Indigenous Participation in Canada's Ocean Workforce

Research Report

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Ocean Alliance Canada

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1. Introduction

Canada is home to the longest coastline in the world and some of the most ecologically, economically, and culturally significant ocean regions on the planet. Indigenous peoples have lived in relationship with these waters for millennia, developing deep knowledge systems, governance structures, and stewardship practices rooted in respect, reciprocity, and responsibility. Today, as Canada's ocean sector evolves in response to climate change, biodiversity loss, reconciliation, and the emerging blue economy, there is growing recognition that Indigenous leadership, knowledge, and participation must be at the forefront.

Despite this recognition, Indigenous peoples remain underrepresented in many areas of ocean-related employment and training. Systemic barriers—rooted in colonial histories, jurisdictional fragmentation, and persistent inequities—continue to limit access to meaningful, culturally relevant pathways into ocean work. At the same time, Indigenous communities across Canada are leading innovative workforce development initiatives that integrate cultural teachings, support local priorities, and reflect holistic understandings of what it means to "work" in relation to land and water.

This report was developed through the Ocean Pathways 2.0 initiative, led by ECO Canada in collaboration with Ocean Alliance Canada. The project seeks to understand and strengthen Indigenous participation in the ocean workforce, with particular focus on training, credentialing, and governance. It builds on the premise that inclusive, culturally grounded approaches to workforce development are not only more effective, but also essential to advancing equity, sustainability, and Indigenous rights in ocean sectors.

The report integrates two key sources of evidence:

1. **Direct engagement through key informant interviews** with Indigenous participants from communities in Newfoundland and Labrador and New Brunswick. A total of eight interviews were conducted in August and September 2025 with participants from Benoit's Cove, Kingsclear First Nation, Esgenoôpetitj First Nation, and St. Mary's First Nation. ECO Canada provided 34 contacts, all of whom were invited and received multiple follow-up attempts. Interviewees represented a mix of youth, workers, and knowledge holders with diverse experiences in coastal stewardship, fisheries, training programs, and community roles.
2. **A national and regional environmental scan and literature review** encompassing more than 45 sources, including Indigenous organizational reports, federal and provincial strategies, academic publications, community-based program evaluations, ocean workforce studies, and examples of Indigenous-led training and stewardship models from British Columbia, the Maritimes, and Northern Canada.

The combined insights from these sources are organized to:

- Describe how Indigenous peoples define meaningful work in ocean contexts;
- Identify systemic barriers and promising enablers to participation, retention, and advancement;
- Highlight Indigenous-led or community-driven workforce models;
- Examine how Indigenous knowledge, governance, and values intersect with emerging ocean workforce needs;
- Inform the design of culturally relevant, accessible training and credentialing systems.

Ultimately, this report aims to provide a foundation for more inclusive workforce policies and programs that honour Indigenous rights, reflect local realities, and support long-term success for Indigenous individuals and communities in Canada's ocean sector.

2. Methodology

2.1 Key Informant Interviews

Between August and September 2025, the project team conducted one-on-one interviews with eight Indigenous participants from Newfoundland and Labrador and New Brunswick. Participants were from the communities of Benoit's Cove, Kingsclear First Nation, Esgenoôpetitj First Nation, and St. Mary's First Nation—regions selected for their close connections to marine environments and ocean-related economic activity. These communities also reflect a diversity of Indigenous governance structures, relationships to fisheries and ocean management, and proximity to regional training institutions.

Participant identification and outreach were led by ECO Canada, who provided a list of 34 potential individuals with relevant knowledge or experience. These individuals represented a broad mix of community members, including Elders, educators, knowledge keepers, youth, and those working in or adjacent to ocean-related employment. All 34 individuals were contacted by Qatalyst via email and/or phone, and reminder messages were sent approximately once per week in August and September to encourage participation and accommodate scheduling needs. This persistent outreach approach helped maintain flexibility while ensuring a transparent and respectful invitation process.

INTERVIEW DESIGN AND FACILITATION

Qatalyst developed a semi-structured interview guide to support open, respectful, and relational conversations across regions and community contexts. The questions were crafted to align with the project's core objectives and to be adaptable depending on the knowledge, role, and interest of each participant. Seven thematic areas guided the interviews:

- Definitions of meaningful work in the ocean sector
- Barriers and enablers to Indigenous participation
- Indigenous-led or community-based workforce initiatives
- Intersection of Indigenous knowledge and values with ocean sector needs
- Accessibility and cultural relevance of training and credentialing
- Preferred training formats and learner supports
- Topics and needs for digital learning

Interviews were conducted by Reilly Baldwin from Qatalyst, either by phone or videoconference depending on participant preference, and lasted approximately 30 to 45 minutes. Participants received an honorarium in recognition of their time and contributions.

Conversations were structured to allow for flexibility, with interviewers following the lead of participants where appropriate, adapting the order and depth of questions to ensure cultural safety and genuine engagement. In all cases, participants were invited to reflect on personal, professional, or community perspectives, and to highlight challenges or opportunities they believed were most important for shaping inclusive ocean workforce development.

DOCUMENTATION AND ANALYSIS

All interviews were documented through detailed note-taking by the interviewer, with participant consent. These notes captured both the substance of participant responses and, where relevant, contextual observations about tone, emphasis, and the emotional or cultural weight of particular insights. To ensure accuracy, notes were reviewed immediately following each interview, with key ideas highlighted and preliminary reflections recorded to support subsequent analysis.

Given the qualitative nature of the data and the relatively small number of interviews, a thematic analysis approach was applied. This method is well-suited for exploratory and values-based inquiry, particularly when working with diverse personal narratives and culturally situated knowledge. The analysis was grounded in the seven thematic domains established in the interview guide, which served as an organizing framework for sorting responses.

Each interview was systematically reviewed, and data were grouped according to their relevance to these core themes:

- Definitions of meaningful work
- Barriers and enablers to participation
- Indigenous-led or community-based workforce initiatives
- Intersection of Indigenous knowledge, governance, and values with ocean sector needs
- Accessibility and cultural relevance of training and credentialing
- Training delivery preferences and learner supports
- Topics and priorities for digital learning

Within and across themes, the research team identified commonalities, divergences, and emergent sub-themes. Patterns were identified through multiple readings of the transcripts and by applying a comparative lens across interviews. Special attention was paid to language that reflected cultural values, relational ways of knowing, and community priorities. Where applicable, quotes or paraphrased phrases were included to preserve the integrity of participants' voices and to ground findings in lived experience.

The analysis also considered the intersections between individual experiences and broader structural factors such as colonization, jurisdictional fragmentation, and systemic exclusion from mainstream workforce development systems. Where appropriate, findings were contextualized using data from the environmental scan, which helped to verify and reinforce insights emerging from the interviews.

Although the interviews were regionally focused in Atlantic Canada, the findings reflect a number of values, experiences, and priorities that are widely echoed across Indigenous communities in Canada. Many of the themes raised—**such as the importance of land-and water-based learning, the need for recognition of Indigenous knowledge, and the barriers related to rigid credentialing systems**—were also present in research and policy documents from British Columbia, Northern Canada, and national Indigenous organizations. As such, the results offer both local depth and broader relevance to national workforce development conversations.

2.2 Environmental Scan and Literature Review

To complement and expand upon the perspectives gathered through direct interviews, a comprehensive environmental scan and literature review was conducted in October 2025. The purpose of this phase was to situate local and regional insights within broader national and international contexts, validate themes emerging from the interviews, and deepen the understanding of Indigenous workforce participation across diverse ocean regions.

The literature review served several key functions in relation to the interview findings. First, it provided comparative evidence from Indigenous-led research, government strategies, academic studies, and community reports that either reinforced or contextualized what participants expressed in the interviews. Second, it helped fill gaps where interview participants had limited exposure—such as program models in British Columbia, Inuit-led marine initiatives in the Arctic, and emerging technology-based ocean careers. Third, the scan enabled the identification of consistent cross-regional patterns, confirming that many of the barriers, enablers, and priorities raised by Atlantic participants are shared across Indigenous coastal communities nationally.

This secondary research also strengthened geographic representation. While the interviews focused on Atlantic Canada, the environmental scan incorporated workforce strategies and innovations from British Columbia, the Canadian North, and other Indigenous coastal regions. This broader lens was essential for illustrating the diversity of contexts in which Indigenous peoples engage in ocean work and training, and for providing a richer, more holistic understanding of the current landscape.

SCOPE AND PURPOSE

The environmental scan was designed to:

1. Identify Indigenous-authored or Indigenous-led reports, strategies, and program models that speak to ocean workforce development;
2. Surface evidence-based and community-driven recommendations related to employment, training, and credentialing in marine and blue economy sectors;
3. Contextualize interview themes (e.g., barriers, knowledge systems, delivery preferences) within broader systemic, cultural, and policy realities; and
4. Highlight exemplary or promising practices from Indigenous communities and organizations across Canada.

SOURCE SELECTION AND SEARCH PROCESS

The scan prioritized high-quality, publicly available materials published between 2015 and 2025, with an emphasis on the most recent five years to ensure relevance to the current economic and policy environment.

Materials were included based on the following criteria:

- Produced by or in partnership with Indigenous Nations, organizations, communities, or research teams;
- Focused on marine, coastal, or water-based work, training, or governance;
- Explicitly addressed workforce participation, skill development, training access, credentialing, or Indigenous knowledge integration;
- Relevant to one or more of the project's core themes.

The research team used a multi-step, iterative search strategy, including:

- Targeted keyword searches using combinations such as "Indigenous ocean workforce," "blue economy and First Nations," "Inuit marine employment," "training pathways for Indigenous learners," and "Indigenous knowledge and fisheries";
- Manual review of Indigenous organization websites, including but not limited to Coastal First Nations, BC Assembly of First Nations, Nunavut Tunngavik Inc., Inuvialuit Regional Corporation, Mi'kmaq Confederacy of PEI, Ulnooweg Education Centre, and Oceans North;
- Searches of government repositories and grey literature databases (e.g., Google Scholar, Erudit, Canadian Science Publishing, Government of Canada's Open Library);
- Citation tracing from key reports and frameworks;
- Review of relevant federal and provincial policy documents (e.g., Indigenous Knowledge Policy Framework, Canadian Blue Economy Strategy consultation reports, Indigenous Skills and Employment Training (ISET) documentation).

The scan included both qualitative and quantitative material: program evaluations, community strategy documents, workforce development frameworks, training curriculum descriptions, academic publications, and case studies. While academic journal articles were included selectively, preference was given to grey literature where Indigenous authorship or community governance of the material was clear.

ANALYSIS AND SYNTHESIS APPROACH

Each source was reviewed in full and coded thematically using the same categories applied to the interview data:

- Definitions and characteristics of meaningful work;
- Barriers and enablers to Indigenous workforce participation;
- Indigenous-led or community-driven training and employment models;
- Integration of Indigenous knowledge systems and governance in ocean sectors;
- Training access, preferences, and culturally relevant delivery approaches;
- Credentialing systems, recognition of prior learning, and alternative validation pathways;
- Demand and design principles for digital or blended learning formats.

The team synthesized key insights across regions and themes, documenting where findings aligned with or expanded upon the interview data. In cases where empirical evidence was presented (e.g., graduation rates, employment outcomes), this was noted to provide additional grounding. The review also captured notable gaps—for example, the limited number of formal evaluations of Indigenous-led ocean workforce programs—and emphasized areas where further research or investment may be warranted.

Efforts were made to retain the language and framing used by Indigenous authors and organizations. Where Indigenous knowledge systems or values were referenced, the team took care not to translate or reframe them through a Western analytic lens, instead describing them as presented in original sources.

LIMITATIONS AND STRENGTHS

As with any literature review, the scan was limited by what is publicly available and documented in accessible formats. Many local or Nation-specific initiatives may be underrepresented due to the absence of published materials or their circulation only within communities. In addition, while there has been increasing investment in Indigenous-led research and marine governance, gaps remain in sector-specific training evaluations, especially in small-scale or emergent initiatives.

Nonetheless, the breadth and depth of Indigenous-authored and Indigenous-informed material uncovered in the scan provide a rich and credible basis for analysis. The environmental scan reflects a wide cross-section of geographies, governance contexts, and sectoral involvement—capturing fisheries, marine conservation, ocean sciences, shipping, and emerging blue economy niches such as seaweed harvesting and marine renewable energy.

Results

3.1 Key Informant Interviews

Eight key informant interviews were conducted with Indigenous participants from Newfoundland and Labrador and New Brunswick in August and September 2025. These interviews were guided by a semi-structured protocol designed to elicit reflections on connections to the ocean, experiences with ocean-sector work and training, definitions of meaningful work, and systemic barriers and enablers to Indigenous participation in ocean-related employment and education. The results reflect a strong interplay between personal experience, cultural identity, and systemic opportunity. While participants' backgrounds and exposure to the ocean sector varied, common threads emerged around the value of Indigenous knowledge, community support systems, and the need for inclusive training pathways.

1. CONNECTIONS TO WATER

Participants described deeply rooted, multifaceted relationships with the ocean. While these connections were broadly shared across communities, individuals noted differing experiences shaped by family background, proximity to the coast, and opportunities available during their upbringing. These connections fell into three interrelated categories:

DAILY CONNECTION

Many interviewees grew up in coastal communities where the ocean is integral to everyday life, not only as a source of recreation and reflection but also as a source of income. Fishing, shellfish harvesting, and seaweed collection remain common activities, and some communities support employment in areas such as fisheries stewardship, archaeological restoration, and coastal protection. Participants noted that the level of day-to-day interaction varies somewhat across communities and households, reflecting differences in access, family roles, and personal interests.

INDIGENOUS IDENTITY

> "The ocean is just a few clicks away. It's my peace. I go down there, drum, |and sing to the water. It brings a sense of belonging."

Water was described not simply as a natural resource but as a spiritual presence and cultural teacher. For several participants, the ocean embodies a source of healing, reflection, and connection to ancestors. These connections are often passed down intergenerationally and continue to inform values, aspirations, and community well-being. Some participants described lifelong teachings from Elders, while others shared that their relationship with the ocean had deepened more recently through cultural programming or time on the land and water.

OCEAN SECTOR EXPERIENCES

Direct work experience in the ocean sector was limited for most participants, though several had engaged in seasonal employment, volunteer efforts, or training programs. These included roles in lobster fishing, archaeological fieldwork, river and water treatment operations, and BEAHR environmental training. Many described family members employed in marine trades, highlighting the centrality of fisheries in local economies and cultural life. Experiences varied across participants—some described strong family ties to fishing and marine work, while others had more limited exposure or fewer opportunities to engage directly in the sector.

> "My brother is a lobster fisherman and dives for sea urchins, providing elders in our community with lobster, sea urchins, and halibut."

2. DEFINING MEANINGFUL WORK

Participants offered rich definitions of meaningful work, emphasizing three core themes. While these themes were broadly shared, individual perspectives varied depending on age, prior exposure to the ocean sector, and personal career aspirations.

COMMUNITY WELLBEING AND SUSTAINABILITY

Work is meaningful when it benefits the broader community, supports ecological balance, and reflects a stewardship-based relationship with the ocean. Participants spoke of a desire to restore, protect, and sustain marine life rather than exploit it, and highlighted the role of employment in building collective well-being. Several participants, particularly those with strong cultural or family ties to traditional harvesting, emphasized the importance of work that reinforces community responsibility and environmental care.

> "I wouldn't want to have a business that destroys something; I'd rather fix something while creating a business."

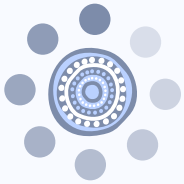
PASSION AND NEW OPPORTUNITIES

Participants emphasized that meaningful work must align with personal interests and passions. While commercial fishing is widespread, it was not always viewed as the most fulfilling path. Opportunities in seaweed harvesting, marine biology, and ocean research were cited as especially exciting to youth. Younger participants, in particular, expressed curiosity about emerging fields and emphasized the value of roles that feel innovative or future-oriented. Participants called for expanded pathways that reflect modern aspirations and environmental values.

RECOGNITION OF INDIGENOUS KNOWLEDGE AND LEADERSHIP

The meaningfulness of work was strongly tied to cultural safety and the validation of Indigenous perspectives. Workplaces and training programs that recognize Indigenous knowledge, offer mentorship, and create leadership opportunities for Indigenous people were seen as transformational. Participants noted that opportunities to apply Indigenous knowledge—whether land-based, experiential, or community-taught—significantly increased their sense of purpose and belonging in the sector.

> "A good meaningful relationship has to be reciprocal, a balance."



3. ENABLERS TO PARTICIPATION, RETENTION, AND ADVANCEMENT

Success in the ocean sector was described as dependent on a combination of social, structural, and cultural supports. Three types of enablers were emphasized, with participants noting that their importance can vary depending on age, prior exposure to training, and community context. Across interviews, financial supports, mentorship, and clear access pathways emerged as the most urgent priorities for strengthening Indigenous participation.

MENTORSHIP AND INTERGENERATIONAL GUIDANCE

Participants highlighted mentorship as both a technical and cultural bridge. Elders and experienced professionals serve as sources of inspiration, accountability, and confidence. These relationships are foundational for building trust and transmitting values. Many participants identified mentorship as a critical first step—especially for youth and early-career learners—because it helps them understand available opportunities and navigate unfamiliar training or career systems.

> "Good guidance is important, someone who knows the ins and outs and is willing to help you get where you want to go."

HOLISTIC AND CULTURALLY RELEVANT SUPPORT PROGRAMS

Programs such as BEAHR, Students on Ice, and AFS Canada were cited as positive examples of integrating Indigenous knowledge, environmental ethics, and hands-on experience. Their success stems from their grounding in community contexts and their ability to build curiosity, confidence, and skill among participants. Participants emphasized that culturally grounded programs help reduce intimidation or uncertainty, making them especially valuable early entry points into the sector.

STRUCTURAL SUPPORTS

Financial assistance, accessible program design, and family encouragement were frequently mentioned as critical. Barriers related to tuition, travel, and bureaucratic application processes remain significant, but targeted supports can make programs more accessible and appealing. Financial support—covering tuition, transportation, and gear—was often described as the most immediate and practical enabler, and participants stressed that addressing these costs upfront would have the greatest near-term impact on participation.

> "They take youth, probably 18 to 30, and they work within the program, get paid, go out on lobster boats… I think they need to lower the age group to catch preteens."

PRIORITY ENABLERS

Across interviews, participants consistently identified three priorities for immediate impact:

1. Financial supports that reduce the cost of participation;
2. Strong mentorship to guide entry into the sector; and
3. Clear, accessible pathways that make training opportunities easier to understand and navigate.

4. BARRIERS TO PARTICIPATION, RETENTION, AND ADVANCEMENT

Despite strong community interest, participants noted numerous barriers that limit entry and progression in ocean-related work. Across interviews, financial constraints, limited access to training, and the lack of culturally relevant learning environments emerged as the most pressing challenges requiring early attention. The environmental scan revealed several existing models and approaches that directly respond to these challenges, suggesting opportunities to strengthen pathways into the sector.

LIMITED ACCESS TO TRAINING AND JOBS

Participants described low awareness of training opportunities and a disconnect between available programming and local communication channels. Even when programs exist, participants often struggle with next steps or lack clarity on how to continue their learning journey. Comparable findings in the literature highlight the effectiveness of in-community and mobile training models—such as portable simulators, community-delivered courses, and local partnerships—which reduce geographic and informational barriers and could help address these challenges.

EXCLUSION OF INDIGENOUS KNOWLEDGE AND LEARNING STYLES

Participants noted that many training programs are built on Western academic norms, undervaluing traditional knowledge or experience. Several highlighted that culturally appropriate approaches—including oral learning, hands-on practice, and land/water-based teaching—are often missing. The environmental scan identifies strong Indigenous-led models that integrate relational, land-based learning and Elder involvement, demonstrating that culturally grounded approaches not only improve engagement but also strengthen retention and confidence.

> "Jobs require specific formal qualifications and provide no opportunities to meet requirements based on traditional or lived experience."

FINANCIAL AND INSTITUTIONAL CHALLENGES

Participants reported that the cost of training and travel, as well as administrative complexity, can be prohibitive. Credentialing pathways were described as long, fragmented, and incompatible with rural or community-based learners. Administrative complexity referred to challenges such as lengthy application forms, unclear eligibility criteria, multiple approval steps, difficulty accessing required documents, and limited support for navigating online systems—particularly for those with inconsistent internet access or limited experience with institutional processes. The environmental scan points to best practices such as fully funded training, living allowances, paid placements, and streamlined application supports, all of which have shown measurable success in improving Indigenous access and helping learners successfully complete training programs.

PRIORITY BARRIERS

Across all interviews, the three most significant barriers limiting Indigenous participation were:

1. Financial constraints associated with tuition, travel, and living costs;
2. Limited access to clear and culturally relevant training pathways; and
3. The lack of programs that recognize and integrate Indigenous knowledge and learning styles.

5. INDIGENOUS KNOWLEDGE, GOVERNANCE, AND VALUES

Participants emphasized the need for greater inclusion of Indigenous worldviews in the ocean sector. Although experiences varied, there was a shared sense that current training and employment systems do not fully reflect Indigenous ways of knowing or the values that guide relationships with land and water. Two key findings emerged:

INTEGRATION OF INDIGENOUS KNOWLEDGE

Many participants described the centrality of oral history, relational ethics, and long-term environmental thinking. Community practices such as language retention, place names, and land-based learning were seen as carriers of ecological knowledge. Participants called for training models that integrate these approaches alongside scientific content. Some spoke about the importance of learning directly on the land or water, while others highlighted how cultural teachings—such as stories, ceremony, or guidance from Elders—shape their understanding of environmental stewardship. These practices were viewed as essential for grounding ocean-sector learning in identity and community.

> "More land-based and community-focused. Digital is good for accessibility, but it doesn't have the same impact."

KNOWLEDGE INTEGRATION CHALLENGES

Participants noted that Indigenous knowledge is often marginalized in formal programming. Application forms, instructor qualifications, and curricula reflect Eurocentric structures that overlook Indigenous contributions. Several advocated for new models of credentialing that recognize lived knowledge and mentorship experience. Participants also described practical challenges—such as limited opportunities for emerging knowledge keepers to share their expertise, or the tendency for organizations to rely on the same Elders repeatedly—which can restrict the diversity of voices represented in training and decision-making. These concerns reflect broader desires for more inclusive and community-driven approaches to learning.

> "Organizations tend to hire the same Elders repeatedly, but it's important to give others a chance to share what they know."

6. INCLUSIVE DESIGN AND KNOWLEDGE RECOGNITION

Participants offered practical advice to increase the accessibility and cultural relevance of training and employment opportunities in the ocean sector. Although their specific suggestions differed based on personal experience and familiarity with training systems, there was broad agreement on the need for approaches that feel clear, culturally grounded, and supportive at every stage of the learning journey. Key recommendations included:

- Simplify application processes and provide guidance for those unfamiliar with formal education systems.
- Recognize oral knowledge, lived experience, and land-based skills as valid credentials.
- Embed Indigenous languages, place names, and teachings in programming.
- Ensure Elders and community leaders are involved as co-designers and mentors.
- Create culturally safe learning environments through protocol, ceremony, and community co-leadership.
- Improve outreach and awareness through school-based programs, local networks, and direct community engagement.

Participants noted that early and proactive communication—especially through trusted community channels—helps reduce intimidation and increases understanding of available pathways.

"The ocean sector can often be seen as intimidating and very technical, so greater clarity about pathways into the field and simple application processes could reduce barriers to awareness and entry."

SUMMARY

The interviews conducted with Indigenous participants from Atlantic Canada reveal a rich tapestry of lived experience, cultural knowledge, and critical insight into the future of Indigenous participation in the ocean sector. While direct employment in the sector remains limited for many, participants expressed deep and multifaceted connections to water that are cultural, spiritual, practical, and intergenerational. These connections inform strong aspirations for work that is both environmentally sustainable and community-rooted.

Participants articulated a clear and consistent vision of meaningful work—grounded in values of stewardship, mentorship, and Indigenous leadership. They highlighted a desire for training and employment pathways that are accessible, culturally safe, and reflective of Indigenous worldviews. Across interviews, enablers such as mentorship, Indigenous-led training programs, and structural supports (like funding and community engagement) were seen as essential for success. Conversely, systemic barriers—including inaccessible credentials, financial hardship, exclusion of Indigenous knowledge, and bureaucratic processes—continue to restrict participation and advancement.

Notably, participants called for a transformation in how training and employment in the ocean sector are designed and delivered. They emphasized that Indigenous learners thrive in programs that honour local ways of knowing, blend hands-on learning with community engagement, and actively integrate ceremony, language, and land-based knowledge systems.

While the perspectives captured here are regionally grounded, they echo broader themes identified across national Indigenous workforce development research. It is important to acknowledge that the interview sample was small and focused on communities in Atlantic Canada and therefore does not represent the full diversity of Indigenous experiences across the country. However, the depth of the conversations, the consistency of the themes raised, and the strong alignment with broader research reinforce the credibility, relevance, and applicability of these findings. Together, the experiences and recommendations shared provide both urgent direction and inspiring possibilities for building a more inclusive and Indigenous-led ocean economy in Canada.

3.2 Environmental Scan and Literature Review

INTRODUCTION

Canada's extensive coastlines and ocean territories are home to many Indigenous nations – including First Nations, Inuit, and Métis – whose relationships with marine environments span millennia. These connections are not only economic but cultural, ecological, and spiritual (Battiste, 2013; Greenwood et al., 2018). In recent years, there has been growing recognition that Indigenous participation is essential to the future of Canada's ocean industries and to the long-term sustainability of marine ecosystems (Clear Seas Centre for Responsible Marine Shipping, 2023; Ocean Networks Canada, 2021).

This environmental scan and literature review was undertaken as part of the Ocean Pathways 2.0 initiative, which seeks to better understand how Indigenous peoples define meaningful ocean work, the barriers and enablers they experience, and the ways training and credentialing systems can be made more inclusive, culturally grounded, and supportive of Indigenous learners and workers. The scan complements a series of interviews conducted with Indigenous participants by compiling and synthesizing publicly available insights from across the country. These include Indigenous organizational reports, government strategies, community-driven publications, and peer-reviewed research (Inuit Tapiriit Kanatami, 2020; Assembly of First Nations, 2021; Government of Canada, 2022). Particular attention is given to regional contexts in British Columbia, Atlantic Canada, and Northern Canada, where marine activity is especially relevant to Indigenous communities (Coastal First Nations, 2020; Northern Territories Indigenous Peoples Secretariat, 2019).

The findings are organized around eight thematic areas explored through interviews with Indigenous participants and extended through the environmental scan. These include how Indigenous peoples define meaningful work in the ocean sector; the barriers and enablers that shape participation, retention, and advancement; and examples of Indigenous-led or community-driven workforce models. The scan also examines intersections between Indigenous knowledge, governance, and ocean sector needs; the accessibility and cultural relevance of training and designation pathways; and preferred delivery formats and learner supports. Additional areas of focus include priority topics for digital learning and the recognition of Indigenous knowledge and experience within credentialing processes. Each section synthesizes key insights, highlights promising practices, and provides illustrative examples. Wherever possible, Indigenous perspectives and voices are foregrounded, reflecting the project's commitment to centering lived experience.

Before turning to the thematic findings, it is important to ground this work in the national context of reconciliation. The Truth and Reconciliation Commission's Call to Action #92 challenges all sectors of the Canadian economy to ensure that Indigenous peoples have equitable access to training, education, and employment, and to foster culturally safe and respectful workplaces (Truth and Reconciliation Commission of Canada, 2015). Government-led programs, postsecondary initiatives, and industry–Indigenous partnerships are beginning to respond to this call (Transport Canada, 2024; Colleges and Institutes Canada, 2020), but significant gaps remain (Wilson & Macdonald, 2017). Many Indigenous communities view workforce development not simply as a pathway to employment, but as a mechanism for nation-building, self-determination, and environmental stewardship (Simpson, 2014; Napoleon & Friedland, 2016). In this context, "meaningful work" is inseparable from values of reciprocity, community wellness, and intergenerational resilience—concepts that shape how Indigenous peoples engage with and transform Canada's ocean workforce. The sections that follow aim to capture the depth of this perspective and the current state of systems that support (or limit) its realization.

1. INDIGENOUS DEFINITIONS OF MEANINGFUL WORK IN THE OCEAN SECTOR

Indigenous peoples across regions emphasize that meaningful ocean work is more than a paycheck—it is work that carries purpose, honours cultural values, and contributes to the well-being of both community and environment (Battiste, 2013; Simpson, 2014). Many Indigenous nations see themselves as caretakers of the ocean; thus, roles that allow them to practice stewardship, protect marine resources, and uphold ancestral responsibilities are inherently meaningful (World Resources Institute, 2022; Coastal First Nations, 2020). For example, the Indigenous Ocean Careers initiative highlights that Indigenous job-seekers "don't have to choose between meaningful work and [their] cultural identity"—meaningful ocean careers reflect Indigenous values and knowledge while sustaining the oceans for future generations (Ocean Networks Canada, 2021).

Common elements in Indigenous definitions of meaningful ocean work include:

1. **Connection to Ancestral Waters and Territory:** Work that keeps people connected to their traditional coastal or marine areas is highly valued. This includes fishing, Guardian duties, marine harvesting, and modern roles such as marine renewable energy—so long as the work benefits or occurs within their home waters (Coastal First Nations, 2020). Being on the water or contributing to its health fulfills cultural and spiritual bonds rooted in long-standing relationships to place. Many Indigenous nations describe themselves as "ocean peoples," emphasizing that working on the ocean continues a lineage of identity, knowledge, and responsibility (Greenwood et al., 2018).

2. **Stewardship and Protection:** Roles focused on caring for the ocean—such as marine stewardship, conservation, and environmental monitoring—are widely cited as meaningful. Indigenous participants frequently describe protecting marine ecosystems and species not only as employment but as a sacred duty (Simpson, 2014; Napoleon & Friedland, 2016). Serving as Guardians, fisheries officers, or stewards aligns closely with traditions of sustainable harvesting and ecological balance. Research by the World Resources Institute (2022) echoes this perspective, noting that Indigenous communities hold "immense knowledge about the ocean" and see themselves as caretakers even when excluded from formal management systems.

3. **Community Well-being and Food Security:** Work that directly benefits the community—by ensuring access to food, enhancing safety, or supporting local economies—is viewed as meaningful (Assembly of First Nations, 2021). In remote regions, careers in small-scale fisheries, aquaculture, or marine rescue services often play dual roles: strengthening food sovereignty and supporting community livelihoods (Inuit Tapiriit Kanatami, 2020). For example, one Mi'kmaq worker described meaningful work as "we protect wild salmon while also farming salmon for our communities," illustrating a balance of tradition and innovation supporting community needs.

4. **Alignment with Cultural Values and Knowledge:** Many Indigenous ocean workers want to bring their whole selves to work—meaning they seek workplaces that respect Indigenous values such as reciprocity, interconnectedness, and relational decision-making (Battiste, 2013; Simpson, 2014). Work is more meaningful when Indigenous languages, teachings, and governance principles can be integrated into daily practice. For example, an Indigenous marine policy advisor may find their role meaningful when able to consult Elders and incorporate Indigenous governance principles, rather than sidelining them. Canada's Ocean Supercluster (2022) notes that "Indigenous peoples are natural collaborators in the ocean sector," contributing unique perspectives that foster innovation when genuinely included.

5. **Personal Growth and Pride:** Some Indigenous youth and professionals describe meaningful ocean work in terms of personal and cultural pride. Entering fields from which their people were historically excluded – such as becoming a ship's captain, marine biologist, or running an ocean tech business – can be profoundly meaningful if it breaks stereotypes and inspires others (Ocean Networks Canada, 2021). Sarah Thomas of the Tsleil-Waututh Nation shares that seeing Indigenous people in leadership roles in the marine industry brings not only jobs but pride and healing to communities. As one program put it, ocean careers offer "a significant opportunity for aligning career paths with purpose-driven values" – allowing Indigenous individuals to succeed professionally while staying true to who they are.

In sum, "meaningful work" for Indigenous peoples in the ocean sector is defined by purpose, connection, and respect. It is work that ties into Indigenous rights and responsibilities to the water, that lets them give back to their people and territories, and that affirms their identity rather than requiring its suppression. This stands in contrast to purely extractive or menial jobs that might be available in the ocean economy. As the Clear Seas Centre (2023) notes, Indigenous people "want meaningful participation in the maritime industry," not just any jobs. They seek roles that reflect their standing as leaders in marine stewardship and partners in ocean governance, rather than outsiders looking in. The next section examines what obstacles have historically impeded such participation and what factors are beginning to enable it.

2. BARRIERS AND ENABLERS TO INDIGENOUS PARTICIPATION, RETENTION, AND ADVANCEMENT

Indigenous peoples often face a unique set of barriers when accessing or advancing in ocean-related careers. These barriers range from structural and logistical challenges to cultural and historical factors (Clear Seas Centre for Responsible Marine Shipping, 2023; Assembly of First Nations, 2021). Fortunately, various enablers and support strategies have been identified that can help overcome these challenges.

Below is a summary of key barriers and corresponding enablers, followed by a detailed discussion.

GEOGRAPHICAL ISOLATION & RELOCATION

Barrier: Many Indigenous communities are located in remote coastal or northern regions, making it difficult to access training centres or jobs without relocating and leaving family and community behind (Transport Canada, 2024; Northern Territories Indigenous Peoples Secretariat, 2019).

Enablers / Solutions:

- Deliver training directly in or near Indigenous communities.
- Use mobile training units, such as portable simulators (e.g., Western Arctic Marine Training Centre) (Transport Canada, 2024).
- Provide travel support and housing when in-person training outside the community is required.

EDUCATIONAL GAPS & CREDENTIAL REQUIREMENTS

Barrier: Rigid entry requirements (e.g., high school diplomas, advanced math, or medical certifications) can disqualify capable Indigenous candidates, particularly in communities lacking full educational services (Clear Seas, 2023).

Enablers / Solutions:

- Offer bridging programs and preparatory courses (e.g., math or physics refreshers).
- Allow for "alternative entry" pathways, recognizing prior learning or community-based experience in place of formal education (Canada's Ocean Supercluster, 2022).
- Example: Nova Scotia Community College's A'paqt program provides foundational training to build student confidence (NSCC, 2021).

FINANCIAL BARRIERS

Barrier: High costs of tuition, travel, gear, and lost income from leaving community responsibilities make training inaccessible (Government of Canada, 2022).

Enablers / Solutions:

- Fully fund Indigenous trainee participation, including tuition, materials, travel, and living allowances.
- Offer stipends (e.g., $60/day under Oceans Protection Plan's Marine Training Program) (Transport Canada, 2024).
- Provide paid placements and internships (e.g., Indigenous Career Pivot Program), allowing participants to earn while they learn (Canada's Ocean Supercluster, 2022).

WORKPLACE CULTURE & DISCRIMINATION

Barrier: Indigenous workers often face racism, stereotyping, or cultural exclusion in marine sectors like shipping, fisheries, and science. Few Indigenous role models exist, contributing to low retention and progression (Clear Seas, 2023; Wilson & Macdonald, 2017).

Enablers / Solutions:

- Provide cultural competency training for all staff.
- Create inclusive work environments through reconciliation-informed hiring and retention practices (Colleges and Institutes Canada, 2020).
- Establish mentorship programs with Indigenous mentors or allies.
- Example: Indigenous Career Pivot Program offers both professional and cultural coaching (Canada's Ocean Supercluster, 2022).
- Celebrate Indigenous leadership and success stories to foster belonging.

LACK OF AWARENESS & ENGAGEMENT

Barrier: Indigenous youth may be unaware of ocean-related careers or how to access them. Conventional outreach often misses Indigenous communities, and past recruitment efforts may have broken trust (Ocean Networks Canada, 2021).

Enablers / Solutions:

- Conduct proactive, culturally relevant outreach through community info sessions and partnerships with Indigenous organizations.
- Showcase Indigenous role models (e.g., "Wave Makers: Blue Career Stories") (Ocean Alliance Canada, 2023).
- Build long-term, trust-based relationships with communities.
- Example: The Coastal Nations Coast Guard Auxiliary began by asking communities what they needed rather than imposing recruitment goals (Coastal First Nations, 2020).

HISTORICAL AND INTERGENERATIONAL FACTORS

Barrier: Colonization disrupted marine knowledge transmission and created mistrust in government and industry initiatives. This can result in lower confidence and engagement among Indigenous candidates (Simpson, 2014; Napoleon & Friedland, 2016).

Enablers / Solutions:

- Build trust through long-term relationship-building and consistent follow-through on commitments.
- Establish joint governance and Indigenous-led conservation areas to affirm Indigenous authority in marine work (Coastal First Nations, 2020).
- Recognize historical Indigenous contributions to ocean stewardship (e.g., Indigenous marine rescuers since 1854) (The Tyee, 2020).
- Embed cultural practices (e.g., Elder guidance, opening ceremonies) in training and work environments to foster pride and heal intergenerational trauma (Greenwood et al., 2018).

TABLE 1. SUMMARY OF BARRIERS AND ENABLERS TO INDIGENOUS PARTICIPATION IN OCEAN CAREERS

GEOGRAPHICAL ISOLATION AND RELOCATION REQUIREMENTS	• Bring training to communities (mobile units, satellite delivery) • Fund travel, housing, and living supports for off-site training • Use portable simulators (e.g., WAMTC)
EDUCATIONAL GAPS AND RIGID CREDENTIAL REQUIREMENTS	• Bridging programs; math/science refreshers • "Alternative entry" pathways recognizing prior experience • Preparatory semesters (e.g., NSCC A'paqt)
FINANCIAL BARRIERS (TUITION, TRAVEL, GEAR, LOST INCOME)	• Fully funded training (tuition/materials covered) • Stipends and living allowances (e.g., OPP MTP) • Paid internships and wage-subsidized placements
WORKPLACE CULTURE, RACISM, AND DISCRIMINATION	• Cultural competency training for all staff • Inclusive hiring, retention, and reconciliation-informed HR practices • Mentorship/leadership development programs • Culturally grounded workplace practices
LACK OF AWARENESS AND WEAK COMMUNITY OUTREACH	• Proactive outreach in partnership with Indigenous organizations • Indigenous role models and storytelling (e.g., Wave Makers) • Recruitment rooted in community priorities (e.g., CNCGA)
HISTORICAL AND INTERGENERATIONAL TRAUMA; MISTRUST OF INSTITUTIONS	• Long-term relationship building • Indigenous-led governance and stewardship roles • Recognition of historical Indigenous contributions • Embedded cultural practices (Elders, ceremony, land-based learning)
GEOGRAPHICAL ISOLATION AND RELOCATION REQUIREMENTS	• Bring training to communities (mobile units, satellite delivery) • Fund travel, housing, and living supports for off-site training • Use portable simulators (e.g., WAMTC)

DISCUSSION

Many of these barriers are interconnected and rooted in systemic inequalities. Historically, Indigenous peoples were integral to maritime industries—"thousands of Indigenous workers helped build the North American shipping economy" in the 19th and early 20th centuries, often in hard, unrecognized labor (The Tyee, 2020). But as the marine sector professionalized, Indigenous participation dwindled, and communities were rarely consulted on ocean development (Clear Seas Centre for Responsible Marine Shipping, 2023). This has left a gap wherein today "few opportunities [are] available for Indigenous individuals, despite their heritage as marine stewards", and those who do wish to enter face a "challenging path to entry" (Transport Canada, 2024).

Encouragingly, targeted interventions are starting to turn the tide. Government programs like Transport Canada's Marine Training Program under the Oceans Protection Plan specifically focus on "making training accessible to Indigenous Peoples, Northerners, and women", with renewed funding of $30 million to institutions across the country (Transport Canada, 2024). These funds have trained hundreds of Indigenous students and placed them in careers with BC Ferries, the Canadian Coast Guard, and other employers. Key lessons learned include addressing prerequisites—Nova Scotia Community College's program A'paqt (Mi'kmaq for "oceans") added essential-skills preparation and found it significantly improved retention (NSCC, 2021)—and covering financial needs, as bursaries and living allowances removed a major hurdle for prospective trainees (Government of Canada, 2022).

Industry-led initiatives also play a role. Canada's Ocean Supercluster launched the Indigenous Career Pivot Project (ICPP) to create "meaningful work placements for Indigenous peoples" in ocean-economy firms (Canada's Ocean Supercluster, 2022). The pilot provided wage subsidies to employers and provided professional and cultural coaching to participants, resulting in 11 Indigenous professionals transitioning into roles ranging from deckhand to project manager across Canada. Clear Seas, a marine research non-profit, helped expand this model nationally and noted that while subsidies help, "employer commitments and cultural competency" are equally important for long-term success (Clear Seas, 2023). They further observed that sustainable careers beyond the subsidy period require more comprehensive retention and professional-development supports—not only entry-level qualification pathways.

Crucially, many sources stress that employers must actively create an inclusive environment if recruitment efforts are to succeed. This means investing in training for non-Indigenous staff on Indigenous history and culture, accommodating Indigenous employees' needs (e.g., time for community events, flexible leave for cultural or family obligations), and instituting zero-tolerance policies for racism (Colleges and Institutes Canada, 2020; Greenwood et al., 2018). Some companies and agencies are beginning to adopt these practices as part of reconciliation action plans. For instance, the Canadian Coast Guard has worked to increase Indigenous representation through training pathways and has intentionally incorporated Indigenous ceremonial practices—such as blanketing ceremonies for Indigenous graduates—into program milestones, symbolic gestures that nonetheless signal a meaningful shift toward respect and belonging (Government of Canada, 2022).

In summary, the barriers to Indigenous participation in ocean careers have been significant but are increasingly well-understood: distance, education gaps, cost, non-inclusive cultures, and historical marginalization. Enablers that make a difference include bringing training and jobs to the community (physically or through flexible delivery), reducing entry barriers through preparatory and alternative pathways, strengthening financial supports, investing in mentorship and networks, building culturally safe workplaces, and committing to long-term relationship-building with Indigenous communities. The next section highlights concrete examples of Indigenous-led or community-based workforce models that embody many of these enabling factors, providing templates for success.

3. INDIGENOUS-LED AND COMMUNITY-BASED WORKFORCE MODELS IN OCEAN AND COASTAL SECTORS

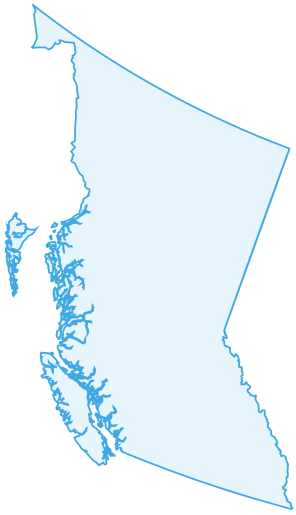
Across Canada, Indigenous nations and organizations are pioneering workforce development models tailored to their communities' needs and values. These initiatives often integrate training, employment, and stewardship in a holistic way, effectively creating a pipeline for Indigenous talent in ocean sectors. The following examples from the Pacific, Atlantic, and Arctic regions illustrate how Indigenous leadership is driving workforce development on their own terms (Coastal First Nations, 2020; Clear Seas Centre for Responsible Marine Shipping, 2023; SmartICE, 2022; Transport Canada, 2024).

STEWARDSHIP GUARDIAN PROGRAMS (BRITISH COLUMBIA)

On the West Coast, First Nations have established guardian programs that hire local members to monitor and manage marine and coastal resources (often in partnership with government) (Coastal First Nations, 2020; Guardian Watchmen Network, 2019). To build capacity for these roles, the Coastal First Nations' Stewardship Technicians Training Program (STTP) was co-developed by two Indigenous stewardship networks and Vancouver Island University's Aboriginal Education department (Coastal First Nations & Vancouver Island University, 2020).

The STTP is a vocational program "designed specifically for Indigenous guardians" that blends cultural awareness and leadership courses with industry-certified technical courses (e.g., environmental monitoring, ecological surveying, archaeology) (Coastal First Nations, 2020). Elders like Hilistis Pauline Waterfall serve as instructors, ensuring participants reinforce Indigenous cultural knowledge, respect, and self-governance alongside Western skills training (Waterfall, 2020; Coastal First Nations, 2020).

The program's success is evident: all participants completed the two-year program in a recent cohort, which organizers attribute to peer support and "family-like" relationships built during training (Coastal First Nations, 2020). Other success factors included delivering modular courses in or near communities, scheduling around seasonal cultural activities, providing in-class supports (tutors, counseling), and granting university/industry accreditation for courses so that graduates earn recognized credentials (Coastal Stewardship Network, 2021).



In effect, the STTP and similar models (e.g., Haida Gwaii's Guardian program training) create a community-based workforce of Guardian Technicians who are qualified for jobs in marine parks, fisheries patrols, research, and environmental departments – all while rooted in their territories (Haida Nation, 2019; Coastal First Nations, 2020). These Indigenous-led programs are often cited as best practices "in the spirit of reconciliation" because they exemplify co-learning and equal partnership in curriculum design (Clear Seas Centre for Responsible Marine Shipping, 2023; Coastal First Nations, 2020).

COASTAL NATIONS SEARCH AND RESCUE & MARINE RESPONSE (PACIFIC COAST)

Several Nuu-chah-nulth and other coastal First Nations in BC have partnered with the Canadian Coast Guard to form the Coastal Nations Coast Guard Auxiliary (CNCGA). Established in 2018 as part of a federal initiative, CNCGA trains Indigenous community members in marine search and rescue (SAR) and provides dedicated rescue vessels to their communities (Canadian Coast Guard, 2019; Government of Canada, 2020). This is a powerful workforce model: coastal First Nations are leading emergency response in their own waters, drawing on generations of knowledge of local seas (The Tyee, 2020).

Participants undergo rigorous training (often at Bamfield Marine Sciences Centre) alongside Coast Guard instructors, learning modern SAR techniques while operating in their home areas (Bamfield Marine Sciences Centre, 2019; Canadian Coast Guard, 2021). The model represents a two-way capacity building – communities gain skills and equipment to ensure safety of mariners (including their own fishermen), and the Coast Guard gains highly skilled auxiliary responders embedded in remote regions (Canadian Coast Guard, 2019).

"It's a working relationship that is so rewarding for both sides," notes one SAR trainer, emphasizing that trust and mutual respect underpin the partnership (The Tyee, 2020). The program acknowledges Indigenous rescuers' "on-the-ground expertise within their territories" and formally validates their role, which historically was unrecognized despite Indigenous people saving countless lives along the "Graveyard of the Pacific" over centuries (The Tyee, 2020; Clear Seas Centre for Responsible Marine Shipping, 2023).

As a workforce model, CNCGA provides year-round part-time employment for trained responders and opens pathways for Indigenous youth into careers like Coast Guard officers, marine emergency responders, or fisheries enforcement with a culturally supportive entry point (Canadian Coast Guard, 2021). The success of the CNCGA has led to discussions of expanding Indigenous auxiliary units in other coastal areas (Government of Canada, 2022).

INDIGENOUS-OWNED MARITIME TRAINING INSTITUTES (NORTH & ATLANTIC)

In the North, the Nunavut Fisheries and Marine Training Consortium (NFMTC) and the newly established Western Arctic Marine Training Centre (WAMTC) in the Northwest Territories provide locally-focused marine training for Inuit and Dene/Métis communities (NFMTC, 2021; Government of Canada, 2023). These institutions are governed by Indigenous organizations in partnership with colleges. For instance, NFMTC is co-funded by Nunavut Inuit associations and delivers courses in Nunavut tailored to fisheries, sealing, and marine operations, often in Inuktitut (NFMTC, 2021).

WAMTC, launched in 2023 as a not-for-profit in Hay River, NWT, offers a range of seafarer programs and has made all training fully funded for Indigenous peoples, women, and Northerners (Transport Canada, 2024). Their flagship is a 16-week Bridge Watch Rating (BWR) program run with BCIT, which prepares residents for entry-level crew positions on ships (BCIT, 2023). A remarkable feature is that WAMTC covers "nearly every aspect of the program, including tuition, books, equipment, accommodations, travel, and food" – about $45,000 value per student at no cost to them (Government of Canada, 2023).

This level of support, funded by Transport Canada's Oceans Protection Plan, has resulted in strong uptake; the first cohorts of mostly Indigenous students celebrated graduations attended by territorial leaders, and graduates immediately secured jobs with the Coast Guard, shipping companies, and ferries (Government of the Northwest Territories, 2023; Transport Canada, 2024). WAMTC also uses portable simulators to conduct training modules in remote communities, an innovation that reflects an Indigenous community-based approach (bringing training to the people) (Transport Canada, 2024)

These Indigenous-run training centers are building a homegrown marine workforce in regions where, previously, few locals obtained seafaring credentials. They also consciously incorporate cultural elements – for example, WAMTC's instructors "make the training experience like a working environment" and emphasize teamwork and community, aligning with Indigenous learning styles (WAMTC, 2023).

COMMUNITY-DRIVEN OCEAN TECHNOLOGY AND RESEARCH (ARCTIC)

Innovative models aren't limited to training – some involve direct employment in ocean monitoring and research led by communities. A prime example is SmartICE, an Inuit-led social enterprise in Nunatsiavut and Nunavut (SmartICE, 2022; Gearheard et al., 2020). SmartICE trains Inuit youth as "producers, operators, and technicians" of a sea-ice monitoring technology that integrates traditional ice knowledge with modern sensors (SmartICE, 2022).

Through its Northern Production Centre in Nain (Labrador), it provides culturally contextualized training programs, meaning the training is person-centered and culturally safe, and involves Elders and Inuit language (SmartICE, 2021). Trainees learn to assemble high-tech SmartBUOY devices and deploy them on sea ice, and to use GIS and satellite data while mapping ice conditions (SmartICE, 2022).

The core of this model is co-production of knowledge: SmartICE's community management committees document "Inuit Qaujimajatuqangit (IQ) of safe ice travel" and incorporate it into training and services (ITK, 2019; SmartICE, 2021). This not only creates jobs (local operators are paid to gather data and produce ice reports) but also preserves and valorizes Indigenous knowledge (SmartICE, 2022). It addresses a community need (safe travel in an era of climate change) while employing local people in science-tech roles that didn't exist before (Government of Canada, 2020).

SmartICE has been internationally lauded as a climate adaptation and Indigenous employment success (UNDP, 2021; SmartICE, 2022). It shows how Indigenous leadership can carve out new niches in the blue economy – in this case, Arctic data services – by combining traditional expertise with new technology. Similar Indigenous guardian and monitoring programs (e.g., the Inuit Marine Monitoring Program in Nunavut, First Nations marine use studies in BC) hire community members to be the "eyes and ears" on the water, often with support from federal programs (Inuit Circumpolar Council, 2020; Coastal Stewardship Network, 2019). These create career pathways in research, conservation, and resource management that are community-based.

COLLABORATIVE MANAGEMENT AND TRAINING (ATLANTIC CANADA)

In Atlantic regions, many Mi'kmaq and Maliseet First Nations have pursued co-management of fisheries and ocean resources, which in turn has led to community-led training and employment (UINR, 2021; DFO, 2020). The Unama'ki Institute of Natural Resources (UINR) in Cape Breton, for instance, is an organization controlled by Mi'kmaq communities that manages fisheries and environmental projects (UINR, 2021). They employ Mi'kmaq guardians, fisheries technicians, and science coordinators. UINR and similar bodies often partner with colleges to deliver courses like Small Craft Operator, Environmental Monitoring, or Habitat Restoration to their community members (UINR, 2021; Nova Scotia Community College, 2021).

One notable model is the Two-Eyed Seeing approach used in some Atlantic programs, where Western science training is complemented by Indigenous ecological knowledge and mentorship by Elders (Bartlett, Marshall, & Marshall, 2012). An example from the Mi'kmaq is the Apoqnmatulti'k project (meaning "we help each other" in Mi'kmaq), a collaborative ocean research initiative that trained community members in research methods while integrating traditional knowledge of species (Apoqnmatulti'k, 2020). While not a formal "workforce program," it built skills that led to jobs in DFO and Indigenous organizations for participants, illustrating how co-research can be a capacity-building model (Apoqnmatulti'k, 2020).

Another Atlantic example is the Marine Training Program at Nova Scotia Community College (NSCC) which, while led by a mainstream institution, was indigenized in its delivery (NSCC, 2021). NSCC branded its program "A'paqt" (Mi'kmaq for "ocean") and actively involved Indigenous communities in recruitment and support. They hired an Indigenous facilitator (Tracy) who engaged communities and even hosted career awareness sessions for families (NSCC, 2021). By treating communities as partners and culturally adapting the training environment, NSCC saw high success rates among Indigenous students, many of whom went on to join the Canadian Coast Guard or other marine employers (Transport Canada, 2024; NSCC, 2021). This shows that even within public institutions, adopting a community-partnership model can yield an Indigenous-centric training program that feels community-based from the learner's perspective.

WHAT MAKES THESE MODELS SUCCESSFUL?

Several cross-cutting factors emerge from the above examples:

- Indigenous governance or co-governance is central – the programs are either run by Indigenous organizations or developed in equal partnership, ensuring they meet community needs and cultural standards (Coastal First Nations, 2020; UINR, 2021).
- They are place-based, bringing opportunities to the community (whether physically or by tailoring content to local context) (SmartICE, 2022; Transport Canada, 2024).
- They blend Indigenous knowledge and practices with mainstream credentials, giving participants the best of both worlds (e.g., earning a recognized certificate while also learning from Elders and ceremonies) (Bartlett, Marshall, & Marshall, 2012).
- Strong support systems (peer cohorts, mentors, Elder involvement, counseling) are built in, which improve retention (Coastal First Nations, 2020; NSCC, 2021).
- Success is measured not just by certificates issued, but by community outcomes – for instance, more local people in well-paying jobs, improved safety on the water, or stronger resource management (Clear Seas Centre for Responsible Marine Shipping, 2023).

These Indigenous-led models contribute to economic reconciliation by enabling communities to actively participate in – and benefit from – the ocean economy on their own terms (Government of Canada, 2021). As Janelle Caballero of Canada's Ocean Supercluster observed, "in addition to collaboration, community building, and knowledge keeping, Indigenous rights holders bring a wealth of innovation ... their unique perspective leads to concepts foundationally different from what's traditionally seen in the industry" (Canada's Ocean Supercluster, 2022).

In other words, Indigenous workforce models are not just training people for existing jobs; they are reshaping what ocean work looks like (often making it more sustainable and community-oriented). The next section will further explore how Indigenous knowledge, governance, and values are being interwoven with ocean work, and how this intersection enriches the sector.

TABLE 2. INDIGENOUS WORKFORCE DEVELOPMENT MODELS BY REGION: AT-A-GLANCE SUMMARY

REGION	PROGRAM / MODEL	LEAD NATION(S) / ORGANIZATION(S)	SECTOR FOCUS	WHAT MAKES IT EFFECTIVE
Pacific Coast (BC)	Stewardship Technician Training Program (STTP)	Coastal First Nations; Vancouver Island University	Conservation, stewardship, monitoring	• Co-designed with Indigenous orgs • Cultural + technical courses • Elders as instructors • High retention through cohort model
	Guardian Programs (various Nations)	Haida Nation, Heiltsuk, others	Marine stewardship	• Land/water-based delivery • Territory-specific training • Career pathways in parks, fisheries, research
	Coastal Nations Coast Guard Auxiliary (CNCGA)	Nuu-chah-nulth, Heiltsuk, others with CCG	Search & Rescue, Marine safety	• Training in home waters • Recognizes traditional marine expertise • Paid response roles; career ladder into CCG
Northern / Arctic	Nunavut Fisheries & Marine Training Consortium (NFMTC)	Inuit organizations	Marine operations, fisheries	• Delivered in Inuktitut • Community-based modules • Bridges into sealing, fisheries, marine crew roles
	Western Arctic Marine Training Centre (WAMTC)	NWT Indigenous partners; Transport Canada	Seafaring careers	• Fully funded training • Portable simulators for remote delivery • Immediate employment outcomes
	SmartICE	Inuit-led social enterprise	Arctic monitoring, climate tech	• Inuit Qaujimajatuqangit embedded • Youth hired as ice technicians • High-tech + traditional knowledge blending
Atlantic Canada	Co-Management Workforce Pathways	Mi'kmaq & Maliseet Nations; UINR	Fisheries, environmental management	• Community-run training • Jobs in guardianship and resource management • Integrates Indigenous governance
	Apoqnmatulti'k Marine Research Training	Mi'kmaq collaborators + universities	Ocean research	• Two-Eyed Seeing methodology • Joint training with Elders + scientists • Leads to jobs in DFO & Indigenous orgs

4. INTERSECTING INDIGENOUS KNOWLEDGE, GOVERNANCE, AND VALUES WITH OCEAN WORK

A recurring theme in Indigenous participation is the profound value that Indigenous knowledge systems and cultural values bring to ocean-related work. Rather than viewing Indigenous hires as needing to "catch up" to industry norms, many now recognize that Indigenous Peoples carry unique expertise – traditional ecological knowledge (TEK), intergenerational observations, holistic management approaches, and community-based governance principles – that can transform and improve ocean sectors from fisheries to marine policy (Berkes, 2018; Huntington, 2011). This section examines how Indigenous knowledge, governance, and values are being integrated into ocean work, and where gaps remain.

INDIGENOUS KNOWLEDGE IN PRACTICE

Indigenous coastal communities have accumulated detailed knowledge of local marine ecosystems over countless generations (Huntington, 2011; ITK, 2019). This includes understanding animal behaviors, ocean currents, weather patterns, and sustainable harvesting techniques specific to place. When Indigenous people work as fisheries technicians, marine biologists, or environmental monitors, they often apply this traditional knowledge alongside Western science (Berkes, 2018).

For example, Indigenous shellfish harvesters in BC brought back the practice of building clam gardens – ancient rock-walled beach terraces that enhance shellfish production – informing modern aquaculture with sustainable Indigenous technology (Groesbeck et al., 2014). In guardian programs, many monitoring protocols intentionally combine scientific methods (e.g., water quality testing) with TEK indicators (e.g., observing abnormal fish behavior or using oral histories to identify ecological baselines) (Coastal Stewardship Network, 2019).

The Indigenous Ocean Careers program highlights this synergy by noting that a Fisheries Technician can use "traditional conservation and harvesting practices to guide sustainable management," and an Environmental Guardian's role parallels "Indigenous conservation practices and local stewardship" historically exercised in that territory (Ocean Alliance Canada, 2023).

There are also roles specifically created to harness Indigenous knowledge. Some co-management boards and environmental agencies hire Knowledge Holder Liaisons or Indigenous Knowledge Advisors who ensure that Indigenous observations and oral history are incorporated into research and decision-making (DFO, 2020). For example, Fisheries and Oceans Canada engages Inuit knowledge holders in Arctic fisheries stock assessments, with Inuit providing insight into species behavior under ice not previously documented in Western science (WWF Canada, 2018).

The inclusion of Indigenous knowledge can lead to stronger outcomes; WWF found that conservation initiatives co-designed with Indigenous communities have higher ecological effectiveness and community support (WWF Canada, 2016). Despite this, many Indigenous experts note their knowledge is still "underused or overlooked" (ITK, 2019; ICC, 2020). Bridging this gap is essential to building meaningful and successful ocean-sector participation.

GOVERNANCE AND CO-MANAGEMENT

Indigenous values and governance models are increasingly intersecting with formal ocean governance. In British Columbia, First Nations and the Province co-developed marine spatial plans under the MaPP (Marine Plan Partnership) initiative, incorporating Indigenous laws and zoning for cultural use areas (MaPP, 2015). This created new workforce roles for Indigenous planners and GIS technicians grounding policy in Indigenous worldviews.

In Atlantic Canada, the recognition of Mi'kmaq and Wolastoqey treaty rights in fisheries has resulted in new governance arrangements—such as moderate livelihood fisheries—where Indigenous communities design and manage their own fisheries plans (DFO, 2020; Assembly of Nova Scotia Mi'kmaq Chiefs, 2021). Indigenous fisheries officers and managers blend community governance with Canadian regulatory frameworks, applying values of reciprocity, relational accountability, and collective decision-making.

One explicit way Indigenous governance enters workforce systems is through the creation of Indigenous Protected and Conserved Areas (IPCAs) and Guardians programs. For instance, the Heiltsuk Nation asserted Indigenous law to designate marine areas off-limits after a spill and employs community members to steward and enforce these protections (Heiltsuk Nation, 2019). Federal Indigenous Guardians funding supports such roles, noting it helps Indigenous Peoples "exercise responsibility for stewardship of traditional lands and waters" (Government of Canada, 2021).

VALUES IN TRAINING AND WORKPLACE

Indigenous cultural values—such as respect for Elders, learning through hands-on experience, relational teaching, and spirituality—are increasingly woven into training programs and workplaces (Bartlett, Marshall, & Marshall, 2012).

Programs like STTP embed cultural protocols (e.g., opening and closing prayers, on-the-land learning) into training, which "strengthens a strong sense of First Nations identity, place, and pride" (Coastal First Nations, 2020). Elders emphasize collaborative, non-hierarchical classrooms as "best practice in the spirit of reconciliation" (Coastal Stewardship Network, 2019).

In workplaces, accommodating Indigenous values can involve flexible scheduling for community obligations, space for ceremony, and cultural protocol training for non-Indigenous staff (Clear Seas Centre for Responsible Marine Shipping, 2023). Such adaptations support Indigenous employees and reduce culture shock for colleagues and employers.

THE RESULT – INNOVATION AND HOLISM

When Indigenous knowledge and values are fully integrated, the outcome is often innovative, community-driven, and ecologically grounded solutions.

The SmartICE project—"combining Inuit knowledge and observations with satellite images"—produced a community-specific sea-ice mapping service that neither Western science nor Inuit knowledge alone could achieve (SmartICE, 2022). It operates "in the spirit of self-determination," ensuring solutions are created by and for the community (SmartICE, 2021).

Similarly, fisheries co-management that uses both Indigenous and scientific knowledge has led to more robust stock assessments and adaptability—for example, integrating Indigenous observations of spawning and migration patterns (WWF Canada, 2018).

From a values perspective, Indigenous participation often brings long-term, intergenerational thinking to organizations. Indigenous employees and leaders frequently raise sustainability or community impacts, improving corporate decision-making (International Funders for Indigenous Peoples, 2019).

CHALLENGES AND UNDERUTILIZATION

Despite impressive progress, Indigenous knowledge and governance remain underutilized. Indigenous law is not always respected in ocean development decisions, and traditional knowledge holders may be consulted late or superficially (ITK, 2019; ICC, 2020). Many scientific institutions still struggle with validating Indigenous knowledge outside Western epistemologies (Huntington, 2011).

Overcoming these challenges requires deeper partnership, earlier engagement, and structural shifts that position Indigenous Peoples as co-leaders, not stakeholders.

CONCLUSION

Integrating Indigenous knowledge, governance, and values enriches ocean-sector work by creating culturally resonant, ecologically sustainable, and community-aligned practices. Recognizing Indigenous expertise transforms ocean roles from merely technical work into stewardship rooted in responsibility and reciprocity. The next sections address how training and credentialing systems can further support this integration—through accessible, culturally grounded pathways (Sections 5 and 6), digital learning (Section 7), and more inclusive recognition of Indigenous skills and knowledge (Section 8).

5. ACCESSIBILITY AND CULTURAL RELEVANCE OF TRAINING & DESIGNATION PATHWAYS

For Indigenous peoples to enter ocean-related careers, the training, education, and certification pathways must be both accessible (removing practical barriers) and culturally relevant (resonating with Indigenous learners' contexts and values). Many traditional training programs—such as marine colleges, fisheries certification courses, or university programs in marine science—were not designed with Indigenous participation in mind, leading to lower enrollment and completion by Indigenous students (NIFI, 2018; Clear Seas, 2023). This section explores how those pathways can be improved, including persistent barriers in training access and promising practices to enhance cultural relevance.

BARRIERS IN TRAINING ACCESS

Some of these have been touched on earlier, but to recap in the context of training and credentials:

- **Location & Delivery:** A major issue is the distance of training institutions from Indigenous communities. For example, a young person from a Nunatsiavut village who wants to get a Bridge Watch Rating might have to travel to St. John's or Halifax for months. That distance can be alienating and logistically difficult (e.g., leaving dependents behind, adapting to a city). Even within provinces, coastal Indigenous communities (like in Haida Gwaii or remote Nova Scotia) are far from campuses. If training is only offered in urban centers, many potential trainees opt out (Clear Seas, 2023). A solution to this barrier is bringing training to the communities or closer to them. This can mean establishing regional training centers in Indigenous territories (like WAMTC in NWT, or a proposed marine training satellite in Nunavut) and using mobile training units/satellite classes. The Clear Seas pilot found that "training needs to reach Indigenous individuals not only in urban areas, but also in their communities" as a first lesson (Clear Seas, 2023). Modular courses and community-based delivery significantly improve access.

- **Cost & Requirements:** Financial constraints (tuition, fees, travel) and strict prerequisites (diplomas, prior courses) have deterred many Indigenous learners from even applying to training programs (NIFI, 2018; TC, 2023). Some communities have lower high school graduation rates due to systemic inequities; requiring a Grade 12 diploma automatically filters out youth who could excel if given a chance. A solution is flexible admission criteria and preparatory courses. For instance, NSCC's A'paqt Marine Program realized that providing a free preparatory semester for Indigenous entrants helped those without strong academic backgrounds gain confidence and meet entry standards (NSCC, 2021). Stakeholders recommend alternatives like "challenge exams" or conditional admissions where students can make up requirements during training. As for cost, targeted bursaries like Transport Canada's Marine Training Program (MTP) remove a huge barrier by offering full coverage of tuition, travel, PPE, and stipends (TC, 2023; OPP, 2023). Community-run training often comes at no cost to participants (funded through agreements or grants), which is ideal to maximize accessibility.

- **Navigating Bureaucracy:** The administrative process of enrolling in courses, applying for certifications, or dealing with agencies (e.g., Transport Canada) can be complex. Indigenous participants from remote areas may lack experience dealing with these bureaucracies or face slow communications. Clear Seas notes "bureaucratic barriers such as complex administrative processes, medical certificates, high school requirements… not easily available in-home communities" (Clear Seas, 2023). A solution is providing navigational support—essentially, concierge or coordinator services. Some programs now have dedicated Indigenous student support officers who help with paperwork, obtaining necessary ID or medical exams, and liaising with regulators (NIFI, 2018). Bringing services directly to communities—such as on-site Transport Canada exams or group marine medicals—has been identified as a best practice (NIFI, 2018; TC, 2023). Industry experts further recommend "flexible education pathways … without traditional high school diplomas" and simplified processes, such as block enrollment for entire community cohorts (NIFI, 2018).

- **Cultural & Social Barriers:** The lack of cultural relevance itself can be a barrier – Indigenous learners may not see themselves reflected in curriculum or instructors, which can impact their engagement and retention (Greenwood et al., 2018; Truth and Reconciliation Commission of Canada, 2015). If training content ignores Indigenous context (for example, teaching only using southern Canada examples, or not acknowledging Indigenous fishing rights in a fisheries course), students feel alienated (NIFI, 2018). A solution to this barrier is integrating cultural content and hire Indigenous instructors when possible (Coastal First Nations Stewardship Network, 2020). The STTP case showed how having an Elder teach leadership, or using real examples from Indigenous territory, made the program culturally relevant (Coastal First Nations Stewardship Network, 2020). Cultural relevance can also mean scheduling around important community times (e.g., not forcing training during hunting or fishing seasons when students need to be home) (Wilson & Inkster, 2018). Many Indigenous communities prefer "land-based" or "on-the-water" training methods to classroom-only – aligning with learning by doing (Bartlett, Marshall, & Marshall, 2012). We discuss delivery format more in Section 6 but suffice it to say that weaving cultural practice (smudges, circle dialogue, traditional teaching styles) into mainstream training is a powerful way to make Indigenous learners feel respected and increase success (Canadian Council on Learning, 2009).

Given these barriers, there have been a number of government and organizational strategies to improve accessibility and relevance:

- **Government Strategies:** Fisheries and Oceans Canada (DFO) conducted an Indigenous Program Review which recommended securing "a long-term source of funding to augment training and skills development" for Indigenous communities beyond what core programs support (National Indigenous Fisheries Institute [NIFI], 2018). This led to initiatives like the Indigenous Training & Skills Development (ITSD) program, which explored gaps and suggested better coordination of training across DFO's various Indigenous programs (NIFI, 2018). One outcome was to standardize certain training resources (e.g., developing modular training for AAROM aquatic managers across the country) and to invest in training coordination – essentially having staff whose job is to help Indigenous program participants plan career progression and find training (AAROM, 2020). At a higher level, federal strategies under the Oceans Protection Plan and others explicitly fund projects to reduce barriers (Transport Canada, 2023). The Marine Training Program (MTP) renewal in 2023 is a prime example: it funds colleges to "remove barriers and encourage Indigenous (and women) students to succeed in the marine industry," with performance metrics around how many get employed (Transport Canada, 2023). The MTP's emphasis on foundational training and financial support is now part of how participating colleges operate, essentially institutionalizing accessibility measures (Transport Canada, 2023).

- **Indigenous Organizations and Agreements:** Many Indigenous nations negotiate training funds within impact benefit agreements or through programs like the Aboriginal Skills and Employment Training Strategy (ASETS, now ISET) (Employment and Social Development Canada, 2019). For ocean sectors, some nations have created their own training arms. For instance, the Mi'kmaw Native Friendship Centre in Halifax runs the Keknu'tmasiek Blue Economy project focusing on training urban Indigenous youth in ocean tech and science (Mi'kmaw Native Friendship Centre, 2022). The National Indigenous Fisheries Institute (NIFI) has also been instrumental; their projects often compile community feedback on training needs (NIFI, 2018). In one summary, NIFI observed that while DFO programs trained hundreds of Indigenous people over years, sustaining "meaningful employment and career progression" needed more tools and support than were available (NIFI, 2018). Their work led to recommendations for things like mentorship networks, more advanced training (not just entry level), and diversification (training for roles beyond just fishing, like in marine policy, conservation, or the blue economy) (NIFI, 2018).

- **Culturally-Based Curriculum Examples:** The BEAHR program (Building Environmental Aboriginal Human Resources) by ECO Canada is a noteworthy model in the environmental sector that is applicable to oceans (ECO Canada, 2021). BEAHR develops short vocational courses (e.g. Environmental Monitoring, Local Environmental Coordinator) in partnership with Indigenous communities. These courses "weave Indigenous and Western perspectives" and are often taught locally by Indigenous trainers and are tailored to community projects (ECO Canada, 2021). Graduates get certificates that help them into entry-level jobs or as a stepping stone to further education. Adapting this model to marine topics (like a BEAHR course for Marine Stewardship or Ocean Resources) could increase cultural relevance. In fact, coastal BEAHR programs have included content on traditional marine use (ECO Canada, 2021). This shows the potential of co-designing curriculum: when communities help create the course, they ensure it's relevant and respectful (ECO Canada, 2021).

- **Inclusive Credentialing Approaches:** Cultural relevance also extends to how credentials are awarded. Some programs have experimented with recognizing Indigenous learning milestones. For example, a training program might issue digital badges for skills like "Traditional Boat Handling" or "Cultural Protocols in Marine Monitoring" alongside conventional certificates (see Indigenous Learning Recognition models in Rickard et al., 2020; Global Affairs Canada, 2022). While not widely adopted yet, this kind of dual recognition values Indigenous knowledge as a skill in its own right. A concrete inclusive practice is granting academic credit for learning Indigenous knowledge – Vancouver Island University, for instance, gives some credit in the STTP for the cultural components, which count toward a stewardship credential (Vancouver Island University, 2020; Coastal First Nations, 2021). That sends a message that Indigenous learning has parity with academic learning.

- **Making Designation Pathways Welcoming:** "Designation pathways" refers to certification processes (like getting one's fishing master ticket, or a biology degree, or a scuba diving certification). To be welcoming, agencies need to consider Indigenous circumstances. One idea raised in community dialogues is having exam preparatory sessions specifically for Indigenous candidates, possibly in their language (National Indigenous Fisheries Institute, 2018; Transport Canada, 2023). Also, increasing the number of Indigenous examiners or board members in bodies like Transport Canada and certification bodies can help. If an Indigenous mariner goes for an oral exam and sees an Indigenous examiner, it immediately reduces anxiety and sense of bias. Some progress: Transport Canada in recent years has hired Indigenous liaison officers in the Coast Guard College and has offered exam mentorship to MTP students (Transport Canada, 2023).

- **Respect and Visibility:** Including Indigenous symbols and language in graduation ceremonies or documents. Small things like that signal inclusion (Coastal First Nations, 2021; Vancouver Island University, 2020).

In summary, making training and credentialing pathways accessible and culturally relevant involves removing practical hurdles (through local delivery, financial and admin support, flexible criteria) and embedding culture and community (through co-designed curriculum, Indigenous instructors/mentors, and valuing Indigenous knowledge). When done right, these changes not only help Indigenous learners succeed, but they tend to improve the programs for everyone by adding new perspectives and supports. The next section will discuss preferred training delivery formats (land-based, in-community, digital) and supports needed by Indigenous learners, which overlaps with this but goes into the how of training implementation.

6. TRAINING DELIVERY PREFERENCES, SUPPORTS NEEDED, AND MODELS

Indigenous learners often have distinct preferences for how training is delivered, based on community context, learning styles, and responsibilities. Understanding these preferences is crucial to designing programs that Indigenous people will enroll in and complete. Additionally, certain supports (beyond the standard academic supports) are important for Indigenous learner success. This section outlines the preferred formats – such as land-based learning, in-community programs, and the role of digital tools – and describes effective support models like mentorship, financial aid, and family/community engagement.

LAND-BASED AND EXPERIENTIAL LEARNING

A strong preference voiced in many Indigenous communities is for hands-on, land (or water)-based training as opposed to purely classroom instruction (e.g., Coastal First Nations, 2021; Clear Seas, 2021). This aligns with traditional Indigenous education, which is rooted in observing and doing in real environments (Battiste, 2017). In ocean-related fields, this could mean on-the-boat training, field trips to practice skills on the shore or ice and learning through direct experience under the guidance of knowledge keepers or experienced workers. For example, the guardians training on the BC coast incorporated field activities in every module – trainees conducted actual stream assessments, beach surveys, etc., in their territory, which reinforced learning in a tangible way (Coastal First Nations, 2021). Likewise, the Coastal Nations SAR program's success is partly due to immersive simulations on the water around their community (as opposed to just theory) (Canadian Coast Guard Auxiliary–Pacific, 2019).

Land-based learning is not only effective for skill acquisition but also culturally comfortable for many Indigenous students, who may find Western classroom settings intimidating or disconnected (Battiste, 2017; NIFI, 2018). Programs like the Indigenous Youth Marine Internship in Haida Gwaii pair youth with Elders to navigate traditional canoes and modern vessels, learning navigation by stars alongside GPS – blending old and new in an experiential manner (Council of the Haida Nation, 2020).

In some cases, land-based delivery is also practical: e.g., teaching cold-water survival by actually going out on the land/ice to build an emergency shelter or test a survival suit in the ocean. These experiences build confidence and muscle memory that a classroom can't. Indigenous participants often cite these as the highlight of programs and a reason they stayed engaged (Clear Seas, 2021; SmartICE, 2021).

IN-COMMUNITY DELIVERY

Closely related is the preference for training delivered in the community or region of the learners. When asked what formats work best, many Indigenous learners say that being able to learn at home or nearby – surrounded by family or fellow community members – is ideal (NIFI, 2018; Transport Canada, 2023). It reduces culture shock and homesickness and allows them to continue fulfilling roles (like child care or community events) while studying. In-community programs can also invite local Elders or experts as guest instructors, enhancing relevance (Coastal First Nations, 2021). The earlier example of the Western Arctic's mobile simulators for WAMTC is an innovation acknowledging this preference (WAMTC, 2023). Similarly, the Nunavut Marine Training Consortium historically would send instructors to smaller communities for short courses (like a two-week MED – Marine Emergency Duties – course in Inuktitut in a hamlet) (NFMTC, 2022). The modular approach mentioned in the guardians program – breaking training into blocks that can be delivered when and where convenient – is another way to achieve community-based delivery (Coastal First Nations & VIU, 2020). Even if the main program is at a central campus, many have started doing the initial or final portions back in community (for instance, having a graduation ceremony on-reserve, or starting with a one-week intro course on the land to build cohort rapport) (VIU, 2020).

In-community also fosters peer support: if multiple community members train together, they can help each other and are more likely to persist. This was a key in the STTP, where a cohort from various First Nations formed tight bonds – described as "strong family bonds" – that encouraged everyone to finish (Coastal First Nations, 2021). Compare that to an Indigenous person being the only one in a class of non-Indigenous peers in a faraway city – the latter scenario often sees individuals drop out due to isolation (NIFI, 2020).

DIGITAL AND REMOTE LEARNING

Digital learning formats (online courses, virtual classrooms, etc.) can be both an opportunity and a challenge. The question in the interview guide explicitly asks: if digital learning options were available, what topics or skills are most important or needed? We will address that more in Section 7, but here we note preferences around digital formats. Indigenous communities, especially in the North, have championed e-learning to overcome geography – for example, the University of the Arctic and other networks have long delivered courses via remote technology to Arctic communities (University of the Arctic, 2020). During the COVID-19 pandemic, many training programs pivoted to online. This revealed both potential and limitations: potential in that students could stay in their community and still attend a course offered hundreds of kilometers away; limitations in that many remote communities have bandwidth issues, and the absence of hands-on elements is a problem for practical skills (NIFI, 2020; ITK, 2021).

Indigenous learners often prefer a hybrid approach: some theoretical components can be done via e-learning (reducing time away from home), but they want in-person practical components to truly master the skill (Clear Seas, 2021). A Clear Seas article notes that marine training providers are seeking to offer "asynchronous learning, mobile, and virtual reality training delivery" options, but regulatory approval is needed for some of these innovations (Clear Seas, 2021). The interest in VR (virtual reality) training is noteworthy – VR simulations (e.g., ship simulators or virtual engine rooms) could theoretically allow students in a remote community to practice scenarios without traveling to a big simulator (Transport Canada, 2023). If regulators allow it, such technology might be very appealing to Indigenous communities with limited infrastructure. However, it's essential that digital content is culturally adapted (e.g., examples and case studies in the curriculum reflect Indigenous contexts) and that support is available (e.g., a local tutor or facilitator present even if the main instruction is via video) (Battiste, 2017; VIU, 2020).

MENTORSHIP AND ELDER SUPPORT

Among the supports needed, mentorship stands out. Indigenous learners benefit greatly from having mentors who understand their background. This could be formal mentorship (an experienced Indigenous person in the industry paired with a trainee) or informal (Elders encouraging youth, or an instructor taking extra time to guide a student).

The ICPP (Indigenous Career Pivot Program) emphasizes "wraparound support, including cultural & professional career coaching", acknowledging that mentorship through the transition into a new field is key (Canada's Ocean Supercluster, 2022). Similarly, programs like SmartICE have youth mentored by elders on the ice knowledge side and by technicians on the tech side (SmartICE, 2021). In many communities, having a local point person (like a training coordinator who is from the community) can act as a mentor/coach for multiple students (NIFI, 2018).

Another support often mentioned is peer support networks. If Indigenous students form a cohort, or even an online group if dispersed, they can share experiences and coping strategies (like dealing with racism in class, or balancing studies and community duties). Some initiatives have created Indigenous student/alumni groups on social media for this purpose (Clear Seas, 2021; Coastal First Nations, 2021).

FINANCIAL AND LOGISTICAL SUPPORTS

These include things we touched on – stipends, travel expenses, childcare if needed, counseling services, etc. One support that emerges specifically for remote northern trainees is help with things like getting a medical certificate (which is required for many marine jobs). As Clear Seas noted, collaboration is needed to "provide access to healthcare providers for medical certificates" in or near communities (Clear Seas, 2021). Without that, a trainee might have to fly to a city just for a doctor's sign-off. Supports can mean partnering with local clinics or flying doctors into communities as part of training (Transport Canada, 2023; NIFI, 2018).

FAMILY AND COMMUNITY ENGAGEMENT

Indigenous learners often succeed when their family and community are behind them. Therefore, effective models frequently involve the community in the training process. For example, some programs hold an orientation feast or ceremony where families are invited, so they understand what the student will be doing and can encourage them (Coastal First Nations, 2021; VIU, 2020). Or, as NSCC's facilitator noted, "we're helping people to see themselves in the industry" including their families – indicating that changing perceptions among parents/elders that these careers are viable is part of the job (NSCC, 2022). Community celebration of achievements (like the WAMTC graduation with leaders attending) also bolsters support (WAMTC, 2023). Traditional community values mean many Indigenous students feel obligated to family; programs that allow them to maintain those ties (via flexible scheduling or by including family in some activities) will reduce the attrition that happens when students feel they're neglecting family to study (Battiste, 2017; ITK, 2021).

EXAMPLES OF EFFECTIVE MODELS INCORPORATING SUPPORTS

We have already described many under previous themes, but to highlight:

- **The Indigenous Career Pivot Program (ICPP)** provided each participant not only a work placement but also ongoing coaching, an Indigenous mentor, and cohort check-ins. This wraparound approach led to success stories (participants stayed in their new careers after the program) (Ocean Supercluster, 2021; Clear Seas, 2021).
- **The Marine Training Program (MTP)** at NSCC (A'paqt) proactively identified common barriers and addressed them (foundation courses, bursaries, daily allowances). They also had an Indigenous support staff (Tracy) working closely with students. The result was many first-time Indigenous seafarers emerging from NSCC (NSCC, 2022; Transport Canada, 2023).
- **The Guardian Stewardship Training (STTP)** had a built-in support network by training a cohort together over two years; they met periodically rather than all at once, allowing them to return home in between (reducing burnout and home-sickness), and employed strategies like "peer-to-peer support and leadership" as a core design. Participants essentially formed a professional family that persisted into their jobs (Coastal First Nations, 2021; Vancouver Island University, 2020).
- **Digital Resource Hubs:** While not exactly a "training program," having accessible information is a support. The National Indigenous Fisheries Institute recommended an "accessible online platform to host information on DFO-CCG programs [and] training opportunities." This implies creating one-stop-shop websites where Indigenous individuals can easily learn what courses or jobs exist and how to get them, which addresses the lack of awareness barrier (NIFI, 2018).

ROLE OF WOMEN AND YOUTH

It's worth noting that within Indigenous communities, specific support may be needed for subgroups, e.g., youth who are leaving home for the first time to train, or women entering a male-dominated marine field (facing gender as well as cultural barriers). Some programs have tackled this by, for example, ensuring female mentors for female Indigenous trainees (since they might face distinct challenges, like sexism at sea) (Clear Seas, 2021; Ocean Supercluster, 2021). Similarly, programs targeting Indigenous youth might incorporate life skills training or confidence-building modules (knowing that residential school legacies and other trauma can affect confidence) (Battiste, 2017; ITK, 2021).

In conclusion, effective training delivery for Indigenous learners is flexible, community-engaged, and supportive. Land-based and in-community formats are preferred wherever possible, and digital tools are welcomed as supplements to overcome distance (but not as full replacements for hands-on learning) (Clear Seas, 2021; Transport Canada, 2023). A suite of supports – mentorship, financial aid, family engagement, counseling – forms the safety net that allows Indigenous learners to thrive in training (NIFI, 2018; Coastal First Nations, 2021). When these elements come together, we see significantly improved outcomes: higher completion rates, stronger skill mastery, and ultimately more Indigenous graduates moving into the ocean workforce (NSCC, 2022; WAMTC, 2023).

Next, we turn specifically to the topic of digital learning (Section 7), since it is a special area of interest for expanding reach, and then to recognition of Indigenous knowledge in credentials (Section 8) which ties into inclusive design of programs.

7. PRIORITY TOPICS OR SKILLS FOR DIGITAL LEARNING FORMATS

Digital learning – including online courses, webinars, virtual simulations, and other e-learning tools – offers a way to extend training to Indigenous learners who cannot easily attend in-person sessions. While it should complement, not replace, land-based learning (as discussed), it's valuable to identify which topics or skills are most suitable and in demand for digital delivery, especially in the ocean sector.

From the research and examples gathered, some priority areas for digital learning in Indigenous ocean training include the following.

- **Foundational Knowledge Courses:** Many communities express the need for basic introduction courses that can spark interest and prepare learners for advanced training. These could be delivered digitally. For example, an online "Introduction to Ocean Careers" or "Marine Safety Basics" course could be offered widely. ECO Canada's initiatives hint at this by promoting awareness of the diversity of ocean careers (ECO Canada, 2021). A digital module that outlines various ocean jobs, required skills, and how Indigenous knowledge applies could be very useful for high school students or those exploring options. This provides a stepping stone without requiring travel.

- **Safety and Compliance Training:** Certain certifications that are largely theory-based can be done online. For instance, Transport Canada's Marine Emergency Duties (MED) theory modules or Small Vessel Operator training could have online components (with practical parts later in person) (Transport Canada, 2023). An impact of COVID was that some previously in-person exams (like for Radio Operator Certificate) were moved online with remote proctoring (Clear Seas, 2021). Indigenous learners in far communities benefited from not having to fly out for a one-day class. Given the importance of safety in marine work, making these certifications accessible digitally is a priority. Additionally, courses on regulations, policy, and rights (like understanding fisheries regulations or Indigenous rights in marine contexts) could be delivered as online workshops, which might encourage community leaders or members who can't leave for long periods to participate (NIFI, 2018).

- **Environmental and Guardian Training Topics:** Digital platforms can deliver knowledge on topics such as marine ecology, climate change, and monitoring techniques. For example, modules on identifying species at risk, or using apps like SIKU (an Indigenous knowledge social platform for ice and wildlife monitoring), can be taught online (ITK, 2021; SmartICE, 2022). The Indigenous Guardians Toolkit website already provides digital resources on many stewardship topics for self-learning (Indigenous Guardians, 2020). It would be a small step to formalize some of those into online courses, e.g., "Remote Sensing and GIS for Indigenous Guardians" or "Water Quality Monitoring 101." In fact, Geographic Information Systems (GIS) skills are often requested by Indigenous communities for managing their ocean and land data, and these skills can be taught via online courses (with software access provided) (Coastal First Nations, 2021). Organizations like Coastal First Nations have used webinars for training community staff in data management when in-person wasn't possible.

- **Technology and Innovation Skills:** As the ocean economy becomes high-tech (drones, ROVs, software), digital learning can play a role in equipping Indigenous learners with those skills. For instance, an online course in drone operation basics for marine mapping, or coding for ocean sensors, could reach youth who are tech-savvy but remote (Ocean Supercluster, 2021). Given that the ICPP program encourages exploring tech roles and notes "Indigenous knowledge can guide tech design, use, and interpretation," providing digital upskilling in technology ensures Indigenous talent can enter those innovative fields. The priority might be on basic digital literacy, data analysis, and specific tools like marine navigation software, which translate well to an online teaching format (Clear Seas, 2021).

- **Cultural Knowledge Sharing via Digital Means:** Another angle is using digital platforms to teach aspects of Indigenous maritime culture that can complement formal training. For example, the earthlawcenter.org Indigenous Youth Ocean Ambassadors program (IYOC) uses online exchanges grounded in Indigenous law and traditional knowledge (Earth Law Center, 2020). A digital course could cover, say, "Indigenous Ocean Governance: Laws and Protocols" featuring knowledge holders from different regions sharing how they govern ocean space. This could be hugely empowering for Indigenous students and also accessible to non-Indigenous allies, fostering mutual learning.

- **Soft Skills and Professional Development:** Some topics like leadership, project management, or communication in a marine context could be taught through e-learning (ECO Canada, 2021). For instance, a webinar series on "Navigating the Workplace as an Indigenous Professional" could give tips on asserting cultural needs or dealing with common workplace issues, which would be valuable particularly for those about to start placements. ECO Canada's "Skills for Success" project (if any exists for green sector) might have digital modules that can be tailored to ocean careers.

- **Blended Learning and Virtual Reality:** As mentioned, training institutes consider VR to teach things like ship handling. If Transport Canada and others approve, future Indigenous cohorts might learn, for example, how to pilot a vessel in a simulated environment from their community school's computer lab. This could dramatically increase accessibility for complex skills (Transport Canada, 2023). Already, NSCC and BCIT were exploring simulators that could be controlled remotely or packaged in smaller units (NSCC, 2022).

- **Community-Led Content Creation:** An important aspect of digital learning in Indigenous contexts is to involve Indigenous instructors or content creators so that the materials reflect their perspective. E.g., recording an Elder explaining traditional ocean knowledge (with subtitles) as part of an online course would make it richer (Indigenous Guardians, 2020). Some communities have radio or TV that broadcast lessons; modern equivalent can be YouTube or podcasts. A "podcast series" on Indigenous ocean stories, for instance, while not a formal course, could disseminate knowledge widely and spark interest in formal training (ITK, 2021).

We should note that connectivity and digital equity issues persist – some remote northern communities have limited bandwidth. So, for digital learning to truly reach them, investments in internet infrastructure or offline learning options (like pre-loaded tablets with course content) are needed (SmartICE, 2022). There have been projects addressing this, like providing satellite internet to Arctic learning centers.

In summary, priority topics for digital formats revolve around foundational knowledge, safety/regulatory training, technical skills like GIS or drone usage, and any content where theory can be separated from practice to reduce travel. Ensuring these digital offerings are culturally adapted and available in the right languages (English, French, and potentially Indigenous languages for key terms) will make them more effective. The next section addresses how formal credentialing systems can recognize Indigenous knowledge and inclusive design, which ties back into how both training and digital content are structured.

8. RECOGNITION OF INDIGENOUS KNOWLEDGE IN CREDENTIALING SYSTEMS AND INCLUSIVE PROGRAM DESIGN

A critical issue for inclusion is how Indigenous knowledge, skills, and learning styles are recognized – or often not recognized – in mainstream credentialing systems. Standard certification and education programs typically value Western, formal modes of learning (classroom hours, written exams, degrees). This can disadvantage Indigenous learners and devalue the competencies they bring from their cultural background (TRC, 2015; Universities Canada, 2019). Inclusive program design means restructuring applications, curricula, and assessment to welcome Indigenous participants and give credit to their knowledge. Here's how that is unfolding and what more can be done.

INCLUSIVE ADMISSIONS AND RECOGNITION OF PRIOR LEARNING

One aspect is acknowledging Indigenous knowledge/experience during admission or credential evaluation. Some institutions now allow Recognition of Prior Learning (RPL) for Indigenous candidates – for example, a person who has spent a lifetime fishing and navigating their territory might challenge portions of a nautical training course, receiving credit for skills already mastered (Universities Canada, 2019). Similarly, universities might grant credits for Indigenous language fluency or traditional ecological knowledge courses, counting them toward a diploma (Bartlett et al., 2012). The guardians' training program ensured university accreditation for its cultural courses, effectively bridging Indigenous learning with formal recognition (VIU & Coastal First Nations, 2021). This is a model others can follow: build Indigenous knowledge components into programs and make them credit-bearing.

Another approach is adjusting entry criteria: e.g., considering an Elder's endorsement or community leadership experience as equivalent to certain prerequisites (NIFI, 2018). Inclusive design asks, why should a mainland high school Physics 12 count, but not years of operating a boat in Arctic ice? If someone can demonstrate competency (even via an oral assessment or portfolio of experience), systems should certify that.

Transport Canada and other bodies have started baby steps – for instance, in some cases waiving certain sea-time requirements if a candidate has significant relevant traditional boating experience (though this is often case-by-case) (Transport Canada, 2023). To institutionalize recognition, policy changes are needed.

CULTURALLY RELEVANT ASSESSMENT METHODS

Indigenous learners often have different strengths; oral tradition cultures may excel in verbal demonstration or practical demonstration of knowledge rather than written tests (Battiste, 2013). Inclusive programs incorporate alternative assessment methods: oral exams, group evaluations, or practical demonstrations in a familiar environment (Bartlett et al., 2012).

The STTP program's success was partly due to not relying solely on written tests; it integrated observation by instructors of skills in the field and allowed discussion-based evaluations, aligning with Indigenous oral learning styles (VIU & Coastal First Nations, 2021). For credentials, this might mean advocating to regulators to allow oral exams (with perhaps an Elder present to support) for certain maritime certifications, rather than only written tests in technical English which ESL/EAL Indigenous learners struggle with (Clear Seas, 2021).

DESIGN OF APPLICATION PROCESSES

The interview guide asks, "What would make application or credentialing processes more welcoming or fair?" Many Indigenous respondents might say: simpler language, relationships over paperwork, and involvement of Indigenous people in the process (NIFI, 2018). For example, lengthy online forms in bureaucratic language deter people. Some inclusive practices:

- Providing application instructions in plain language and potentially translated or explained in Indigenous languages by a community liaison (ITK, 2021).
- Having a contact person (ideally Indigenous) whom applicants can call for help (not just a faceless form) (ECO Canada, 2021).
- Guaranteeing a set number of spots for Indigenous candidates in programs (affirmative measures) so they aren't competing in a system that has historically excluded them (Universities Canada, 2019).
- Allowing community references (like a band council reference) in lieu of certain documents (NIFI, 2018).

Also, including an acknowledgment of Indigenous identity as part of the application (and assuring it's used to support, not discriminate) can make someone feel seen. Some scholarships now have a section asking if you are Indigenous and if you'd like to share anything about that – giving space to mention their community or cultural involvement, which then is considered positively in the evaluation (TRC, 2015).

CREDENTIALING BODIES AND INDIGENOUS INCLUSION

Bodies like professional associations or Transport Canada need to integrate Indigenous perspectives. One concrete change: including Indigenous representatives on boards that set competencies or exam standards (TRC, 2015). This ensures the lens of what is considered "qualified" broadens. For instance, if an Indigenous knowledge holder sat on a marine certification board, they might push for inclusion of questions about traditional navigation or environmental stewardship on exams – validating that knowledge as part of being a good mariner.

There are some moves toward this. The Canadian Navigable Waters Act now recognizes that protecting waterways includes consulting Indigenous peoples (Transport Canada, 2023). In training, the Canadian Coast Guard College has an Indigenous advisor and started incorporating some Indigenous history content in its officer training (CCG College, 2022).

Programs explicitly recognizing Indigenous skills: The new Indigenous Marine Career Advancement Program (IMCAP) by Clear Seas lists among participant benefits: "Respect and Recognition of Indigenous Knowledge and Perspectives" and ensures "culturally safe wrap-around supports" (Clear Seas, 2024). By stating that upfront, the program signals that an Indigenous participant's existing knowledge (say of local waters or cultural protocols) will be valued as an asset, not ignored. This could manifest in tailoring training plans to build on what the person already knows from their community. It's a good practice for any program: do an initial skills inventory that includes Indigenous knowledge (NIFI, 2018).

CREATING NEW CREDENTIALS

In some cases, the solution might be to create new kinds of credentials that bridge Indigenous and Western systems. For example, an "Indigenous Guardians Certificate" co-issued by a college and a Tribal Council, which includes validation by Elders and meets certain provincial standards (Indigenous Guardians, 2020). This dual stamping would carry weight in both worlds.

Another idea is micro-credentials for specific Indigenous knowledge elements – like a badge in "Two-Eyed Seeing in Marine Science" – that professionals can earn to demonstrate they've learned how to integrate both knowledge systems (Bartlett et al., 2012). While this doesn't replace formal degrees, it adds to the currency of Indigenous knowledge in resumes and hiring.

INCLUSIVE PROGRAM DESIGN FROM THE START

Ultimately, making programs inclusive is easiest when Indigenous people help design them from the beginning. Co-design means the curriculum, teaching methods, and evaluation criteria incorporate Indigenous perspectives (ECO Canada, 2021; NIFI, 2018). We've seen that in STTP and other examples.

The advice from VIU's Indigenous coordinator was to secure development funding to infuse "cultural knowledge and content strongly into each course topic" and give instructors time to adapt to Indigenous students (VIU & Coastal First Nations, 2021). That is golden advice: it requires planning and resources but leads to a program where Indigenous ways are baked in, not an afterthought.

Inclusive design also entails consultation with communities on what the training should achieve. For instance, ask an Indigenous community: what do you want your youth to get out of a marine training program? They might say, "Yes, we want them to get a job, but also we want them to learn about our treaties and rights related to fishing." A truly inclusive curriculum would then include a module on Indigenous rights in the ocean sector – knowledge that's empowering for Indigenous students, but often not covered in standard programs (ITK, 2021; TRC, 2015).

Imagine a fisheries officer training that includes learning about the Marshall Decision (affirming Mi'kmaq fishing rights) – an Indigenous student would feel seen, and non-Indigenous students also become better officers by understanding that context (NIFI, 2018).

WELCOMING CREDENTIALING PROCESSES

Simple gestures can make credentialing more welcoming. For instance, when delivering certificates or diplomas, including the Indigenous nation's flag or motif on the certificate if the graduate is Indigenous (with permission) – similar to how universities now offer convocations with Indigenous elements (Universities Canada, 2019). Or giving Indigenous grads both an English and an Indigenous language version of the certificate title, if applicable (Indigenous Guardians, 2020). These things show respect.

From a fairness perspective, it also means removing systemic biases – e.g., if a test references things an Indigenous person in a remote area wouldn't know due to different life experiences, that's a bias (Battiste, 2013). Inclusive design would review and eliminate such biases.

Finally, inclusive design and credential recognition tie back to Reconciliation. It is about leveling the playing field without forcing assimilation. The TRC Call to Action 92 emphasizes that industries and education bodies must adjust their systems to be equitable (TRC, 2015). That means validating Indigenous forms of knowledge transmission (like apprenticeships under an Elder could count as training hours, etc.).

To conclude this section, there is momentum building for recognizing Indigenous knowledge formally. Some universities have started granting honorary degrees to knowledge keepers, and a few have programs like UVic's Indigenous Law degree where learning Indigenous law is accredited just like common law (Universities Canada, 2019). In the ocean sphere, we might foresee similar innovations – such as an accredited program in Indigenous Marine Resource Management. The key is partnerships: when Indigenous organizations partner with accrediting bodies, they can push these changes. The success of inclusive models to date suggests that when Indigenous knowledge is recognized and integrated, Indigenous learners excel and the whole sector benefits from the depth and innovation it brings. Credentialing processes that are welcoming and fair will see more Indigenous applicants, helping to diversify and strengthen Canada's ocean workforce for the future.

CLOSING THOUGHTS

Indigenous participation in Canada's ocean workforce is not simply a matter of training more individuals for existing jobs; it is about transforming the ocean sector to be more inclusive, culturally grounded, and mutually beneficial for Indigenous peoples and the broader blue economy (TRC, 2015; IFIP, 2020). This research synthesis has explored how Indigenous communities define meaningful ocean work – work that aligns with stewardship values, supports community well-being, and respects cultural identity (NIFI, 2018; Indigenous Guardians, 2020). It has identified key barriers that must be addressed, from geographic and financial hurdles to the need for cultural safety and trust-building (Clear Seas, 2021; Transport Canada, 2023). Equally, it has highlighted enablers and promising models that point the way forward: Indigenous-led training programs, co-management arrangements that create new roles, funding strategies that remove access barriers, and curricula that embrace Indigenous knowledge (VIU & Coastal First Nations, 2021; Ocean Supercluster, 2022; ECO Canada, 2021).

A thread running through all themes is the importance of relationship and reciprocity. When Indigenous communities are genuine partners in designing workforce initiatives, the outcomes are more successful and sustainable (Bartlett et al., 2012; NIFI, 2018). The ocean sector stands to gain enormously from Indigenous leadership – as guardians, as innovators, as managers – given Indigenous peoples' deep connections and unique perspectives on the marine environment (Indigenous Guardians, 2020; IFIP, 2020). Progress is evident in examples like the guardian programs, the Indigenous Career Pivot and Advancement projects, and expanded marine training in the North and East (Ocean Supercluster, 2022; Transport Canada, 2023). Yet, gaps remain to be filled. Training pathways need continued reform to be welcoming and flexible; digital tools should be leveraged to reach remote learners with relevant content; and critically, the recognition of Indigenous knowledge and credentials must move from token gestures to systemic integration (Universities Canada, 2019; Clear Seas, 2024).

For policymakers, supporting Indigenous participation means investing in community-driven solutions – funding Indigenous organizations to lead training and stewardship, and aligning government programs with Indigenous priorities (ITK, 2021; TRC, 2015). For industry, it means committing to long-term relationship-building, workplace cultural change, and seeing Indigenous talent as an asset that brings creativity and resilience (IFIP, 2020; Clear Seas, 2021). For educational institutions, it involves decolonizing curriculum and assessment and creating spaces where Indigenous students see themselves reflected and respected (Battiste, 2013; ECO Canada, 2021).

In conclusion, achieving a truly inclusive ocean workforce in Canada is integral to reconciliation and to the sustainability of our ocean industries (TRC, 2015). As one Indigenous leader put it, it's not just about "including Indigenous peoples" in the existing system but re-shaping the system to include Indigenous ways of knowing and being (Indigenous Guardians, 2020). By following the insights and examples gathered – valuing meaningful work as defined by communities, removing barriers through targeted supports, scaling up Indigenous-led models, honoring Indigenous knowledge in every credential and job – Canada can build an ocean workforce that is diverse, skilled, and grounded in the strengths of all its peoples. This national scan underscores that the knowledge, voices, and aspirations of Indigenous communities are pathways to a more innovative, equitable, and sustainable ocean future (IFIP, 2020; NIFI, 2018).

Conclusion & Recommendations

4.1 Conclusion

The Ocean Pathways 2.0 initiative has provided a timely and in-depth look at the aspirations, challenges, and opportunities that shape Indigenous participation in Canada's ocean sector. Through engagement with Indigenous individuals from the Maritimes and Northern Canada, and a comprehensive review of national and regional sources, the project has surfaced clear and consistent messages. Indigenous peoples bring valuable knowledge systems, stewardship values, and lived experiences to the ocean economy. However, they continue to face systemic and structural barriers—geographical, financial, cultural, and institutional—that limit access to ocean-sector training and employment.

Participants emphasized that meaningful work in the ocean sector must be rooted in community benefit, environmental responsibility, and recognition of Indigenous knowledge and leadership. They also stressed the importance of youth engagement, culturally relevant training formats, and opportunities that allow individuals to remain connected to their communities and territories. The environmental scan confirmed and contextualized these findings within broader policy and program landscapes, showing that while some promising efforts are underway, substantial gaps persist.

Ultimately, the findings of Ocean Pathways 2.0 highlight the need to rethink how workforce development in the ocean sector is conceived and delivered. For Indigenous peoples, "workforce development" is not just about preparing individuals for jobs; it is about supporting self-determination, restoring intergenerational knowledge, and building the capacity of communities to care for their lands and waters. If done right, investment in Indigenous ocean careers can serve both economic and reconciliation goals.

4.2 Recommendations

Based on the interviews, literature review, and environmental scan, the following recommendations are offered to guide ECO Canada, Ocean Alliance Canada, and their partners in creating more inclusive, relevant, and effective workforce strategies:

1. Develop Culturally Grounded, Community-Based Training Programs

- Deliver training in Indigenous communities whenever possible, using land and water-based learning approaches.
- Combine classroom theory with hands-on practice and culturally rooted activities (e.g., language, storytelling, ceremony).
- Collaborate with Indigenous educators, Elders, and organizations to design and deliver training content.

2. Increase Recognition of Indigenous Knowledge and Skills

- Build pathways for credential recognition that acknowledge lived experience, community-based learning, and traditional knowledge.
- Include Elders and knowledge holders as instructors, mentors, and evaluators in training programs and credentialing processes.

3. Address Structural Barriers to Participation

- Expand financial supports for Indigenous learners (e.g., tuition, travel, housing, gear).
- Create flexible training schedules and formats to accommodate intergenerational responsibilities and rural realities.
- Provide clear, simple information on how to access training and employment, and offer support with applications.

4. Strengthen Mentorship and Youth Engagement

- Develop mentorship programs that pair Indigenous youth and early-career workers with experienced mentors, ideally within their communities or networks.
- Engage youth through culturally relevant early exposure (e.g., school presentations, local career fairs, youth land camps).

5. Invest in Inclusive Outreach and Relationship Building

- Build long-term relationships with Indigenous communities based on trust, transparency, and shared benefit.
- Promote Indigenous success stories and role models in the ocean sector.
- Ensure all recruitment and outreach materials are accessible, culturally appropriate, and available in Indigenous languages where possible.

6. Support Indigenous Leadership in Governance and Program Design

- Include Indigenous Nations and organizations as equal partners in program governance, curriculum development, and policy design.
- Respect and uphold Indigenous rights, titles, and treaties in all ocean-sector initiatives and collaborations.

7. Develop Digital Learning with Community Input

- Co-design digital learning platforms with Indigenous users to ensure accessibility, relevance, and cultural safety.
- Prioritize digital content on foundational ocean topics, environmental stewardship, marine safety, and sector-specific skills identified by Indigenous communities.

8. Monitor, Evaluate, and Adapt

- Create ongoing feedback mechanisms with Indigenous participants and communities to evaluate program effectiveness.
- Use evaluation findings to improve and adapt training pathways, ensuring they remain responsive to Indigenous priorities and lived realities.

Appendix A: Reference List

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