

INDIGENOUS ENGAGEMENT STRATEGY

Prepared for the Basin-scale Events and Coastal Impacts of the North Pacific
Marine Science Organization (PICES)

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April 2025

POSITIONALITY STATEMENT

This Strategy was produced in April 2025 by Dr. Fiona Beaty for the Basin-scale Events and Coastal Impacts (BECI) initiative of the North Pacific Marine Science Organization (PICES).

I, Fiona Beaty, am a third-generation, Euro-descendent settler in the Skwxwú7mesh Úxwumixw's (Squamish Nation) territory. My institutional education is grounded in western scientific methods, including natural and social sciences and community-based research, while my experiential learning is rooted in community and place-based stewardship, relational advocacy, and local governance. I have worked for just under a decade in service of Indigenous communities whose territories span British Columbia and the Salish Sea, supporting their research, marine planning, and stewardship objectives. I express deep gratitude toward these communities, particularly the Skwxwú7mesh Úxwumixw, for opening my eyes to understanding my place and identity in the world, alternative worldviews, and how to practice ethical and humble knowledge co-creation.

I have reflected upon my positionality during the creation of this Strategy to understand and be aware of how my biases as a white, upper-class, western science trained settler influence the Strategy's development and content. To the best of my ability, I have centered and synthesized resources, recommendations, and content produced by Indigenous organizations and individuals. Where appropriate, I have also brought forward recommendations from my work experience serving coastal Indigenous communities involved in marine planning and stewardship along the coast of British Columbia and in the Salish Sea. My geographic bias may result in perspectives and values of coastal Indigenous communities in California, Oregon, and Alaska being less centered in this Strategy – a bias that should be acknowledged and addressed if BECI conducts engagement with communities in those regions.

Importantly, this document is not intended to be prescriptive, and the content does not speak for individual or collective Indigenous communities. Rather, it provides guidance based on synthesis of resources and recommendations from Indigenous-led marine research and engagement initiatives. Any mistakes or misrepresentations of Indigenous perspectives and content are my own.

Suggested citation: Beaty F. 2025 Indigenous engagement strategy. Report prepared by Fiona Beaty for BECI - Basin-scale Events and Coastal Impacts.

EXECUTIVE SUMMARY

This Indigenous Engagement Strategy (hereafter ‘the Strategy’) provides a high-level roadmap to inform how BECI can approach meaningful engagement with coastal Indigenous communities during the design and implementation of the Ocean Knowledge Network.

Within the Strategy, coastal Indigenous communities include First Nations in B.C., Tribes in Washington, Oregon, and California, and Alaskan Natives.

Meaningful engagement refers to engagement processes between BECI and coastal Indigenous communities that are authentic, reciprocal, and relational. Meaningful engagement is essential to strive for when connecting with Indigenous communities as engagement done well can result in beneficial outcomes for groups involved, while engagement done poorly can result in harm and mistrust.

There is a long history of harm and exploitation of Indigenous communities and their knowledge by non-profit organizations under the auspices of research and science.

To reduce harm to Indigenous communities during BECI’s research and engagement processes and, instead, practice ethical collaboration, this Strategy synthesizes guiding principles, considerations, and approaches for meaningful engagement with Indigenous communities. This content draws directly upon lessons and guidance from Indigenous-led research and engagement protocols, frameworks, and partnerships.

The Strategy focuses on the following questions:

1. What are general principles and guidelines for meaningful engagement between coastal Indigenous communities and environmental non-profit organizations such as BECI?
2. How can BECI create an ethical space for effective knowledge sharing with coastal Indigenous communities via the Ocean Knowledge Network?
3. How can BECI and coastal Indigenous communities engage with each other to share knowledge, build trust, and create tools that serve climate change adaptation, marine conservation, fisheries, and marine management needs of coastal Indigenous communities?

The Strategy describes case studies of meaningful collaboration and partnerships across Indigenous and non-Indigenous organizations, and ends with potential engagement opportunities and tools (e.g., survey guide) associated with the Ocean Knowledge Network’s three programmatic pillars. The Strategy is not prescriptive and should be viewed as a starting resource that can educate BECI staff about ways to approach meaningful engagement with coastal Indigenous communities.

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GLOSSARY

1

Coastal Indigenous communities

This term is used throughout the Strategy to refer to Indigenous communities whose territories span the coastline from California to Alaska. This includes First Nations in British Columbia, Tribes in Washington, Oregon, and California, and Alaskan Natives.

2

Indigenous data sovereignty

The right of Indigenous peoples to govern the collection, ownership, and application of their own data (whether collected by Indigenous communities themselves or external agents), deriving from the inherent right of Indigenous Nations to govern their peoples, lands, and resources. Within international Indigenous rights frameworks, Indigenous data sovereignty is positioned as a collective right. IDS is not limited by geographic jurisdiction or digital form (Carroll et al., 2019)

3

Indigenous knowledge

A cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment. It is not separable from the knowledge holders/keepers or the environment in which it is embedded (Reid et al., 2021)

4

Western science

Knowledge generated following paradigms and methods typically associated with the 'scientific method' consolidated in post-Renaissance Europe on the basis of wider and more ancient roots. Some of its central tenets are observer independence, replicable findings, systematic scepticism, and transparent research methodologies with standard units and categories (IPBES, 2022)

INTRODUCTION

ABOUT BECI

The Basin-scale Events and Coastal Impacts (BECI) was co-developed by the North Pacific Marine Science Organization (PICES) and North Pacific Anadromous Fish Commission – non-governmental organizations that advance transboundary marine science and salmon conservation from the United States, Canada, Russia, South Korea, China, and Japan.

BECI's vision is to support transboundary collaboration and climate-smart decision-making associated with marine conservation and management (e.g., fisheries management) in the North Pacific. BECI's spatial scope is the North Pacific Ocean, including its marginal seas, high seas, continental shelf, and coastal areas.

THE NORTH PACIFIC OCEAN KNOWLEDGE NETWORK

The North Pacific Ocean Knowledge Network (hereafter 'the Network') is the focal project of this Indigenous Engagement Strategy. The Network's purpose is to connect organizations across the North Pacific to share and synthesize knowledge about climate change impacts on marine ecosystems (see [Table 1](#) for the Network's programmatic pillars). The first phase of the Network will focus on climate change impacts on salmon; however, over time the Network will expand to address other marine ecosystem priorities in the North Pacific Ocean.

Examples of tools and resources the Network will produce include:

- Interactive maps of research activities and environmental changes across the North Pacific
- Regular updates on ocean conditions and ecosystem changes
- Searchable catalogue of past climate events and their impacts
- Knowledge sharing platforms that respect different ways of knowing
- Network updates connecting people working on similar issues

The primary audiences that BECI aims to meaningfully engage with through the Network include coastal Indigenous communities, scientists, resource managers and conservation groups, and fishing industries and communities. Since the first phase of the Network is oriented at climate change impacts to salmon along the west coast of North America, the audiences for this Strategy are similarly scoped for this region of the North Pacific Ocean.

TABLE 1

The three programmatic pillars of the North Pacific Ocean Knowledge Network

UNDERSTANDING PAST CLIMATE EVENTS	CONNECTING CURRENT RESEARCH	BUILDING KNOWLEDGE FOR THE FUTURE
• Synthesize information on past climate events	• Map active research programs across regions	• Create clear summaries of projected ocean changes
• Document ecosystem responses to change	• Create a "who is doing what where" database	• Develop platforms for cross-organizational sharing
• Identify key indicators of change	• Connect researchers working on similar themes	• Support coordinated research approaches
• Compile and share research findings	• Share ongoing research through network updates	• Foster cross-regional research initiatives
• Create searchable catalogue of past events	• Facilitate cross-regional collaboration	• Identify emerging research priorities

STRATEGY PURPOSE

The purpose of this Indigenous Engagement Strategy (hereafter ‘the Strategy’) is to identify meaningful engagement opportunities between BECI and coastal Indigenous communities during the design and implementation of the Ocean Knowledge Network. This Strategy is scoped for the Network’s first phase, which involves synthesizing knowledge and fostering collaboration across organizations along the West coast of North America interested in how climate change is impacting Pacific salmon. Coastal Indigenous communities include First Nations in B.C., Tribes in Washington, Oregon, and California, and Alaskan Natives.

To support this purpose, the Strategy aims to inform the following questions:

1. What are general principles and guidelines for meaningful engagement between coastal Indigenous communities and environmental non-profit organizations such as BECI?
2. How can BECI create an ethical space for effective knowledge sharing with coastal Indigenous communities via the Ocean Knowledge Network?
3. How can BECI and coastal Indigenous communities engage with each other to share knowledge, build trust, and create tools that serve climate change adaptation, marine conservation, fisheries, and marine management needs of coastal Indigenous communities?

The Strategy will inform these questions by identifying the following components:

- Engagement motivations, principles, and considerations for non-profit and research organizations collaborating with coastal Indigenous communities;
- Engagement opportunities associated with the Network’s primary pillars (past, present, future);
- Case studies of meaningful engagement across Indigenous and non-Indigenous organizations involved in marine research in the North Pacific Ocean.

The principles and considerations articulated in this Strategy draw upon guidance, resources, and protocols produced by Indigenous communities and Indigenous-led partnerships. While general guidance is suggested, not every principle or recommendation will apply or be appropriate for individual Indigenous communities and contexts.

To avoid perpetuating the notion of pan-Indigeneity, ensure that the design and implementation of specific engagement activities follows the direction and protocols of Indigenous communities involved in the engagement.

WHAT IS ENGAGEMENT



MEANINGFUL ENGAGEMENT

Within the context of this Strategy, meaningful engagement refers to engagement processes between BECI and coastal Indigenous communities that are authentic, reciprocal, and relational. Meaningful engagement resists performative and tokenistic patterns and, instead, aims to generate outcomes that advance relationships, trust, and generate mutual benefits (Beaty et al., 2024a). Reciprocity is a core element to meaningful engagement as it references the need for engagement to involve a two-way flow of information, ideas, and relationship-building. This requires understanding how each group involved can mutually benefit from the engagement and relies on a foundation of trust.

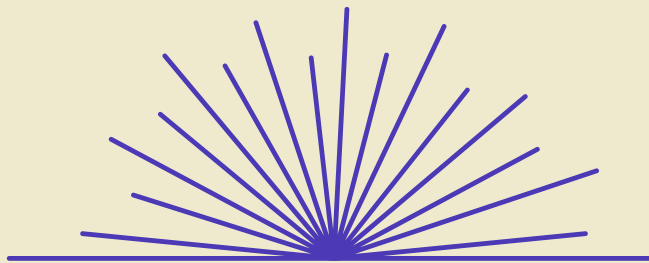
HISTORY OF HARM

It is critical to recognize that researchers and non-profit organizations have repeatedly harmed and exploited Indigenous communities by pursuing engagement and research that extracts Indigenous knowledge without consent to benefit the non-Indigenous organization, while providing little to no benefit, and often causing harm, to the Indigenous community (IRSI, 2018; Trisos et al., 2021; Whyte, 2020; Wong et al., 2020). Helicopter or parachute science is one example of this, where researchers parachute into a community with little to no prior engagement or relationships, extract knowledge, and then publish it without consent and without sharing any benefits back to the community whose knowledge, stories, and rights were infringed upon (de Vos and Schwartz, 2022).

To correct for historic wrongs, many research and non-profit organizations are now striving to engage more ethically with Indigenous communities. This is an important component of reconciliation; however, engagement without thoughtful consideration, reflection, and planning can perpetuate inequitable power dynamics and generate new challenges for Indigenous communities (Reed et al., 2023). For example, many Indigenous communities and members have severe engagement and interview fatigue, resulting from repeated inquiries and requests by external organizations for collaboration, engagement, and partnership (Kitasoo/Xai'xais Stewardship Authority, 2021).

To reduce harm and engagement fatigue, many Indigenous communities have developed engagement and research partnership protocols that outline how they want to engage with external groups (e.g., BRRIC, 2024; IRSI, 2018; Kitasoo/Xai'xais Stewardship Authority, 2021; UNBC, 2025). These guides should be reviewed prior to conducting any engagement with Indigenous communities.

The [References section](#) provides a fulsome list of recommended readings to support anticolonial, decolonial, and ethical research and engagement practices. This is a good starting point for BECI staff to review prior to conducting engagement.



FORMS OF ENGAGEMENT

Engagement can take many forms depending on the audience, objective, and context of the groups involved. For example, engagement between non-profit organizations and coastal Indigenous communities can range from self-orientation about organizational priorities and to the establishment of regular check-ins and collaborative relationships across staff from each organization to formalized collaborative partnerships (Pietri et al., 2013, [Table 2](#)). When done well, meaningful engagement across diverse organizations and communities can generate long-lasting relationships rooted in trust, equity and mutual understanding, and strengthen the quality, accuracy, and value of knowledge and resources for diverse users (e.g., [Box 1](#), Ban et al., 2018, 2017; Hatch et al., 2023).

SPECTRUM OF ENGAGEMENT

Table 2. Potential engagement activities based on a spectrum of engagement objectives identified by non-profit organizations and coastal Indigenous communities. The words 'community/communities' is used to reference coastal Indigenous communities within this table.

OBJECTIVE	ENGAGEMENT ACTIVITY
Understand the context of and existing priorities documented by coastal Indigenous communities	• Learn about the context and history of engagement that communities have had with environmental non-profit organizations through reviewing publicly available community-produced websites, grey literature, and publications • Learn about important places, species, values, and priorities by visiting community learning centers and museums, participate in local events where appropriate • Introduce non-profit and Indigenous organization staff and community members to start building relationships • Research community websites, learn language terms and concepts where appropriate • Understand non-profit organization's history (or lack) of engagement with coastal Indigenous communities. Understand lessons learned where appropriate and existing relationships • Identify self-education priorities of non-profit organization based on experience and lessons (see References section for reading list to support self-education) • Learn about and reference resources produced by community knowledge holders and departments

TABLE 2

OBJECTIVE	ENGAGEMENT ACTIVITY
Establish collaborative relationships across staff members from non-profit organization and coastal Indigenous community	• Ask and learn from community and staff members about their needs and priorities. Discuss research priorities, opportunities, and communication needs (see Engagement considerations section) • Orient non-profit staff members to community cultures where appropriate (e.g., language, cultural protocols), and understand interest by community members of learning from the non-profit organization (e.g., training opportunities) • Seek grants that support relationship-building by both groups involved (e.g., honoraria, stipends, training)
Establish collaborative engagement partnerships across non-profit organization and coastal Indigenous communities	• Where appropriate/desired, obtain funding for non-profit to hire community members/staff, and/or embed non-profit staff within community • Seek funding and engagement opportunities that support community-led research • Develop engagement protocol that outlines mutual needs, responsibilities, capacity, funding, principles of engagement (e.g., Memorandums of Understanding, data sharing agreements, partnership and protocol agreements)

BOX 1

Case study of meaningful engagement across coastal Indigenous communities, academics, researchers, and resource managers from Washington, British Columbia, and Alaska (Beaty, 2024).

The Clam Garden Network is a diverse community of First Nations, academics, researchers, and resource managers from coastal British Columbia, Washington State, and Alaska who are interested in the cultural and ecological importance of clam gardens and traditional clam management. They share ideas, research approaches, tools, and data to better inform knowledge about how people used intertidal resources and ecosystems.

The Clam Garden Network sees clam gardens as a compelling focal point for a series of linked current social issues, such as food security, First Nations governance, and inter-generational knowledge sharing. They seek to deepen knowledge through collaborations that cross communities, disciplines and borders with a hope of stimulating conversation and action that intentionally shifts power dynamics and supports Indigenous community self-determination and resurgence. Members of the Clam Garden Network take inspiration from the ancestors and communities who have been stewarding traditional mariculture practices and territories from Washington to Alaska for thousands of years.

Principles of engagement that have contributed toward the Clam Garden Network's success (understood as providing value to member communities) include **centering cultural stewardship and Indigenous self-determination, moving at the speed of trust, and being thoughtful, creative, and inclusive**. The Clam Garden Network members understand the need to take time to slowly cultivate respectful, reciprocal, and long-term relationships – and the importance of having fun while doing so!

The Clam Garden Network is a fantastic example of a network process that brings together Indigenous and Western science through trust-based relationships. The Clam Garden Network upholds both knowledge systems and values their expertise, while acknowledging the disruption that colonialism and settler societies have brought to clam gardens and the relationships that sustain them. The Clam Garden Network is also contributing to the revival of language and cultural practices, enhancing food security and Indigenous sovereignty, and contributing toward climate change adaptation.

WHY ENGAGE?

Why does BECI seek to meaningfully engage with coastal Indigenous communities?

BECI recognizes that coastal Indigenous communities hold deep historical and ecological knowledge of the North Pacific Ocean, developed through thousands of years of observation, relationship, stewardship, and adaptation. When developing the Network, engaging with coastal Indigenous communities is essential for several key reasons:

- **Holistic understanding of ecosystem change:** Indigenous knowledge systems encompass holistic, place-based observations across multiple generations that can provide insights into ecological changes and patterns not captured by Western scientific monitoring programs, which are typically more recent and may focus on isolated variables.
- **Identification of locally relevant indicators:** Coastal Indigenous communities can help identify key environmental and biological indicators of climate change that are locally significant and relevant to cultural practices, food security, and community wellbeing.
- **Enhanced data comprehensiveness:** Indigenous knowledge can provide information about historical baseline conditions, particularly in areas or time periods where scientific data is sparse, helping to fill critical knowledge gaps in understanding climate impacts.
- **Strengthened relevance and application:** Engagement ensures that knowledge synthesis and tools developed by BECI address the priorities, needs, and values of coastal communities who are experiencing the frontline effects of climate change on marine ecosystems.
- **Improved knowledge translation:** Two-way knowledge sharing between Indigenous communities and BECI can produce more accessible, culturally appropriate, and usable resources that effectively bridge across knowledge systems and support evidence-based decision-making.

WHY ENGAGE?

Why does BECI seek to meaningfully engage with coastal Indigenous communities?

- **Ethical knowledge integration:** Developing tools and approaches in partnership with Indigenous communities helps ensure that knowledge is shared and applied in ways that respect Indigenous data sovereignty and ownership principles.
- **Support for community climate adaptation:** By engaging with coastal Indigenous communities, BECI can better align its research and knowledge synthesis activities to support community-based adaptation planning and marine resource stewardship priorities.
- **Network effectiveness:** Including Indigenous perspectives, knowledge, and participation strengthens the Network overall by increasing its diversity, comprehensiveness, and applicability to real-world challenges.

These motivations align with BECI's broader mission of connecting knowledge across boundaries to enhance understanding of climate impacts on marine ecosystems in the North Pacific. Through meaningful engagement with coastal Indigenous communities, BECI seeks to create an inclusive knowledge network that respects diverse ways of knowing while addressing shared challenges of climate change in marine environments.

BECI has identified the following engagement opportunities with coastal Indigenous communities:

1. Share knowledge and expertise
2. Access network resources
3. Help guide network development
4. Build new collaborations
5. Participate in knowledge synthesis projects
6. Join working groups on specific topics

WHY ENGAGE?

Why might coastal Indigenous communities seek to engage with BECI?

Coastal Indigenous communities will each have their own unique motivations for engaging with environmental non-profit organizations on research and knowledge sharing and it is beyond the scope of this Strategy to outline specific motivations. There will likely be similarities and differences in engagement motivations across BECI and coastal Indigenous communities. Accordingly, understanding where there is overlap and differences in motivations is an important first step of the engagement process (see Engagement considerations section).

That said, the following broad categories may shape engagement motivations by coastal Indigenous communities and are important places to explore through initial dialogue to understand overlap and divergence in engagement motivations (Donatuto et al., 2020; MPA Network BC Northern Shelf Bioregion, 2024):

1. **Stewardship priorities or visions:** what is the community actively working on and toward?
2. **Mandates and protocols:** what direction/projects has the community received from leadership and members and what protocols shape how this work should happen?
3. **Values, principles, and worldviews:** what values drive community work? How do Indigenous worldviews shape values that underpin research and community priorities?
4. **Management issues and knowledge gaps:** What key issues are communities concerned about? What knowledge is needed to inform these issues?
5. **Existing work:** What are communities already working on? How could this work dovetail with the engagement opportunity?

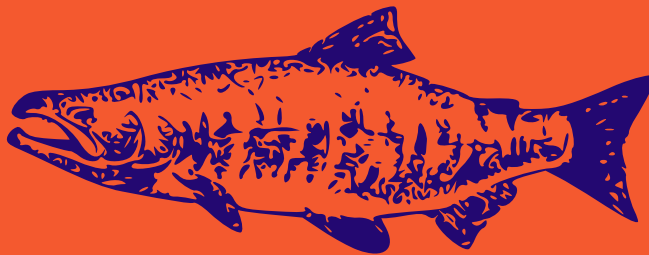
WHY ENGAGE?

Why might coastal Indigenous communities seek to engage with BECI?

Importantly, in exploring the similarities and differences across engagement motivations held by BECI and coastal Indigenous communities, it is not necessary to only advance engagement where there are shared motivations, since motivations can be distinct yet compatible with one another yet.

For example, BECI and a coastal Indigenous community might agree to engage with one another on a project to document the impacts of climate change on salmon abundance and spawning activities through time within the community's territory through weaving Indigenous and western scientific knowledge and methods. BECI's engagement motivation might be to understand how the impacts of climate change on salmon in one area relate to impacts in other study areas, while the coastal Indigenous community's motivation might be to inform their community's restoration and management of a culturally important species for food security and cultural continuity values.

These motivations are distinct, yet potentially compatible so long as the information generated is at the scale and resolution of each organization's needs. Identifying each organization's motivations can shape the research and engagement protocols (see [Engagement considerations section](#)).



PRINCIPLES OF ENGAGEMENT WITH INDIGENOUS COMMUNITIES

Engagement done well can result in meaningful outcomes for groups involved and affected by the research, while engagement done poorly can result in harm and mistrust. The following values, ethics, and principles can guide the design and implementation of engagement between coastal Indigenous communities and BECI that generates trust, value, and more effective climate adaptation.

Through embodying and practicing these guiding principles, BECI can contribute toward strengthening collaboration with coastal Indigenous communities and other Network audiences.

These guiding principles drawn upon lessons and guidance from Indigenous research and engagement protocols, frameworks, and partnerships (Archipelago Management Board, 2018; IRSI, 2018; Kitasoo/Xai'xais Stewardship Authority, 2021; MaPP, 2018; MPA Network BC Northern Shelf Bioregion, 2024).

1



Move at the speed of trust

Create a strong foundation of trust and mutual understanding by starting engagement with coastal Indigenous communities early (i.e., before research and program agendas are set in stone), by moving at the speed of trust, and by starting with listening. Recognize distinct timelines, needs, and contexts for building trust across coastal Indigenous communities and BECI.

2



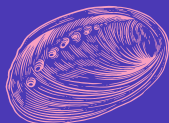
Balance and reciprocity

Ensure that activities, contributions, and relationships are balanced and that the principles of 'giving back' and 'mutuality' shape engagement processes between BECI and coastal Indigenous communities. Centre reciprocity and gratitude throughout the design and implementation of engagement opportunities such that communities flourish.

PRINCIPLES OF ENGAGEMENT

WITH INDIGENOUS COMMUNITIES

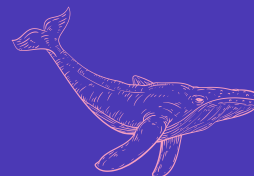
3



Respect and accountability

Respect the distinct values, culture, ways of knowing, capacity, and priorities that coastal Indigenous communities and BECI hold associated with the ocean. Create an ethical and safe space for honouring these differences and commonalities within engagement and relationship building processes. This involves honouring community engagement protocols and principles.

4



Learn with humility

Reflect on the different positionality, context, and history of engagement between coastal Indigenous communities and non-profit organizations such as BECI. Recognize patterns of exploitation associated with engagement and strive to reduce harm. If harm is caused or mistakes made, take accountability, apologize, and (un)learn with humility.

5



Transparency

Ensure clear, accessible, and timely communications across coastal Indigenous communities and BECI. Set realistic expectations for engagement based on the scope, capacity, and desired outcomes across coastal Indigenous communities and BECI.

6



Equity

Design equitable and inclusive engagement processes with coastal Indigenous communities that respect the unique context, capacity, rights, and identities of individuals (e.g., Elders, hereditary chiefs, youth) and organizations (Indigenous government, community, and alliance/aggregate/commission organizations).

PRINCIPLES OF ENGAGEMENT

WITH INDIGENOUS COMMUNITIES

7



Indigenous data sovereignty

Respect Indigenous data sovereignty throughout the process of designing and implementing the Network and abide by Indigenous data sovereignty guidelines (see [Indigenous data sovereignty section](#)) throughout data management, sharing, synthesis, and communication processes.

8



Place-based recognition:

Indigenous knowledge is strongly associated with the individuals, communities, and places where it is generated. Recognizing this place-based dimension to Indigenous knowledge is essential, especially if Indigenous knowledge is being applied outside of the community where it was generated (e.g., during aggregation). Ensure the application of Indigenous knowledge is accompanied by relevant context to avoid knowledge extraction, harm, or inaccuracies.

9



Adaptiveness

Ensure that engagement opportunities, capacity, and processes adapt in response to community needs yet persist to support an enduring relationship and trust.

HINT

KEEP YOUR EYE OUT
FOR THESE LOGOS
WHEN GUIDING PRINCIPLES
ARE REFERENCED
THROUGHOUT THE STRATEGY

INDIGENOUS DATA SOVEREIGNTY

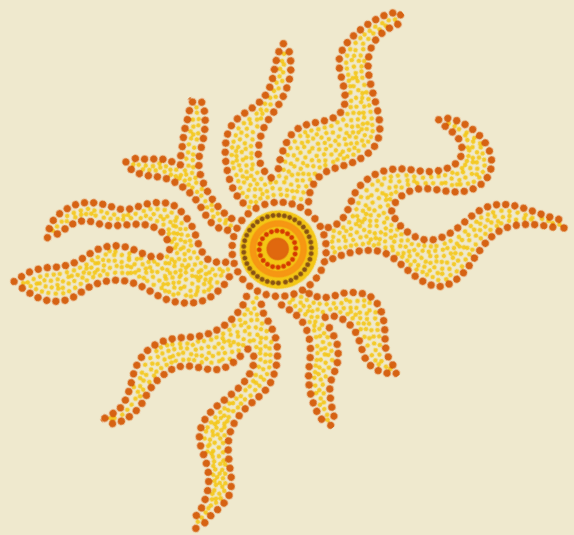


Indigenous knowledge is a product of deep relationships to places and peoples and cannot be separated from the Indigenous communities and/or individuals who hold that knowledge. Accordingly, the use of Indigenous knowledge must occur alongside the recognition of Indigenous peoples' rights to govern the collection, ownership, and application of their knowledge, whether it is collected by Indigenous communities themselves or external organizations (Cannon et al., 2024). This right is defined as Indigenous data sovereignty (see [Glossary](#)), and researchers have a responsibility to uphold Indigenous data sovereignty and rights throughout the work (Ignace et al., 2023).

OCAP: In Canada, the First Nations' Principles of OCAP (ownership, control, access, and possession) provide a framework for respecting Indigenous data sovereignty (OCAP, 2023). Aligning research and collaborative engagement with OCAP is a critical starting point for respecting and abiding by Indigenous data sovereignty.

FAIR: The FAIR (Findability, Accessibility, Interoperability, and Reusability) data principles emerged from the open and big data movement, which seeks to increase the public availability, accessibility, and reuse of data to solve societal problems.

CARE: While there are many benefits to the open data movement, the FAIR data principles were not designed with the input of Indigenous communities and thus overlook central dimensions of Indigenous data sovereignty, such as retaining the control and use of Indigenous knowledge. Accordingly, the Global Indigenous data Alliance developed the CARE (collective benefit, authority to control, responsibility, and ethics) principles for Indigenous data governance (GIDA, 2023). The CARE principles were designed to be implemented alongside FAIR to advance Indigenous innovation and self-determination within open data movements. Guidelines for operationalizing CARE and FAIR data management principles throughout the data lifecycle can be found in (Carroll et al., 2021).



INDIGENOUS DATA SOVEREIGNTY

Collaborative engagement with Indigenous communities might involve the creation and sharing, and potential aggregation of Indigenous knowledge into more centralized databases, such as the Network. In these instances, Indigenous data sovereignty tools, such as those produced by Local Contexts, can support access and awareness of Indigenous knowledge by assigning digital labels and notices to Indigenous knowledge (“Local Contexts – Grounding Indigenous Rights,” 2025).

This is particularly important when projects archive Indigenous knowledge. Local Contexts is a global initiative that supports Indigenous communities with tools that can reassert cultural authority in heritage collections and data. By focusing on Indigenous cultural and intellectual property and Indigenous data sovereignty, Local Contexts helps Indigenous communities repatriate knowledge and gain control over how data is collected, managed, displayed, accessed, and used in the future. LocalContexts is an initiative of ENRICH, an organization that supports the advancement of Indigenous data sovereignty via developing Indigenous based protocols, standards, and technology for data management and relationships between Indigenous and non-Indigenous organizations (“ENRICH,” 2025).

Recommended steps for non-profit organizations to respect and support Indigenous data sovereignty are outlined in Cannon et al., 2024 (Figure 1). They include:

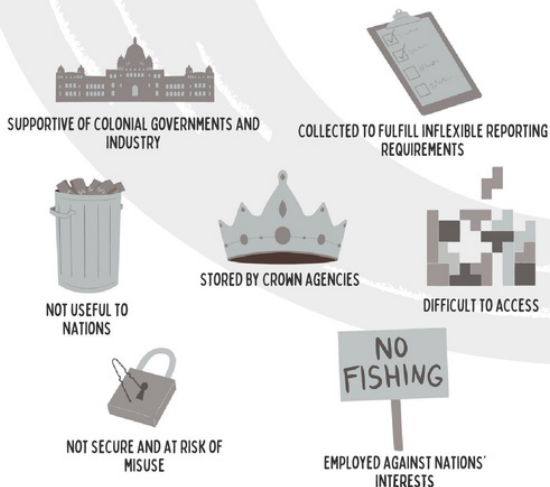
1. **Self-education:** Educate staff about issues related to Indigenous data sovereignty and come prepared. At a minimum this involves becoming familiar with and anticipating how to implement the First Nations Principles of OCAP and the CARE principles. Reviewing the [References section](#) of the Strategy is a starting point for BECI staff.
2. **Engage early:** Engage with Indigenous communities before planning research or programs. This links back to the engagement principles of ‘Move at the speed of trust’. Ensure that Indigenous communities have the option of contributing toward the project from the outset as it will strengthen the value and applicability of the research and knowledge production process.
3. **Respect plurality:** Avoid making assumptions about how data should be managed. Not all Indigenous communities will have the same vision or expectations for data management. Individual community needs must be deferred to.
4. **Advocate for power re-distribution:** Organizational data governance policies may conflict with Indigenous data sovereignty principles (e.g., funding agencies requiring publication of raw data). Doing the heavy lifting to alleviate and adapt these policies such that they respect Indigenous data sovereignty is an important step toward accounting and correcting for the power imbalances across Indigenous communities and non-Indigenous organizations.



FIGURE 1

Steps to understand and support Indigenous data sovereignty during collaborations with external organizations. Figure from Cannon et al. 2024.

UNDER WESTERN DATA MANAGEMENT, DATA CAN BE:



UNDER INDIGENOUS DATA SOVEREIGNTY, DATA ARE:



DISCUSSION QUESTIONS FOR RESEARCH PARTNERS

SUCCESSFULLY INCORPORATING INDIGENOUS DATA SOVEREIGNTY INTO RESEARCH REQUIRES ONGOING DISCUSSION AND NEGOTIATION BETWEEN PARTNERS. WE HAVE COMPILED SOME QUESTIONS THAT PARTNERS CAN REFERENCE TO HELP GUIDE THESE DISCUSSIONS.

METHODOLOGICAL CONSIDERATIONS

- HAS THE NATION PROVIDED CONSENT THROUGH A VALID, INDIGENOUS-LED PROCESS?
- HOW DO WE COLLECT THE DATA?
- WHO COLLECTS THE DATA?
- WHAT SHOULD BE MEASURED?
- WHO AND WHAT ARE THE DATA FOR?

ACCESSIBILITY

- WHO CAN ACCESS THE DATA?
- WHO HAS THE AUTHORITY TO GRANT ACCESS TO OTHERS?
- WHAT ARE THE CRITERIA AND PROCESSES FOR REQUESTING ACCESS?
- SHOULD DIFFERENT AUDIENCES HAVE ACCESS TO DIFFERENT DATA FORMATS (E.G. RAW VS. AGGREGATED DATA)?

AUTHORSHIP AND ACKNOWLEDGMENTS

- HOW WOULD KNOWLEDGE-HOLDERS LIKE THEIR CONTRIBUTIONS TO BE ACKNOWLEDGED? WILL THEY BE CO-AUTHORS ON OUTPUTS?

- WOULD KNOWLEDGE-HOLDERS LIKE TO BE ACKNOWLEDGED DIFFERENTLY DEPENDING ON THE MATERIALS AND/OR AUDIENCES?

OWNERSHIP AND CONTROL

- WHO OWNS THE DATA?
- WHAT ARE THE CONDITIONS OR PROTOCOLS FOR USING THE DATA?
- WHAT DOES OWNERSHIP ENTAIL? DOES IT INCLUDE POSSESSION OF THE DATA AND/OR RIGHTS TO PUBLISH?

SECURITY AND STORAGE

- WHERE WILL THE DATA BE STORED?
- IN WHAT FORMAT(S) WILL THE DATA BE STORED? IF ELECTRONICALLY, ARE DATA ENCRYPTED?
- ARE DATA BACKED UP?
- FOR HOW LONG WILL DATA BE RETAINED?
- HOW CAN WE ENSURE LONG-TERM ACCESS?

POTENTIAL STEPS FOR FIRST NATIONS

1. DETERMINE WHO IS RESPONSIBLE FOR GRANTING PERMISSION FOR EXTERNAL PARTNERS TO ACCESS DATA AND/OR OF FIRST NATIONS TERRITORIES FOR RESEARCH.
2. CREATE STEPS OR POLICIES FOR EXTERNAL RESEARCHERS AND/OR NEIGHBORING NATIONS FOR DATA SHARING AND/OR REQUESTING PERMISSION TO ACCESS DATA OR FIRST NATIONS TERRITORIES.
3. ESTABLISH A PLAN FOR DATA COLLECTION AND/OR MONITORING.
4. BUILD CAPACITY AND SECURE FUNDING FOR STORING AND MANAGING INDIGENOUS DATA.
5. AS AN INTERIM SOLUTION, CONSIDER USING OUTSIDE TECHNICAL TOOLS TO HELP MANAGE DATA.
6. CREATE TOOLS THAT WOULD SUPPORT DATA COLLECTION, MANAGEMENT, AND DISSEMINATION.
7. CONSIDER ADDITIONAL METHODS THAT WOULD HELP TO ENSURE CONTROL AND MAINTAIN OWNERSHIP OVER INDIGENOUS DATA IF NECESSARY.

RECOMMENDATIONS FOR EXTERNAL RESEARCHERS

- BECOME EDUCATED ON ISSUES RELATED TO INDIGENOUS DATA SOVEREIGNTY AND COME PREPARED.
- ENGAGE WITH FIRST NATIONS PRIOR TO PLANNING RESEARCH OR MONITORING.
- AVOID MAKING ASSUMPTIONS ABOUT HOW DATA SHOULD BE MANAGED.
- BE TRANSPARENT ABOUT RESEARCH GOALS AND HOW EXTERNAL PARTIES WILL BENEFIT FROM THE RESEARCH.
- IF A FIRST NATION AGREES TO COLLABORATE, CONSIDER WAYS TO CO-PRODUCE KNOWLEDGE OUTPUTS SO THAT FIRST NATIONS ARE INVOLVED THROUGH ALL STEPS IN THE PROJECT.
- FIND WAYS TO REDIRECT FUNDING AND RESOURCES TO FIRST NATIONS.
- RECOGNIZE THAT PROVIDING FUNDING DOES NOT EQUAL OWNERSHIP OF THE DATA.
- DO THE HEAVY LIFTING TO REDUCE BURDENS ON FIRST NATIONS.
- PROVIDE AND SUPPORT FIRST NATIONS' ACCESS TO TECHNOLOGY AND/OR LAB SPACE, ALONG WITH TRAINING FOR HOW TO USE THOSE SPACES.
- BE PREPARED TO TAKE ON SOME PERSONAL RISK.
- ADVOCATE FOR CHANGING DATA GOVERNANCE POLICIES WITHIN AND BEYOND ORGANIZATIONS AND INSTITUTIONS, INCLUDING THE REPATRIATION OF EXISTING DATA.

ENGAGEMENT CONSIDERATIONS

Conducting meaningful engagement involves a slow process of building trust and relationships across non-profits and coastal Indigenous communities so that the needs and values, contributions, capacity, and benefits to each organization are understood and respected.



Where possible, it is ideal for formal engagement to be accompanied by relationship building and self-education processes. This can be done through attending community events, building friendships, and immersing oneself in community and published resources ([Table 1](#), [References section](#) Beaty et al., 2024a).

The following section outlines general guidance and considerations for initiating engagement between BECI and coastal Indigenous communities. This guidance draws upon the following resources associated with Indigenous engagement on research projects and is best applied to instances where BECI is engaging with individual or a few Indigenous communities in greater depth of partnership:

- Beaty et al., 2024a;
- Carroll et al., 2019;
- IRSI, 2018;
- Kitasoo/Xai'xais Stewardship Authority, 2021

These guiding activities and questions do not have to be implemented linearly or exclusively. They are intended to provide support and direction, but the real-life exploration and implementation of engagement should respect the needs and direction of the groups involved.

These general guidance sections are followed by a more specific set of engagement implementation strategies associated with the Network's three programmatic pillars ([Table 1](#)).



ENGAGEMENT CONSIDERATIONS CONT.

PHASE 1: INITIAL ENGAGEMENT

The following reflection and scoping activities should be conducted by BECI staff prior to initiating engagement with coastal Indigenous communities and can inform how BECI initiates, or does not initiate, engagement.

1. Identify primary engagement objectives for BECI (see 'Why engage' section)
2. Identify primary engagement audiences across coastal Indigenous communities and relevant contact people (e.g., stewardship or fisheries staff within a Tribal or Nation office)
3. Learn about coastal Indigenous communities' research and management priorities that may be publicly available (e.g., posted on community websites or in published resources, [Table 2](#))
4. Learn about established processes and existing templates/frameworks that coastal Indigenous communities have for engaging with new partners (e.g., partnership/research intake and review processes, compensation protocols via honoraria)



5. Evaluate whether BECI is qualified and resourced to address the communities' priorities (i.e., can BECI offer the support, resources, and contributions that these communities have identified are priorities?)



AUDIENCES CAN INCLUDE BUT ARE NOT LIMITED TO:

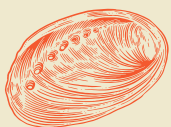
INDIVIDUAL COASTAL INDIGENOUS COMMUNITIES, ALLIANCES OR AFFILIATIONS OF INDIGENOUS COMMUNITIES. MOST OF THE FOLLOWING QUESTIONS ARE ORIENTED TOWARD ENGAGING WITH INDIVIDUAL OR A SMALL GROUP OF COMMUNITIES RATHER THAN ALLIANCES

ENGAGEMENT CONSIDERATIONS CONT.

Engagement exploration questions

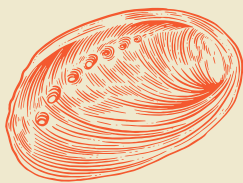
If there is potential alignment between BECI's qualifications and resources with coastal Indigenous communities' priorities, the following questions can provide a starting point for exploration of engagement opportunities between BECI and the coastal Indigenous communities.

1. What are potential engagement opportunities between coastal Indigenous communities and BECI (e.g., [Table 2,3](#))? What can each group offer the other? What are each other's needs, priorities, and strengths? What values are driving each organization's interest in this topic/engagement opportunity?
2. What would a meaningful engagement experience look and feel like for coastal Indigenous communities and BECI?
3. What are the potential outputs (e.g., publications, resources) and outcomes (enhanced collaboration) of this engagement opportunity? How are they relevant and beneficial to both coastal Indigenous communities and BECI?
4. Can the proposed engagement opportunity deliver outputs on a timescale that is useful for both coastal Indigenous communities and BECI? Consider the alignment or discrepancy between timelines for community policy-making, decision-making, and/or education needs, and for BECI's programming.
5. Are there opportunities to provide skills training and capacity building through this engagement (e.g., skills, experience, training, certification, employment)?
6. Who are the main people that coastal Indigenous communities want to be involved in this engagement opportunity (e.g., stewardship and/or fisheries staff, council members, hereditary leadership, elders, youth)? What compensation and community protocols should be understood and respected via this engagement (e.g., honoraria, gifts)? That is, are BECI staff connecting with the right people on the right issues following the right protocols?
7. Does this engagement approach/activity align with Indigenous laws, principles, and policies, and cultural protocols?
8. What are the expectations and limitations of engagement that people from coastal Indigenous communities and BECI have (e.g., frequency of communication)? Are those expectations/limitations being transparently communicated?



ENGAGEMENT CONSIDERATIONS CONT.

9. What are the communication needs for coastal Indigenous communities associated with the outputs of this engagement (e.g., are the audiences technical or community). What is the timeframe, format (e.g., seminars, social media, videos) and are there resources to support communications?
10. What are the communication needs of BECI associated with the outputs of this engagement (e.g., publications, presentations, publicly available tools). What are the formats and timeline considerations?



11. What is the consent process associated with these communication needs (e.g., for images, quotes, audio-visual footage)?
12. What are contexts where disputes might arise in the use and communication of knowledge shared via engagement between BECI and coastal Indigenous communities? Are there dispute resolution strategies in place?
13. Are there ways BECI and coastal Indigenous communities can share feedback on the quality of engagement and address issues that might arise to improve collaboration?

ENGAGEMENT CONSIDERATIONS CONT.

PHASE 2: ENGAGEMENT COMPONENTS

This section outlines questions associated with specific components and outputs of engagement opportunities between BECI and coastal Indigenous communities. Not every section will be applicable to every engagement opportunity (e.g., some engagement may aim to foster collaboration without producing a public output).

Public outputs

If BECI or coastal Indigenous communities intend to produce a public output stemming from the engagement opportunity, the following questions should be answered during the engagement process.

1. What are the intended public outputs deriving from this engagement (e.g., policy briefing, peer-reviewed publication, interactive map)?
2. Are these outputs in a format that is useful for the coastal Indigenous communities? Are the outputs able to be expanded upon by coastal Indigenous communities?
3. What data sharing principles will guide how Indigenous knowledge is reflected in these outputs? What sensitivities, constraints, and opportunities are associated with sharing data via this engagement opportunity?
4. Are there protocols or recommendations for displaying sensitive spatial data (i.e., confidential cultural or ecological spatial data that may not be appropriate to share in a public format? E.g., how can spatial scale, resolution, buffering of raw spatial data make it safer to share?
5. How will coastal Indigenous communities review their knowledge before it is included in an output?
6. What are the timelines for this output and are there opportunities to share research findings before it is complete (e.g., in policy briefs before a decision-support tool is launched)?



ENGAGEMENT CONSIDERATIONS CONT.

Recognition

1. How can the engagement partners be meaningfully recognized through this collaboration (e.g., co-authorship or other forms of acknowledgement)?
2. How will knowledge sharing participants be identified and recognized? How are consent and community protocols considered in this process?

Funding & capacity

1. What are the funding and capacity needs of this engagement opportunity? Is funding planned and secured for the project's full life-cycle (i.e., relationship building, tool development, community dissemination)?
2. How are coastal Indigenous communities and BECI supporting this engagement? Who is responsible for funding which components? What resources are available and offered by coastal Indigenous communities and BECI?
3. Are there synergies between the proposed engagement and other existing projects?
4. If relevant, how is capacity building incorporated into this engagement opportunity? Is there a policy on hiring and/or supporting students, staff, and members from coastal Indigenous communities to participate in the engagement opportunity?



Information stewardship

1. Is there a shared understanding of the similarities and differences between Indigenous knowledge and western scientific knowledge?
2. How are the principles of OCAP, FAIR and CARE, and being applied through this engagement opportunity (see [Indigenous data sovereignty section](#))? Is there a need to develop data sharing agreements to outline consent, data access, archiving, ownership, sharing, and other information stewardship processes?
3. Who owns or co-owns knowledge and data associated with this engagement opportunity?
4. How sensitive is the knowledge and data being discussed? What are the implications? Can the knowledge and data be shared outside of this engagement opportunity?
5. How will the data be stored and for how long? Who has access to the data? What happens after the project is complete? What is the data archival process?
6. What is the consent process for data and knowledge sharing?
7. How will knowledge and data sharing agreements meet the needs of coastal Indigenous community and BECI protocols (e.g., open data policies). If there is a discrepancy in data sharing protocols, how will that be navigated?
8. How will data be shared with coastal Indigenous communities (e.g., in what format and timeline)?

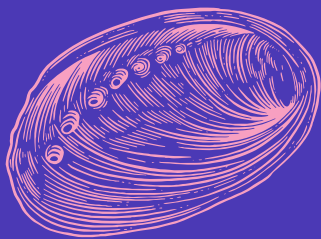


ENGAGEMENT CONSIDERATIONS CONT.

PHASE 3: ROLES AND RESPONSIBILITIES

The following questions should be answered before and during the implementation of engagement activities between coastal Indigenous communities and BECI.

1. Who is responsible for conducting which pieces of work associated with this engagement (including knowledge gathering, synthesis, sharing)? For example, are coastal Indigenous communities responsible for collating and preparing knowledge associated with climate change effects, or will BECI researchers facilitate that knowledge gathering?
2. What are the logistical constraints associated with knowledge gathering, analysis, and sharing (e.g., timeline, community availability and capacity, engagement fatigue, existing available and accessible knowledge)?
3. Are methods for knowledge gathering, synthesis, and sharing clearly shared with coastal Indigenous communities?



IMPLEMENTATION PLAN

This section outlines a menu of potential engagement opportunities associated with the North Pacific Ocean Knowledge Network’s three programmatic pillars that BECI could consider and discuss implementing with coastal Indigenous communities (Table 3). These activities can provide inspiration to discussions held across staff during the ‘Initial engagement’ phase outlined above (see Engagement considerations section). It is not expected that all these engagement opportunities be implemented. Rather, this section provides inspiration and potential guidance to support conversations with potential engagement partners.



Table 3. Potential engagement opportunities that BECI and coastal Indigenous communities can explore associated with the Ocean Knowledge Network programmatic pillars. Considerations for the engagement opportunities include those relating to audience, roles and responsibilities, and timelines. The words ‘community/communities’ is used to reference coastal Indigenous communities who are engaging with BECI.

TABLE 3

PILLAR #1: UNDERSTANDING PAST CLIMATE EVENTS

Tasks	Engagement opportunity	Considerations and resources
Synthesize information about past climate events (e.g., marine heatwaves, temperature anomalies) Document and link ecosystem responses including species distribution shifts and food web changes Highlight key environmental and biological indicators of change in different regions Compile and share research findings and publications Create a searchable catalogue of past events and impacts	Pre-activity homework: Progress through the Initial engagement questions articulated above to identify mutual benefits, protocols for knowledge sharing, research partnership documentation needs associated with these activities Activity: Hold community dialogue to understand how past climate events have affected community members, with a focus on climate change impacts on marine species and places that community members care about. Focus on listening to and learning community stories during this process. Dialogue can involve a small focus group, a town hall, interviews, or reviewing existing information/resources the community has access to (e.g., archived interviews). Group storytelling opportunities provide the added benefit of community members getting to hear and learn from each other through the knowledge sharing process. Outcomes: BECI and community members understand how past climate events have impacted them. This can reveal some of the values that communities care about that are affected by climate change, which could inform future engagement and research on how climate change is impacting those values now and into the future (Pillars #2 and 3). Product: Communicate these stories of past climate events using narrative approaches such as short videos and photos that can be shared with community members and archived on community and BECI websites. Through time could generate a coast-wide climate-stories page (e.g., Coastal Voices project, the Climate Atlas of Canada, “Climate Atlas of Canada,” 2025; Reid, 2025).	• Explore this activity with 1-2 communities first to learn about the process. Consider adding communities through time. • If appropriate, hire or support community youth to facilitate dialogue (e.g., hold interviews, facilitate town hall, see (Beaty et al., 2024b). • If of interest, community members can be asked to identify change in the abundance, size, quality of important species to them due to climate change (e.g., see (Lee et al., 2018). • Provide honoraria and/or gifts to those who share stories/participate in dialogue • Hire or collaborate with a graphic note-taker during community dialogues to bring stories and dialogue to life in real time (e.g., Fig 1 of Cannon et al., 2024) • Hire or collaborate with social scientists to ensure knowledge sharing is designed appropriately (e.g., someone with participatory videography or archival analysis experience, (Bennett et al., 2017) • Hire or collaborate with artists to support communication of community dialogue (Reid, 2025)

TABLE 3

PILLAR #2: CONNECTING CURRENT RESEARCH

Tasks	Engagement opportunity	Considerations and resources
Map active research programs and monitoring networks across the North Pacific Create a database of "who is doing what where" to facilitate collaboration Connect people working on similar themes across regions Share ongoing research findings through network updates Identify opportunities for cross-regional collaboration Help connect complementary research efforts Identify critical knowledge and research gaps	Pre-activity homework: Progress through the Initial engagement questions articulated above to identify mutual benefits of establishing and using an inventory of 'who is doing what where', protocols for knowledge sharing, research partnership documentation needs associated with these activities Activity A: Attend events, build relationships, and participate in online events (e.g., webinars) to understand research priorities and activities (current and planned). Build awareness of Indigenous climate networking events, tools, and initiatives across coastal Indigenous communities (Box 2). Activity B: Upon establishing collaborative relationships across BECI and coastal Indigenous communities and gathering preliminary information on research priorities, design and disseminate a low-barrier survey to document what people are researching/monitoring and why. Ensure survey is designed to fulfill information needs of coastal Indigenous communities. See Appendix 1 for an example of draft survey questions. Learn about and connect with other similar Network-based organizations to avoid duplication of effort (Box 2). The Network could build upon and expand this to span the BECI geographic scope. Activity C: Poll/interview coastal Indigenous communities to understand their desires for networking amongst each other and with broader BECI audiences for the Network. Outcomes: Strengthened collaboration amongst communities and BECI audiences associated with Network-related research and monitoring activities. Improved understanding of networking resources and opportunities that already exist, work, and are effective, as well as gaps that BECI's Network could fill or support. Product: Online database of research and monitoring activities relevant to the Network.	• Activity A: Apply for funding to support BECI staff time being put toward self-education about coastal Indigenous community priorities and activities and relationship building with community staff and members. • Activity B: Collaborate or hire a social scientist to support survey design, dissemination, and analysis • Activity B: Collaborate with or hire a data management and visualization specialist to support monitoring inventory development and maintenance • Activity B: Ensure that BECI staff are well versed with Indigenous data sovereignty guidelines, including First Nations principles of OCAP, FAIR and CARE (see Indigenous data sovereignty section) • Activity B: Surveys completion can be facilitated by setting up meetings to go through and populate the survey with staff from coastal Indigenous communities. This is why it is important to establish relationships prior to disseminating the survey. It will also need to be very clear how the communities can benefit from the creation of an inventory of who is doing what where. Ensure the survey is co-designed with staff and members from communities (Reed et al., 2023)

BOX 2

Examples of existing Indigenous knowledge sharing networks that could be relevant for the North Pacific Ocean Knowledge Network.

Indigenous climate hub - ICH, Canada, <https://indigenousclimatehub.ca/>

- *About:* The ICH provides a platform for Indigenous peoples across Canada to share their climate change experiences and stories. Developed by and for Indigenous peoples, the ICH provides access to climate change resources tools for Indigenous peoples to monitor and adapt to climate change. The platform also acts as a hub for Indigenous climate change leaders working on similar issues to come together and build from each other.
- *Potential relevance to BECI:* This hub can provide educational resources for BECI staff to understand how climate change is affecting Indigenous communities. The First Nations Adapt Program and Indigenous community-based climate monitoring programs can also help identify Indigenous organizations that are leading climate change research and adaptation work, and guide BECI's potential engagement with select communities.

Indigenous climate action - ICA, Canada, <https://www.indigenousclimateaction.com/>

- *About:* ICA is an Indigenous-led organization that advances solutions to the climate crisis and climate justice by centering Indigenous peoples' rights and knowledge systems. ICA is guided by a diverse group of Indigenous knowledge keepers, water protectors and land defenders from communities and regions across Canada.
- *Potential relevance to BECI:* As with the Indigenous climate hub, ICA was created by and for Indigenous peoples. It provides valuable resources to understand solutions to the climate crisis that center Indigenous knowledge, rights and priorities, and that disrupt colonial systems of extraction, which include harmful practices of research and non-profit organizations toward Indigenous communities. These educational resources could be particularly valuable in supporting BECI staff with self-educational activities prior to advancing engagement.

Indigenous sentinels network - ISN, Alaska, <https://www.sentinelsnetwork.com/>

- *About:* ISN provides support, training, and coordination to enhance Indigenous ecological monitoring and stewardship of their lands and waters and adaptation to climate change. ISN is based in Alaska and originally focused on the Arctic but has expanded. ISN creates digital tools to support Indigenous Guardian and Sentinels programs (on the water monitoring) to enhance the braiding of Indigenous and western knowledge.
- *Potential relevance to BECI:* ISN shares many goals with the Ocean Knowledge Network in terms of creating tools and resources that enhance awareness, gathering, and uptake of knowledge about the ocean to inform climate-adaptation. The geographic scope is slightly outside of the Network's focus, considering the Arctic emphasis; however, the lessons learned and approaches they have taken could provide valuable insights to support the Network's design and development.

TABLE 3

PILLAR #3: BUILDING KNOWLEDGE FOR THE FUTURE

Tasks	Engagement opportunity	Considerations and resources
Create clear summaries of expected future ocean changes based on available climate projections Create platforms for sharing information across organizations Support development of coordinated research approaches Foster cross-regional research initiatives Help identify emerging research priorities	Pre-activity homework: This stage assumes collaborative relationships are established with specific coastal Indigenous communities (based on work conducted in Pillars #1 and 2) and that research protocols and partnership agreements are in place. Activity: Select 1-2 values identified in the knowledge sharing and storytelling activities from Pillar 1 (e.g., food security and cultural connectivity). Explore how they will change under climate projections. For example, if food security and cultural connectivity are linked with specific species, understanding how those species are and will be affected by climate change could provide relevant information to coastal Indigenous communities for fisheries management and conservation. Hold dialogues with communities and staff to understand what information and capacity building support they need to develop projections of climate impacts on priority species at a scale that is relevant to them (e.g., downscaling large oceanographic models of projected changes, training support with programming). Product: Reports produced in a visual, intuitive, and accessible format for communities to use in their decision-making and communications processes	As with Pillar #1, start this work with 1-2 organizations to ensure BECI capacity can meet community needs and expectations. Consider how knowledge and capacity building needs can be met through networking activities developed as through Pillar #2.

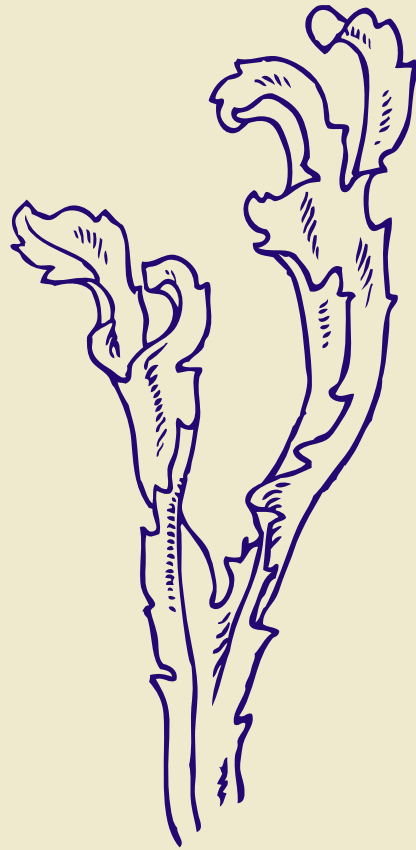
CONCLUSION

This Indigenous Engagement Strategy provides a high-level roadmap to support BECI's meaningful engagement with coastal Indigenous communities. The synthesis of engagement recommendations, principles, and considerations can provide a starting point for BECI staff to learn and reflect on why and how engagement with coastal Indigenous communities could commence.

The resources and publications referenced within this Strategy (see [References section](#)) are particularly informative starting points for the self-education work that should precede direct engagement. Upon initiating engagement, this Strategy also provides a series of guiding questions that can be explored in tandem with the communities engaging with BECI.

Overall, the extent to which meaningful engagement can occur depends on the motivations, capacity, intentions, and practices of the individuals involved in the engagement relationship. The historic context of harmful research and engagement practices by non-profit and research organizations to Indigenous communities necessitates caution and care on the part of BECI while developing engagement relationships with Indigenous communities.

Centering principles of trust, friendship, and respect can build a strong foundation that meaningful engagement can grow from.



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APPENDIX 1

SURVEY QUESTIONS FOR PILLAR #2

This appendix provides a draft outline or starting point for a survey to gather information about who is doing what monitoring where to inform Activity B of Phase #2 engagement opportunity described in the [Implementation Plan section](#).

Background page:

Provide relevant background information for the purpose of this survey, organizations involved, the Network, consent etc.

1. Do you consent to participate in this survey?
 - a. Yes
 - b. No (skip to the end)
2. Are you involved in a research program that collects data associated with the ocean in the North Pacific?
 - a. Yes
 - b. No (skip to the end)

Monitoring program section:

The following sections are designed to target individual monitoring and research programs that are ongoing/repeated. The survey will need to be completed separately for distinct monitoring programs. For this survey, monitoring programs are considered distinct from one another if they have different overarching goals and objectives. A single monitoring program can measure multiple things to inform a broad goal.

1. What is the name of the research program?
2. What are the main goals or objectives of the research program? Check all that apply.
 - a. Insert examples of research and monitoring program categories of interest to BECI (e.g., informing climate prediction and adaptation, evaluating climate impacts, tracking long-term conditions and trends, establishing snapshot assessments)
3. If available, please share the research program's overarching purpose or objective(s)?
4. If available, what research question(s) or knowledge gap is your research program trying to answer?
5. Please identify which of the following regions the research program occurs within (select multiple options):
 - a. California State coastline and waters
 - b. Oregon State coastline and waters
 - c. Washington State coastline and waters
 - d. British Columbia coastline and waters
 - e. Open Pacific waters

APPENDIX 1 CONT.

Indicators

The following questions ask about information that is collected as a part of this research program.

1. Ecological (e.g., species, habitats, ecosystems): Please identify ecological information you collect. This can include focal, supplemental, and opportunistic information. Check all that apply.
 - a. Provide a list of indicators of relevance to the Network and coastal Indigenous communities.
E.g., salmon, eelgrass, kelp, herring, estuaries etc.,
2. Environmental (e.g., biogeochemical, oceanographic): Please identify environmental information you collect. This can include focal, supplemental, and opportunistic information. Check all that apply.
 - a. Provide a list of indicators of relevance to the Network and coastal Indigenous communities.
E.g., temperature, pH, dissolved oxygen, sea level rise etc.,
3. Human (e.g., cultural, governance, health, social, economic): Please identify human information you collect. This can include focal, supplemental, and opportunistic information. Check all that apply.
 - a. Provide a list of indicators of relevance to the Network and coastal Indigenous communities.
E.g., seafood landings, catch per unit effort, access to food, nutrition, cultural continuity and practices etc.,
4. If you monitor a driver of change, please identify what information you collect. Drivers of change are factors that drive changes in the indicators of interest (e.g., ecological, environmental, human). Monitoring drivers of changes helps understand potential causes behind trends. Check all that apply.
 - a. Provide a list of indicators of relevance to the Network and coastal Indigenous communities.
E.g., aquaculture, pollution and contamination, underwater noise, climate change impacts
5. Optional: use this space to elaborate on any additional things you are collecting information on.

Organizational information

1. What is the name of the lead organization for this research program?
2. Who is a good contact person for learning more about this research program?
3. Please share the contact information for the person identified above.

Other information:

1. Please use this space to identify any additional relevant information that could inform the Ocean Knowledge Network's development going forward.

Insert contact information and details about next steps for the survey/knowledge gathering process (e.g., how the information might be shared with survey audiences).

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THANK YOU