

## *Guest Editorial*

# Reading the Ocean: Framing Ocean Literacy in Canada

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This special issue of the *Canadian Journal of Environmental Education* focuses on varied, place-based relationships with the ocean (and water) across Canada and Turtle Island. It is also closely linked to the emerging relationships and socio-ecological challenges that we all face, both personally and as a society.

This issue comes at an historic moment of intense global uncertainty, exacerbated by the ongoing COVID-19 pandemic, as well as by the effects of rapid climate change, which continue to be experienced through increasing extreme weather events, rising temperatures, melting sea ice, and biodiversity loss. This escalating upheaval has exposed more clearly the interconnections between planetary health, human health, justice, and world economies. Multiple and growing social movements (#BlackLivesMatter, #LandBack, #FridaysforFuture, etc.) continue to demand systemic transformations shaped by principles of equity, justice, and accountability.

Within the broader global context and its multiple, intersecting challenges, it is easy to feel overwhelmed. However, in collective turmoil lies an opportunity: to critically examine our lives and experiences, our positionality and choices, our behaviours and actions, and our relationships with each other and with our communities. Perhaps most profoundly, there is also an opportunity to recognize and uphold the connections that fundamentally unite us, wherever we call home: the land, the water, and the ocean.

It can be said that Canada is uniquely blessed with an abundance of water. It is a country with over 8,500 rivers and an estimated two million lakes covering more than 11 % of Canada's total area (Statistics Canada, 2017). These waterways drain into one of five ocean basins that comprise Canada's coastline, the longest of any country in the world at over 240,000 kilometres (Statistics Canada, 2017). Eight provinces and three territories directly border the ocean and marine waterways, and an estimated 13 % of Canada's total population lives within 20 km of a marine shoreline (Mercer Clarke et al., 2016).

For coastal communities, Indigenous Peoples, and small-scale fishers, the ocean is linked to livelihoods, food security, well-being, and a rich cultural heritage. For over 27 million Canadians who live inland, this sense of ocean connectedness can be less tangible, though no less impactful. For instance, the ocean regulates our climate, absorbing 25–30 % of our carbon emissions and 80 % of the heat added to the global system (Intergovernmental Panel on Climate Change, 2018). The ocean and its resources provide over CA\$31 billion annually in gross domestic product and account for approximately 30,000 jobs (Fisheries and Oceans Canada, 2021). Fulfilling our basic needs, the ocean provides us

with oxygen, food, medicines, mineral, and energy resources. Simply put, the ocean is the determining life system on the planet; we cannot live without it.

Still, the cumulative impacts of human activity on marine ecosystems are increasingly evident in every corner of the world. If we are to understand, value, and care for the ocean and the waters that flow into it, we need to develop and describe a culture, an ethic, and a sense of connectedness that can enable this. These relational elements are emerging as part of a growing and internationally recognized field of research termed “ocean literacy.”

Following the first ever United Nations (UN) Ocean Conference in 2017, the UN Educational, Scientific and Cultural Organization released *Ocean Literacy for All: A Toolkit*. This publication was part of a growing recognition of the value of engaging citizens in the development of a “civic relationship with the ocean” (Santoro, 2017, p. 61). Further, ocean literacy was identified as a “societal outcome” for the UN Decade of Ocean Science for Sustainable Development (2021–2030). This suggests that with the current attention on ocean science, ocean protection, and the development of sustainable “blue growth” opportunities, educating, engaging, and empowering all citizens is also vital to this work. The role of educators and partners at all levels of the system, as well as in broader spaces of knowledge sharing is essential to mobilize a citizenry that understands, values, and acts with ocean (and water) health in mind.

This special issue is supported by the work of the Canadian Ocean Literacy Coalition (COLC), a bottom-up, community-driven alliance of regional and national organizations, networks, institutions, communities, and individuals who have come together to better understand and advance ocean literacy in Canada. COLC launched at the Oceans Inspiration Expo in September 2018 as part of the G7 Ministerial Meetings in Halifax, Nova Scotia. From 2019–2020, COLC led the national research initiative, *Understanding Ocean Literacy in Canada*. The project, facilitated by an all-women research team of national and regional coordinators, examined how ocean literacy is understood and practised across five Canadian regions (Pacific, Inuit Nunangat, Atlantic, St. Lawrence, and Inland Canada), as well as within 10 sectors: Government, Non-Governmental Organizations (NGO) and Foundations, Research, Industry, Education, Youth, Community, Media, Arts and Culture, and Health. Using a mixed methods approach, the study engaged with over 3,000 Canadians and more than 400 organizations to identify enablers of, gaps in, and barriers to ocean literacy in Canada. The regional and national priorities and recommendations that emerged directly informed the co-development of *Land, Water, Ocean, Us: A Canadian Ocean Literacy Strategy*.

This issue is therefore organized to include diverse regional and cultural voices of community members, academics, professionals and practitioners, from coast to coast to coast. The issue features original artwork and complementary statements from five artists, all linked to COLC’s Canada-wide study, and all offering critical reflections on community-level conversations with Canadians.

Each artist focused on the shared research question, “If you and the Ocean spoke the same language, what would be said?” These contributions form an important context, and they frame each section in which the research appears.

The remaining articles present important ocean literacy-related research, some of which is independent of and some of which is emergent from COLC’s work. All of these voices, perspectives, critical insights, and forward-looking solutions are essential to ongoing discussions about ocean literacy. As guest editors, we are most grateful for the opportunity to compile these efforts into a unique volume: an *ocean literacy reader*. What follows is a summary of the ideas and research we share with you in this special issue.

We open the issue with an overarching context piece—a community perspective essay authored by Anne Stewart, marine educator and founder of the Canadian Network for Ocean Education (CaNOE). Initiated in 2014, CaNOE’s active membership of educators and community practitioners engaged in a multi-year conversation to collectively answer a question, which also forms the essay title, “What is Canadian Ocean Literacy?” CaNOE’s co-developed community response is presented in the form of Stewart’s essay. It provides important context for the challenges and considerations of ocean literacy unique to Canada.

We then head into the first section of our issue, which is focused on understanding Indigenous land- and sea-based ways of knowing. As editors, we believe it is essential that perspectives of the First Peoples of the land (now known as Canada) are presented first. This section is composed of one poem, one artist’s statement, and three research articles focusing on Indigenous perspectives. Siku Allooloo, an Inuk/Haitian Taíno writer, artist, and land-based educator from Denendeh (“Land of the People”), Northwest Territories and Pond Inlet, Nunavut, sets the tone as she speaks of Indigenous community revitalization through the poem, “Offering.” Becky Okatsiak, from Rankin Inlet, Nunavut, shares a painting of Nulijuk (or Sedna), “our sea goddess,” and personal reflections on her relationship with the ocean (and sea ice) as a young Inuk in “One with the Ocean.”

Following these artistic contributions are several important research works, beginning with “DamXan gud.ad t’alang hllGang.gulXads Gina Tllgaay [Working together for a better world].” In this article, Barbara Wilson, Haida matriarch and scholar articulates how coastal Indigenous communities are facing ongoing colonization while they are attempting to address the impacts of rising sea levels and climate change. She argues that re-infusing Indigenous values is important for rebuilding and maintaining healthy and resilient communities, which are then empowered to reduce the impacts of climate change on our oceans. Taken together, this Indigenous knowledge and values system is a key and critical component of “ocean literacy” in all of its forms. Following this article, Larry (Shucks) Nahanee, Chiaxten Wes Nahanee, Lilia Yumagulova, Kathleen Sperry, and Jonathon Reynolds tell the story of the revival of the Skwxwú7mesh ocean-going canoe and traditions in “Canoe as a Teacher,” particularly through a

description of the annual Tribal Canoe Journeys. Through the stories, reflections, and teachings shared by Wes and Shucks, the paper considers how Indigenous pedagogies are attained through canoe journeys, particularly in the urban Indigenous context. This section on Indigenous perspectives concludes with a case study article by northern-born (and non-Inuk) scholar, Heather McGregor, who examines a Polar Regions-focused environmental education and youth leadership development program. She does so through a detailed case study identifying program components that are uniquely important to engaging a specific group of learners: Inuit youth from the circumpolar Arctic.

The second section in this issue is dedicated to exploring ocean pedagogy in Quebec and Atlantic Canada. It begins with artists Nancy Breton (Quebec) and Jane Affleck (Prince Edward Island), who share their reflections on community responses to their ocean-themed paintings. Next, Francophone researchers, Émilie Morin, Geneviève Therriault, Barbara Bader, and Dany Dumont examine “Une démarche éducative pour susciter les apprentissages et développer le pouvoir d’agir chez les jeunes Québécois du secondaire avec un accent particulier sur l’activité de développement durable dans la région du Saint-Laurent [An educational process to stimulate learning and develop the power to act in young high school-aged Quebecers, with a focus on sustainable development activity in the St. Lawrence region].” The authors explore the significant learning experiences of 26 youth, aged 15-16, in relation to a developing sense of agency, and offer a thematic analysis of students’ comments shared during facilitated activities along the St. Lawrence. Following this, scholar Noémie Roy describes case study research on how a rural Quebec community on the St. Lawrence Estuary mobilized to save a middle school from closing by creating an innovative, place-based program connecting curriculum to concepts related to the St. Lawrence River and the Atlantic Ocean. Finally, the section is rounded out by an article focusing on community-based ocean literacy, led by Julia Ostertag (COLC researcher) and 18 contributing authors. This article highlights four case studies of ocean optimism from Mi’kma’ki/Atlantic Canada.

The third section examines ocean education programming specific to the Pacific Region. It begins with artist Robi Smith’s arts-research reflection, “Poetic Questioning, Ocean Gratitude.” This piece is followed by an article describing a collaborative research study with Ocean Wise, a Vancouver-based NGO with international reach based out of the Vancouver Aquarium. This case study, co-authored by Maria Albuquerque and David Zandvliet of Simon Fraser University, examines the efficacy of various forms of ocean literacy programming offered by Ocean Wise and includes rich qualitative data about participants’ experiences with the programs. The Pacific section concludes with an article co-authored by program staff and researchers from Ocean Networks Canada that provides an evaluative critique of lessons focused on improving ocean-climate science knowledge in middle and high school students through the use of authentic data sets.

The concluding section of our special issue offers perspectives and findings related to ocean literacy on a national scale. This section begins with an arts-research reflection from Alberta artist and teacher, Karen Tamminga-Paton, entitled “What Do Ranchers and Heavy-Duty Mechanics Say to the Ocean?” This piece is followed by two research articles. Our own research article (Lisa [Diz] Glithero and David B. Zandvliet) describes the development, validation, and key findings of the Canadian Ocean Literacy Survey, an evaluative tool created and used by the COLC research team and its partners as part of a national, mixed methods research study on ocean literacy. The survey research uncovers patterns in ocean awareness, perceptions, and values for Canadians as well as their behavioural intentions and actions. The final article of the issue, entitled “Coming to Terms with Ocean Literacy,” is co-authored by COLC’s research team. In it, the team discusses the challenge of contextualizing “ocean literacy” as an international term within Canadian contexts and the potential inadequacies of the term in encapsulating different worldviews and diverse linguistic communities.

The release of this special issue is intentionally aligned with World Oceans Day, an internationally recognized and globally celebrated event initially conceived by Canada’s International Centre for Ocean Development (ICOD) in Halifax, Nova Scotia, in 1991. World Oceans Day was launched on behalf of the Government of Canada at the Global Forum of the UN Conference on Environment and Development (Earth Summit) in Rio de Janeiro, Brazil, in 1992. Each year on June 8<sup>th</sup>, volunteers and community organizations around the world mobilize thousands of youth, educators, families, and community organizations to celebrate and help maintain the health of the ocean. In Canada, existing efforts such as Oceans Week Halifax and Oceans Week Victoria are uniting under the banner Ocean Week Canada to highlight, coordinate, support, and inspire events in communities from coast to coast to coast. You can join this growing national effort at [www.oceanweekcan.ca](http://www.oceanweekcan.ca).

In solidarity with these efforts, the overarching aim of this special issue is to raise and strengthen the profile of the emerging field of ocean literacy in Canada and to better position Canada as an active collaborator and contributor to ocean (and water) literacy research internationally. Here and abroad, ocean advocates, educators, scholars, natural and social scientists, innovators, entrepreneurs, artists, storytellers, and many others recognize the opportunities that await us. With accelerating global attention on (restoring) ocean sustainability, our collective goal over the next 10 years of the UN Decade of Ocean Science for Sustainable Development must be to transform ocean–climate knowledges into societal changes. These changes must be felt in the behaviours and actions of all citizens, across scales, sectors, regions, cultures, and worldviews in order to ensure that this renewed focus on ocean sustainability succeeds. As guest editors, we invite you to join Canada’s growing ocean literacy community of actors, read the recently launched *Land, Water, Ocean, Us: A Canadian Ocean Literacy Strategy*, and get involved at [www.colcoalition.ca](http://www.colcoalition.ca).

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Together, we have brought this special issue to life. As guest editors, we are proud and honoured to have been granted the trust and support to bring together a diverse compilation of perspectives across regions, cultures, and languages from coast to coast to coast.

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