



MARINE INDUSTRY ENGAGEMENT FOR WHALE DATA COLLECTION

Canadian East Coast Sector

Activity
Report
Seasons
2014-2018



Cover photography © Yan Guilbault

This document has been jointly prepared by the Marine Mammal Observation Network and Green Marine, which together have overseen the marine industry engagement project for the collection of whale data along Canada's east coast.

Based in Rivière-du-Loup, the Marine Mammal Observation Network (MMON) is a non-profit organization that has been working for the conservation and promotion of the St. Lawrence and its fauna since 1998. MMON notably comprises a vast network of observer members that collect whale and seal observation data in the context of their regular activities and subsequently use them for various conservation purposes. With its integrated management approach, the organization collaborates with various players in the marine industry to involve them in a coordinated effort to preserve marine ecosystems.

Founded in 2007, Green Marine is an environmental certification program for the North American marine industry that stems from a voluntary effort to go above and beyond existing regulations. It is a rigorous, transparent and inclusive initiative that targets priority environmental issues with its 12 distinct performance indicators. There are currently more than 130 ship owners/operators, port authorities, terminals and shipyards from coast to coast, in Canada and the United States, participating in the program. The unique character of Green Marine's program lies in the support it receives from environmental, scientific and governmental groups. Approximately 70 supporters help develop and fine-tune the program.

www.romm.ca

www.allianceverte.org



This project was undertaken with the financial support of the Government of Canada



PREFACE

MESSAGE FROM MMON

For MMON, the marine industry engagement program for whale conservation represented an exceptional opportunity to work hand in hand with this sector for the long-term protection of cetaceans. In 2011, an initial and highly successful collaboration with the Shipping Federation of Canada was undertaken for the production and distribution of A Mariner's Guide to Whales in the Northwest Atlantic, which aimed to educate ship owners/operators on the presence of whales and the behaviours to adopt in their presence. Driven by this most positive experience, MMON was excited to team up with Green Marine in order to develop a comprehensive whale data collection and training program tailored to the reality of ship owners/operators. This program gave further impetus to this nascent collaboration with the marine industry. The answer was beyond our expectations: today, approximately seven companies with a fleet of 50 ships actively participate in the program and are consistently accompanying us to ensure continuous improvement. Four years into the project and approximately 3,475 collected data later, we can affirm that the industry is contributing to a better understanding of whale distribution patterns in major shipping channels. The sector is thereby helping to develop protective measures more suited to reality, notably through a better understanding of collision risk factors. A warm thank you to each every one of our partners and long live the project!



Esther Blier
Executive Director

MESSAGE FROM GREEN MARINE

Green Marine is proud to have collaborated in this project, which has allowed us to learn more about whale movement patterns. This knowledge will make a tangible contribution to their conservation. Green Marine has facilitated networking between ship owners/operators and the development of suitable training tools. The various crew trainings that I have had the opportunity to offer by boarding a number of ships have helped educate seafaring personnel on the presence of at-risk whale species in their navigation area and the actions to be taken when whales are encountered, notably in order to minimize and report collisions. These trainings have led to enriching discussions on both sides of the equation. They provide motivation for the crew's direct involvement and facilitate the collection of essential information. Thanks to the binational nature of the program, Green Marine's participation has also allowed the project to leverage expertise developed in this field in western Canada. This partnership also spawned the development of two performance indicators on underwater noise (ship owners/operators and ports). The objective of the indicators is to reduce the impact of maritime activities on marine mammals. This is an important addition to the program not only since these are the very first indicators that directly pertain to whales, but also because it is the only voluntary environmental certification program in the world that addresses this issue. Moreover, these criteria will facilitate tracking when implementing and completing the developed programs, whether for maritime carriers or ports.



Véronique Nolet
Program Manager –
St. Lawrence



SUMMARY

In 2014, the Marine Mammal Observation Network (MMON), the Shipping Federation of Canada and Dalhousie University co-produced and published the first edition of *A Mariner's Guide to Whales in the Northwest Atlantic*. This book opened the door to numerous collaborations between the marine industry and the conservation sector by proposing various solutions to lower the risks of collisions between ships and whales. Further, it was mentioned therein that, ideally, all maritime companies would be required to provide their crews with training to educate them on the measures to be taken to prevent collisions and what to do in the event a ship strike were to occur. Improving crew members' ability to identify key whale species was also proposed in order to better understand the behaviour of the species encountered. Additionally, acquiring data on the main seasonal ranges of whales that lie within or in proximity to shipping channels was also identified as a major added value in order to better understand potential interactions between ships and whales.

It was in this context that MMON and Green Marine teamed up to carry out the marine industry engagement project as part of a vast initiative to collect whale observation data along the Canadian east coast. This project placed significant emphasis on training seafaring personnel on how to identify whales and collect observation data. Information was also distributed on the behaviours to adopt in the presence of whales and in the event of a collision.

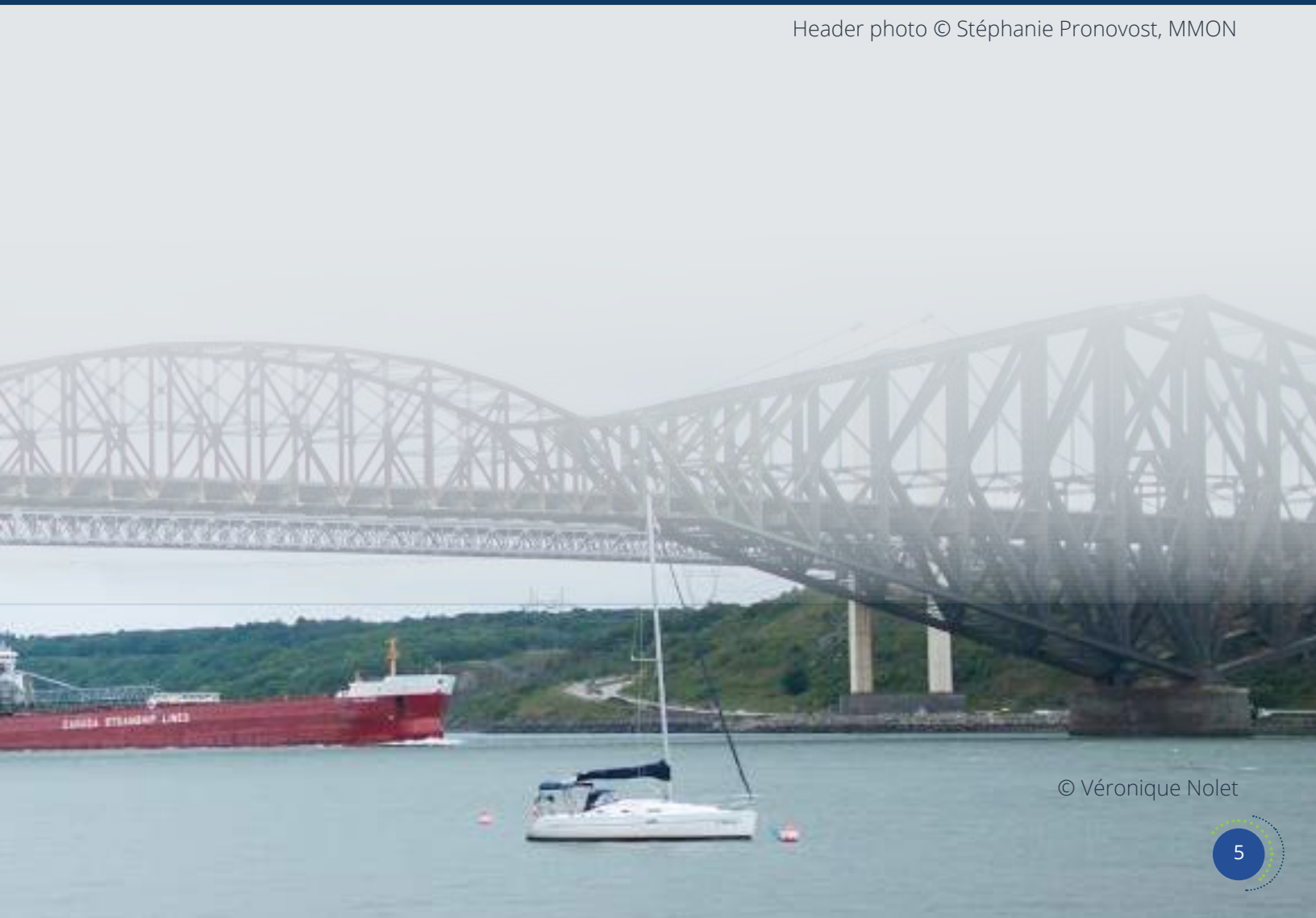
Following an initial successful trial carried out in 2015 with the fleet of ships operated by Groupe Desgagnés as well as CSL Group's Salarium, the project officially kicked off thanks to funding received under the Canadian government's Habitat Stewardship Program for Species at Risk for a three-year pilot project. Between 2016 and 2019, seven companies volunteered to join this project and received training on how to identify whales and the correct behaviours to adopt in their presence. The diverging realities of the different companies forced the MMON and Green Marine teams to develop individually tailored training for each company. This activity report provides an overview of the participating companies, training and data collection activities that were conducted as well as the future outlook of the project.



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1 • CONTEXT

The Northwest Atlantic, the Gulf of St. Lawrence as well as the St. Lawrence Estuary represent important waterways for the marine industry. On the other hand, these same waters contain highly productive ecosystems that are home to a wide diversity of whale species that come to carry out vital activities such as feeding, reproduction and rest. Although some species such as the St. Lawrence beluga are year-round residents, the majority undertake annual migrations. Consequently, shipping corridors and whale migration routes inevitably overlap at certain locations and times of the year.

Collisions between ships and whales is an issue in countries around the globe, and Canada is no exception. For certain endangered species such as the North Atlantic right whale, blue whale and southern resident killer whale, ship strikes are one of the main threats compromising their recovery.

A number of international agencies are working on initiatives that aim to reduce the risks of collisions between ships and whales. Examples of such initiatives include avoidance of areas by ships on a seasonal or permanent basis, speed reduction zones, mandatory ship reporting in certain zones, aerial surveys, observation reports and training for crew members.

This training and whale data collection engagement project for stakeholders in the marine industry is particularly important. Indeed, awareness-raising actions are amongst the solutions identified and deemed to be effective for reducing the potentially adverse impacts of maritime traffic where shipping channels overlap with the feeding, breeding and resting grounds of whales.



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2 • PRESENTATION OF PROJECT

AN ACTIVE NETWORK OF OBSERVERS SINCE 1998

Since its founding in 1998, the Marine Mammal Observation Network (MMON) has been compiling a database on the whales and seals that frequent the Estuary and Gulf of St. Lawrence. Since the earliest stages of this environmental observation project, a wide array of organizations have joined the movement by voluntarily collecting data on marine mammals and other marine species throughout their regular observation season. Conservation parks, cruise and whale-watching tour companies, shipping operators and ferries are thus grouped under the designation “MMON observer members”.

Over the years, additional members have joined the network and the territory covered has correspondingly grown. Each observer member contributes to marine mammal conservation objectives by gathering information on the geographic range and abundance of these animals in the Northwest Atlantic, including the Estuary and Gulf of St. Lawrence.





MARINE INDUSTRY ENGAGEMENT

Maritime carriers operate year round and in the farthest reaches of the oceans, meaning that data can be obtained in areas that are sometimes nearly inaccessible. These data – sometimes collected outside the summer season, sometimes in areas that are infrequently visited or poorly known – provide a better understanding of the distribution and abundance of marine mammals.

Due to the growing interest of companies in following in the footsteps of Groupe Desgagnés and Canada Steamship Lines and in order to address this demand, MMON, in collaboration with Green Marine, submitted a project to the Government of Canada's Habitat

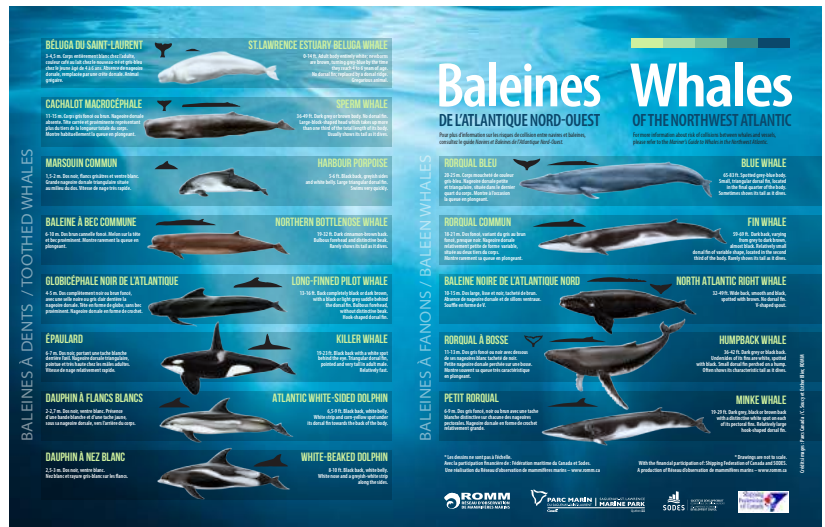
Stewardship Program for Species at Risk. The funding received made it possible to expand the training and data collection program to include other players and to develop training tools adapted to the multiple realities of the various participating companies. By the end of this four-year pilot project, approximately 3,475 data had been collected by a fleet of some fifty ships operated by seven different companies.

This activity report outlines the positive spinoffs of this pilot project, which was carried out from April 2015 to March 2019.

PUBLICLY AVAILABLE DATA

The data collected by MMON's network of observer members are centralized at the St. Lawrence Global Observatory, where they are made accessible to the public via the observatory's website at www.slgo.ca. For more substantial use, groups, organizations or public/private institutions must submit a written request to MMON.

As a concrete example, collected data could be used to prepare certain awareness-raising or educational publications (e.g. A Mariner's Guide to Whales in the Northwest Atlantic) to complete existing scientific databases or to serve as a reference for the implementation of adequate marine mammal management and conservation measures.



CORNERSTONE OF THE PROJECT: TRAINING

Training ship crews is an essential component for ensuring the success of such a data collection project. Indeed, training can help increase confidence levels in collected data, notably in terms of correctly identified whales as well as uniformity in the data collection method. To achieve this, MMON and Green Marine needed to develop quality training and reference tools tailored to the needs of their users.

Three types of training were developed in order to adapt to the realities of different ship owners/operators.

For each of these trainings, the material used will include the following:

- A PowerPoint presentation on the project;
- A PowerPoint presentation on whale identification;

- A PowerPoint presentation on the data collection method;
- Laminated ID sheets illustrating the whales of the St. Lawrence;
- A large poster illustrating the whales that can be observed in the Northwest Atlantic;
- One reference notebook per ship containing the following information: A Mariner's Guide to Whales in the Northwest Atlantic, a data collection protocol, observation charts, copies of the PowerPoint presentations given, identification sheets and information on whale species, and additional information on key species and those of significant importance.



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DIFFERENT TYPES OF TRAINING OFFERED

ON-BOARD CREW TRAINING

Consists of having the instructor directly board the ship for a complete transit or a portion thereof. Lasting approximately 2.5 hours, trainings are given in the pilothouse during the different shifts of the crew members.

ADVANTAGES

- Optimum understanding of the importance to be placed on a better co-existence between ships and whales.
- Opportunity to practise whale observations and data collection in real time.
- Possibility of giving more than one training (if necessary).
- Information adapted to the routes most often taken by the ship (e.g. marine protected areas encountered).
- Presence of an instructor on board the ship for several days to answer questions.

DISADVANTAGES

- Training limited to domestic companies that make short trips lasting a week at the very most.
- Requires significant coordination between the instructor and the company.
- Financial investment for the company (representation and travel expenses of instructor).
- Significant time investment for the instructor.

DOCKSIDE CREW TRAINING

Consists of the instructor boarding the ship when the latter is docked, i.e. between two transits. Trainings are subject to time constraints, as ships generally remain docked for the shortest time possible.

ADVANTAGES

- Training adapted to domestic and international ship owners/operators.
- Possibility to meet with crews in their workplace.
- Minor investment for the company.
- Minimal time investment for the instructor.

DISADVANTAGES

- Training is time constrained and subject to whatever other activities might be planned for the docked ship.
- Requires significant coordination between the instructor and the company due to changing schedules.
- No opportunity to practise in real time.

GROUP TRAINING DURING ANNUAL SEMINARS FOR SEAFARING PERSONNEL

Consists of offering training to as many individuals as possible when the latter are gathered at an annual meeting organized by the company.

ADVANTAGES

- Possibility to train a large number of individuals (and thus the crews of multiple ships) at the same time.
- Minor investment for the company.
- Minor time investment for the instructor.

DISADVANTAGES

- Training accessible only to domestic companies that organize these types of meetings.
- Impossible to adapt training to the ships' transits.
- Basic, very generalized training "fast tracked" due to the very tight schedules often constraining this type of event.
- Few opportunities to interact with attendees.

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A NOTEWORTHY COMMITMENT

To help stimulate a crew's long-term interest in collecting data, it is important to implement various promotion, motivation and feedback activities. Below is a brief overview of the activities that have been conducted in this regard as part of this project:

- Press releases to announce the engagement of each company participating in the project.
- Certificates issued to each participating ship demonstrating its commitment to the project.
- Regular communication to ship crews by key persons within these same participating companies (e.g. environmental managers and captains) to promote participation in the project.
- Regular communication between representatives of participating companies and MMON.



- Personalized newsletters sent monthly or bimonthly to each company that shares the whale observations made by its crews over the preceding month as well as news articles relating to whales or the marine environment. This is a unique opportunity to disseminate messages pertaining to whale conservation.



THE SEASON HAS BEGUN: OPEN YOUR EYES!

The month of April is already rich in sightings: 3 humpback whales were seen at Grande-Grève in Gaspésie, many seals at Pénouille and Saint-Jacques, as well as a blue whale and 3 fin whales in the area of Sept-Îles.



Off-shore to Matane, 5 belugas were seen, 2 of them with young. To recognize it, juveniles have gray skin. A group of 15 beluga whales was observed at the Batardeaux Vaches, Tadoussac, and another group of 10 belugas was seen in the estuary near les aux Lièvres. Beluga whales were also observed in mid-April in the L'Éléon-Croûtes area by the L'Île aux Coudres - Saint-Joseph-de-la-Rive Ferry crew.

“ The bowhead whale is one of three endemic species who live all the year in the Arctic. ”

Last February, the Arctic ship's crew from Festina reported 3 bowhead whales sightings in the Hudson Strait of northern Quebec, for a total of 12 bowhead whales observations. Moreover, 2 killer whales was observed in the Arctic islands.



MMON is a non-profit organization dedicated to the protection of whales and seals of the St. Lawrence.

Facebook: @observation | Website: www.mmon.ca | Email: info@mmon.ca



THE OBSERVER

April-May 2019

YOUR DATA ARE PRECIOUS!

The implication of the marine industry to collect whale data was initiated in 2015. There are 7 companies totalizing 50 ships participating. The MMON want to thanks for your growing involvement: nearly 3,300 observations have been sent to us! Your participation give a better understand of the distribution of whales on the main commercial shipping routes. These information could be used for the whales conservation projects in the Northwest Atlantic, including the St. Lawrence Estuary, as far as the Arctic. Here is an example of density mapping of marine mammal observations generated using your data.

We are pleased to send you the individual report of the data collected by your company in 2018. You will also be able to appreciate very soon the results of the common efforts, generated by all for 4 years in a global activity report in progress.



Nearly 3,300 cumulative data since 2015. A great implication!

2019 : THE PROJECT GOES ON !

To improve the program from year to year, new initiatives are planned for 2019. In particular, it is envisaged to develop a new training tool better adapted to the reality of the maritime industry. In the meantime, let's beginning the 2019 season by maximizing data collection to maintain the success of the project. It's up to you, we are counting on you!

Ce projet a été réalisé avec l'appui financier de
This project was undertaken with the financial support of

 Gouvernement du Canada / Government of Canada

Particular attention was paid to feedback from seafaring personnel in order to ensure their continued membership as well as continuous improvement of the project.

POSITIVE SPINOFFS FOR WHALES

It remains difficult to quantify the long-term positive benefits of such a project on cetacean populations since their habitat is enormous and their movements are highly variable. Whales' geographic ranges are often closely linked to the presence and abundance of food resources and knowledge in this area remains rather limited in certain locations. However, it can be argued that greater knowledge of their distribution patterns helps improve cohabitation between ships and whales while minimizing associated disturbance and the risks of collision.

In the short term, the project aimed to:

- Educate seafaring personnel on actions to take in the event of a collision or whenever a ship approaches or encounters a whale in order to lower the risks of collision.
- Train and educate seafaring personnel with respect to the presence of whales in navigation areas and the identification of their species.
- Encourage marine industry players to participate in activities that support the recovery of species at risk such as data collection, reporting species of interest (e.g. right whale) or those observed outside their normal range, and reporting individuals in difficulty to the various emergency response networks.
- Characterize the geographic distribution and abundance of marine mammals in the Northwest Atlantic, including the Estuary and Gulf of St. Lawrence, during transits made regularly by participating representatives of the marine industry.

In the long term, the project aims to:

- Improve knowledge on the distribution patterns of whales in areas that are poorly known due to infrequent visits by scientists.
- Contribute to better spatial and temporal sharing between whales and ships in the North Atlantic, including the Estuary and Gulf of St. Lawrence.
- Mitigate the threats to species at risk and their habitat caused by human activities.



3 • PARTICIPATING COMPANIES





THE MARINE INDUSTRY IN A NUTSHELL

Canada's coastline is the longest in the world, stretching 243,042 km and spanning three oceans. The history of Canada is thus inevitably linked to that of the shipping sector. Maritime transportation is not only essential in the lives of Canadians, but also for the safe and responsible shipping of goods to international markets. In 2011, the Human Resources Sectorial Committee of the Maritime Industry (CSMOIM) produced a 17-page glossary of maritime terms entitled *Lexique des termes usuels dans le transport maritime*, which demonstrates that the shipping sector is both vast and complex and that the players working directly or indirectly in this industry are many!

Governmental agencies such as Transport Canada and Fisheries and Oceans Canada (including the Canadian Coast Guard) as

well as provincial ministries share roles and responsibilities for the development and promotion of an efficient shipping sector that adopts safe, secure and sustainable practices. Various initiatives are put into place to achieve the objectives. An excellent example of such an initiative is the Canada-Quebec Agreement on the St. Lawrence, also known as the St. Lawrence Action Plan.

Four marine associations are responsible for representing the interests of companies that navigate the St. Lawrence and the Great Lakes as well as international waters. Generally speaking, these associations strive to support the growth of their members and the sustainable development of the shipping sector.

St. Lawrence Shipoperators	Groups and represents the interests of domestic ship owners/operators operating in the St. Lawrence, the Great Lakes, the Arctic and the Maritime Provinces.	 ARMATEURS DU SAINT-LAURENT <small>ST. LAWRENCE SHIPOPERATORS</small>	https://www.armateurs-du-st-laurent.org/
St. Lawrence Economic Development Council	Represents the St. Lawrence maritime community, which includes stakeholders from the private and public sectors whose activities affect the St. Lawrence economy directly or indirectly in every region of Quebec.	 SODES	http://www.st-laurent.org/
Shipping Federation of Canada	Represents and promotes the interests of the owners, operators and agents of ships involved in Canada's international trade. The Federation's mandate is to promote and protect the interests of its members by building consensus on common issues and by working with governments to develop policies, laws and regulations that enable the marine industry to make its full contribution to the Canadian economy.	 Shipping Federation of Canada	http://www.shipfed.ca
Chamber of Marine Commerce	Binational, non-profit, private sector association. Provides a unified voice for sustainable growth of marine commerce in the Great Lakes, the St. Lawrence River, as well as the Arctic and east coasts.	 CHAMBER OF MARINE COMMERCE www.MarineDelivers.com	https://www.marinedelivers.com/

Source : Statistiques Canada / géographie
<https://www.statcan.gc.ca/pub/11-402-x/2011000/chap/geo/geo-fra.htm>
http://www.csmoim.qc.ca/public_upload/files/travailleurs/etudes-documentation/lexique-et-liens-utiles.pdf






By definition, a ship owner/operator is the proprietor or lessee of a ship that oversees the operation and outfitting of the ship. There are two main types of ship owners/operators that navigate our waters. First, there are domestic ship owners/operators, which are companies owning ships flying under the Canadian flag and carrying out activities primarily in Canadian waters (cabotage). The crew is composed of Canadian citizens or permanent residents, since only they can hold the certificates of competency required to be employed on a Canadian ship. International ship owners/operators are companies owning ships flying under a non-Canadian flag. As a rule, these ships are not allowed to perform cabotage activities in Canada. Crews are often composed of foreigners. Additionally, ship owners/operators can also be charterers. This is an individual or a company that leases a vessel to a ship owner/operator for a given period or rents out storage space on a ship for a given journey.

Transport Canada's Pilotage Act establishes the regulatory framework for pilotage services in Canada in order to promote safety in the shipping sector. Pilotage consists of marine pilots taking control of a ship in order to steer the vessel through rivers, ports, lakes, straits and other navigable waterways. In Canada, when Canadian ships pass through a mandatory pilotage zone, these ships may use the services of a pilot licensed by a federal Crown corporation or use the services of their own officers provided they hold a pilotage certificate. There are four main pilotage regions in Canada: the Pacific, the Great Lakes, the Atlantic and the Laurentians. The Laurentian region uses the services of two corporations, including the Corporation des pilotes du Bas Saint-Laurent, which plays a critical role in the security of shipping on the St. Lawrence between Les Escoumins and Québec City, as well as on the Saguenay River.

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PORTRAIT OF PARTICIPATING MARITIME COMPANIES

	Société des traversiers du Québec	Compagnie de navigation des Basques	Groupe Desgagnés
Logo			
Description	STQ is a Crown corporation that provides ferry services on the St. Lawrence.	CNB is a private company that operates the ferry between Trois-Pistoles and Les Escoumins.	Groupe Desgagnés operates a fleet of approximately twenty ships (liquid bulk, chemicals and dry bulk).
Number of Participating Ships in 2018	1 ship (<i>F.-A.-Gauthier</i>) and 1 ferry terminal (Godbout)	1 ship (<i>Héritage 1</i>)	10 to 15 ships a year
Territory Covered	Gulf of St. Lawrence	St. Lawrence Estuary	St. Lawrence Seaway, Maritime Provinces, Arctic and international
Outlook for Future	Baie-Comeau Ferry Terminal, ferry crossing between Isle-aux-Coudres and Saint-Joseph-de-la-Rive	Continued data collection	Continued data collection

Canada Steamship Lines	Fednav	Oceanex	Algoma
			
<p>CSL operates a fleet of approximately 20 ships, mainly bulk freighters.</p>	<p>Fednav specializes in the transport of solid and liquid bulk by means of bulk carriers, tankers (including oil tankers) and cement freighters.</p>	<p>Oceanex offers shipping to Newfoundland and Labrador from the rest of North America.</p>	<p>Algoma Central Corporation owns and operates a fleet of over 20 dry and liquid bulk carriers.</p>
<p>1 ship (<i>Salarium</i>)</p>	<p>2 ships (<i>Arctic et Umiak I</i>)</p>	<p>3 ships (<i>Sanderling, Avalon et Connaigra</i>)</p>	<p>22 ships involved, including 7 that are active</p>
<p>St. Lawrence Seaway</p>	<p>St. Lawrence and Arctic Seaway</p>	<p>Gulf of St. Lawrence</p>	<p>St. Lawrence Seaway, US east coast, Canadian and US west coasts</p>
<p>Participation of other ships</p>	<p>Participation of other ships</p>	<p>Continued data collection</p>	<p>Participation of more ships</p>



GROUPE DESGAGNÉS

Domestic ship owner/operator

- MMON member since **2015** (Relais Nordik since 1998)
- Founding member and certified participant of Green Marine since **2007**
- Between **11 and 13 ships** involved in data collection from 2015 to 2018
- **1,752 data** collected by Relais Nordik from 1998 to 2013 and 1,277 by Desgagnés from 2015 to 2018

Trainings offered:

- Training of crews on board the *Bella Desgagnés* (June 2016, May 2017 and May 2018)
- Training at annual staff training seminar (2015, 2016 and 2017 and presentation of results in 2018 and 2019 only)

Since the 19th century, Québec City-based Groupe Desgagnés has specialized in maritime transportation that currently includes general merchandise, liquid bulk, solid bulk and passengers. The company owns and operates a fleet of over twenty ships that ply the Great Lakes – St. Lawrence Seaway system, the Canadian Arctic, the Canadian and US east coasts as well as seas around the world. All ships in the fleet sail under the Canadian flag and are operated by Canadian crews, with the exception of certain ships when they are engaged in international commerce.



CANADA STEAMSHIP LINES

Domestic ship owner/operator

- MMON member since **2015**
- Founding member and certified participant of Green Marine since **2007**
- **1 ship** involved in data collection
- **187 data** collected from 2014 to 2019

Trainings offered:

- Training offered: Training of crews on board the *Salarium* in the context of a transit from Québec City to Halifax and back (September 2016)

Canada Steamship Lines, a division of CSL Group, is headquartered in Montréal, Quebec, and has offices in Halifax, Nova Scotia and Winnipeg, Manitoba. Ships fly under the Canadian flag and their crews are entirely Canadian. CSL operates a highly diversified fleet of dry bulk cargo handling vessels that includes several types of self-unloaders, transhippers and gearless bulkers.



OCEANEX

Domestic ship owner/operator

- MMON member since **2018**
- Founding member and certified participant of Green Marine since **2007**
- **3 ships** involved in data collection
- **434 data** collected in 2018

Trainings offered:

- On-board crew training (*Sanderling, Avalon and Connaigra*) during trips from Halifax to St. John's, Québec City to St. John's, and St. John's to Québec City in April 2018).

Oceanex Inc. offers a complete range of shipping and trucking services to Newfoundland and Labrador from throughout North America. It provides consistent year-round service to and from the Ports of Montréal, Halifax and St. John's with a fleet of ice-classed vessels often sailing in harsh weather conditions.



ALGOMA CENTRAL CORPORATION

Domestic ship owner/operator

- MMON member since **2018**
- Founding member and certified participant of Green Marine since **2007**
- **22 ships** involved in data collection, **including 7** that were active in 2018
- **102 data** collected in 2018

Trainings offered:

- Training at annual staff training seminar in Toronto (February 2018)

Algoma Central Corporation offers shippers within the Great Lakes, St. Lawrence River and Canadian East coast regions the largest and most versatile fleet of bulk carriers and oil tankers available today. The Algoma fleet comprises bulk carriers, various conveyor-style long-boom self-unloaders, and oil tankers.



SOCIÉTÉ DES TRAVERSIERS DU QUÉBEC

Domestic ship owner/operator

Since 1971, the Société des traversiers du Québec (STQ) has occupied an important role as a maritime carrier by offering reliable, safe and efficient ferry services to the Quebec population as well as visitors to the province. STQ oversees a major network of 13 ferry connections that stretches from Montréal to eastern Quebec, including the Lower North Shore (Basse-Côte-Nord) and the Magdalen Islands.

- MMON member since **2017** (Rivière-du-Loup – Saint-Siméon ferry crossing from 1998 to 2006)
- Founding member and certified participant of Green Marine since **2007**
- **1 ship and 1 ferry terminal** involved in data collection
- **2,700 data** collected from 1998 to 2006 (RDL-SS ferry) and **875** in 2017 and 2018
- MMON technicians have been collecting data on board the RDL-SS ferry every summer since 2015.

Training offered:

- Training of crews on board the *F.-A. Gauthier* during Matane-Godbout crossing (July 2017)



FEDNAV

International ship owner/operator

Thanks to a modern fleet of over 60 owned ships, Fednav carries bulk cargo and general merchandise worldwide. The company manages its fleet from its Montréal headquarters as well as offices around the world. The company plays an important role in the international marine industry. Operating the largest fleet of ice-class bulk carriers worldwide, the company maintains offices on four continents.

- MMON member since **2018**
- Founding member and certified participant of Green Marine since **2007**
- **2 ships** involved in data collection
- **39 data** collected in 2018

Training offered:

- Dockside trainings given to crews of the *Arctic* and *Umiak I* in Québec City (July, August and October 2018)



COMPAGNIE DE NAVIGATION DES BASQUES

Domestic ship owner/operator

Privately-owned Compagnie de navigation des Basques (CNB) operates the ferry between the municipalities of Trois-Pistoles and Les Escoumins. The *Héritage I* can accommodate up to 42 automobiles and the duration of the crossing is 90 minutes. The service operates in summer, i.e. May through October inclusively.

- MMON member since **2017**
- **1 ship** involved in data collection
- **383 data** collected in 2017 and 2018

Training offered:

- Training of crews on board the *Héritage I* (June and August 2017 / July 2018)

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4 • SUMMARY OF WHALE OBSERVATIONS

A GOOD EFFORT IN DATA COLLECTION

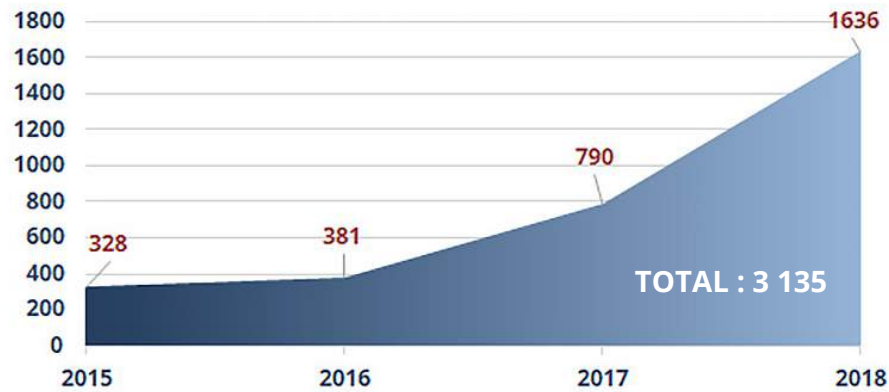


FIGURE 1. EVOLUTION OF NUMBER OF DATA COLLECTED THROUGHOUT THE PROJECT

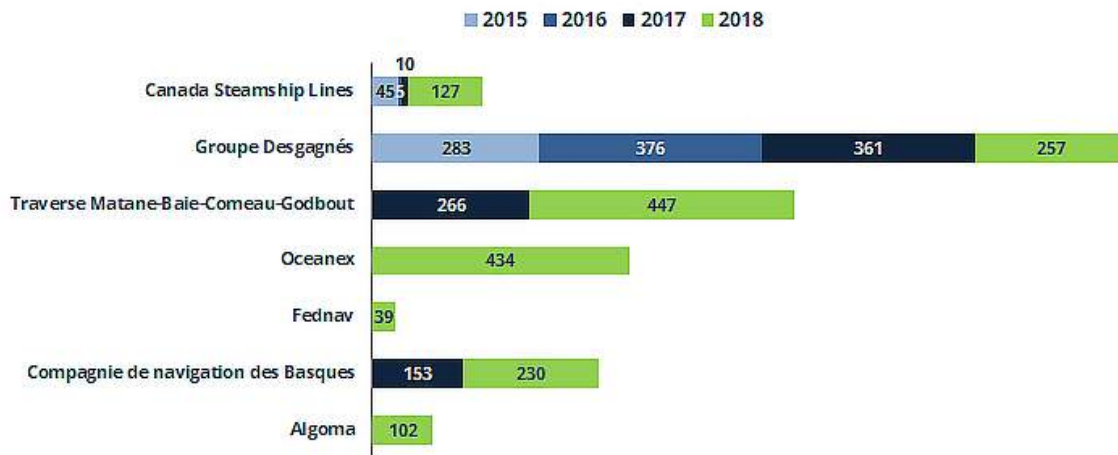


FIGURE 2. NUMBER OF OBSERVATIONS PER YEAR PER SHIPPING COMPANY

Since the start of the project in 2015, a total of **3,135 data** were collected by the crews of participating ships (Figure 1). Also noteworthy are the **340 additional data collected in 2017 and 2018** by the Godbout Ferry Terminal in accordance with a land-based observation protocol. This type of observation is of particular interest, as it provides for a daily watch over a given sector throughout the entire year. This helps provide an overview of how whales are using the site.

Data collection considerably expanded in 2018 with an **increase of 107%** compared to 2017 (Figure 1). This figure underscores the industry's growing engagement in data collection. Ship crews affiliated with Groupe Desgagnés generated 67% of the data collected, which is due to the fact that they have been involved since the earliest phases of the project in 2015 (Figure 2). Moreover, the efforts being made by companies that have recently joined the project are considerable.

A TOTAL OF 3,475 DATA WERE COLLECTED IN 4 YEARS!



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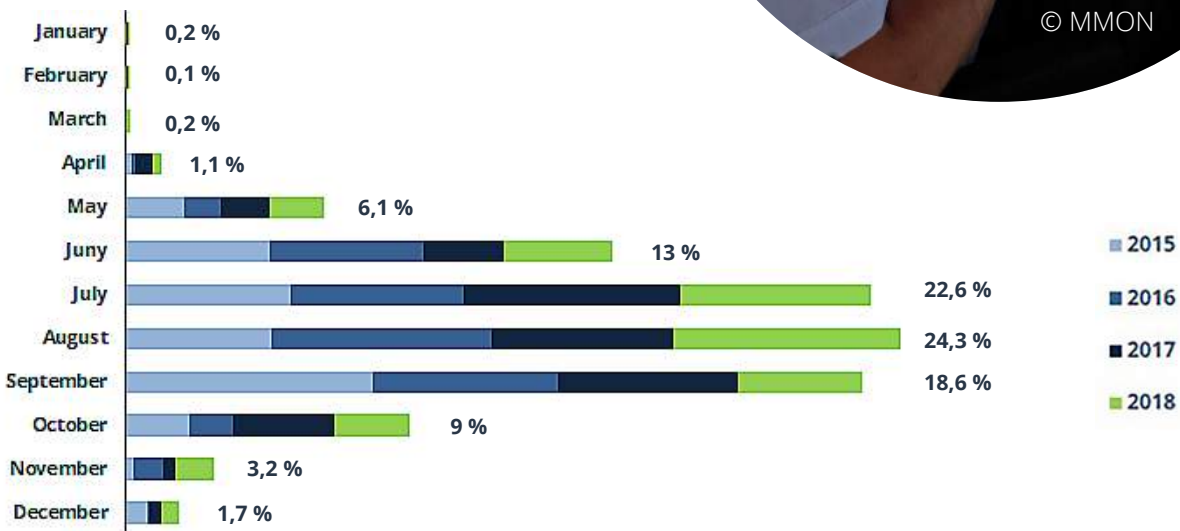


FIGURE 3. BREAKDOWN OF COLLECTED OBSERVATIONS BY MONTH OF YEAR THROUGHOUT THE PROJECT

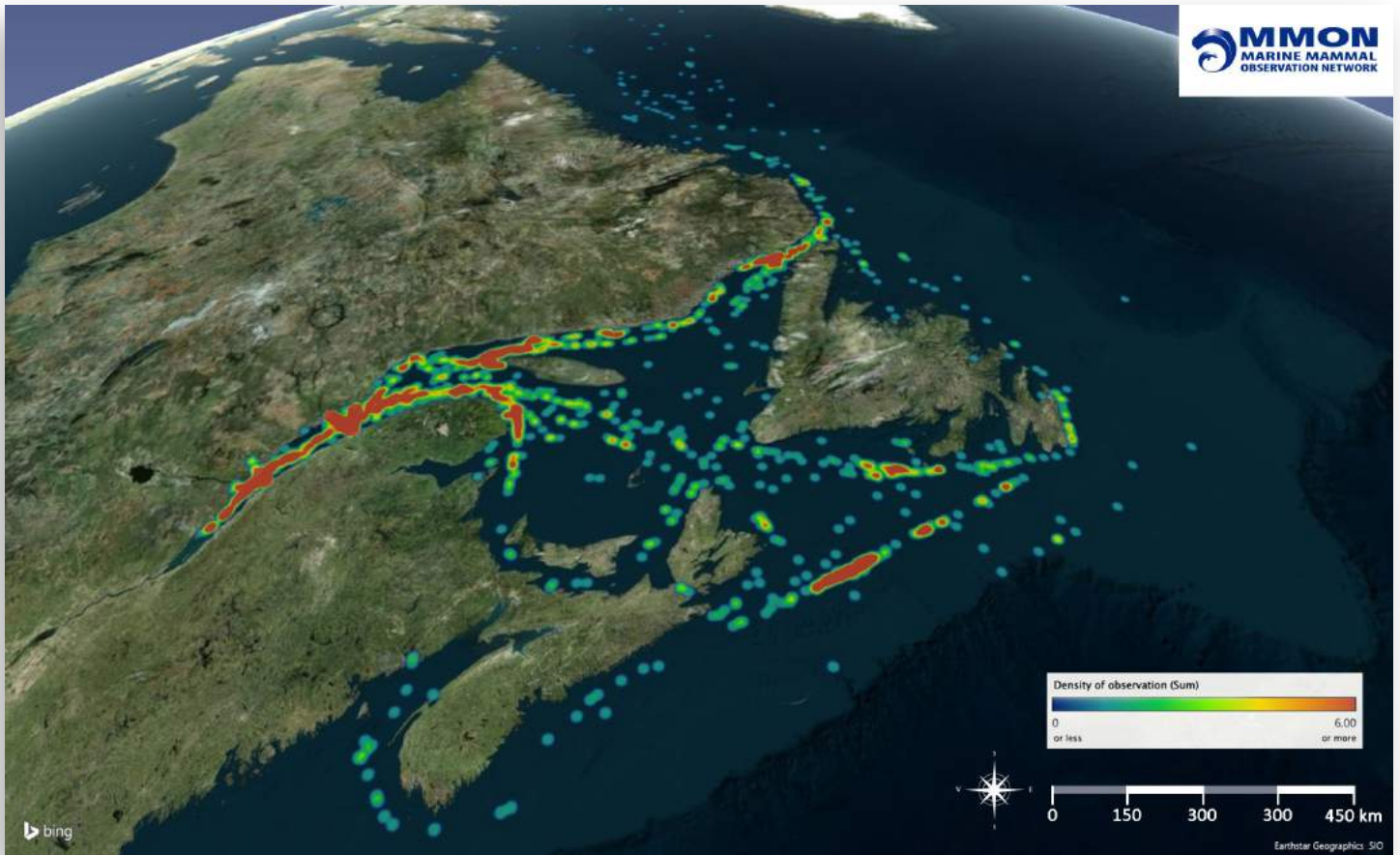
For example, in just one year, the crews of 3 Oceanex-operated ships alone collected 12% of all data. In two years, the crew of the Matane-Baie-Comeau-Godbout ferry collected approximately 20.5% of all data.

The commitment of marine industry players also contributes to a better understanding of the seasonal patterns of whales throughout the year, within or in proximity to shipping channels. As illustrated in Figure 3, approximately 79% of data are compiled in summer, i.e. from June to September. However, although fewer in

number, data collected outside these seasons are invaluable due to their rarity. They provide information on the presence of certain whale species within the covered area, notably in winter. Keeping crews motivated to pursue a sustained data collection effort outside the summer season thus represents a significant challenge.



DATA ACROSS A VAST TERRITORY



MAP 1. WHALE OBSERVATION DENSITY IN MAIN SHIPPING CHANNELS OF PARTICIPATING COMPANIES (CANADIAN EAST COAST)

Entire Gulf of St. Lawrence covered by the project, all the way to the Bay of Fundy!

SIGNIFICANT DENSITIES:

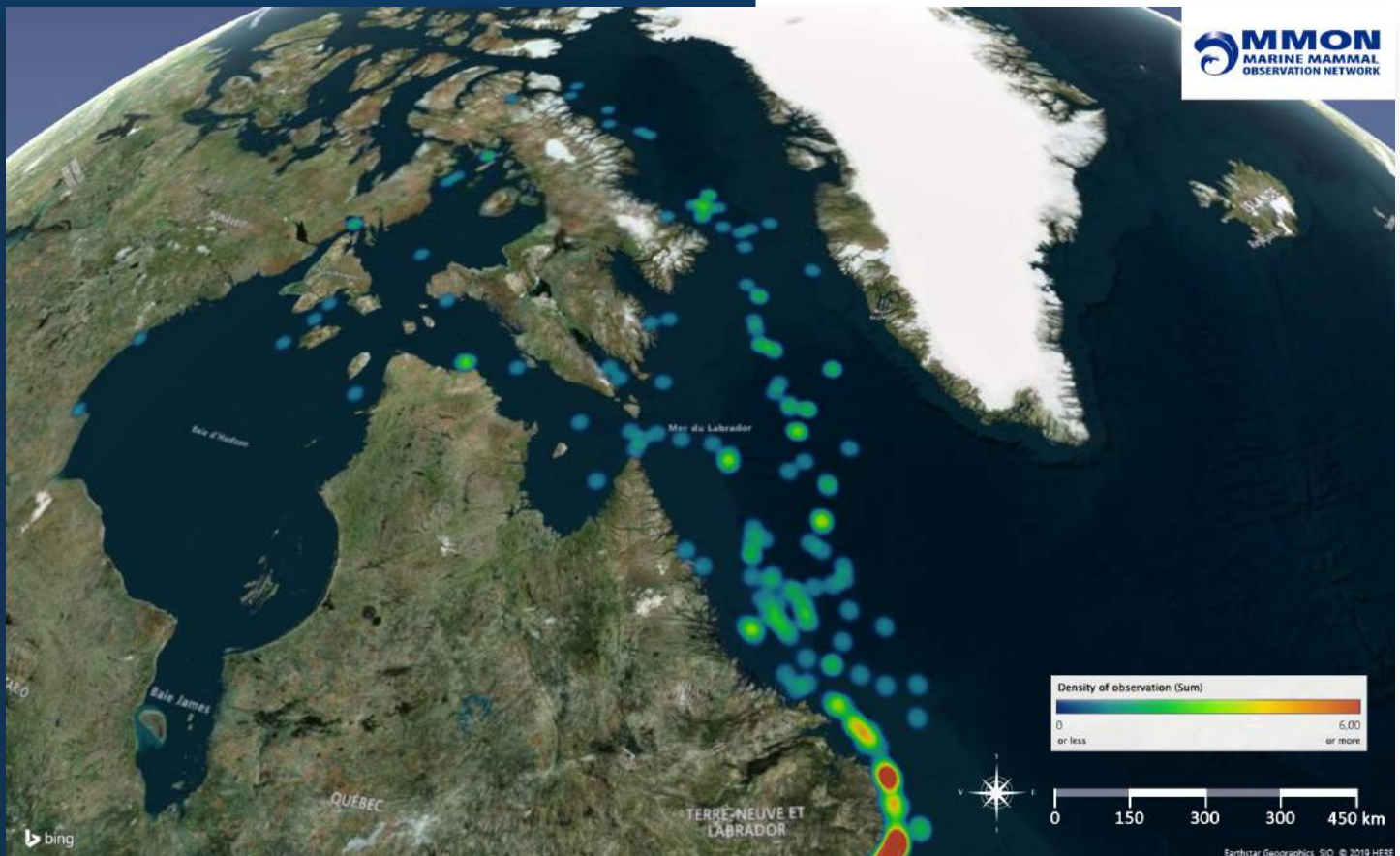
- **In the St. Lawrence Estuary**
- **Along Quebec's North Shore region and the Newfoundland and Labrador coasts**
- **Along the eastern oceanic trench of Nova Scotia and Newfoundland**

Data collected by ship owners/operators help to better understand the spatial distribution patterns of whales in major commercial waterways. This participation supports whale conservation in the Northwest Atlantic, from the St. Lawrence Estuary to the Arctic (Maps 1 and 2).

The commitment of marine industry players is growing every year, as is the territory covered by the project. This expansion allows data to be collected in certain areas less studied by scientists, notably with regard to species at risk such as the North Atlantic right whale. This collaboration is thus of particular importance!

ARCTIC OBSERVATIONS:

- In Hudson Bay and Hudson Strait
- In Ungava Bay
- Along the east coast of Newfoundland
- In Davis Strait up to Baffin Bay



MAP 2. WHALE OBSERVATION DENSITY IN MAIN SHIPPING CHANNELS OF PARTICIPATING COMPANIES (ARCTIC REGION)

PRECIOUS DATA ON WHALE DISTRIBUTION PATTERNS

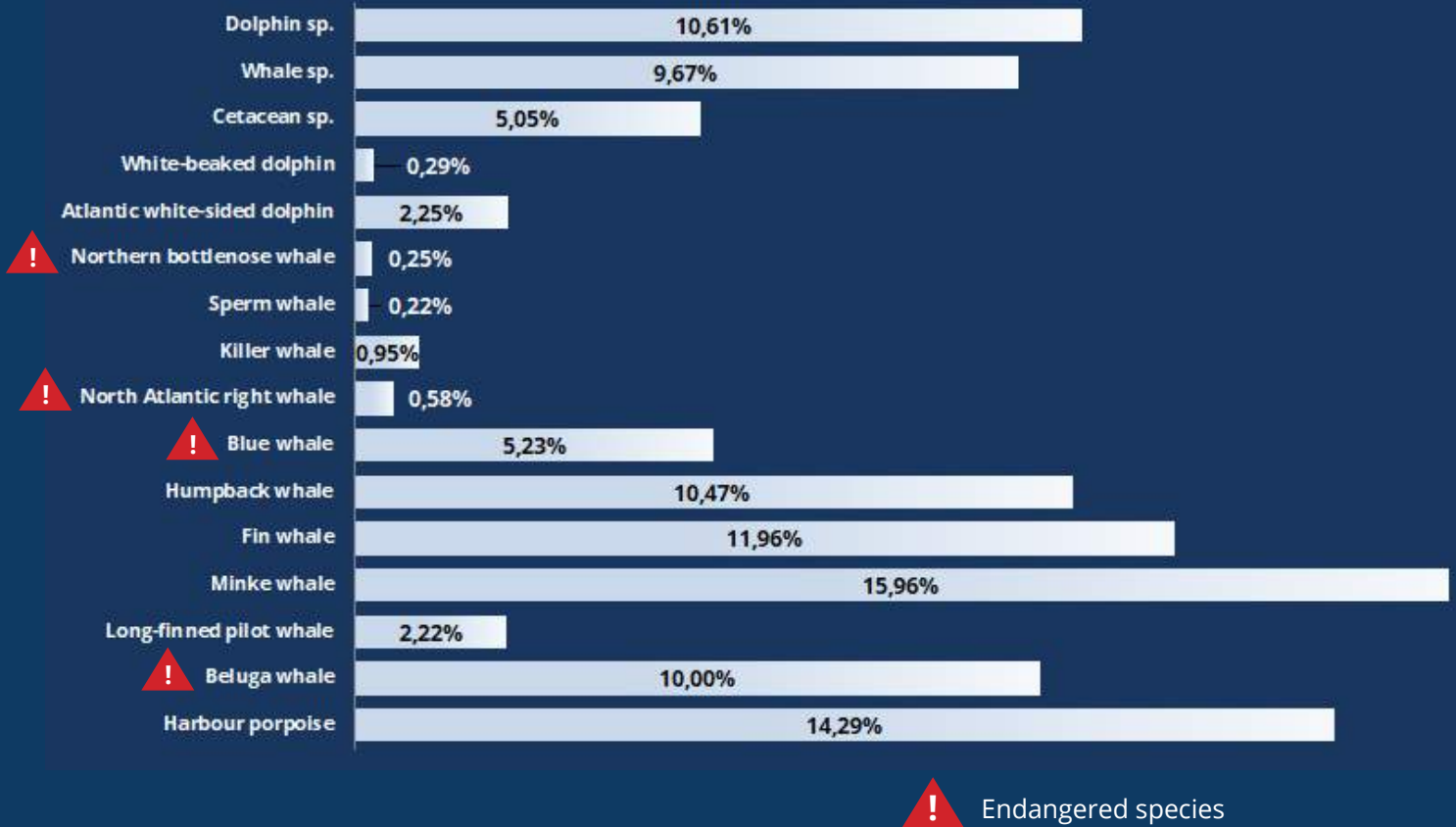


FIGURE 4. BREAKDOWN OF WHALE OBSERVATIONS BY SPECIES THROUGHOUT THE PROJECT

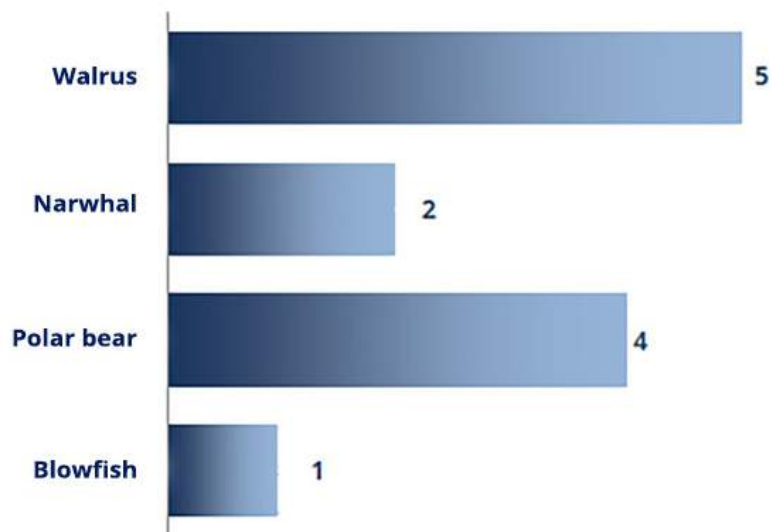


FIGURE 5. NUMBER OF OBSERVATIONS OF SPECIFIC SPECIES THROUGHOUT THE PROJECT

As illustrated in Figure 4, the most frequently observed species since the start of the project has been the minke whale, representing 16% of all sightings. The harbour porpoise comes in second place (14%), followed by the fin whale (12%).

We should emphasize the importance of data on species at risk and especially those that are endangered. The St. Lawrence beluga, which is endemic to the Lower Estuary, represented approximately 10% of the reported observations. The blue whale (5%) and North Atlantic right whale (0.6%) were also reported. In the Arctic region, a few observations of walruses, polar bears and narwhals added

some diversity to the database (Figure 5). Sightings also include a single observation of an ocean sunfish.

Approximately 25% of data concerned dolphins, porpoises and cetaceans that could not be identified with certainty by seafaring personnel. This underscores the importance of developing new interactive training tools that will enable crews to better their whale identification skills and help train the crews of new member companies more effectively.



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5 • CHALLENGES AND OUTLOOK FOR THE FUTURE

Even if it was a success during its pilot phase, this project has also had its share of challenges and difficulties. It is important to properly understand the work setting in order to better adapt the work that remains to be completed.

DOMESTIC VS. INTERNATIONAL SHIP OWNERS/OPERATORS

A Canadian shipowner/operator headquartered in Quebec has a comparative advantage in such a project. From the perspective of a ship owner/operator, knowledge of issues concerning whales that frequent the waters of the Gulf of St. Lawrence and its Estuary is relatively accessible. For scientists, teaming up with the environmental departments within these companies is relatively straightforward. Conversely, an international shipowner/operator based elsewhere in the world and whose ships navigate the waters of Canada, India, China and Panama, for example, obviously cannot have the same sensitivity to Canadian species. Likewise, organizing training sessions for an international shipowner/operator represents an additional layer of complexity that must be taken into account. That said, other training methods should be considered, including online training, dedicated applications, etc. In conclusion, the success of such a project is partially dependent on the crew members' level of attachment to the local environment. It goes without saying that compared to his or her Canadian counterpart, a foreign mariner will not have the same frame of reference for our ecosystems, as sensitive and conscientious about the environment as he or she may be.

DATA TO BE MANAGED

As mentioned above, in 4 years, a total of 3,475 data were collected by the seven companies that participated in the project. The more companies involved, the more data will be collected. The absence of regular funding dedicated to this project – including management of the generated data – represents a colossal administrative challenge.

MAINTAINING THE MOMENTUM

This new initiative is interesting, but can it be sustained? In 2018 and 2019, marine mammals have been making headlines and finding favour with the public and government agencies alike. The numerous right whale mortalities in the summer of 2017 are part of this trend. Ship owners/operators, who have always paid particular attention to the marine environment, were held responsible for these mortalities and immediately sought ways to address the issue. This project was perfectly suited to meet their urgent need. Once the dust has settled, management measures are implemented by the federal government, and multiple ship crews are trained, will we succeed in sustaining the interest in collecting whale data in a context of increasing regulations and administrative paperwork?

AND GREEN MARINE IN ALL OF THIS?

In January 2017, Green Marine published two new performance indicators on underwater noise. The objective is to reduce the noise generated by marine activities in an effort to lessen the impacts to marine mammals. Although they do not directly target ship strikes, these indicators include criteria to help reduce noise levels under certain conditions and to improve the co-existence between ships and whales. Destined to improve over time, they will certainly continue to put wind in the sails of this data collection project.

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