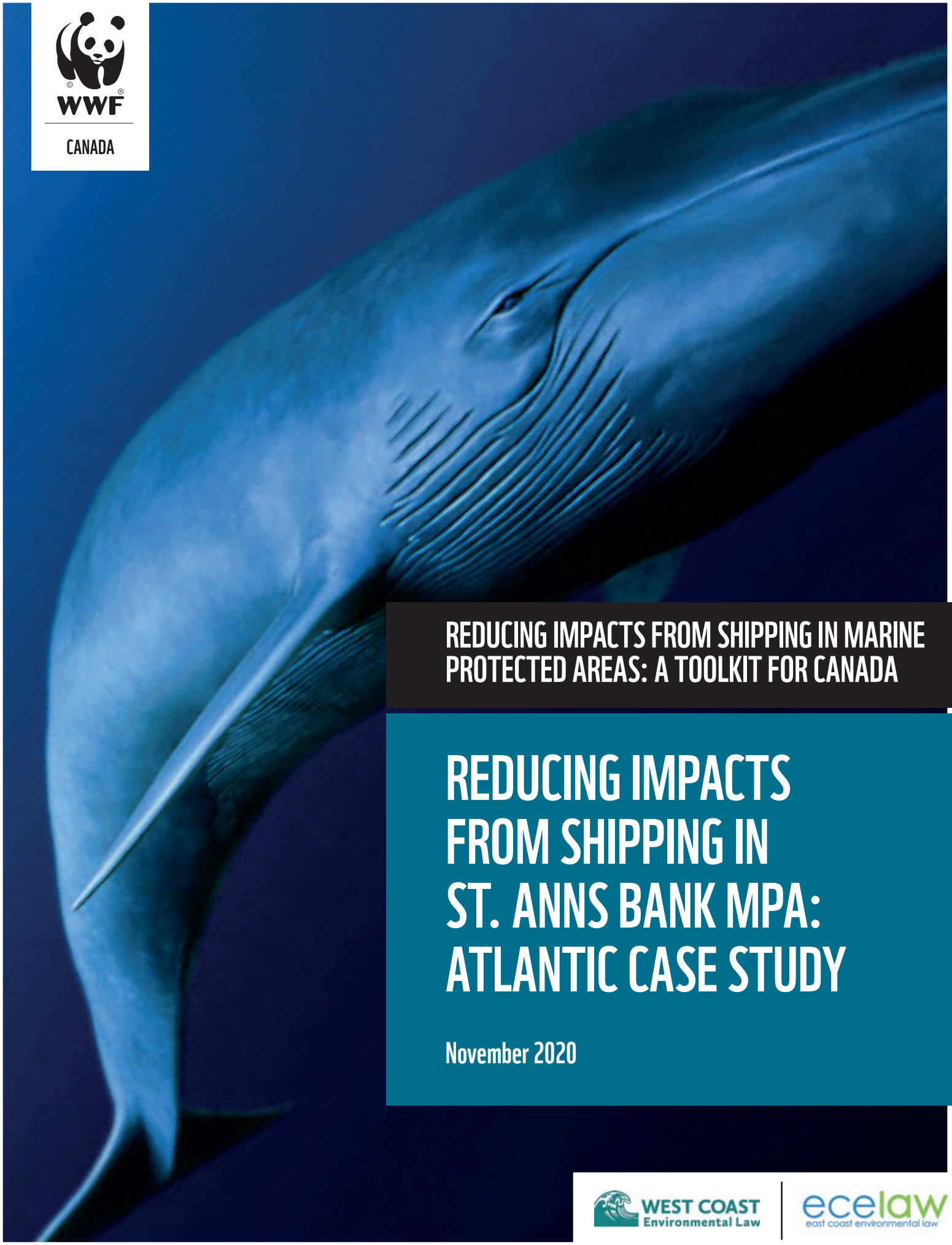
WWF CANADA



REDUCING IMPACTS FROM SHIPPING IN MARINE PROTECTED AREAS: A TOOLKIT FOR CANADA

REDUCING IMPACTS FROM SHIPPING IN ST. ANNS BANK MPA: ATLANTIC CASE STUDY

November 2020

WEST COAST Environmental Law | ecelaw east coast environmental law

Prepared for WWF-Canada by
Mike Kofahl (East Coast Environmental Law)

Contributors and review support: Sarah Saunders, Kim Dunn, Will Merritt (WWF-Canada)
and Stephanie Hewson (West Coast Environmental Law)

Contents

EXECUTIVE SUMMARY

The impacts of shipping on marine protected areas (MPAs) is an important and underexamined topic, particularly given the harm that shipping activities can inflict on marine wildlife and biodiversity. Shipping has often not received the attention required in MPA planning and management. The St. Anns Bank MPA is no exception.

Early in the risk assessment process for the St. Anns Bank area of interest (AOI), concerns about the perceived limitations of Canada's ability to regulate shipping appeared to stall further discussion or analysis of how shipping impacts could be managed. Ultimately, the St. Anns Bank MPA Regulations provided an unnecessarily broad exception to navigation from the protections that are afforded to help achieve the MPA's conservation objectives.

The broad exception does not fit well into the general spirit of the conservation objectives, into the nuance that St. Anns Bank is situated in three different ocean zones or the reality that shipping poses significant risks to the MPA. However, despite the challenges posed by the exception for navigation in St. Anns Bank, there are opportunities to address the effects of shipping on the MPA and reduce the risk of failing to achieve its conservation objectives.

Although the navigation exception is broad and vague, ship activity that is not directly related to safe and continuous transit must be considered to be outside of the scope of the exception. This would allow ship discharges like greywater or sewage to be better managed, regulated and even prohibited. Furthermore, even under the existing exception, where there is a violation of current shipping laws and regulations related to navigation, most notably those created under the *Canada Shipping Act* (CSA), those violations must be interpreted as a breach of the St. Anns Bank Regulations. Thus, the exception must apply only to lawful navigation.

There are also opportunities for the advisory committee, using the St. Anns Bank Management Plan, to create and utilize future scientific research to re-assess the efficacy and need for better regulation of ship impacts in St. Anns Bank.

As a conclusion, the exception for navigation, based on questionable foundations early in the risk assessment process, is a barrier to effective and efficient management of shipping impacts in St. Anns Bank MPA. However, there are tools available to address shipping impacts even with the exception, and these are outlined throughout this Case Study. Ultimately, the surest path to better management of shipping impacts is to remove blanket exceptions for navigation, and instead address specific aspects of shipping using appropriate tools and authorities through a more robust and detailed regulatory framework.

We would like to acknowledge that this Case Study involved the ongoing and committed engagement of a number of stakeholder groups and practitioners, including members of relevant federal departments, environmental groups, legal organizations and the shipping industry. We would like to thank all the groups and individuals who generously provided input. We would also like to thank the members of the St. Anns Bank MPA Advisory Committee for allowing us to participate in their meetings and to Fisheries and Oceans Canada (DFO) for providing us with the draft St. Anns Bank Management Plan.

RECOMMENDATIONS

RECOMMENDATION #1:

The impacts of shipping, especially those that were determined to be medium to high risk to the conservation priorities of St. Anns Bank in the initial risk assessment, should be evaluated in the context of those conservation objectives, and the blanket exception for navigation should be removed from the Regulation.

RECOMMENDATION #2:

A definition for "navigation" should be clearly set out in the Regulations. Furthermore, if navigation remains an activity excepted from Section 4, the Regulations should be clear that navigation must be carried out in accordance with all other applicable legislation; if navigation is in contravention of other relevant legislation, it should void the exception and any unlawful navigation, and related activities, should be considered a contravention of the Regulations and an offence under the Oceans Act.

RECOMMENDATION #3:

The blanket exception for navigation should be removed from the Regulations, and all ship activity should be fully captured by the prohibitions for the purpose of environmental protection (rather than shipping regulation). This is the single most effective and administratively efficient way to reduce and mitigate ship impacts in MPAs in all zones, including the Exclusive Economic Zone (EEZ).

RECOMMENDATION #4:

MPA advisory committees, including the one for St. Anns Bank, should include regular involvement and participation by members of Transport Canada (TC) and representatives of the shipping sector who can preemptively identify, raise and address issues, challenges and opportunities to reduce and mitigate navigation and shipping impacts, notwithstanding the navigation exception.

RECOMMENDATION #5:

The management plan for St. Anns Bank must include a detailed overview of how shipping impacts, particularly those not directly necessary for navigation, can be reduced and mitigated. This is especially important because navigation currently receives such a broad exception under the Regulations.

RECOMMENDATION #6:

Management zones in St. Anns Bank and future MPAs should reflect the legal realities and management possibilities present in MPAs that cross jurisdictional zones. At a minimum, Canada must retain its full jurisdiction with respect to regulating navigation and shipping in its territorial sea.

RECOMMENDATION #7:

Clear criteria are needed to ensure that any assessment of future MPAs and monitoring plans, including indicators relevant to shipping impacts, is complete and accurate regarding vessel-source discharges. Language must be consistent with definitions found in legislation that is referred to to ensure efficient and consistent application of existing regulatory tools.

RECOMMENDATION #8:

A speed reduction zone like the one that was created for North Atlantic right whales (NARW) should be considered for the St. Anns Bank MPA to better protect the marine mammals and turtles within the MPA, including in areas of the EEZ.

RECOMMENDATION #9:

Virtual aids to navigation, and other informational tools, should include references to, and information on, the St. Anns Bank MPA, including its boundaries and zones.

RECOMMENDATION #10:

The Government of Canada's commitment to minimum standards prohibiting dumping within MPAs should include all ship discharges that are not necessary for unimpeded transit.

RECOMMENDATION #11:

When possible without compromising safety, all vessel discharges should be withheld while operating within MPAs. In all other instances, discharges that exceed the limits set out in the *Vessel Pollution and Dangerous Chemical Regulations* and *Ballast Water Control and Management Regulations* made under the CSA should automatically be considered a violation of the *St. Anns Bank MPA Regulations*, and this should be explicitly set out in the Regulations. This is consistent with the government of Canada's commitment to minimum standards prohibiting ocean dumping within MPAs.[1]

RECOMMENDATION #12:

St. Anns Bank, and all other MPAs, could be designated, in law or by policy, as areas to be avoided for the purposes of routeing schemes meant otherwise to mitigate against environmental impacts from pollutants – for example, routeing measures made under sections 175.1 or 189 of the CSA.

1 Fisheries and Oceans Canada (DFO), "Protection Standards to Better Conserve Our Oceans," online: dfo-mpo.gc.ca/oceans/mpa-zpm/standards-normes-eng.html

RECOMMENDATION #13:

The discharge of both treated and untreated greywater should be prohibited in the St. Anns Bank MPA because it is unnecessary to facilitate transit through the MPA. This is consistent with the Government of Canada's commitment to minimum standards prohibiting dumping within MPAs.

RECOMMENDATION #14:

The discharge of both treated and untreated sewage should be explicitly prohibited in the entire St. Anns Bank MPA by its Regulations and included in its management plan.

RECOMMENDATION #15:

Given the large volume of vessel traffic near St. Anns Bank, the management plan must include clear guidance and set out the necessary steps that are to be taken by managers if there is a threat of an oil spill. This should ensure that effective and urgent preventative measures for the St. Anns Bank MPA are taken in such an event.

RECOMMENDATION #16:

The existing Alternative ballast water exchange zone in the Laurentian Channel must be moved to an area that is completely outside of the St. Anns Bank MPA.

RECOMMENDATION #17:

Ballast water exchange and discharge should be prohibited explicitly in MPAs, and a buffer zone should be established around all MPAs that extends this prohibition past its boundaries.

RECOMMENDATION #18:

The St. Anns Bank Management and Monitoring Strategy should reference and incorporate provincial efforts to protect nearby areas, especially because of the interrelatedness between nesting, foraging and feeding sites of bird species, including migratory birds.

RECOMMENDATION #19:

The St. Anns Bank Advisory Committee should include a representative from the provincial department that is responsible for the *Wilderness Areas Protection Act* (currently Nova Scotia Environment).

OVERVIEW

This section provides an overview of how the St. Anns Bank Case Study fits into the larger practitioner's Toolkit; a summary of the scope, objectives and methodology; and an ecological overview of the site.

INTRODUCTION

The Atlantic Case Study of the St. Anns Bank Marine Protected Area (in this document, the Case Study) is part of Reducing Impacts from Shipping in MPAs: A Toolkit for Canada (the Toolkit), which is a decision-support tool based on policy, regulatory and statutory analysis and supplemented by data analysis and mapping. The Toolkit is aimed at helping decision-makers, marine protected areas practitioners and the shipping industry take informed action to reduce or mitigate shipping impacts in Canadian MPAs.

A key component of the Toolkit is a regulatory and legal analysis of shipping laws in Canada within the context of marine protected areas, which is found in the report *Navigating the Law: Reducing Shipping Impacts in Marine Protected Areas*. This Case Study is one of the supporting documents to that analysis and is complemented by the Pacific Case Study of the Scott Islands marine National Wildlife Area and the Arctic Case Study of the Tallurutiup Imanga National Marine Conservation Area.

Specifically, this Case Study is the culmination of legal, policy and data analysis of shipping impacts in the St. Anns Bank MPA (St. Anns Bank, or SAB) to determine how the tools identified in *Navigating the Law* might be used within the context of the Atlantic Ocean and a Marine Protected Area created under the *Oceans Act*. We note that many of Canada's MPAs are in close proximity to other protected areas, and that some are part of emerging bioregional MPA networks. While this Case Study examines shipping for the St. Anns Bank MPA, management measures on a regional scale should consider a similar analysis for neighbouring MPAs (e.g., Laurentian Channel MPA) and broader networks as appropriate.

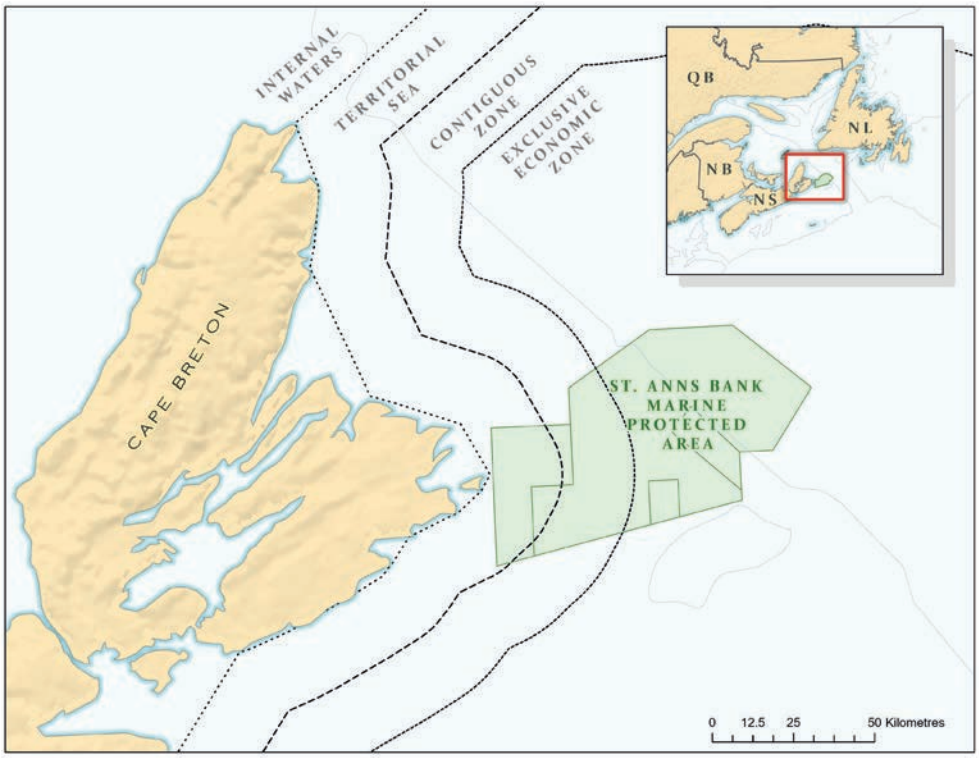
THE CASE STUDY: ST. ANNS BANK

The St. Anns Bank MPA is located off the eastern coast of Cape Breton, Nova Scotia. The 4,364 km^2 MPA is situated on the inner Scotian Shelf and includes Scatarie Bank, most of St. Anns Bank, and a portion of the Laurentian Slope and Channel. It is home to a number of endangered and threatened marine species, and contains ecologically significant features, such as unique habitats and areas of high biodiversity.

This Case Study is a unique opportunity to analyze the varying degrees of protection that an MPA may receive because St. Anns Bank is located in a cross-section of jurisdictional zones within the Atlantic Ocean. Part of the work of this Case Study, therefore, was determining how effective protections are in Canada's territorial sea, contiguous zone and Exclusive Economic Zone (EEZ), as shown in Figure 1.

Figure 1. St. Anns Bank Marine Protected Area

Map showing the MPA relative to Canada's maritime zones.

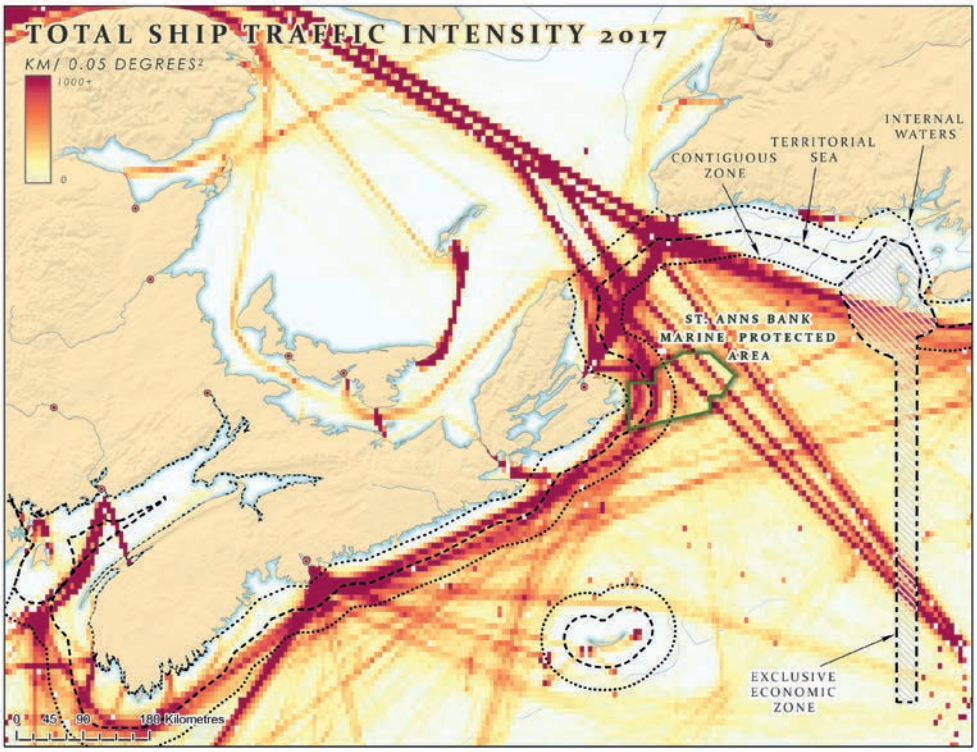


St. Anns Bank is located in a marine region that has dense commercial vessel traffic travelling between the St. Lawrence Seaway and the Eastern Seaboard of North America. The primary vessels that transit the area are cargo, tanker and passenger vessels.[2] Vessel traffic is more frequent during the summer months than the winter months. There are also regular Marine Atlantic Ferry transits between Cape Breton, Nova Scotia and Newfoundland. Aggregated vessel traffic intensity is shown in relation to the MPA in Figure 2.

2 J. Aker, J. Ford, A. Serdynska and T. Koropatnick, "Ecological Risk Assessment of the St. Anns Bank Area of Interest" (2014) Canadian Technical Report of Fisheries and Aquatic Sciences, online: waves-vagues.dfo-mpo.gc.ca/Library/353381.pdf [ERA] at 132.

Figure 2. Total vessel traffic intensity

Map displaying cumulative 2017 vessel traffic intensity for the Gulf of St. Lawrence and Scotian Shelf as represented by total distance travelled in kilometres per 0.5 degrees. Distance was derived from AIS point locations across all available ship types. See ***Appendix B*** for breakdown of intensity by individual ship types.



St. Anns Bank features habitat for a diversity of wildlife, including important commercially harvested species and a variety of species at risk, that could potentially be impacted by shipping.[3] Key fish species found in the area include Atlantic cod, redfish, white hake, and witch flounder, in addition to important habitat for Atlantic and northern wolffish. Bottom-dwelling species that are sensitive to activities that contact the seafloor are present in the area, such as corals, sea pens and sponges, providing important habitat. The area acts as a migration corridor for species travelling through the Laurentian Channel, including blue whales, fin whales, North Atlantic right whales (NARW) and porbeagle sharks. St. Anns Bank is also an important feeding area for leatherback turtles in summer months. Important areas for these species are depicted in Figures 7-14 in ***Appendix A***, along with the regional intensity of vessel traffic.

In this Case Study, attention is given to the shipping impacts and stressors, and specifically the environmental impacts, that originate from vessels that are relevant to the conservation objectives of the St. Anns Bank MPA or those identified by practitioners as being a relevant consideration to achieving the MPA's conservation objectives. These impacts are of particular importance because of the high volumes of commercial and fishing vessel traffic that passes near or through St. Anns Bank to enter or exit the Gulf of St. Lawrence and the St. Lawrence Strait.

3 J. Ford and A. Serdynska (Eds), "Ecological Overview of St. Anns Bank" (2013) Canadian Technical Report of Fisheries and Aquatic Sciences 3023, online: waves-vagues.dfo-mpo.gc.ca/Library/348156.pdf [Ecological Overview]; E. Kenchington, et al., "Delineation of Coral and Sponge Significant Benthic Areas in Eastern Canada Using Kernel Density Analyses and Species Distribution Models" (2016) Canadian Science Advisory Secretariat Research Document 2016/093, online: waves-vagues.dfo-mpo.gc.ca/Library/40577806.pdf [Kenchington].

This Case Study reviews provincial and federal laws, regulations and policies that apply to ships and shipping inside St. Anns Bank, including those applicable to Canada's territorial sea, contiguous zone and EEZ.

The objectives of this Case Study are to provide information on the range of legal and policy tools available to reduce and mitigate shipping impacts in St. Anns Bank and assist in the following goals:

- To understand the types of shipping impacts present in the MPA and identify the challenges that restrict or hinder an effective response to those impacts;
- To identify and describe the range of possible solutions to current gaps and challenges so shipping impacts may be better regulated within the St. Anns Bank MPA;
- To identify how existing management measures can be improved and augmented in the future to ensure shipping impacts are appropriately managed; and
- To support the legal and regulatory analysis in the Toolkit by providing a practical example on its use.

The Case Study identifies regulatory and legal tools that are readily available in St. Anns Bank to help manage prevalent shipping impacts. This report makes recommendations for ways that existing and potentially available regulatory, legal and policy tools can be improved to assist management of *Oceans Act* MPAs now and in the future.

© Mike Ambach / WWF-Canada

ST. ANNS BANK MARINE PROTECTED AREA

This section provides an overview of how the St. Anns Bank MPA was created and the regulatory, legal and policy framework that both offers it formal protection and guides its management. This section situates the Toolkit within the St. Anns Bank MPA and contextualizes the shipping impacts.

DEVELOPMENT OF THE ST. ANNS BANK MPA

There are generally, four steps to establishment of an MPA under the *Oceans Act*. The process involves selecting an area of interest (AOI), assessing the AOI, developing a regulatory intent document that guides creation of the regulations for the MPA, and creating the regulation. Once the MPA is established, it requires ongoing management to ensure that its conservation objectives are met and that new threats are dealt with accordingly.

St. Anns Bank was identified and designated as an AOI in 2011 by the Minister of Fisheries, Oceans and the Canadian Coast Guard (the Minister). DFO created Ecosystem Overview and Assessment Reports, which assessed the area's ecosystem attributes and potential risks to the MPA's conservation objectives.[4] Shipping was included as an anthropogenic activity to be considered in a full assessment of the AOI (an additional "other" category included garbage debris).[5]

The final Ecological Risk Assessment (ERA, or risk assessment) of the St. Anns Bank AOI was completed in 2014.[6] It used an approach that looked at the potential consequence of an activity and the likelihood that the consequence would occur. The **consequence of an activity** was defined as the impact considering the potential for long-term harm and the capacity for resistance or recovery.[7] The **likelihood of a risk** was the percentage of spatial overlap between the activity and the conservation priority area.

The primary purpose of the ERA was to identify the risks of each activity on the conservation objectives for St. Anns Bank. The three primary activities that were reviewed under the ERA were fishing, oil and gas, and marine transportation. The findings of the ERA were used to make decisions about the activities that would be allowed for St. Anns Bank and set out in its Regulation, and to inform the final design and boundaries of the St. Anns Bank MPA. [8]

4 DFO, "Conservation Priorities, Objectives, and Ecosystem Assessment Approach for the St. Anns Bank Area of Interest (AOI)" (2013) Canadian Science Advisory Secretariat Science Advisory Report [DFO, Conservation Priorities].
5 DFO, 2012, p.10.
6 ERA.
7 Ibid at 19.
8 Ibid at 20.

Assessment of Marine Transportation

The conservation objectives that were considered in the risk assessment of marine transportation for the St. Anns Bank AOI included risks to fish and invertebrates and top predators as follows:[9]

- Vessel Strikes: leatherback turtles and marine mammals;
- Vessel noise: fish, leatherback turtles, marine mammals;
- Small oil spills: leatherback turtles, primary producers, zooplankton, top predators (including sea birds);
- Large oil spills: all conservation priorities with pelagic life;
- Ballast water: all ecosystem components.

To determine the likelihood of vessel transits and vessel-sourced oil pollution, the area encompassing the highest density of vessel traffic was used to define the spatial parameter. For ballast water, an alternative ballast water exchange zone existing in the Laurentian Channel, which overlapped with the northern part of the AOI, was used.

The risk level or degree of risk for each of the types of marine transportation were determined to be mostly medium or high, with the exception that small oil spills had a low risk for primary producers and ballast water exchange had a low risk for all conservation priorities.[10] See Table 1 for a summary of the risk assessment results. Despite the conclusion that marine transportation posed medium to high level of risk to many of the conservation objectives, the risk assessment noted the following (emphasis added):

> *"While the marine transportation sector will not be restricted under the proposed MPA regulations, on-going monitoring is planned to ensure existing management measures are adequate to protect conservation priorities from risks presented by transportation-related pressures".*[11]

© Jürgen Freund / WWF

9 Ibid at 134.
10 Ibid, see summary table (4.5-1) at 147.
11 Ibid at 148.

Table 1. Risk Assessment Matrix of Marine Transportation

Table replicated from ERA for St. Anns Bank AOI showing the risks to conservation priorities from marine transportation.[12] It shows the potential overlap between conservation priorities and marine transportation activities (transit, oil spills/discharges and ballast water exchange). Dark green shading indicates a known potential for interaction, light green indicates an interaction may exist and white indicates no interaction.

Conservation priority	Transit		Oil pollution		Ballast water exchange
	Strikes	Noise	Small spills	Large spills	
Habitat					
Benthic habitats					
Structure forming/sensitive benthic species					
Biodiversity					
Area of high fish diversity					
Atlantic cod					
Atlantic wolffish					
Redfish					
American plaice					
Leatherback turtles					
Productivity					
Primary producers					
Zooplankton					
Benthic invertebrates					
Forage fish					
Demersal fish					
Top predators					

No reasons were provided for why, at this stage in the designation process, the entire marine transportation (aka shipping) sector would not fall within the scope of the protections provided by the St. Anns Bank MPA Regulations.

12 Ibid.

Regulatory Impact Analysis Statement

The Regulatory Impact Analysis Statement (RIAS) for St. Anns Bank was created to guide the drafting of the enabling Regulation by setting out the objectives that the Regulation is meant to capture and achieve, to evaluate both the strengths and weaknesses of designation and to address concerns or issues.

The RIAS noted that under the *United Nations Convention on the Law of the Sea* (UNCLOS), "Canada's authority to regulate international navigation rights within Canada's exclusive economic zone is limited".[13]

PRACTITIONER'S TIP #1:

Refer to the "Maritime Zones" and the "United Nations Convention on the Law of the Sea" in Navigating the Law to learn more about each of the zones and UNCLOS, including the opportunities for regulating shipping in the EEZ.

FINDING:

The ability to effectively minimize or eliminate shipping impacts in St. Anns Bank was severely hindered early in the designation process because of a pre-determination with respect to the ability or viability of regulating shipping activities. It should also be noted that while Canada's authority to regulate shipping in the EEZ is more restricted or defined than in its territorial sea, the ability does exist.

Furthermore, there is no distinction between the portion of St. Anns Bank that is located in the EEZ and the remainder of the MPA that is located within Canada's territorial sea. Additionally, the contiguous zone (which forms the first 12 nautical miles (NM) of the EEZ) provides for opportunities to regulate shipping for sanitation reasons, such as sewage.

RECOMMENDATION #1:

The impacts of shipping, especially those that were determined to be medium to high risk to the conservation priorities of St. Anns Bank in the initial risk assessment, should be evaluated in the context of those conservation objectives, and the blanket exception for navigation should be removed from the Regulation.

13 SOR 2017-106 [RIAS] at 1210.

THE POLICY FRAMEWORK FOR ST. ANNS BANK

Under the *Oceans Act*, the Minister is required to ensure that clearly identified objectives are set out for each MPA.[14] The St. Anns Bank MPA has **primary conservation objectives** in three areas: habitat, biodiversity and biological productivity.

Habitat

Conserve and protect:

- All major benthic, demersal (i.e., close to the sea floor) and pelagic (i.e., in the water column) habitats within the St. Anns Bank MPA, along with their associated physical, chemical, geological and biological properties and processes;
- Distinctive physical features and their associated ecological characteristics;
- The structural habitat provided by sea pen and sponge concentrations.

Biodiversity

- Conserve and protect marine areas of high biodiversity at the community, species, population and genetic levels within the St. Anns Bank MPA, including:
- Priority species and their habitats (including leatherback turtle, Atlantic wolffish, Atlantic cod and American plaice);
- The area of high fish diversity within the site.

Biological productivity

Conserve and protect biological productivity across all trophic levels so that they are able to fulfill their ecological role in the ecosystems of the St. Anns Bank MPA.

St. Anns Bank also has secondary goals to conserve and ensure the ecologically sustainable use of living marine resources in the MPA, to help maintain the health and resilience of the ecosystem, and to support the ecologically sustainable use of living marine resources beyond the boundaries of the St. Anns Bank MPA.

14 Oceans Act, SC 1996 c. 31, s 35(2.1).

THE LEGAL FRAMEWORK FOR ST. ANNS BANK

PRACTITIONER'S TIP #2:

Look at the "Oceans Act – Marine Protected Areas" section of Navigating the Law to learn more about the Act, including the enabling legislation and relevant authority for the St. Anns Bank MPA.

Name	Enabling Legislation	Regulation	Area	Authority
St. Anns Bank MPA	*Oceans Act*	St. Anns Bank Marine Protected Area Regulations SOR/2017-106	TS, CZ, EEZ	DFO

The St. Anns Bank Marine Protected Area Regulations (Regulations) set out the boundaries of the MPA (in Schedule 1), set out management zones within the MPA (depicted in Schedule 2), and provide legal protection to the MPA.

Section 4 of the Regulations is the key to protecting SAB because it prohibits any activity that disturbs, damages, destroys or removes any living marine organism or any part of its habitat, or is likely to do so, inside St. Anns Bank MPA. There are exceptions to the prohibition: certain fishing activities are allowed if carried out in accordance with the *Fisheries Act* or the *Coastal Fisheries Protection Act*, or their respective Regulations; any activity for the purpose of public safety, national defence, national security, law enforcement or emergency response is excepted from the prohibitions; and most importantly, navigation may be carried out in the MPA.[15]

FINDING:

The Regulations do not define "navigation" or describe what activities are associated with it. This leaves a breadth of navigation-related activity potentially excepted from Section 4, despite the possibility of that activity contravening the conservation objectives for the MPA.

RECOMMENDATION #2:

A definition for "navigation" should be clearly set out in the Regulations. Furthermore, if navigation remains an activity excepted from Section 4, the Regulations should be clear that navigation must be carried out in accordance with all other applicable legislation; if navigation is in contravention of other relevant legislation, it should void the exception and any unlawful navigation, and related activities, should be considered a contravention of the Regulations and an offence under the *Oceans Act*.

15 St. Anns Bank Marine Protected Area Regulations, SOR/2017-106 [Regulations] ss 4-7.

As the lead federal authority for St. Anns Bank MPA, DFO has overall responsibility for ensuring compliance with, and enforcement of, the Regulations. DFO does this using powers provided to it under the *Oceans Act*. The primary means of monitoring and enforcement includes the Canadian Coast Guard and its enforcement officers, who are designated by the Minister under section 39 of the *Oceans Act* and responsible for enforcing the St. Anns Bank MPA Regulations. Enforcement and offences are dealt with under section 37 of the *Oceans Act*.[16]

The DFO's powers and authorities stem from the objectives of fisheries conservation, environmental protection, habitat protection and marine safety, primarily created by the *Oceans Act*, *Fisheries Act* and the *Coastal Fisheries Protection Act*.

FINDING:

One of the primary goals of the *Oceans Act*, and the purpose of MPAs created under the Act, is the protection and preservation of the marine environment. This is also one of the few areas for which Canada has jurisdiction in the EEZ. Therefore, DFO has a legitimate and effective authority to prohibit disturbances, damage, destruction or removal of living marine organism or any part of its habitat, or those activities likely to do so, from a ship for the purpose of environmental protection.

Furthermore, because DFO officers are already responsible for monitoring and enforcement, and because DFO has responsibilities for the Canadian Coast Guard under the *Oceans Act*, the department is in an effective position to ensure that ships do not contravene the prohibitions set out in the Regulations, without needing to coordinate with other federal departments. DFO's ability to monitor and ensure compliance would also reduce the administrative burden on Transport Canada (TC) in MPAs.

RECOMMENDATION #3:

The blanket exception for navigation should be removed from the Regulations, and all ship activity should be fully captured by the prohibitions for the purpose of environmental protection (rather than shipping regulation). This is the single most effective and administratively efficient way to reduce and mitigate ship impacts in MPAs in all zones, including the Exclusive Economic Zone (EEZ).

16 Oceans Act, s 37.

MANAGEMENT AND MONITORING IN ST. ANNS BANK

St. Anns Bank advisory committee

The management of St. Anns Bank is overseen by DFO, who receives advice from an advisory committee that meets regularly to discuss management of the MPA and to provide input and recommendations. The advisory committee consists of representatives from DFO, as well as members of fisheries, academic, Mi'kmaq and environmental groups, and Nova Scotia government officials. There were no representatives from the shipping industry, TC or the Atlantic Pilotage Authority on the SAB advisory committee. Although these groups were considered for inclusion, they are instead engaged on an "as-needed" basis, and their participation will be sought if the advisory committee has an issue or concern.[17]

RECOMMENDATION #4:

MPA advisory committees, including the one for St. Anns Bank, should include regular involvement and participation by members of Transport Canada (TC) and representatives of the shipping sector who can preemptively identify, raise and address issues, challenges and opportunities to reduce and mitigate navigation and shipping impacts, notwithstanding the navigation exception.

St. Anns Bank Management Plan

Like all *Oceans Act* MPAs, the St. Anns Bank MPA is required to have a management plan, which is meant to guide the regulatory and non-regulatory management of the MPA. The current draft management plan for SAB lacks details about management opportunities for any navigation or shipping related impacts. This appears to stem from the fact that navigation was excepted under the Regulations.

There are broad management strategies with respect to reviewing the St. Anns Bank Regulations, to ensure that allowable activities continue to be consistent with the MPA's conservation objectives; however, there is no clear path to including activities currently excepted (like navigation, or some activities associated with navigation) if it is found that those activities have become (or continue to be) inconsistent with the MPA conservation objectives.

Finally, there are mechanisms, strategies and opportunities in place for future additional scientific research to be carried out in St. Anns Bank. This research will help to feed back into the management process. It is unclear whether there are opportunities to re-assess the impacts of shipping and navigation, and whether the broad protections provided by the Regulations might be included in any re-assessment.

RECOMMENDATION #5:

The management plan for St. Anns Bank must include a detailed overview of how shipping impacts, particularly those not directly necessary for navigation, can be reduced and mitigated. This is especially important because navigation currently receives such a broad exception under the Regulations.

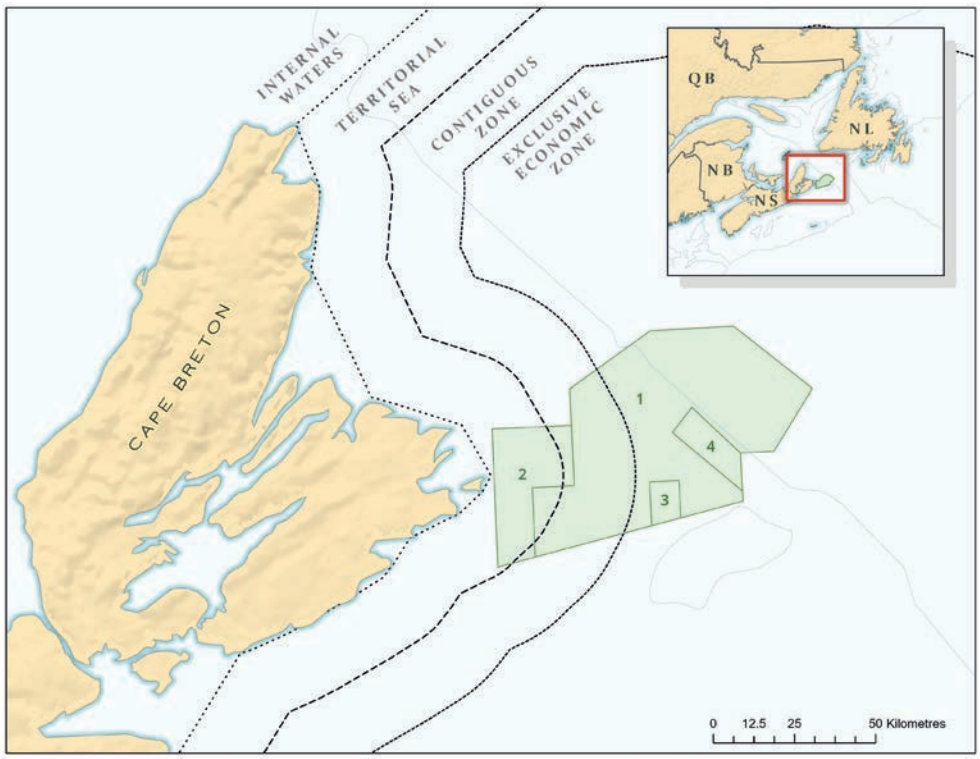
17 Communication with DFO, September 2020.

St. Anns Bank management zones

There are four management zones in the St. Anns Bank MPA: a Core Protection Zone (CPZ) and three Adaptive Management Zones (AMZ), as shown in Figure 3. Each of the zones corresponds with different levels of acceptable or prohibited anthropogenic activities, although these are not set out clearly in the Regulations.

Figure 3. Management zones

Map displaying the four management zones in St. Anns Bank MPA in relation to its important features.



Core Protection Zone (Zone 1): This zone is the most strictly protected.[18] Most human activities are prohibited in this zone in order to protect habitat, biodiversity, and biological productivity. The only activities allowed are scientific research and monitoring and approved commercial activities with a low risk to conservation objectives, Aboriginal food, social and ceremonial fisheries and activities related to public safety, national security and marine transportation.[19] Zone 1 covers 3,308 km^2.

18 The RIAS specifically identified the purpose of the CPZ (Zone 1 of St. Anns Bank) as limiting most human activity in order to safeguard habitat, biodiversity and biological productivity.

19 RIAS at 1213.

Adaptive Management Zones (Zones 2, 3 and 4): These zones are designed to accommodate certain activities that are compatible with the conservation objectives of the MPA (e.g., bottom longline and trap fishing), and were largely created for fisheries management.[20] Zone 2 has an area of 720 km^2, Zone 3 is 113 km^2 and Zone 4 is 221 km^2.

Again, despite early indications by risk assessments and the ERA that shipping may present serious (medium to high levels) risks to St. Anns Bank, marine transportation was identified as acceptable in the CPZ (and by extension, the other zones).

FINDING:

The exception for navigation in the Regulations flows directly from the RIAS without any clarification for the legal differences in terms of Canada's jurisdiction and rights in the parts of the MPA that are in territorial waters and the parts that are in the EEZ.

Despite *Oceans Act* MPA management being based on conservation priorities and ecological features that often do not align with man-made boundaries (like the maritime zones), the *Oceans Act* explicitly allows, and regulations actively employ, management zones in MPAs. In the St. Anns Bank MPA, the Regulations reflect a preference for management zones to be used to manage fishing.

RECOMMENDATION #6:

Management zones in St. Anns Bank and future MPAs should reflect the legal realities and management possibilities present in MPAs that cross jurisdictional zones. At a minimum, Canada must retain its full jurisdiction with respect to regulating navigation and shipping in its territorial sea.

20 The RIAS identified the purpose of the AMZ as being for the purpose of accommodating certain activities that are compatible with conservation objectives. However, these AMZs were largely created for fisheries management, which is evident by the exception from the prohibitions set for fishing in Zones 2, 3 and 4. Furthermore, the final boundaries for Zones 1 and 2 were modified following public concerns raised about fisheries access.

Monitoring framework for St. Anns Bank

A monitoring framework is meant to guide the observance of biological and ecological indicators to ensure that conservation objectives are achieved and to aid managers in adjusting management measures to help achieve those objectives.

When a draft monitoring framework for St. Anns Bank AOI was prepared, the likely significant anthropogenic pressures on the ecosystem within St. Anns Bank that were identified included marine transportation and associated ship strikes and noise, the release of chemical (oils), biological (organic garbage) and other contaminants from vessels, and the release of aquatic invasive species from ballast water exchange.[21]

The recommended monitoring framework (as of December 2020 there is no final monitoring plan) for the St. Anns Bank MPA envisioned a set of monitoring indicators, data collection and archiving, and regular review, analysis and reporting of monitoring information. A list of indicators was proposed for the final monitoring framework, including several that are relevant to shipping[22]:

- The number and speed of transits by vessels other than pleasure craft;
- Hours of operation within the MPA by vessels other than commercial fishing vessels or pleasure craft;
- Incidents of vessels anchoring within the MPA;
- Number of ballast water exchanges within or in proximity to the MPA;
- Number, quantities and types of other discharges from vessels of all kinds;
- Incidents of whale or turtle entanglement, ship strikes or other interactions;
- Reports of known invasive species in the MPA;
- Characterization of natural and anthropogenic noise within the MPA.

FINDING:

The language in the draft monitoring framework and ERA around vessel-source "discharges" was vague and inconsistent. Some documents referred to oil spills (further characterized as small or large spills) while others referred to vessel-source discharges or pollution, and therefore the source of the discharges was not always clear. It was not clear whether garbage or debris, forms of ocean dumping, sewage or greywater were included, and this did not appear to have been considered.

RECOMMENDATION #7:

Clear criteria are needed to ensure that any assessment of future MPAs and monitoring plans, including indicators relevant to shipping impacts, is complete and accurate regarding vessel-source discharges. Language must be consistent with definitions found in legislation that is referred to to ensure efficient and consistent application of existing regulatory tools.

21 DFO, "Review of a Monitoring Framework for the St. Anns Bank Area of Interest" (2014) Canadian Science Advisory Secretariat Science Response 2013/028 at 6; and see also Trevor J. Kenchington (DFO), "A Monitoring Framework for the St. Anns Bank Area of Interest" (2014) Canadian Science Advisory Secretariat Research Document 2013/117 at 25-27.

22 Ibid at 10 (Table 1 at items 29, 30, 41, 42, 43, 48, 50 and 51, respectively).

SHIPPING IMPACTS IN ST. ANNS BANK

This section provides an analysis of potential shipping impacts as they relate to the identified MPA conservation objectives. It identifies existing tools for addressing impacts and additional tools from the Navigating the Law report that are available to address impacts. This section also addresses the issue of dealing with multiple ocean zones and the interaction between these zones.

PRACTITIONER'S TIP #3:

Identify a shipping impact and use Appendix A of *Navigating the Law* to discover regulatory tools that are available to address or manage that impact.

VESSEL STRIKES

A primary concern related to the St. Anns Bank MPA conservation objectives arises from vessel strikes to marine mammals that spend time on the water's surface within the area.[23] Vessel strikes, especially when ships are travelling above 10 knots (kt), are a recognized cause of mortality for cetaceans worldwide and pose a risk to species found in the MPA.[24,25] The risk assessment of the St. Anns Bank AOI identified that speed was a key factor for increased risk to marine mammals, including lethal strikes. The risk for vessel strikes was assigned as "medium risk." In particular, there are risks for turtles, including the endangered leatherback turtle, and cetaceans (humpback and fin whales). While the risk assessment noted that a reduction to under 11.8kt was needed to lower the risk of lethal strikes with marine mammals, that assessment did not result in any management action.

23 Note: We received feedback from stakeholders that vessel strikes are also a concern for seabirds. Although the Regulatory Report, and by extension, this Case Study, deals with MPA-creating legislation, rather than legislation specifically protecting species, we felt it important to note that provisions of the Migratory Birds Convention Act or federal Species at Risk Act may also have unique protections available for seabirds in MPAs.

24 Transport Canada, "Protecting North Atlantic Right Whales from Collisions with Vessels in the Gulf of St. Lawrence" (2020) online: tc.canada.ca/en/marine-transportation/navigation-marine-conditions/protecting-north-atlantic-right-whales-collisionsvessels-gulf-st-lawrence

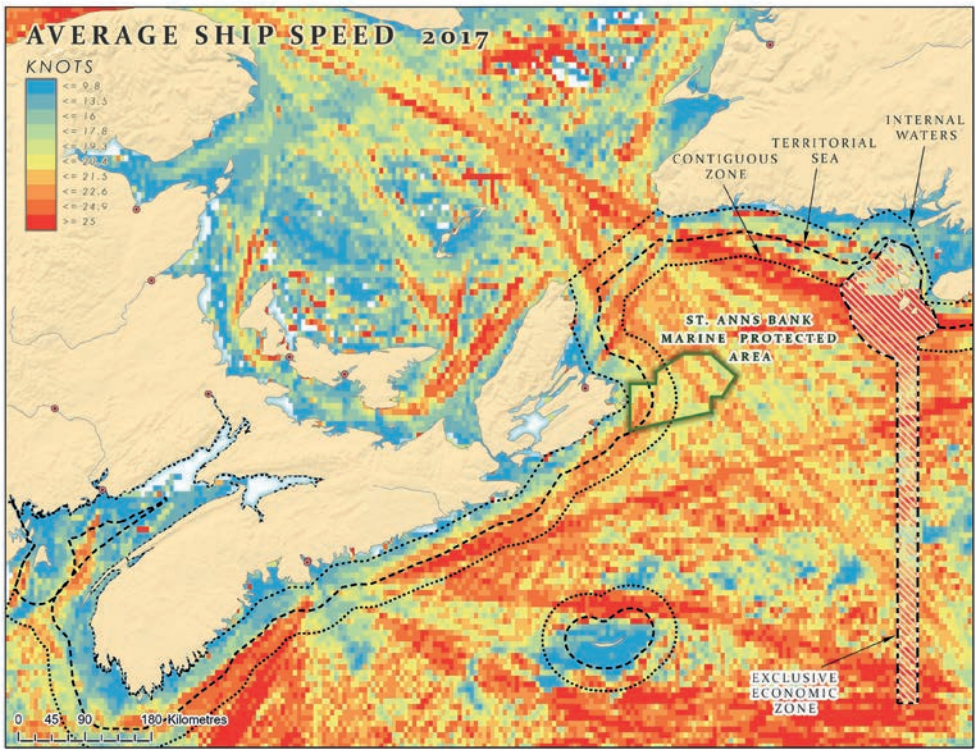
25 DFO, "Assessing the Risk of Ship Strikes to Humpback (Megaptera novaeangliae) and Fin (Balaenoptera physalus)Whales off the West Coast of Vancouver Island, Canada" (2017) Canadian Science Advisory Secretariat Science Advisory Report 2017/038 online: wavesvagues.dfo-mpo.gc.ca/Library/40619709.pdf

FINDING:

Mapping based on average 2017 ship speeds for the Gulf of St. Lawrence and Scotian Shelf that was derived from AIS point locations across all available ship types (see Figure 4) indicates that ships transiting throughout the entire St. Anns Bank MPA are travelling at speeds at or exceeding the 11.8kt that are required to reduce lethality of ship strikes for marine mammals.

Figure 4. Average ship speeds

Map displaying average 2017 ship speeds for the Gulf of St. Lawrence and Scotian Shelf in knots. Average speeds were derived from AIS point locations across all available ship types on a per-pixel basis. See ***Appendix C*** for breakdown of speed by individual ship types.



Interim orders or regulations to reduce speed

The *Canada Shipping Act* allows the Minister of Transport to create interim orders, which can last up to one year, that require all vessels to reduce their speed.[26] The Governor in Council may approve the extension of these orders for a further two years or create regulations with their effect. Speed reduction orders or regulations can be issued for the entirety of the St. Anns Bank MPA, including areas that are within the EEZ.

For a more permanent option, the Minister of Transport may create general regulations for the purposes of protecting the public interest and the environment under the CSA. These regulations could create shipping routes for SAB or restrict ship navigation (including speed limits) in areas or zones in the MPA. These regulations could apply to all areas of St. Anns Bank.

26 Oceans Act, s 10.1(1).

PRACTITIONER'S TIP #4:

To learn more about the specific powers and limits of an important statute relevant to shipping impacts, refer generally to the "Select laws affecting commercial shipping" section of Navigating the Law. In this case, see the "Canada Shipping Act, 2001" section for more information on the available regulatory tools under this specific Act.

For example, a seasonal speed restriction zone was created as an interim order under the CSA to reduce the risk of fatal ship strikes to NARW in the western portion of the Gulf of St. Lawrence. The zone, located in Canada's internal waters and partially within the Laurentian Channel of the Gulf of St. Lawrence, has a number of "dynamic" sectors. Within those sectors, vessels may proceed at safe operational speeds unless NARW are present. Speed reductions are posted monthly in Notice to Mariners (NOTMAR) and Notice to Shipping (NOTSHIP). The restrictions are in place from April until November, and a voluntary speed reduction is always in place for vessels in the presence of the whales. Because NARW are listed as endangered under the *Species at Risk Act* (SARA) and may occasionally pass through St. Anns Bank, a similar speed reduction might be used in SAB.

RECOMMENDATION #8:

A speed reduction zone like the one that was created for North Atlantic right whales (NARW) should be considered for the St. Anns Bank MPA to better protect the marine mammals and turtles within the MPA, including in areas of the EEZ.

Pilotage to provide support

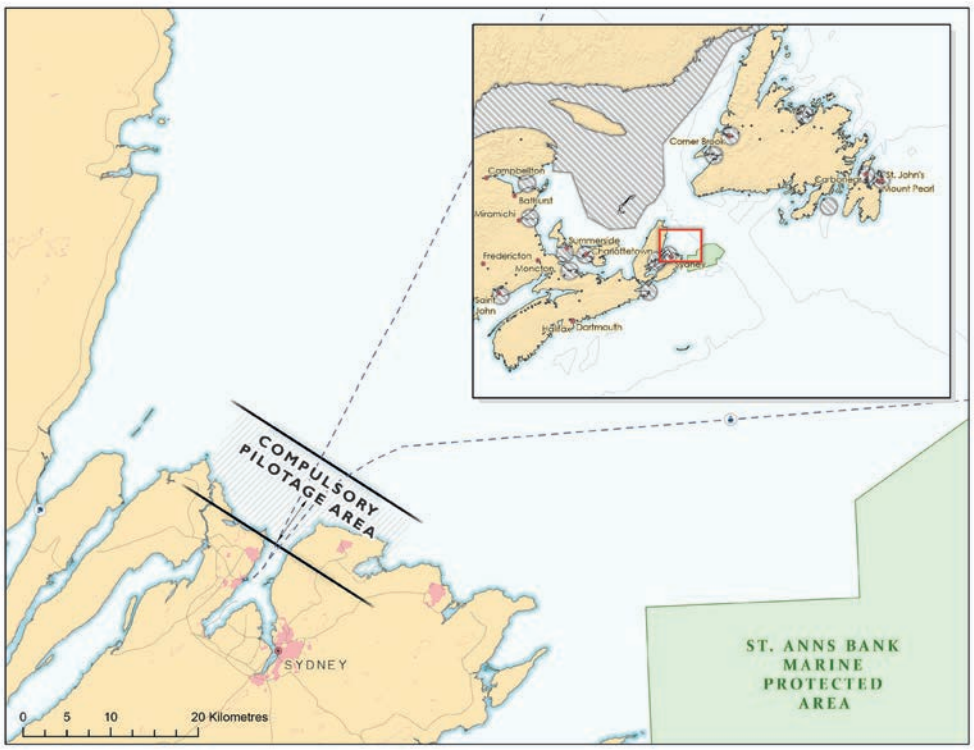
Under the *Pilotage Act*, there may be an opportunity to create a compulsory pilotage area within the internal waters near, and territorial sea portions of, St. Anns Bank.[27] The Atlantic Pilotage Authority is responsible for pilotage around the Atlantic provinces, including in Nova Scotia. There are currently a number of Compulsory Pilotage Areas in Atlantic Canada, the closest to the St. Anns Bank MPA being the Sydney Compulsory Pilotage Area (see Figure 5), which requires vessels to embark a pilot in order to enter the port of Sydney, Nova Scotia.

It may be advantageous to have the pilotage authority, and other local users of the marine space around St. Anns Bank, hold regular discussions to determine the need for pilotage in the areas of the MPA that are closest to the shoreline.

27 Pilotage Act, RSC 1985 c P-14, s 52(f).

Figure 5. Sydney Compulsory Pilotage Area

Map displaying the location of the Sydney and Bras d'Or Lakes Compulsory Pilotage Area which consists of the area from a line drawn from McGillivray Point to Swivel Point, extending 6NM seaward. Inset map shows the generalized location of other regional compulsory pilotage areas.



Aids to navigation for St. Anns Bank

As part of the speed reduction zone noted above, the Canadian Coast Guard is testing virtual Automatic Identification System (AIS) aids to navigation that provide vessels with information about the speed reduction zones. These virtual aids, if successful, could provide a benefit to vessels that wish to minimize impacts on St. Anns Bank or to assist in the success of the other mechanisms.

PRACTITIONER'S TIP #5:

To learn more about voluntary measures like aids to navigation, refer to the sections titlTENMPed "Notices to Mariners" and "General IMO mechanisms for environmental protection" in Navigating the Law. To learn more about monitoring in MPAs, see Reducing Impacts from Shipping in MPAs: Evaluating Tools for Monitoring and Compliance.

Additionally, under the *Oceans Act*, the Canadian Coast Guard produces both a NOTMAR and NOTSHIP that provide notices to vessels transiting in the area around St. Anns Bank. These notices can include information about possible sensitive areas related to breeding and foraging areas that are used by marine mammals within the MPA. Alongside these notices, there may also be an option to provide aids to navigation under the CSA, which would mark out the boundaries of the MPA for the benefit of vessels, or to mark specific areas within the MPA that are most sensitive.

RECOMMENDATION #9:

Virtual aids to navigation, and other informational tools, should include references to, and information on, the St. Anns Bank MPA, including its boundaries and zones.

VESSEL NOISE

Low-frequency underwater noise has doubled since 1960, largely due to shipping.[28] This has impacted marine life, especially marine mammals that rely on the acoustic environment, by affecting communication, hunting and feeding; forcing animals to avoid preferred habitats; and increasing stress hormones, ultimately leading to fewer offspring and higher death rates.[29] In areas of high vessel density, the impacts on these animals is increased because of the continual input into the marine environment. Therefore, while there may be a need to directly regulate the amount of noise generated from vessels, an indirect way to reduce noise impacts in St. Anns Bank is to reduce or limit vessel traffic.

Reductions in vessel speed can play a large role in reducing noise according to the International Maritime Organization (IMO) Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life. As such, the same tools applicable to reducing vessel strikes by limiting or prohibiting vessel traffic, or reducing ship speeds, would be applicable to reducing noise in St. Anns Bank. One particular tool that could be used for noise is a Particularly Sensitive Sea Area because the IMO recognizes noise generally as pollution.[30]

FINDING:

Due to the lack of available options to address vessel noise specifically, and due to the proximity and volume of vessel traffic near the St. Anns Bank, vessel strikes and vessel noise should be addressed together with a focus on speed reductions for areas that are prone to vessel strikes with marine mammals.

28 International Maritime Organization, “Ship Noise” (2020) online: imo.org/en/MediaCentre/HotTopics/Pages/Noise.aspx

29 WWF-Canada, “Underwater Noise from Arctic Shipping: Impacts, Regulations and Recommendations” (2017) online: wwf.ca/wp-content/uploads/2020/03/Underwater-noise-from-Arctic-Shipping-impacts-regulations-andrecommendations_April-2017.pdf

30 International Maritime Organization, “Particularly Sensitive Sea Areas,” online: imo.org/en/OurWork/Environment/PSSAs/Pages/Default.aspx

GENERAL VESSEL DISCHARGES

Vessels can discharge a number of substances including oil, ballast water, greywater, exhaust gas cleaning systems or sewage. Sometimes, it may be more desirable to address these discharges on an individual basis, and specific discharges are addressed in sections below. In other circumstances, it may be more efficient or convenient to address vessel discharges as a general discharge category because multiple types of discharges cumulatively threaten conservation objectives. For example, some groups have called for a comprehensive definition of "dumping" to be included in the government of Canada's MPA minimum standards that includes all of these common vessel discharges.[31]

The ERA noted vessel-source discharge impacts in St. Anns Bank including oily discharges and oil spills, namely intentional release of bilge water and fuel oil sludge, accidental spills from collisions and groundings, and emergencies. The ERA determined that the degree of risk of vessel-source discharges is medium for leatherback turtles and high for top predators and birds. There is also a medium to high risk for large oil spills to all these animals, based on the low probability of a large oil spill occurring.

The *Vessel Pollution and Dangerous Chemicals Regulations* and the *Ballast Water Control and Management Regulations* under the *Canada Shipping Act, 2001* are the primary regulatory means of controlling vessel-source pollution in waters under Canadian jurisdiction. The standards for various discharges set out in these Regulations are additional or complementary to the standards set out in the *International Convention for the Prevention of Pollution from Ships, 1973*, as amended by the Protocol of 1978, and the Protocol of 1997, which added Annex VI to the convention.

One of the primary conservation objectives for St. Anns Bank is conservation and protection of the chemical and biological properties and processes that are associated with major benthic and pelagic habitats in the area. The lack of discussion or analysis of the benefits and drawbacks to regulating harmful vessel discharges that are incidental but not vital to navigation in the process leading up to MPA designation and following with its management (albeit in its early stages) do not align with those conservation objectives.

For example, discharge from onboard exhaust gas cleaning systems (EGCS, also known as scrubbers) is not specifically addressed by the St. Anns Bank ERA and it is unclear whether it is included or captured by the assessment of discharges or if it is considered a reasonable discharge for the sake of safe vessel navigation. Increasingly, port authorities and states are restricting scrubber discharge in particularly sensitive or high traffic waters because it is highly acidic and contains substances known to be toxic and carcinogenic and have mutagenic properties.[32] Like EGCS, many discharges including sewage and greywater are unnecessary for safe and continuous vessel transit.

31 Environmental groups, including WWF, have called for a comprehensive definition of "dumping" in the DFO's MPA minimum standards, so that the definition includes various discharges from ships like oil, greywater, sewage, garbage, ballast water, EGCS fluids and solid wastes. See, for example, wwf.ca/2019/11/25/got-99-problems-dumping-one/

32 IMO, "Scrubber Environmental Impact Literature Review" (2019) online: 1u594u31nvw01cjgyx4gvsr15ge-wpengine.netdna-ssl.com/wp-content/blogs.dir/1/files/2019/08/MEPC-74-INF.10-Scrubber-Environmental-Impact-Literature-Review-Panama-2019.pdf

FINDING:

A number of discharges from ships threaten the chemical and biological properties and processes associated with benthic and pelagic habitats in St. Anns Bank, and these would be better addressed collectively than individually.

RECOMMENDATION #10:

The Government of Canada's commitment to minimum standards prohibiting dumping within MPAs should include all ship discharges that are not necessary for unimpeded transit.

FINDING:

The breadth of possible discharges stemming from vessel activity is a primary reason to remove the broad exception for navigation or, at minimum, to better define what is included as part of "navigation" (see Recommendation #3).

RECOMMENDATION #11:

When possible without compromising safety, all vessel discharges should be withheld while operating within MPAs. In all other instances, discharges that exceed the limits set out in the *Vessel Pollution and Dangerous Chemical Regulations* and *Ballast Water Control and Management Regulations* made under the CSA should automatically be considered a violation of the *St. Anns Bank MPA Regulations*, and this should be explicitly set out in the Regulations. This is consistent with the government of Canada's commitment to minimum standards prohibiting ocean dumping within MPAs.[33]

Vessel routeing

There are powers under the CSA to reroute vessels carrying, discharging or at risk of discharging a pollutant in Canadian waters and the EEZ. Under section 175.1, a pollution response officer may direct ships carrying pollutants to proceed by a route and at a speed they specify.[34] And under section 189, the Minister of Transport may direct a vessel that may discharge a prescribed pollutant to proceed by a route and at a speed as specified.

Practically, this is not an efficient means of protecting St. Anns Bank because each individual ship passing through the area would need to be identified by the Minister of Transport or a pollution response officer. However, to prepare for this possible routeing response, it would be an effective measure to ensure the worst effects of pollutant discharge were mitigated by designating St. Anns Bank as an area that the Minister of Transport or a pollution response officer would never designate as part of a routeing order made under these sections.

RECOMMENDATION #12:

St. Anns Bank, and all other MPAs, could be designated, in law or by policy, as areas to be avoided for the purposes of routeing schemes meant otherwise to mitigate against environmental impacts from pollutants – for example, routeing measures made under sections 175.1 or 189 of the CSA.

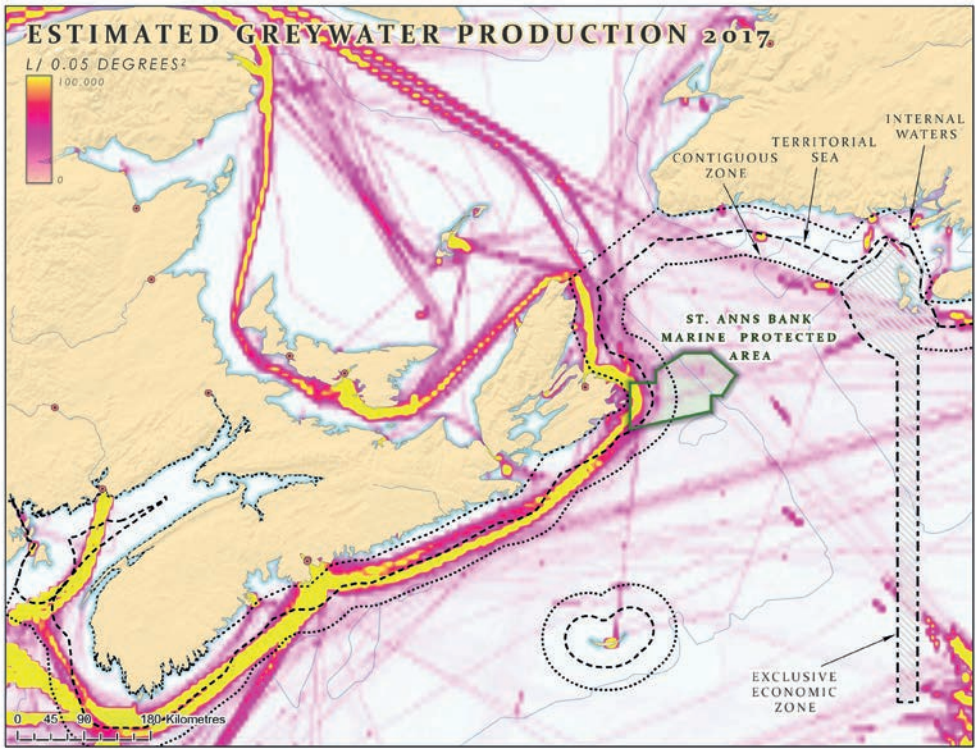
33 DFO, "Protection Standards to Better Conserve Our Oceans," online: dfo-mpo.gc.ca/oceans/mpa-zpm/standards-normes-eng.html
34 Canada Shipping Act, 2001, SC 2001 c. 26, s 175.1(b).

GREYWATER

Greywater, characterized as drainage from sinks, laundry machines, bath tubs, shower-stalls or dishwashers, can have pollution levels comparable to untreated sewage.[35] It can contain a variety of pollutants, can increase the amount of nutrients in the surrounding water, causing algal blooms and anoxic dead zones, and can spread harmful bacteria and disease, posing risks to human health.[36] Greywater was not explicitly mentioned in the St. Anns Bank ERA. It is unclear whether greywater was included or captured by the assessment of discharges, or if it was considered a reasonable discharge for the sake of safe vessel navigation. See Figure 6 for a spatial representation of estimated greywater production in and around the MPA. In 2017, an estimated 3,639,815 litres of greywater was produced by ships in the St. Anns Bank MPA.

Figure 6. Estimated ship-based greywater production

Map displaying cumulative 2017 ship greywater generation for the Gulf of St. Lawrence and Scotian Shelf as represented by total litres per 0.5 degrees^2. Estimates were derived from AIS point locations across all available ship types in combination with coefficients of greywater production.[37] See ***Appendix D*** for breakdown of estimated greywater production by individual ship types.



35 Vessel Pollution and Dangerous Chemicals Regulations SOR/2012-69, s 131.1(1).

36 L. Nowlan and I. Kwan, "Cruise Control – Regulating Cruise Ship Pollution on the Pacific Coast of Canada" (2001) West Coast Environmental Law, online: georgiastrait.org/wp-content/uploads/2015/02/CruiseControl_WCEL.pdf

37 Vard Marine, Inc, "Greywater Generation Estimates for the BC Coast" (2019) Ottawa, ON: Vard Marine, online: wwf.ca/wp-content/uploads/2020/03/greywater-generation-estimates-for-the-bc-coast_june-2019.pdf

Like for sewage (examined further below), additional measures may be taken for the purposes of ensuring sanitation, even in parts of the EEZ, that might otherwise not be possible. Specifically, Canada has additional authority under UNCLOS to enforce federal laws related to sanitation law in the contiguous zone, which overlaps the first 12NM of the EEZ (and is up to 24NM from the coast). This power, for example, could be used to restrict or prohibit release of greywater up to 24NM for purposes of protecting public health and enforcing Canada's sanitary laws for its land territory or territorial sea.[38]

RECOMMENDATION #13:

The discharge of both treated and untreated greywater should be prohibited in the St. Anns Bank MPA because it is unnecessary to facilitate transit through the MPA. This is consistent with the Government of Canada's commitment to minimum standards prohibiting dumping within MPAs.

38 See Vessel Pollution and Dangerous Chemicals Regulations s. 131.1(4) and the Banc-des-Americains Marine Protected Area Regulations, SOR/2019-5, which prohibit greywater.

SEWAGE

Sewage discharge can introduce invasive species and produce fecal-contaminated waters, which pose health risks to humans that eat fish and bivalves from these areas.[39] Similar to greywater, and unlike physical transit or ballast water discharge, release of sewage is unnecessary for safe and continuous navigation. The release of sewage, treated or untreated, is not specifically addressed by the St. Anns Bank ERA. Discharge of sewage is already prohibited in Canada's internal waters, and there is additional authority for Canada to regulate sewage both in the territorial sea and the contiguous zone (out to 24NM), under the objective of regulating sanitary conditions.

Although treated sewage is generally permitted for discharge (dependent on the type of vessel and area) by the *Vessel Pollution and Dangerous Chemical Regulations*, work undertaken by a Marine Environmental Protection Committee, under the IMO's remit, has found onboard sewage treatment plants fail to treat sewage to minimum standards up to 97 per cent of the time.[40] In light of these findings, all sewage should be considered unsafe for disposal in important areas like MPAs.

FINDING:

Canada's authority to regulate for sanitary reasons, in light of the fact that St. Anns Bank is used for recreational and commercial fisheries, and for Aboriginal food, social and ceremonial fisheries, provides another reason to prohibit all unnecessary ship discharges.

Designated Sewage Area

The *Vessel Pollution and Dangerous Chemicals Regulations* restrict the discharge of sewage, oily substances, cargo residues and other noxious liquids.

In particular, a designated sewage area is a useful tool because it allows higher standards of sewage release (lower allowance for fecal coliform rates) to be required in designated areas, in addition to the prohibition on sewage release within 15NM of the coast.

RECOMMENDATION #14:

The discharge of both treated and untreated sewage should be explicitly prohibited in the entire St. Anns Bank MPA by its Regulations and included in its management plan.

39 J.J. Smith and M. Riddle, "Sewage Disposal and Wildlife Health on Antarctica," Health of Antarctic Wildlife: A Challenge for Science and Policy (2009) Springer, Berlin Heidelberg, Germany, 271.

40 MEPC 71/INF.22, "Updated Information and Analysis Based on Tests on the Effluent of Sewage Treatment Plants," s 6.

OILY DISCHARGES AND SPILLS

Oily discharges are associated with bilge water, discharges from routine operations, illegal cleaning of tanks and propeller shaft bearings, though there is also a potential for oil spills to occur within the MPA as well. Oily discharges can be difficult to clean up and persist in ocean sediment and the marine environment for years.[41] Discharged oily mixtures have the potential to harm species vulnerable to changes in the marine environment and cause behavioural disturbances and malformations in marine animals.

Birds are especially impacted when oil reduces the waterproofing and insulating properties of their feathers, leading to death from hypothermia.[42] The ERA determined there is a medium to high degree of risk for large oil spills to impact all marine mammals and seabirds. Section 4 of the Regulations implicitly prohibits any activity leading to an oil spill. Large oil spills from ships are largely regulated under the *Marine Liability Act*, although other statutes including the *Fisheries Act* would also apply. Under the CSA, vessels are prohibited from discharging oily bilge water with oil concentrations greater than 15 parts per million. There are other prohibitions or limitations on the release of other substances. It is an offence under the CSA if these limits are exceeded.

In addition, heavy fuel oil (HFO) is being banned in some regions of the world due to its harmful effects.[43] HFO spills are nearly impossible to clean up and can persist in the marine environment for months, threatening marine life and coastal communities. Burning HFO also produces more soot than alternative fuel options, impacting air quality and contributing to local warming and climate change. Ships carrying this type of fuel, sometimes called residual fuel, regularly transit the MPA (see Figure 7), which could negatively impact the conservation objectives. Canada has already committed to a ban on HFO in the Arctic by 2024 through the IMO's Sub-Committee on Pollution Prevention and Response, and a similar ban could be extended to MPAs.[44]

41 D.S. Etkin, "Worldwide Analysis of In-Port Vessel Operational Lubricant Discharges and Leakages" (2009) Environmental Research Consulting, 1529-1553; R. Pitt, "Case Study Example for Oil Spill Movement and Fate" (2002) online: rpitt.eng.ua.edu/Class/EffectsandFates/Module7/Module7.htm

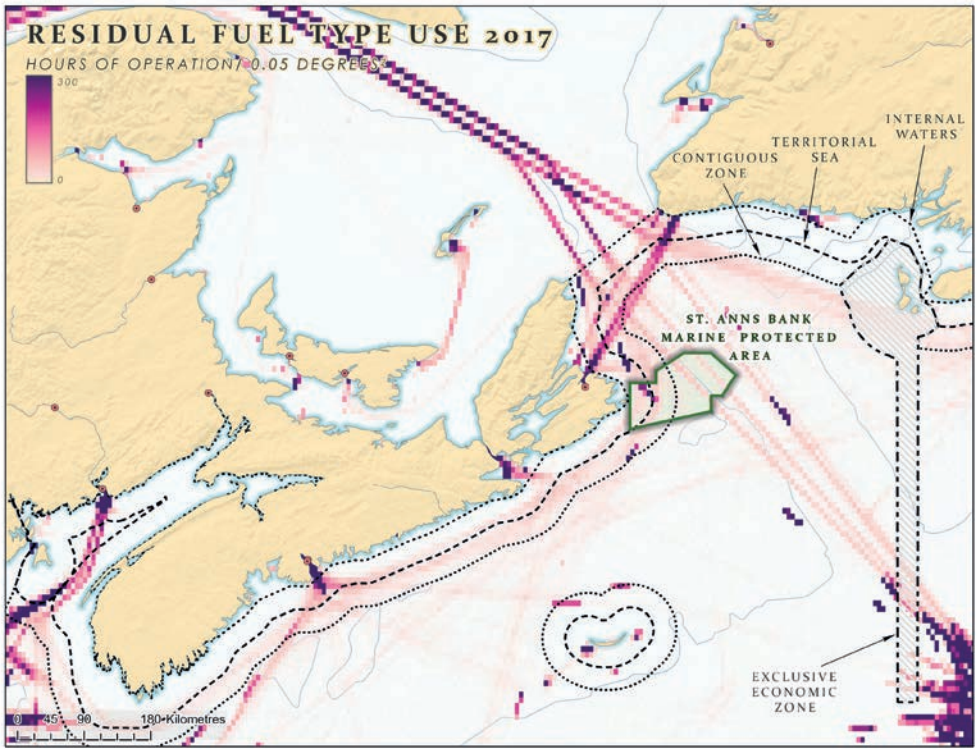
42 Ibid.

43 E. DeCola and T. Robertson, "Phasing Out the Use and Carriage for Use of Heavy Fuel Oil in the Canadian Arctic: Impacts to Northern Communities" (2018) online: wwf.ca/wp-content/uploads/2020/03/Phasing-Out-the-Use-and-Carriage_July-2018.pdf; J. Fritt-Rasmussen, et al., "Heavy Fuel Oil (HFO)" (2018) Denmark: The Nordic Council of Ministers.

44 Government of Canada, "Let's Talk Marine Fuel in the Arctic" (2018) online: letstalktransportation.ca/marine-fuel-in-the-arctic2

Figure 7. Total residual fuel oil use

Map displaying cumulative 2017 ship residual fuel use for the Gulf of St. Lawrence and Scotian Shelf as represented by total hours of operation per 0.5 degrees. Time spent by residual-fuel-oil-using ships was derived from AIS point locations across all available ship types. Residual fuel oils, also known as bunker or heavy fuel oil, is the heaviest fuel oil grade. See ***Appendix E*** for breakdown of residual fuel type use by individual ship types.



RECOMMENDATION #15:

Given the large volume of vessel traffic near St. Anns Bank, the management plan must include clear guidance and set out the necessary steps that are to be taken by managers if there is a threat of an oil spill. This should ensure that effective and urgent preventative measures for the St. Anns Bank MPA are taken in such an event.

Vessel Routeing

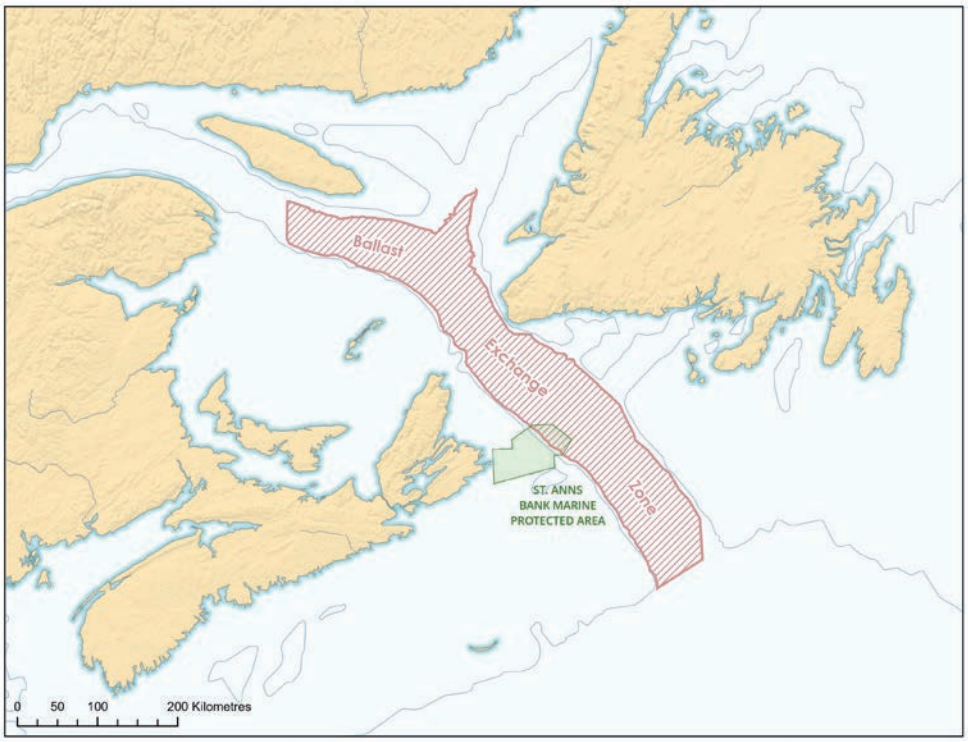
As discussed above, there are powers under the CSA to reroute vessels carrying, discharging or at risk of discharging a pollutant in Canadian waters and the EEZ. This is particularly relevant for preventing large oil spills because oil can be easily defined within the parameters of a specific regulation (indicating it as a pollutant). A routeing scheme and speed reductions for these specific vessels would be appropriate mechanisms to mitigate against oil spills: a buffer area between the SAB and the specific route would also be helpful.

BALLAST WATER

Ballast water can carry pathogens and invasive organisms.[45] The *Ballast Water Control and Management Regulations* made under the CSA generally restrict ballast exchange outside of designated ballast water exchange zones for marine areas inside Canada's EEZ. The Laurentian Channel alternative ballast water exchange zone (BWEZ) overlaps the St. Anns Bank MPA (see Figure 8).[46] It is a seasonal ballast water exchange zone that runs from December 1 through May 1, when surface temperatures are cooler. It should be noted that the BWEZ was created prior to the designation of St. Anns Bank as an MPA.

Figure 8. Ballast exchange zone

Map displaying the location of the Laurentian Channel ballast exchange zone relative to the St. Anns Bank MPA.



The presence of a ballast water exchange zone within the MPA undermines efforts to conserve and protect biodiversity and biological productivity due to the potential risks associated with introducing invasive species from ballast water into the area.

Taking into consideration the multi-decadal regime shift toward increasingly warm conditions on the Canadian margin west of the Laurentian Channel, the precautionary approach dictates the need to prohibit ballast water exchange within the MPA.[47]

45 A. Ricciardi, "Tracking Marine Alien Species by Ship Movements" (2016) Proceedings of the National Academy of Sciences of the United States of America 113(20) at 5470-5471.

46 ERA at 132-33.

47 See for example, Thomas et al., "Seasonal Trends and Phenology Shifts in Sea Surface Temperature on the North American Northeastern Continental Shelf" (2017) Elementa: Science of the Anthropocene, 5, 48.

RECOMMENDATION #16:

The existing Alternative ballast water exchange zone in the Laurentian Channel must be moved to an area that is completely outside of the St. Anns Bank MPA.

RECOMMENDATION #17:

Ballast water exchange and discharge should be prohibited explicitly in MPAs, and a buffer zone should be established around all MPAs that extends this prohibition past its boundaries.

ENDANGERED SPECIES IN ST. ANNS BANK

Endangered and threatened marine species listed under SARA, and their habitats, are located in or near the St. Anns Bank MPA. For example:

- The leatherback turtle, listed as endangered under SARA, is identified as being one of the species most at risk within the St. Anns Bank MPA. Its critical habitat is currently being identified and will be included in an amended recovery strategy.[48]
- The northern wolffish is listed as threatened under SARA. Although its critical habitat has been identified and does not include area within St. Anns Bank, this species does have preferred habitat within the MPA. Atlantic wolffish (SARA special concern) also have preferred habitat within the MPA.
- The NARW is listed as endangered under SARA. Although its critical habitat does not include St. Anns Bank, it is known to travel through the area, and speed restrictions related to these marine mammals have been enacted in nearby areas.

SARA prohibits any person (including a ship) from killing, harming, harassing, capturing or taking any wildlife species that is listed as endangered or threatened.[49] Furthermore, SARA prohibits any person from destroying any part of the critical habitat of any listed endangered or threatened species if the critical habitat is on federal land (including in the EEZ or on the continental shelf), if the listed species is an aquatic species, or if it is a migratory bird under the *Migratory Birds Convention Act*.[50] More specifically, if the critical habitat or a portion of it is in an MPA made under the *Oceans Act*, the Minister must publish a description of that critical habitat in the *Canada Gazette* within 90 days after the recovery strategy or action plan identifies the critical habitat.[51]

Under SARA, the Minister must prepare a recovery strategy for any endangered or threatened species, including for the leatherback turtle, which was created in 2006.[52] An action plan for an endangered or threatened species must also be created based on the recovery strategy and identify the species' critical habitat if possible.[53]

It is not clear how marine traffic is meant to fit into the endangered species regime in St. Anns Bank. While navigation is excepted from the general prohibitions in Section 4, there are no similar exceptions in the Regulations for incidental navigation impacts that may result in the death or harm of an endangered species within the MPA.

What is clear is that the species protections found under SARA, with their primary purpose being environmental protection and conservation, are more broadly scoped and explicitly meant to include areas of the ocean up to the 200NM limit of the EEZ. In that regard, and in light of the conservation objectives for St. Anns Bank, it seems counterproductive and counterintuitive to pre-emptively except "navigation" and shipping impacts from the St. Anns Bank MPA Regulation prohibitions. This especially given that the leatherback turtle and northern wolffish, two of the priority species under the biodiversity conservation objectives, are listed under SARA as endangered and threatened, respectively.

48 DFO, "Action Plan for the Leatherback Sea Turtle (Dermochelys coriacea), Atlantic population, in Canada. Species at Risk Act Action Plan Series" (2020) Fisheries and Oceans Canada, online: species-registry.canada.ca/index-en.html#/consultations/3354 at 13.
49 Species at Risk Act, SC 2002 c 29, s 32(1) [SARA].
50 Ibid, s 58(1).
51 Ibid, s 58(2).
52 Ibid, s 37(1); Atlantic Leatherback Turtle Recovery Team, "Recovery Strategy for Leatherback Turtle (Dermochelys coriacea) in Atlantic Canada" (2006) Species at Risk Act Recovery Strategy Series. Fisheries and Oceans online: species-registry.canada.ca/index-en.html#/consultations/901
53 SARA s 47.

The ERA recommended that conservation priorities related to seabirds be developed in partnership with Canadian Wildlife Service.[54] However, there are only limited references to migratory birds and no conservation objectives related to seabirds or other migratory birds. One of the birds that is found in the St. Anns Bank MPA, the roseate tern, is listed as endangered under both SARA and the Nova Scotia *Endangered Species Act* (ESA). Similar to SARA, there are provisions in the ESA that prohibit the killing, injuring, disturbance or interference with endangered or threatened species listed under the Act.[55] The roseate tern is also protected under the *Migratory Birds Convention Act*.

FINDING:

The impacts and risks of shipping were pre-emptively and prematurely excepted from the St. Anns Bank MPA, without due consideration for an effective management scheme to deal with navigation and its effects on endangered species or migratory birds.

54 DFO, 2012, 8.
55 Endangered Species Act, SNS 1998 c 11.

PROVINCIAL CONSIDERATIONS

Scatarie Island, located just outside the MPA, is a Wildlife Management Area created under section 15 of the Nova Scotia *Wildlife Act* and a provincial Wilderness Area created under section 11 of the Nova Scotia *Wilderness Areas Protection Act* (the WAPA).[56]

Wildlife Management Areas are designed under the *Wildlife Act*, and each has its own regulations that govern its protection and management. The *Scatarie Island Wildlife Management Area Designation and Regulations* (the "Scatarie Island Regulations") prohibit any person, including a ship, from killing any wild mammal or bird within the management area.[57] Migratory birds listed under the federal *Migratory Birds Convention Act* are excluded from the prohibition.[58]

The objective of the WAPA, and by extension, designation of provincial wilderness areas, is to provide for the establishment, management, protection and use of wilderness areas in perpetuity, for present and future generations, including maintaining the integrity of natural processes and biodiversity, protecting representative species and ecosystems, and protecting unique, rare and vulnerable natural features.[59]

The WAPA prohibits certain Crown activities in the Wilderness Area, or parts thereof, including the granting, deeding, leasing, approvals, licences, permits, easements and authorizations within the Wilderness Area. The WAPA requires a management plan to be created for a wilderness area and prohibits industrial developments, including mineral or petroleum extraction, aquaculture and forestry, as well as other anthropomorphic activities not excepted by regulation.[60] More specifically, it is an offence under WAPA for any person, including ships, to do one of the following[61]:

- Remove, destroy or damage any natural object, flora or fauna, whether living or dead;
- Remove, destroy or damage any object of scientific, historical, archaeological, cultural or paleontological interest;
- Introduce a substance or thing that may destroy or damage existing flora, fauna or ecosystems;
- Dump or deposit any litter, garbage or refuse other than in containers provided or designated by the Minister for that purpose;
- Create a nuisance or act in a manner or do anything that may be, or may cause, a nuisance.

Several of the bird species that frequent the island include the common eider, double-crested and great cormorants, black guillemot, common and Arctic terns, leach's storm-petrel and black-legged kittiwake.

While the prohibitions under the *Wildlife Act* only apply to activities within the management area and are limited to only wildlife, the prohibitions under the WAPA are fairly extensive and do apply to activities outside of the protected area that have effects within the area – for example, discharges from ships that remove, destroy or damage the area, or dumping or deposit from a ship, or any discharges (like noise or light) that create a nuisance.

56 Wildlife Act RSNS 1989 c 504; Wilderness Areas Protection Act, SNS 1998 c 27 Schedule A, s 21 [WAPA].
57 Wildlife Act, ss 2-3.
58 Ibid, s. 5.
59 Wilderness Areas Protection Act, SNS 1998 c 27 s 2.
60 WAPA, ss. 13 , 15, 17.
61 WAPA, ss 17(2)(h-k, m), 30.

FINDING:

Provincial protections like those found for Scatarie Island under the *Wilderness Areas Protection Act* can help to inform the necessary management of federally protected areas like St. Anns Bank MPA and highlight the need for federal and provincial coordination to duplicate efforts and strengthen enforcement and monitoring. Effective management of each area in a coordinated manner should improve the success of achieving MPA conservation objectives.

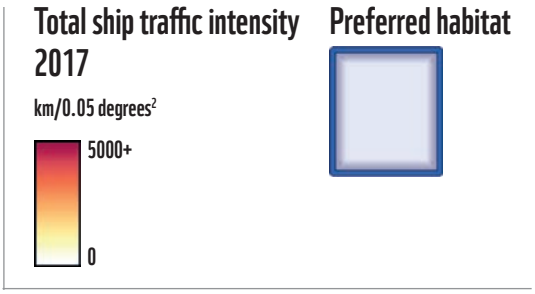
RECOMMENDATION #18:

The St. Anns Bank Management and Monitoring Strategy should reference and incorporate provincial efforts to protect nearby areas, especially because of the interrelatedness between nesting, foraging and feeding sites of bird species, including migratory birds.

RECOMMENDATION #19:

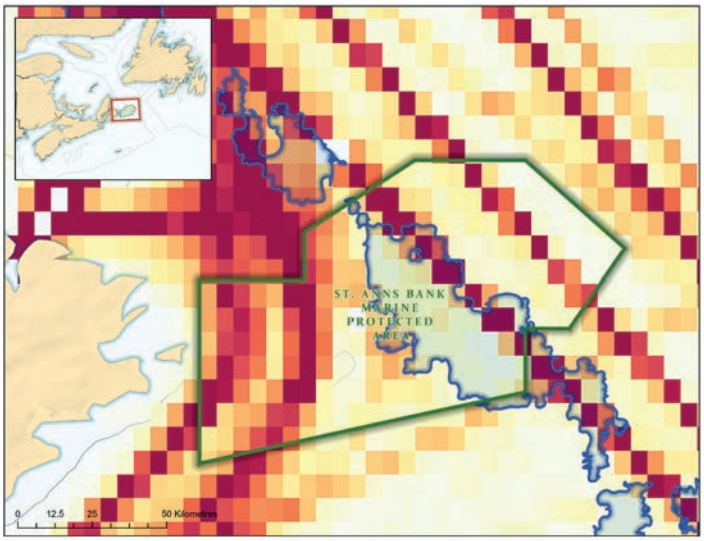
The St. Anns Bank Advisory Committee should include a representative from the provincial department that is responsible for the *Wilderness Areas Protection Act* (currently Nova Scotia Environment).

APPENDIX A: PREFERRED HABITAT FOR SELECT SPECIES



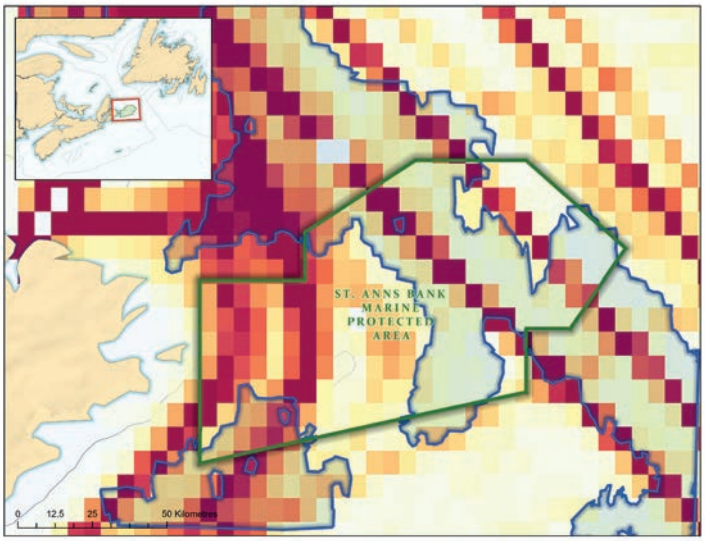
Preferred habitat: Atlantic wolffish

Map displaying the generalized location of Atlantic wolffish (Anarhichas lupus) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees²). Figure adapted from Horsman and Shackell (2009).[62]



Preferred habitat: Witch flounder

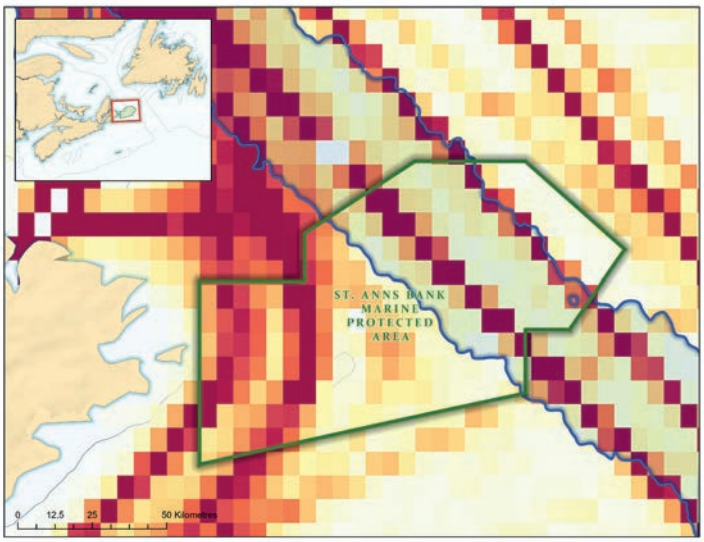
Map displaying the generalized location of witch flounder (Glyptocephalus cynoglossus) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees²). Figure adapted from Horsman and Shackell (2009).[63]



62 T. Horsman and N. Shackell, "Atlas of Important Habitat for Key Fish Species of the Scotian Shelf" (2019) Canadian Technical Report of Fisheries and Aquatic Sciences. 2835.
63 Ibid.

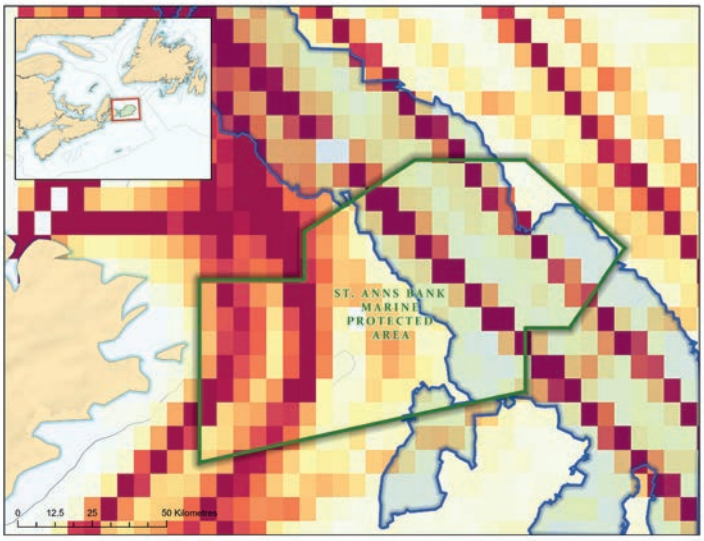
Preferred habitat: White hake

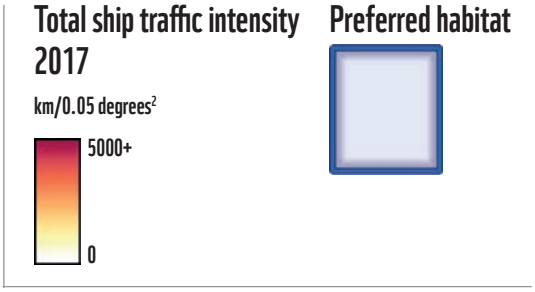
Map displaying the generalized location of white hake (Urophycis tenuis) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees^2). Figure adapted from Horsman and Shackell (2009).[64]



Preferred habitat: Acadian redfish

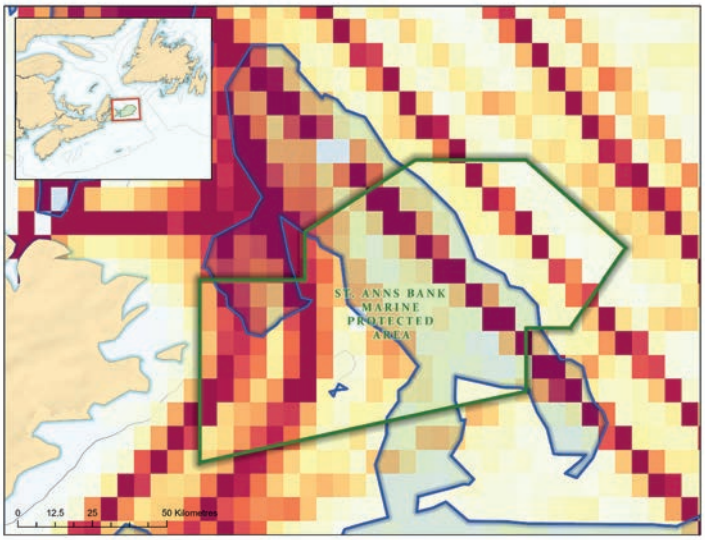
Map displaying the generalized location of Acadian redfish (Sebastes fasciatus) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees^2). Figure adapted from Horsman and Shackell (2009).[65]





Preferred habitat: Atlantic cod

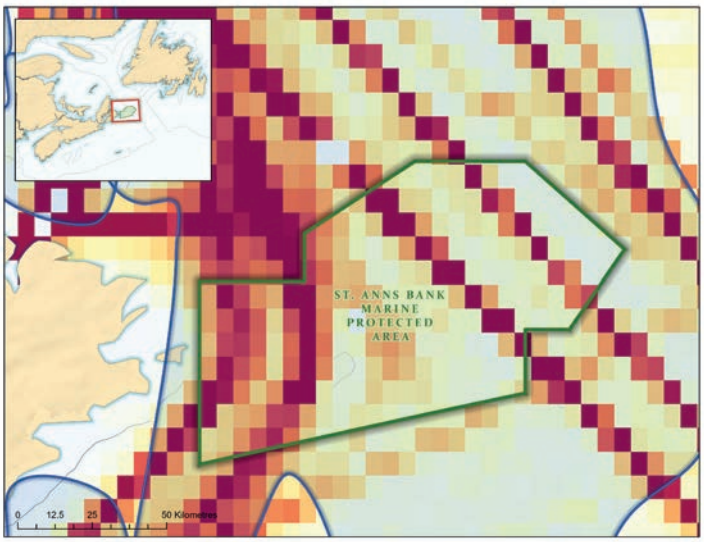
Map displaying the generalized location of Atlantic cod (Gadus morhua) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees^2). Figure adapted from Horsman and Shackell (2009).[66]

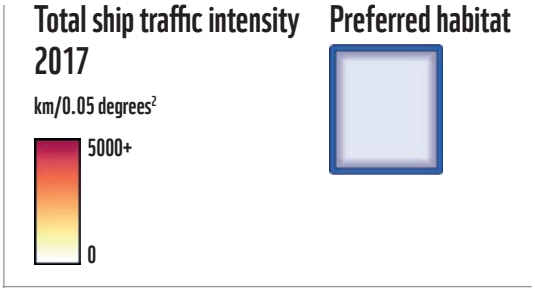


64 Ibid.
65 Ibid.
66 Ibid.

Preferred habitat: Leatherback turtle

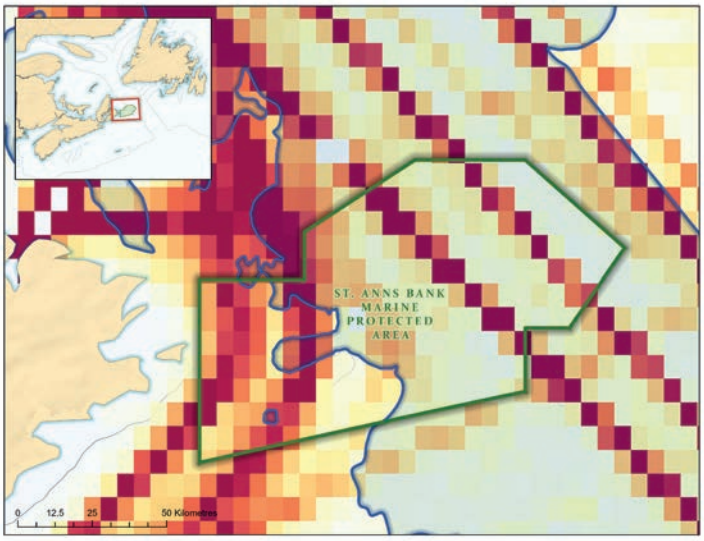
Map displaying the generalized location of leatherback turtle (Dermochelys coriacea) preferred habitat relative to the St. Anns Bank MPA and regional shipping intensity (km/0.5degrees^2). Figure adapted from James, Ottensmeyer and Myers (2005).[67]





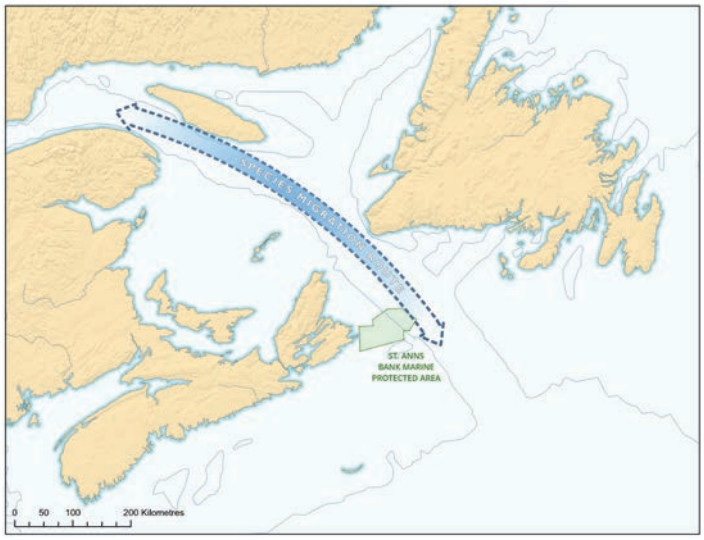
Significant benthic habitat

Map displaying the generalized location of significant benthic habitat relative to the St. Anns Bank MPA. Significant habitat has been identified for corals, sea pens and sponges.[68]



Migration route

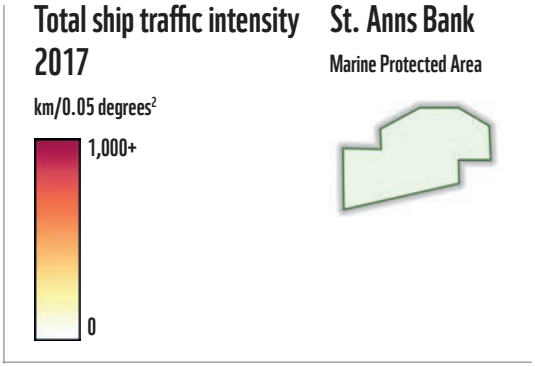
Map displaying the generalized migration route between the Gulf of St. Lawrence and the Scotian Shelf relative to the St. Anns Bank MPA. This migration route has been identified as important for cetaceans, harp seals and grey seals.[69]



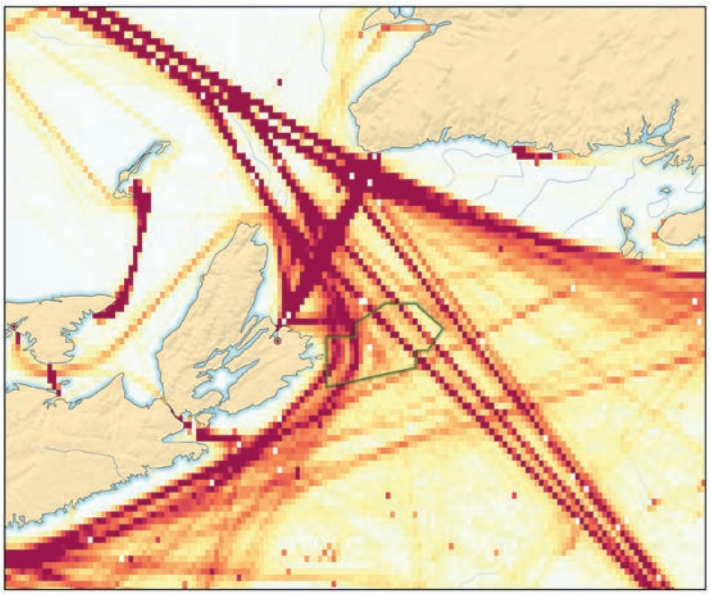
67 M.C. James, C.A. Ottensmeyer and R.A. Myers, "Identification of High-Use Habitat and Threats to Leatherback Sea Turtles in Northern Waters: New Directions for Conservation" (2015) Ecology Letters, 8(2), 195.
68 Kenchington.
69 Ford and Serdynska, "Ecological Overview" (2013) at 132.

APPENDIX B: VESSEL TRAFFIC INTENSITY BY SHIP TYPE

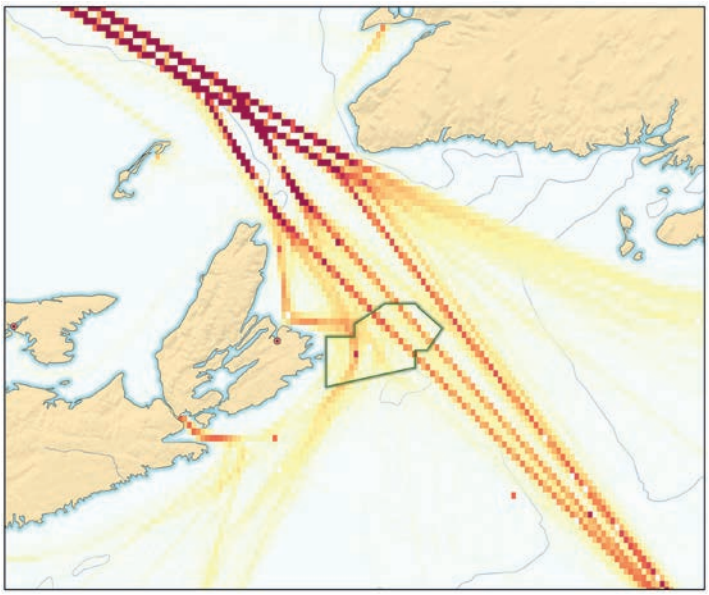
Maps displaying cumulative 2017 ship traffic intensity for the region surrounding St. Anns Bank as represented by total distance traveled in kilometers per 0.5 degrees^2. Distance was derived from AIS point locations across all available ship types.[70] Ship types with nominal activity within the region were omitted.



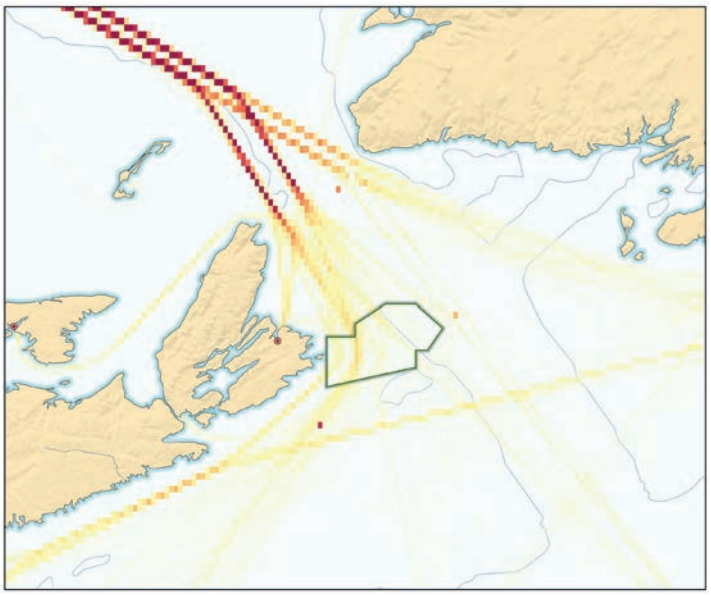
Total ship traffic intensity: All ship types



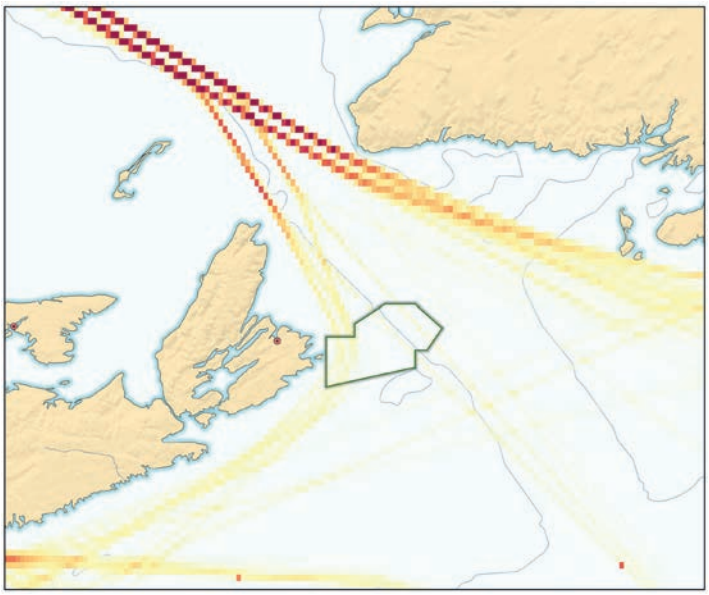
Total ship traffic intensity: Bulk carriers



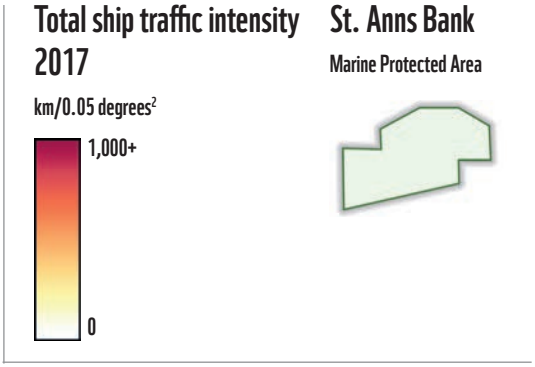
Total ship traffic intensity: Chemical tankers



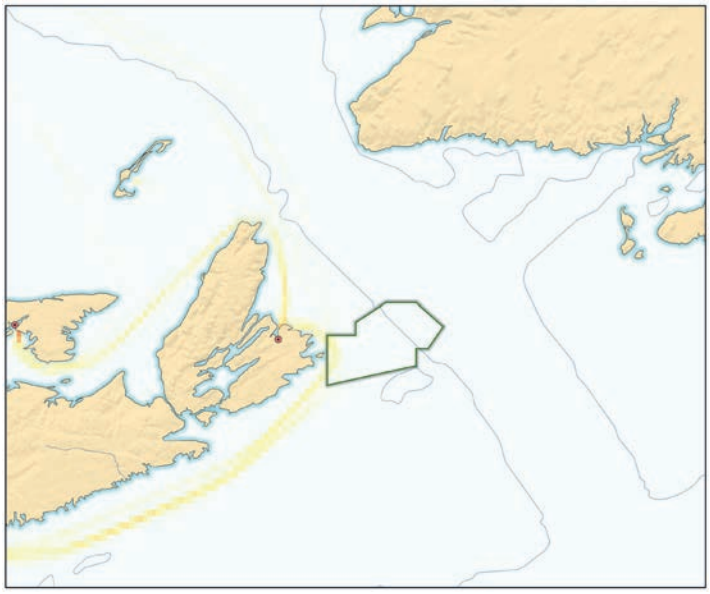
Total ship traffic intensity: Container ships



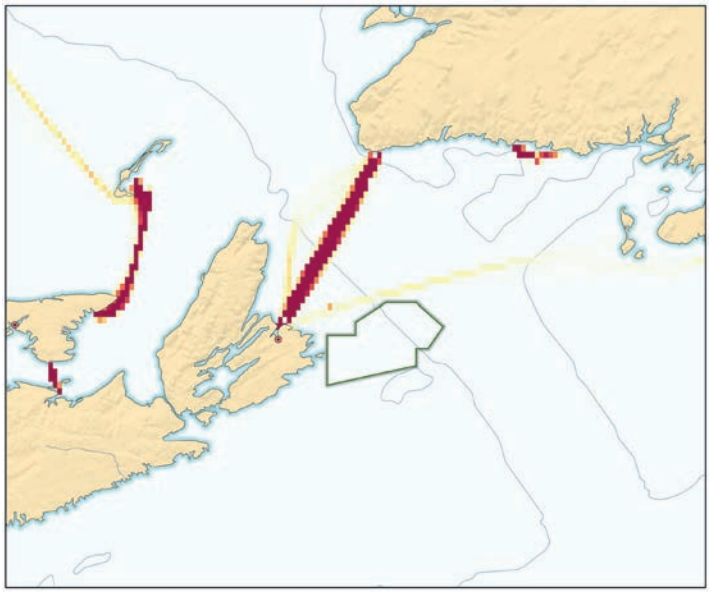
70 Vard Marine, Inc. (2019). Greywater Generation Estimates for the BC Coast. Ottawa, ON: Vard Marine. Retrieved from: https://wwf.ca/wp-content/uploads/2020/03/greywater-generation-estimates-for-the-bc-coast_june-2019.pdf.



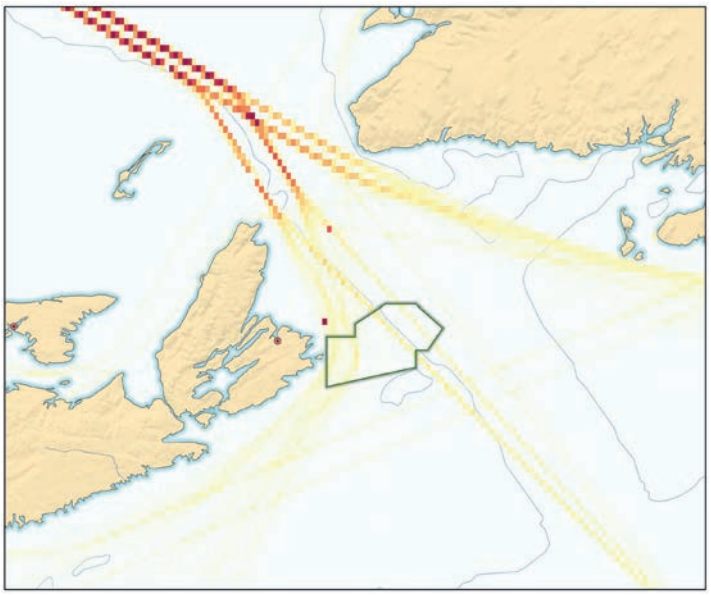
Total ship traffic intensity: Cruise ships



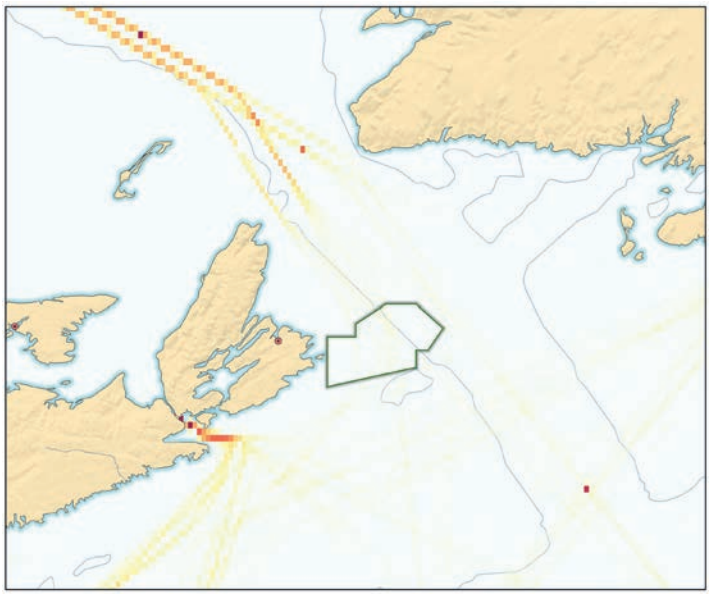
Total ship traffic intensity: Ferry (vehicle and passenger)



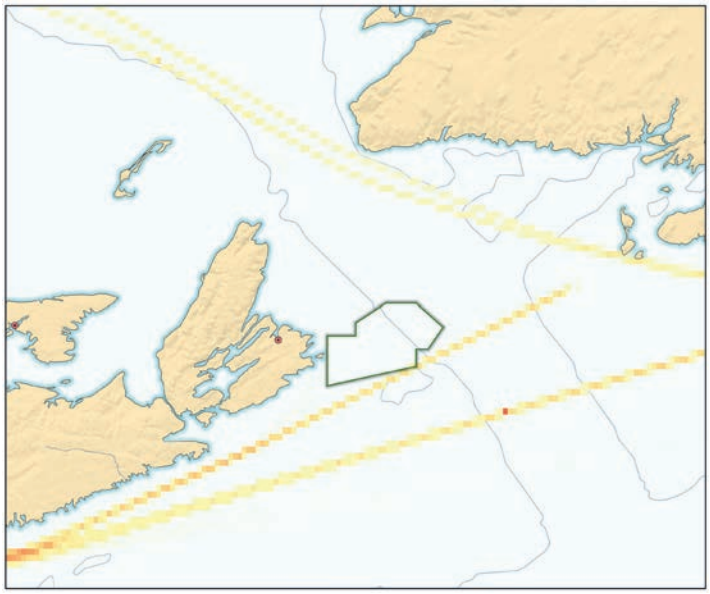
Total ship traffic intensity: General cargo ships



Total ship traffic intensity: Oil tankers



Total ship traffic intensity: Roro ships



Total ship traffic intensity 2017

km/0.05 degrees^2

1,000+

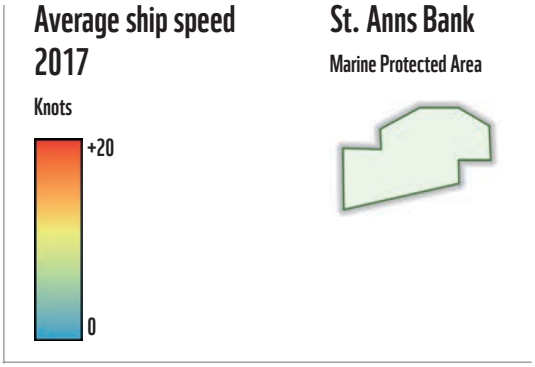
0

St. Anns Bank

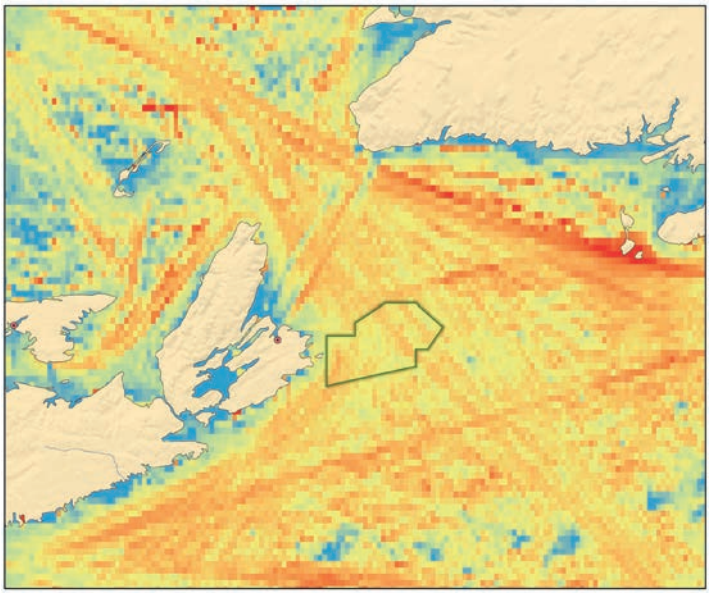
Marine Protected Area

APPENDIX C: AVERAGE SHIP SPEED BY SHIP TYPE

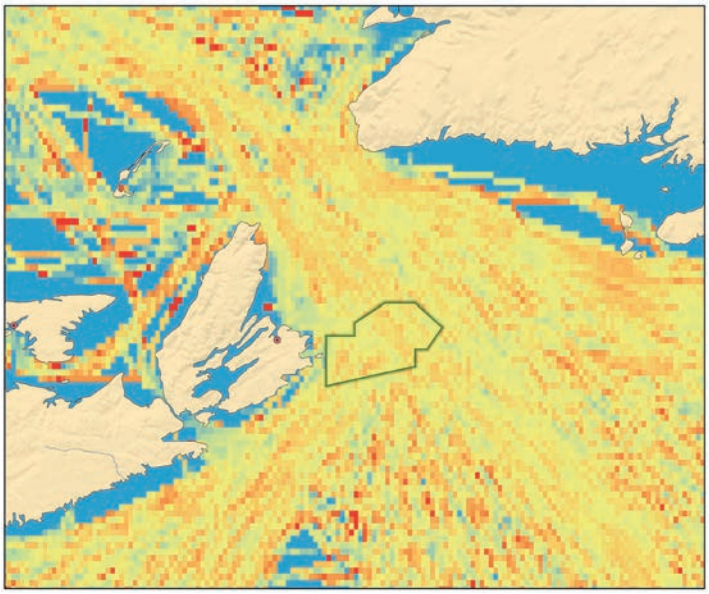
Map displaying average 2017 ship speeds for the region surrounding St. Anns Bank in knots. Average speeds were derived from AIS point locations across all available ship types on a per-pixel basis. Ship types with nominal activity within the region were omitted.



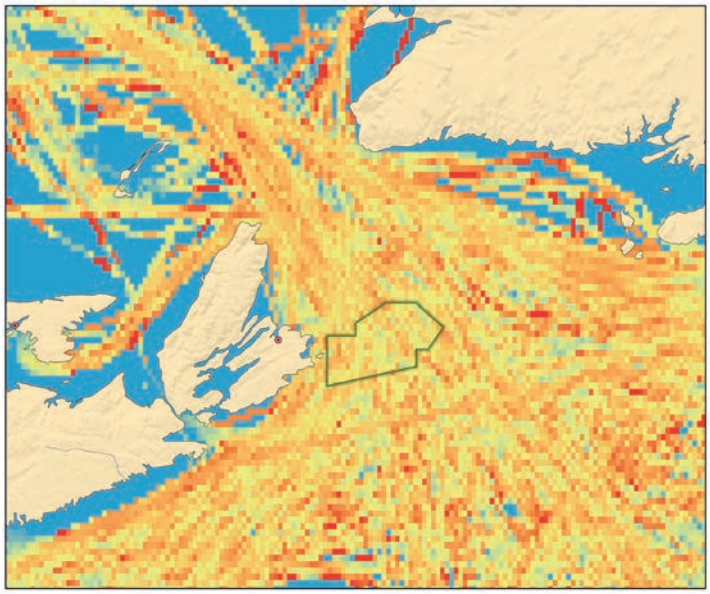
Average ship speeds: All ship types



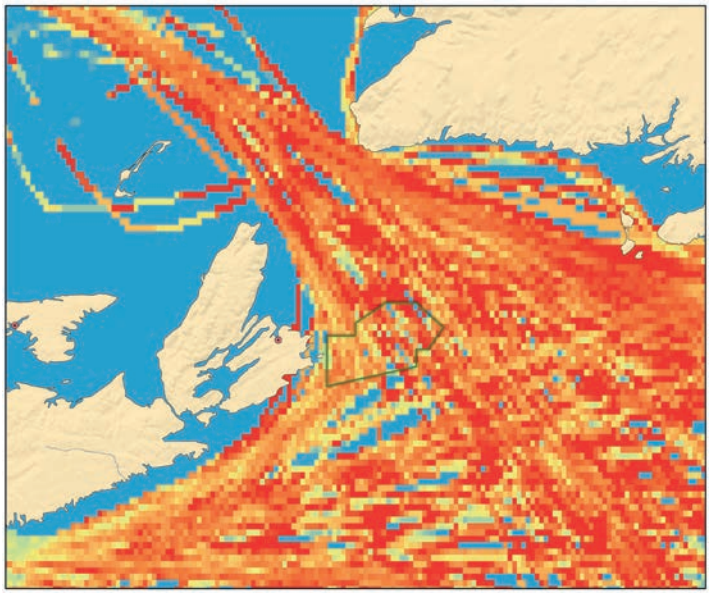
Average ship speeds: Bulk carriers

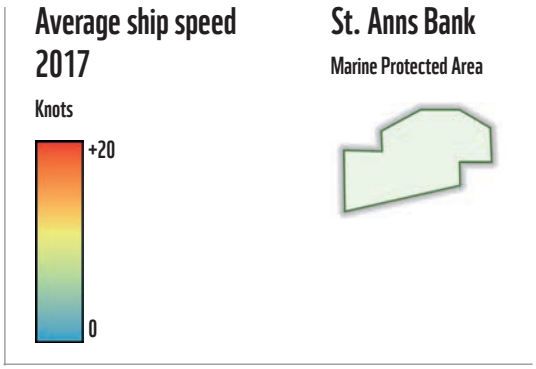


Average ship speeds: Chemical tankers

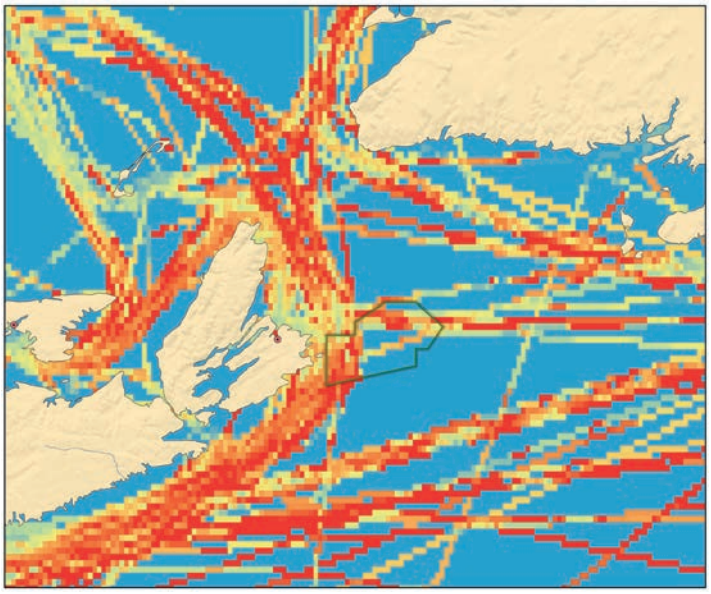


Average ship speeds: Container ships

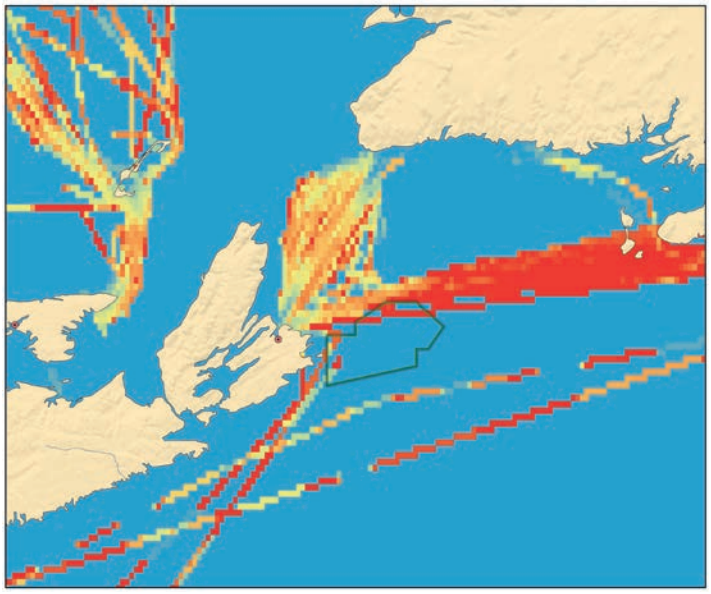




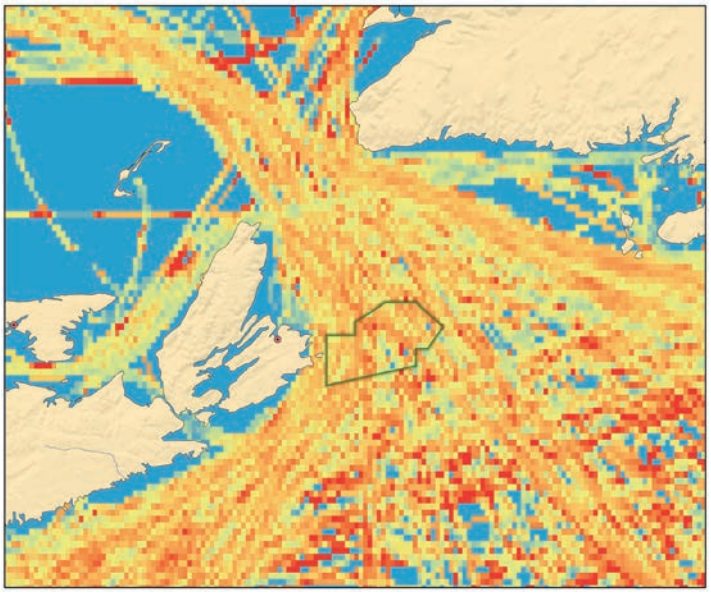
Average ship speeds: Cruise ships



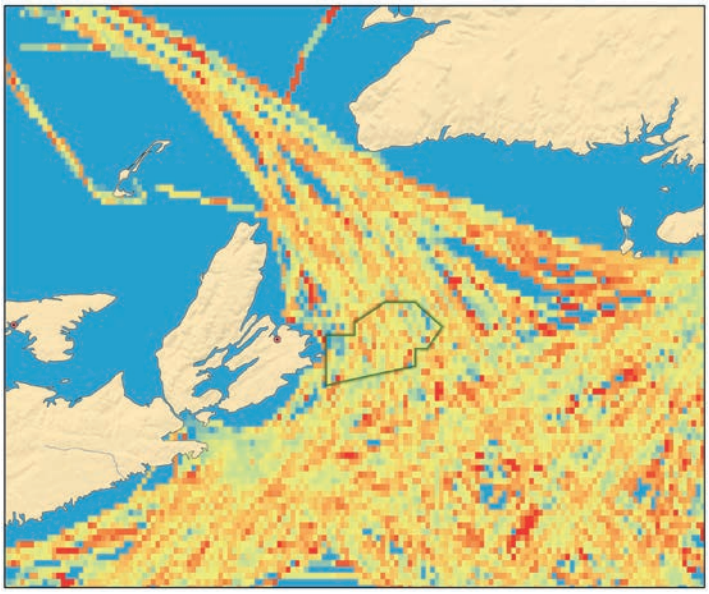
Average ship speeds: Ferry (vehicle and passenger)



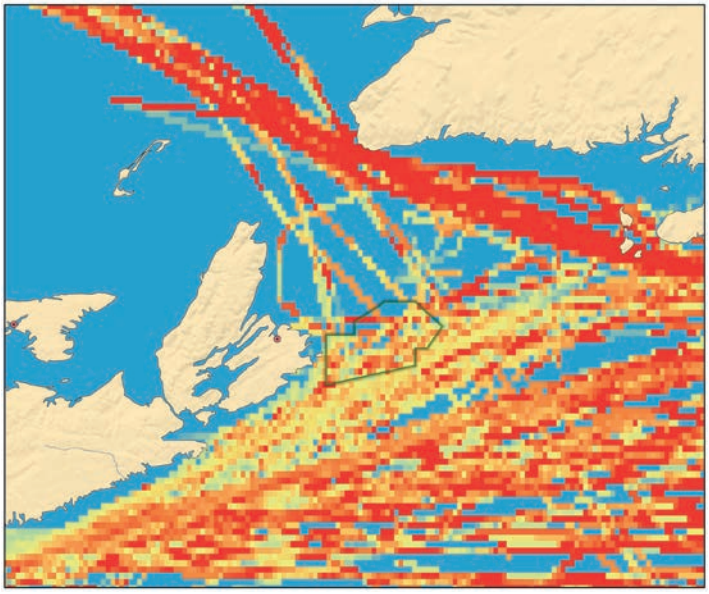
Average ship speeds: General cargo ships



Average ship speeds: Oil tankers



Average ship speeds: Roro ships



Average ship speed 2017

Knots

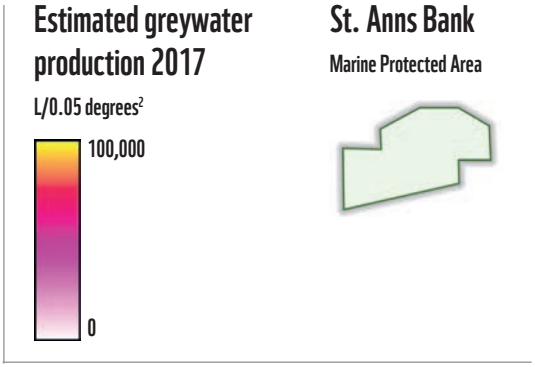
+20

0

St. Anns Bank

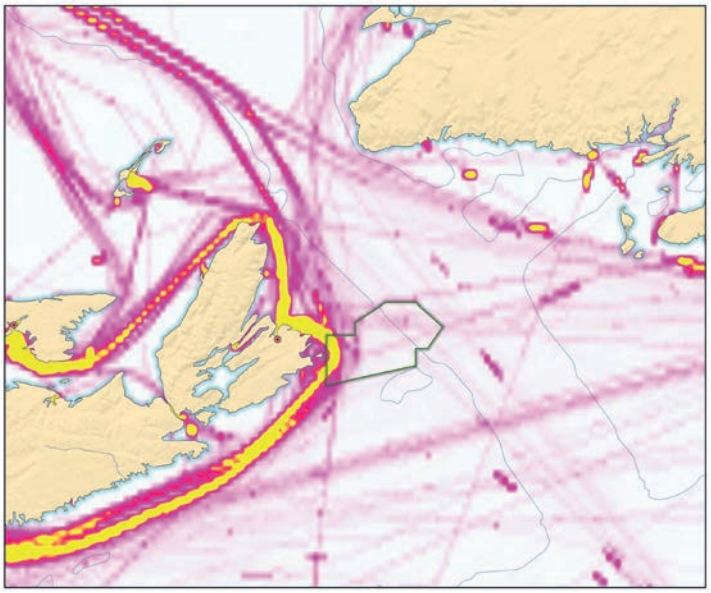
Marine Protected Area

APPENDIX D: ESTIMATED GREYWATER PRODUCTION BY SHIP TYPE

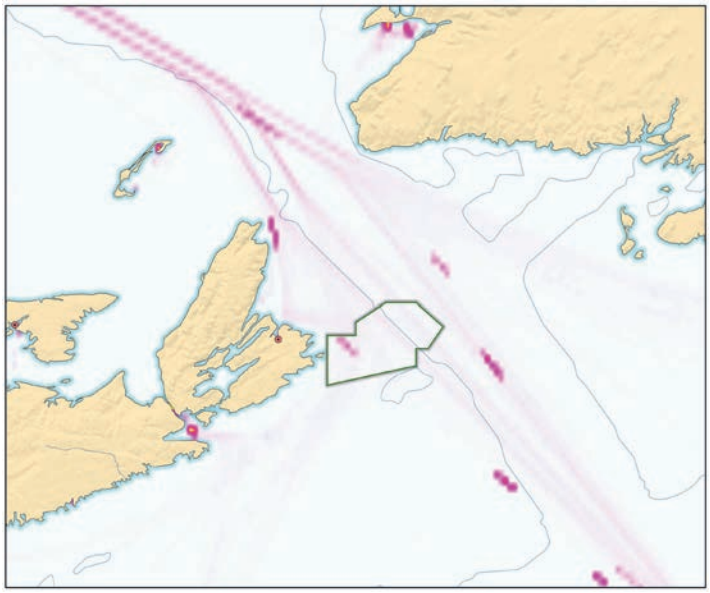


Map displaying cumulative 2017 ship greywater generation for the region surrounding St. Anns Bank as represented by total litres per 0.5 degrees^2. Estimates were derived from AIS point locations across all available ship types in combination with coefficients of greywater production (Vard, 2019). Ship types with nominal activity within the region were omitted.

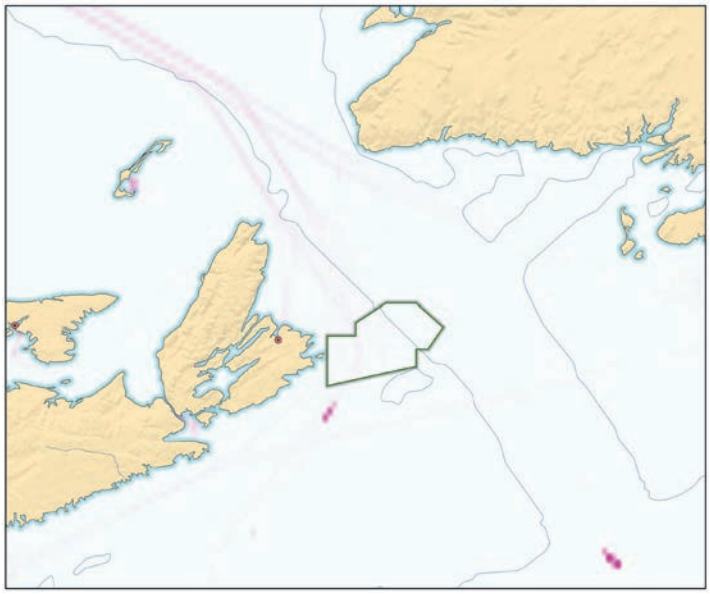
Estimated ship-based greywater production: All ship types



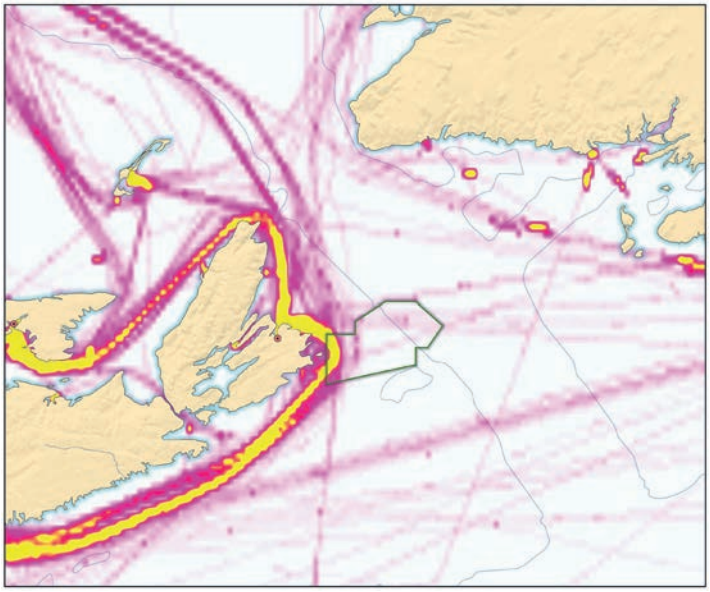
Estimated ship-based greywater production: Bulk carriers



Estimated ship-based greywater production: Chemical tankers



Estimated ship-based greywater production: Cruise ships



Estimated greywater production 2017

L/0.05 degrees^2

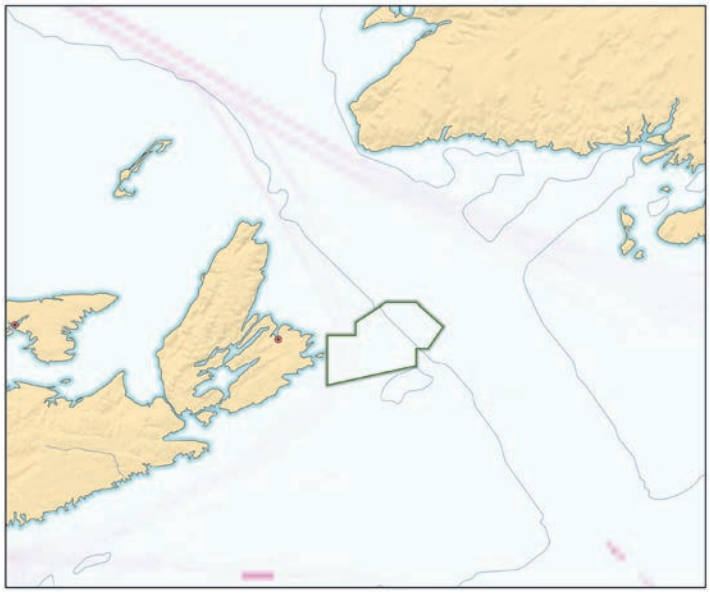
100,000

0

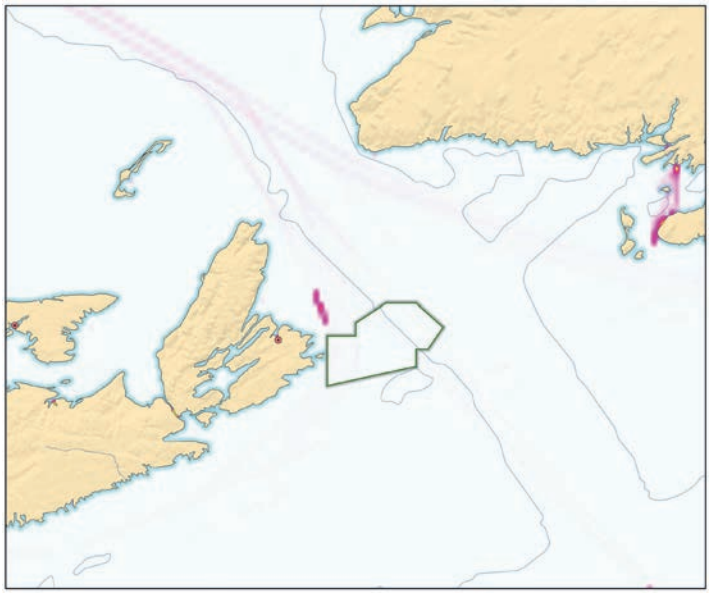
St. Anns Bank

Marine Protected Area

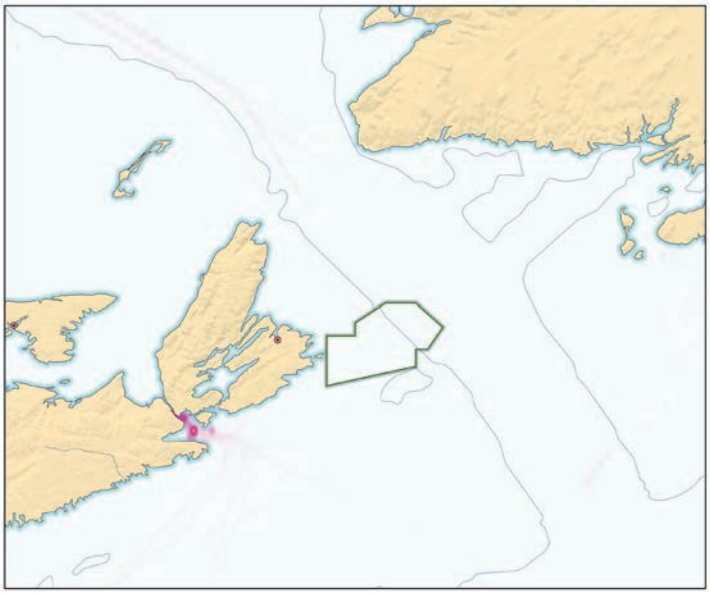
Estimated ship-based greywater production: Container ships



Estimated ship-based greywater production: General cargo ships



Estimated ship-based greywater production: Oil tankers



Estimated greywater production 2017

L/0.05 degrees^2

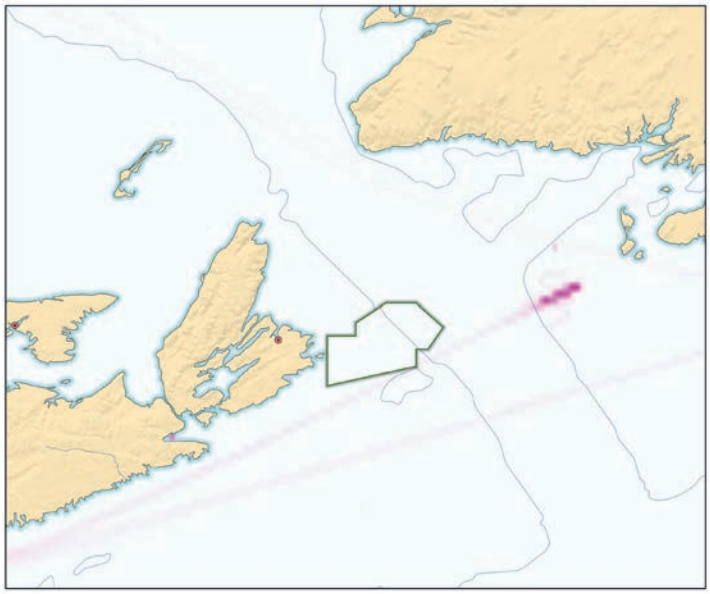
100,000

0

St. Anns Bank

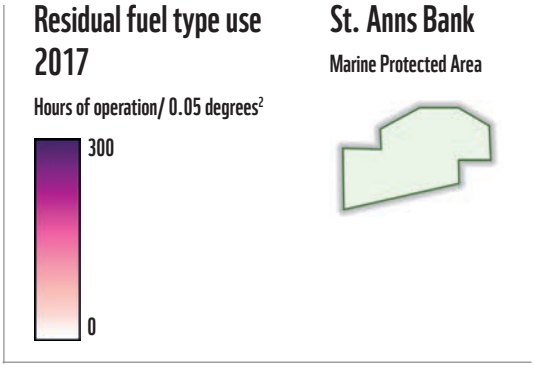
Marine Protected Area

Estimated ship-based greywater production: Roro ships

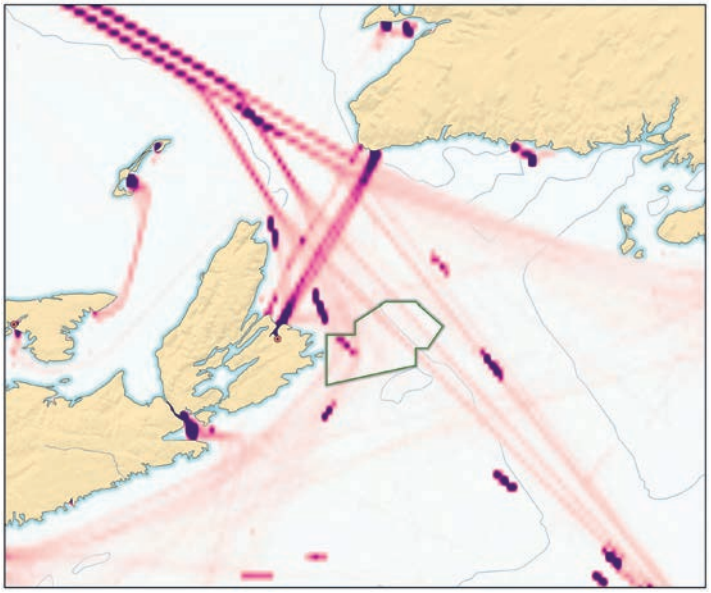


APPENDIX E: RESIDUAL FUEL TYPE USE BY SHIP TYPE

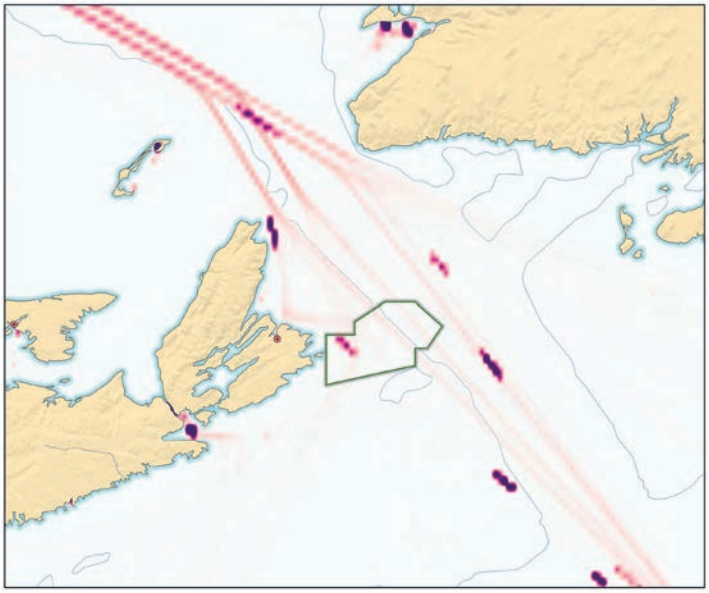
Map displaying cumulative 2017 ship residual fuel use for the region surrounding St. Anns Bank as represented by total hours of operation per 0.5 degrees^2. Time spent by residual fuel oil using ships was derived from AIS point locations across all available ship types. Residual fuel oils, also known as bunker or heavy fuel oil, is the heaviest fuel oil grade. Ship types with nominal activity within the region were omitted.



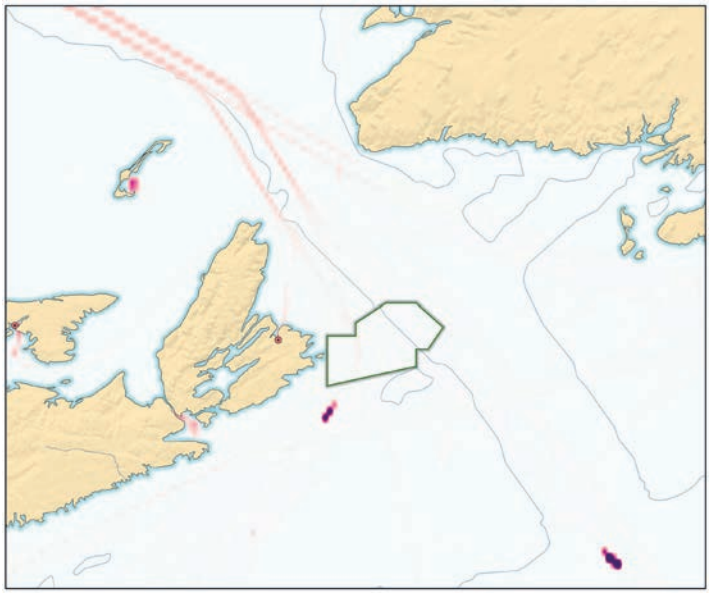
Total residual fuel oil use: All ship types



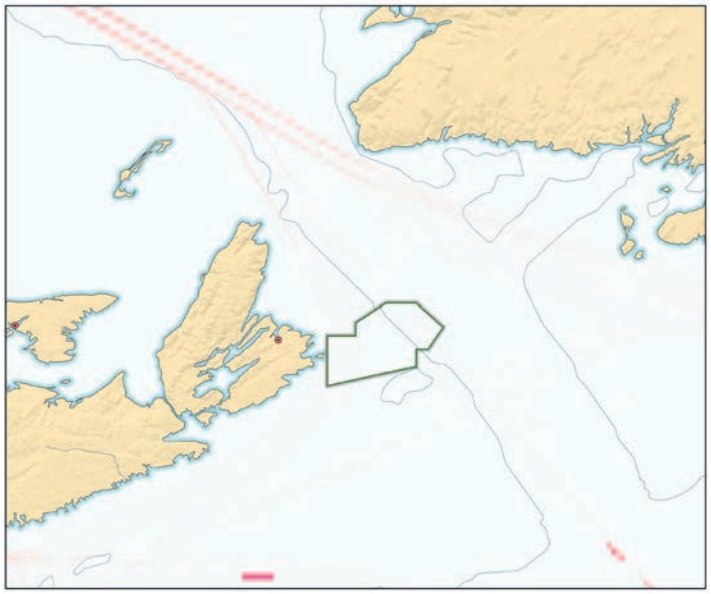
Total residual fuel oil use: Bulk carriers

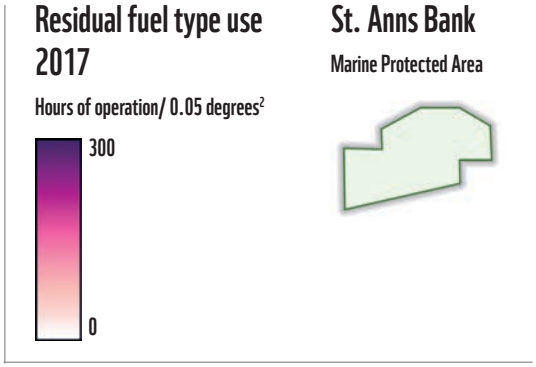


Total residual fuel oil use: Chemical tankers



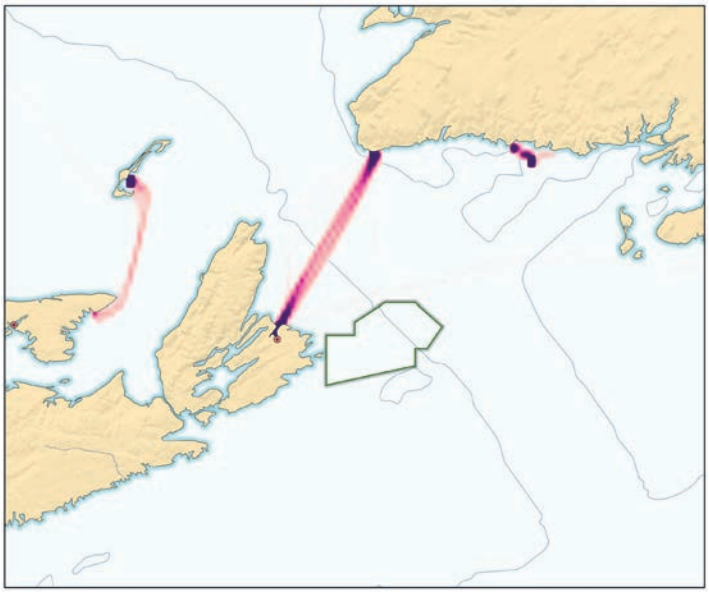
Total residual fuel oil use: Container ships



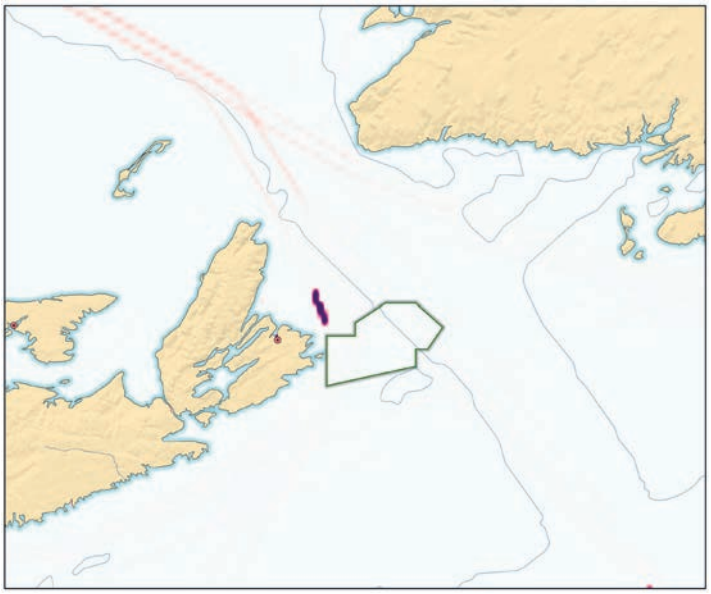


Total residual fuel oil use: Cruise ships

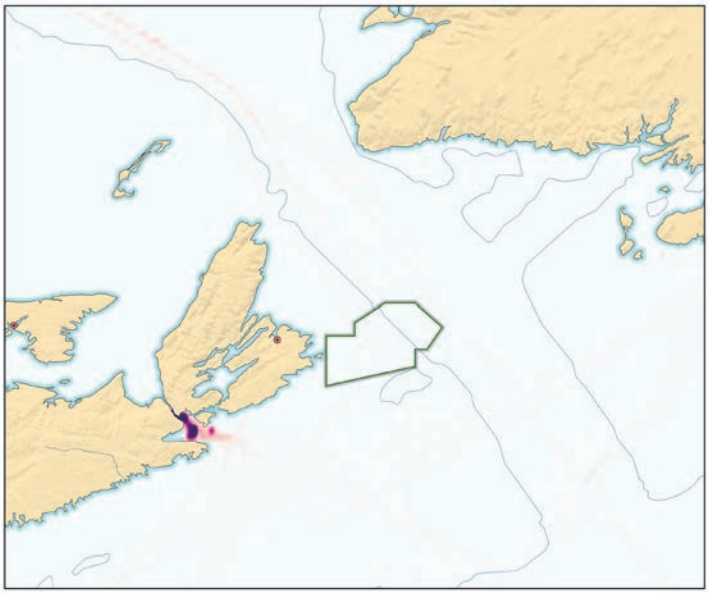
Total residual fuel oil use: Ferry (vehicle and passenger)



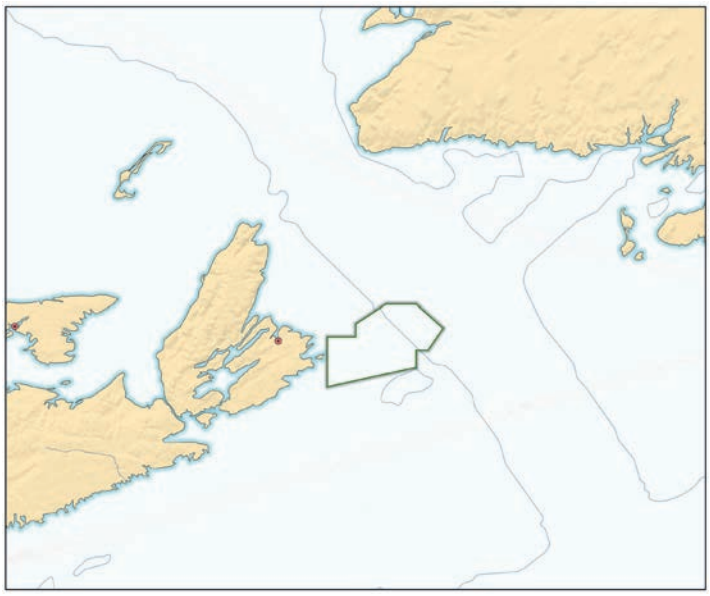
Total residual fuel oil use: General cargo ships



Total residual fuel oil use: Oil tankers



Total residual fuel oil use: Roro ships



Residual fuel type use 2017

Hours of operation/ 0.05 degrees^2

300

0

St. Anns Bank

Marine Protected Area

GLOSSARY OF TERMS

AIS	Automatic Identification System
AOI	Area of interest
BWEZ	Ballast water exchange zone
CSA	*Canada Shipping Act, 2001*
DFO	Fisheries and Oceans Canada
EEZ	Exclusive Economic Zone
EGCS	Exhaust gas cleaning systems
ERA	Ecological risk assessment
ESA	Nova Scotia *Endangered Species Act*
HFO	Heavy fuel oil
IMO	International Maritime Organization
kt	Knots
MPA	Marine protected area
NM	Nautical mile
NOTMAR	Notice to Mariners
NOTSHIP	Notice to Shipping
RIAS	Regulatory Impact Analysis Statement
SAB	St. Anns Bank
SARA	*Species at Risk Act*
WAPA	Nova Scotia *Wilderness Areas Protection Act*

For more information about this report, please contact
Mike Kofahl
mike@ecelaw.ca

For more information about the Toolkit, please contact
Kim Dunn
kdunn@wwfcanada.org

A Canada with abundant wildlife, where nature and people thrive.

wwf.ca