
Scott Islands Marine National Wildlife Area	Marine National Wildlife Area	Pacific	11,570.7	22.2	48	29.8	91,928,797	12,402,112	875,767	6,363,242,152

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Seymour Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Arctic	51.3	0	0	100	-	-	-	-
SGaan Kinghlas-Bowie Seamount Marine Protected Area	Marine Protected Area	Pacific	6,102.6	0	100	0	155,170	31,034	28,294	142,103,251
Shepherd Island Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	0.2	0	0	100	-	-	-	-
Shoal Harbour Migratory Bird Sanctuary	Migratory Bird Sanctuary	Pacific	1.5	0	0	100	-	-	-	-
Sirmilik National Park Of Canada	National Park	Arctic	233.0	0	0	100	-	-	-	-
Slope of Magdalen Shallows Coral Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	334.8	0	0	100	1,152,166	184,553	72,120	204,005,832
South-East of Anticosti Island Sponge Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	845.3	0	0	100	57,796	9,565	4,075	15,340,137
St. Anns Bank Marine Protected Area	Marine Protected Area	Atlantic	4,363.8	16.4	83.6	0	5,033,804	717,507	125,185	515,266,447
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Anvil Island)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.5	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Bowyer Island)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.6	0	0	100	1,849,761	248,586	15,117	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Brunswick Point)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.3	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Defence Islands)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.7	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Dorman Point)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.2	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (East Defence Islands)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.3	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (East Hornby Island)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	3.2	0	0	100	146,214	19,728	2,005	5,080,183
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Foreslope Hill)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.8	0	0	100	65,113	9,123	1,443	7,420,787

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Gabriola Island)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.6	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Halibut Bank)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	5.4	0	0	100	177,667	23,931	1,835	7,256,543
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Halkett Point)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.3	0	0	100	-	-	-	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Lions Bay and Kelvin Grove)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	1.1	0	0	100	14	3	2	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Lost Reef)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	0.3	0	0	100	7	1	1	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Outer Gulf Islands)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	4.2	0	0	100	14	2	3	-
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Parksville)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	2.1	0	0	100	66	13	10	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Queen Charlotte Channel)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	4.5	0	0	100	475,141	64,502	5,436	11,172,268
Strait of Georgia and Howe Sound Glass Sponge Reef Closure (Sechelt)	Other Effective Area-Based Conservation Measure (OECM)	Pacific	7.6	0	0	100	86,623	11,848	1,335	3,351,484
Tallurutiup Imanga National Marine Conservation Area	National Marine Conservation Area	Arctic	107,926.0	13.7	26.2	60	7,698,196	1,082,848	279,792	80,928,976
Tarium Niryutait Marine Protected Area	Marine Protected Area	Arctic	1,749.6	0.9	0	99.1	5,707	1,141	1,341	-
Terra Nova Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	11.8	0	0	100	3,371	548	306	-
Trois-Saumons Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	1.6	0	0	100	-	-	-	-
Tuvaijuittuq Marine Protected Area	Marine Protected Area By Ministerial Order	Arctic	319,411.4	6	87.3	6.8	-	-	-	-
Ukkusiksalik National Park Of Canada	National Park	Arctic	3,077.0	0	0	100	-	-	-	-
Victoria Harbour Migratory Bird Sanctuary	Migratory Bird Sanctuary	Pacific	18.6	0	0	100	9,457,371	1,272,858	78,777	109,419,870
Wallace Bay National Wildlife Area	National Wildlife Area	Atlantic	2.8	0	0	100	-	-	-	-
Wapusk National Park Of Canada	National Park	Hudson Bay	804.0	0	0	100	-	-	-	-

Name	Type	Region	Area in 2022 (km ²)	Area of MPA in territorial sea (%)	Area of MPA in EEZ (%)	Area of MPA in internal waters (%)	Greywater (L)	Sewage (L)	Bilge water (L)	Scrubber washwater (L)
Watshishou Migratory Bird Sanctuary	Migratory Bird Sanctuary	Atlantic	104.6	0	0	100	-	-	-	-
Western Honguedo Strait Coral Conservation Area	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	495.7	0	0	100	2,416,644	366,300	107,736	305,363,574
Western/Emerald Banks Conservation Area (Restricted Fisheries Zone)	Other Effective Area-Based Conservation Measure (OECM)	Atlantic	10,234.2	0	100	0	2,621,353	386,526	115,130	469,992,928
Total			831,182.2				261,246,219	36,519,690	6,077,202	23,522,589,561

APPENDIX III: 2019 AND 2022 COMPARISON

TABLE I. Comparison of summary data for ships that sailed in Canadian waters in 2019 and 2022.

Ship class	Number of Ships 2019	Number of Ships 2022	Canadian Flagged Vessels in 2019	Canadian Flagged Vessels in 2022	Total distance sailed in 2019 (km)	Total distance sailed in 2022 (km)	People Hours in 2019 (hrs)	People Hours in 2022 (hrs)
Bulk carrier	2369	2613	31	48	7,208,299	8,604,005	16,597,160	19,799,896
Chemical tanker	568	570	21	21	2,948,388	2,567,120	4,586,276	3,662,940
Container	670	868	1	1	4,433,661	4,886,367	6,818,495	8,582,692
Cruise	110	109	0	0	1,651,815	1,856,748	309,485,059	375,579,369
Ferry pax only	17	9	8	8	212,994	200,279	10,352,273	11,997,002
Ferry ro-pax	80	83	70	72	3,962,652	4,030,388	170,951,316	184,440,743
Fishing	264	298	64	76	2,563,584	2,870,056	2,927,438	3,429,208
General cargo	320	323	19	18	2,010,719	2,167,724	3,529,834	3,767,994
Liquefied gas tanker	65	99	0	0	125,251	267,159	195,012	502,106
Oil tanker	241	280	3	3	1,135,904	1,263,883	1,658,548	1,948,910
Other liquid tankers	176	169	4	4	604,840	582,006	1,048,229	1,042,759
Refrigerated	18	27	2	2	111,449	120,790	226,004	204,225
Ro-ro	322	282	12	9	1,726,476	1,730,040	4,212,535	4,182,827
Tug/towing	286	284	137	134	3,467,737	3,011,555	5,667,631	5,218,295
Yacht	40	43	1	2	106,074	138,483	269,127	560,278
Total	5546	6057	373	398	32,269,844	34,296,604	538,524,936	624,919,245

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