Canadian
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canadienne de
la connaissance
de l'océan

UNDERSTANDING OCEAN
LITERACY IN CANADA

ST. LAWRENCE REGIONAL REPORT
WITH GREAT LAKES OVERVIEW
AND HIGHLIGHTS

JUNE 2020

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EXECUTIVE SUMMARY

This report is one of five regional reports that support a Canada-wide study conducted by the Canadian Ocean Literacy Coalition (COLC) to establish a baseline seascape of ocean literacy (OL) in Canada. The study's results will be used to develop an evidence-based national OL strategy and implementation plan.

This report shares the findings from the St. Lawrence Region with key highlights relevant to the Great Lakes. These combined waterways span southern Ontario and Quebec, as well as eight American states, and are comprised of many diverse ecosystems, which encompass a gradual transition from freshwater to marine. Although the Great Lakes and the St. Lawrence River are inherently connected, inhabitants of these shores are separated by provincial and international borders that harbour different models, cultures, networks, institutions, policies, and perspectives, which all affect citizens' relationships to water and the ocean. Capacity and limitations of this study have guided the decision to focus primarily on one province's realities, those of Quebec.

The **key strengths of OL** identified in this study are coordinated consultation and dialogue, dynamic and accessible knowledge communication, multidisciplinary research networks, and intersectoral collaborations and partnerships. **The key barriers** to OL identified are funding challenges, disconnection from the regions' waters, access to the ocean and its resources, and language constraints.

Four recommendations to advance OL in the St. Lawrence Region **emerged from the study**. These include: provide sustained funding for OL; integrate knowledge and perspectives of First Nations and non-Indigenous coastal communities into the co-production of OL knowledge; support and promote accessible knowledge and science communication tools; and create collaborative tools and spaces for OL practice across borders.
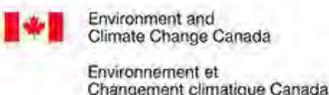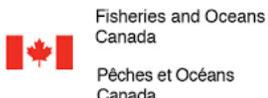
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COLC would like to thank NIVA Inc. for their in-kind contribution on the publication design.

* The above partners directly contributed to supporting this region's research. See Appendix F for complete list of all funding partners.

Heading Photo:Julia Ostertag

INTRODUCTION:
FRAMING OUR CANADA-WIDE STUDY

Canada has the longest coastline in the world and jurisdiction over an area of ocean equivalent to about 55% of the country's landmass.[1] For the 6.5 million Canadians living in a coastal zone[2] the ocean is deeply embedded in the fabric of community livelihoods, food security, and well-being. Across Canada, the ocean is a major economic driver, the backbone of weather and climate systems, and a recreational playground for millions of Canadians and global visitors. Ocean conservation is increasingly highlighted as a priority, as signalled by Canada's pledge to establish marine protected areas covering 25% of our ocean waters by 2025 and 30% by 2030.[3]

The ocean space is not just about species and industries; it is also about people, livelihoods, relationships, and identity. A knowledgeable and engaged citizenry is required to support and ensure ocean and human health, sustainable ocean economies, and social equity.

The Canadian Ocean Literacy Coalition (COLC) is an alliance of organizations, networks, institutions, and communities working together to better understand and advance ocean literacy (OL) in Canada. Widely accepted internationally, OL is defined as "**understanding our impact on the ocean and the ocean's impact on us**."[4] COLC's primary project since its inception in 2018 has been to lead a Canada-wide research initiative to better understand Canadians' varying relationships with the ocean and to examine how OL is understood and practiced across different regions and sectors. The aim of this work is to establish a baseline *seascape* of OL in Canada, and in so doing, to co-develop an evidence-based national OL strategy and implementation plan.

This report presents the findings for the St. Lawrence Region, with key highlights relevant to the Great Lakes. It is one of a set of five regional reports and one national report that are available at www.colcoalition.ca.

Heading Artwork: Nancy Breton

Photo: Quebec City waterfront, Photo Credit Mike Sudoma/Students on Ice Foundation

OUR APPROACH AND METHODS

Through a collaborative research approach, and drawing on qualitative and quantitative methods, the study focuses on five Canadian regions (Atlantic, Inuit Nunangat, Pacific, St. Lawrence, and Inland Canada), as well as a national overview. The study moves beyond an examination of OL in the context of formal education and youth to consider the practice of OL within nine sectors: Government, NGO and Advocacy, Academia and Research, Industry, Education, Community, Media, Cultural Heritage, and Health.

Data was primarily collected from participants who are directly engaged in OL, or in other ocean-related work that (1) advances **ocean knowledge** systems (e.g., scientific, Indigenous, expert, local, etc.), (2) strengthens **ocean values** (e.g., life-sustaining, economic, personal, communal, etc.), and/or (3) implements **ocean actions** (i.e., individual behavioural change, social justice actions, policy changes, etc.).

THE STUDY WAS GUIDED BY THREE CENTRAL RESEARCH QUESTIONS:

1 What is the current understanding and state of OL in Canada?

2 What are the current strengths and barriers of OL in Canada?

3 What are the key recommendations to advance OL in Canada?
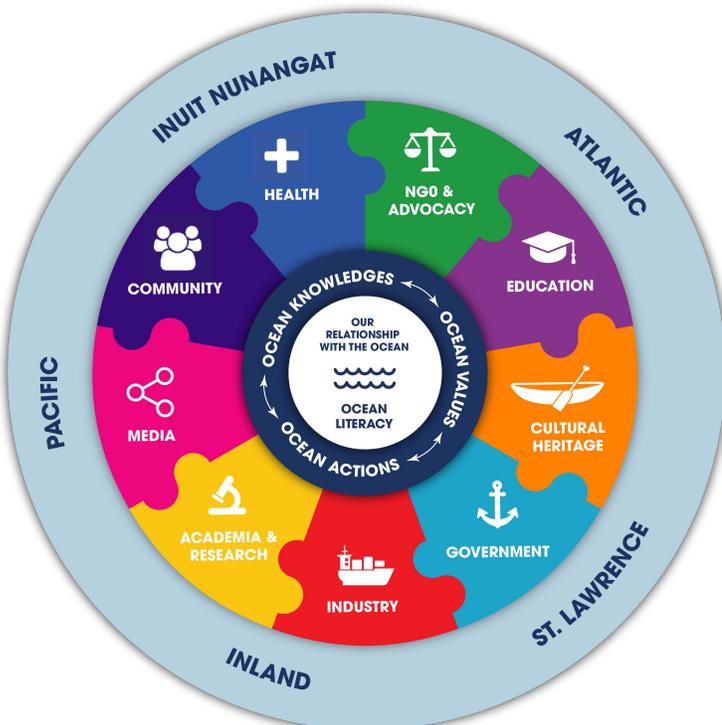
5 REGIONS

9 SECTORS

3 DIMENSIONS OF OL

Figure 1: The conceptual framework used for the study, integrating the five regions, nine sectors, and three dimensions of OL – ocean knowledge, values, and actions

Table 1 outlines the eight data collection methods used in the study and provides the sample total for each method, nationally and for the St. Lawrence Region. See Appendix E for further details on research methodology, ethics, and links to research tools. All data collection occurred between September 2019 and March 2020.

TABLE 1: COLC RESEARCH BY THE NUMBERS

Data Method	Description	National	St. Lawrence (Great Lakes)
Canadian Ocean Literacy Survey (COLSurvey)	National online survey with COLC members' networks & interested Canadians (For Findings Report PDF)	1,359 respondents	565 Respondents (QC = 150) (ON = 415)
Nanos Poll	National poll conducted with random sample (For Findings Report PDF)	1,010 respondents	251
Document Scan	Documents and reports reviewed for context	332	70 documents (see Appendix A)
Interviews	Semi-structured, 45 minutes (see Appendix C)	188	25 participants* (see Appendix B)
Ocean Literacy Mapping Survey (OLMSurvey)	Organizational-level online survey for OL providers	136 respondents	22 participants** (see Appendix D)
Youth Workshops	Researcher facilitated, semi-structured focus groups (For Youth Report PDF)	3 workshops – 210 youth total	National scale only
Arts-based engagement	Public interactions with artwork and research question (For St. Lawrence Arts Report PDF)	5 interactive art works - 250 responses	1 art work 53 responses
Media & Social Media Scan	Coarse-scale analysis of topics discussed in Canadian media & Twitter (For Media Analysis Report PDF)	1,253 articles; 77 influential accounts (800+ followers)	National scale only

*5 interviews were also considered in the Inland Regional Report

** 22 organizations participated in the OLMSurvey and an additional 46 organizations/initiatives were identified by these participants and/or the research team to include in the St. Lawrence Region and Great Lakes OL Asset Map Table. See Mapping OL Initiatives section.

ST. LAWRENCE AND GREAT LAKES:
BACKGROUND CONTEXT

The St. Lawrence River and Great Lakes region forms one of the most complex and important networks of ecosystems in the world. With 5,238km of shoreline spanning southern Ontario and Quebec, and 4,676km of inland island shoreline, the Great Lakes and St. Lawrence River make up 9,914km of Canada's inland coast.[5] More than 45 million people live along these waterways, of which two-thirds live in one of the eight bordering states and more than 15 million live in Canada.[6] The Great Lakes alone have a surface area of more than 246,000 square kilometers, and their reserves account for nearly 20% of the world's freshwater.[7] From the eastern tip of Lake Ontario, its source, the St. Lawrence flows as freshwater until it reaches Quebec City, after which it increasingly develops marine qualities, as river becomes estuary, estuary becomes gulf, and gulf becomes ocean.[8]

For millennia, Indigenous peoples have lived, harvested, navigated, and traded along the waterways: the Haudenosaunee, Anishinaabe, and Lenape along the Great Lakes and the interior St. Lawrence; the Wendat, Abenaki, Maliseet, Innu, and Mi'kmaq along the river to the Atlantic Ocean.[9] Connection to the waters and shores for Indigenous peoples was integral to social, cultural, and trade activities. With European settlement along the waterways rising in the 16th century, borders were increasingly drawn and enforced even as the waters continued to be an interconnected hub of transportation, communication, and trade in North America.[10] The commercial boom brought on by the fur trade led to rapid and extensive community development along the waterways, and to this day, both Ontario and Quebec's largest cities sit on these shores. Southern Ontario and Quebec are home to nearly half the Canadian population, with an estimated 98% of Ontarians living in the Great Lakes Basin,[11] and 70% of Quebecers living in the St. Lawrence Valley.[12]

Ensuring the health of the water systems is vital to some 3,500 native species of plants and animals,[13] as well as the millions of Canadians who rely on the water basins for their drinking water, food, livelihoods, recreation, and health and well-being.[14] Nearly 150 identified invasive species threaten native flora and fauna, and high levels of pollution, climate change, urban and industrial development, agricultural runoff, and habitat loss or fragmentation also pose imminent threats to the health of the waters and those who depend on them.[15,16]

Heading Photo: Nikhil Mitra, Unsplash.com

Photo: Julia Ostertag

Healthy waterways are also critical to the multiple sectors that sustain the economy of the region, which is currently valued at CA$8.5 trillion.[17] The Great Lakes and St. Lawrence are well-known as a thriving corridor for shipping in North America through the Seaway[18], and they also support a wide range of economic activity including manufacturing, agriculture, maritime transportation, energy generation, land use development, tourism, and recreational and commercial fishing.[19] Designing and implementing policies, regulatory bodies, research initiatives, and conservation and protection measures that are cohesive and effective require a strong level of cooperation among diverse rights holders and stakeholders.

Although the Great Lakes and the St. Lawrence River are inherently connected, forming a continuum that is fed and flows as one, the political, cultural, and linguistic boundaries dividing the region create unique challenges (and opportunities) for cooperation across borders. They also contribute to varying regional relationships with the water and the ocean, enhanced by differing provincial models, networks, cultures, institutions, policies, and perspectives. Perhaps most of all, the difference can be keenly felt between a population that borders only freshwater (e.g. Ontario) and one that identifies with a range of ecosystems, from freshwater to marine (e.g. Quebec).

This report focuses on findings related to Quebec[20] – the St. Lawrence Region – and the people and places more directly connected with the St. Lawrence River, Estuary, and Gulf, while highlighting Great Lakes features.

WHAT'S IN A NAME?

In the language of the Ojibwe, also known as Anishinaabemowin, the Great Lakes are known as *Nayaano-nibiimaang Gichigamiin*, or the "five freshwater seas."[21] The names by which we know each lake today have been traced to Ojibwe or Iroquois (language family) origin.[22]

Lake Erie: from the Iroquois *erielhonan*, meaning "long tail"

Lake Ontario: from the Iroquois *onioatarí:io*, meaning "lake of shining waters"

Lake Michigan: from the Ojibwe *mishigami*, meaning "large water" or "large lake"

Lake Huron: named after the Huron (also Huron-Wendat, Wendat, or Wyandot) communities of the region

Although Lake Superior and the St. Lawrence were renamed in French (with names easily transferrable to English), communities inhabiting the area have traditional names for these bodies of water. **Lake Superior**, for instance, is known in Ojibwe as *Gichigami*, which can be translated as "great water or sea."[23] The **St. Lawrence River**, in the language of the Mohawk, also known as Kanien'keha, is named *Kaniatarowanenneh*, meaning "big waterway,"[24] and in Anishinaabemowin, *Magtogoek*, or "the path that walks."[25]

Photo: Unsplash.com

EXPLORING THE TERM 'OCEAN LITERACY'

Interviews for the St. Lawrence Region and the Great Lakes were conducted in French and English. Although "ocean literacy" is an established term in relevant international circles, there is no consistent equivalent in French.

COLC exists in French as the *Coalition canadienne de la connaissance de l'océan*, wherein *connaissance* is the equivalent of **literacy**, which is also preferred by [Fisheries and Oceans Canada](#) (DFO). At least two other translations are also in use, including *alphabétisation des océans*, as seen in the Intergovernmental Oceanographic Commission for the United Nations Educational, Scientific and Cultural Organization (UNESCO)'s [Ocean Literacy Portal](#), and *littératie océanique*, as used by the [National Film Board and Dalhousie University](#) in their collaborative project [Ocean School](#). In some instances, terms are used interchangeably, such as UNESCO's *Ocean Literacy for all: A Toolkit,*[26] wherein both *connaissances des océans* and *littératie océanique* are used to designate OL.

All COLC documentation and resources have so far adopted *connaissance de l'océan* as preferred terminology for OL. However, to understand the responses and reactions to OL in interviews from the St. Lawrence Region and Great Lakes, it is necessary to understand that **literacy** is a more highly charged word in English (e.g. perceived as deficit-based, technical), while *connaissance* is a relatively neutral word that more generally designates knowledge. When taken as a whole, *connaissance de l'océan* was overwhelmingly understood by interview participants to mean scientific knowledge of the ocean.

KEY TAKEAWAYS:

OL as an internationally recognized term can be lost in translation from English to French.

Few interview participants were familiar with the term OL or *connaissance de l'océan* and no participant indicated using the term within the context of their work. Of the OLMSurvey respondents, 40% indicated they 'sometimes' or 'frequently' use the term.

While neither OL nor *connaissance de l'océan* elicited strong opposition in the region, and many interviewees and OLMSurvey respondents indicated that the term made sense, the terms did not garner strong interest. The three principle reasons cited were these:

a. The terms exclude freshwater and its connection to the ocean;

b. Most organizations along the Great Lakes and St. Lawrence River focus on specific sections of their waterways, as opposed to the ocean specifically; and,

c. Most participants preferred **ecosystem literacy**, or *connaissances écosystémiques*, with the ocean considered as a part of the whole.

Heading Photo: Petite-Rivière-Saint-François
Photo credit: Jo-Ann Wilkins/Students on Ice Foundation

Below are key thoughts as to how OL, although not a widely used term, is perceived and/or considered by interview participants.

> We speak mostly of a continuum – river, gulf, ocean – and about understanding the dynamics between ecosystems, preserving biodiversity, preserving the health of the population along its shores, and coming up with answers to overall changes brought on by climate change and human activity.
> – *Denise Pérusse, Director of Societal Challenges and Intersectoral Networkings, Fonds de recherche du Québec*

> Why the term ocean? It feels disconnected from our reality. For us everything is interconnected: saltwater, freshwater, all the way down to the smallest stream.
> – *Lynn Jacobs, Director of Environment Protection, Kahnawà:ke Environment Protection Office*

> Connection between freshwater and the ocean is important, to realize that they do run into each other, replenish each other. I have found that people often relate to water through their personal connection, whether it be visiting the shoreline as a child or having a hobby on or in the water, canoeing, angling, etc. Getting people to share their stories of personal connection to the St. Lawrence or the Great Lakes is very powerful. – *Nicola Crawhall, Secretariat Director, Great Lakes Saint Lawrence Collaborative*

> I tend to speak more about the estuary, the gulf, the river – for me, the ocean is a bit more removed.
> – *Pierre Léonard, Fisheries Coordinator, Innu Essipit First Nation Band Council*

> The ocean is a part of a whole. I think that the broader biodiversity needs to be shown as well.
> – *Étienne Laurence, Head of Public Programs and Education Division, Montreal Biodôme*

> I don't use the term "ocean literacy" when I talk to students about systems thinking, and the importance of oceans in that thinking process. It's about being familiar and comfortable within the whole system.
> – *Shoshanah Jacobs, Associate Professor, Ideas Congress, University of Guelphh*

> With 'ocean literacy,' it seems to exclude humans, as well as coastal communities and the historical dimension. There's no magic term, but maybe it's in the notion of ecosystems, or of 'ocean health literacy,' where you can have both marine ecosystem health and human health within those ecosystems. – *Mélanie Lemire, Associate Professor, Littoral Research Chair, Centre de recherche du CHU de Québec - Université de Laval, Lead Researcher of the collective Manger notre Saint-Laurent*

> We've often said that we want to mobilize "environmental and scientific literacy." I think the two go well together, whereas just 'connaissance de l'océan' is a bit vague. 'Alphabétisation' also is maybe too scholarly of a word.
> – *Anne-Marie Asselin, Co-founder of The Blue Organization*

> We talk about cohabitation more than knowledge, in the sense that we try to reposition humans, to make people realize that the St. Lawrence isn't our habitat, that we share it with other species.
> – *Marie-Ève Muller, Communications, Group for Research and Education on Marine Mammals*

> I think that the knowledge, connections, and cultural values – in terms of sustenance and economic importance as well – that relate to the ocean, it's huge for our communities. It's very important because the ocean is at the heart of Mi'kmaq and Maliseet cultures. Still today, it's a significant factor in the socio-economic development of our communities. – *Catherine Lambert Koizumi, Executive Director, Mi'gmaq Maliseet Aboriginal Fisheries Management Association*

> We are woodland people and we are the original caregivers of the water because of where we are placed within our nation on the Great Lakes. We are the water people and we honour the water. It's important to us because it provides sustenance through our fishing and the wild rice and the cat tails and our natural medicines.
> – *Georgina Riel, Anishinaabe Knowledge Keeper; Riel Cultural Consulting*

Photo: Unsplash.com

Sector Breakdown	Number of Organizations
Education	15
NGO and Advocacy	22
Media	3
Government	6
Academia and Research	8
Community	3
Cultural Heritage	4
Health	1
Industry	3
Multisectoral	3

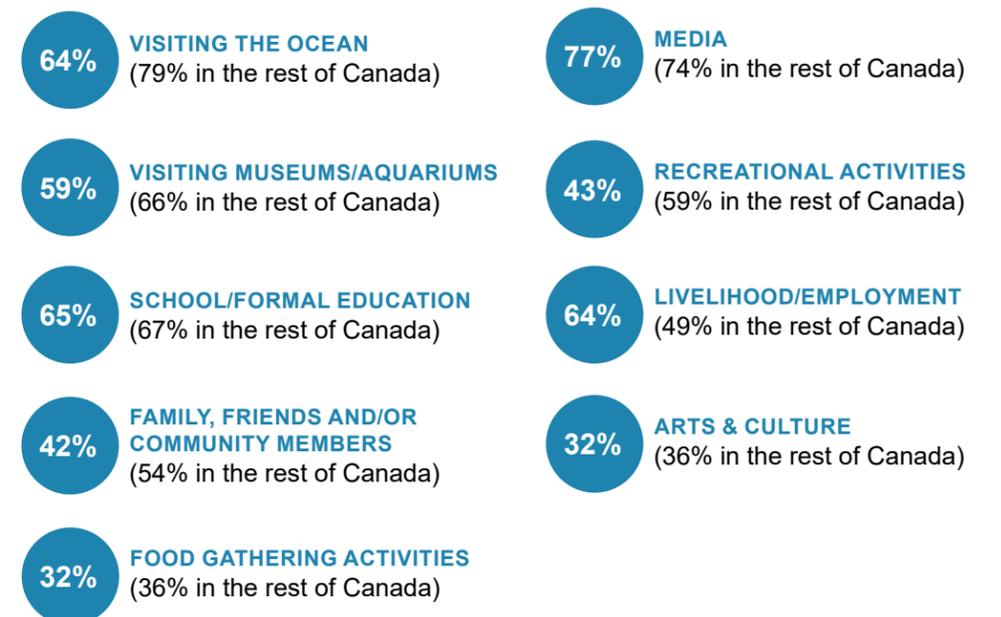| OL Initiatives Engagement Type	Number of Organizations
Information Resources	60
Interactive Activities	46
Expanding Capacity	6

MAPPING OCEAN LITERACY INITIATIVES

Organizations featured in the OL Asset Map and Table for the St. Lawrence Region and the Great Lakes were first mapped based on the responses from the OLMSurvey respondents and interviewees, as well as from the initial document scan. Many organizations and initiatives, recommended by participants, were also added by the researcher, with Ontario-based organizations being almost exclusively included in this way. The organizations and OL initiatives were mapped across nine sectors, target audiences (organized by age), and types of engagement, organized by categories: 1) information resources; 2) interactive activities, and 3) expanding capacity which includes intensive and immersive multi-day initiatives/experiences, such as training and leadership development. It is not an exhaustive list; rather, it highlights a sample of projects and programs that were identified as leaders or assets in the region.

A list of all organizations and OL initiatives that appear on the map below can be found in Appendix D. For the full St. Lawrence Region and the Great Lakes OL Asset Map Table, visit: https://colcoalition.ca/our-projects/regional-reports/st-lawrence-region/. The aim is to integrate all regional OL asset map tables into a digital, National OL Asset Map as part of the National OL Strategy, which can continue to evolve throughout the United Nations Decade of Ocean Science for Sustainable Development (2021-2030).

HOW DO RESIDENTS OF ONTARIO AND QUEBEC LEARN ABOUT THE OCEAN?

64% VISITING THE OCEAN (79% in the rest of Canada)

77% MEDIA (74% in the rest of Canada)

59% VISITING MUSEUMS/AQUARIUMS (66% in the rest of Canada)

43% RECREATIONAL ACTIVITIES (59% in the rest of Canada)

65% SCHOOL/FORMAL EDUCATION (67% in the rest of Canada)

64% LIVELIHOOD/EMPLOYMENT (49% in the rest of Canada)

42% FAMILY, FRIENDS AND/OR COMMUNITY MEMBERS (54% in the rest of Canada)

32% ARTS & CULTURE (36% in the rest of Canada)

32% FOOD GATHERING ACTIVITIES (36% in the rest of Canada)

Findings from 565 Quebec (n=150) and Ontario (n=415) respondents to the Canadian Ocean Literacy Survey.

Figure 2: St. Lawrence Regional Ocean Literacy Map

There are many OL strengths in Quebec today, largely stemming from unique policies and networks developed over the past 30 years. Some of these key strengths include a commitment to coordinated consultation and dialogue, dynamic and accessible knowledge communication, multidisciplinary research networks, and collaborations and partnerships between sectors.

1. COORDINATED CONSULTATION AND DIALOGUE

Quebec and Canada's commitment to coordinated consultation and dialogue around the St. Lawrence can be traced to the 1988 signing of the *Canada-Quebec Agreement on the St. Lawrence*, also known as the St. Lawrence Action Plan (SLAP).[29] The SLAP, designed to ensure a healthy future for the waterway, also laid the groundwork for advancing integrated management as a fundamental principle in safeguarding the St. Lawrence. Also in 1988, 27 regional groups came together to form the Coalition for the Saguenay-St. Lawrence Marine Park in a bid to protect beluga whales, an iconic symbol of the St. Lawrence, from further population devastation due to pollution.[30] The Coalition coordinated regional consultations and

negotiations that, in 1998, led to the creation of the Saguenay-St. Lawrence Marine Park.[31] The first of its kind, the Park is managed through a provincial-federal collaboration, with continued participation from regional stakeholders.

These early events in the history of modern water resource management laid the foundation for integrated management to be firmly built into Quebec's values, creating a long-lasting commitment to consultation and dialogue. Stratégies Saint-Laurent (SSL), founded as a result of the SLAP, works to ensure region-wide consultation and dialogue throughout communities along the river by supporting the establishment and coordination of a network

> **i** Integrated management is defined in the SLAP as "the cooperation of all decision makers, users and civil society for the planning and more effective harmonization of measures governing the protection and use of the resources of this important ecosystem from a sustainable development perspective."

Photo: Tall ship, Toronto, ON.
Photo credit: Martin Lipman/Students on Ice Foundation

Heading Photo: Julia Ostertag

of 12 independent regional organizations (See Case Study 1: Stratégies Saint-Laurent and the ZIP Committees). A decade later, following the recommendations of the Beauchamp Commission and the passing of the Quebec Water Policy,[32] the Government of Quebec supported the establishment of the [Regroupement des organismes de bassins versants du Québec](#) [Quebec Watershed Alliance] (ROBVQ). The ROBVQ, created in 2001, uses a similar model to SSL for facilitating integrated management of the river's tributaries, supported by the province's extensive network of watershed authorities, including the management of several rivers flowing into the St. Lawrence and its estuary.

In 2009, the Government of Quebec adopted *the Act to affirm the collective nature of water resources and provide for increased water resource protection* (Water Act).[33] Applicable to the St. Lawrence River and all watersheds in Quebec, the Water Act reinforces the impact of the Quebec Water Policy and further promotes the principles of cooperation and dialogue in provincial integrated water resource management.

> A network of 40 watershed authorities is spread across the province's nearly 1.7 million square kilometres. Along with the St. Lawrence, 3.6 million bodies of freshwater and tens of thousands of rivers and streams cover an area equivalent to 22% of Quebec's territory.

CASE STUDY # 1: **Stratégies Saint-Laurent and the ZIP Committees**

Stratégies Saint-Laurent (SSL) is an umbrella organization representing the interests of a network of 12 'areas of prime concern' that encompass the length of the Quebec portion of the St. Lawrence River. Launched first in 1989 by a group of environmental organizations in the province, SSL incorporated in 1993-94, and continued to become one of the SLAP's principle collaborators[34]. SSL's primary role is to mobilize and implicate coastal communities in the protection, restoration, and promotion of the St. Lawrence and its resources. As SSL Director General Jean-Éric Turcotte noted, *"Concertation is our modus operandi!"*

Covering territory that stretches from St. Regis in the west to Blanc-Sablon in the east, and including the Gaspé Peninsula and the Magdalen Islands, Priority Intervention Zones (ZIP) are overseen by independent non-profit committees who fulfill a mandate to engage in regional consultation and dialogue. ZIP committees invite the leading regional stakeholders in their zone to discuss environmental issues and to identify, by consensus, intervention priorities related to the St. Lawrence. SSL, as a standalone, neutral body, ensures overall coordination and cohesion among the network of committees.

Among the primary objectives of SSL is to facilitate consultation and constructive dialogue between its freshwater and marine commissions, created in 2003, to encourage dialogue and synergy between the ZIP committees concerned with the respective ecosystems.

2. DYNAMIC AND ACCESSIBLE KNOWLEDGE COMMUNICATION

Engaging communities and making knowledge accessible is a key strength across the region, from classroom and academic settings to hands-on experiential programming. As noted by interview participants with [Exploramer](#), it is "elements like public interest for ocean science communication and the understanding of that habitat" that contribute to the success of their program, noting also that there is a desire from the communities with which they interact to engage in the sustainable development and harvesting of marine resources, notably through the [Smarter Seafood](#) certification program.

Interactive programming is particularly strong in OL-related initiatives in the region, and often focuses on 'bringing the ocean to the people,' through such institutions as museums and interpretation centres. As Étienne Laurence, Head of the Public Programs and Education Division with the [Montreal Biôdome](#), remarked,

"*Immersion is certainly important. Touching an animal, like a sea urchin, there's emotion, and as soon as there's information linked to emotion like that, there's a greater rate of retention.*" Innovative programming in schools is particularly present, including St. Luce's *École de la mer* (See Case Study 2: École de la mer) and the École du Grand-Pavois' 'Blue School' designation.[35] As observed by Catherine Lambert Koizumi, Executive Director of the Mi'gmaq Maliseet Aboriginal Fisheries Management Association, strong, localized engagement within schools can have far reaching effects: "*It can encourage kids in elementary school to want to go into sciences in high school and cégep, to be able to go into jobs related to conservation or sustainable management of ocean and marine resources.*"

Other dynamic ways of engaging in accessible knowledge communication that bring the ocean to the people can be seen through various types of media. Blog posts, community bulletins, videos, and TV reports are all among the variety of tools to have carved a space in OL in Quebec. One such tool, targeting whale enthusiasts, is the Whales Online webzine and encyclopedia from the Group for Research and Education on Marine Mammals. Free and open to all, it allows anyone to engage in whale watching without stepping foot on a boat. A multitude of interpretation centres across the province also play an important role in blending science, history, arts, and culture to bring the waters to life for tourists and locals alike.
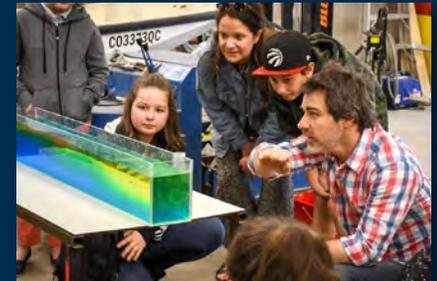
Using the arts as a means of making knowledge accessible is the "ultimate factor" for Anne-Marie Asselin, Co-founder of the Blue Organization: "*We try to integrate the arts and creativity in everything we do – then we make the knowledge more accessible, we communicate, we produce. People want that novel aspect, original, and uncomplicated.*"

> "*A blue school is an institution that centres its educational activities on the acquisition of knowledge and the development of skills through learning situations tied to the ocean, i.e. preservation of wildlife, the flora, the history, the trades, and the arts.*"

CASE STUDY # 2: École de la mer

From scuba diving in their physical education class to reading about shipwrecks in their French class, the students of the Sainte-Luce middle school in Quebec learn about the ocean in every subject. In 2017, this school became the first to implement the École de la mer [School by the sea] program, in which teachers from all subjects follow the regular middle school curriculum and apply it to the ocean. Themes from hurricanes to marine mammals are covered, and change each year. École de la mer was initiated by a committee of parents and developed in partnership with Lyne Morissette, researcher and science communicator with M – Expertise Marine. Lyne Morissette explained that at École de la mer, students learn that "the sea is not about science only. The sea is about new technologies, the sea is about arts, the sea is about history, French, English."[36]

The village of Sainte-Luce, with the St. Lawrence Estuary in its 'backyard', has many marine researchers, fishers, and storytellers in its community. As such, École de la mer represents an opportunity for place-based education and intergenerational connections. As the students interact with community members, they develop ocean citizenship and become ambassadors of the sea in their community.

Case study authored by Noémie Roy

Photo: Students from École de la mer visiting the Institut des Sciences de la Mer [Marine Science Institute], in Rimouski, QC. Photo Credit, Josée Cormier Roussel

CASE STUDY # 3: **Quebec Maritime Network**

In 2014, the Government of Quebec formulated the province's first Maritime Strategy, which, in the words of then Premier Philippe Couillard, was a means to "preserve the biodiversity of our maritime ecosystems, create worthwhile jobs in our regions and make Quebec a transatlantic trade hub."[38] That same year, researchers and stakeholders of the maritime sector came together to define Quebec's research needs in support of its Maritime Strategy. The outcome was the establishment of the Quebec Maritime Network (RQM) in 2016.[39] Today, the RQM has over 170 member institutions, representing academic, government, NGO, industry and community sectors.

Sharing knowledge across sectors is key to the RQM's operations; its mission is steeped in collaboration, consultation, and dialogue in maritime research. In describing the RQM's mission, Director Dany Dumont stated that the network "*mobilizes researchers from all sectors covered by the Quebec Research Funds (Nature and Technology; Society and Culture; Health) to involve stakeholders to co-build research and innovate openly.*" Since 2016, the RQM has financed more than 20 intersectoral projects through the Odyssée Saint Laurent program, the Lever program, and two calls for proposals organised with the ROBVQ and MEOPAR.

The RQM's work is focused around five themes: (1) Ecosystem health; (2) Human community health; (3) Monitoring, security, and maritime safety; (4) Sustainable and intelligent maritime transport; and (5) Resources, marine energies, and health of the maritime economic sector.

In response to the question "How would you like to see OL advanced in Canada?", Dumont responded, "*I would like to see it permeate general society, including youth, so that future generations might better claim a maritime identity.*"

Photo: Samuel Zeller/Unsplash

***Fishing huts along Petite-Rivière-Saint-François shore.
Photo credit: Jo-Ann Wilkins/Students on Ice Foundation***

3. MULTI-DISCIPLINARY RESEARCH NETWORKS

There are strong, established research networks in Quebec, driven by provincial policies and the cross-disciplinary requirements of the Quebec Research Funds (FRQ). For example, embedded within the top level of science in Quebec, the Office of the Chief Scientist is tasked with ensuring an intersectoral, collaborative approach to research in the province.[37] As related by Denise Pérusse, Director of Societal Challenges and Intersectoral Networkings with the FRQ, "*the intersection of multidisciplinary, intersectoral approaches to questions related to water and the ocean – it's innovative and impactful. You need to combine different approaches to address water and maritime issues in their multiple dimensions.*" Although many robust and well-respected maritime research institutions operate in the province – DFO's Maurice-Lamontagne Institute, the GREMM, the Mingan Island Cetacean Study (MICS), the Marine Mammal Observation Network, the Institut des sciences de la mer de Rimouski (ISMER), and the St. Lawrence Global Observatory, to name a few – it is particularly with the launch of the Quebec Maritime Network (RQM) (see Case Study 3: Quebec Maritime Network) that the maritime space became more inclusive of other research fields, such as social sciences and health, and valued the contribution of different sectors (academic, public, private, artistic, etc.) in the co-generation of knowledge. Deemed the "network of networks" by former ISMER director Ariane Plourde, she maintained that "*the missing links in the chain have now been developed. At the Canadian level, we're not at all close to what exists in Quebec.*"

4. COLLABORATIONS AND PARTNERSHIPS ACROSS SECTORS

The importance of collaborations and partnerships across sectors stood out strongly throughout the region. Denise Pérusse, FRQ, when asked to identify an OL leader in the region, responded that there was no one leader, rather that it was "*more about being united, about collaboration rather than competition*." Indeed, collaborations were often noted at regional, provincial, and national levels in many sectors, including Community, Research, Industry, NGO and Advocacy, and Government. As a notable example, the NGO Green Marine manages a voluntary environmental certification program for the marine industry, which encourages industry and research collaboration that can ultimately lead to developments beneficial to the region's inhabitants and users of the St. Lawrence. As explained by St. Lawrence Program Manager at Green Marine, Véronique Trudeau, "*some certification criteria require participation in research, which provides data that improves knowledge levels, and in so doing, enables the development of mitigation measures and technologies to reduce environmental impact*."

International partnerships were also noted, particularly in marine species migration research and sharing of data and knowledge with researchers in the U.S. The Institut France-Québec Maritime, launched in 2016, complements the RQM's Quebec-centric mission with the aim of encouraging bilateral efforts between Quebec and France, and mobilizing intersectoral stakeholder engagement on both sides of the Atlantic in research, training, and innovation.[40] International industry partnerships are perhaps most clearly demonstrated through the U.S.–Canada partnership to share administration of the St. Lawrence Seaway.

Less common to emerge through this study were interprovincial (Ontario-Quebec) partnerships and collaborations on the waterways. However, there is still important work being done to

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CASE STUDY # 4: **Great Lakes St. Lawrence Collaborative**

Launched in 2018, the Great Lakes Saint Lawrence Collaborative coordinated an 18-month, stakeholder-led process, to "develop recommendations for all governments to safeguard Canada's greatest reserve of freshwater."[41] The Collaborative was guided by a panel of experts from both Ontario and Quebec representing Indigenous, municipal, private, environmental, and academic/scientific sectors, coming together around four key challenge areas: (1) climate change, (2) toxics and other harmful pollutants, (3) nutrients, and (4) beaches and bacteriological contamination.

The process was conducted in two phases, releasing the *Great Lakes Action Plan 2030*[42] in June 2019, and the *Action Plan 2020-2030 for the Future of the St. Lawrence*[43] in March 2020. On June 10, 2020, the Great Lakes St. Lawrence Collaborative released its final report, *Action Plan to Protect the Great Lakes and St. Lawrence 2020-2030: Implementing Innovations in Science and in Governance*, focused on integrating the protection of both bodies of water.

When asked about factors of success of the initiative, Nicola Crawhall, Secretariat Director for the Great Lakes St. Lawrence Collaborative, commented: "I think it's that we recognize that the Great Lakes and the St. Lawrence are one connected body of water," while appreciating that "jurisdictionally and linguistically they're very different; governance-wise they're very separate. We need a more integrated approach to protecting this complex and fragile ecosystem."

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i The St. Lawrence Seaway, completed in 1959, is a series of 15 locks (13 Canadian, two American) built between Montreal and Lake Erie that allows ships to pass directly from the Atlantic Ocean to the heart of the Great Lakes. In the 61 years since its opening (at the time of this report), it is estimated that 3 billion tonnes of cargo have transited through the Seaway's locks.

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build relationships and further common goals and priorities relative to the waterways, with a recent example emerging in the Great Lakes St. Lawrence Collaborative (See Case Study 4: Great Lakes St. Lawrence Collaborative).

GREAT LAKES AT A GLANCE

The Great Lakes, to a much greater degree than the St. Lawrence, are characterized by numerous binational agreements along with organizations and committees working collaboratively towards the governance, regulation, protection and conservation of the lake basins and tributaries. This can be seen in policy, as through the *Great Lakes Water Quality Agreement*,[44] Indigenous water declarations, such as the *Tribal and First Nations Great Lakes Water Accord*,[45] and in one of the longest-standing Great Lakes organizations, the International Joint Commission (IJC).

The IJC has been operating for over a century, carrying out the provisions of the *Boundary Waters Treaty* of 1909[46], signed to "prevent and resolve disputes over the use of the waters shared by Canada and the United States and settle other transboundary issues."[47] The IJC is guided by a team of six Commissioners, with Canada and the U.S. each appointing three. In 2019, Dr. Henry Lickers, a Haudenosaunee citizen of the Seneca Nation and member of the Turtle Clan,[48] was appointed as the first Indigenous Commissioner in the history of the IJC.[49]

Photo: Launch of the St. Lawrence report, Great Lakes -- St. Lawrence Collaborative, Salon des Teq, March 2020, L to R:
Line Beauchamp, Jean Cinq-Mars, Michelle Morin-Doyle,
Denise Cloutier, Dr. Yves Comeau
Photo: Christian Duval

KEY FINDINGS:
BARRIERS TO OCEAN LITERACY

Interview participants and OLMSurvey respondents identified several key barriers to OL in the region, with funding being the most significant by far, particularly in that it was too often short-term and competitive. Other gaps and barriers include a sense of disconnect from the regions' waters, challenges to accessing the ocean and its resources, and challenges navigating the language barrier.

1. INSUFFICIENT, SHORT-TERM AND COMPETITIVE FUNDING

Funding was cited as the number one barrier by approximately three quarters of study participants. Particularly underscored was insufficient funding and uncertainty created by short-term funding. As Richard Sears, Founder of MICS, remarked, "you feel like a dog chasing its tail. Sometimes we didn't know how we would manage to operate from one season to another." This uncertainty was directly correlated to challenges at all levels of research or organizational operations, particularly in being able to hire and maintain qualified staff, strengthen capacity, and respect the integrity of long-term organizational or research goals.

Another compounding factor is the competitive nature of funding. As Jean-Éric Turcotte, SSL, observed: *"In the community sector in 1992, there were maybe 90 to 100 non-profits in Quebec. Today, there are over 500. It's a nice reality, because it shows there's an interest. However, where there may have been 25 or 30 of us applying for a program 25 years ago, today there might be 100 to 125."*

2. DISCONNECTION FROM THE REGIONS' WATERS

Another common theme in interviews was a sense of disconnect between many of those living in Quebec and the waters that characterize this region. There is often a lack of realization that the St. Lawrence does not merely exist as a natural border of cities and landscapes, but as a living body of water and shoreline supporting multitudes of animal and plant species. Étienne Laurence, Montreal Biôdome, shared that "*with what we're presenting on the [species in the] Gulf, the first reflex of many visitors is 'ah! We have that in Quebec?'*"

Moving from the coast to the interior of the province, people's relationship to the St. Lawrence varies as the ecosystems become increasingly freshwater and the population density increases. As Jimmy Vigneux, Co-founder and Lead of Mission 100 Tonnes, remarked: *"The relationship between Montrealers and the river and the relationship between people further up the coast and the river is different. In Montreal, people don't realize they're next to the river, they don't interact with it, not like people from Lower St. Lawrence, the North Shore, Gaspé. I think that's sort of the general story when it comes to knowledge about waterways in Quebec."*

Heading Photo: Bob Lamotte, Unsplash.com

The disconnect is also evident in relation to the pollution along the St. Lawrence. Interview participants noted that although shoreline clean-ups were relatively popular activities, participants did not always see the importance or understand the impact of the initiatives. As Anne-Marie Asselin, The Blue Organization, explained, *"participants would comment, 'what are you doing here, everything is clean!', as if the problem only existed elsewhere. But on every supposedly clean beach, we would also pick up at least 50lbs of plastic waste in less than an hour. It's as if we're completely disconnected from our coastal environment, as if we forget that we're even part of one."*

3. ACCESS TO THE OCEAN AND ITS RESOURCES

Related to the feeling of disconnect, interviewees identified access to the ocean and waters as a challenge, resulting in limited exposure and difficulty in connecting. Within urban centres, this can present itself through limited public waterside spaces, or few options and opportunities to travel to the coast. Accessing the coast for research and educational programming can also be challenging taking into account cost and distances to reach the ocean from further inland.

Access is also an issue keenly felt by the many First Nations whose traditional territories border the waterways. Georgina Riel, Anishinaabe Knowledge Keeper, commented that *"we talk about our relationship to the water, we talk about how from a historical lens our relatives would access these bodies of water. But then when colonization came, they were given boundaries where they could no longer go, so we couldn't even access our relatives because now these invisible boundaries were on the water."* Similarly, Lynn Jacobs, Director of Environmental Protection with the [Kanahwà:ke Environment Protection Office](#), noted that with the construction of the St. Lawrence Seaway in the 1950s, access to the water and shoreline for her community was severely impacted, and continues to hamper the rebuilding of a relationship with the water.

From a different lens, access was noted as a systemic issue when talking about access to local food: only 19% of edible resources from the St. Lawrence are sold on the market in Quebec, with the rest being exported, in part to other provinces, but especially to the United States and Asia.[50] *"People want local fish and shellfish, but apart from snow crab and lobster, they are hard to come by! Many species are not very well known, such as seaweed, redfish, and seal,"* explained Mélanie Lemire, Lead Researcher for the project [Manger notre Saint-Laurent](#) [Eating from our St. Lawrence]. The project initially set out to highlight the work of fishers in eastern Quebec and the knowledge of elders relating to food from the sea, which has long served an important role in food security amongst coastal communities in Quebec. The second phase of the project is now focused on creating a citizen-led movement *"to increase demand and bring our governments around the table with different stakeholders to implement policies that will substantially increase the amount of products from the St. Lawrence on the plates of Quebeckers."*

Photo: "Tied up in Isle de Madeleine.
Photo credit: - Jo-Ann Wilkins/Students on Ice Foundation

Photo: TBA

Photo: Martin Lipman/Students on Ice Foundation

4. LANGUAGE CONSTRAINTS

Although OLMSurvey respondents rarely noted that language was a barrier, several interview participants expressed that language was an impediment to effective collaboration, strong partnerships, and expansion of programs.

Within Quebec, for instance, many programs and initiatives highlighted that it can be difficult to find resources to offer programming and resources in both official languages and to sustain bilingual communications. As explained by Véronique Trudeau, Green Marine, "it is a constraint for a very small organization like ours to work in two languages with the need to translate all of our documents and communications." Jimmy Vigneux, Mission 100 Tonnes, noted to this effect as well that *"at the moment, we don't really reach English Canada much, we're very 'Quebec' – language has something to do with it, because it's a whole other ball game when you start to work in two languages."*

Within non-Francophone communities in Quebec, communication and relationship-building can be difficult to navigate in the sea of organizations and proceedings operating only in French. As Lynn Jacobs, Kahnà:wake Environment Protection Office, highlighted: "Our community speaks mainly English and Mohawk,

Indigenous languages in this region are principally shared between two language families, Algonquin (e.g. Ojibwe, Mi'kmaq, Cree-Montagnais varieties) and Iroquoian (e.g. Mohawk, Oneida, Cayuga) with many thousands of people today indicating a primary spoken language belonging to one of these families.

Kanien'keha. There isn't a good proportion of the community that speaks French, so we often have challenges around communication and partnerships with our neighbours."

Commenting on the process of building the Great Lakes St. Lawrence Collaborative Strategy, Nicola Crawhall, Great Lakes St. Lawrence Collaborative Secretariat, remarked that: "We had to conduct an 18-month consultation process in two languages with a very small budget, with half the panel only speaking English, luckily the other half bilingual. It's hard to do, so people don't do it. You need to have a real commitment." Mélanie Lemire, Manger notre Saint-Laurent, underscored that *"offering simultaneous and written translation, in both official languages as well as in Indigenous languages, represents a significant cost, and it often means that some very considerable knowledge is unable to be properly showcased in projects."*

GREAT LAKES AT A GLANCE

As with organizations along the St. Lawrence, funding was identified as the top challenge for organizations in the Great Lakes region. Given that the lakes spans a large swath of Canadian political ridings and jurisdictions, obtaining funding for projects targeting the Great Lakes as a whole is difficult. The breadth of the Great Lakes can also be challenging in garnering support for projects, since local shoreline is often much more engaging to the local population than the entire body of water.

While the shoreline is divided, the water itself unites over 80% of the Ontario population in that it is the main source of drinking water.[51] However, heavy levels of toxic contaminants in the world's largest freshwater system is increasingly placing access to safe drinking water at risk. In 2003, deep concern for the state of the waters led two Anishinaabe Grandmothers, along with other community supporters, to begin the Mother Earth Water Walk around the perimeter of the Great Lakes to raise awareness about the water conditions. One of these elders, Josephine Mandamin, who passed away in 2019, walked over 17,000 km, including the shorelines of all five Great Lakes as well as walking "in all four directions of Turtle Island – bringing water from all oceans together."[52] Mandamin's great-niece and well-respected water advocate, Autumn Peltier, was appointed as Chief Water Commissioner of the Anishinabek Nation in 2019, at just 14 years old.[53]

The water quality of the Great Lakes has important ramifications on recreational interactions with the waters as well, as embodied by Swim Drink Fish. Their Swim Guide, a free app and website, provides another means for local inhabitants to get involved in citizen science by taking part in monitoring the quality of the waters in their area through real-time data sampling and cataloguing.

PRELIMINARY RECOMMENDATIONS TO ADVANCE OCEAN LITERACY

Throughout the interviews and survey responses, participants voiced common recommendations on how best to increase OL across the region. Most prominent among them are:

R1. INVEST IN OL

Funding and its increasing competitiveness over time, as well as resources spent seeking funding rather than on OL work, were seen as central challenges to practitioners of OL. To better support OL in the region, funding should be made available:

- Across jurisdictions to account for the "systems approach" described by interviewees, relating the interconnectedness of the St. Lawrence, the Great Lakes, and ocean waters
- For translation of OL materials in English, French, and local Indigenous languages
- To connect research and education networks with OL experts
- To support long-term relationship-building and consultation processes

"Consultation and dialogue represent long-term work, based on human resources, and based of course on trust and the development of human relationships. You can't build that in a day." - Jean-Éric Turcotte, Executive Director, SSL

R2. INTEGRATE KNOWLEDGE AND PERSPECTIVES OF FIRST NATIONS AND NON-INDIGENOUS COASTAL COMMUNITIES INTO THE CO-PRODUCTION OF OL KNOWLEDGE

Recognizing the historical and current role that First Nations and non-Indigenous coastal communities play in the region, their knowledge of the waterways and their voices should be included in all co-creations of OL knowledge and practices.

- Incorporate (localized) Indigenous and community knowledge in education programs and curricula to provide context on historical and current relationships with waterways and for a better understanding of the interconnectedness of ecosystems
- Establish consistent, respectful, and bidirectional communication between First Nation and regional organizations and initiatives
- Include knowledge and perspectives of members of Indigenous and non-Indigenous communities along the St. Lawrence in all levels of decision-making processes and OL co-creation

To better support local engagement in OL and communicate the interconnectedness of the water systems:

- Support citizen-driven science and community monitoring programs
- Partner with local leaders to increase community engagement in research initiatives and project consultations
- Increase and amplify local/community participation in provincial, national, and international initiatives
- Lean on existing umbrella networks to better communicate and share localized information

Heading Photo: Martin Lipman/Students on Ice Foundation

R3. SUPPORT AND PROMOTE ACCESSIBLE KNOWLEDGE AND SCIENCE COMMUNICATION TOOLS

Integrated and transparent sharing of information across sectors, as well as supported community participation, were highlighted as challenges. To make OL knowledge and tools more accessible:

- Build on existing regional models to include holistic, land/water-based programming in schools and educational initiatives
- Commit to data transparency through research and consultation processes, detailing methods and providing status updates over long-term projects
- Invest in showcasing the broader impact of programs and initiatives by collaborating with experts in relevant fields to present an integrated vision of the impacts through the dynamics between economy, health, environment, and other social factors
- Offer solution-oriented information and highlight opportunities for the public to engage and be involved in solutions
- Collaborate with artists and arts-based communicators
- Create more opportunities for intergenerational and intersectoral interactions and collaborations
- Support consistently science-based media messaging

Photo: Copyright_Jonathan Reynolds

R4. CREATE COLLABORATIVE TOOLS AND SPACES FOR OL PRACTICE ACROSS BORDERS

While strong examples of regional networks and partnerships exist, communication between networks and across borders and languages was cited as a challenge. To support collaborative tools and spaces for OL:

- Adapt messaging to reach multiple audiences
- Collaborate to produce and share bilingual (FR/ENG) resources between provinces
- Increase interprovincial partnerships with organizations and initiatives working towards common goals
- Develop and communicate clear and consistent messaging

These four recommendations align directly with the recommendations that have emerged nationally, as seen in other COLC regional reports, and internationally. The details of their implementation are relevant specifically to the St. Lawrence region. Due to limitations of this study, both in research framework and research team capacity, the interviews and surveys elicited only broad responses to advancing these recommendations; no further ways emerged to implement these recommendations that are not already widely understood and/or practiced. The strength of this report lies instead in highlighting regional models and systems relevant to OL, as well as why they are working.

In the next phase of this study, findings from this report will be integrated with those of the other four Canadian regions into a draft National Ocean Literacy Strategy. A dedicated workshop will be held in fall 2020 with regional and sectoral representatives to examine the draft strategy and to develop an accompanying Implementation Plan.

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APPENDIX A: FOCUSED DOCUMENT SCAN LIST

The document scan list reflects the reports and resources that were recommended by regional COLC members and study participants, and provides important regional and background context. The scan helped to inform and guide aspects of the regional engagement phase, including interview and OLMSurvey questions, participant recruitment, and points of interconnectivity.

In total, 70 documents were scanned. Any documents that were referenced in the report appear in the References. All relevant recommended OL assets (e.g., information resources) appear in the St. Lawrence Region OL Asset Map Table. The rest of the documents, 21 total, appear in the list below.

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APPENDIX B: INTERVIEW PARTICIPANTS

Organization	Participant
Anishinaabe Knowledge Keeper; Riel Consulting	Georgina Riel
Artist and Educator	Jane Affleck
Association des chasseurs de phoques intra-Québec	Gil Thériault
Eau Secours	Rébecca Pétrin
Montreal Biodôme	Étienne Laurence
Exploramer	Organization Representatives
Fonds de recherche du Québec	Denise Pérusse
Great Lakes St. Lawrence Collaborative Secretariat	Nicola Crawhall
Green Marine	Véronique Trudeau
Group for Research and Education on Marine Mammals	Marie-Ève Muller
Innu Essipit First Nation Band Council	Pierre Léonard
Institut des sciences de la mer de Rimouski	Ariane Plourde
Kahnawà:ke Environment Protection Office	Lynn Jacobs
Littoral Research Chair, Centre de recherche du CHU de Québec - Université de Laval; Manger notre Saint Laurent	Mélanie Lemire
Mi'gmaq Maliseet Aboriginal Fisheries Management Association	Catherine Lambert Koizumi
Mingan Island Cetacean Study	Richard Sears
Mission 100 Tonnes	Jimmy Vigneux
Montreal Biodôme	Étienne Laurence
Ripley's Aquarium	Katie McMahon
Saguenay-St. Lawrence Marine Park	Organization Representative
St Lawrence Seaway Management Corporation	Organization Representatives
Stratégies Saint-Laurent	Jean-Éric Turcotte Frédéric de Beaumont
The Blue Organization	Anne-Marie Asselin
University of Guelph	Shoshanah Jacobs
Swim Drink Fish	Mark Mattson
Water First	Cody Avery

APPENDIX C: INTERVIEW QUESTIONS

1. From your perspective, how does your organization (or community) foster a relationship with the ocean?

2. Is ocean literacy a useful or familiar term for you(r) organization? If so, how do you define it? If not, why?

3. What factors contribute to the success of your (organization's) work on ocean literacy? (can include ocean knowledge(s), ocean values, ocean action(s))

4. Can you provide some specific examples of positive impacts from your (organization's) work (specific to OL)?

5. What are the key challenges and barriers to your (organization's) work on ocean literacy?

6. What would you like OL to look like in Canada by 2030? How do you think we can get there?

7. Do you have any long-term goals for your organization goals for OL in Canada? If so, what are they? If not, why not?

8. How would you like to see ocean literacy defined in Canada?

9. Who would you identify as a leader in OL in Canada? Why?

10. What are your (organization's) most important partnerships, networks, collaborations, for ocean literacy work?

11. Are there any organizations (or communities/ groups) you would like to work with in the future (on OL)?

12. Are there any people within this region/sector that you think I should interview?

APPENDIX D: OL MAPPING TABLE LIST OF ORGANIZATIONS

The list below represents organizations that are included in the St. Lawrence (with Great Lakes) Region OL Asset Map Table. The organizations that participated in the OLMSurvey are marked with an asterisk.

Education:
Aquarium du Québec
Montreal Biodôme*
Canadian Water Resources Association
Centre de découverte du milieu marin
Centre de la biodiversité du Québec
Centre d'interprétation de l'eau
Centre d'interprétation des mammifères marins
Exploramer*
Explos-Nature
Jeunesse maritime du Saint-Laurent
Hamilton Water Education Programming
La baleine nomade
Pinnacle Education Service*
Regroupement des Écoles de Pêche Francophones*
Ripley's Aquarium

NGO & Advocacy:
Mi'gmaq Maliseet Aboriginal Fisheries Managemant Association*
Association des chasseurs de phoques intra-Québec*
Eau Secours*
Comité ZIP Côte-Nord du Golfe
Comité ZIP des Seigneuries*
Comité ZIP Gaspésie*
Comité ZIP Haut Saint-Laurent
Comité ZIP Îles-de-la-Madeleine*
Comité ZIP Jacques-Cartier
Comité ZIP Lac Saint-Pierre*
Comité ZIP Les Deux Rives
Comité ZIP Québec et Chaudières-Appalaches*
Comité ZIP de la Rive Nord de l'Estuaire
Comité ZIP Saguenay-Charlevoix*
Comité ZIP Sud-de-l'Estuaire*
Freshwater Future
Mission 100 tonnes
Regroupement des organismes de bassins versants du Québec
River Institute
Stratégies Saint-Laurent*
The Great Lakes Protection Act Alliance
Water First

Academia & Research
Group for Research and Education on Marine Mammals
Institut des sciences de la mer de Rimouski
Institut France-Québec Maritime*
Mérinov
Mériscope
Mingan Island Cetacean Study
Observatoire global du Saint-Laurent*
Réseau Québec Maritime*

Government
Fonds de recherche du Québec
Great Lakes Fishery Commission
Great Lakes Guardian Council
Institut Maurice-Lamontagne
Parc Marin du Saguenay Saint-Laurent*
Plan d'Action Saint-Laurent*

Community
Agence Mamu Innu Kaikusseht
Innu Essipit First Nation Band Council
Kahnawà:ke Environment Protection Office

Industry
Green Marine*
RIEL Cultural Consulting
St. Lawrence Seaway Management Corporation

Cultural Heritage
Cap-de-bon-désir Interpretation and Observation Centre
Centre d'interprétation du phoque
Musée du Fjord
Musée maritime du Québec

Health
Manger notre Saint-Laurent

Media
Swim Drink Fish
The Blue Organization*
Whales Online
Partnerships
Council of the Great Lakes Region
Great Lakes St. Lawrence Cities Initiative
Great Lakes St. Lawrence Collaborative

APPENDIX E: RESEARCH ETHICS AND METHODS SUMMARY

Drawing on qualitative and quantitative methods through a collaborative research approach, the study focused on five Canadian regions (Atlantic, Inuit Nunangat, Pacific, St. Lawrence, and inland Canada), as well as nationally. As a Mitacs-funded and Canadian Ocean Literacy Coalition (COLC)-led project, the research team included postdoctoral fellows, graduate students, supervising professors at partner universities (Dalhousie, Ottawa, Simon Fraser and Trent), and an extensive network of industry/organizational partners located across Canada.

In order to co-develop a national OL strategy based on regional findings and recommendations, the team engaged in three central lines of inquiry:

1. reviewed regional ocean-related studies, reports, policies, media, and other publicly available documents for linkages to OL through a focused document scan. This process also contributed to OL mapping.

2. conducted semi-structured interviews and a comprehensive asset mapping methodology to understand the ways in which OL is being interpreted and implemented regionally across nine pre-identified sectors; and

3. conducted a national online ecosystem survey (COLS - Canadian Ocean Literacy Survey), as well as a National Poll, conducted by Nanos Research, for the general Canadian public.

In addition to the above lines of inquiry, an arts-based methodology was used led by a team of artists (one per region), 3 youth workshops (e.g., focus group approach), and a Canadian media content analysis and social media scan.

Interview data was organized by key questions (see Appendix C) and then coded and categorized into key themes. The findings from the interviews were then examined with the findings from the OLM (regional/organizational) Survey and the COL (national) Survey. A convenience sample of self-identified participants within the COLC network was used along with a snowballing technique to further expand the initial sample (i.e., participants suggested others to interview and participate in the OLMSurvey). This report primarily focuses on data collected from participants who are directly engaged in OL or in other ocean-related work. Data collected from a random sampling of the Canadian public took place via the national poll conducted by Nanos Research and the arts-based research data.

To view these research tools and related reports, please visit: https://colcoalition.ca/our-projects/regional-reports/st-lawrence-region/

All research tools and protocols were approved by Dalhousie Research Ethics, REB# 2019-4891 as the lead (national) research institution, as well as by Ottawa University REB# S-09-19-5040 for the St. Lawrence and Great Lakes regional engagement.

Validation: The draft St. Lawrence Regional report, in-depth case studies, and a baseline table with OL initiatives organized by sectors were sent for review to the participating organizations and individuals. This final report reflects this review process.

APPENDIX F: RESEARCH PROJECT FUNDING
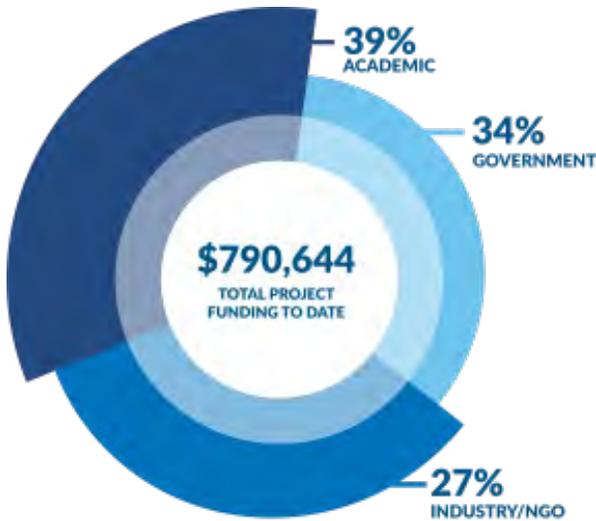
The COLC is comprised of NGO, government, academic, industry, and philanthropic organizations. Our funding reflects this collaboration.

Total Project Budget to date: **$790,644**

Federal Government	$266,630
Fisheries and Oceans Canada	$200,000
Environment and Climate Change Canada	$20,000
Polar Knowledge Canada	$25,000
Science Horizons Internship Program	$13,750
Ingenium (Canadian Museum of Science and Technology)	$5,000
Natural Sciences and Engineering Research Council of Canada	$2,880

Industry/NGO/Philanthropic	$220,750
Students on Ice	$63,750
Ocean Wise	$50,000
NIVA Inc.	$25,000
Clean Foundation*	$25,000
Canadian Commission for UNESCO	$18,000
Stratos Inc	$15,000
McConnell Foundation	$10,000
Ocean Networks Canada	$9,000
Baffinland	$5,000

* with support from Environment and Climate Change Canada

Academic	$303,264
Mitacs	$169,664
Ocean Frontier Institute	$80,000
Marine Environmental Observation, Prediction and Response Network	$23,600
Ocean Frontier Institute Seed Fund	$20,000
Marine Institute	$10,000