2023 SEASON ACTIVITY REPORT

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Navigating Whale Habitat

Canadian East Coast Sector

Prepared by:

MMON MARINE MAMMAL OBSERVATION NETWORK

In collaboration with:

Fisheries and Oceans Canada / Pêches et Océans Canada

SAGUENAY–ST. LAWRENCE MARINE PARK Canada Québec

GREEN MARINE

Association of Arctic Expedition Cruise Operators AECO

SLGO St. Lawrence Global Observatory

ABOUT

The North Atlantic Ocean, including the Gulf of St. Lawrence and its Estuary, represents a key migration corridor and critical habitat for several species of whales, some of which are at risk such as the blue whale, the fin whale, the North Atlantic right whale and the St. Lawrence beluga. It is also a major shipping corridor and a region brimming with a wide range of human activities that are essential in many regards, notably for the economic development of certain coastal communities. Inevitably, these activities have impacts on any whales that cross their path.

The Marine Mammal Observation Network (MMON) and its partners are working together with the different user categories in the St. Lawrence to promote a harmonious co-existence with whales. One of the initiatives that has been launched is an educational platform to promote responsible watercraft operation called *Navigating Whale Habitat*. The platform features portals for different user groups in the St. Lawrence that contain tools and references that these groups can use to contribute to whale conservation in the Northwest Atlantic. The voluntary documentation of marine mammal sightings is one of the actions advocated to encourage users of the St. Lawrence to actively participate in whale conservation. MMON oversees a network of volunteer observer members including a number of ship operators, ferries and organizers of marine observation activities that collect observation data on the whales and seals they encounter in the course of their activities. Citizens are also encouraged to participate in the program.

This report presents an overview of activities conducted between April 1, 2023 to March 31, 2024 as part of the *Navigating Whale Habitat* program, which aims to compile valuable information on the presence of whales in key shipping areas and to train seafarers, fishers, whale-watching companies and the general public in the identification and conservation of whales.

The project is an initiative of MMON and is being carried out in collaboration with a large number of partners such as the St. Lawrence Global Observatory, Green Marine, Association of Arctic Expedition Cruise Operators, M-Expertise Marine, GREMM, Parks Canada, and Fisheries and Oceans Canada. Representatives of the various user categories of the St. Lawrence are also actively participating in working committees created to develop the tools of the program. We are most grateful to all our partners and collaborators for their invaluable feedback, which greatly helps us design tools that are well suited to their respective realities.

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The *Navigating Whale Habitat* program is made possible in part thanks to funding received under Fisheries and Oceans Canada's *Habitat Stewardship Program* (HSP) for Aquatic Species at Risk and *Oceans Management Contribution Program*.

Fisheries and Oceans Canada | Pêches et Océans Canada

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PART 1 • MMON ACTIVITY REPORT

Navigating Whale Habitat

1.1 PROJECT HISTORY

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. With its integrated management approach, the organization collaborates with various users of the St. Lawrence to involve them in a coordinated effort to preserve marine ecosystems.

Ever since it was first founded, MMON has comprised a vast network of observer members that collect whale and seal observation data in the context of their regular activities. In the past two years, this network has enjoyed strong growth and has begun welcoming new categories of members. In addition to years of participation by the maritime industry, whose contribution has been documented in this report since 2015, MMON now boasts a large network of conservation parks, whale-watching companies, expedition cruise operators as well as institutional players and the research community. In 2022, for the first time, all member categories were grouped in the same annual report and their observations were compiled in a single expanded database. In addition to the growing participation of observer members, ordinary citizens also reported their sightings in much higher numbers in 2023. These additional data are helping to expand the program's databases and complement the sightings made by observer members. This also allows the general public to appreciate the contributions of our observer members, since every sighting is identified in the visualization tool. Over the course of the past year, a number of improvements have been made to the data entry application thanks to funding from Fisheries and Oceans Canada and Parks Canada.

Fisheries and Oceans Canada's *Habitat Stewardship Program* (HSP) for Aquatic Species at Risk, which has funded the program's stewardship projects since they were first launched in 2015, will continue to provide support for the year to come. This will enable us to continue supporting our members who collect marine mammal observation data as well as meet with whale-watching tour companies to share with them various educational and interpretation tools that have been developed in recent months. This activity report describes the improvements made to the *Navigating Whale Habitat* program and the involvement of observer members and citizens in collecting whale observation data throughout 2023.

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1.2 GENERAL COORDINATION

In 2023, the maritime industry was in its 9th year of involvement in the *Navigating Whale Habitat* training and data collection program. The program is now running smoothly, with a dozen or so active members in this user category participating annually. In 2022-2023, the MMON team, in collaboration with the coordination committee, focused its efforts on the new program to educate whale-watching companies and encourage them to participate in the collection of marine mammal observation data. To date, two virtual meetings have been held with the general coordination committee to plan and coordinate the development of tools designed under this HSP program between 2022 and 2025. The coordination committee for this project is made up of representatives of MMON, GREMM, the Saguenay-St. Lawrence Marine Park (Parks Canada and Sépaq) and Fisheries and Oceans Canada. Comments from whale-watching companies have also been gathered thanks to a large number of in-the-field meetings in the Bas-Saint-Laurent, Haute-Côte-Nord and Gaspésie regions.

MMON MARINE MAMMAL OBSERVATION NETWORK
GREMM
SAGUENAY-ST. LAWRENCE MARINE PARK
Canada Québec
Fisheries and Oceans Canada Pêches et Océans Canada

1.3 A COMPREHENSIVE TOOLKIT FOR PROGRAM MEMBERS

One of the issues raised by the maritime industry early in the project (2015) was where to find and how to consult information on whale conservation as it relates to this sector. Likewise, one of the program's deliverables was to create a neutral, web-based platform that would serve as a new reference for issues relating to navigating whale habitat in eastern Canadian waters. The online platform is divided into four portals: the first one for recreational boaters, the second for ship operators, the third for fishers and, lastly, a fourth portal launched in March 2023 geared toward the whale-watching industry. Users from each category can find on their respective portal key messages from organizations and ministries responsible for whale conservation as well as a number of tools developed under their respective program.

Designed by the SLGO, the *Navigating Whale Habitat* website has been online since spring 2020 at navigationbaleines.ca/en/home/. Together with all the finalized items in its toolkit, the site was officially launched in May 2021 for ship operators and in February 2023 for the fishing community, which is encouraged to engage in so-called "citizen" data collection, which does not require the creation of an observer member account. Citizen data collection is also promoted amongst recreational boaters and members of the general public who consult the online platform.

The following sections describe the efforts made throughout the 2023-2024 fiscal year to develop tools for the *Navigating Whale Habitat* platform.

Continuous Improvement of Online Platform Portals

In fiscal year 2023-2024, a number of improvements and updates were made to the online platform to optimize consultations and ensure the online platform runs smoothly. Notable examples include the implementation of a cookie management and confidentiality policy under Law 25, G4 migration in Google Analytics for easier viewing of platform visit statistics, updates to the portal for whale-watching companies, and the addition of a section to promote the involvement of observer members in the data collection program.

Screenshot of online portal home page

Optimization of Data Entry and Visualization Tools

One of the project's most significant achievements was the creation and launch in 2022 of a new whale observation data entry and visualization tool that is available on the online platform. This tool aims to optimize data collection by MMON's observer members and citizens (fishers, boaters and the general public), as well as how these data are subsequently managed.

In 2023-2024, trainings were provided to several program members on how to use the online data entry tool. The switch to this tool is a gradual one: some members adopted it quickly while others continue to prefer to report their sightings on paper. We noted a gradual increase in its use in 2023, however. MMON will continue its training efforts to encourage as many observer members as possible to use this approach while at the same time maintaining the paper reporting option, which is indispensable to ensure the participation of some data collectors. The coordination committee chose a new name for the data entry tool: *Vigie marine*; a promotional campaign will be carried out in 2024 to raise awareness of the tool and encourage citizen participation.

VIGIE MARINE

In 2023-2024, with funding received under Fisheries and Oceans Canada' *Oceans Management Contribution Program*, SLGO finalized the configuration of a new offline data entry tool for seafarers who tend to gather observation data in areas without Internet coverage. After testing this tool in the summer of 2023, whale-watching companies operating out of the Gaspé Peninsula submitted their feedback and recommendations for improvement to MMON. An updated, optimized version of the tool is being made available for the start of the 2024 whale-watching season.

Additionally, all data collected by MMON observer members, notably those of 2023, were added to the visualization tool.

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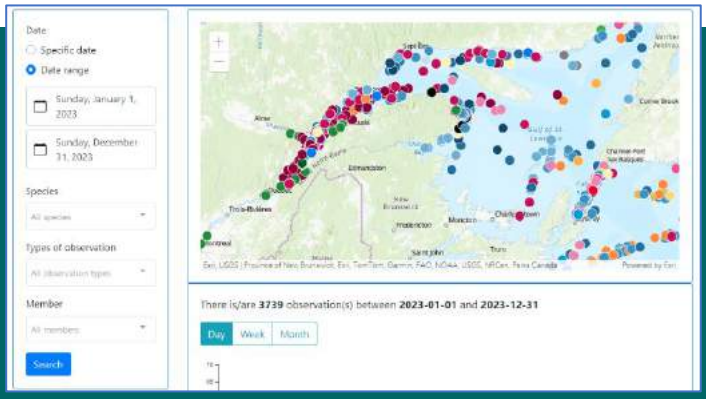
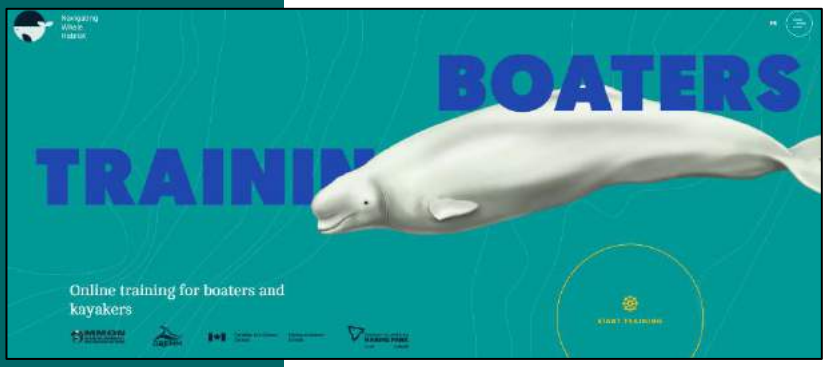


Screenshot of visualization tool

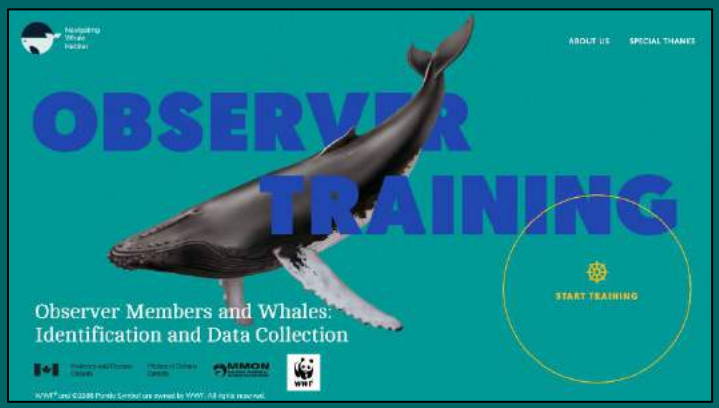
Online Training

When the project was first launched in 2015, MMON's biologists offered only in-person training to the crew members of participating ships (e.g. presentations as part of seminars, on-board or dockside crew training). In light of the growing interest in the project within the maritime and whale-watching industries and in an effort to promote continuous learning within these companies, a bilingual self-training tool on whale identification and data collection was developed. A certificate is issued to participants who successfully complete the training, i.e. those who score at least 70% on the final evaluation. The training is now being offered in two versions, either online in all portals or offline once it has been downloaded and installed onto a device. The training is also available in a "packaged" format that can be integrated into other learning systems already in use by ship operators directly on board their vessels (e.g. learning management system, LMS). To receive this version, please email MMON at info@romm.ca.

The *Navigating Whale Habitat* also features a second **training tool** for recreational boaters. This training was developed in a collaborative effort between MMON, GREMM, Parks Canada and Fisheries and Oceans Canada. It is designed to educate the users of different categories of recreational watercraft (kayaks, motorboats, sailboats) on the potential impacts of their activities on whales as well as regulations that apply whenever these animals are present. With a view to continuous improvement, this training is updated on a regular basis.



Screenshot of home page for boaters' training



Screenshot of home page for observer members' training

Stewardship Guides

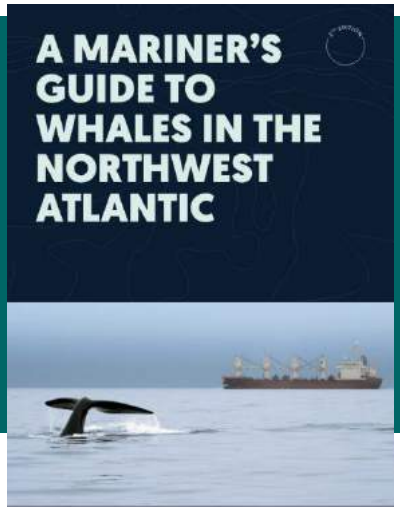
In the context of the *Navigating Whale Habitat* program, MMON has produced over the years a series of three guides that aim to educate the various users of the St. Lawrence on how to responsibly navigate whale habitat along Canada's east coast.

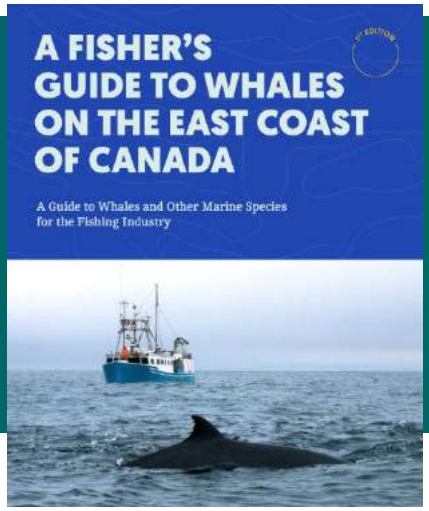
In 2014, MMON and the Shipping Federation of Canada teamed up to produce the first guide which was intended to provide ship operators with information on the issue of ship strikes and on the presence of whales and to educate them on areas where extra caution is warranted. Highly popular, this initial guide inspired the creation of similar works in the Arctic and the Canadian west coast. It was updated five years later (2019).

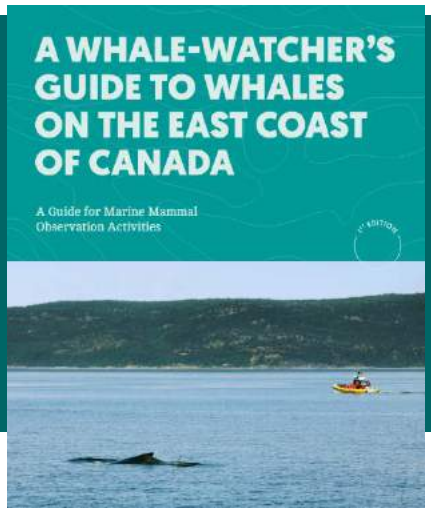
Inspired by the first guide for ship operators, MMON joined forces with World Wildlife Fund Canada (WWF-Canada) and M-Expertise Marine to create a similar reference in 2022, this time adapted to the reality of fishing communities. This tool also presents information on the issue of whale entanglements in fishing gear, risk factors, as well as measures and innovations designed to minimize incidents, a number of which have their origins in the fishing industry. Additionally, the guide includes identification sheets for whales, sea turtles and sharks.

In Winter 2023-2024, again on the basis of the initial guide for ship operators, MMON finalized the production of a third guide, this time with a focus on the whale-watching industry. This guide contains information on the potential impacts of marine mammal observation activities, mitigation measures to minimize them, the positive role that whale-watching companies can play in whale conservation as well as identification sheets for the whales and seals of eastern Canada.

The PDF versions of these three guides can be downloaded from the different portals of the online platform and hard copies are available upon request by emailing info@romm.ca.







Toolkits

Toolkits are also developed and distributed to participants of the *Navigating Whale Habitat* training and data collection program. Custom tailored to each category of users, they consist of pocket folders with the project logo that notably contain data collection protocols, information sheets on whales, sharks and turtles, mitigation measures related to the user category's activities, and more. The toolkits for ship operators and fishers are continuously distributed together with the stewardship guides specifically designed for these groups.

In 2023-2024, MMON, in collaboration with the members of the coordination committee, produced more comprehensive educational toolkits that will be distributed to whale-watching companies on the south shore of the St. Lawrence Estuary, the Côte-Nord region and the Gaspé Peninsula in the 2024 summer season. In addition to the marine mammal observation data collection protocol and other educational tools of the program designed for whale-watching companies, the toolkits contain laminated information sheets on different topics as well as items to support interpreter guides by giving them quick access to easy-to-understand visual information.

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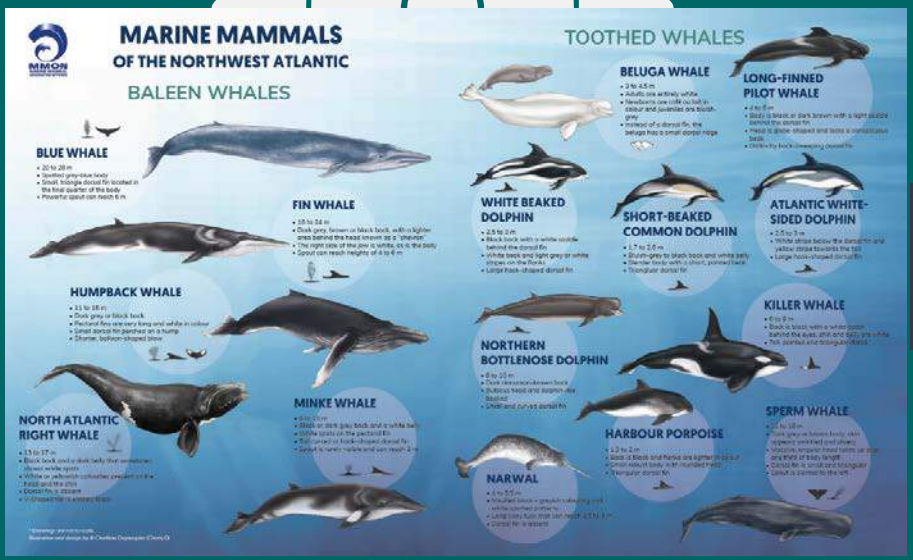


Example of an information sheet included in the toolkit for whale-watching companies

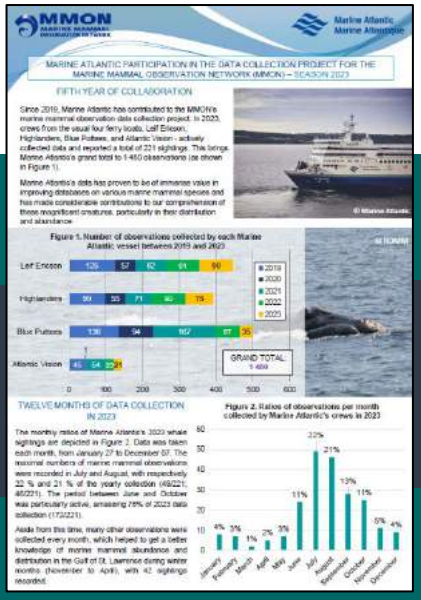
1.4 COMMUNICATION ACTIVITY

Communication with Members

Members of the maritime industry were once again very active in 2023. The personalized data collection reports sent out to these members at the end of the year is a source of motivation for crews to continue logging their data. Regular contact with these crews is maintained through the bulletin *The Observer*, which highlights their contributions and monitors data collection. Training efforts also continued with certain crews to encourage them to enter their sightings through the application rather than on paper; this is a gradual transition.

MMON met with whale-watching companies last summer to train them in data collection techniques, consult with them in anticipation of the release of the educational kit, and recruit new members. Communication with this group was direct, i.e. either in person or over the phone. In parallel, the new marine mammal identification poster promoting the website and the data collection application was distributed. This new poster was highly appreciated by whale-watching companies, who have been requesting that more be printed for their clientele.

Our collaborator Lyne Morissette continued to distribute tools developed under the project that aim to involve and educate the fishing community during her attendance of various events, including the annual gathering of the North Atlantic Right Whale Consortium. MMON also distributed *A Fisher's Guide to Whales on the East Coast of Canada* at the trainings it gave to Biorex, Javitech and fishery officers.


MMON

MARINE ATLANTIC PARTICIPATION IN THE DATA COLLECTION PROJECT FOR THE MARINE MAMMAL OBSERVATION NETWORK (MMON) – SEASON 2023

FIFTH YEAR OF COLLABORATION

Figure 1. Number of observations collected by each Marine Atlantic vessel between 2019 and 2023

GRAND TOTAL

TWELVE MONTHS OF DATA COLLECTION IN 2023

Figure 2. Ratios of observations per month collected by Marine Atlantic's crews in 2023

Example of an individual report from an observer member

The Observer

Fall 2023

BASKING SHARK SIGHTINGS

SUMMER SIGHTINGS

NEW MEMBERS IN THE ARTIC

AECO

MMON

Bulletin *The Observer*

Communication with the General Public

In 2023, MMON continued its efforts to increase the general awareness of its *Navigating Whale Habitat* platform. In this context, there was a sustained presence on the social networks in order to reach a wider audience.

The promotional tools created last year for the beluga awareness campaign were again distributed to the general public this summer at various events by MMON and Saguenay-St. Lawrence Marine Park teams. The distribution of promotional posters for the citizen science project on board ferries and in marinas also continued in the Côte-Nord, Gaspésie and Bas-Saint-Laurent regions.

Additionally, MMON maintained promotional booths at three events: i) 24 Hours of Science organized by Réseau Québec Maritime at Carrefour de Rimouski on May 6, 2023, ii) Congrès Avenir Maritime, which took place on June 20-22 in Québec City and iii) the Pow Wow of the Wolastoqiyik Wahsipekuk First Nation held on August 20.

Lastly, an interview was broadcast on the community radio station in Tête-à-la-Baleine to encourage citizen-based data collection in this sector, which is still not well covered by our contributors.

Promotional booth © S. Giroux, MMON

1.5 OUTLOOK FOR PROGRAM DEVELOPMENT IN 2024-2025

Efforts to involve and educate organizers of marine observation activities in the *Navigating Whale Habitat* program will continue in 2024 with the distribution of tools created over the past year. This will help consolidate recent collaborations with members in this user category and to develop new ones to continue to grow the network. The next few years will be spent enhancing the online platform (including the *Vigie marine* application) and developing the opportunistic data collection program. Key actions that will be carried out over the course of the 2024-2025 fiscal year are as follows:

- Introduction of the new name for the data entry application: *Vigie marine*.
- Renewed communication activities to boost awareness of the *Navigating Whale Habitat* program and its application, *Vigie marine*.
- Integration of new content onto the platform for citizens, notably to encourage observers to watch whales from shore.
- Increase the number of observer members collecting data in key sectors such as Côte-Nord (particularly eastern Haute-Côte-Nord and Basse-Côte-Nord), the Gulf of St. Lawrence and the Arctic.
- Enhanced data collection for sightings made from shore by citizens in remote regions.
- Expansion of network into the Maritimes, Newfoundland, Saint Pierre and Miquelon.
- Promotion of the application for use in research projects, as will be the case for two projects overseen by M-Expertise Marine.
- Continued distribution of tools developed in the framework of three stewardship projects for the maritime, tourism and fishing industries.
- Development of a budget sustainability plan accompanied by a search for required funding to facilitate further development of the program beyond current HSP funding, which will end on March 31, 2025.

Grey seal haulout © C. Horvath, MMON

PART 2 • RECAP OF DATA COLLECTION PROGRAM DEVELOPMENT, 2023

2.1 CONTINUOUS EFFORTS TO SUPPORT MEMBERS AND RETROSPECTIVE OF YEARLY RESULTS

Throughout 2023, our main focus was on recruiting and supporting new members from the tourism industry. Trainings were offered on board watercraft owned by Société d'écologie des battures du Kamouraska, Excursions de la Providence, Cap Aventure and Croisières Baie de Gaspé. Virtual meetings with Croisières Escoumins and Croisières Essipit also took place via Microsoft Teams. Further, MMON was able to integrate data collected by Croisières Essipit using a digital log developed under Transport Canada's Enhanced Maritime Situational Awareness (EMSA) pilot project into the *Navigating Whale Habitat* program database, a substantial contribution of more than 900 observations. Training in marine mammal identification proved to be less of a concern with this category of observer members, who are generally highly skilled in this regard.

The production of individual reports continues to be appreciated by members and is a strong source of motivation for the crews. For MMON, the resulting workload has increased drastically due to the significant uptick in the number of observer members over the past two years. We produced 12 individual reports in 2021 and this figure rose to 25 in 2023! Analysis of the corresponding data kept part of the team busy for several months this winter and spring.

2.2 A FEW HIGHLIGHTS OF PROGRAM DEVELOPMENT, IN 2023-2024

- One of the main objectives of Phase III of project development – which commenced on April 1, 2022 and will last three years – was to encourage whale-watching companies to get involved in the *Navigating Whale Habitat* program. By 2022-2023, this challenge was already met when five organizers of marine observation activities signed collaboration agreements whereby they agreed to actively participate in the collection of observation data. This expansion continued in 2023-2024. MMON signed or renewed collaboration agreements with eight additional members in the program's category for organizers of marine observation activities, namely Croisières Essipit, Excursions de la Providence Inc., Société d'écologie des battures du Kamouraska, Cégep de La Pocatière (which organizes occasional sea kayak outings as part of its bioecology program), as well as the Association of Arctic Expedition Cruise Operators, itself comprising four new participating companies: Hurtingruten Expeditions, Aurora Expeditions, Scenic Cruises & Tours and Seabourn. Also, collaboration agreement was signed with the student association named the Navire Étudiant du Module en Océanographie (NEMO) of the Institute of Ocean Sciences of the Université du Québec à Rimouski (ISMER/UQAR), which will begin gathering data in 2024.
- Another development objective is to continue training members of the maritime industry while encouraging them to get involved. In 2023-2024, collaboration agreements were signed with a new member in this category, namely Reformar, which began data collection only in October 2023. A total of 13 ship operators participated in data collection in 2023.
- There are now a total of 27 observer members actively participating in data collection efforts under the *Navigating Whale Habitat* program, including 13 members from the maritime sector representing a fleet of over 60 ships and 14 organizers of marine observation activities.
- MMON and its partners also continued their promotional efforts to increase citizen participation in the program. These efforts ultimately paid off: the number of observations reported in 2023 tripled compared to 2022.

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2.3 PORTRAITS OF PARTICIPATING COMPANIES

	LOGO	DESCRIPTION	NUMBER OF PARTICIPATING SHIPS IN 2023	REGION COVERED
OUR SHIP OPERATORS				
Algoma Central Corporation		Algoma Central Corporation owns and operates a fleet of over 20 dry and liquid bulk carriers.	To date, 14 ships have collected data, including 3 in 2023	St. Lawrence Seaway, US east coast, Canadian and US west coasts
Atlantic Towing	ATLANTIC TOWING	Atlantic Towing specializes in various maritime services including towing, oil and gas exploration, and product support.	2 ships (*Paul A. Sacuta* and *Atlantic Heron*)	Newfoundland, Nova Scotia, British Columbia, Trinidad and Tobago
Baffinland	Baffinland	Baffinland Iron Mines Corporation is a Canadian mining company that extracts iron ore at the Mary Rive operation and subcontracts various ship owners/operators to transport this ore.	15 subcontracted vessels active in 2023	Eastern Arctic
Canada Steamship Lines	CANADA STEAMSHIP LINES	CSL operates a fleet of approximately 20 ships, mainly bulk freighters.	2 ships (*Nukumi* and *Baie St. Paul*)	St. Lawrence Seaway
Compagnie de navigation des Basques	CNB COMPAGNIE DE NAVIGATION DES BASQUES	CNB is a private company that operates the ferry between Trois-Pistoles and Les Escoumins.	1 ship (*Héritage 1*)	St. Lawrence Estuary
CTMA	CTMA	CTMA offers cruises on the St. Lawrence and a ferry service between the Magdalen Islands and the coast	1 ferry (*Madeleine II*)	Gulf of St. Lawrence

	LOGO	DESCRIPTION	NUMBER OF PARTICIPATING SHIPS IN 2023	REGION COVERED
OUR SHIP OPERATORS				
Fednav	FEDNAV	Fednav specializes in the transport of solid and liquid bulk by means of bulk carriers, tankers (including oil tankers) and cement freighters.	1 ship (*Umiak I*)	St. Lawrence Seaway and Arctic
Groupe Desgagnés	DESGAGNÉS	Groupe Desgagnés operates a fleet of approximately 20 ships (liquid bulk, chemicals and dry bulk).	18 active ships in 2023	St. Lawrence Seaway, Maritime Provinces, Arctic and international
Marine Atlantique	Marine Atlantic Marine Atlantique	Marine Atlantic operates a ferry service between Nova Scotia and Newfoundland & Labrador	4 vessels (*Leif Ericson*, *Highlanders*, *Atlantic Vision* and *Blue Puttees*)	Gulf of St. Lawrence between Nova Scotia and Newfoundland & Labrador
NEAS	NEAS	NEAS specializes in the shipping of products, supplies and foodstuffs to remote regions of the eastern and western Arctic.	6 ships (*Sivumut*, *Sinaa*, *Qamutik*, *Nunalik*, *Mitiq* and *Aujaq*)	Eastern Arctic
Oceanex	OCEANEX	Oceanex offers shipping to Newfoundland and Labrador from the rest of North America.	3 ships (*Oceanex Sanderling*, *Oceanex Avalon* and *Oceanex Connaigra*)	Gulf of St. Lawrence
Société des traversiers du Québec	Société des traversiers Québec	STQ is a Crown corporation that provides ferry services on the St. Lawrence.	3 ships (Matane – Baie-Comeau – Godbout ferry and L'Isle-aux-Coudres – Saint-Joseph-de-la-Rive ferry) and 2 ferry terminals (Godbout and Saint-Joseph-de-La-Rive)	Estuary and Gulf of St. Lawrence

	LOGO	DESCRIPTION	NUMBER OF PARTICIPATING SHIPS IN 2023	REGION COVERED
OUR SHIP OPERATORS				
Reformar	REFORMAR	Reformar soutien les chercheurs et différentes organisations lors de la réalisation de leurs projets scientifiques en sciences et technologies de la mer par le biais de ses infrastructures.	1 navire (*Coriolis II*)	Estuaire et golfe du Saint-Laurent et Arctique
OUR ORGANIZERS OF MARINE OBSERVATION ACTIVITIES				
NEMO-ISMER	NEMO Océanographie	The Navire Étudiant du Module en Océanographie (NEMO) is the student association of the oceanography program offered by UQAR's Institute of Ocean Sciences.	No data collection in 2023, as the association only became an observer member in the fall of that year.	Estuary and Gulf of St. Lawrence
Écomaris	ÉCO MARIS	ÉcoMaris is an organization that offers educational programs and outings to discover the St. Lawrence on board a sailboat.	1 sailboat (*ÉcoMaris*)	Estuary and Gulf of St. Lawrence
Saguenay Aventure	Saguenay aventures	Saguenay Aventures offers whale-watching cruises and sea kayak excursions in the Saguenay Fjord.	1 Zodiac Sea kayaks From shore	Saguenay Fjord
Parks Canada	Parks Canada Parcs Canada	Parks Canada co-manages the Saguenay-St. Lawrence Marine Park, which operates a number of land-based marine mammal observation sites.	Cap de Bon-Désir	Saguenay-St. Lawrence Marine Park

	LOGO	DESCRIPTION	NUMBER OF PARTICIPATING SHIPS IN 2023	REGION COVERED
OUR ORGANIZERS OF MARINE OBSERVATION ACTIVITIES				
Croisières Baie de Gaspé		Croisières Baie de Gaspé offers whale-watching trips departing from Grande-Grave in Forillon National Park.	1 Zodiac (*Narval III*)	Gaspé Bay
Cap Aventure		Operating out of the Gaspé marina, Cap Aventure offers several types of excursions on the water, whether it be by Zodiac, kayak or paddleboard.	2 Zodiacs	Gaspé Bay
Excursions de la Providence		Excursions de la Providence Inc. offers outings for observing marine mammals in the waters around the Kamouraska Islands.	1 Zodiac	St. Lawrence Estuary
Association of Arctic Expedition Cruise Operators		AECO is an international association for expedition cruise operators operating in the Arctic and others with interests in this industry.	4 companies Hurtigruten Expeditions Aurora Expéditions Scenic Cruises & Tours Seabourn	Arctic
Société d'écologie des battures du Kamouraska		SEBKA offers sea kayaking trips in the Kamouraska Islands sector.	Sea kayaks	St. Lawrence Estuary

	LOGO	DESCRIPTION	NUMBER OF PARTICIPATING SHIPS IN 2023	REGION COVERED
OUR ORGANIZERS OF MARINE OBSERVATION ACTIVITIES				
Croisières Essipit		Croisières Essipit offers Zodiac-based whale-watching trips in the north shore sector of the St. Lawrence Estuary with departures out of Les Bergeronnes.	5 inflatable watercraft	St. Lawrence Estuary
Cégep de La Pocatière		Together with SEBKA, the Cégep organizes as part of its bioecology program sea kayak outings to teach students how to document marine mammal observations in the Kamouraska Islands sector.	Sea kayaks	St. Lawrence Estuary

© Croisières Baie de Gaspé

PART 3 • RESULTS OF DATA COLLECTION PROGRAM IN 2023

The efforts made by observers to report their sightings are not in vain. There is growing interest amongst research organizations in the opportunistic databases compiled by MMON's network of observer members. The highly reliable data collected by the network are of great value in terms of their quantity and the size of the territory covered.

3.1 WHALE DISTRIBUTION PATTERNS IN THE ST. LAWRENCE IN 2023

Whales arrived in the region rather late in 2023, or at least this is the conclusion reached by whale-watching companies. The first sightings were made by these companies in the Gaspé Peninsula in early June, at which time the animals had yet to be observed in the estuary. Visibility was also affected by forest fires early in the season, which may explain the slight dip in observations in June. On the other hand, whales lingered late into the autumn, to the point that some tour companies even prolonged their operating season.

The number of data collected by members of the maritime industry increased slightly compared to 2022, but remains below the records set between 2018 and 2021. Given that participation by members in this category is stable, these figures suggest that the number of marine mammals may have been lower in the waters of eastern Canada or that observation conditions were less than ideal.

Basking shark© S. Papias, MMON

Blue whales were observed on occasion last year in the Gulf of St. Lawrence and its estuary, as were fin whales. In their region, MMON's biologists identified the normally faithful minke whale much less often than usual. One species turned more than a few heads with its periodic leaps out of the water: the bluefin tuna! This can be confusing when they are spotted from afar, as tuna can grow to be bigger than some dolphins. In Gaspé Bay, several basking sharks left observers in awe. In the Arctic, which was better covered by the data collection project in 2023, sightings of polar bears were both impressive and exciting for those who were lucky enough to witness them. One thing is for certain: The humpback whale outclassed the minke whale and the harbour porpoise to become the most frequently observed species by members in 2023.

Thanks to members and ordinary citizens, observations were reported in all 12 months of 2023, as whales took advantage of sparse ice cover to visit the St. Lawrence throughout the winter. The following section details the results of data collection efforts made by members of the maritime industry, organizers of marine observation activities (MOA) and ordinary citizens, including boaters and fishermen.

3.2 SUMMARY OF OBSERVATIONS REPORTED BY SHIP OPERATORS IN 2023

Data Collection Rebounds in 2023

Figure 1. Evolution of observation data logged and number of participating ship operators and ferry terminals, 2015-2023

Although observation data collected in 2023 fell short of the record figures seen in 2019 and 2021, a considerable uptick was observed compared to 2022. Indeed, a total of 1,328 observations were compiled by the sixteen (16) participating companies, which included eight freight hauling services of various types (bulk, chemical, commodities, etc.), three passenger ferry services as well as three ferry terminals, one port and maritime service group and, lastly, one research and scientific training institution.

As can be seen in Figure 1, the number of observations and the number of participants trended similarly between 2015 and 2019. Further, the pandemic put a damper on upward trends in both the number of observations and the number of participants. After renewed impetus in 2021, the quantity of data dropped off significantly in 2022 and 2023, whereas the number of participating companies continued to grow.

The 5% increase in data may be attributable to the fact that the the number of participating observer members rose from 15 in 2022 to 16 in 2023. Although two of the observer members did not provide any data in 2023, the year saw the addition of two new ship operators as well as renewed participation by one ferry terminal that had not logged any data since 2019.

Companies collecting data from on board a ship accounted for approximately 94% of the 1,328 observations documented by the maritime industry this year. Data provided by ferry terminals are presented a little later in this report. As shown in Figure 2, the main contributors are Groupe Desgagnés (37% of all data collected) and Marine Atlantique (18%). A few other companies accounted for more than 5%, namely NEAS, the Matane–Baie-Comeau–Godbout ferry, Oceanex and Baffinland Iron Mines Corporation. The seven other ship operators account for a combined 16%, with individual contributions ranging from 0.6% to 4.7%. The majority of ship operators, including the two new members, increased or maintained their data contributions compared to 2022.

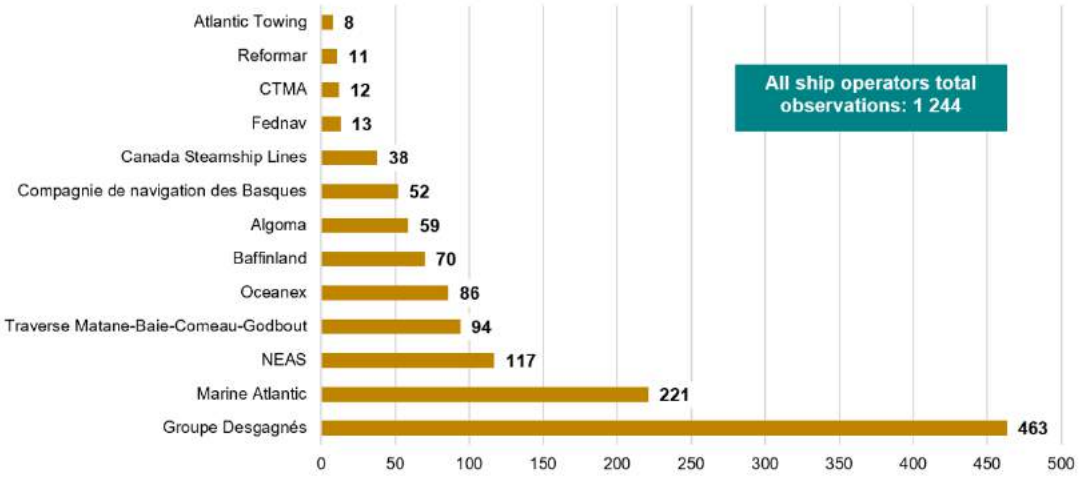


Figure 2. Number of observation data logged by each ship operator in 2023 (ferry terminals not included)

As was the case last year, the data collection effort spanned all twelve months of the year. In 2023, observation data were collected by ship operators mainly between the months of May and October. As can be seen in Figure 3, this period accounts for over 90% of the total observations for the year, i.e. 1,122 of 1,244 data. This is not only the high season for shipping, but also a period when marine mammals are most plentiful in the St. Lawrence and the Arctic due to the many species that come to take advantage of their ice-free waters.[1] Peaks were reached in July and August during which 245 (19.7%) and 315 (25.3%) data points were logged, respectively. As for the colder months, fewer than 10 data points were recorded in January and February, between 12 and 15 data points in March and December, and 35 and 44 data points in November and April, respectively. Nevertheless, certain observations can be made and documented in the application during this period during which marine mammal occurrences are more rare. These data are particularly valuable, as they represent a period that is less well documented by scientists.

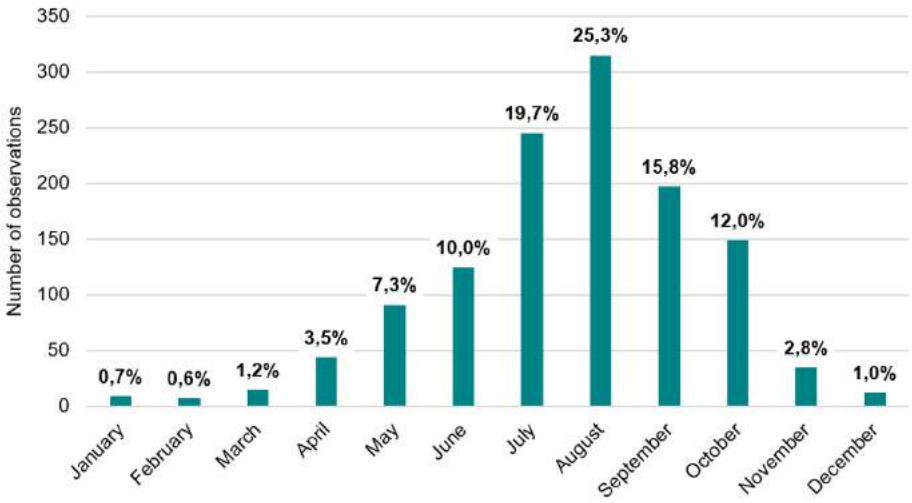
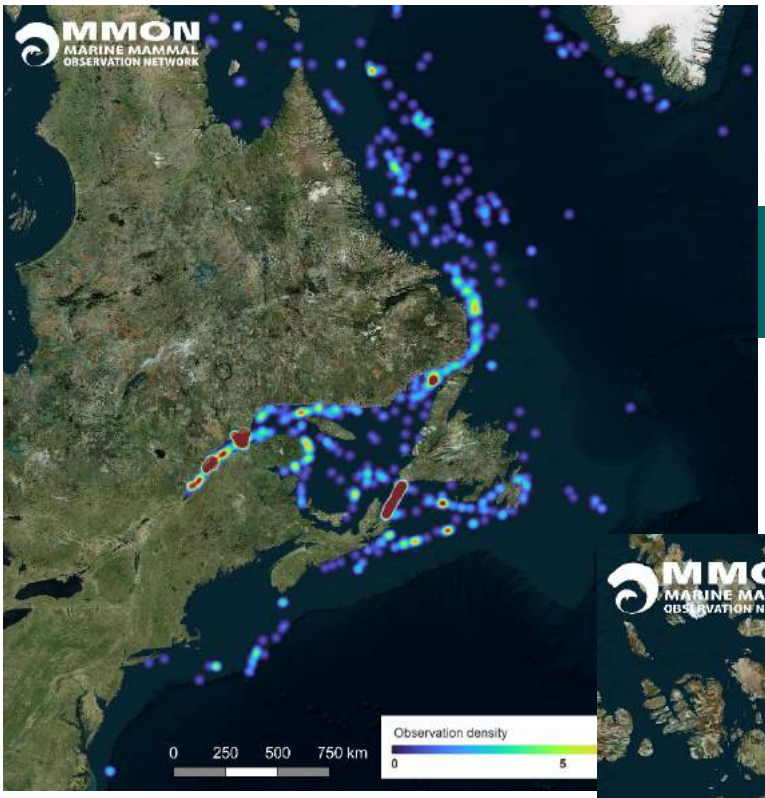
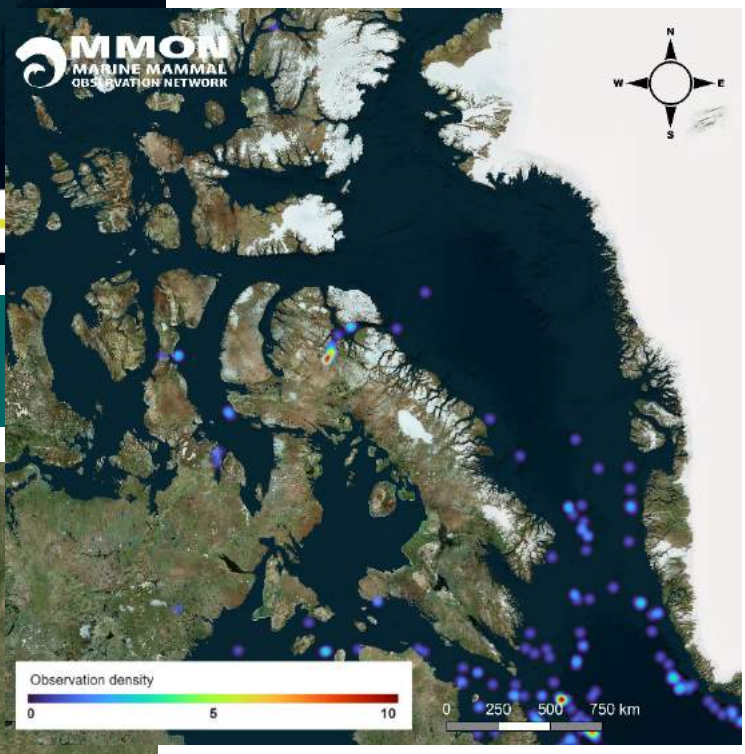


Figure 3. Monthly breakdown (numbers and percentages) of observation data logged by ship operators in 2023 (ferry terminals not included)

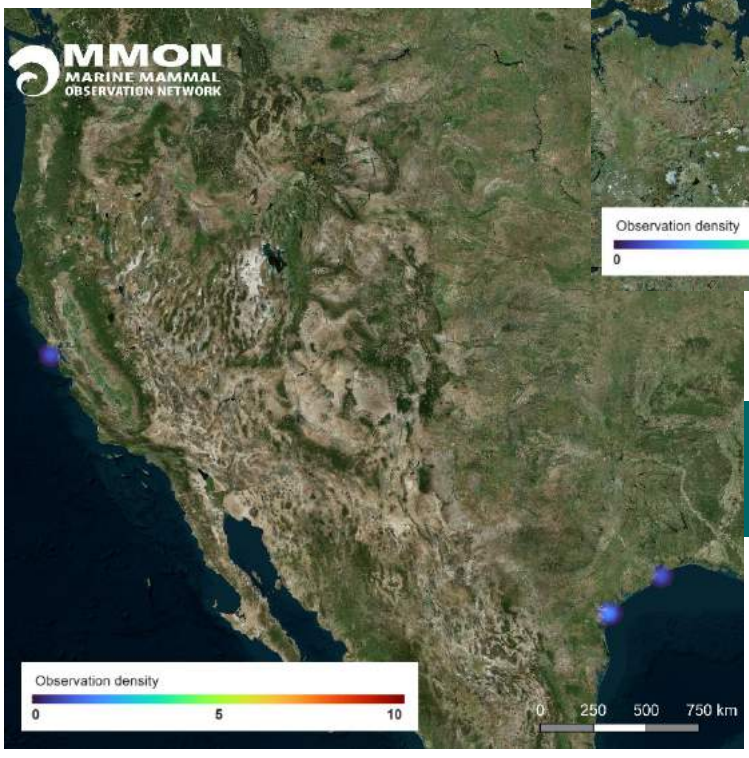
Vast Coverage Area



Map 1. Density of observation data collected by ship operators in 2023 – Northwest Atlantic



Map 2. Density of observation data collected by ship operators in 2023 – Arctic



Map 3. Density of observation data collected by ship operators in 2023 – Southern US

Observation data collected by ship operators in 2023 extends latitudinally from the Arctic to the Gulf of Mexico, and longitudinally from Greenland to the west coast of the US. The territory covered by observations expanded compared to 2022, especially southward and westward. However, the overwhelming majority of data once again come from the Northwest Atlantic and the Arctic (see Maps 1 and 2).

- The northernmost data of the distribution are found especially in Milne Inlet and around Bylot Island, as well as in Davis Strait, the Gulf of Boothia, Baffin Bay, Hudson Strait, Ungava Bay and Hudson Bay (Map 1). A single observation was logged even farther north, in Eureka Sound separating Ellesmere and Axel Heiberg islands.
- A number of sightings come from the Labrador Sea, not to mention a concentration of data in the Strait of Belle Isle. Large clusters of observations are also found between Newfoundland and Nova Scotia, notably in Cabot Strait and the Atlantic Ocean.
- In the St. Lawrence, observations are concentrated in the estuary along the handful of ferry service routes that crisscross these waters. Other hotspots can be found along Quebec's Côte-Nord region and the Gaspé Peninsula. Other data are scattered around the Gulf of St. Lawrence.
- Observations made in US waters, including California on the west coast and the Gulf of Mexico in the south (Map 3) as well as on the east coast between Maine and North Carolina (Map 2), help shed light on the distribution patterns of marine species in sectors that are generally less well covered by this data collection project. In fact, no data had previously ever been reported from the zone illustrated in Map 3, and very few from the east coast of the United States.

Harp seals
© R. Trépanier

© NEAS

Precious Data on Whale Distribution Patterns

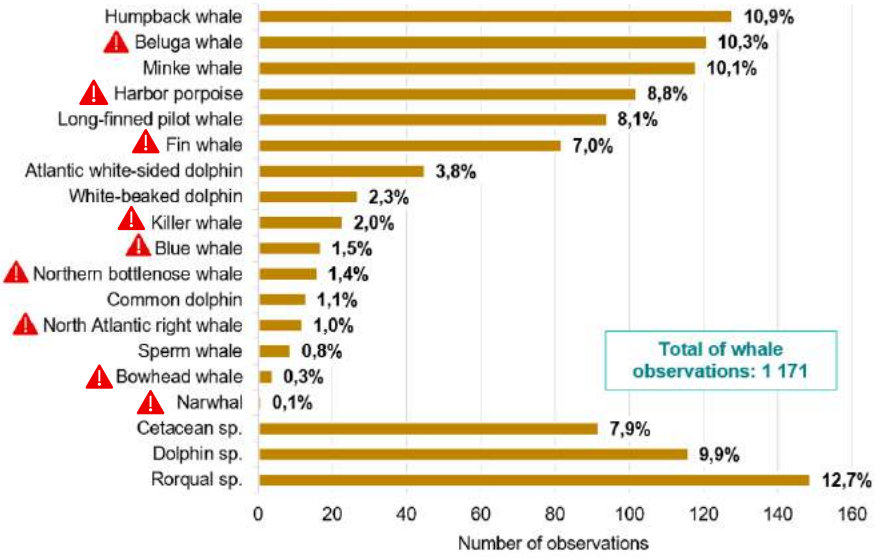


Figure 4. Species breakdown (numbers and percentages) of cetacean observations made by ship operators in 2023 (ferry terminals not included)

⚠ Species at risk under the *Species at Risk Act* or with COSEWIC statut

Ship operators logged a total of 1,171 cetacean observations in 2023. As can be seen in Figure 4, with 128 observations (10.9%), the most frequently identified species this year was the humpback whale. Of the other frequently encountered species, the beluga and minke whale show similar results with 121 and 118 observations, respectively. The harbour porpoise and long-finned pilot whale were also spotted with fairly equal frequency, i.e. 102 and 94 observations each. As for large cetaceans, fin whales were identified 82 times, blue whales 17 times, North Atlantic right whales 12 times, and sperm whales 9 times, while the rarely observed bowhead whale was spotted on 4 occasions. As for mid-size species, killer whales and northern bottlenose whales were identified 23 and 16 times, respectively. With regard to smaller cetaceans, the different species of dolphins (white-sided, white-beaked, and short-beaked common dolphin) represent approximately 7% of all observations, i.e. 85 occurrences, while the narwhal was seen just once. It is interesting to note that in terms of species diversity, a total of 19 taxa (species or groups of species) were reported in 2023, which is one fewer than in 2022 (the sei whale not having been identified by observer members this year).

Approximately 30% of all data (10% more than in 2022) corresponds to sightings for which the species could not be identified with certainty. These were marked as "cetacean sp.," "dolphin sp." or "rorqual sp." Indeed, meteorological conditions at sea can quickly complicate the identification process during an observation, as can the distance between the animal and the observer or poor light. With the aim of increasing the level of certainty for such complex identifications, Observer Training offers a refresher course on various identification criteria. This training is available directly on the site observers.navigatingwhales.ca or on the Navigating Whale Habitat portals for ship operators and whale-watching companies.

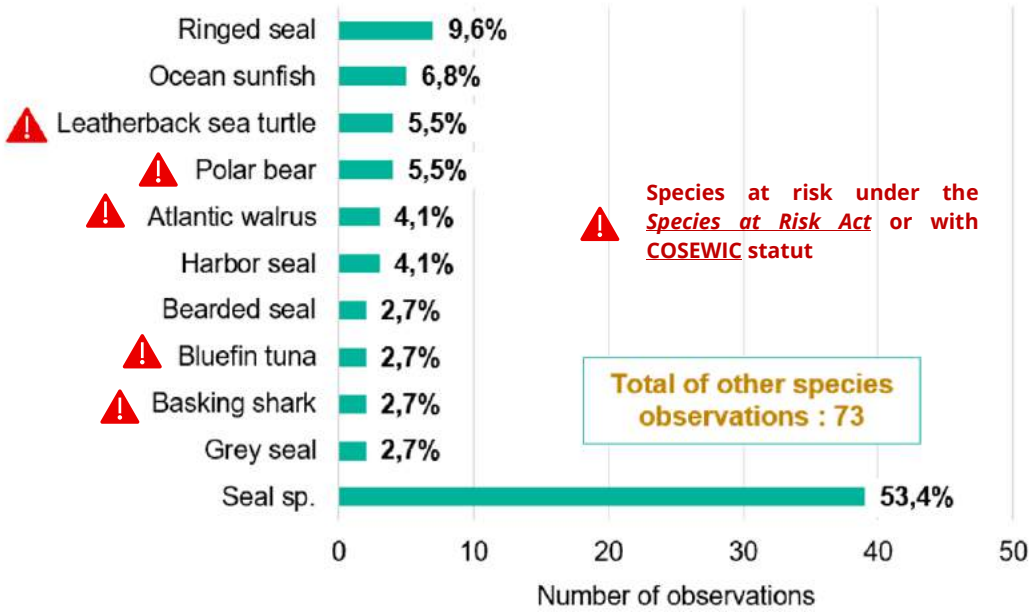


Figure 5. Species breakdown (numbers and percentages) of non-cetacean observations made by ship operators in 2023 (ferry terminals not included)

Besides cetaceans, other marine species were also identified by ship operators in 2023, yielding a total of 73 data points. With 39 occurrences, observations of unidentified seals account for the majority of these data. Otherwise, combined pinniped (seals and walruses) sightings represent approximately 24% of observations, notably thanks to 7 occurrences of ringed seals. Three species of fish combine for 12%, with the ocean sunfish being the species identified most often. Lastly, leatherback sea turtles and polar bears were each seen on 4 occasions. Although the same number of taxa was recorded in 2022 and 2023, the biodiversity make-up observed in 2023 was altered due to the addition of bearded seal and bluefin tuna sightings and the absence of swordfish and unidentified sea turtles.

Harbour seal haulout © J. Linossier, MMON

Participation of Ferry Terminals

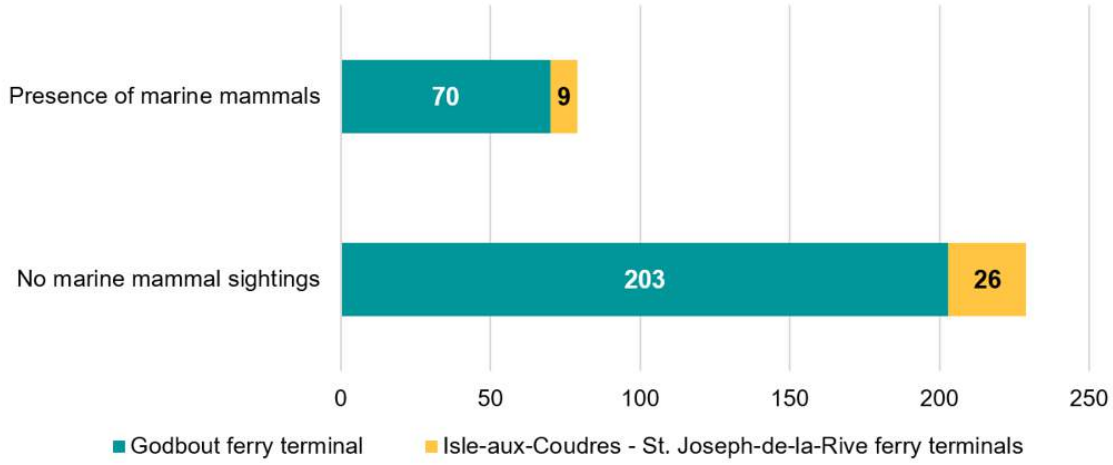


Figure 6. Number of observation days with or without data logged by ferry terminals in 2023

In 2023, the Saint-Joseph-de-la-Rive ferry terminal resumed its participation in data collection, thereby joining the Godbout and L'Isle-aux-Coudres terminals. Overall, the data collection effort was up 16% this year, rising from 266 data points in 2022 to 308 in 2023. For the data analysis illustrated in Figure 6, ferry terminals that are part of the same ferry crossing were combined.

This is the case for the L'Isle-aux-Coudres and Saint-Joseph-de-la-Rive (IAC-SJR), which together account for 11% of ferry terminal data in 2023. The combined effort of these two ferry terminals fell by 50% compared to 2022. Of these data, approximately 25% of the collection effort revealed the presence of marine mammals, i.e. 7 data points from L'Isle-aux-Coudres and 2 from Saint-Joseph-de-la-Rive.

Once again this year, the majority of the effort comes from the Godbout ferry terminal, which accounted for over 88% of all data. Indeed, this terminal is located in a sector that is more conducive to observing different species of cetaceans than its L'Isle-aux-Coudres and Saint-Joseph-de-la-Rive counterparts, which might explain why the number of data is skewed in favour of Godbout. Despite the markedly different figures, the marine mammal occurrence rate is similar at just over 25%. Additionally, the number of data collected surged 39% compared to 2022.

Godbout ferry terminal © M. Martel, MMON

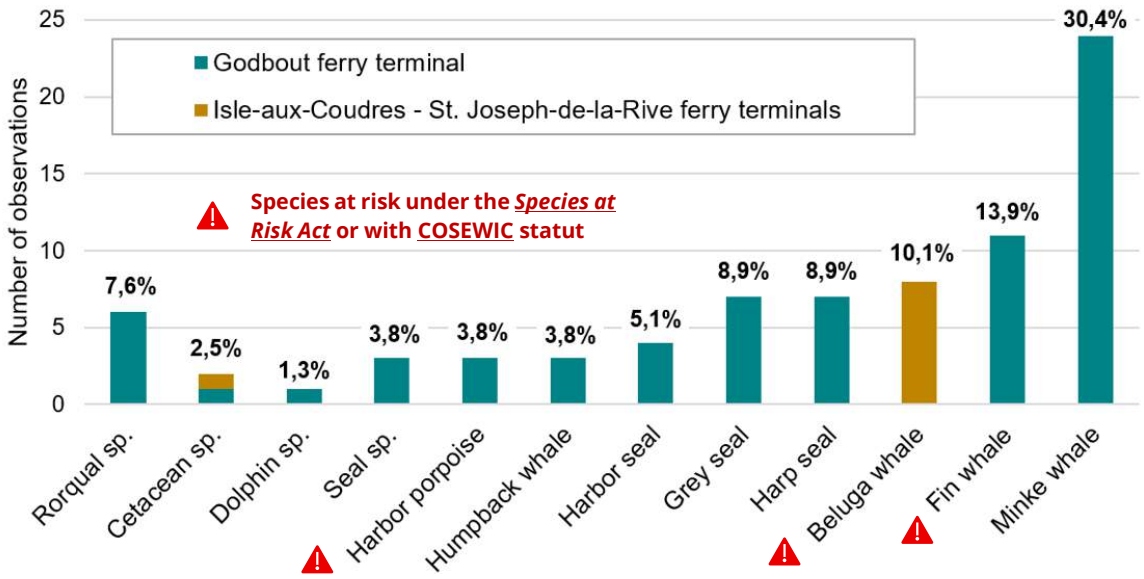


Figure 7. Species breakdown (numbers and percentages) of observation data logged by ferry terminals in 2023

Figure 7 presents the species breakdown of marine mammals identified by the ferry terminals in 2023. In terms of biodiversity, eight different species and four other taxa were recorded. Overall, the various rorqual taxa jointly account for approximately 63% of all observations, while the minke whale is the most often identified species with 24 occurrences. Representing an appreciable 30% of all observations were various species of seals, most frequently the harp seal and grey seal, i.e. 7 times each.

The only species of marine mammal identified by the IAC-SJR ferry terminals was the beluga. These terminals are located close to a sector that is heavily used by this population in the summer months and which has been designated part of the species' critical habitat.[2] Also reported was a single observation of a cetacean that could not be identified with certainty.

Observations made at the Godbout ferry terminal included 7 species, of which the minke whale and fin whale were the ones identified most often. As for the other species observed, the humpback whale and harbour porpoise were identified on a few occasions, while harp, grey and harbour seals were sighted somewhat more frequently. Additionally, a total of 11 data points were associated with unidentified taxa, including 7 that were recorded as "rorqual sp."

Beluga whales
© F. Gandolphe, MMON

3.3 SUMMARY OF OBSERVATIONS REPORTED BY ORGANIZERS OF MARINE OBSERVATION ACTIVITIES IN 2023

Second Year of Involvement in the Program

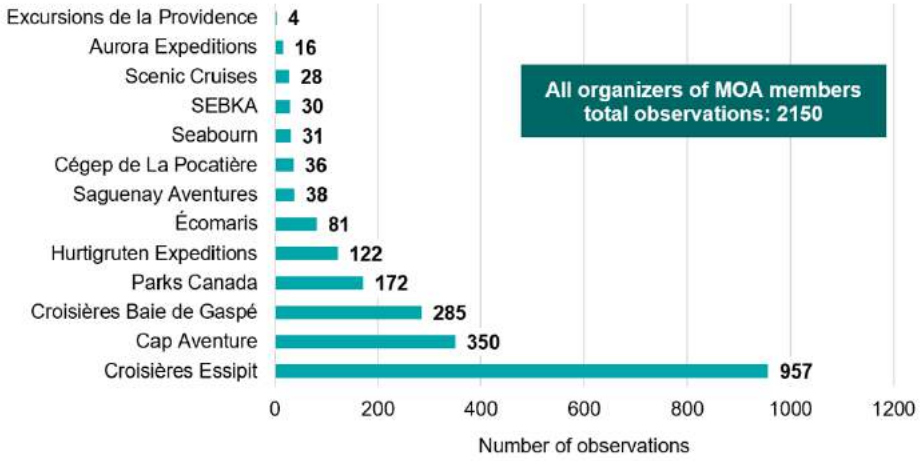


Figure 8. Number of observation data logged by each organizer of marine observation activities in 2023

For the second consecutive year, the contribution made to the data collection effort by organizers of marine observation activities was most remarkable. Firstly, the overall number of data practically doubled compared to 2022, increasing from 1,221 to 2,150 observations. The same holds true for the number of MOA organizers having collected data, which surged from 5 in 2022 to 13 in 2023. Making a substantial contribution to data collection, the 8 new participants logged 1,224 data points, or approximately 57% of observations in 2023. Additionally, a larger territory was covered, especially in the Arctic.

This new zone was covered by four new observer members, namely Aurora Expeditions, Scenic Cruises & Tours, Seabourn and Hurtigruten Expeditions. These companies are all members of the Association of Arctic Expedition Cruise Operators, an association dedicated to the responsible management of tourism activities in the Arctic. Although marine mammal watching is not their primary activity, a total of 197 data points (approx. 10%) was generated by this new group of observer members.

Unsurprisingly, the largest data set was compiled by organizers of activities specifically geared toward observing marine mammals. The main contributor in 2023 was Croisières Essipit, which collected nearly half of all data (44%), followed by Cap Aventure and Croisières Baie de Gaspé. Additionally, Saguenay Aventures, SEBKA and Excursions de la Providence logged a total of 72 data points in the course of their offshore excursions.

The other members, namely Cégep de La Pocatière, Écomaris and Parks Canada, gather data in the context of their educational and research activities. In 2023, these members contributed 289 of the 2,150 marine mammal observations.

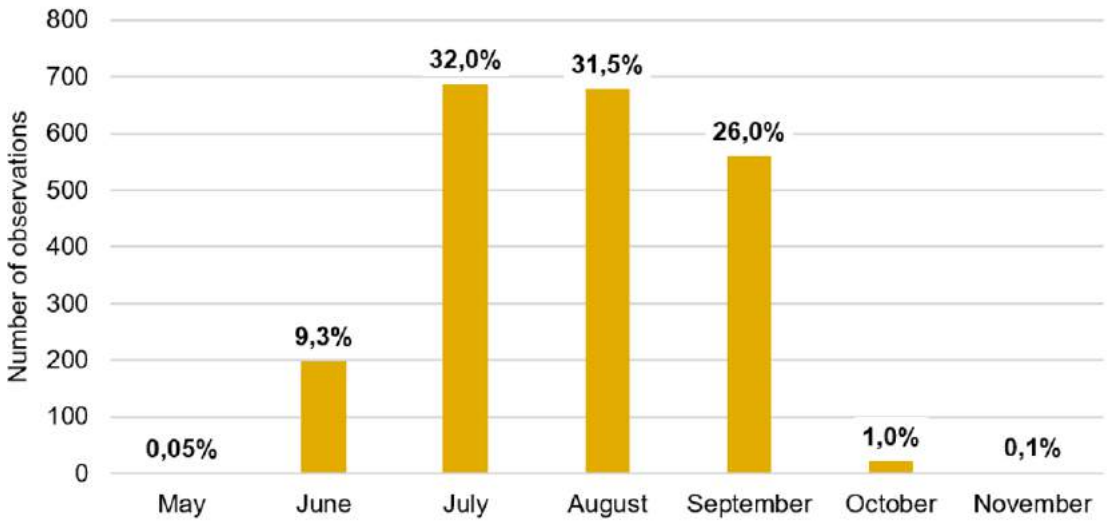


Figure 9. Monthly breakdown (numbers and percentages) of observation data logged by organizers of marine observation activities in 2023

In Figure 9, it can be seen that the data collection season lasted seven months and that approximately 99% of the data were gathered during the peak season for marine mammals, i.e. between June and September. As was the case in 2022, the top months for documented sightings were July and August, with 688 and 678 data points, respectively. These two months are proportionally lower in 2023 than they were in 2022, even if they both generated more observations. This might be explained by the significant uptick in observations logged in September, increasing from 124 in 2022 to 560 in 2023.

Additional Invaluable Data on Whale Distribution Patterns

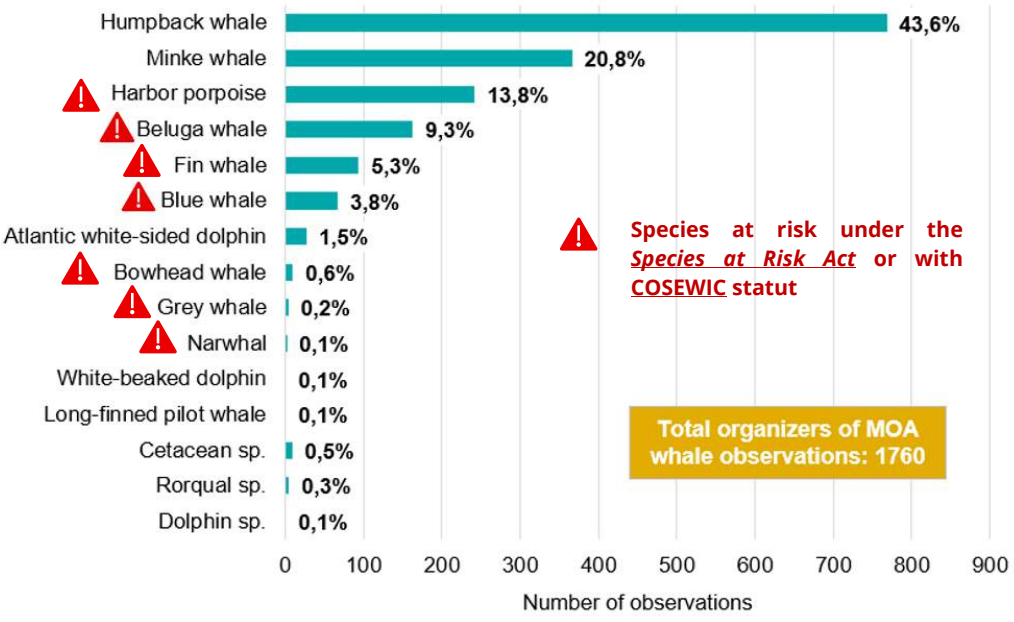


Figure 10. Species breakdown (numbers and percentages) of cetacean observations made by organizers of marine observation activities in 2023

Figures 10 and 11 present the respective species breakdowns for cetaceans and other marine species observed in 2023. Overall, 12 species of whales were recorded in 2023, plus 3 taxa that could not be definitively identified. Four of these – namely arctic species – were not identified the previous year. The humpback whale generated the largest number of observations, i.e. 768 of the 1,760 data points. This contrasts with 2022, when cetacean observations were dominated by the harbour porpoise, whereas the latter was the third most frequently reported species in 2023. The minke whale conserves its second place position, with more than 20% of all observations. The beluga, fin whale and blue whale, all three of which are endangered, were seen on a number of occasions (163, 94 and 67 observations, respectively). The other species represent more sporadic sightings, namely those found exclusively in the Arctic such as the narwhal, bowhead whale and grey whale. Unlike 2022, no North Atlantic right whales were observed by this category of members in 2023.

Figure 11 indicates the other marine species documented by organizers of marine observation activities in 2023. This category shows more diversity in 2023 than it did in 2022. In fact, the harp seal, polar bear, bearded seal, ringed seal, walrus as well as two species of fish represent new additions to the list of biodiversity observed. This greater diversity can be partially explained by the coverage of the arctic region this year. The most often noted species is the harbour seal (approximately 40% of all observations), followed by the harp seal and grey seal. The latter was identified more frequently in 2022. These three species account for over 73% of the data.

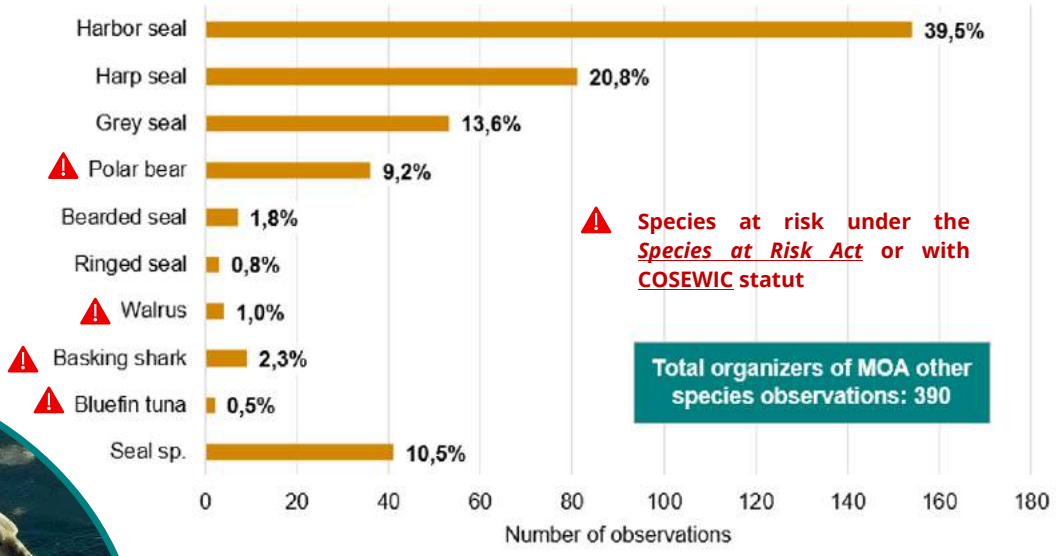


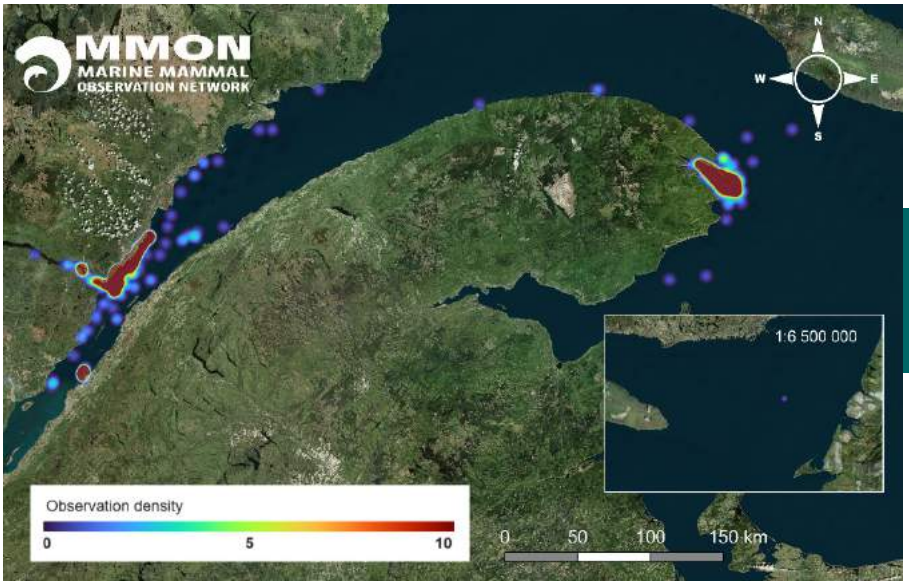
Figure 11. Species breakdown (numbers and percentages) of non-cetacean observations made by organizers of marine observation activities in 2023

Polar bear © Wikipedia

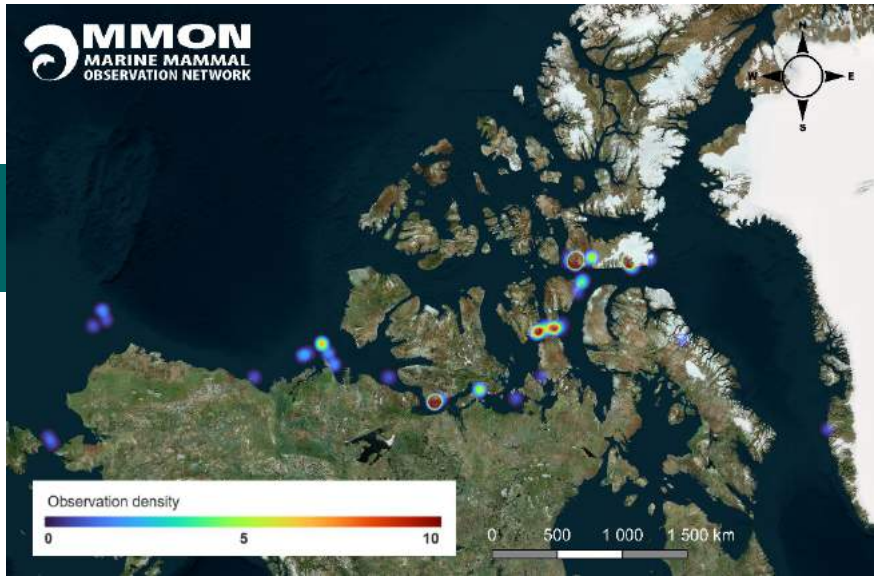
Observations from the St. Lawrence to the Arctic

Maps 4 and 5 illustrate the locations of these observations. In the St. Lawrence, numerous observations were made in the Saguenay-St. Lawrence Marine Park as well as in Gaspé Bay and the Banc-des-Américains Marine Protected Area. Other sightings can be found in the estuary between Les Éboulements, Kamouraska, Rimouski and Godbout, along the coasts of the Gaspé Peninsula between Sainte-Anne-des-Monts and Percé, as well as in the Gulf of St. Lawrence and Chaleur Bay.

In the arctic region, the waters of Lancaster Sound, Bellot Strait and Coronation Gulf produced many observations, though other sightings were made as far west as the Bering Strait.



Map 4. Density of observations reported by organizers of marine observation activities, 2023 – Estuary and Gulf of St. Lawrence



Map 5. Number of observations reported by organizers of marine observation activities, 2023 – Arctic

3.4 SUMMARY OF OBSERVATIONS REPORTED BY CITIZENS IN 2023

A Booming Contribution!

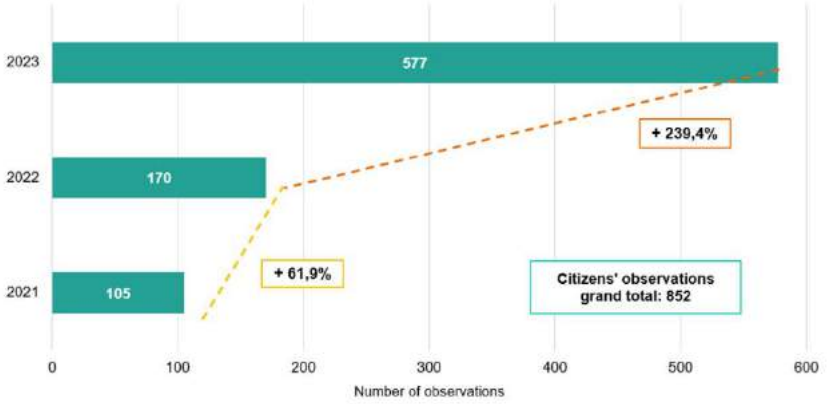


Figure 12. Evolution of number of citizen observations, 2021-2023

As was the case the previous year, citizen science was more popular than ever in 2023. Indeed, Figure 12 illustrates a significant spike in the number of observations logged by citizens last year, with the number of data points rising from 170 to 577. This is three times the number of observations made in 2022 and five times the number of sightings reported the first year. The value of these data lies notably in the nature and locations of the corresponding observations. A number of these sightings were made from land-based sites. In addition to demonstrating that simple access to a shoreline is enough to observe marine mammals, there is the added advantage of enhanced territorial coverage. The total number of citizen observations reported since the start of the project now stands at 852.

Besides the number of observations recorded, Figure 13 also shows that data were reported every month of the year in 2023. This is three months more than in 2022, i.e. January to March. Overall, the bulk of data was collected between June and October, i.e. 86.3% of the 852 citizen data points since the start of this effort in 2021 and 87% of citizen data for 2023. Observations reach a noticeable peak in August, not only in 2023, but also in the cumulative three-year total. Indeed, the summer period is a good opportunity to observe marine mammals and log the corresponding data in the application *Vigie marine*. Observations made in the other months, i.e. November to May, also continue to increase with each passing year, from 4 data points in 2021 to 39 in 2022 and 75 in 2023. This is testimony to the fact that the general public is beginning to become more familiar with the tool.

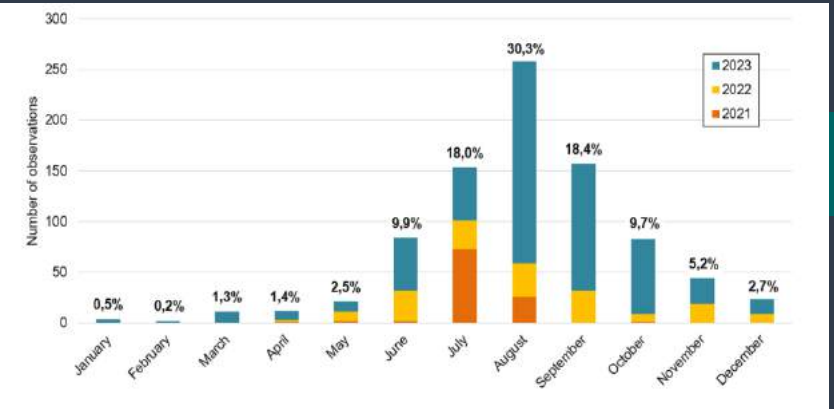
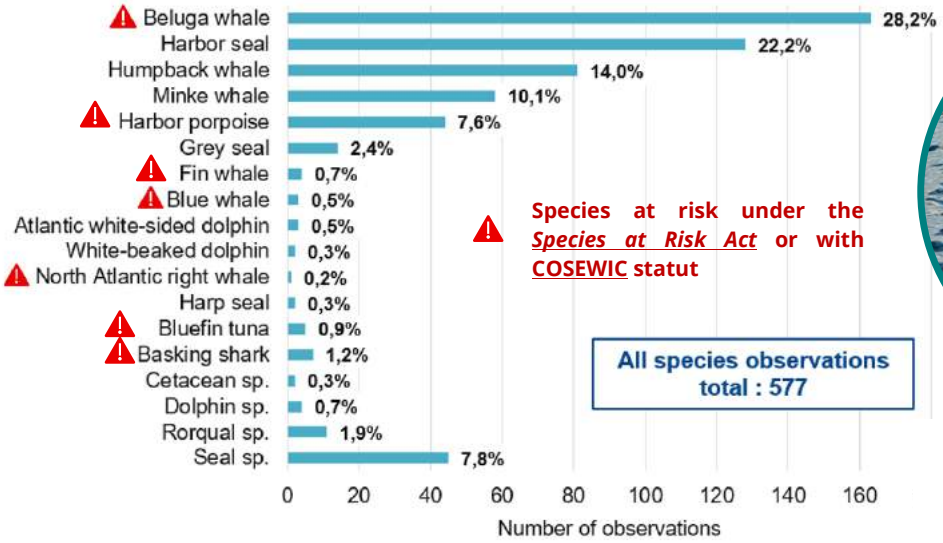


Figure 13. Monthly breakdown (numbers and percentages) of citizen observations, 2021-2023

Broad Diversity of Species Observed



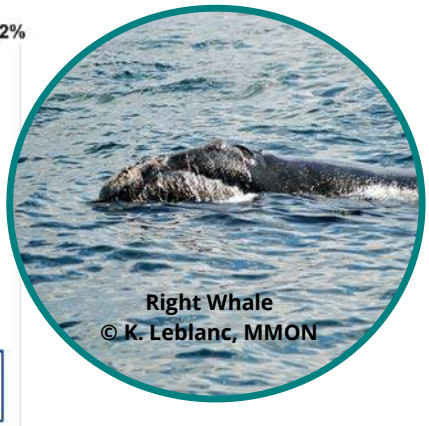
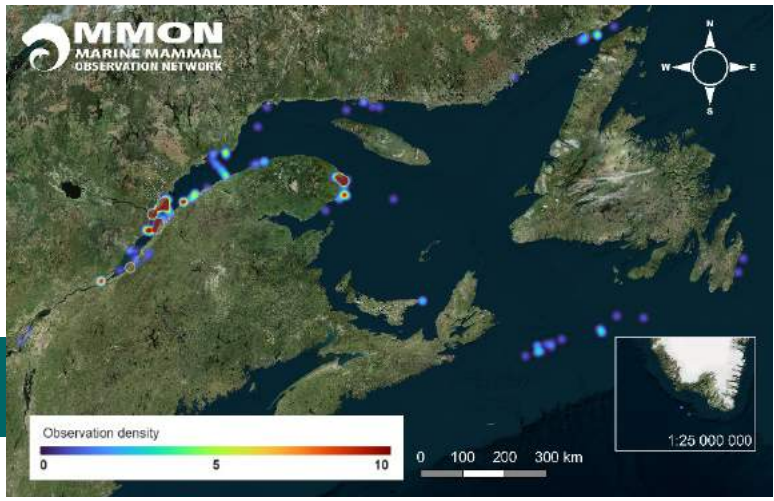


Figure 14. Species breakdown (numbers and percentages) of citizen observations in 2023

Figure 14 presents the different marine species reported by citizens in 2023. Nine species of cetaceans and three species of seals were seen in 2023, whereas ten species (excluding "sp." taxa) had been recorded in 2022. The minke whale was the most frequently observed species in 2021 and 2022, though in 2023 it lost this distinction to the beluga, which registered 163 observations. The beluga is followed by the harbour seal, humpback whale and minke whale with 22.2%, 14.0% and 10.1% of observations, respectively. In addition to the beluga, two other species that are considered endangered were documented, namely the blue whale and the North Atlantic right whale. The narwhal and the killer whale, which had been seen previous years, were not identified this year, while the white-beaked dolphin and harp seal were not part of the biodiversity reported in 2021 and 2022. Also worth noting is the presence of two fish species, namely the basking shark and bluefin tuna.

Map 6 illustrates the locations of the many citizen observations made in 2023. As was the case last year, most of these data are concentrated along the ferry routes crisscrossing the St. Lawrence Estuary as well as in the vicinity of Bic National Park and Rimouski. Observations were also recorded as far upstream as the port of Québec City, in Gaspé Bay, the Côte-Nord region and even Prince Edward Island. Observations made far offshore between Newfoundland and Nova Scotia as well as in southern Greenland are believed to come from ship operators, as their locations match the routes used by certain companies.



Map 6. Density of observations reported by citizens, 2023 – Estuary and Gulf of St. Lawrence

3.5 OVERVIEW OF RESULTS OF NAVIGATING WHALE HABITAT DATA COLLECTION PROGRAM IN 2023

Remarkable Diligence!

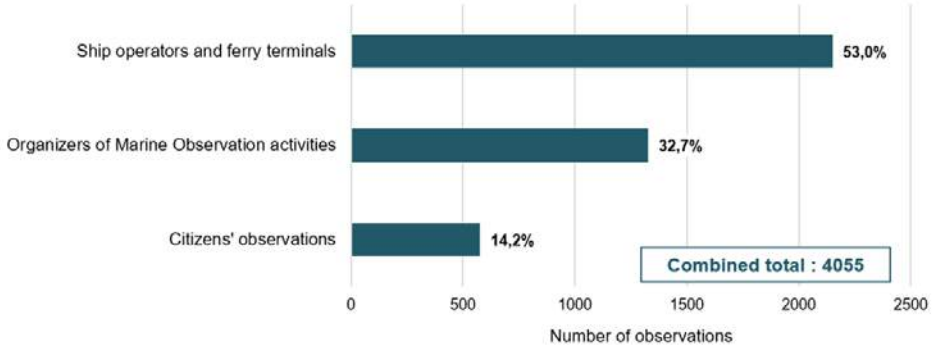


Figure 15. Numbers and proportions of observation data logged by each observer category, 2023

The continued dedication of observers in 2023 is remarkable. As illustrated in Figure 15, the number of observations is trending upward for each category. As the most likely participants to sight marine mammals, organizers of marine observation activities stand out with their significant contribution of 53% of all data. Citizen science observations also rose sharply compared to 2022, increasing from 6.4% to 14.2%. Although the proportion of their contribution fell approximately 15% in 2023, notably due to the sharp increase of the other categories and the less pronounced increase in their own observations, ship operators and ferry terminals also reported more data than in 2022. For all three categories combined, observers logged a total of 4,055 data points in 2023, i.e. 1,404 more than in 2022.

The 2023 data collection effort was largely comparable to that of 2022. Figure 16 illustrates the monthly breakdown of observations for the year. Collectively, the six months from May to October represent a similar proportion of observations in 2023, i.e. 95% of the year's data set, compared to 94.6% the year before. Within this important period, only the month of September presents a higher percentage than 2022, rising from 13.4% to 21.9%, while the five other months show declines ranging from 0.1% to 3.8%. More observations were made in August 2023 than in any other month, followed by July and September; the same trend was noted in 2022. The observation ratios for the other months remain rather stable between the two years. The month-to-month evolution of observation statistics suggests that marine mammals were seen slightly later than last year at the start of the high season and that they were observed later into the fall. This slight shift in the whale-watching season may stem from the contributions of new members, for example the four members of AECO that operate their cruises between late July and mid-September.

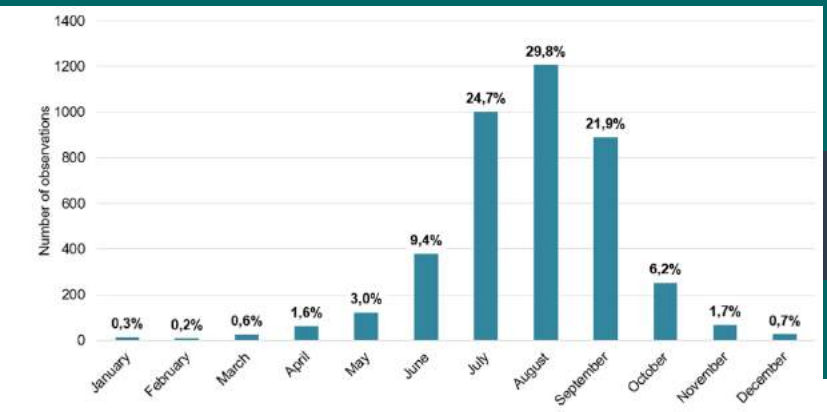


Figure 16. Monthly breakdown (numbers and percentages) of observation data, all observer categories combined, 2023

Humpbacks in the Spotlight

Humpback Whale
© C. Horvath, MMON

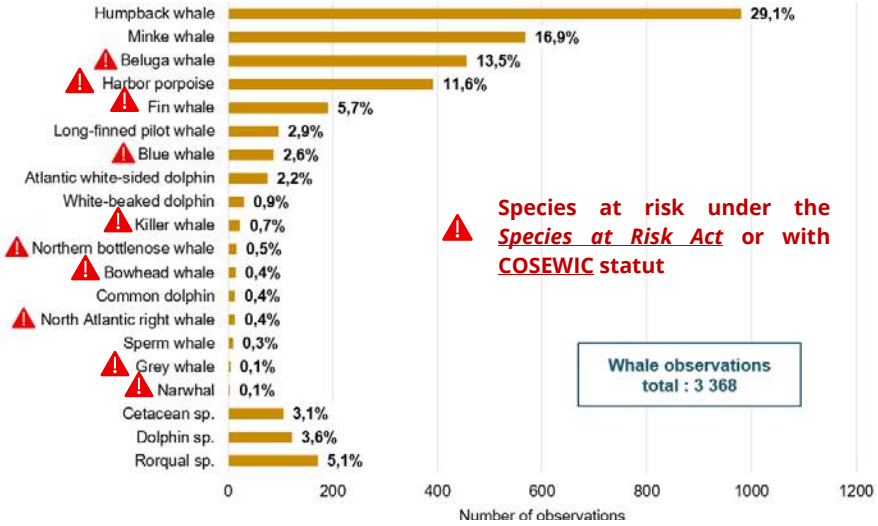


Figure 17. Species breakdown (numbers and percentages) of cetacean observations, all observer categories combined, 2023

Of the year's 4,055 data, the majority of observations were of cetaceans. In fact, cetaceans of various species account for 83% of all observations (Figure 17), with the remaining 17% consisting of sightings of seals, walrus, polar bears, turtles and fish (Figure 18). Of the 17 species of cetaceans, the most frequently documented species is the humpback whale, followed by the minke whale, beluga and harbour porpoise. Reported more occasionally were the fin whale, long-finned pilot whale, blue whale and white-sided dolphin. The other species were seen on just a few occasions, notably the narwhal, grey whale and sperm whale, each of which represents but a handful of observations.

Sightings of the 11 other marine species were largely dominated by the harbour seal. This species is followed, albeit distantly, by sightings of harp seals and grey seals. The polar bear is another species that was spotted on a few occasions, notably on the itineraries of companies operating in arctic waters. The basking shark is the most frequently identified fish, though this species was recorded just 18 times. The other more rarely observed species are more associated with the Arctic or are simply less plentiful in our regions, as is the case for the endangered leatherback sea turtle or the ocean sunfish, though sightings of the latter are on the rise on account of rising water temperatures.[3]

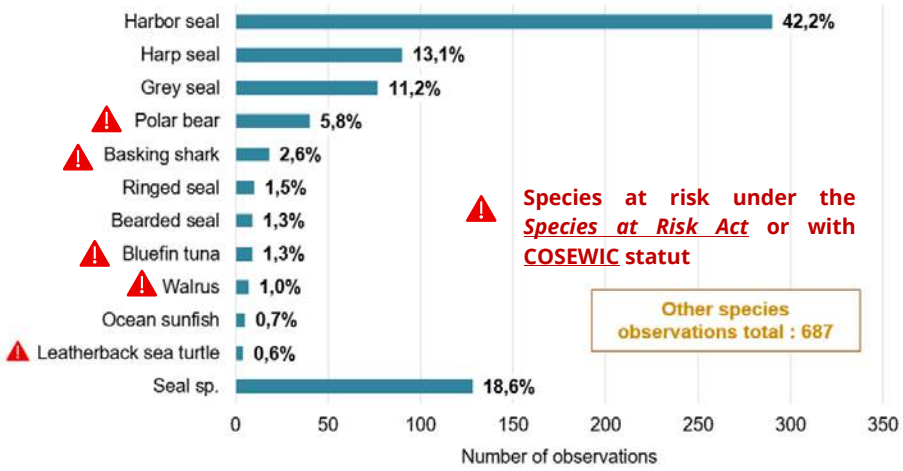


Figure 18. Species breakdown (numbers and percentages) of non-cetacean observations, all observer categories combined, 2023

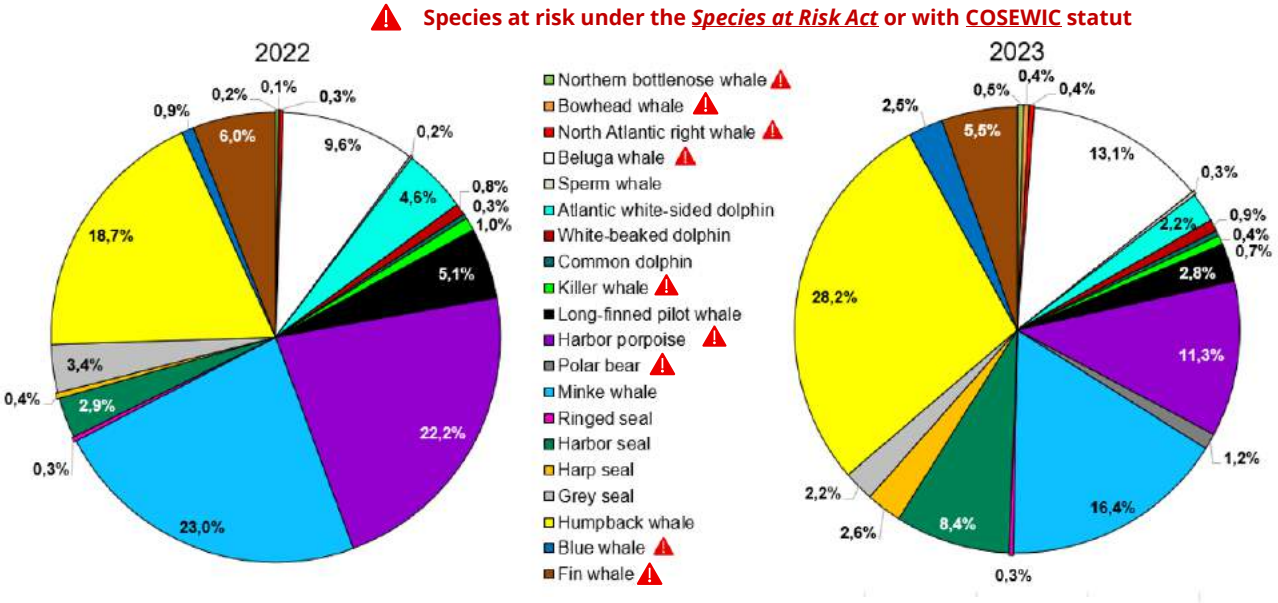


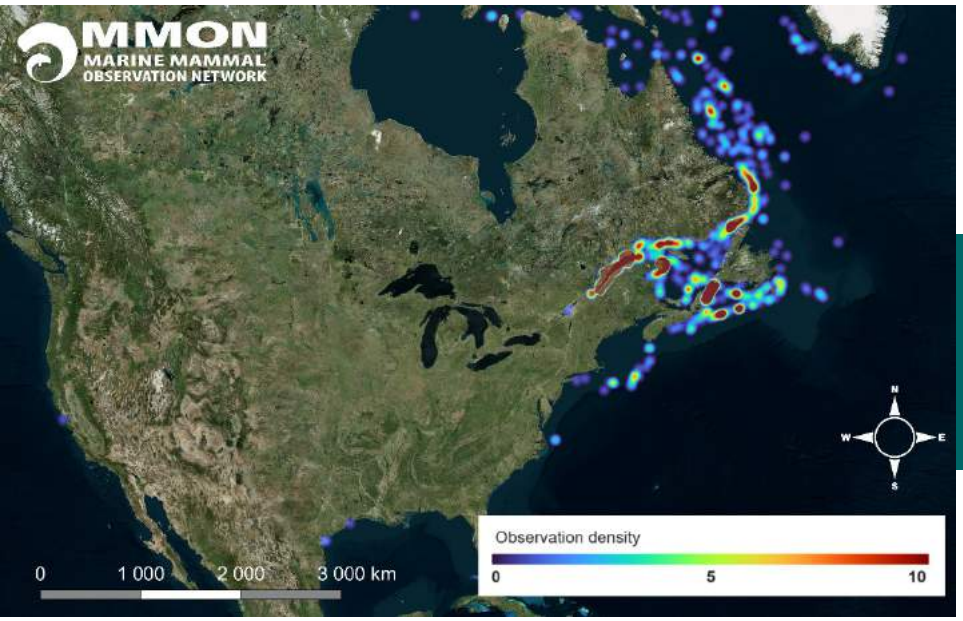
Figure 19. Percentage breakdown of observations for main species, all observer categories combined, 2022 and 2023

Figure 19 illustrates the relative proportions of the main species recorded in 2022 and 2023. Although the four most frequently observed taxa in these two years remain the same (i.e. beluga, harbour porpoise, minke whale and humpback whale), their respective proportions have changed. In fact, minke whale and harbour porpoise observations represent smaller proportions of the overall data set, while that of the humpback whale in particular has grown. The same endangered species were seen both years, with greater numbers for each in 2023, especially belugas and blue whales. The harp seal and harbour seal were seen more often in 2023, whereas sightings of white-sided dolphins, long-finned pilot whales and grey seals were fewer in number. Lastly, the polar bear joins the list of "main species" in 2023, whereas there was just a single observation of this species in 2022.

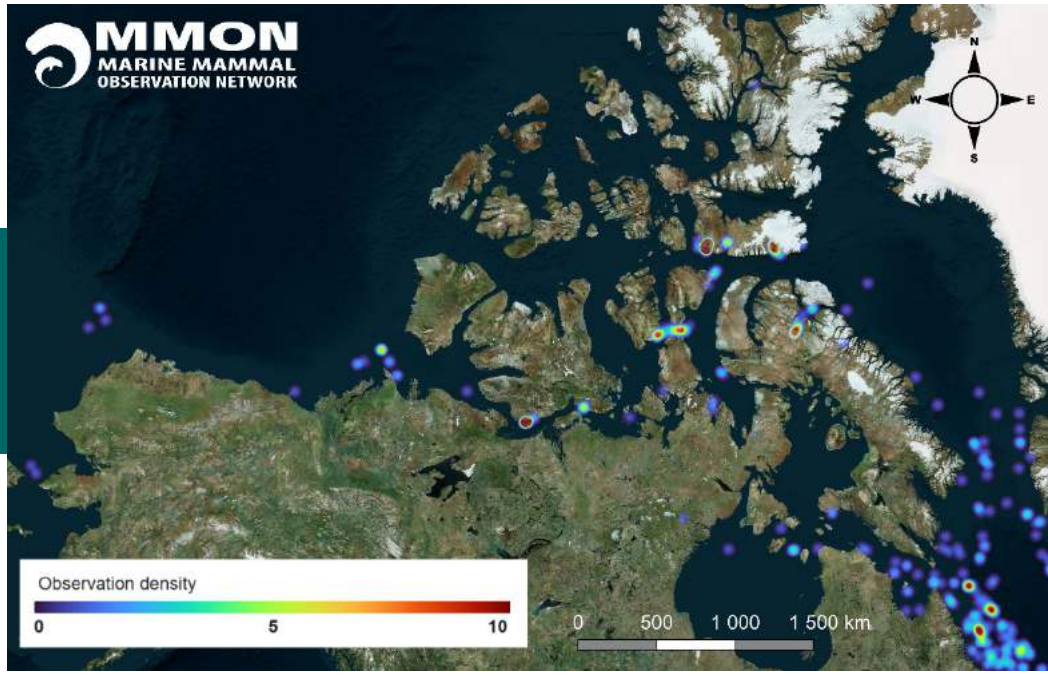
Blue whale © A. Sinclair, MMON

Vast Coverage Area

Maps 7 and 8 illustrate the entire set of data logged by all observer categories. Eastern Canada and the Arctic show the greatest concentrations of observations, especially the Gulf of St. Lawrence and its Estuary, where the *Vigie marine* application is best known, though it should be emphasized that data logged by MMON's observer members cover all of North America this year, which is particularly impressive.



Map 7. Density of observations, all observers categories combined, 2023 – Northwest Atlantic, Gulf of Mexico and Northeast Pacific



Map 8. Density of observations, all observers categories combined, 2023 - Arctic

CONCLUSION

The *Navigating Whale Habitat* training and data collection program is increasingly popular with all observer categories, especially organizers of marine observation activities and ordinary citizens. In 2023, 7 additional representatives joined the ranks of active observer members, which previously numbered 17. This brings the number of observer members actively participating in the program's data collection efforts to 24, including 14 members from the maritime sector representing a fleet of over 60 ships and 10 organizers of marine observation activities.

Under the program, toolkits tailored to each major user category are developed and distributed to participants. These kits notably contain data collection protocols as well as various training tools, including stewardship guides that provide information on best practices for navigating whale habitat and how to identify marine species. These tools are hosted on the online platform, which is divided into four main portals for each of the user categories targeted by the program, namely ship operators, fishers, boaters and whale-watching companies. In 2023-2024, MMON finalized a number of tools to enhance the whale-watcher's kit, which notably contains the new stewardship guide printed last March as well as a manual and information sheets to help these companies diversify the content of their interpreting material. The online platform also features tools to allow observer members to enter and visualize their data. MMON continued to enhance these tools, including the new offline data entry application *Vigie marine*. These new tools will be launched in the course of the 2024 whale-watching season.

Additionally, efforts to encourage ordinary citizens to collect data also paid off in 2023, with the number of observations reported by the general public having more than tripled! Tools specifically designed for citizen science will be developed and integrated into the platform in 2024 to allow the program to build on its momentum and continue to grow.

In 2023, even if observation conditions were mediocre for part of the season due to forest fire smoke and fog, the expanded observation network of the *Navigating Whale Habitat* program and its highly motivated members logged a total of 4,055 observations, i.e. 1,404 more than in 2022! Contributions were on the upswing for each of the three categories of contributors, i.e. ship operators, organizers of marine observation activities, and ordinary citizens. In 2023, for all observer categories combined, the humpback whale was the leading star, representing just over 29% of all sightings. Furthermore, the territory covered continues to grow and data were collected every month of the year. Since the beginning of the program in 2015, a grand total of 15,289 observations have now been documented.

We extend our heartfelt thanks to all of the program's members and each of the ordinary citizens who help document the presence of marine mammals in our waters! Your participation plays a valuable role for marine mammal conservation.

Saguenay Fjord © M. Martel