

**Advancing Ocean Literacy Through Media: Best Practices and Insights for Engaging Young  
Adults in Canada**

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### III. Abstract

Ocean literacy, defined as “an understanding of the ocean’s influence on you, and your influence on the ocean”, is key to advancing the United Nations Ocean Decade Challenge 10: *Restoring society’s relationship with the ocean*. Public ocean perceptions research (POPR) provides insights into society’s ocean awareness, ocean connectedness, and actions that support a healthy ocean. These insights are particularly relevant for strategic ocean communications, which represent a key pathway for advancing ocean literacy. In Canada, the Centre for Ocean Literacy Collaboration, formerly known as the Canadian Ocean Literacy Coalition, has pioneered POPR, but limited research has focused on young adults’ perspectives. It is important to address this gap because young adults will inherit future ocean challenges and will be responsible for managing ocean sustainability. For them to meaningfully contribute, they must be ocean literate. To this end, the ubiquity of media as an information source in this digital age can be leveraged by targeted communication strategies. POPR on young adults can provide insights into young adults’ perceptions, guiding tailored communication strategies and inspiring action. This study synthesizes key communication strategies through a directed qualitative analysis of the Communications Inc. *Better Practice Principles* document, a practitioner-oriented set of guidelines on impactful and effective communication strategies. Findings are integrated with a quantitative analysis of the Canadian dataset of the *Ocean and Society Survey* (OSS) (n=1,022) to examine young adults’ (aged 18 – 34) perceptions of media’s role in advancing ocean literacy. Ultimately, this research identifies communication approaches that are most effective for engaging young adults in Canada and strengthening their ocean knowledge, emotional connection, and pro-ocean behaviours.

**Keywords**

Ocean literacy, strategic ocean communications, public ocean perceptions research, young adults, media, Canada.

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## **Chapter 1. Introduction**

### **1.1 Ocean Literacy**

The ocean sustains all aspects of human life on Earth by regulating global temperatures, providing ecosystem services, and supporting cultural, social, and economic practices (Costanza, 1999). Despite this, human activities continue to harm the marine environment, including biodiversity decline, ocean acidification, ocean warming, sea-level rise, and ocean pollution (Doney et al., 2020; Halpern et al., 2025; Ortuño Crespo & Dunn, 2017; Tokarska et al., 2019). We intrinsically depend on the ocean, and thus, these threats imperil human safety and health (Depledge, 2024). To protect ocean environments and in turn secure our future, it is critical for society to understand human-ocean relationships and engage in more sustainable practices (Santoro, 2017).

The concept of ocean literacy first emerged in the early 2000s in the United States in response to growing concern about marine environmental degradation, widespread gaps in public understanding of ocean systems, and an acknowledgement of the necessity for a societal awareness of ocean issues to solve ocean management problems (Shellock et al., 2024; Schoedinger et al., 2010). In 2005, a grassroots group of marine scientists and educators collaborated to develop the first ocean literacy framework, which focused on formal education, in particular kindergarten to grade 12 students (Schoedinger et al., 2010). Cava et al. (2005) defined ocean literacy as “an understanding of the ocean’s influence on you, and your influence on the ocean”, and described an ocean literate person as someone who understands fundamental ocean concepts, meaningfully communicates about the ocean, and makes informed and responsible decisions regarding the ocean and its resources. The report included seven essential ocean literacy principles: 1. The earth has one big ocean with many features; 2.

The ocean and life in the ocean shape the features of Earth; 3. The ocean is a major influence on weather and climate; 4. The ocean makes the Earth habitable; 5. The ocean supports a great diversity of life and ecosystems; 6. The ocean and humans are inextricably interconnected; and 7. The ocean is largely unexplored (Cava et al., 2005). These principles provided a common foundation for curricula, outreach, and policy discussions focused on human-ocean relationships.

Since its inception in 2005, the concept of ocean literacy has moved from a formal education-focused framework to a broader mechanism for change that informs ocean policy, conservation, knowledge mobilization, and capacity building, and is embedded in sustainable development agendas (McKinley et al., 2023). Ocean literacy is an enabler for the success of the United Nations *Ocean Decade*, acting as a pillar for Challenge 10, “Restoring society’s relationship with the ocean” and in the State of the Ocean Report’s vision for “an inspiring and engaging ocean where society understands and values the ocean in relation to human wellbeing and sustainable development” (Glithero et al., 2024; Enevoldsen et al., 2024). The 2024 Ocean Decade Conference Barcelona Statement further emphasizes the need to advance social science and ocean literacy research to better understand human-ocean connections, behavioral change, and cultural engagement, and to develop approaches for mapping and measuring the impact of ocean literacy initiatives (IOC-UNESCO, 2024a). In response to this need, the International Ocean Literacy Survey was initiated in 2015 to assess and compare ocean literacy levels of 15 – 17-year-olds geographically and temporally (Fauville et al., 2019). This study marked the first international ocean literacy survey of its kind, establishing a baseline for ocean knowledge while underscoring the need for further research into additional dimensions of ocean literacy.

Communication is increasingly recognized as a core dimension of ocean literacy, alongside knowledge, awareness, attitude, behaviour, activism, emotional connections, access and experience, adaptive capacity, trust and transparency, and connectedness (McKinley et al., 2023; Fauville et al., 2019). Strategic ocean communications was identified as one of four central drivers in the Ocean Decade Challenge 10 White Paper: Restoring Society's Relationship with the Ocean (Glithero et al., 2024). It relates to the intentional use of messaging, media, and storytelling to influence how people think, feel, talk, and act in relation to the ocean (McRuer et al., 2025). Recent international work in this field highlights two key questions: 1. How do people communicate about ocean issues with peers, friends, and family?; and 2. How do people learn about ocean issues? (IOC-UNESCO, 2024b; McKinley et al., 2023). Addressing these questions requires attention not only to scientific content, but also to the media, narratives, and social contexts through which ocean information is shared.

## **1.2 Ocean Literacy Research in Canada**

In Canada, several organizations contribute to advancing ocean literacy, including the Centre for Ocean Literacy Collaboration, Ocean School (Dalhousie and National Film Board project), Ocean Networks Canada, Ocean Wise, and the Canadian Network for Ocean Education (CaNOE). The Centre for Ocean Literacy Collaboration (COLC), formerly known as the Canadian Ocean Literacy Coalition, launched in 2018, and has led national ocean literacy research providing baseline measurements in ocean literacy. Given this study's focus on ocean literacy, I draw on the foundational work of COLC to help frame my research. COLC expands UNESCO's definition of ocean literacy by explicitly integrating freshwater relationships and emphasizing the connectedness of inland inhabitants to the ocean, because rivers, lakes, and watersheds are

fundamentally connected to the ocean (COLC, 2020). COLC's national goals focus on increasing ocean knowledge and awareness, ocean connection, and action for the ocean. This framing aligns with the broader international shift toward understanding ocean literacy as involving not only what people know, but also how they feel about the ocean and what they are willing and able to do to support ocean health.

The Canadian Ocean Literacy Survey led by COLC in 2019 provides a baseline picture of ocean literacy in Canada and informs priorities for education, communication, and policy. Survey findings show that most people in Canada (78%) agree that Canada is an ocean nation, reflecting broad recognition of the country's extensive coastlines and marine heritage (Glithero & Zandvliet, 2020). However, there is a notable gap between this general awareness and perception of personal relevance: fewer respondents recognize how the ocean directly affects their day-to-day lives (44%) or how their day-to-day actions impact the ocean (52%) (Glithero & Zandvliet, 2020). These results suggest that many Canadians view the ocean as important yet distant from their own lives, particularly those living inland. Media, included in the study as news, social media, films, and podcasts, and other forms of mass and digital communication, has been identified as the most important source of ocean information, cited by 76.5% of respondents (Glithero & Zandvliet, 2020). For the purposes of this study, *media* refers to all forms of mass and digital communication used to disseminate information and shape public discourse, including traditional outlets (e.g., television, radio, newspapers) and digital platforms, particularly social media, which facilitate the online exchange of information, opinions, and visual content. Willingness to act is high, with 77% of respondents expressing a willingness to change their lifestyle to support ocean health. These findings indicate that media could be an

important pathway for helping people understand their connection to the ocean, and possibly encourage more people in Canada to take action to address ocean threats. While these national findings provide valuable insight into public perceptions of the ocean in Canada, they also raise important questions about how different demographic groups experience and engage with ocean issues. In particular, understanding how young adults interpret, access, and respond to ocean-related information is critical, given their central role in shaping future environmental leadership and public discourse.

Younger generations will inherit the long-term consequences of ocean degradation and climate change, and evidence suggests that they are already experiencing heightened levels of climate-related stress and anxiety (Galway & Field, 2023; Hickman et al., 2021). As future leaders, scientists, communicators, policymakers, and community influencers, young adults represent a foundational audience for strengthening ocean literacy and fostering more just and sustainable futures. Supporting their ocean awareness, emotional connection, and sense of agency is therefore vital for effective long-term stewardship (Thew, 2018).

Media-based communication strategies are particularly important for engaging young adults, who are already active media users. In 2023, the most used social media platforms in Canada were Facebook, YouTube, Twitter, Facebook Messenger, Instagram, and TikTok (Newman et al., 2023). Platform preferences vary by age, with TikTok, Instagram, and YouTube being considerably more popular among Gen Z and Millennials than older generations (Denham, 2025). As social media remains pervasive among young adults, it provides a critical opportunity for communication-based approaches to foster ocean literacy.

### 1.3 Background

Understanding how the public perceives, values, and connects with the ocean is central to designing effective ocean communication strategies (McKinley et al., 2023). POPR provides insights into attitudes, values, knowledge gaps, motivators, and barriers to action across different demographic groups. These insights help guide communication efforts by ocean scientists, managers, educators, conservationists, industry, and communicators. Internationally, tools such as the Yale Program on Climate Change Communication’s “Six Americas Super Short Survey” illustrate how communicators can effectively categorize their audiences based on their perceptions of climate change and tailor communications approaches accordingly (Leiserowitz, 2023). Together, these tools highlight the need to ground communication strategies in evidence about how different audiences learn, think, and feel about the ocean and climate change.

Technological advancements and the widespread use of digital media provide important opportunities for ocean education, communication, and connection (Kelly et al., 2022). Media plays an increasingly important role in shaping public environmental culture and sustainability values (Stoll-Kleemann, 2019). Traditional media has shed light on the importance of biodiversity conservation and has influenced public perceptions and behaviour, e.g. Rachel Carson’s book *Silent Spring* or BBC and David Attenborough’s documentary film *Blue Planet* (Dunn et al., 2020; Lockwood, 2012). Today’s media environment extends beyond traditional formats to include social media, participatory digital storytelling, podcasts, mobile apps, citizen science tools, and immersive technologies (Shriver-Rice & Vaughan, 2020). In the context of information overload and misinformation, POPR-guided communication approaches are essential for effectively engaging young adults. Strategic, evidence-based media approaches

therefore represent a promising pathway for strengthening ocean literacy, particularly for young adults, who are highly active in digital spaces.

Understanding what motivates pro-ocean behaviour change is central to the design of effective strategic ocean communications. Behaviour change theories from environmental psychology have found that the Protection Motivation Theory explains what influences behaviour change, emphasizing two key processes that determine engagement: threat appraisal and coping appraisal (Kothe et al., 2019). The above author's work describes threat appraisal as dependent on the perceived severity, perceived susceptibility, and maladaptive response rewards, whereas coping appraisal depends on response efficacy, self-efficacy, and response costs. People are more likely to exhibit protective behaviours when they have high perceived severity, perceived susceptibility, response efficacy, and self-efficacy, and low maladaptive response rewards and response costs. In the literature, there is broad support for the association between Protection Motivation Theory and pro-environmental behaviours, but there remains a gap in evidence of causality between Protection Motivation Theory constructs and intention to act or resulting pro-environmental behaviours (Kothe et al., 2019). With the same goal of influencing behaviour change, *conservation marketing* is defined as the "ethical application of marketing strategies, concepts and techniques to influence attitudes, perceptions and behaviours of individuals, and ultimately societies, with the objective of advancing conservation goals" (Veríssimo & McKinley, 2016). A parallel between conservation marketing and strategic ocean communications is the emphasis on audience research to create targeted communication efforts, ultimately with the goal of influencing pro-environmental behaviour change (Wright et al., 2015).

Together, Protection Motivation Theory and conservation marketing emphasize the importance of understanding audience perceptions, motivations, and barriers in designing effective communication strategies. While these frameworks provide valuable guidance for influencing pro-environmental behaviour, they have been applied unevenly across demographic groups and geographic contexts. In particular, limited research has examined how media-based ocean communication informed by these approaches shapes knowledge, emotional connection, and action among young adults in Canada.

#### **1.4 Marine Management Problem: A gap in POPR on young adults in Canada**

Despite this potential, limited ocean literacy research has focused specifically on young adults in Canada, particularly in relation to media and strategic communication. Existing research has largely focused on national surveys, regionally focused studies (Pacific, Inuit Nunangat, Atlantic, St. Lawrence, and Inland), and youth (ages 12-18) in Nova Scotia (Glithero & Zandvliet, 2020; Guest et al., 2015). Targeted national-level insights are drawn from youth workshops (Roy, 2020), which identified the need to strengthen youth-ocean relationships, with participants highlighting education and social media as key pathways for connection with and action for the ocean. However, these studies do not examine how media and communication strategies shape ocean literacy outcomes among young adults.

As a result, there remains a significant gap in understanding how strategic ocean communication, particularly media-based approaches, can effectively support ocean literacy outcomes related to knowledge, emotional connection, and action among young adults in Canada. Addressing this gap is essential for developing evidence-based communication strategies that resonate with this demographic and support long-term ocean stewardship.

In response, this study addresses two central research questions:

1. What best practices in strategic ocean communication, particularly media, support increased awareness, stronger ocean connection, and inspired action?
2. How do young adults in Canada (ages 18–34) perceive media’s role in fostering these outcomes?

To answer these research questions, two complementary approaches were used. To address Research Question 1, this study drew on the *Advancing Strategic Ocean Communication: Better Practice Principles* (BPP) document (Communications INC., 2024). The BPP was developed by the Advancing Strategic Ocean Communications initiative, a global community of practice led by Communications INC. and comprising over 100 ocean communications professionals working to elevate evidence-based approaches to ocean communications and campaigns. As part of the growing intersection between ocean literacy and strategic communications, Communications INC. also hosted the Ocean Insight & Strategy Unit (ISU) at the third United Nations Ocean Conference (UNOC) in Nice, France (June 2025), positioning the BPP within an active global policy and communication context. The BPP was analysed to identify evidence-based practices in strategic ocean communications, specifically the use of media, to increase awareness, strengthen ocean connection, and inspire action. Complementary to POPR, strategic ocean communications are defined as the intentional design and use of messaging, media and storytelling to increase public awareness, strengthen ocean connection and support ocean-positive behaviours (McRuer et al., 2025; McKinley et al., 2023).

To address research question 2, the Canadian dataset of the Ocean & Society Survey (OSS) was analyzed to examine how media shapes ocean literacy among young adults (Ocean

and Society Survey Canada, 2025). Coordinated by COLC and co-designed with more than 50 partners and collaborators, the OSS explores how people connect with and value the ocean and what influences their interests, concerns, willingness, and capacity to act (COLC, 2025). The OSS provides baseline public-opinion data intended to inform ocean-related research, communication, education, policy, and industry strategies (McRuer et al., 2025). As of November 2025, the OSS had been administered in thirteen countries including Canada, USA, Brazil, UK, Spain, Sweden, Norway, Bulgaria, Ireland, Finland, Cyprus, France, and Australia – with the goal of reaching 100 countries by 2030. This study draws exclusively on the Canadian dataset (January 2025, n=1,022). Together, these approaches aim to inform future communication-based ocean literacy initiatives in Canada by identifying effective strategies for engaging young adult audiences and supporting meaningful ocean connection and action.

## **Chapter 2. Methods**

This chapter outlines the mixed methods approach used in this study. Section 2.1 presents the qualitative review of the Communications Inc. BPP document used to identify best practices in strategic ocean communications. Section 2.2 presents the quantitative analysis of the Ocean & Society Survey Canada dataset, including the filtering, weighting, and analytical procedures used to examine how media shapes ocean literacy among young adults.

### **2.1 Better Practice Principles Document Analysis**

The BPP document was analyzed to identify communication strategies relevant to this study's focus on media-based pathways for strengthening ocean awareness, connection, and action. Given the study's applied purpose and the BPP's role as a practitioner-oriented resource, a

targeted qualitative review was conducted to extract themes directly aligned with the research scope. The analysis involved a close reading of the full document, during which sections related to strategic communication, media use, narrative design, audience engagement, and behaviour change were identified. Passages relevant to these areas were annotated, and recurring ideas were grouped into categories according to theme that represented core communication principles. This approach reflects a form of directed qualitative analysis, in which existing conceptual frameworks (like ocean literacy outcomes and strategic communications objectives) informed the identification of relevant and meaningful themes (Hsieh & Shannon, 2005). The resulting themes were synthesized into a set of best-practice communication principles, providing a communications framework for interpreting public perception patterns from the OSS results.

## **2.2 Ocean Society Survey (OSS) Analysis**

The OSS datasets are openly accessed and administered by FocalData, a UK-based public opinion survey agency (COLC, 2025). The Canadian dataset used in this study comes from the OSS survey administered between January 9 and 11, 2025 and includes responses from 1,022 participants aged 18 and older. Respondents were asked optional demographic information including gender identity, age, province or territory, and education level, and were categorized into six age groups (18-24; 25-34; 35-44; 45-54; 55-64; and 65+). To ensure national representativeness, FocalData applied survey weights based on gender, age, and geographic region, which were incorporated into all analyses.

The complete OSS instrument contains 30 questions and includes multiple formats (ranking, Likert-scale, multiple select, and single select). For the purposes of this study, the

dataset was filtered to include only questions that align with the study’s aim of understanding how media shapes ocean awareness, connection, and behaviour among young adults. Six questions were selected for analysis because they included “media” in the title or response options, and more broadly related to media use and media-based pathways for ocean learning, connection, and action, including social media, entertainment media (films, TV shows, and documentaries), radio, podcasts, books, magazines, news (online, print, and broadcast), and virtual technologies. The selected questions are summarized in Table 1.

**Table 1.** Overview of Ocean Society Survey (OSS) questions analyzed in this study summarizing each question’s focus, response type, key variables, and analytical approach. Question IDs correspond to their numbering in the original OSS survey. Data from the Ocean and Society Survey Canada. (2025) provided by the Centre for Ocean Literacy Collaboration.

<b>Question focus</b>	<b>Response type</b>	<b>Key variables &amp; analysis</b>
<b>Q5. Experiences that increase connection to the ocean</b>	Multiple selection	Media-based experiences — weighted mean by age group
<b>Q7. Main sources of ocean information</b>	Multiple selection	Media vs. non-media sources — weighted frequency comparison by age
<b>Q13. Incentives for ocean-friendly lifestyle change</b>	Multiple selection (up to 3)	Media, policy, and social motivators — weighted frequency & age-group analysis
<b>Q18. Perceived responsibility for ocean action</b>	Ranked (5-point)	Responsibility across actors (e.g., media, government) — weighted mean & CI by age group
<b>Q19. Trust in ocean information sources</b>	Ranked (5-point)	Trust in media vs. scientific sources — weighted mean & correlation with Q18
<b>Q20. Actions that increase knowledge of and action for the ocean</b>	Ranked 1–4	Actions most vs. least prioritized — weighted mean rank

From this question subset, quantitative analyses were conducted to examine responses from young adults 18—34 and compare them with responses from older adults (ages 35+). Methods included weighted descriptive statistics, ranking comparisons, and additional statistical procedures described in Section 2.2. All OSS responses were weighted using survey-provided weights to ensure representativeness of the Canadian population by age, gender, and region. For analyses using weighted percentages or weighted means with 95% confidence intervals, to account for variance inflation introduced by survey weighting, standard errors were computed using the Kish effective sample size (Kish, 1965). All analyses were conducted in RStudio (Version 2025.09.1+401) using the *Hmisc* package for weighted statistics and *ggplot2* for visualization. The approach used to examine each of the seven survey questions in this research are outlined in the following sub sections.

### **2.2.1 Experiences Impacting Connection to the Ocean**

To examine how different types of ocean-related experiences influence perceived connection to the ocean, responses from Question 5 of the OSS Canada survey were analyzed. Question 5 asked *“In the past year, have any of the following experiences made you feel more connected to the ocean?”*. Respondents could evaluate a series of experience types, including: spending time in, on, or near the ocean; arts and culture (e.g., books, music, performance); virtual technology (e.g., gaming); educational course or activity; talking with family, friends, peers; media (e.g., print, social media, films); public venues (e.g., museums, aquariums, libraries); volunteering (e.g., beach cleans); and advocacy (e.g., rallies, letters, petitions). Each experience type was rated by respondents using five response options: *I have not participated, No change in my connection, A little more connected, More connected, and Much more connected*. For analytical

purposes, responses were converted into an ordinal five-point scale (0-4) to quantify changes in ocean connectedness (0= I have not participated; 1= No change in my connection; 2= A little more connected; 3= More connected; 4= Much more connected). The response “I have not participated” was retained as the lowest value (0) because participation itself varied by age group, and this allowed for a more direct reflection of how experience exposure affected connectedness to the ocean. Weighted means and 95% confidence intervals were calculated for each experience type for two age groups (18–34 and 35+). Mean levels of connectedness for each experience type were visualized as point estimates with horizontal error bars to show uncertainty.

### **2.2.2 Sources for learning about the ocean**

To examine which sources are most important for ocean learning, responses from Question 7 of the OSS were analyzed. Question 7 asked respondents “*Where do you mostly learn or get information about the ocean?*” Participants could select multiple options, including: formal education; public venues; radio/podcasts; books/magazines; news; social media; entertainment media; NGO outreach; talking with peers; arts and culture; visiting the ocean; other; and none. To examine the importance of media-based learning for young adults, weighted frequencies of selected information sources were analyzed, and a comparison was conducted between respondents aged 18–34 and those aged 35+. This allowed for the identification of generational differences in preferred information pathways and media usage.

### **2.2.3 Incentives for lifestyle changes**

To identify what motivates individuals to change their lifestyles to support ocean health, responses to Question 13 were analyzed. Question 13 asked: “*Would any of the following*

*incentives encourage you to make lifestyle change(s) to support ocean health? Select up to 3 answers.”* Participants could select up to three incentives from nine options, including: understanding how my actions affect the ocean; feeling that I’m doing the right thing; learning about issues in clear and actionable ways; feeling that my lifestyle will be positively impacted (e.g., money, health) if I make changes; being provided with government resources and support; feeling that I’m helping a team or community; seeing others take action (e.g., leaders, businesses, influencers, etc.); feeling that my lifestyle will be negatively impacted (e.g., money, health) if I don’t make changes; and none of these. Each incentive option was coded as binary (selected = 1; not selected = 0). Weighted proportions were calculated for each incentive to assess their relative importance as motivators for lifestyle change. With this study’s focus on young adults, weighted proportions were examined for respondents aged 18–34 and compared with those aged 35+ to identify most and least frequently selected incentives.

#### **2.2.4 Actions that strengthen understanding and action for the ocean**

To assess how people in Canada prioritize different actions that could strengthen society’s understanding of and action for the ocean, Question 20 was analyzed. Question 20 asked: *“Here are some actions that could be taken to strengthen society’s understanding of and action for the ocean. How would you rank these by importance?”* The question presented four possible actions and asked participants to rank them from 1 (most important) to 4 (least important): *Increasing knowledge sharing between scientists, communities, and other knowledge holders; Sharing and celebrating diverse cultural connections with the ocean; Including ocean stories in media, news, and entertainment; and Emphasizing learning about the ocean in schools and public spaces.* To examine generational differences in priorities, analyses focused on a

comparison between respondents aged 18–34 and those aged 35+. Weighted mean ranks were calculated for each action by age group. For visualization, rankings were inverted so that higher values corresponded to higher perceived importance (i.e., a rank of 1 became the highest value). Standard errors and 95% confidence intervals were estimated to visualize uncertainty around the weighted mean ranks.

To test for between-group differences, non-parametric Wilcoxon rank-sum tests were conducted for each action, and unweighted *t*-tests were performed on the ranked responses for a robustness verification. A Benjamini–Hochberg correction was applied to adjust for multiple comparisons. Weighted means were used descriptively to interpret direction and magnitude of age-group differences but were not used in inferential tests. To assess within-group differences in how the 18–34 age group prioritized the four actions, a Friedman test was performed on the ranked responses. Significant results were followed by Pairwise Wilcoxon signed-rank tests with Benjamini–Hochberg correction to identify specific differences between action pairs.

### **2.2.5 Responsibility of groups to take action to address ocean threats**

To assess how people in Canada perceive the responsibility of different actors for addressing ocean threats, responses to Question 18 were analyzed. The question asked: *“How much responsibility does the following group have to take action to address ocean threats?”*. The groups included: individuals; local communities and small businesses; government; environmental groups or non-profit organizations; industry and big business; Indigenous leaders and communities; universities and research institutions; media; foundations or charities; the United Nations; national environmental authorities; and schools and curriculum developers. Respondents could select from the following options: *No responsibility; Some responsibility;*

*Much responsibility, Significant responsibility; and Don't know.* For quantitative comparison, responses were converted into an ordinal scale (0 = no responsibility; 1 = some responsibility; 2 = much responsibility; 3 = significant responsibility). “Don't know” responses were excluded from the calculation to observe differing responsibility levels attributed to each group. Weighted means and 95% confidence intervals were then calculated for age group. Analysis compared young adults (18–34) with older respondents (35+) to identify generational differences in perceived responsibility of different groups.

### **2.2.6 Trust in groups to take action to address ocean threats**

To assess how Canadians evaluate the credibility of different groups in responding to ocean threats, question 19 of the OSS was analyzed. Respondents were asked: *“How much do you trust the following group to take action to address ocean threats?”*. The question included the following groups: individuals; local communities and small businesses; government; environmental groups or non-profit organizations; industry and big business; Indigenous leaders and communities; universities and research institutions; media; foundations or charities; the United Nations; national environmental authorities; and schools and curriculum developers. For each group, respondents selected from six response options: *Do not trust at all; Distrust somewhat; Neither trust nor distrust; Trust somewhat; Trust completely; Don't know.* These categories were converted into an ordinal scale to quantify levels of trust (0= Do not trust at all; 1= Slightly distrust; 2= Neither trust nor distrust; 3= Trust somewhat; 4= Trust completely). “Don't know” responses were excluded from the trust score calculations to allow for visualization of trust patterns and comparison between age groups. Weighted means and 95% confidence intervals were calculated for each group for respondents aged 18–34 and 35+. These

values were used to compare trust patterns between generations and to identify which groups are perceived as most and least trusted to address ocean-related threats.

### **2.2.7 Trust and responsibility**

To explore the relationship between perceived responsibility and trust across different groups, responses to Questions 18 (responsibility) and 19 (trust) were combined into a joint analysis. For each group, responsibility scores (0-3) and trust scores (0-4) were calculated using the ordinal scales described above, with “Don’t know” responses excluded. Weighted mean trust and responsibility scores were calculated for each group among young adults aged 18–34. A bivariate scatterplot was created with the weighted means forming the x and y coordinates and with 95% confidence intervals. Quadrants were divided at the midpoints of each ordinal scale (“Some responsibility” and “Neither trust nor distrust”), which represent different perceptions of trust and responsibility levels. The resulting plot positions each group according to how much young adults perceive them as responsible for taking action to address ocean threats and how trustworthy they are to do so, allowing for the visualization of the alignment or divergence of those two constructs.

## **Chapter 3. Results**

### **3.1 Better Practice Principles document analysis results**

The BPP document was reviewed to identify key insights relevant to media-based ocean communication and effective engagement of young adults. Four chapters were most aligned with this study’s scope: *Research and Evidence Principles*, *Messages and Messengers*, *Training Ocean Voices*, and *Justice, Equity, Diversity and Inclusion (JEDI)*. Across these sections, the BPP

consistently emphasized that effective communication must be grounded in research on audience perspectives, behaviours, and media practices. Understanding the intended audience is critical, requiring attention to aspects of the communications design, delivery, and evaluation.

A key theme was the need for specific audience targeting, which includes identifying preferred platforms, selecting credible and relevant messengers, and developing strategic message-framing. Communications strategies should focus on three core elements: the audience, the narrative, and the intended impact, whether influencing policy, shifting public opinion, or motivating action. The BPP emphasizes the importance of clearly defined communications objectives and measurable indicators of success, supported by built-in feedback loops to improve delivery approaches over time.

Another key theme is accessibility and knowledge sharing. The BPP recommends presenting research findings in clear, digestible formats to facilitate uptake by practitioners and communicators. The JEDI chapter highlights the importance of context-specific approaches that prioritize representation, equity, and empowerment of marginalized communities. Finally, the BPP notes that digital and social media platforms create new possibilities for inclusion, accessibility, and amplification of diverse voices; for example, through youth-led storytelling and participatory media practices. Table 2 summarizes the three overarching phases of communications approaches identified in the BPP, along with key principles and practical considerations.

**Table 2.** *Key Phases, Principles, and Practical Considerations from the Communications INC. Better Practice Principles Document.*

<b>Phase</b>	<b>Key Principles</b>	<b>Practical Considerations</b>
Design	<ul style="list-style-type: none"> <li>• Audience targeting and segmentation</li> <li>• Inclusive and culturally relevant communication</li> <li>• Success evaluation metrics</li> </ul>	<ul style="list-style-type: none"> <li>• Identify specific audience</li> <li>• Reflect diverse identities, values, and lived experiences</li> <li>• Align goals with clear, specific, and measurable behaviour-change metrics</li> </ul>
Delivery	<ul style="list-style-type: none"> <li>• Framing and digital storytelling strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Select platforms intentionally (e.g., social media, news, film)</li> <li>• Choose an appropriate messenger (e.g., celebrity, community leader, youth)</li> <li>• Consider message framing (tone, motivation, calls to action)</li> </ul>
Evaluation	<ul style="list-style-type: none"> <li>• Impact measurement</li> <li>• Adaptive learning and improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Assess reach and behaviour change</li> <li>• Incorporate feedback from intended audience</li> <li>• Adjust strategy based on performance insights</li> </ul>

Note. Phase categories, key principles, and practical considerations outlined in Table 2 are adapted and synthesized from *Better Practice Principles: Advancing Strategic Ocean Communication* (Communications INC, 2024).

### **3.2 Ocean Society Survey analysis results**

Following the identification of these key principles for effective ocean communication, the BPP insights were used to guide analysis of the OSS Canada dataset. The principles related to audience targeting, message framing, platform selection, and impact evaluation informed the selection and interpretation of the OSS Canada variables relevant to media use, ocean knowledge, connectedness, and action. The OSS Canada analysis was conducted with the intent of identifying strategic ocean communication delivery methods that align with the evidence-based best practices for engaging young adults in Canada. The OSS Canada results provide

insight into how young adults in Canada engage with the ocean through different pathways, what motivates them to adopt ocean-supportive behaviours, and how they perceive the trust and responsibility of different actors in addressing ocean threats. These OSS Canada analysis findings fall into three strategic ocean communications themes reflecting the design-delivery-evaluation framework: 1. Audience Insights for Ocean Awareness and Connection; 2. Communication pathways for motivating ocean-supportive action; and 3. Trust and Perceived Responsibility of Ocean Actors. Together, these themes show that media, messaging, and trust in different groups plays a central role in shaping how young adults in Canada engage with ocean issues. They provide a foundation for identifying targeted communication strategies tailored to this audience. For consistency, in all figures comparing age groups, young adults aged 18 – 34 appear in golden yellow and older adults aged 35+ appear in dark blue. The following subsections present an analysis of responses to six questions from the OSS Canada dataset.

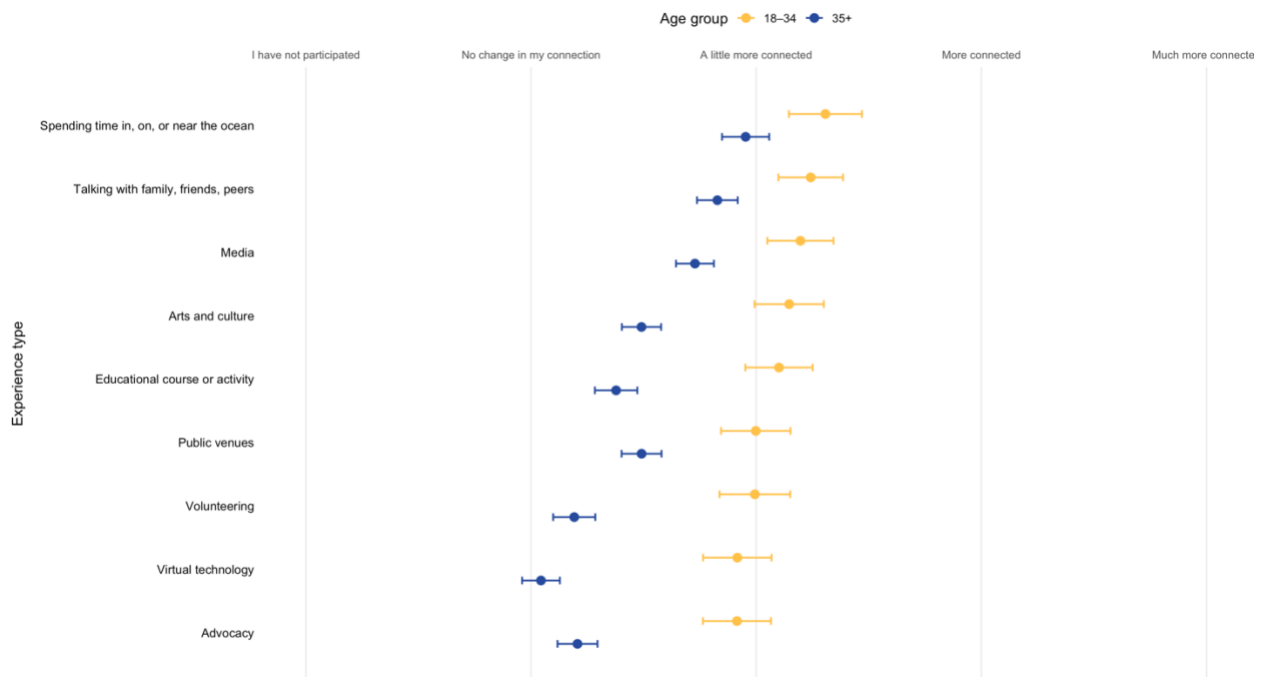
### **3.2.1 Audience Insights for Ocean Awareness and Connection**

Within this section focusing on audience insights for ocean awareness and connection, two survey questions results are examined. These provide insights into public perceptions of which experiences impact connection to the ocean and which sources are important for ocean learning.

#### **OSS Canada Question 5: Experiences impacting connection to ocean**

OSS Canada Q5 data was analyzed to understand how youth in Canada connect to the ocean through different experience types. Data was obtained from Ocean Society Survey Canadian Dataset Question 5: “In the past year, have any of the following experiences made you feel more

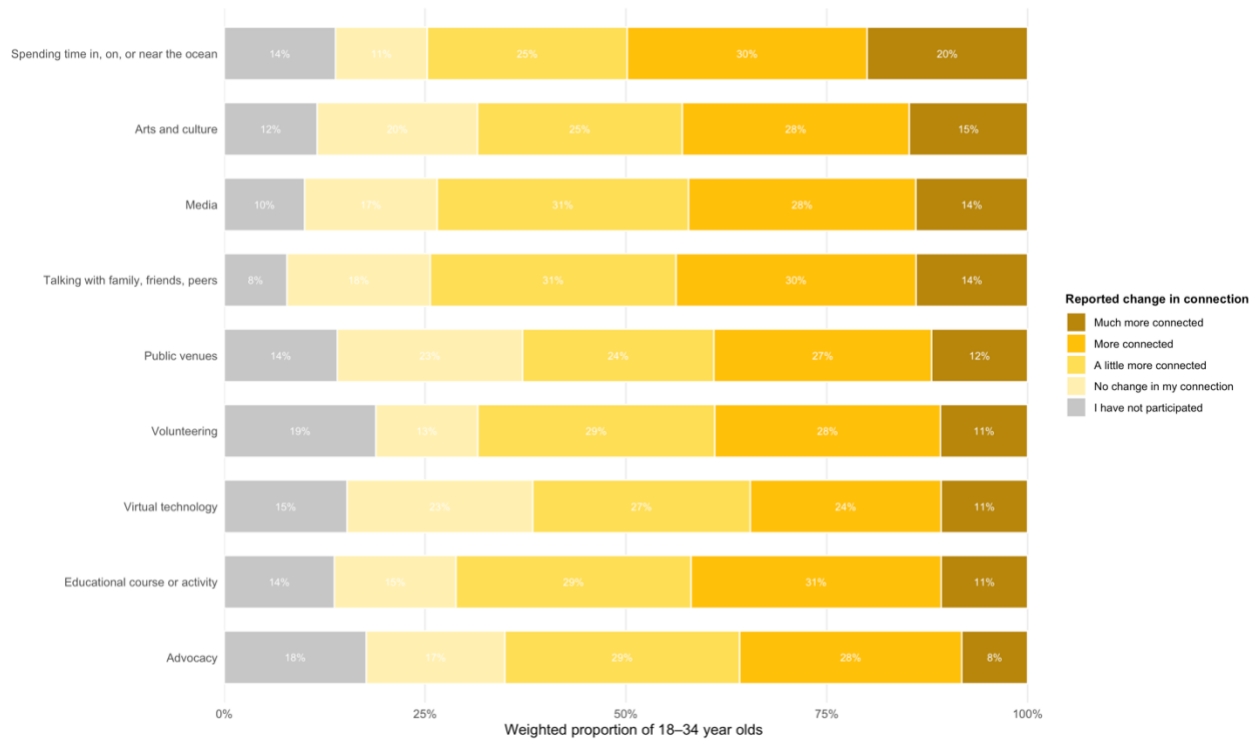
connected to the ocean?” For each experience, response options were: *not participated; no change; a little more connected; more connected; and much more connected*. Responses of youth 18 – 34 and 35+ were weighted and averaged to observe changes in connectedness resulting from each activity (Figure 1).



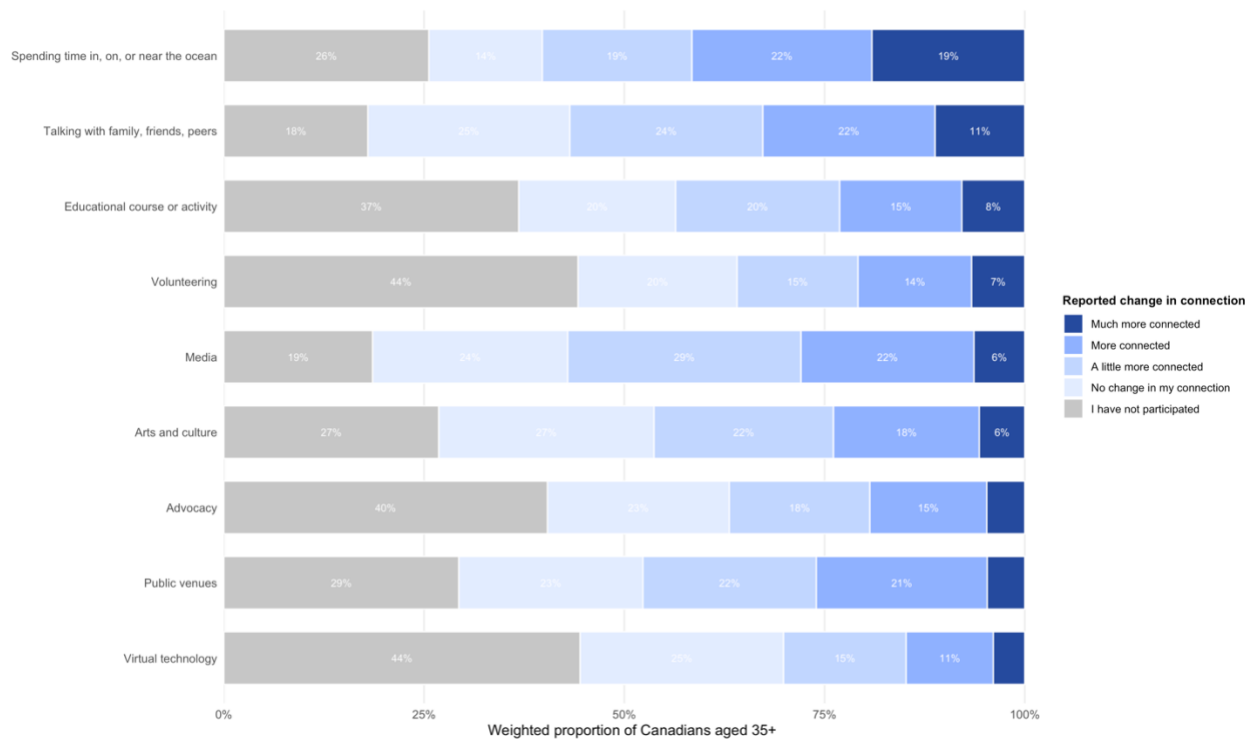
**Figure 1.** Impact of different activities on feeling of connectedness to the ocean for ages 18 – 34 and 35+ (OSS Canada, 2025). Error bars represent 95% confidence intervals. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

Figure 1 presents weighted mean connection scores for each experience type for young adults 18–34 and adults aged 35+. Higher values indicate stronger perceived increases in ocean connectedness. Across all experience types, young adults consistently reported higher increases in ocean connection than older adults. For both age groups, highest levels of connection were associated with the following experiences: spending time in, on, or near the ocean; talking with family, friends, and peers; and consuming media.

For young adults, approximately 75% reported feeling more connected to the ocean after spending time in, on, or near the ocean (Figure 2) compared with 60% among those aged 35+ (Figure 3). Similarly, 75% of young adults felt more connected through talking with family, friends, and peers compared to 57% of those aged 35+. Seventy-three percent felt more connected through consuming media, compared to 57% for those aged 35+. The largest generational difference was 62% of young adults reported feeling more connected through virtual technology (e.g. gaming) vs. 31% of those aged 35+.



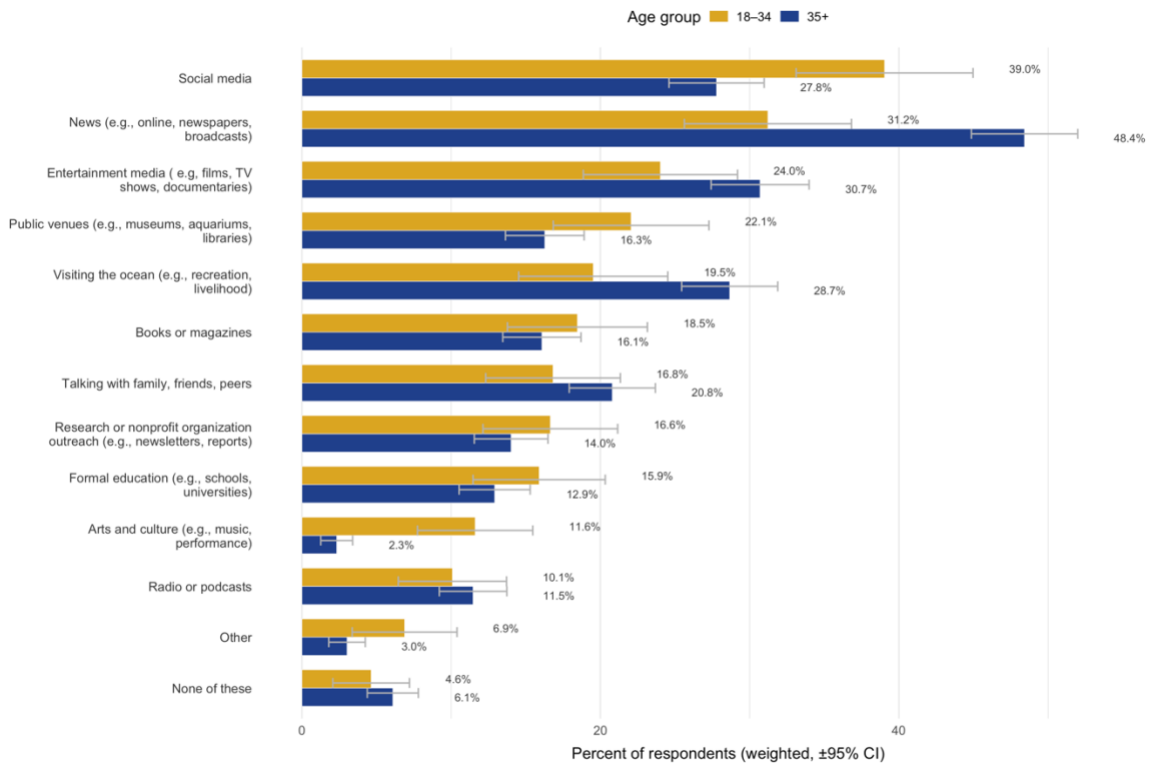
**Figure 2.** Change in connectedness to the ocean resulting from different experiences for young adults in Canada aged 18 – 34. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.



**Figure 3.** Change in connectedness to the ocean resulting from different experiences for people in Canada aged 35+. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

### OSS Canada Question 7: Sources of ocean knowledge

OSS Canada Question 7 asked: “Where do you mostly learn or get information about the ocean from?” Participants could select multiple sources. The weighted percentage of young adults (18 - 34) and adults aged 35+ who identified each source as a primary way they learn about the ocean were compared (Figure 4).



**Figure 4.** Ocean information sources for Canadians 18 – 34 and 35+. Error bars represent standard errors with a 95% confidence interval. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

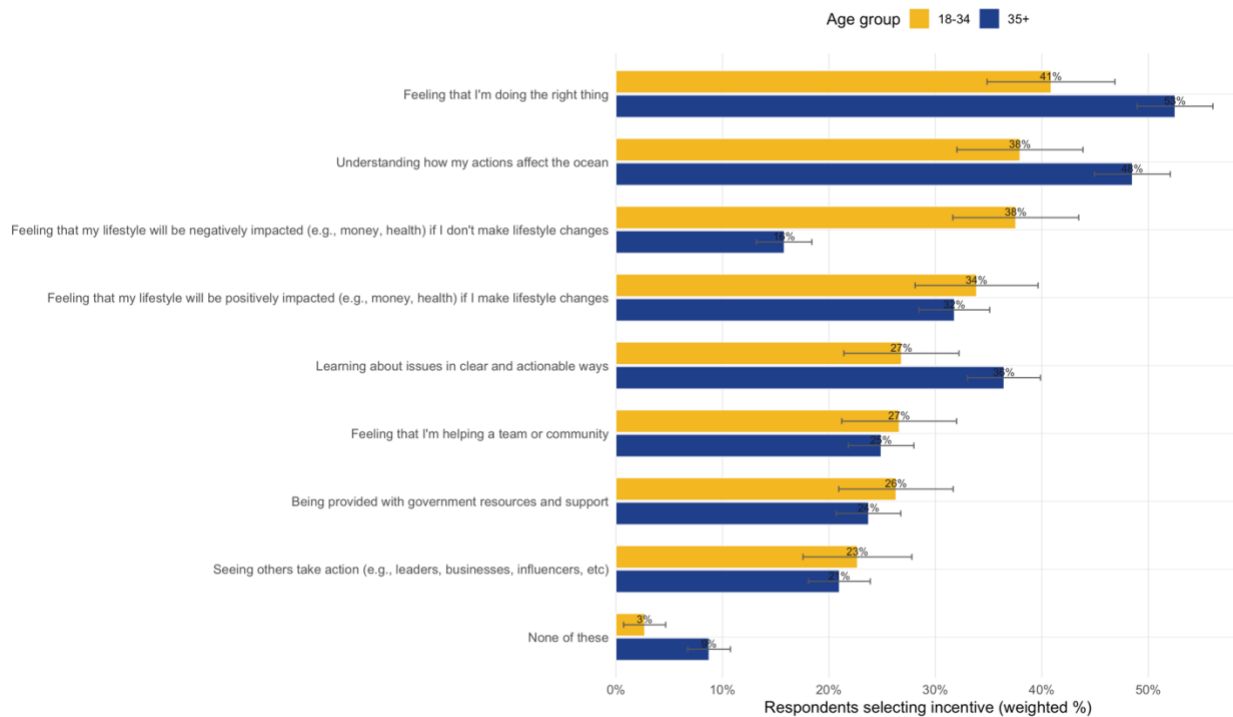
Across both age groups, people in Canada most frequently reported learning about the ocean from news, social media, entertainment media (e.g. films, TV documentaries), and visiting the ocean. Young adults aged 18 – 34 reported learning most often from social media (39%), followed by news (31%), and entertainment media (24%). In contrast, adults 35+ relied more heavily on news (48%), entertainment media (31%), visiting the ocean (29%), and social media (28%). Young adults aged 18 – 34 reported learning most often from social media 10% more and through arts and culture 10% more compared to adults aged 35+. Conversely, young adults 18 – 34 learn 20% less through the news than those aged 35+, and 10% less by visiting the ocean.

### 3.2.2 Communication pathways for motivating ocean-supportive action

In this section focusing on important communication pathways for motivating behaviour change that supports ocean health, two OSS Canada questions are examined. These questions provide insights into public perceptions of what incentives encourage lifestyle changes and what actions increase understanding of and action for the ocean.

#### OSS Canada Question 13: Incentives for lifestyle change

OSS Canada Q13 asked: “Would any of the following incentives encourage you to make lifestyle change(s) to support ocean health? Select up to 3 answers.” Weighted proportions for each incentive were calculated for young adults (18 – 34) and adults aged 35+ (Figure 5).

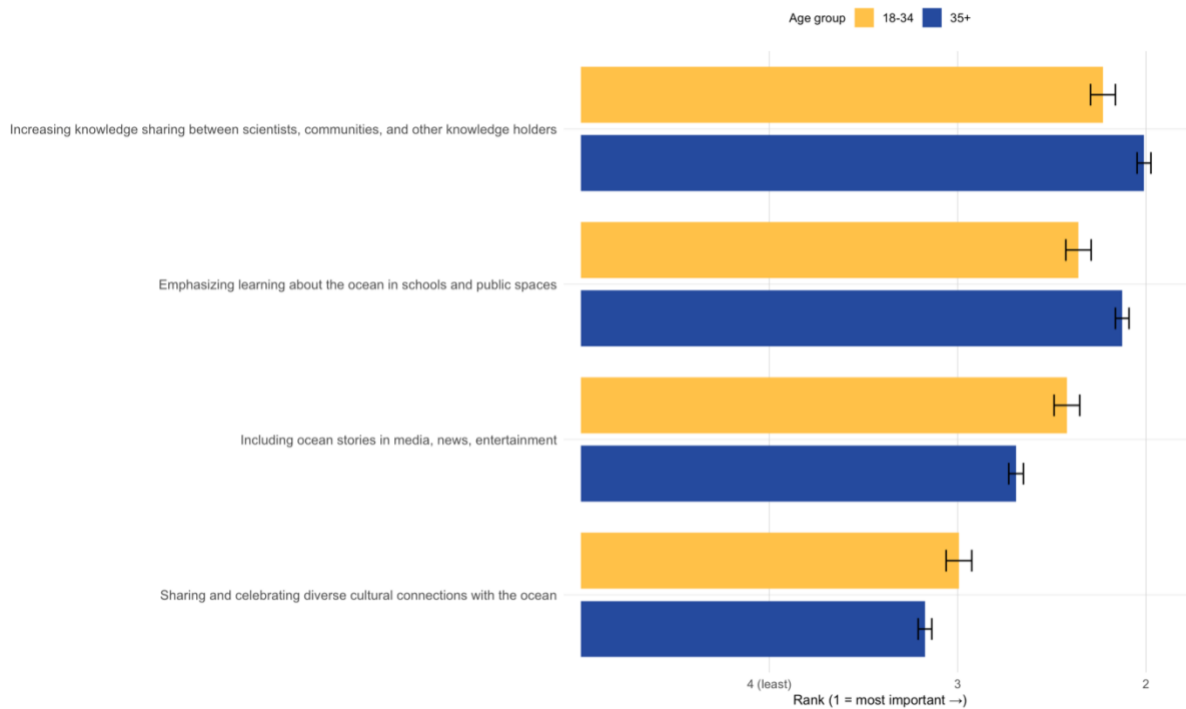


**Figure 5.** Incentives encouraging lifestyle changes to support ocean health for Canadians aged 18 – 34 and 35+. Error bars represent standard errors with a 95% confidence interval. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

Across both age groups, “Feeling that I’m doing the right thing” was the greatest incentive to encourage a lifestyle change to support ocean health, followed by “Understanding how my actions affect the ocean” and “Feeling that my lifestyle will be positively impacted if I make lifestyle changes”. The most significant difference between age groups was young adults 18 - 34 responding 22% more likely than older adults to be motivated by “Feeling that my lifestyle will be negatively impacted if I don’t make lifestyle changes”.

**OSS Canada Question 20: Actions increasing understanding of and action for the ocean**

OSS Canada Question 20 asked “Here are some actions that could be taken to strengthen society's understanding of and action for the ocean. How would you rank these by importance?” Participants ranked actions 1- 4 in order of importance (1 being most important). Ranked responses were weighted and averaged for age groups 18 – 34 and 35+, with ranks reversed so that higher perceived importance is displayed further to the right (Figure 6).



**Figure 6.** Important actions for strengthening understanding of and action for the ocean for Canadians 18 – 34 and 35+. Error bars represent standard errors with a 95% confidence interval. Ranks were reversed so that higher rank was shown as further to the right for readability. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

Among young adults 18 – 34, three actions were ranked within the same margin of error:

Increasing knowledge sharing between scientists, communities, and other knowledge holders;

Emphasizing learning about the ocean in schools and public places; and Including ocean stories

in media, news, and entertainment. No significant differences were found among these three

highly ranked actions. In contrast, “Sharing and celebrating diverse cultural connections with the

ocean” was ranked significantly lower than the first three (Pairwise Wilcoxon tests, Benjamini–

Hochberg adjusted,  $p < 0.001$ ). Comparisons between age groups showed no major differences

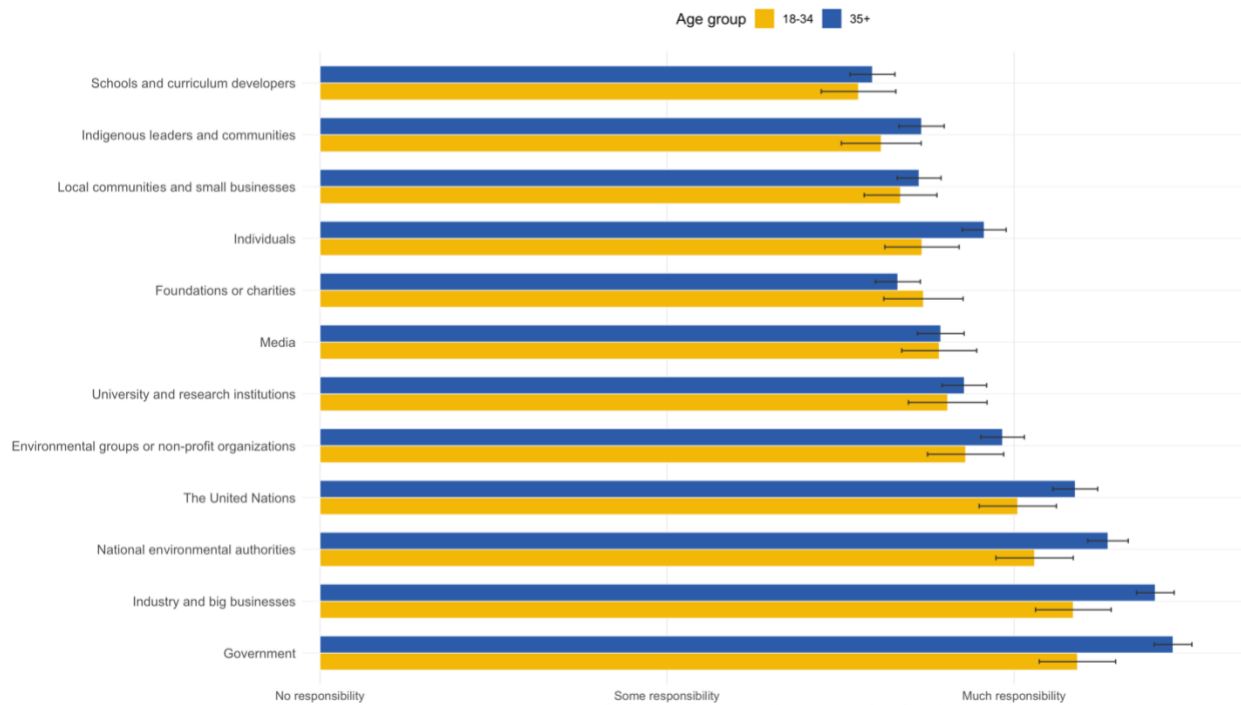
in overall ranking between young adults 18 – 34 and adults 35+.

### 3.2.3 Trust and Perceived Responsibility of Ocean Actors

In this section focusing on trust and perceived responsibility of different ocean actors, OSS Canada survey results from two question are examined. These questions provide insights into public perceptions of which groups are trusted to take action to address ocean threats and which are considered responsible to take action to address ocean threats.

#### OSS Canada Question 18: Responsibility to take action to address ocean threats

OSS Canada Question 18 asked “In your opinion, which of the following groups need to take responsibility to address ocean threats?” Response options included *no responsibility*, *some responsibility*, *much responsibility*, *significant responsibility*, and *don’t know*. Weighted mean responsibility scores were calculated for young adults (18 – 34) and adults 35+, with higher values indicating greater perceived responsibility (Figure 7).



**Figure 7.** Responsibility of different groups to address ocean threats, responses from Canadians aged 18—34 and 35+. Error bars represent standard errors with a 95% confidence interval. Data

from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author's analysis.

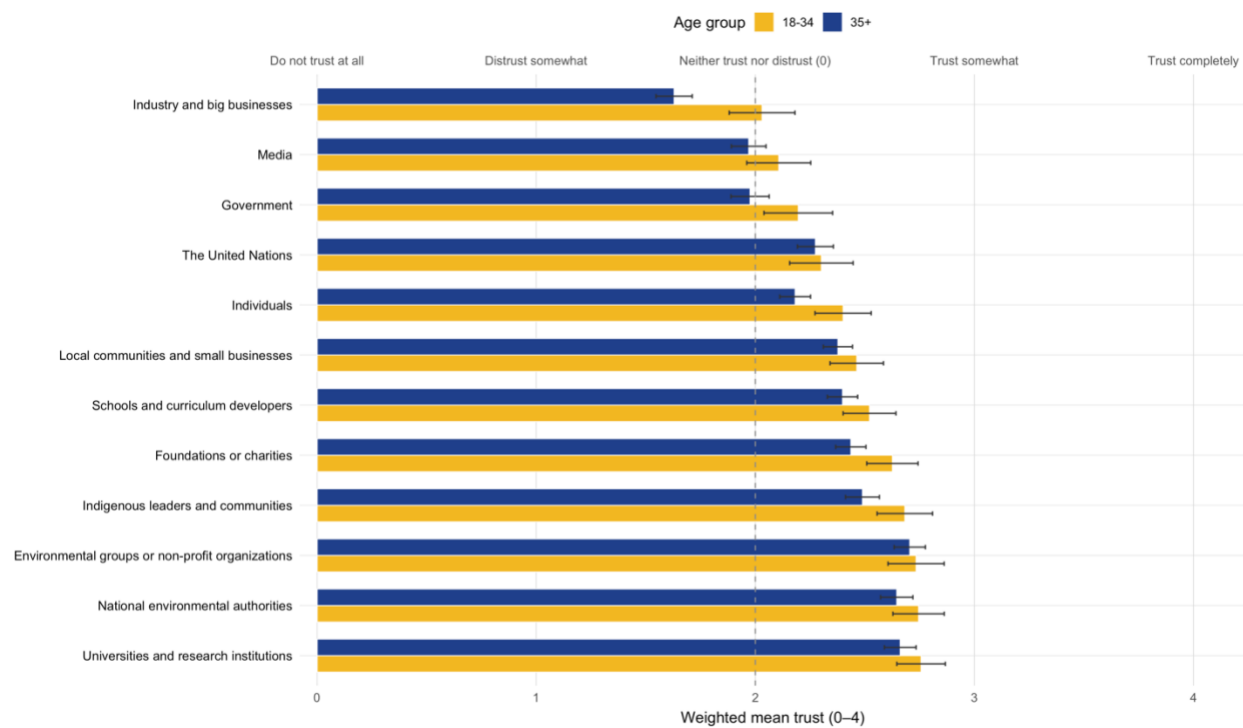
Across both age groups, government was viewed as having the greatest responsibility to address ocean threats, with average scores between *much* and *significant responsibility*.

Industry and big business, national environmental authorities, and the United Nations were also perceived to have high levels of responsibility. There was a consistent generational pattern, with young adults 18—34 assigning slightly lower responsibility scores than adults 35+ across nearly all groups, indicating a small age-related increase in perceived responsibility.

#### **OSS Canada Question 19: Trust in groups to take action to address ocean threats**

OSS Canada Question 19 asked “In your opinion, to what extent do you trust each of the following groups to take action to address ocean threats?” Response options included *do not trust at all*, *distrust somewhat*, *neither trust nor distrust*, *trust somewhat*, and *trust completely*.

Weighted mean trust scores were calculated for young adults (18 – 34) and adults 35+, with higher values indicating greater trust (Figure 8).

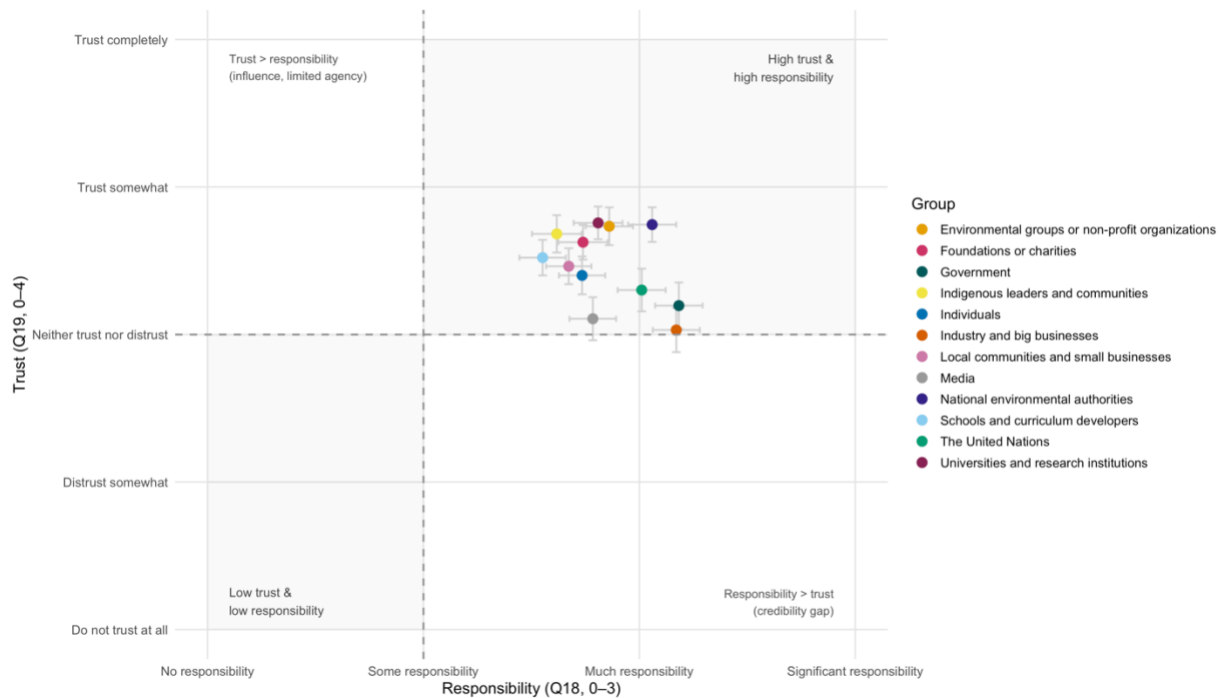


**Figure 8.** Trust in different groups to take action to address ocean threats, responses from Canadians aged 18–34 and 35+. Error bars represent standard errors with a 95% confidence interval. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

Across both age groups, the highest levels trust was placed in Environmental groups or non-profit organizations, Universities and research institutions, National environmental authorities, Indigenous leaders and communities, and Foundations or charities. These groups were rated between *neither trust nor distrust* and *trust somewhat*. Conversely, Industry and big business, Media, and Government received the lowest trust scores among both young adults 18–34 and adults 35+. Trust in these groups tended to fall closer to *distrust somewhat* and *neither trust nor distrust*. Although there were small differences between young adults and older adults, the greatest generational difference was that young adults trust *Industry and big business* more than adults aged 35+.

## OSS Canada Questions 18 and 19: Trust and Responsibility

To examine how young adults perceive trust and responsibility across different societal groups, weighted mean trust and responsibility scores for respondents aged 18 – 34 from OSS Canada Questions 18 and 19 were plotted together (Figure 9).



**Figure 9.** Trust and perceived responsibility in different groups to take action and address ocean threats, responses from Canadians aged 18–34. Error bars represent standard errors with a 95% confidence interval. Data from the Ocean and Society Survey (Centre for Ocean Literacy Collaboration [COLC], 2025). Author’s analysis.

Young adults’ perceptions of trust and responsibility clustered within a relatively narrow band of responses. Across all groups, trust ratings fell between “neither trust nor distrust” and “trust somewhat”, while responsibility ratings fell between “some” and “much” responsibility. This indicates generally moderate expectations of action and moderate confidence in institutions among young adults 18 -34. The highest combined trust and responsibility scores were assigned to national environmental authorities. A cluster associated with moderate trust and moderate

responsibility included *environmental groups or non-profit organizations, schools and curriculum developers, Indigenous communities, foundations or charities, and local communities*. A second cluster characterized by high responsibility, but low trust included *industry and big business, government, and the UN*. Finally, *media* was associated with moderate responsibility, but low trust.

## **Chapter 4. Discussion**

In this section, I discuss the results from the OSS Canada survey data analysis and interpret how these findings fit within the BPP framework. I identify the most effective ocean communication strategies for engaging young adults in Canada in ocean learning, connection, and action. I discuss the role of social media as a key engagement pathway, ideal types of message framing to incentivize action, and key messengers for inspiring young adults to engage in pro-ocean behaviours.

### **4.1. Social media as key pathway for ocean learning**

My research indicates that media is a key pathway for ocean communication and engagement, specifically highlighting the role that social media plays for young adults in Canada. The BPP emphasizes the importance of selecting communication platforms based on audience insights. Based on this recommendation, analysis of the OSS Canada data shows that young adults in Canada primarily learn about ocean issues through social media, news, and entertainment media. This aligns with previous research indicating that Canadians of all ages mostly learn about ocean issues through media via news, social media, films, and podcasts (Glithero & Zandvliet, 2020). Older adults continue to rely more heavily on traditional news sources,

whereas young adults increasingly turn to digital platforms for information, which aligns with broader trends in media consumption globally (Russmann & Hess, 2020). Recent findings from the Reuters Institute Digital News Report (2023) show that younger audiences primarily access news via social media platforms, particularly Instagram and TikTok – with TikTok now reaching 44% of 18 – 24-year-olds across all markets (Newman et al., 2023). On these platforms, celebrities, influencers, and social media personalities are more influential sources of news than journalists, contrasting with platforms like Facebook and Twitter where traditional journalism continues to carry more weight. Direct access to news websites is declining across age groups, while social media is becoming increasingly dominant as the main access point for information. These findings point to digital platforms, particularly social media, as critical communication pathways for reaching young adults in Canada.

Canadian case studies on youth engagement in marine conservation showcase how community-based conservation campaigns have successfully integrated mediums such as social media, film, and mobile apps to increase reach and activate youth audiences in marine protected areas planning and stewardship (Chen et al., 2019). This example aligns with international research showing that social media is an increasingly important channel through which young people access environmental and ocean-related information. Evidence shows that exposure to environmental content on social media can increase young adults' engagement in pro-environmental behaviour (Meng et al., 2023). Social media platforms also increase exposure to different perspectives and provide sources of inspiration, allowing youth to form new connections, ultimately supporting deeper engagement with ocean issues (Kelly et al., 2022).

Research has identified a positive relationship between social media news use and trust in science, indicating that social media is an important pathway for environmental and scientific marine topics (Huber et al., 2019). Combined with OSS Canada findings that young adults in Canada primarily learn about the ocean from social media, news, and entertainment media, this suggests that the strategic use of social media is central to effectively reaching young adults through ocean literacy campaigns. However, legislation like the *Online News Act* (Bill C-18) has affected news distribution on digital platforms like Google and Meta (Facebook, Instagram), resulting in news being blocked on these platforms in Canada (Hutchinson, 2023). This is problematic in that it restricts freedom of information circulation, but also presents new opportunities for other creators to stand out in ocean news reporting. Research has shown that small news creators and social media influencers are increasingly becoming sources of news (Newman et al., 2025). This has implications for identifying the most effective messengers to communicate ocean messages and is subject to further discussion in a later section. There are still very few peer-reviewed studies that focus specifically on Canadian young adults' use of social media to learn about ocean issues, highlighting an important gap that this study begins to address indirectly through national survey data.

#### **4.2 Using social media to foster ocean connections**

OSS Canada data analysis also showed that the experiences that most connected young adults aged 18–34 to the ocean were: spending time in, on, or near the ocean, talking with family, friends, and peers, and media. Young adults reported similar levels of slightly increased connection across all experience types, suggesting that a range of activities can foster feelings of ocean connectedness. This aligns with a growing body of evidence emphasizing the importance

of emotional connection in driving pro-environmental behaviour. In a recent Canadian study, emotional connectedness to nature was found to be the strongest predictor of environmentally responsible behaviour among young adults, more so than age and location (Anderson & Krettenauer, 2021). Survey results pointing to media as an important source for ocean learning and fostering ocean connection also position media as an opportunity for sharing in-person events fostering ocean connection. For example, Ocean Week Canada, a Canada-wide event series held annually from June 1– 8, engages thousands of participants through ocean-themed art, science presentations, storytelling, beach cleanups, and cultural events (Ocean Week Canada, 2025). These interactive programs combine social interaction, place-based experience, and media to deepen public connection to the ocean. Moreover, CaNOE offers an initiative, CaNOE Currents, for youth and early-career ocean enthusiasts to create ocean-related content that are shared on social media platforms to connect youth to the ocean via media creation (CaNOE, 2023).

Youth themselves recognize the value of such connection-building opportunities. In a 2020 study on youth and ocean literacy in Canada, participants emphasized the importance of strengthening relationships with the ocean and identified education and social media as pathways for connection and inspiring action (Roy, 2020). Together, these findings suggest that both direct and mediated experiences can play important roles in strengthening young adults' connection with the ocean.

#### **4.3 Message framing to incentivize action**

The way a message is framed and delivered can determine its impact on audience engagement. Research from visual framing theory demonstrates that emotionally charged imagery can

influence marine conservation behaviour (Ison et al., 2024). Therefore, effective strategies for ocean communications targeting young adults in Canada must be grounded in what motivates this audience to both care and act. The results of this study suggest that the most impactful incentives for young adults aged 18 – 34 include fostering a feeling of doing the right thing, an understanding of how their actions affect the ocean, a feeling that there will be negative lifestyle impacts without a lifestyle change, and a feeling that their lifestyle will be positively impacted if they *do* change their lifestyle. This highlights the importance of balancing affirmation (doing the right thing) with messages that emphasize personal relevance and urgency (lifestyle impacts).

Youth were 22% more likely than adults 35+ to be motivated by threat-based messaging (i.e. avoiding negative lifestyle impacts), indicating that loss-framed messaging may be more effective among younger audiences. This could possibly be explained by the fact that young adults have higher rates of eco-anxiety (Galway & Field, 2023). In that case, threat-based messaging could be perceived by young adults to be more impactful because it is *their* future that is at stake. However, such approaches should be treated with caution, as research has shown that threat or fear oriented messaging can potentially lead to discouragement and ultimately disengagement and apathy (McKinley et al., 2023; O'Neill & Nicholson-Cole, 2009). However, other research suggests that inciting feelings of guilt can be effective if combined with specific messaging content, e.g. pairing guilt with feasibility (demonstrating actionable items, *what to do*) (Kim et al., 2023).

There is much research discussing message framing techniques that have been found to motivate behaviour change. Solution-oriented frames using positive language and imagery can

increase engagement and outreach, inspiring hope and encouraging pro-conservation behaviours (Ison et al., 2024; Kopke et al., 2019). Narrative persuasion, the use of storytelling and rich imagery to engage an audience in a topic and internalize the value of a specific message, has been shown to reduce audience resistance and increase pro-conservation support (Liu & Yang, 2023). Using audio and video formats in persuasion narratives is often more effective than using text formats (Shen, 2015). Using narrative persuasion and psychological distancing in climate risk communication can make the audience feel like the risk is more personal and imminent, increasing audience investment in risk prevention (Liu & Yang, 2023). A global study on climate change messaging suggests that messages elicited effects depended on country and political preferences; however, overall messages with a sense of urgency and call to action were most effective at eliciting a positive response in support of climate action (Ballew et al., 2025).

From OSS Canada survey data analyzed in this study, young adults 18 – 34 identified three equally important priority actions for strengthening public understanding of and action for ocean issues: *increasing knowledge sharing between scientists, communities, and other knowledge holders; emphasizing learning about the ocean in schools and public places; and including ocean stories in media, news, entertainment*. These results suggest that younger audiences prioritize initiatives grounded in information exchange, visibility, and educational access, reflecting how their understanding of ocean issues has been shaped by formal education systems and digital media. In contrast, *sharing and celebrating diverse cultural connection with the ocean* received the lowest score among the options measured. While this may indicate lower perceived relevance, it could also reflect a lack of exposure to these narratives,

particularly for youth who may not have direct experience with coastal or Indigenous ocean cultures. These findings highlight opportunities for communication campaigns to embed more ocean-related content in university courses and public learning hubs such as museums or science centers. Aligning with the BPP framework's emphasis on reflecting diverse values, identities, and lived experiences, this highlights an opportunity to promote relational learning that transcends knowledge dissemination by showcasing diverse ocean experiences and stories from culturally marginalized voices. Strategies should leverage media storytelling, especially through social, news, and entertainment media, to make ocean issues visible, relatable, and actionable to young adults across Canada. Campaigns should aim to increase ocean curriculums in university programs as well as public spaces, such as museums and community hubs.

#### **4.4 Ideal messengers for communication strategies**

The BPP framework emphasizes the importance of selecting credible messengers who resonate with the target audience. OSS Canada findings reveal that young adults (18 – 34) assign the highest combined trust and responsibility to environmental groups or non-profit organizations, universities and research institutions, and national environmental authorities, positioning these actors as highly suitable messengers for strategic ocean communications. In Canada, environmental non-governmental organizations (ENGOS) have an important role, working with scientific, governmental, and public outreach. For example, organizations like World Wildlife Fund and Ecology Action Centre use media campaigns for public outreach to build support for marine conservation initiatives like Marine Protected Areas (MPAs) (Cadman et al., 2020). In contrast, industry and big business, government and media were assigned moderate responsibility but comparatively low trust, revealing a credibility gap that must be considered in

a campaign design. This gap aligns with global patterns where private sector actors often hold significant environmental responsibility yet have low awareness of environmental impacts and even lower concrete actions to mitigate, despite growing commitments to ocean-related SDG 14 (Sardá et al., 2023). Young adults' low trust in media reflects broader research showing that trust in newer media channels (e.g. social media, online news, etc.) is consistently lower than trust in traditional outlets, and reliance on social media as a primary news source is associated with decreased trust in journalists and news institutions (Russmann & Hess, 2020). These dynamics show that although young adults consume significant amounts of information via digital platforms, the perceived credibility of the source (or messenger) remains critical.

Modern media systems enable non-institutional messengers to reach larger audiences, and the BPP framework highlights the advantages of digital platforms in elevating diverse voices. Environmental activists such as Greta Thunberg illustrate the power of online presence in mobilizing collective action: utilizing social media, she has gained a massive following, and amplified media coverage of climate change, and ultimately influenced politics and individual behaviour (Mede & Schroeder, 2024). Youth-targeted messaging increasingly relies on “greenfluencers”, social media figures who promote environmental behaviour. However, their effectiveness depends on perceived authenticity and alignment between the messenger and the message (Quesada Baena et al., 2024). Audiences may engage more with celebrity-framed conservation messages but be less likely to remember the message content (Duthie et al., 2017), underscoring the need to balance attention-grabbing content with memorable messaging. Campaigns featuring public figures as messengers must be cautiously planned by considering celebrity credibility and authenticity and desired impact to ensure successful public

engagement. More broadly, public figures such as politicians and celebrities also have a great impact as they can transmit social norms through public-policy decisions and social media (e.g., Wright et al., 2015; Kopke et al., 2019).

In June 2025, COLC launched the *Ocean Week Canada Ambassador Program* to promote ocean literacy to a diverse audience, engaging a wide range of ocean advocates, storytellers, scientists, and educators, including Bob McDonald, Jill Heinerth, Moronke Harris, and Jill Taylor (COLC, 2025). This initiative aligns well with OSS Canada findings by leveraging trusted messengers (scientists, educators, NGOs) and combining them with broad public outreach.

The OSS Canada trust-responsibility mapping highlights a dilemma (Figure 9), with many groups having high perceived responsibility (government, industry, the UN) are little trusted by youth. In contrast, NGOs and research institutions are trusted but do not hold direct regulatory authority. This suggests that collaborative messenger strategies (for example scientists and NGOs communicating alongside government actors) might bridge credibility gaps and increase acceptance of policy messaging. This type of strategic collaboration could involve a partnership that utilizes universities' credibility and media's reach. As another example, organizations like the Nature Conservancy use their platform to elevate Indigenous voices and amplify their leadership in conservation (The Nature Conservancy, 2025). Broader research reinforces this strategy. Scientific and NGO actors are often viewed as more competent and trustworthy in marine management and protection than government and the private sector/industry (Gkargkavouzi et al., 2020). Moreover, engaging the public in community science initiatives can strengthen trusting relationships among stakeholders and increase trust in ocean governance institutions (Kelly et al., 2022).

Increasing trust in Indigenous communities and leadership requires active support for Indigenous knowledge systems and co-governance rather than symbolic inclusion. Research demonstrates how collaborative film, participatory research, and Indigenous-led storytelling can improve public understanding of environmental relationships (Borish et al., 2021). Increasing trust in Indigenous leadership may also be supported by increasing research partnerships and public education on Indigenous ocean governance, which has been shown to strengthen legitimacy and reciprocity in environmental decision making (Kaiser et al., 2019).

A recent European example illustrates the intersection of pop culture and conservation marketing: Vattenfall's partnership with actor Samuel L. Jackson to promote wind-farmed seaweed products (Maritime Forum, 2025). This campaign demonstrates how entertainment personalities can normalize ocean-positive behaviours by embedding sustainability messages in mainstream cultural discourse (Duthie, 2017).

#### **4.5 Limitations**

This study examined a sample of 1,022 people in Canada, including 263 young adults aged 18 – 34 (25% of respondents). As a result, margins of error were larger for young adults, given that their population size was smaller than that of respondents aged 35+ (n=759). Geographic representation was generally proportional to the national population distribution, as respondent distributions were compared with provincial and territorial population proportions reported by Statistics Canada (Statistics Canada, 2022a). However, this poses a limitation since there were zero respondents from Nunavut or Yukon, and only one from the Northwest Territories. Although populations of each territory account for less than 1% of Canada's total population, this lack of representation is significant given that these territories are home to the

highest proportions of Indigenous Peoples in Canada (22.3% in Yukon, 49.6% in the Northwest Territories, and 85.8% in Nunavut; Statistics Canada, 2022b). The absence of northern young adult perspectives limits the inclusivity of this POPR, particularly in a country where ocean governance and rights-based stewardship are inseparable from Indigenous leadership. This gap conflicts with the BPP design standard that communications should “reflect diverse identities, values, and lived experiences.” The fact that there is no representation at all from these territories is a gap in POPR in Canada. Although data were weighted to represent national demographics, strong or extreme views from underrepresented groups may have been disproportionately amplified. Future work should examine whether weighting procedures unintentionally magnify systemic biases, particularly for groups underrepresented in traditional POPR.

#### **4.5.1. Artificial Intelligence: Limitations and Opportunities**

One of the most notable caveats of using social media to increase ocean literacy is the prevalence of misinformation and disinformation, which is particularly prevalent with climate science (Lewandowsky, 2021; Tomassi et al., 2025). This situation could potentially be exacerbated by artificial intelligence (AI) generated content, which is increasingly difficult to differentiate from human-generated content (Galaz et al., 2023). While this rapidly changing media landscape poses challenges, AI also presents opportunities for POPR and strategic ocean communications. Utilizing machine learning to gather information on public discourse on social media platforms can effectively categorize key themes and emotions relating to environmental topics, thus providing insights into potentially effective message framing strategies (Rahman & Aidatul Fitriyah, 2025). Future POPR could apply these methods to ocean literacy research in

Canada. Such strategies could build off Yale's *Six Americas Super Short Survey* that classifies Americans according to their stance on climate change, and shares messages based on what research demonstrates will best engage them (Leiserowitz et al., 2023).

#### **4.6 Recommendations for engaging young adults in Canada**

Based on the results of this study, I propose three key recommendations for practitioners aiming to create effective media-based ocean communication strategies targeting young adults in Canada:

1. Practitioners should prioritize popular social media channels to maximize reach with content that is visually engaging, and emotionally resonant, and caters to their media consumption preferences.
2. Messaging should clearly explain the ocean issue, how it directly affects young adults' lives, and what concrete actions individuals can take. Messages should aim to foster an emotional connection to the ocean and a sense of collective responsibility through positive imaging and storytelling using reliable narratives.
3. Messengers perceived as credible, such as researchers, universities, NGOs, can benefit from partnerships with media outlets or public figures to amplify reach. Messengers should also reflect the diversity of young adults in Canada, including Indigenous voices, youth leaders, and locally respected and reliable public figures to enhance relatability. As highlighted in the BPP, communication strategies should measure their success and impact, learning from what works well and what doesn't, integrating continuous feedback loops and learning.

#### 4.7 Future research

Building on the findings and limitations of this study, future POPR should further explore how ocean literacy varies across demographic factors among young adults in Canada. While previous ocean literacy research had suggested that ocean perceptions and values are broadly similar across populations (Glithero & Zandvliet, 2020), this study identified clear generational differences between young adults (18 – 34) and older adults (35+). Further research should explore the 2025 OSS Canada dataset to examine differences by gender, region, and coastal vs inland people in Canada.

Building on the BPP document priorities, future research should also advance equity-informed POPR. Future ocean literacy research should focus in Northern territories to improve national and Indigenous representativeness. The BPP also suggests creating opportunities for youth leadership. Future work could investigate the efficacy of having early career ocean professionals (ECOPs) as messengers given their unique position as innovators and knowledge-brokers to promote equity and sustainability (Vozzo et al., 2025). More research should investigate the practical impact of celebrity or influencer messengers for ocean literacy messaging. Future research should examine how online personalities, from science communicators to *greenfluencers*, shape trust, learning and behaviour among Canadian youth. This includes whether influencers can effectively bridge credibility gaps between government, science, and industry.

Research should identify which specific media platforms are trusted and used by different subgroups of Canadian youth and should also aim to differentiate learning channels from mobilization channels. Research should also investigate who youth enjoy learning from

(influencers, journalists, politicians, etc.), exploring if they learn from primary sources, or from secondary public figures who specialize in covering ocean topics, for example Ocean Week Canada ambassador Jill Taylor.

Future research should move beyond descriptive perceptions research toward experimental testing of ocean communication strategies. Building off conservation marketing and behavioural science, studies should compare the effectiveness of different message framing approaches (hope, threat, and knowledge-based) in motivating behaviour change among young adults. Given the gap between perceived and actual behaviour-change motivators, experimental studies should compare hope, threat, and knowledge-based message framing strategies effectiveness motivating behaviour change for Canadian young adults. Designs could follow the SASSY survey style affective response measures (“How do you feel when you think about the ocean?”) to link emotional states with communication receptivity (Leiserowitz et al., 2023).

#### **4.8 Conclusion**

This study demonstrates that young adults in Canada engage with the ocean through social media, news, and entertainment media, and that these platforms also play a meaningful role in fostering their emotional connection to the ocean. Aligning with the BPP framework, effective ocean communication for this audience must therefore leverage trusted messengers, emotionally engaging framing, and culturally relevant communication channels.

Findings reveal that young people moderately trust most institutions but assign greater responsibility to government, industry, and environmental authorities than to themselves. This trust-responsibility gap highlights both the need and opportunity for strategic messenger partnerships between trusted groups such as environmental NGOs, research institutions, and

Indigenous knowledge holders, and less trusted but highly responsible actors such as government and industry.

With a rapidly changing media landscape infused with AI, POPR and strategic ocean communications must be wary of the associated challenges while utilizing the opportunities this presents for this field. Ultimately, strengthening ocean literacy and advancing pro-ocean behaviour among young adults in Canada will require more than information dissemination alone but emotionally engaging, evidence-based communication that reflects diverse lived experiences, foster meaningful connection, and empower young adults to see themselves not only as informed audiences, but as active contributors to ocean solutions.

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