Wicuhkemine: Revive the Bay of Fundy

Water Back in the Quoddy Region, Peskotomuhkati lessons from 14,000 years of honouring Samaqan

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Dalhousie University is located in Kjipuk'tuk, Mi'kma'ki,
the ancestral and unceded territory of the Mi'kmaq Peoples.
We are all Treaty People.

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Abstract

Samaqan, Water – we are all connected.

The Peskotomuhkati Peoples have lived in a reciprocal relationship with the Lands, Waters, and Wildlife of the Skutik River watershed, the Quoddy Region, and Monahnuk (Grand Manan Archipelago) – southwestern Bay of Fundy – since time immemorial. Wildlife populations, including Peskotom (pollock) the Peskotomuhkati's namesake, have struggled for the past two centuries. The Canada-U.S. border divides the Skutik River and Peskotomuhkati territory, a meaningless border to Wildlife, but one that complicates protection and restoration of culture and habitat. The Quoddy Region is rich in nutrient upwellings, supporting a range of biodiversity, yet has no formal marine protection west of Musquash Marine Protected Area (MPA), in either country. With rising calls for action, yet no formal marine protection plan, there is an incredible opportunity to advance Indigenous-led marine conservation through a Water Back framework, return of Water rights and responsibility to Indigenous Nations (Leonard et al., 2023). Understanding that MPAs are not a silver bullet, this project explores appetite for Peskotomuhkati-led marine Indigenous Protected and Conserved Areas (IPCAs) and defines elements required for collaborative ocean governance. A legislative review of conservation tools and IPCAs, interviews, and talking circles with Peskotomuhkati and non-Indigenous practitioners outlined conservation values, restoration needs, policy and management changes required to repair the health of the Bay and all relatives. Peskotomuhkati community members interviewed from Sipayik wish to see the entire Quoddy Region protected and revitalized – through Peskotomuhkati leadership. Concerns include land and ocean-based cumulative impacts, inadequate monitoring, rockweed harvesting, overfishing, gear types, a need for temporal closures, and finfish aquaculture practices. Revival of the Quoddy Region will require interdisciplinary, interjurisdictional efforts grounded in Indigenous leadership through Water Back principles. Wicuhkemine – help us. Holistic thinking, honouring Treaty integrity by addressing power imbalances, and a values shift are necessary for true effectiveness in reviving the Quoddy Region, to welcome Peskotum home.

List of Abbreviations and Terms

CBD – Convention on Biological Diversity
CCNB – Conservation Council of New Brunswick
CPAWS NB – Canadian Parks and Wilderness Society – New Brunswick Chapter
DELG – Department of Environment & Local Government (New Brunswick)
DAAF – Department of Agriculture, Aquaculture & Fisheries (New Brunswick)
DFO – Fisheries and Oceans Canada
EBSA – Ecologically and Biologically Significant Area
ECCC – Environment and Climate Change Canada
ESA – Ecologically Significant Area
HMSC – Huntsman Marine Science Centre
IBA – Important Bird (or Biodiversity) Area
IPCA – Indigenous Protected and Conserved Area
MNM – Marine National Monument (U.S.)
MPA – Marine Protected Area
NERR – National Estuarine Research Reserve (U.S.)
NMCA – National Marine Conservation Area (U.S.)
NOAA – National Oceanic Atmospheric Administration (U.S.)
NMCA – National Marine Conservation Area (Canada)
NWA – National Wildlife Area (Canada)
OECM – Other area-based Effective Conservation Measure
PRGI – Passamaquoddy Recognition Group Inc.
TRC – Truth and Reconciliation Commission
UN – United Nations

Notes to the Reader and Key Terms

Using capital letters on words such as Water and Indigenous or Peskotomuhkati Peoples was done intentionally to draw attention to their importance and to respect them as kin. Passamaquoddy is an anglicized version of Peskotomuhkati (pronounced Bess-Go-Do-Muh-Ga-Dee), the name of the Nation. I use Passamaquoddy only within the title of the organization and the U.S.-based Tribes: Passamaquoddy Recognition Group Inc. and Passamaquoddy Tribe. Otherwise, I use Peskotomuhkati (Passamaquoddy Recognition Group, 2023).

The Wabanaki Peoples – or People of the Dawn – are Indigenous Peoples whose ancestral and unsurrendered lands and waters are colonially known as the Maritime provinces, Maine, and southern Quebec. The Mi'kmaq, Wolastoqiyik, Peskotomuhkati, Pαnawάhpskewi, and Abenaki are the five northeastern Algonquian-speaking Nations that make up the Wabanaki Confederacy (The Canadian Encyclopedia, 2024). Peskotomuhkati words used will be translated to a close approximation in English for the first use of the term in the text.

Monahnuk – Grand Manan Archipelago – grouping of islands in the outer Bay of Fundy known for rich biodiversity – south of the Quoddy Region, also within Peskotomuhkati territory.

Quoddy Region – coastal and marine space in the outer Bay of Fundy – Peskotomuhkati territory, encompassing Passamaquoddy Bay (in what's colonially known as New Brunswick) and Cobscook Bay (in what's colonially known as Maine).

Relational accountability – the responsibility to future generations, ensuring that human activities do not harm Water or ecosystems, or future generations. (Leonard et al., 2023)

- Samaqan – means 'Water' in Peskotomuhkati.
- Siqonomeq – means 'alewife' in Peskotomuhkati.
- Wicuhkemine – means 'help us' in Peskotomuhkati.

Gratitude

First, I say woliwon (thank you) to the lands, waters, siqonomeq (alewives), and ancestors of the Peskotomuhkati, for all I have, and continue to learn. Kci'woliwon to Sakom (Chief) Hugh Akagi, without whom this project would not have happened. Thank you, Chief for trusting me with this very important task of discussing long-term care and revitalization of your territory with the Peskotomuhkati peoples and others who love, research, and care for this area. I am forever grateful for the lessons you have taught me, and will continue to work toward honouring my responsibility as a Treaty person, and as someone who has been gifted these lessons.

The whole team at the Passamaquoddy Recognition Group Inc., Sipayik Environmental Department, and the Sipayik community whom I have met have been incredibly supportive throughout this research in helping flesh out ideas, brainstorm, and guide me in the right direction. A special woliwon goes to William "Eric" Altvater for introducing me to so many incredible community members in his home community of Sipayik. And a heartfelt thank you goes to Dani Deonarine, who made this project possible, as she is driving this work forward at the Passamaquoddy Recognition Group, bringing people together to delve into difficult and emotional topics, and will be carrying on with this work as Indigenous Protected & Conserved Areas Coordinator in the marine realm. Dani has been an incredible source of strength in asking the tough questions, challenging systems at play to think in anti-colonial ways, to think creatively and collaborate on protecting our collective life source – the Bay.

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Thank you to all of the researchers, practitioners, and Peskotomuhkati community members I have listened to, run, laughed, cried, swam, fished, and eaten with. My one hope is that this document can be a useful stepping stone to the work of protecting Peskotomuhkati home waters and your kin, to thrive within these waters for many generations to come.

To my parents, family and friends, I am so grateful for your love, support and encouragement as I took the scary step to return to school. Big hugs to Mum and Dad for helping every step of the way.

This project and my entire program would not have been possible without the unwavering support of my best friend and loving husband, Michael. Thank you for the meals, cups of tea, proof-reading, and for encouraging me to keep going, and also take breaks for dog walks and food.

Positionality

Eleven generations before me, my ancestors John Howland and Elizabeth Tilley crossed the Atlantic Ocean on the Mayflower. John was an indentured servant from England, a member of the English separatists, landing in 'New England' in 1620. I grew up in the unceded and unsurrendered Wolastoqiyik, Peskotomuhkati, and Mi'gmaq territory (colonially known as New Brunswick). My first encounter with the mighty Skutik River in the heart of Peskotomuhkati territory was when I was 11, my family rented canoes to paddle along the Skutik River (which at the time we knew as the St. Croix). We spent the day basking in the peaceful surroundings, enjoying the diversity of wildlife from mighty bald eagles and swift loons, to jumping fish. Something that struck me was that a series of dams blocked the river flow, and thus, our journey by canoe. In my early career, I learned more about this sacred and significant watershed when I met the Passamaquoddy Recognition Group staff through my work in land conservation with a settler-established land trust. I learned more about this area, the importance of the Skutik and its creatures to the Peskotomuhkati, and the dark colonial history of the last 300 years along this river.

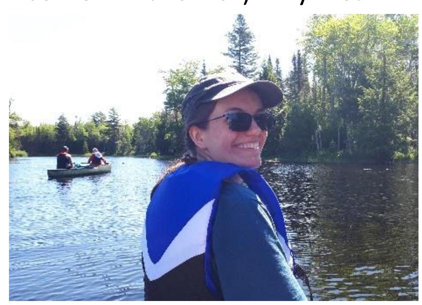

Figure 1: Author canoeing on the Skutik with the Passamaquoddy Recognition Group (photo: A. Pluta, 2022)

I have done a lot of learning and un-learning in the past decade and am beginning to realize many of the ways in which I have been unfairly privileged by the oppression of racialized peoples. Through access to land in a gorgeous and peaceful place (peaceful for settlers like me), access to clean drinking water, the ability to live away from more polluted areas; these 'luxuries' are not a given for Indigenous Peoples from Turtle Island, despite signed Treaties that promise so. Since learning more, I have wanted to give back, to work towards Land Back, to learn about ocean governance and ways in which the colonial systems of control may be challenged and softened – to make way for the healing and revitalization that is so needed.

I also learned about Truth and Reconciliation Calls to Action, and am driven by a sense of urgency to advance Land Back, and to learn more about governance systems, including ocean governance. This brought me to Dalhousie, to learn more about the return of Indigenous sovereignty to Wabanaki Lands and Waters. I would like to acknowledge that the Peskotomuhkati Peoples traditional ways are oral histories and storytelling, and that the writing of these lessons shared with me cannot and is not meant to replace the important ceremony of oral traditions, but merely to share what the interviewees would like readers to know. This is my interpretation from lessons I've had the privilege of hearing, but as a white settler on these lands, this paper is in no way to be taken as consultation of Indigenous Peoples.   I humbly write down these lessons that were shared with me, and see it as my responsibility to do what I can for Skutik, Samaqan and all of her beings. We are all connected.

Chapter 1: Introduction

Nature is under increasing pressure and is declining globally (Diaz et al, 2019). Research shows that the most biodiverse and intact lands and waters are those managed by Indigenous Peoples, where the rate of decline has been shown to slow (Diaz et al, 2019; Beattie et al., 2023). Degradation of nature is linked to cultural well-being. For centuries, many Indigenous Peoples have been removed from their homelands and deprived of their culture. For instance, the displacement of the Songhees Nation in Canada (Buscher et al., 2021; Beattie et al., 2023; Leonard et al., 2023). There is a parallel between the decline in biodiversity and the decline in Indigenous Peoples' traditional livelihoods, cultures, languages, and knowledge (Diaz et al, 2019; Buscher et al, 2021). Biodiversity and culture are well-documented as interconnected. The biodiversity crisis inhibits Indigenous Peoples' ability to sustain their traditions, languages, and ways of living over the long term (Buscher et al, 2021). Amidst these challenges, nature conservation efforts in Canada are finally beginning to acknowledge the value of Indigenous stewardship knowledge (ICE, 2018) and recognize that complex global issues require a polycentric governance[1] approach (Ostrom, 2009). There is increasing recognition that Marine Protected Areas (MPAs) are not a silver bullet (Filbee-Dexter et al, 2024; Agardy et al, 2003), and that Indigenous-managed areas contain more biodiversity than conventional protected areas (Heidt & Jones, 2023). This has led to the creation of Indigenous Protected and Conserved Areas (IPCAs) within what is colonially called Canada (ICE, 2018). This project explores options, case studies, and the appetite for Peskotomuhkati-led marine IPCAs while defining key elements required for collaborative ocean governance in the Quoddy Region of the Bay of Fundy.

Indigenous Protected and Conserved Area (IPCA): "Lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems through Indigenous laws, governance and knowledge systems." (ICE, 2018). The three primary requirements of an IPCA are (1) that it be Indigenous-led, (2) have a long-term commitment to conservation, and (3) elevate Indigenous rights and responsibilities (ICE, 2018).

As a signatory of both Peace & Friendship Treaties (1725-1779) with Wabanaki Nations and the United Nations Declaration on the Rights of Indigenous Peoples, Canada has a responsibility to honour the integrity of these commitments to Indigenous self-governance, self-determination, and control over lands and waters within their territories (Government of Canada, 2013; United Nations, 2007). Supporting IPCAs offers a pathway to affirming Indigenous laws and governance, ensuring more equitable, shared decision-making can occur, reducing conflict and advancing Truth and Reconciliation efforts (Innes, et al., 2021). In recognizing these commitments, several federal departments are tasked with conserving coastal and ocean spaces in Canada to help achieve the Convention on Biological Diversity (CBD) Target 3: protecting thirty percent of ocean space by 2030 (CBD, 2022). Parks Canada and Environment and Climate Change Canada (ECCC) have each progressed in supporting IPCA establishment. However, Fisheries and Oceans Canada (DFO) has not fully implemented recommendations from the 2018 National Advisory Panel on Marine Protected Area (MPA) Standards

[1] Polycentric governance: having more than one center (Merriam-Webster, 2024) for decision-making, in this case recognizing the multiple governance systems at play in Canadian waters, both Indigenous and Canadian federal management structures.

(Heidt & Jones, 2023). While work has advanced to support greater self-determination with Inuit in the Arctic and some First Nations in Western Canada, gaps remain (Fisheries & Oceans Canada, 2024e; Assembly of First Nations, 2023).

The Assembly of First Nations, as of 2021, has prioritized advocacy for First Nations' leadership in marine protection through the creation of Marine IPCAs (Heidt & Jones, 2023). As Canada works to meet its commitments under the CBD (2022) Target 3, this project aims to ensure space is made for Indigenous leadership. Marine IPCAs can contribute to both reconciliation and ocean conservation goals (Heidt & Jones, 2023). Though Indigenous laws are unique to each Nation and community, and were not traditionally written down, some common themes emerge in IPCA case studies. A key distinction is that Indigenous governance frameworks emphasize fulfilling responsibilities rather than solely exercising rights (Innes et al., 2021), a principle central to the Water Back Framework (Leonard et al., 2023) – see Section 1.1.1.

Building on these broader efforts across Turtle Island, this project focuses on a specific region of significance: the Quoddy Region of the Bay of Fundy, home to the Peskotomuhkati peoples; 'the people who spear pollock'. They have lived, fished, hunted, and cared for the region of present-day southwestern New Brunswick, and northeastern Maine for over 10,000 years. The Passamaquoddy Recognition Group Inc. (PRGI) was founded in 2005 by Chief (Sakom) Hugh Akagi to gain recognition of the Peskotomuhkati as a Nation by Canada. A secondary goal of PRGI is to advance environmental priorities within the region, including restoration of the Skutik River, fish monitoring, land conservation, and shoreline restoration (PRGI, 2023). Recently, PRGI was approached by the Department of Fisheries and Oceans Canada (DFO) to discuss IPCAs for marine protection. Given the recognized value of Indigenous leadership in conservation, this project seeks to help define what Peskotomuhkati governance over a marine IPCA would entail. The project seeks to explore Peskotomuhkati values, marine management concerns in the Quoddy Region, ideal collaboration, and current marine conservation legislative tools that could be used to protect Peskotomuhkati territorial lands and waters.

Marine Management Problems:

In a decade where both marine conservation and supporting Indigenous self-governance are of utmost importance:

1 What does the Bay need to become healthy again?
2 How can marine practitioners and researchers best support Peskotomuhkati-led marine conservation?
3 What would a successful collaborative process look like to protect the Quoddy Region?

1.1 Canada's commitments, Self-determination, Water Back

In order to answer these questions, one must understand the reality of life for Indigenous Peoples on Turtle Island, Canada's commitments to improving relations with Indigenous Peoples through Truth and Reconciliation, and the concept of Water Back.

Canada has Nation-to-Nation obligations in the form of Peace and Friendship Treaties, and international obligations on upholding the Rights of Indigenous Peoples (United Nations, 2007). Canada has committed to Truth and Reconciliation actions following the abhorrent treatment of Indigenous children through the genocidal Indian Residential 'Schools'. Canada's Truth and Reconciliation Commission (TRC), chaired by the late Justice Murray Sinclair, aims to advance Indigenous reconciliation efforts, and calls on Canadians to learn from traditional First Nations, Inuit, and Métis approaches to conflict resolution and relationship restoration to guide the reconciliation process. The TRC contains 94 calls to action for Canada, including #45 regarding territorial lands and waters, and Indigenous governance (Truth and Reconciliation Commission of Canada, 2012).

#45. We call upon the Government of Canada, on behalf of all Canadians, to jointly develop with Aboriginal peoples a Royal Proclamation of Reconciliation to be issued by the Crown. The proclamation would build on the Royal Proclamation of 1763 and the Treaty of Niagara of 1764, and ***reaffirm the nation-to-nation relationship between Aboriginal peoples and the Crown****. The proclamation would include, but not be limited to, the following commitments:*

1. ***Repudiate*** *concepts used to justify European sovereignty over Indigenous lands and peoples such as the* ***Doctrine of Discovery*** *and terra nullius.*
2. *Adopt and implement the* ***United Nations Declaration*** *on the Rights of Indigenous Peoples as the* ***framework for reconciliation****.*
3. *Renew or establish* ***Treaty relationships*** *based on principles of mutual* ***recognition, mutual respect, and shared responsibility*** *for maintaining those relationships into the future.*
4. *Reconcile Aboriginal and Crown constitutional and legal orders to ensure that* ***Aboriginal peoples are full partners in Confederation****, including the recognition and integration of* ***Indigenous laws*** *and legal traditions in negotiation and implementation processes involving Treaties, land claims, and other constructive agreements.*

Update for Call to Action #45:

1) no formal repudiation of the Doctrine of Discovery has occurred by the Canadian government;
2) the UN Declaration received Royal assent in Canada in 2021, through the United Nations Declaration on the Rights of Indigenous Peoples Act, becoming law for the minimum standards of survival and dignity for Indigenous peoples;
3) *Principles Respecting the Government of Canada's Relationship with Indigenous Peoples* is adopted, yet there is no clarity on how it will be integrated;
4) and 'Principles' mentioned in #3 do not align with the UN Declaration (Indigenous Watchdog, 2021).

Canada has a long way to go to answer this Call to Action, and equitably sharing power and decision-making on the management of lands and waters.

In terms of sharing power, one option often discussed by federal officials, and one that would – in theory – be a move toward achieving the UN Declaration goals, is 'co-governance' or 'co-management' of resources. Nation-to-Nation governance is not possible without first understanding Indigenous diplomacy and acknowledging settler power and privilege, and the oppression of Indigenous Peoples for the benefit of white settlers of 'Canada' since 1604 (Dana-Sacco, 2020). Indigenous diplomacy, from a Wabanaki perspective, centers respect for diverse values and knowledge, consensual decision-making (Ranco, 2016), and the Seven Generation Policy—making decisions for the benefit of the next (and previous) seven generations of all creatures (Michelle, 2021). In contrast, oppressive power dynamics and reactionary, profit-driven, short-sighted management (Michelle, 2021), ensures only some voices are heard and makes 'equality' in a Nation-to-Nation sense nearly impossible to achieve in Canada's current formal decision-making model. Many oppressive actions may not even be recognized as such by settler society, including word choice and powerful symbols that reinforce state power (i.e. 'decision maker', 'landowner', 'Crown', 'stakeholder'); activities such as map making, boundary drawing, and re-naming of places are attempts at Indigenous erasure (McGreavey, et al, 2021). This power imbalance and clash of values stalls meaningful progress on the matters of Truth and Reconciliation. As Dana-Sacco (2020) states, to make positive change we require: 'systematic rebalancing of the power equation that interrupts the persistent expectation of subservience in favor of equality and partnership'.

Lessons can also be drawn from Maine's Penobscot River restoration project led by an interdisciplinary co-management team with government and Penobscot Tribes, researchers and fish harvesters (Natural Resources Council of Maine, 2023). This project is an example of Wabanaki diplomacy using Indigenous Research Methods. Ensuring enough time for relationship-building and community dialogue; thinking of time in a non-linear, more long-term sense like a river; and supporting Wabanaki leaders, students, and researchers (McGreavy, Ranco et al, 2020). This includes ensuring that Nation-to-Nation marine management upholds Indigenous diplomacy will allow for all voices to be heard equitably and will disrupt the power dynamic of current decision-making. Currently, Canadian federal conservation tools give the federal Minister the ultimate authority and power. This is not *true* shared governance. In areas where Indigenous Nations did not sign Treaties (i.e. much of British Columbia), or areas with settled land claim agreements (i.e. territories and Labrador), co-governance is more common where both Crown and Indigenous laws are used to govern and care for protected areas (ICE, 2018). Case Studies of Indigenous-led conservation are explored in the Background and Results sections.

Modern day conservation within Canada and the United States has a dark history due to a Euro-centric lens of viewing humans as detrimental to nature, and viewing conservation as keeping humans out, denying the rights of Indigenous Peoples of access to their lands, medicines, and traditional livelihoods (ICE, 2018). Understandably, there is mistrust among Indigenous communities (and some settler communities like Acadians (Rudin, 2016)) because of past displacement and conservation efforts that forced people off their lands, restricted Indigenous rights to hunt and fish, and did not involve proper partnership and shared decision-making (Chilibeck, 2024; ICE, 2018). To achieve Canada's conservation targets in an ethical way, and to break the cycle of harm and trauma, Indigenous leadership and partnerships are required when it comes to caring for and protecting lands and waters, 'Nothing for us, without us.' (ICE, 2018).

1.1.1 Water Back Framework

Indigenous scholars from 16 Nations on two continents have recently proposed a framework for the Water Back movement to help guide Indigenous-led research (Leonard et al., 2023). This framework helps introduce globally-relevant themes that were interwoven with key research results, particularly those from talking circles with Peskotomuhkati community members. Of particular importance is the connection between the **rights and responsibilities** related to Water within Indigenous worldviews, and research and data sovereignty surrounding Water (Leonard et al., 2023). (See **Figure 2** for the six themes**)**.

> “Water rematriation becomes a transformative path, allowing humanity to be rematriated into the care of Mother Earth and her life-giving Waters. It is through this collective commitment to honouring Water as our first medicine that we can honour the Water for sustaining our collective well-being.” (Leonard et al., 2023)

Indigenous cosmologies describe Water as a living sacred entity, a relative - far beyond a physical need. Reciprocity due to interconnectedness between present, past, and future generations, nature, Creator, and the more-than-human realm is a commonly held value. Despite growing recognition of the value of Indigenous Knowledge Systems and Water rights and responsibilities in settler-colonial states (Kyoto Water Declaration, 2003; United Nations, 2007), continued exclusion of Indigenous leadership in water governance persists, including through continual extraction and institutionalized discrimination (Leonard et al., 2023).

Water Colonialism: the continual water injustices facing Indigenous Peoples today, the 'living legacy' of settler-colonial laws like the Doctrine of Discovery[2] and processes enabling the theft of Water and the removal of Indigenous Peoples from Water and decision-making surrounding Water (Robison et al, 2018). Settler[3], extractive[4], imperial[5], and environmental colonialism overlap and exacerbate harms. Of particular concern for conservation efforts, environmental colonialism consists of land grabs and damming of Rivers which has drastically affected traditional food sources and sacred lands, severed community ties, transportation, and trading routes, and killed many relations. 'Benevolent' forms of water colonialism include the creation of parks and MPAs that restrict Indigenous access, governance, and stewardship. (Leonard et al., 2023)

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[2] Doctrine of Discovery: legal principles from the 15th century which granted European nations to ‘acquire’ territory that was not settled by Christians (Canadian Encyclopedia, 2023).

[3] Settler-colonialism: colonisers stay and occupy Indigenous Lands and Waters.

[4] Extractive colonialism: raw materials are stripped from the Land and Waters and transported to colonial centres.

[5] Imperial colonialism: colonial powers forcibly 'acquire' territory.

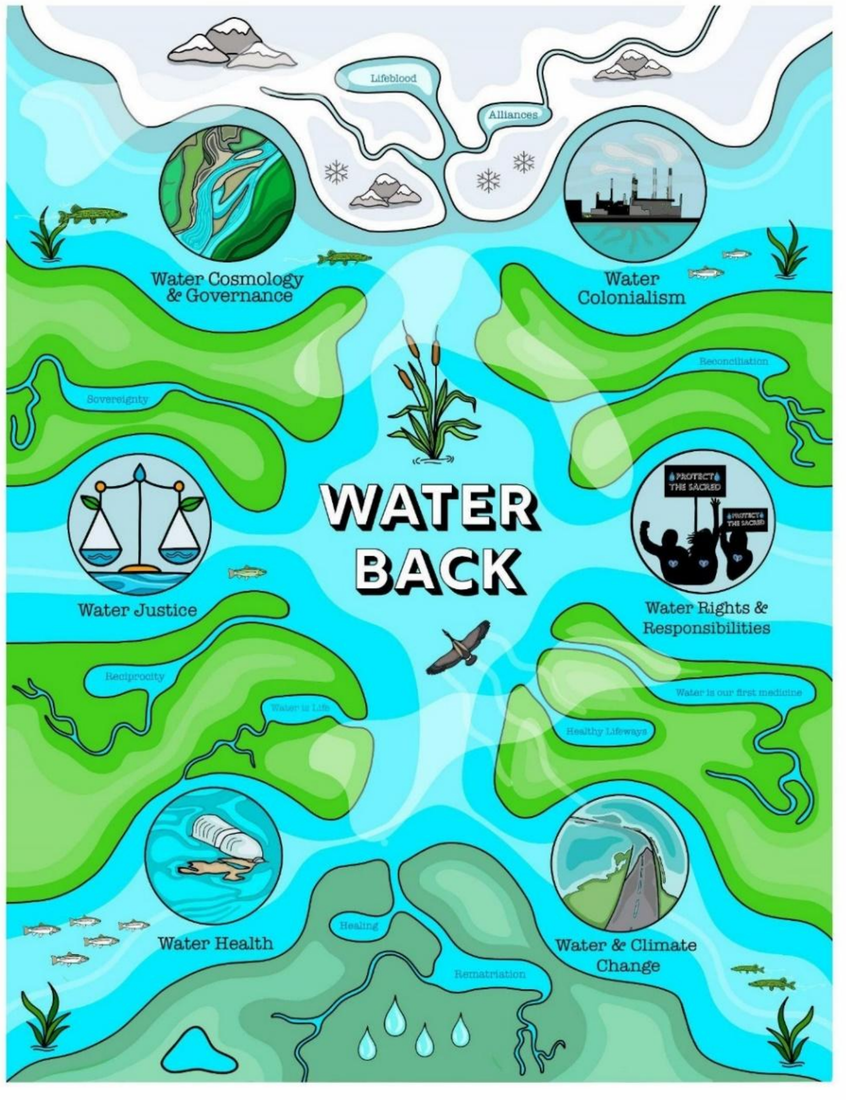

Figure 2: Water Back Framework - main themes, Art by Hawlii Pitchett (Leonard et al., 2023)

Water Justice: Water justice and restoration must shift from a focus on improving Water quality for humans, to a more ecocentric and Indigenous feminist[6] practice of 'loving responsibility', seeing Water as a sentient being, for our collective healing (McGregor, 2015), and asking “What does the Water need?”. Treaties with Indigenous Nations are often overlooked as being the first transboundary Water agreements, the foundational International legal mechanism to secure Water rights and responsibilities. (Leonard et al., 2023)

Water Health: Restoration of Indigenous responsibilities for Water care helps improve Water health. Water health is closely linked with the health of Indigenous communities, environmental racism, lack of proper infrastructure, and forced relocation (Meehan et al., 2020). Participatory processes that consider

[6] Indigenous women are fundamental to this shift as they are Water warriors, and many parallels have been drawn between harms to Water and harms to Indigenous women and girls (Chiblow, 2019).

community-specific needs and ensures healthy Water and healthy People will require improved access to Water data for Indigenous Nations and communities (Black & MacBean, 2017).

Water & Climate Change: Climate-related changes to Water disproportionately impact Indigenous Peoples. Declining snowpack, warming winters, and more flooding are among the hydroclimatic changes seen by Apsáalooke/Crow Tribal members from the Northern Plains that exacerbate overall Tribal and Water vulnerability to climate change as they interact with other environmental, historical, economic, and cultural factors (Martin et al, 2020). Indigenous Knowledge Systems carry critical guidance for observing and adapting to climate change[7]. (Leonard et al., 2023).

Water Back means the return of Water and kin to Indigenous governance in a way that empowers resurgent Indigenous Water relationships integral to Indigenous cultural, biological, spiritual, and political sovereignty (Leonard et al., 2023). It means allowing Water to rematriate relationships with Indigenous Peoples, the Lands nourished by Water, and the more-than-human relatives that live within and care for Water. There is an urgent need to restore humanity's responsibility to care for Water, while recognizing Indigenous Peoples' inherent connections, rights, and responsibilities to Water. The deep-seated duty to ensure abundance for future generations best positions Indigenous Peoples to lead critical ecosystem restoration work (Leonard et al., 2023; ICE, 2018).

1.2 Marine Conservation: Canada, IPCAs, and Peskotomuhkati

As previously stated, Canada has signed on to protect 30 percent of oceans by 2030 (CBD, 2022). The previous Aichi Biodiversity Target 11 to protect 10 percent by 2020 (CBD, 2011), drove an increase of funding and marine conservation efforts under the Trudeau government since 2015 (Prime Minister of Canada, 2024). What does it mean to conserve the ocean? From a colonial perspective, it generally means prohibition or a reduction of human activity within a protected area, and the various legislative tools offer different levels of protection. Marine conservation measures can be place-based, tied to a particular geographic region of the ocean or coastal zone; or non-spatial, such as a fisheries closure (i.e. cod moratorium (Emery, 1992)), or temporal closure to protect a certain species at certain times (i.e. when a North Atlantic Right Whale is sighted or heard on hydrophones in the Bay of Fundy or Gulf of St. Lawrence, there is a temporary or season-long fishery closure to prevent entanglement (Fisheries & Oceans Canada, 2024a)). This research paper focuses on spatial or place-based conservation. In the Canadian context, section 1.5.1 outlines various conservation methods through federal legislation that make marine conservation possible. Any federal MPA designated after 2019 must follow the MPA Protection Standard which prohibits the following activities:

(1) Bottom-trawl gear;
(2) Disposal at sea of waste and other matter;
(3) Mineral exploration and exploitation; and
(4) Oil and gas activities (Fisheries & Oceans Canada, 2023a).

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[7] Indigenous self-determined and equitable partnerships remain paramount in engaging with climate science and attempting to solve problems, so that Indigenous Knowledge is not misused to inform further extractive and colonial practices.

In Canada there are also Other Effective Conservation Measures (OECMs) which can be counted toward the 30x30 target (CBD, 2022), provided they meet the DFO criteria (Fisheries & Oceans Canada, 2022a). These are known as marine refuges, or certain fisheries closures under the *Fisheries Act* (R.S.C., 1985).

Studies demonstrate that conservation planning is best done by integrating community-based and scientific approaches 'to achieve community acceptance and conservation utility' (Ban et al., 2009) and learning from Indigenous perspectives who have been living sustainably in these lands since time immemorial (ICE, 2018). Canadian Parks and Wilderness Society (CPAWS) rated the level of protection for 18 Canadian MPAs using the MPA Guide as their assessment tool (MPA Guide, 2024; CPAWS, 2021a). One of their top recommendations to ensure conservation success is equitable MPA governance, particularly through Indigenous leadership and co-management models (CPAWS, 2021b). In the Quoddy Region, the Peskotomuhkati Nation has experienced success with the Skutik River restoration (Abbott, 2022; Scully, 2023), and this project looks to ensure Peskotomuhkati views are not only incorporated within, but lead the decision-making processes at each stage of marine protection, long-term management, and restoration of important areas within the Bay.

Chapter 2: Background

2.1 Brief History of the Peskotomuhkati Nation

Peskotomuhkati Peoples are part of the Wabanaki (People of the Dawn) Nations. Along with Mi'kmaq, Wolastoqiyik, Penobscot, and Abenaki Peoples, they have resided for 14,000 or more years in what is colonially known as Atlantic Canada, southern Quebec, and Maine (Abbe Museum, n.d.). Peskotomuhkati translates to the people who spear Peskotom (pollock) – they have lived and cared for the lands and waters of the Quoddy Region in a reciprocal relationship with human and non-human relatives since time immemorial (PRGI, 2023). Moving with the seasons of abundance, they would spend time in the upriver lakes in mid-December for the tomcod spawn, inland during the winter for the caribou hunt and to tap maples, to the Bay for clam digging and weir fishing in the spring, seal and porpoise hunting by boat, and back upriver to Salmon Falls for the fish runs. The cycle fluctuating as needed in response to changes in weather or other factors. (American Friends of Canadian Conservation, 2022)

The Quoddy Region is where the Skutik (aka Schoodic, aka St. Croix) River watershed meets the Bay of Fundy, and is home to Cobscook Bay in present-day Maine, U.S. and Passamaquoddy Bay, of Qonaskamkuk (St. Andrews), New Brunswick, Canada. This Chapter is meant to inform the reader on necessary background information through a brief history of the Peskotomuhkati Nation, the Treaties between Wabanaki Peoples and the British Crown, and the Quoddy Region as critical to the ecological functioning of the Bay of Fundy as a whole. Figure 3 depicts a timeline of selected major events that impacted the lives of people and more-than-human beings living within this region since colonization.

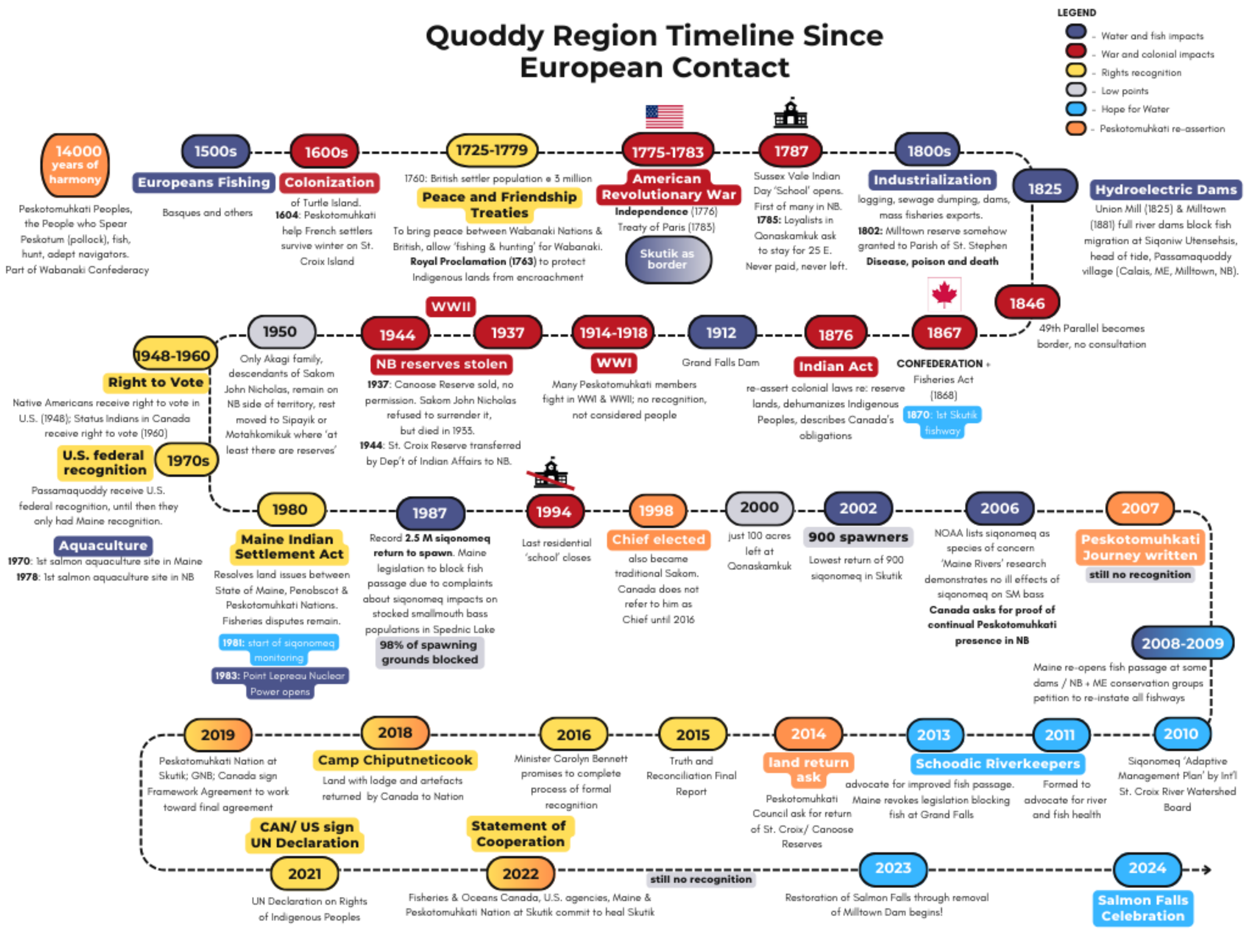

*Figure 3: Timeline of key events post-contact in the Quoddy Region (**Disclaimer: not comprehensive**) – made in Canva by B. Pohl, see starred (*) references for source. Larger version can be found in Appendix B**

Land disputes and forced relocation: In 1763, the Royal Proclamation granted lands to Indigenous Peoples, however this promise was betrayed just 20 years later. At the end of the American Revolutionary War (1775-1783), the Treaty of Paris was signed between Great Britain and the U.S., turning over many lands set aside for Indigenous Peoples to the U.S. (Canadian Encyclopedia, 2006), and designating the Skutik (St. Croix) River as the boundary between the U.S. and what is now Canada (American Friends of Canadian Conservation, 2022). The boundary divided the Peskotomuhkati Nation in two and has caused continual hardships for the Nation.

During the time of European settlement, when the European population on Turtle Island was small, avoiding conflict over land was possible, but when more and more came to settle, surveys of land for towns and settlements were done up, and reserves in New Brunswick were afterthoughts. Promises to the Peskotomuhkati peoples of land in Qonaskamkuk and Campobello were never kept, and reserves at Milltown (St. Stephen), Canoose, and St. Croix were deeded and/or sold by the Crown without surrender in 1802, 1937, and 1944 respectively. The trust fund for the monies for two of the reserves "were quietly transferred into the Public Debt of Canada". With no reserve lands, Canada could conveniently claim that Peskotomuhkati were not a 'band' as defined within the Indian Act, and so their status was lost, and many moved to the two reserves in Maine. Here, "at least there were reserves". In 1950, only the Akagi family remained in Qonaskamkuk. (Williams, 2018a; PRGI, 2023)

Residential and Day Schools: Treatment of Wabanaki children by settlers was deplorable. Sussex Vale Indian Day School opened in 1787; the first of many to open in New Brunswick for the same purpose as Indian residential schools, 'to remove the Indian from the child' (Fournier & Crey, 2006). These particular schools aimed to have children convert to the protestant faith. Atrocious treatment of children is well documented, and many were forced to live with settler 'host families' who received payment from the New England Company, forced the children to work, often as indentured servants until they were 21 years old. Many were sexually exploited or abused. The last Indian Day School in New Brunswick did not close until 1992. Some of the people interviewed during this research are survivors, or direct descendants. (TRC, 2012; Fraser, 2021)

Cultural Revitalization: The Peskotomuhkati Nation has faced extensive discrimination, racism, and genocidal acts from settlers to their homelands, whom they helped survive scurvy and harsh winters and living conditions by showing them how to live off the land (Williams, 2018a). Despite all of these hardships, the Nation and its People are strong, and are working hard to revitalize their culture, language, customs and ways of life through Museums, Powwows, restorative justice, and multigenerational healing (Wabanaki REACH, n.d.). At top priority is ensuring that Peskotomuhkati People now and in the future have access to clean drinking water (Wabanaki Alliance, 2022), are able to live in harmony with Mother Nature with deep connections, and are able to sustain themselves and their families from foods and medicines of the lands and waters. Realizing the truths of the continual oppression faced by the Nation from colonial governments on both sides of the border is a step toward uncovering the truths of Truth and Reconciliation.

2.1.1 Treaty Relationships, Recognition, Reconciliation

The Peskotomuhkati Peoples are still not recognized as a First Nation by the Canadian government, even though their Chiefs signed the Treaties of Peace and Friendship (1725-1779) with the British Crown, along with others from the Wabanaki Confederacy (PRGI, 2023).

Europeans including Basques fishermen began to fish the waters off the coast of Turtle Island (North America) in the 1500s, setting up temporary camps in Wabanaki territory to dry fish. The first colonisers came to settle in the lands of the Wabanaki in the early 1600s (Old Berwick Historical Society, 2024). A series of Peace and Friendship Treaties were signed between the Wabanaki Peoples (Abenaki, Mi'kmaq, Peskotomuhkati, Penobscot, and Wolastoqiyik) and the British Crown from 1725-1779. Treaty-making, as it is known in Canada, is called *lakutuwagon*, or 'making family' by Wabanaki people (Peskotomuhkati-Wolastoqey Language Portal, n.d.; Williams, 2018b). This shows how Wabanaki view a treaty relationship – descendants of those who have signed a Peace and Friendship Treaty are treated as siblings, and Wabanaki people view it as impossible to make war with one another. Treaties were not viewed in this same way by the British Crown, nor Canada, and Indigenous rights have been continually eroded through displacement, dispossession, disenfranchisement, and genocidal acts of residential schools, just to name a few of the ways the Treaties were dishonoured (Young, 2018).

How can a Nation that signed Treaties with the British Crown no longer be recognized as a Nation? There are many First Nations across Turtle Island whose traditional and ancestral territories span the Canada-U.S. border, only the Peskotomuhkati. The border was established between 1783-1854 – finalized over a century after the Peace and Friendship Treaties were first signed – all before Canada became a nation (Williams, 2018a).

Section 35 of the Canadian Constitution Act of 1982 states:

> 35 (1) The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed. (2) In this Act, aboriginal peoples of Canada include the Indian, Inuit and Métis peoples of Canada (Constitution Act, 1982).

The Treaties are mentioned directly in the Canadian Constitution. These Treaties are living documents, full of useful principles for shared governance, they are vehicles for reconciliation. The term 'aboriginal peoples of Canada', however, is leading to confusion and a seemingly legal grey area, which the Government of Canada appears to be using to shirk its responsibility in upholding the Treaties. Do 'Aboriginal Peoples of Canada' include those living in communities that are currently south of the border, but whose homelands span the border? In the years following the creation of the border, the Crown recognized its treaty obligations on several occasions, including in 1838 when the U.S. began an 'Indian removal policy', and in response the Crown invited Nations to come north for protection. However, for the Peskotomuhkati Peoples, the Crown did not demonstrate integrity when it forced them out of main communities in Qonaskamkuk (St. Andrews). The people who had been living there moved to Deer Island and eventually over to Sipayik (in Maine). (Williams, 2018a)

The core goal of the Passamaquoddy Recognition Group is for the Peskotomuhkati Nation to be recognized by Canada as a First Nation. The organization is based in Qonaskamkuk (St. Andrews), New Brunswick, and has been working diligently on relationship building with the federal government since its founding in the late 1990s (PRGI, 2023). A lack of recognition prevents the Nation from accessing certain federal grants, including through the Guardians Program with Environment & Climate Change Canada, meant to support in the creation and training of a team of Indigenous caretakers for IPCAs (D O'Leary, personal communication, June 2024). Gestures have been made by the federal government to attempt to demonstrate their support for the Peskotomuhkati plight, including the 'donation' (giving back) of a 2300-acre tract of land that came up for sale along the Skutik River which has a large guiding lodge where Peskotomuhkati peoples were once hired as hunting and fishing guides for American tourists (AFCC - American Friends of Canadian Conservation, 2022). This acreage has a Nature Trust of New Brunswick conservation easement over it, to ensure its long-term protection from subdivision, development, or clearcutting (AFCC, 2022). This land, now known as Chiputneticook Lodge, is an important gathering place for training, and is the centre of the land-based Skutik IPCA that is in the works (AFCC, 2022).

2.1.2 Skutik River

The Skutik River is at the heart of Peskotomuhkati territory and is essential for transport, sustenance, and culture for the Peskotomuhkati Peoples. It is the home waters of many sea-run fish that return upriver each spring to spawn, including historically 40 – 80 million siqonomeq (alewives) (PRGI, 2022). In the past two centuries, the Skutik River has faced extreme environmental degradation on both sides of the colonial border that separates New Brunswick and Maine. Clearcuts, pesticide use, pulp mills spewing untreated effluent into the Skutik, and four hydro-power dams made the waters toxic and largely impassable to fish (Dana-Sacco, 2020). The State of Maine was even convinced by bass fishermen that the decline of small-mouth bass (an introduced species in the watershed) was on account of the alewives[8] (siqonomeq in Peskotomuhkati), prompting the removal of an important fish ladder from the downstream dam, which lead to the lowest count of siqonomeq ever to return to the River in 2002 at only 900 fish (PRGI, 2022).

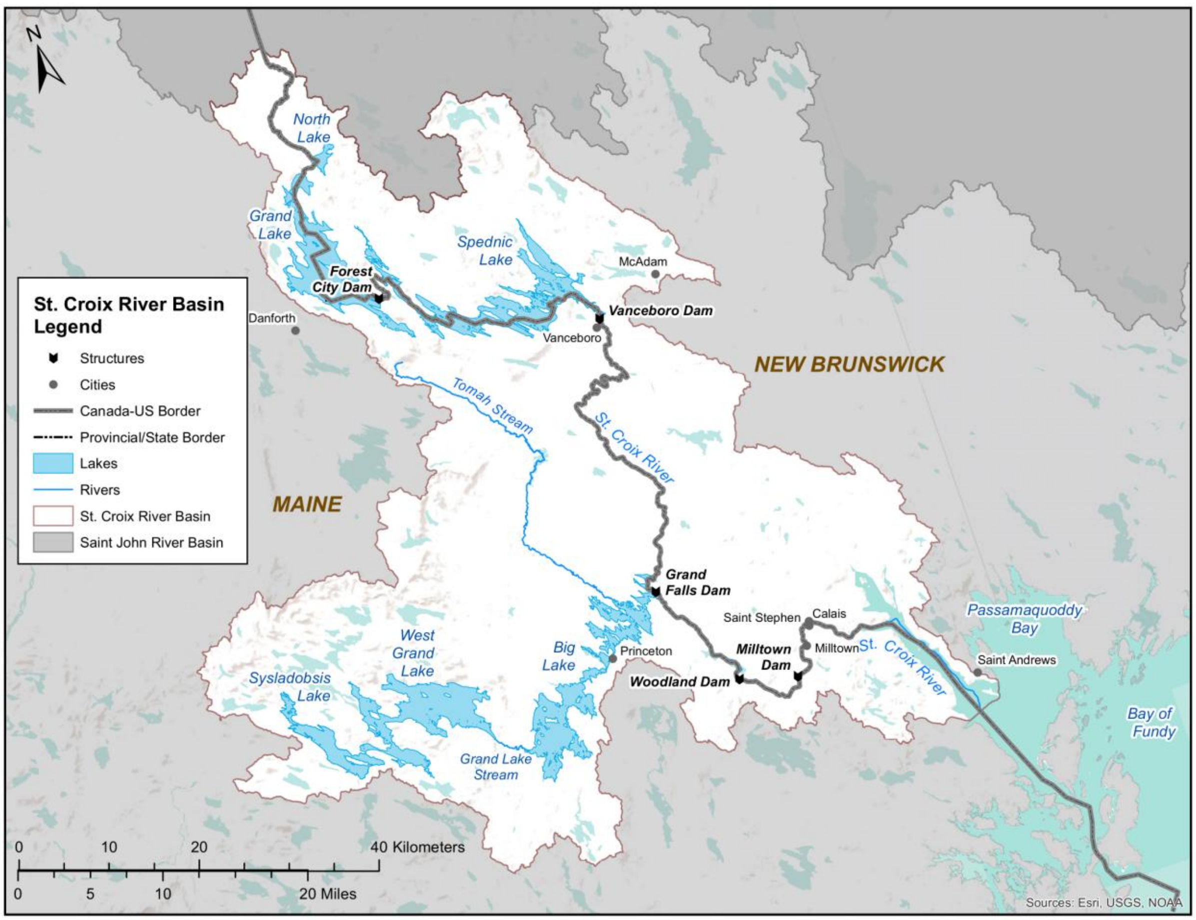

Figure 4: Skutik watershed's three major dams affecting fish passage in the first 30 km upriver from St. Stephen, NB: Canadian-owned Milltown Dam (removal in spring 2024), US-owned dams at Woodland and Grand Falls. (International Joint Commission).

[8] Alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*)– these two similar species are generally lumped together.

Since 2011, the Schoodic Riverkeepers of the Passamaquoddy Tribes in Maine and the Peskotomuhkati Nation in New Brunswick have been pushing toward river restoration and improved fish passage in the Skutik River, the heart of the Peskotomuhkati territory. (See Figure 3, Quoddy Region timeline for more details on key milestones)

> "My work that I'm doing currently with alewives and river restoration, is to make sure that the environment is capable of holding those resources for the future generations to be able to access and survive off of. That is really central to our continued survival; culturally, spiritually, and physically." Ed Bassett. (Bassett et al., 2014)

> "The restoration of a species like the alewife actually works towards helping the restoration of other species. This is very important. It's critical. If we're really serious about restoring this river system, it has to start with that fish." Sakom (Chief) Hugh Akagi. (Bassett et al., 2014).

The Schoodic Riverkeepers, along with allies, created a Skutik River Restoration Plan that outlines the history of the River and its estimated future carrying capacity for anadromous fish (i.e. between 40 and 80 million of the keystone species, siqonomeq) (Peskotomuhkati Nation at Skutik, 2022). The plan outlines a series of goals to achieve river health, one being the removal of the Milltown Dam at Salmon Falls (PRGI, 2022), which was completed in summer 2024 (Scully, 2023). The successes of the river restoration work thus far highlights the power of collaboration behind a unifying goal, and the willingness of local partners to improve the environment. The revitalization of the Skutik River is essential for any efforts to improve the health of the Quoddy marine environment. Without a healthy ocean, the Skutik River restoration will also be meaningless – the two are interconnected.

Siqonomeq are less abundant in Passamaquoddy Bay than Midcoast sites in the Gulf of Maine, leading to less high lipid food available to forage fish and other species (Willis et al., 2016). River restoration efforts can help the anadromous fish recover (Willis et al., 2016), but only so much; it's also critical to protect them from pressures at sea. Bycatch is another concern in the region for siqonomeq, and one that can only be solved through improved fisheries management measures like gear types, and temporal closures (Hasselman et al., 2015).

2.2 Ecological Importance of the Quoddy Region, Bay of Fundy

The Quoddy Region and Monahnuk (Grand Manan Island) are rich in nutrient upwellings. Supporting a range of marine biodiversity (Lotze et al., 2004; Buzeta & Singh, 2008) it's colloquially known as the 'cafeteria of the Bay of Fundy' (see Figure 5). Due to the many islands within the Bay in this region, and the benthic variability and high tides, nutrients support high concentrations of various marine life (Lotze et al., 2004). However, wildlife populations, including Peskotom (pollock) the Peskotomuhkati's namesake, have struggled for the past two centuries (Lotze & Milewski, 2002; Lotze et al. 2004).

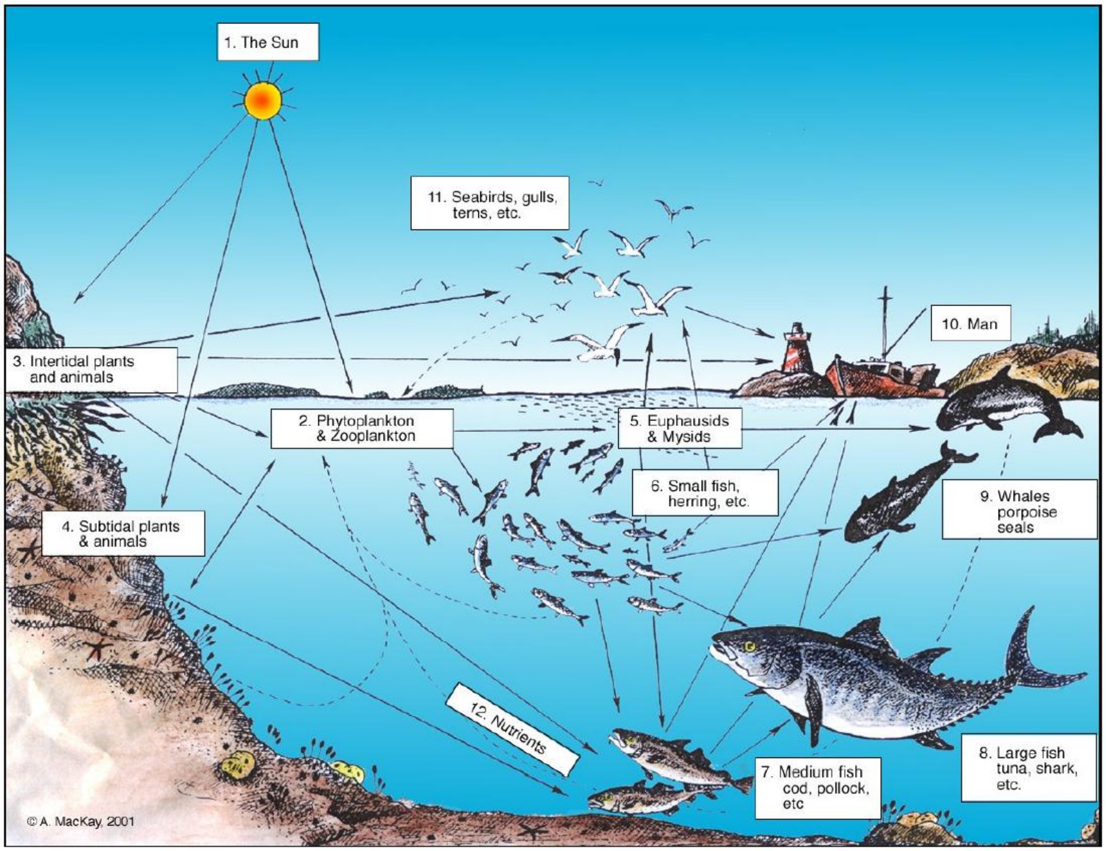

Figure 5: Quoddy Region nutrient upwellings and biodiversity - Art MacKay 2001 (Lotze & Milewski, 2002)

The Quoddy Region is well-known for its biodiversity, which is why it has been recognized with a number of areas designated as critical for various creatures including Atlantic Wolffish, seabirds and sea ducks, cetaceans, and sponges found only in the Quoddy Region (Huntsman Marine Centre, 2024; IBA Canada, n.d.). Important Bird Areas, Ecologically Biologically Significant Areas, Key Biodiversity Areas, and nature (p)reserves are common throughout the Quoddy Region (Buzeta, 2014).

Ecologically Biologically Significant Area (EBSA): designated by DFO and partners. A non-regulatory tool meant to “draw attention to areas of high ecological or biological significance”, to encourage risk aversion in management. (Buzeta, 2014)

Important Bird (& Biodiversity) Area (IBA): Globally important areas to conserve bird populations. IBA was developed and sites are identified by BirdLife International. Not formally protected, the program is administered and bird counts done by Birds Canada. (IBA Canada, 2024)

Key Biodiversity Area (KBA): International designation - similar to Important Bird Area - supports future conservation efforts, but is not in and of itself a protective tool – program administered in Canada by Canadian Wildlife Service. (KBA, 2023)

2.3 Economic Importance of the Quoddy Region, Bay of Fundy

As mentioned, the Quoddy Region is rich in nutrient upwellings and is a biodiversity hotspot – this also makes it an important area for marine industries including fishing, and other uses of the Bay. What follows in 2.3.1 – 2.3.3 is a non-comprehensive overview of some of the many extractive uses of the Quoddy Region. Some of the other economic uses and pressures in the Quoddy Region include Saint John shipping traffic coming past the Quoddy Region (though shipping lanes have recently been diverted with the help of local cetacean advocates); power generation including Point Lepreau Nuclear Power Generating Station, tourism including whale and bird watching on zodiacs and fishing vessels, sea kayak tours, and SCUBA diving.

2.3.1 Fishing

Commercial, moderate livelihood, recreational, and Food, Social, and Ceremonial (FSC) fishing all happen in the Bay of Fundy (Gough, 2006; Fisheries & Oceans Canada, 2022c). There is a wide array of different species fished with various gear types, seasons, and restrictions aimed at conservation of the species. Fundy North Fishermen's Association represents 150 of the small-scale commercial fishermen in New Brunswick in the Quoddy Region and up to Saint John (CBC News, 2018); many fish multiple species, including those listed in Table 1:

Table 1: Top fish landings value in NB (Fisheries & Oceans, 2021); Gear types (Fisheries & Oceans, 2024f; Percy, 1996)

<table>
<tr><th>Species</th><th>Gear Type(s)</th><th>Total landed value in NB (2021) in millions</th><th>Top species fished by landed value (2021)</th></tr>
<tr><td>Groundfish (i.e. halibut, cod, pollock, silver hake)</td><td>trawl nets, gillnets, bottom longlines, or rod and reel</td><td>$2.005 M</td><td>Halibut: $1.85 M</td></tr>
<tr><td>Pelagic & other finfish (i.e. herring, alewife, mackerel, eel, smelt, tuna, shark)</td><td>Purse seines, weirs,</td><td>$13.329 M*</td><td>Highest value:
Herring: $8.812 M

2nd Highest value:
Alewife: $0.864 M</td></tr>
<tr><td>Shellfish 1 (i.e. scallops, sea cucumber, green sea urchins, shrimp)</td><td>Bottom-trawls or diving</td><td rowspan="2">$617.959 M</td><td>Scallop: $ 8.781 M
Shrimp: $ 6.732 M
Urchin: $ 2.137 M</td></tr>
<tr><td>Shellfish 2 (i.e. lobster) (crabs fished in N-E NB)</td><td>Pots or traps</td><td>Lobster: $ 420.116 M</td></tr>
<tr><td>Others (marine plants – see 2.3.2; lumpfish roe, other)</td><td>Small skiffs or barge, cutter rakes, vacuum</td><td>$0.684 M</td><td>unlisted</td></tr>
</table>

*Tuna, shark, smelt unlisted for confidentiality reasons because there are two or fewer fishers of those species (Fisheries & Oceans Canada, 2021).

There are some conservation measures in place to prevent overfishing in the DFO Maritime region; there are seasonal restrictions and size limits on many types of fisheries, and commercial fishing requires a license (Fisheries & Oceans Canada, 2024f; CBC News, 2018).

Soft-shell clams and periwinkles are examples of shellfish and invertebrates harvested by hand. Periwinkles have no active management plan (Fisheries & Oceans Canada, 1998a; ibid., 2024h), but other hand-collected species do (blue mussel, oyster), along with daily harvest limits, and some require a license (Fisheries & Oceans Canada, 2024g).

2.3.2 Seaweed Harvesting

There are small-scale commercial fisheries for dulse (*Palmaria palmata*) and rockweed (*Ascophyllum nodosum*) harvesting that have been regulated by New Brunswick's Department of Agriculture, Aquaculture, and Fisheries (DAAF) since 2022. Prior to this, DFO was the regulator and the change of management was swift and unexpected (H. Bergeron, personal communication, July 2024). The warming of the Bay of Fundy and seasonal weather changes effect the abundance and quality of dulse (Urquhart, 2023). Rockweed is impacted by ice scour (Acadian Seaplants, 2019). Dulse is harvested for human consumption, does not require a license, and is done at low tide either by hand with buckets, or with small skiffs; rockweed is harvested with small skiffs and cutter rakes or sickles, then brought to barges, and harvesters are required to leave 12.7 cm above the holdfast, and exploit at a rate of 17% of the accessible biomass (H. Bergeron, NB DAAF, personal communication, December 2024); Maine has the same exploitation rate allowed for their fishery (Acadian Seaplants, 2019).

Rockweed has been used for centuries as an agricultural mulch and fertilizer; then a commercial industry began in Nova Scotia in the 1960s, and expanded to the Quoddy Region in 1995, currently employing around 550 people in the Maritimes (Percy, 1996; Fisheries & Oceans, 1998b; Acadian Seaplants, n.d.). Rockweed is now exported for use in making extracts including a foliar feed to spray on crops, to grind into 'kelp meal', or to extract alginates to use to thicken products from pudding, to make-up, to paint (Percy, 1996). Rockweed has closure areas for reference sites for research that were first established by DFO when the industry began in NB (Langridge, 2023; P. Lawton, personal communication, July 2024). In the Maritimes, the industry conducts its own biomass assessments pre- and post-harvest, mentioning that ideally this would be the role of government, but they lack the resources for annual surveys; the government then audits the company surveys (Acadian Seaplants, 2019).

2.3.3 Finfish Aquaculture

Since the Quoddy Region is incredibly biodiverse with rich nutrient upwellings and cold waters, it is described as a prime location for finfish aquaculture, where farmed fish are grown in cages for human consumption. In 1978, New Brunswick saw its first commercial salmon aquaculture site with open net pens; now there are over 90 sites (NB Agriculture, Aquaculture and Fisheries, 2013), each site containing 6-24 pens, holding up to 200,000 salmon (Pedersen, 2024). This industry is regulated by the New Brunswick Department of Agriculture, Aquaculture and Fisheries (NB DAAF), by the Aquaculture Act (SNB 2019, c 40), and must also abide by federal regulations under the Fisheries Act. Along with 'secondary' fisheries like green sea urchin, sea cucumbers, and rockweed, aquaculture began as a way to stimulate the economy of rural coastal communities when some of the groundfish fisheries were seeing sharp declines (P. Lawton, personal communication, July, 2024). From 2020-2022, salmon aquaculture in New Brunswick produced on average 18,639 tonnes ($121.3 million) of farmed salmon, ranking it the second top producer in Canada, second only to British Columbia (Fisheries & Oceans, 2024i). Sites are concentrated in the Quoddy Region and surrounding Grand Manan. The Cooke family of New Brunswick began their first farm at Kelly Cove in 1985, and Cooke Aquaculture is now the largest family-owned seafood company globally with 13,000 staff in 14 countries; they operate most sites throughout Maine and New Brunswick (Cooke Aquaculture, 2024).

2.4 Marine Conservation Legislative Background

There exist a multitude of means to protect marine spaces within Canadian and U.S. legislation through various federal Acts. Existing outside of colonial legislation, Indigenous Protected & Conserved Areas (IPCAs) are used in contemporary Indigenous-led conservation efforts. There are a wide array of conservation tools that can be used to protect coastal zones in Canada – some designed for protecting only ocean space beyond the high tide mark, others that can also protect intertidal zones or beaches, and still others that are designed to protect land space. The Oceans Act Marine Protected Areas on the other hand, can only protect ocean space, and are thus not considered silver bullets (Filbee-Dexter et al, 2024; Agardy et al, 2003); they are also seen as too prohibitive in some cases, and cumbersome to get buy-in. An advantage of IPCAs and National Marine Conservation Areas (NMCAs) is that they can be used to protect ocean, intertidal zone[9], and land, however this requires inter-jurisdictional collaboration between federal, provincial, sometimes private management, working alongside Indigenous groups to protect areas.

The federal approach to marine conservation uses federal tools in consultation with groups, including rights holders and stakeholders. Recent progress has been made on meeting Canada's target of 5 percent of marine spaces protected by 2017, and 10 percent by 2020 using both marine protected areas (which can encompass any site designated with a federal tool), and Other Effective Conservation Measures (OECMs[10]). In Canada, an OECM is a marine refuge, and in all cases currently, this is a fisheries closure under the *Fisheries Act* (Fisheries & Oceans Canada, 2022a). The government of Canada, in line with the Convention on Biological Diversity, is now aiming to protect 25 percent of its oceans by 2025, and 30 percent by 2030 (Prime Minister of Canada, 2019). There is recognition that this work must centre Indigenous conservation efforts (ICE, 2018).

2.4.1 Indigenous Protected & Conserved Areas

The UN Declaration on the Rights of Indigenous Peoples' Article 29.1 discusses the "right to conserve and protect the environment and the productive capacity of their lands, territories, and resources" (United Nations, 2007). In 2017, the Indigenous Circle of Experts (ICE) was formed to help guide Canada in achieving Canada's Pathway to Target 1, defining what Indigenous-led conservation would entail. As mentioned in the Introduction, Indigenous Protected and Conserved Areas (IPCAs) are: "lands and waters where Indigenous governments have the primary role in protecting and conserving ecosystems

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[9] Intertidal zone: the beach space between the mean high tide mark and the mean low tide mark. In New Brunswick, this space is 'owned' and managed by the Province of New Brunswick, thus deemed 'Crown land'.
[10] An OECM is a designated area, in this case an ocean zone, managed to ensure lasting conservation of biodiversity and ecosystem services, and to preserve cultural, spiritual, socio-economic, and local values.

through Indigenous laws, governance and knowledge systems." (ICE, 2018). The three primary requirements of an IPCA are (1) that it be Indigenous-led, (2) have a long-term commitment to conservation, and (3) elevate Indigenous rights and responsibilities (ICE, 2018). As shown in Figure 7, there is a spectrum of Indigenous leadership found in current IPCAs, from exclusive Indigenous leadership to mixed jurisdictional decision-making, to co-management that uses Canadian Legislation as its foundation and where the final decision is made by a Minister of the Canadian government, rather than by a co-governance board, or Indigenous Nation. Arguably, the third category (co-management) may not meet the standards of ICE, as they may not be fully Indigenous-led.

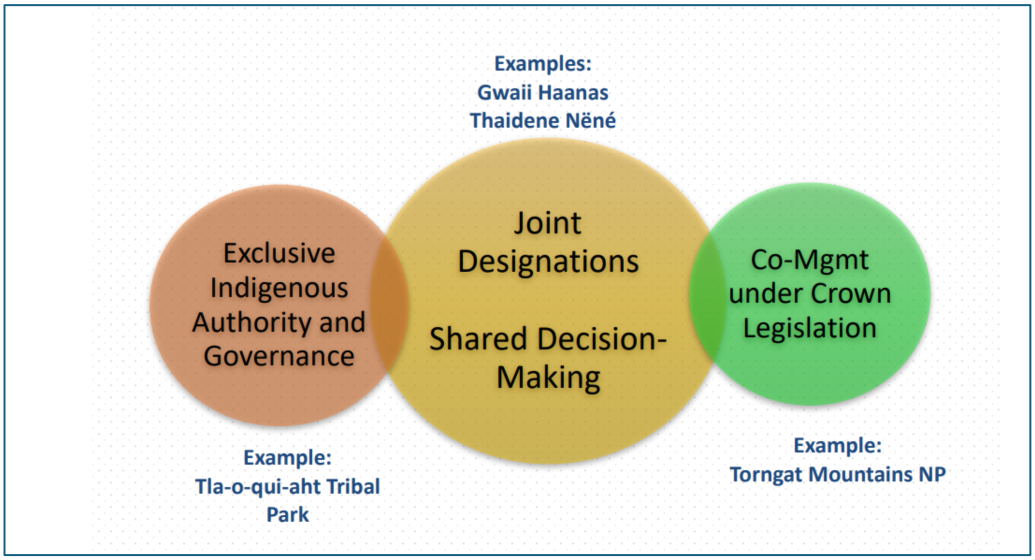

Figure 6: Jurisdictional Spectrum of IPCA Types (Innes et al, 2021)

Meaningful shared decision-making goes well beyond consultation to full adoption and internalization of the distinct laws, value and knowledge systems of Indigenous and Crown governments – this means that consensus is critical (Innes et al., 2021). Though Canada has publicly and financially committed support to Indigenous-led conservation and stewardship, including investing $340 million (Indigenous Leadership Initiative, 2021), there is still much work to be done by DFO and other departments to achieve recommendations made by ICE to make Indigenous-led marine conservation a reality (Heidt & Jones, 2023). Within the range of governance models for IPCAs, the following graphic (Figure 8) demonstrates the various options – all are Indigenous-led, some involve Crown (federal colonial governments), and/or Non-Governmental Organizations (NGOs). Below are some case studies of these IPCAs.

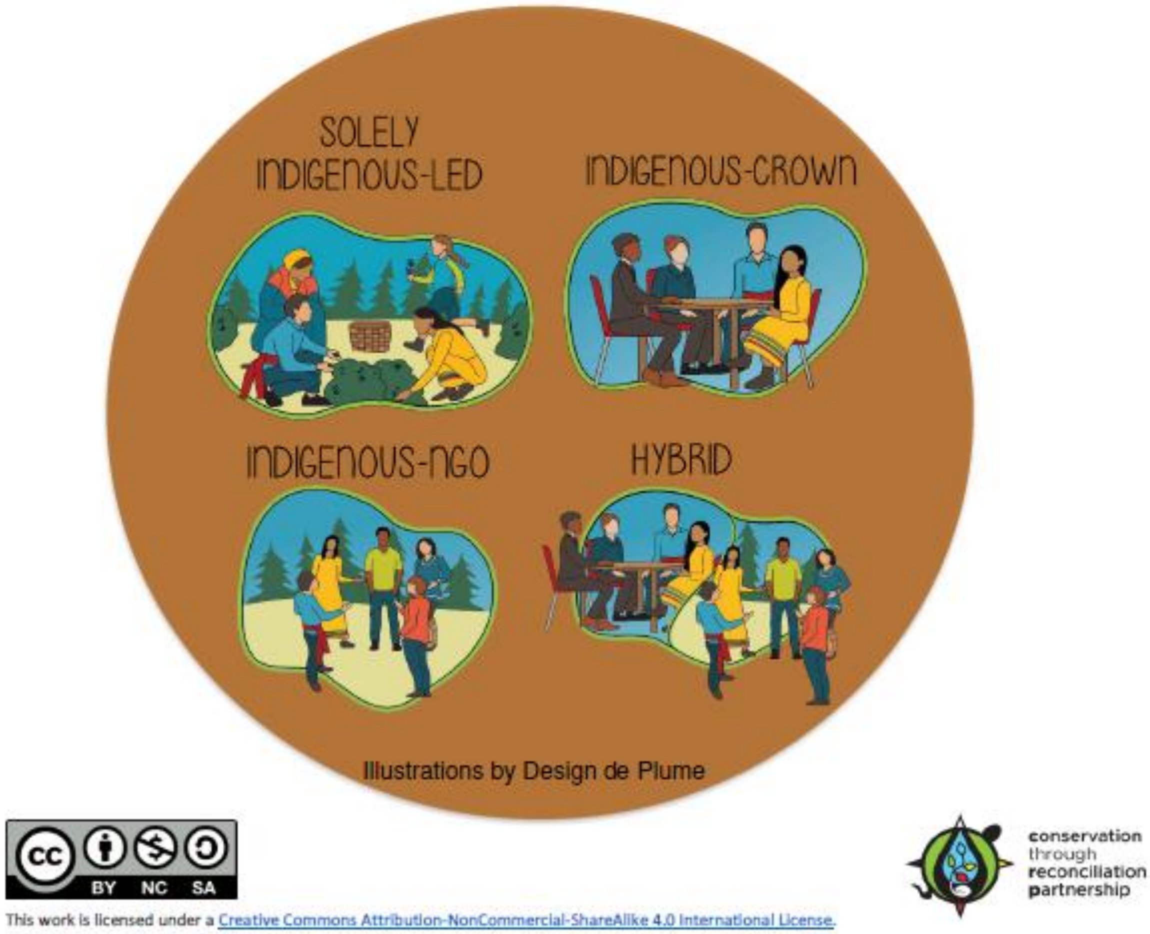

Figure 7: Spectrum of IPCA leadership and governance. (Youdelis et al., 2023)

Solely Indigenous-led Protected & Conserved Areas

Below are some case studies from Turtle Island of Nations that have led conservation initiatives.

Gwaxdlala/Nalaxdlala (Mamalilikulla Nation) – declared a protected area in November 2021 and in February 2023, the federal government finally honoured this area as protected (Wood, 2022; von Herff, 2023). This protected area does not allow any fisheries, including Indigenous food fisheries, something that the Kitasoo Xai'Xais Nation are looking to avoid (von Herff, 2023).

Gitdisdzu Lugyeks MPA (Kitasoo Xai'Xais Nation) - Without 'permission' from DFO, the Kitasoo Xai'Xais Nation set up a fully Indigenous-led Marine Protected Area in 2022 which has been internationally recognized with a gold distinction as a Blue Park[11] (Kitasoo Xai'Xais Nation Council, 2023; Marine Conservation Institute, 2024a). A treaty was never signed between the Kitasoo Xai'Xais and Canada,

[11] "The Blue Parks initiative sets a science-based standard for marine protected area quality, incentivizes the standard with prestigious international awards, and supports conservation leaders around the world who are working to achieve the standard." (Marine Conservation Institute, 2024b)

though they do still want the federal government involved, but felt this critical Bay was in urgent need of protection, and could not wait for DFO to be ready to act. The federal government is considering various elements: the interruption of shipping, threat to economic development, damage to the fishing industry; however for the Nation, not declaring an MPA will endanger their lives – Kitasu Bay is their life source.

Tla-o-qui-aht Tribal Parks – In 1984, the old growth forests on Meares Island were under threat of logging, so a peaceful blockade was set up by Tla-o-qui-aht members and allies, successfully protecting the forests. To protect the territory for future generations, the Tla-o-qui-aht led by the Ha'wiih – hereditary leaders – worked to establish four tribal parks (from 2007-2014), encompassing their whole territory, including the area of a recently proposed Fandora gold mine. Guided by Nuu-chah-nulth knowledge systems, Tla-o-qui-aht Tribal Parks' sizes have not been recorded or calculated. The Tribal Parks are governed by both hereditary and elected leadership, and have two distinct management zones with plans guided by *qua'siin'hap,* (leave as it is, which includes old growth forests) and *uuya'thluk'nish*, (we take care of). (Youdelis, 2023, pg. 4-12)

Indigenous and Crown Co-Governed IPCA

Thaidene Nëné - Indigenous-led by the Łutsël K'é Dene First Nation, this area was declared protected by the Nation in 2000, and recognized as protected by Canada in 2019. The decision-making is guided by the all-Indigenous Thaidene Nëné Xá Dá Yáłtı who make decisions by consensus with the focus to provide habitat for bears, wolves, moose, muskox, and caribou. The Łutsël K'é Dene First Nation, Parks Canada and the Government of the Northwest Territories are partners in decision-making, with federal and territorial governments only participating during discussions regarding the National Park Reserve (NPR) or territorial protected areas respectively. All parties appoint representatives to Xá Dá Yáłtı who are to represent the best interest of Thaidene Nëné while in meetings, guided in a Two-Eyed Seeing Approach (Bartlett, Marshall & Marshall, 2012), rather than speaking on behalf of their organization (see Figure 9. If consensus cannot be reached, and there is a conflict that the Thaidene Nëné Xá Dá Yáłtı cannot resolve, the issue is brought to the Łutsël K'é Dene First Nation and the federal or territorial Minister (depending on the issue) to discuss and resolve.

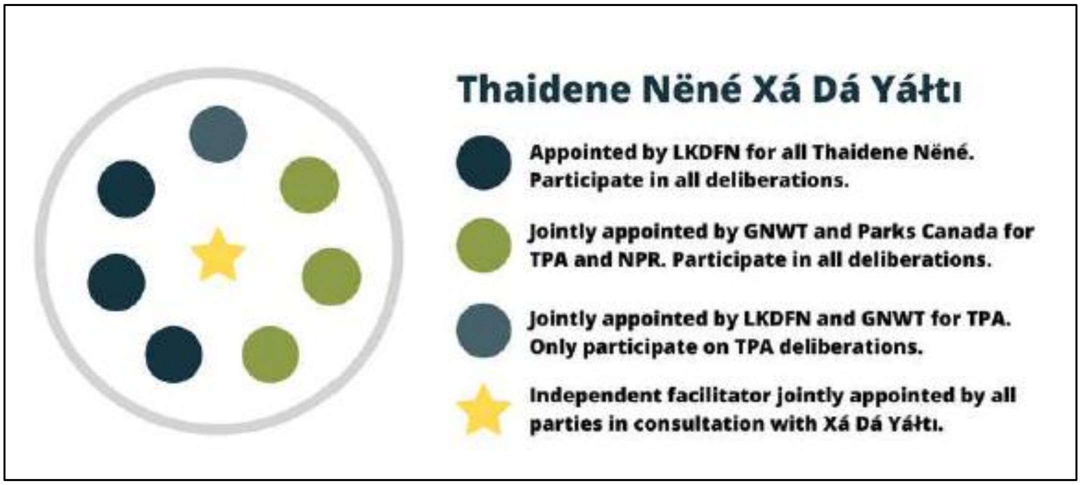

Figure 8: The composition of Thaidene Nëné Xá Dá Yáłtı, or "the people who speak for Thaidene Nëné. Source: landoftheancestors.ca

See Appendix for the agreement summary (Youdelis et al., 2023).

Indigenous & NGO IPCA and Hybrid IPCAs (Figure 8) are other ways that an IPCA could be governed – this could represent either the yellow (shared governance) or green (co-management) circles within Figure 7, however Indigenous leadership is emphasized as critical for a true IPCA process (ICE, 2018). Currently, there are no Canadian examples that are published where an NGO is on the governing team, yet many have helped establish IPCAs, including some examples mentioned above (Youdelis et al., 2023). The Passamaquoddy Recognition Group and the Nature Trust of New Brunswick have a unique relationship in co-protecting land through a land-holding agreement along the Skutik River watershed until a time when the Peskotomuhkati Nation has an established land-holding entity, and the lands will be transferred to their sole ownership and care (MacNeill, 2024).

2.4.2 Canadian Legislative Tools for Marine Conservation

There are five types of legislation for marine conservation currently used in Canada to work toward achieving the United Nations Convention on Biological Diversity (2022) Target 3 goal of 30 percent of oceans protected by 2030. These area-based legislative tools include those shown in Figure 10 and described below:

Figure 9: Canadian Conservation Tool Spectrum (not comprehensive). Created in Canva. (B. Pohl, 2024)

National Wildlife Areas (NWA): Led by Environment and Climate Change Canada can include marine conservation of ecologically significant areas, protected under the Canada Wildlife Act (Environment and Climate Change Canada, 2024). The first of its kind and only example is Scott Islands marine National Wildlife Area (Environment & Climate Change Canada, 2018). Currently there are no examples where establishment was led or co-led by Indigenous Peoples.

National Marine Conservation Areas (NMCA): Led by the Parks Canada Agency (2024a), aim to protect 'representative marine areas for the benefit, education and enjoyment of the people of Canada and the world'.

- Example: Gwaii Haanas National Park Reserve, National Marine Conservation Area Reserve, and Haida Heritage Site – established first by the Haida Nation (Parks Canada Agency, 2024b).

***Oceans Act* Marine Protected Areas (MPA):** Established for the conservation of important ocean habitats and species - led and enforced by Fisheries and Oceans Canada (2024b).

- Example of MPA established by DFO: St. Anns Bank MPA, which has a jointly written management plan with the Mi'kmaq Nation, and though they were consulted in the design process, they were not partners in establishing the MPA (Fisheries & Oceans Canada, 2023c).
- Example of MPA established in partnership with a First Nation: SG̲áan K̲ínghlas-Bowie Seamount MPA – Haida Nation (West Coast Environmental Law, 2021).

Other Effective area-based Conservation Measures (OECM): "*Provide long-term biodiversity conservation benefits for species, habitats and ecosystems*". Currently, the only marine OECMs in Canada that meet the criteria are fisheries closures, termed marine refuges under the *Fisheries Act,* but OECMs could be established by any relevant regional governing authority. (Fisheries & Oceans Canada, 2022a)

- Example of OECM: Jordan Basin Conservation Area – fisheries closure for sensitive corals and sponges (Fisheries & Oceans Canada, 2019).

Ecologically Significant Areas (ESA): Led by Fisheries and Oceans Canada, this is a new legislative tool that aims to "*provide long-term enhanced conservation and protection of key areas for fish and fish habitat that are highly productive, sensitive, rare, and/or unique and to ensure effective restoration of these areas*". This designation will be issued through the *Fisheries Act* as a lasting way to protect fish habitat including intertidal and freshwater areas, though it does not protect against fishing, and is not required to follow the Oceans Act restrictions of 2019 (Fisheries & Oceans Canada, 2023a). As this tool is still under development, there are currently no ESAs in existence, but a proposed ESA at St. Mary's River is home to one of the largest concentrations of wood turtles, a species at risk in Nova Scotia. (Fisheries & Oceans Canada, 2023c)

Other Canadian Conservation Designations

These designations provide no formal protection – discussed in section 2.2 in more depth.

- **Ecologically Biologically Significant Area (EBSA)**: designated by DFO and partners.
- **Important Bird Area (IBA):** Globally important areas to conserve bird populations.
- **Key Biodiversity Area (KBA):** International designation - similar to Important Bird Area.

2.4.3 United States' Legislative Tools for Marine Conservation

Since 1783, the Skutik River was used to demarcate the border between the United States (U.S.) and Canada (Great Britain at the time), splitting the Peskotomuhkati territory between two colonial entities (American Friends of Canadian Conservation, 2022). For this reason, three main legislative tools to help achieve marine conservation in Peskotomuhkati territory in Maine were explored: National Estuarine Research Reserves (NERR); Marine National Monuments (MNM); and National Marine Sanctuaries (NMS). Figure 11 describes the jurisdiction of these tools.

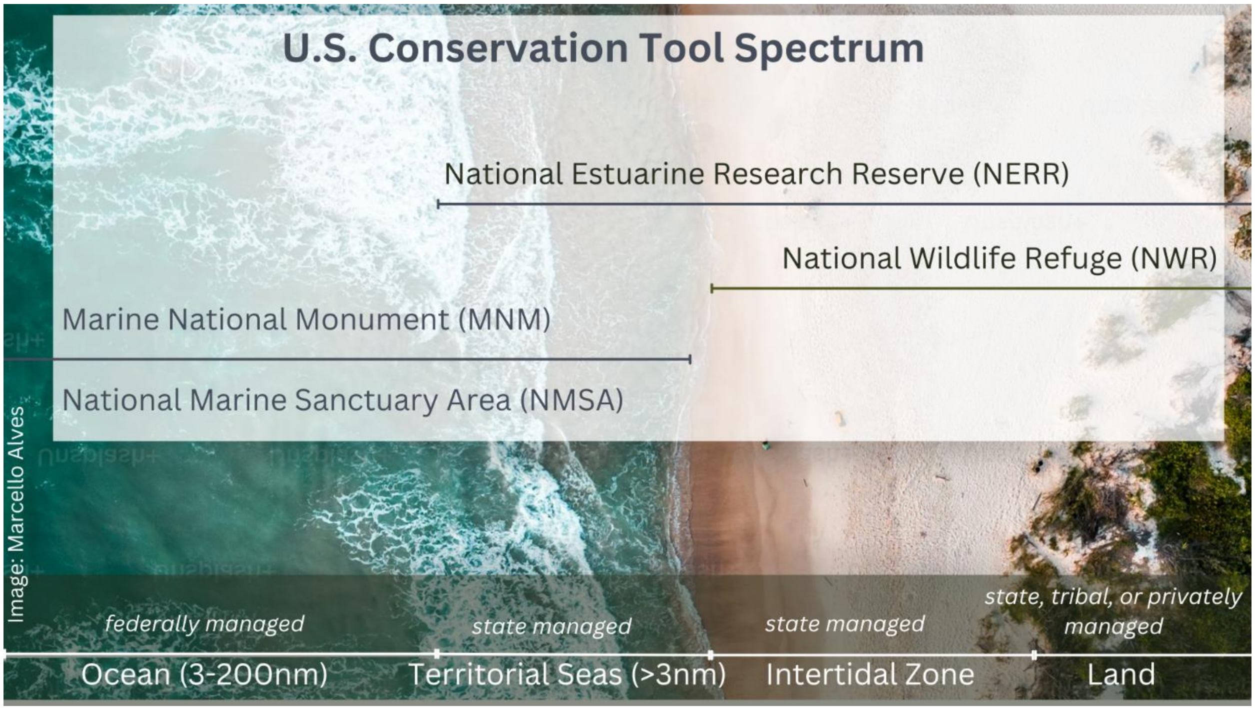

Figure 10: U.S. Conservation Tool Spectrum (not comprehensive). Created in Canva. (B. Pohl, 2024)

National Estuarine Research Reserve (NERR): A system first established under Section 315 of the *Coastal Zone Management Act* of 1972. NERRs provide no formal protection, however they elevate the profile of an area by having it recognized by NOAA and the State Governor as an important estuarine habitat, and are typically a prerequisite to further protection, since extensive monitoring occurs at the site (NOAA, 2024b). "Established to promote informed management of the nation's estuaries and coastal habitats".

- Example of NERR: Chesapeake Bay National Estuarine Research Reserve in Virginia
- Tijuana River – along the border with Mexico – described as the only International NERR (Virginia Institute of Marine Science, 2024).

Marine National Monument (MNM): May protect ocean space by presidential proclamation under the Antiquities Act of 1906 (16 U.S.C. 431-433). U.S. Fish & Wildlife Service and National Oceanic & Atmospheric Administration (NOAA), state and territorial governments manage MNMs that conserve ocean, remote islands and atolls. Currently manages 4 MNM in the Pacific and 1 in the Atlantic. (NOAA, n.d. -a)

- Example of MNM: Papahānaumokuākea Marine National Monument off the coast of Hawaii – home to 7,000 marine species, ¼ unique to Hawaii. Six presidents have worked to protect sections of it over the last century, and they had some level of public engagement. Developing MNM management plans and regulations undergoes a public review. (Papahānaumokuākea MNM, 2023).

National Marine Sanctuary (NMS): Designated by NOAA under the Marine Protection, Research, and Sanctuaries Act (1972) or by Congress through legislation. NOAA evaluates community nominations based on specific criteria, and if accepted, consults stakeholders and the public before final designation. As of November 2024, NOAA has created 10 sanctuaries, while Congress has established three. Regulations for these sanctuaries are developed through a public process. (NOAA, n.d. -b)

- Example of NMS: Florida Keys National Marine Sanctuary is a prime example of a large (3,800 square miles) coastal NMS that prohibits commercial and recreational fishing. The NMS has **five types of zones** with varying levels of protection: ecological reserves, sanctuary preservation areas, wildlife management areas, existing management areas, and special-use areas. (National Marine Sanctuary Foundation, n.d.; NOAA, n.d. -c)
- **Proposed Indigenous-led NMS**: Alaĝum Kanuux̂* (Heart of the Ocean), proposed as a marine sanctuary in the Eastern Bering Sea. "The Aleut Community of St. Paul Island is working toward a designated, co-managed marine area that addresses conservation concerns (...) while ensuring sustainability of commercial fisheries and our local economies." The proposed NMS was to protect habitat to prevent continued "alarming decline of fur seals, sea lions, seabirds, fish, crab, and other invertebrates". Recently, the Tribal Government decided not to pursue the NMS any further. (Aleut Community of St. Paul, n.d.)
- Proposition to make Papahānaumokuākea NMN a Marine Sanctuary: This would allow for more community engagement in the area's governance. Monuments do not require an advisory council the same way NMSs' do, this would make the Native Hawaiian advisory roles permanent. (CAP 20, 2023).

Note: there are other pieces of legislation available in both Canada and the U.S. for forms of protection of artifacts or ecosystems (i.e. Archaelogy Act, Beaches Act in New Brunswick, Clean Water Acts) however the analysis was focused on spatial marine conservation tools. Of note for non-spatial measures, for the finfish aquaculture industry, pesticides are permitted to be used in the control of the spread of a sea lice infection (Health Canada, 2017). Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Regulations, approves the use of pesticides in Canada (Health Canada, 2024a).

2.4.4 Co-Governance Agreements

On the far right of Figure 8 (2.4.1), co-management – one example of what this could look like may be a co-governance agreement for areas that are being established, or that have already been protected.

To date, the Peskotomuhkati Nation at Skutik has been invited by DFO to discuss several iterations of the MPA Network Plan (2023-2024). According to Chief Hugh and staff members, though the discussions and relationship-building are appreciated, this has been a frustrating experience because the proposed areas for MPAs continually change, and the voices of industry seem to have more sway. Shared governance, and a co-design process has been done in other provinces between DFO and one or more Nations, and between other agencies such as Parks Canada, as has Indigenous-led conservation.

The Mamalilikulla protected area is governed by a co-governance agreement – it was first protected by the Nation in 2021, and then in 2023 recognized federally as a protected area (see 1.5.1). The St. Ann's Bank MPA is another example more locally where after the fact of conserving the MPA, the Mi'kmaq

Nation has been involved in developing a co-management plan and sharing monitoring responsibilities (Fisheries & Oceans, 2023c).

Chapter 3: Methodology

This research uses mixed methods to understand key conservation considerations for Peskotomuhkati territorial waters, and what legislative tools could be used to achieve a future marine IPCA that spans an international border. Qualitative data was gathered from one-on-one interviews, focus groups, or talking circle-style meetings. The talking circle is an Indigenous research interview methodology, informed by lessons learned in *Research is Ceremony* (Wilson, 2008), as well as directly taking the lead from Sipayik community leaders. Participants were chosen in a combination of ways, by Chief Hugh Akagi, through the networks of the lead author and academic supervisor Maxine Westhead, and through snowball sampling (Johnson, 2014). To prepare for the talking circle, one key community member of Sipayik, Maine took the lead author by car around the community to meet with influential community members and gauge their interest in joining an informal talking circle in the coming week. This method was essential, as relationship-building and trust are critical to Peskotomuhkati values and culture.

The guiding questions to help address the main research questions were developed with the help of discussions with supervisors and social scientists, and inspiration was drawn from Figure 12 (Jiménez & Orozco, 2021), attempting to use prompts rather than outright questions so that people would be more encouraged to share longer form reflections or stories.

From: Prompts, Not Questions: Four Techniques for Crafting Better Interview Protocols

Prompt	*Solicits the respondent's account of...*	*Prompt Format*
Guided "Grand-Tour"	the salience of events, attributes, and experiences	How would you describe ___ to someone unfamiliar with it?
Comparison	the structure of what is normal	How would you compare ___ to ___?
Counterfactual	their perceptions of cause and effect	What would ___ be like if ___ didn't happen?
No-limits	behaviors, experiences, and views related to sensitive topics	Some people say / feel ___ and others say / feel ___. And, I have heard lots of views in between. What do you think? People have shared with me lots of different opinions / experiences / behaviors related to ___. Tell me about your view / your experience/what you've done.

Figure 11: Prompts, what they solicit, and sample formats (Jiménez & Orozco, 2021)

Guiding questions were as follows:

1. What areas would be good candidates for Peskotomuhkati-led marine Indigenous Protected and Conserved Areas (IPCAs)?
2. What would a successful collaborative process look like to establish marine IPCAs by the Peskotomuhkati Nation?

Interviews to help answer:

- What does the Peskotomuhkati Nation most value about the ocean spaces within their territory?

- What are common worries about the state of the ocean? Can protected areas help address these worries?
- What activities are most considered threatening to the well-being of these values?
- What should continue to happen, and where, within the region to support coastal livelihoods?
- What would ideal governance, collaboration, monitoring, and enforcement of a marine IPCA look like for the Nation?

Literature Review & Analysis:

- What strategies have other Nations been utilizing to work toward self-governed marine spaces? (i.e. Haida Nation and Coastal First Nations' Great Bear Sea Initiative).
- How do each of these tools align with Peskotomuhkati values, and what gaps exist in current conservation tools?
- What are the strengths and weaknesses of the various marine conservation tools in the context of a potential Peskotomuhkati-led marine IPCA?

Data analysis occurred through NVivo software and through qualitative analysis videos recorded by Dr. Philip Adu (Adu, n.d.). NVivo was used to inductively group key messages from the interviews into themes, and subsequently discuss overarching themes including policy change recommendations, harmful or beneficial activities within MPAs, and Indigenous values and knowledge about the Bay of Fundy region. Interviews were discussed extensively with a co-worker, Dani Deonarine, without whom the analysis would have been impossible. Figure 13 outlines the sectors that interviewees represented, for all interviewees who were able to attend at least one session. A handful of participants attended two or more sessions. Interview sessions and group meetings lasted between 1.5 – 5 hours each. Limitations of the study representativeness are discussed in Section 4.5.

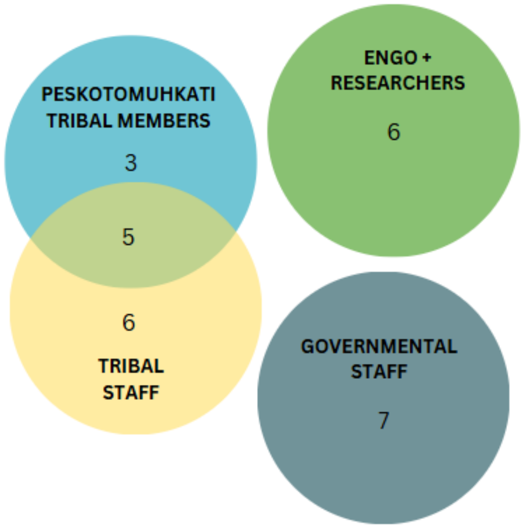

Figure 12: Interviewees' sectors - Peskotomuhkati Tribal Members were self-reported

3.1 Legislative Review

Canadian and U.S. Legislation, and Indigenous-led Tools that have marine, estuarine, and intertidal zone protection capabilities were reviewed and compared, looking at case studies led by federal governments, and First Nations, where applicable. Google scholar and the IPCA Knowledge Basket (n.d.) were used primarily, and any resources given by interviewees and supervisors.

3.2 Interviews with Peskotomuhkati Nation members

Conducting interviews with Peskotomuhkati community members was a critical component to answering the research question. Interviewees were chosen in collaboration with Sakom (Chief) Hugh Akagi and staff members of the Passamaquoddy Recognition Group Inc. for their knowledge and community leadership. Once chosen, each community member was phoned to invite them to participate in an interview to share their thoughts on Peskotomuhkati-led marine conservation in the Bay of Fundy. If interested, they were asked to participate in a 1.5-2 hour talking circle in Sipayik, and offered an honourarium for their time.

Before the interview, tobacco ties were shared to thank the interviewee for their time, and the researcher explained the consent form, which was sent out by email ahead of time. This was explained to all interviewees and signed in person before the interview by each participant. The consent form details whether or not the interviewee consents to have the interview recorded. If recorded, methodology was as follows:

- Recording unit was initiated.
- The researcher let the interviewee know when the recording began and when the unit was shut off at the end.
- Transcription of interview notes.
- Member checking: A typed transcript was sent via email to the interviewee for verification of accuracy and to make any clarifications.

See Appendix C for interview questionnaires – interviews roughly followed this format, however at times the conversation prompted different questions, which were noted in the transcripts.

Files were stored and encrypted using locked USBs to store data on, both kept in a lockbox. The researcher used a password protected laptop during all analysis.

NVivo software was used to analyze the transcripts through inductive coding of themes and sub-themes (parent and child coding), and to keep track of key quotes for later use in the research paper. The 'Case' feature was also used so that if individuals spoke in multiple meetings or interviews, all of their highlighted quotes could be grouped – this may help PRGI in their future work to determine important areas and key messages from various interviewees.

Figure 14 shows an image of the printed map used during discussions with community members to show which areas were already proposed as MPAs by Fisheries and Oceans Canada, in April 2024, and the Ecologically and Biologically Significant Areas (EBSAs) that were designated by extensive scientific surveys, largely work done by Maria Buzeta (2014). These maps were used merely as a discussion starter on key areas, after the initial few questions were asked, so as not to sway interviewees into focusing on any particular areas in their discussion on important areas or areas of concern in the Bay.

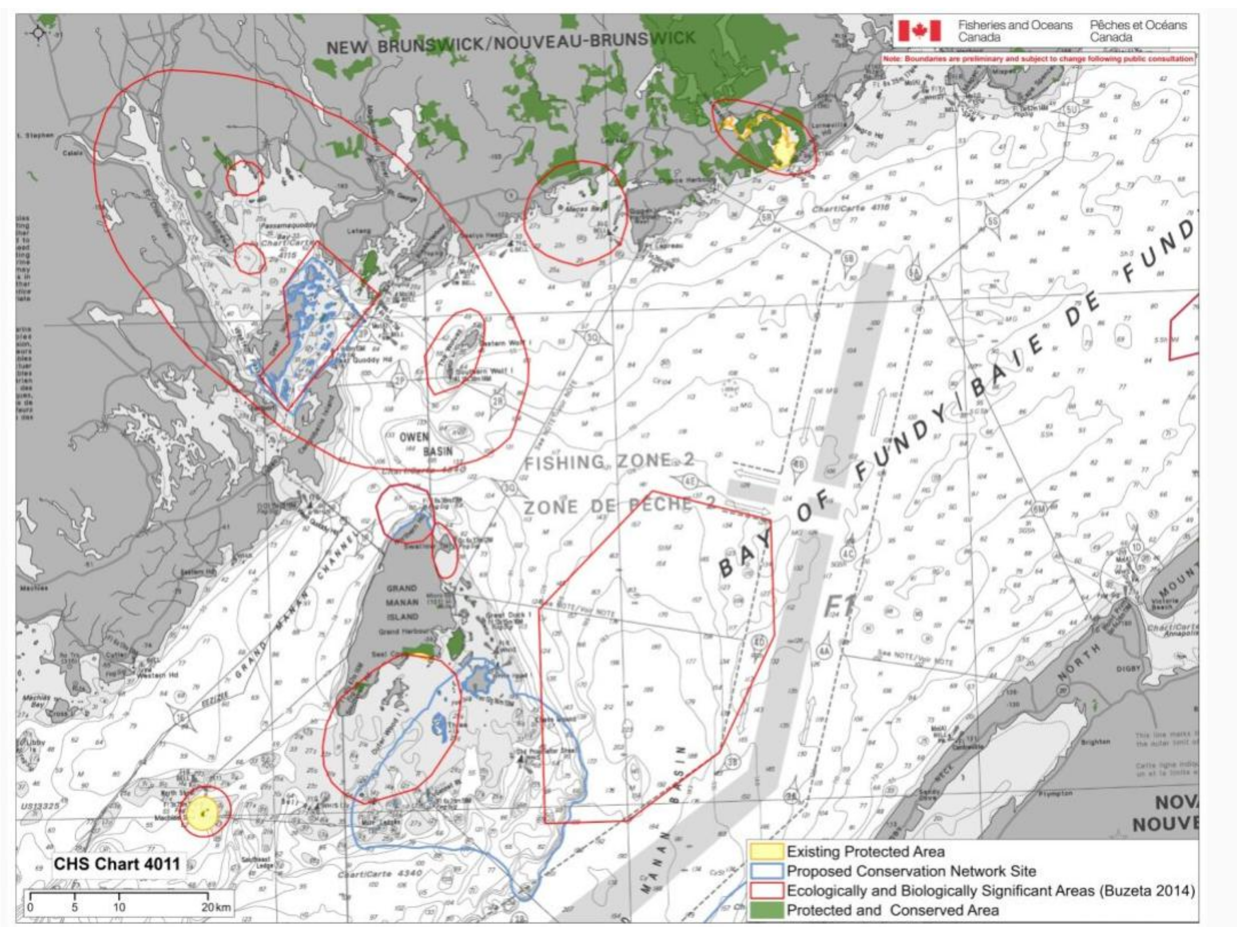

Figure 13: Map of Ecologically and Biologically Significant Areas (red) with proposed Marine Protected Areas (blue) within Peskotomuhkati territory (Fisheries and Oceans Canada, 2024d).

3.3 Interviews with practitioners

Similar to the community interviews, practitioners were chosen in collaboration with Sakom Hugh Akagi, Maxine Westhead, and through a snowball sampling methodology for their subject matter expertise on the Bay of Fundy, Gulf of Maine, marine conservation, or other relevant topics. Interviews were either conducted in-person or on Teams, and recordings were taken and transcripts sent for verification.

Chapter 4: Results

Results from interviews are detailed in this Chapter, Table 2 shows a summary of the key results as they relate to answering the three research questions, and tie into the Water Back themes outlined in Section 1.1.1. The Water Back themes were used to show interconnectedness and similarities between the Quoddy Region context and other global examples of Water Back.

Table 2: Results Table - subheadings, research questions & Water Back themes

Result Topic	Research Question	Water Back Theme
	Q1: what does the Bay need to become healthy again? (4.1)	Water health; Water colonialism; Water Justice
Holistic caretaking vs. Single species management (4.1.1)	Lack of in-depth, ongoing research to lead to an understanding of the life cycles of and threats to species that are being harvested, by many accounts overharvested	
Rockweed Harvesting (4.1.1a)	Rockweed is an essential building block of marine life, critical to juvenile fish and wildlife. Harvesting is seen as detrimental by interviewees.	
Finfish Aquaculture (4.1.1b)	Finfish Aquaculture practices are a key concern for many interviewees. Pesticide use, marine debris, effects to benthic species due to site overproduction.	
'Secondary' Fisheries Management (4.1.1c)	'Secondary fisheries' (i.e. green sea urchins, softshell clams, and sea cucumbers) are of utmost concern.	
	Gear types and fishing timing concerns: bottom-trawling, severe sedimentation and destruction of benthic habitats; seining and long-lining during peak cetacean feeding periods, bycatch and overfishing.	
The Bay Needs: Urgency & Adaptation – 'Integrated Stops' (4.1.2)	Integrated Management Planning = 'delay tactic'. The time to act is now. 'Integrated Stops' – needed to address urgency.	
	Ecosystem-Based + Adaptive Management – more balanced.	
	Goal for the future: seeing the past – abundance.	
Species health and monitoring – Interdisciplinarity (4.1.3)	Certain species under-valued/ researched; 'lack of capacity at DFO' – can address with collaborative monitoring.	
	With climate change – urgent need for restoring and caring for Bay.	
Paradigm Shift: Land, River, Sea, Human Interconnectedness (4.1.4)	Interconnectedness – humans have lost ability to live off land – well-being of planet and cultural survival at stake	
	Land & river-based activities cause severe impacts to Quoddy Region health. Barriers to connectivity causeways restrict flow of Water and all beings. Expanding buffer zones, protecting wetlands, riparian and coastal shorelines, removing barriers.	
	Paradigm shift to value each creature and element of life over profit.	

	Q2: how to support Peskotomuhkati-led conservation	Indigenous cosmologies; Water Justice; Water colonialism
Holistic Thinking & Urgent Restoration (4.2.1)	Urgent action needed to restore function of Bay, not only conserve as it is.	
	Skutik River restoration can be used as a positive example of collaboration and what is possible with a shared vision.	
	Governments must uphold their own laws of the precautionary principle	
Treaty Relationship – Integrity and Responsibility (4.2.2)	Honouring Peace & Friendship Treaties, earning respect, trust	
	Government appeasing industry must end; conscience back into system	
	All must take accountability and responsibility to care for the Bay	
	Transparency and truthfulness	
	Q3: what would a successful collaborative process look like to protect the Quoddy Region?	Rights and responsibilities
Localization (4.3.1)	Currently exporting much of what is fished. Local decision-making, local fisheries feeding local people would ensure less damage to ecosystem, social safety nets. Re-align with Peskotomuhkati values – natural balance.	
Considerations for establishment of a future protected area (4.3.2)	Small MPAs difficult to manage, ineffective at protecting core conservation targets (due to adjacent sedimentation, etc.). Buffer zones could help. However, politically, small could be best outcome.	
	Whole of Peskotomuhkati territorial lands and waters are important to protect and revitalize. Some key areas highlighted, but emphasize that all important. Cannot end at Canadian border.	
Wabanaki Collaboration (4.3.3)	3 Peskotomuhkati communities, Wabanaki Nations to lead the way, develop shared vision, all ages. Ensure sovereignty reinforced, not diluted.	
Lessons Learned from Collaborations and from other Nations (4.3.4)	Many allies in other Nations, i.e. in BC. Skutik River restoration collaborative process can be replicated to restore Quoddy Region – marine spaces.	

An overarching message that came out of the interviews is that the Quoddy Region has high biodiversity potential as demonstrated through its past abundance, and it is currently not healthy. Better human behaviour management practices are emphasized as being critical to reversing biodiversity loss, rather than solely protecting small MPAs. For this reason, MPAs were discussed as being only part of the puzzle of reviving the Bay. *"MPAs (are) one piece of the conservation basket of tools – fisheries management and all those other things are components that would build off each other to support that whole ecosystem approach."* (DFO staff 3)

Interviewees shared that marine conservation must go hand-in-hand with policy change through holistic care-taking rather than single species management (4.1.1), and that there is a need for ending practices that are continuing to degrade the Bay (4.1.2). Long-term monitoring through interdisciplinarity (4.1.3) and the recognition of interconnectedness (4.1.4) could improve the lack of current federal capacity for research and enforcement. Researchers and practitioners can support Peskotomuhkati-led marine conservation by honouring Treaties, shifting power, and taking more urgent action on caring for the Bay (4.2). Interviewees mentioned that local decision-making would be the best way forward for marine conservation in the Quoddy Region, through collaboration with the Wabanaki Confederacy, and partners including those who are restoring the Skutik River (4.3). A sense of urgency to revitalize the Bay is driving this work – wildlife in the Bay are suffering, and the loss felt by many interviewees is devastating.

> "The goals for the Bay – what about that line I keep telling the Minister – how do I save the last fish? So, once again looking back – has this not always been a question? Let's go back 20-30 years, if you'd asked: 'Hughey, what would be your goal for the Bay?' It would be to make sure it's always healthy. Make sure the diversity of fish will always be there, make sure, etc. etc. BUT, to look at this then I would jump ahead to a question I wanted to ask you – because the story on your map was, in 2030. We might have a protected area for the islands. But the first question I would ask is: how would you protect what is not there? There's not going to be anything there in 2030, I mean, most of it's gone now. (…) Why are we STARTING a dialogue now about things we haven't been able to do, about things that we've lost, that we were supposed to protect." – Sakom (Chief) Hugh Akagi

Chief's quote here demonstrates the gravity of the situation – the Bay is severely depleted. Protection is not the only answer; it is also essential to stop harming the Bay. The results sub-sections below aim to answer the 3 research questions stated in the key results table, however as is natural, the responses to these answers and the questions themselves are interconnected.

4.1 What does the Bay need to become Healthy again?

To better answer the question: *what does the Bay need to become healthy again?* it is imperative to understand the Bay's current condition based on interviews and the talking circle.

A recurring theme is that marine conservation is not the full answer to improving the health of the Bay (see DFO staff 3 quote). Sustainability and conservation are terms frequently used by Canada, including DFO, and as Chief Hugh Akagi points out, they both refer to keeping things as they are today, but today the conditions of the Bay are not healthy.

> "In my mind, MPAs would be completely unnecessary if government agencies did a better job. Period. Better regulations, better enforcement." – Todd Watts, Ornithologist, PRGI

There is acknowledgement from all interviewees that a multi-pronged approach is required: changing or ending certain practices, tightening restrictions and/or enforcement, and using a more holistic approach to unbiased monitoring, with more indicators. There is also a need to shift the dominant paradigm to one of caring for the health of the Bay above immediate profit.

4.1.1 Holistic caretaking vs. Single species management

Themes related to the Water Back framework (Leonard et al., 2023) were abundant during discussions with Peskotomuhkati interviewees. These included: Water as a relative, Porpoise as a relative, and the inability to have safe access to traditional foods, medicines, ways of life and culture, clean drinking Water and Waterways for transportation and trading. One interviewee discussed the joy that a community Elder had when she got to taste Porpoise meat – she requested to eat it even though she knew it was contaminated with Mercury. This anecdote was a prime example of the damages inflicted by colonial impacts of industrialization (environmental, settler, and extractive colonialism) on the physical, spiritual, and cultural well-being of living and future generations of Peskotomuhkati Peoples, more-than human relatives, and all people. This also brought up the importance of connection to nature, the concern of the younger generations having a deep disconnect (excessive screen time), and not being able to live off the land. All of these issues are also interconnected, as are the proposed solutions.

> "When people ask me: what do you want? They want me to say, well I want to save the clam, etc. – no, I want to leave a better world. That's the only way a Native can answer that." – Chief Hugh Akagi

From Chief Hugh's perspective, the Peskotomuhkati worldview is explained – the life of more-than-human relatives is cherished, one cannot be valued over another. In a similar vein, the emphasis placed on certain species over others for research, monitoring regimes, and management plans was evident in many interviews.

> "In those days and I think it's still true, you cannot get research money to study gulls even though they're not as well-known as they need to be given their interactions with other seabirds. So that's an ongoing frustration." – Dr. Tony Diamond, seabird ecologist

In the subsections to follow (4.1.1a-c), various pressures on the Bay will be outlined and suggestions provided by interviewees on ways to move forward will be summarized.

4.1.1a Rockweed Harvesting Damages Prime Habitat

Rockweed (*Ascophyllum nodosum*) harvesting began in southern NB in earnest in about 1995 as a means of making an income for coastal communities (Percy, 1996). There were 13 species of fish known to utilize the unaltered rockweed beds off of Deer Island with pollock (*Pollachius virens*) being by far the most abundant at 50 – 98 % of total abundance (Corrigan, 2003). There is debate about this practice; it has been criticized by environmental advocates and researchers including those who have studied Common eider (*Somateria mollissima*) and their reliance on rockweed for feeding grounds and shelter for ducklings (Blinn et al., 2008). Chief Hugh Akagi is deeply concerned about the practice of harvesting the building blocks of life, where juvenile marine species find shelter.

> "[T]his is the Inka Milewski warning [Milewski & Lotze, 2004], that we're getting down to where we're saying, let's restore salmon, but… it's gone. And we're taking the very foundation that is needed to help ANYTHING come back. And we're making an industry out of it." – Chief Hugh Akagi

The impacts of rockweed harvesting on intertidal fish communities in the Quoddy Region include a loss of habitat for juvenile fish. Matt Abbott, the Fundy Baykeeper (CCNB) describes taking Dr. Heike Lotze and a grad student out on his boat in 2012 to recreate a study doing transects of intertidal rockweed beds and look for “evidence of juvenile Pollock using the rockweed as nursery habitat”, as they had seen years before. “I don’t think they saw a single pollock. (…) it’s a big difference, you know, it's really depressing, the change from remnant populations to none...”

Because there is a lack of funding for the research and monitoring of rockweed, the industry is self-monitored and then audited by the government (Acadian Seaplants, 2019). Industry-led monitoring was cited as a major concern for many of the interviewees as this leads to bias. A message from the Peskotomuhkati interviewees and several scientists was to protect rockweed because so many species desperately rely on it, and the harvest is described as poorly regulated.

> “… I kind of look at the seaweed like the forest of the sea. Many of the species use that as cover. I remember a few years ago, they were doing some clearcutting, and the deer would end up in people’s yards, gardens … because you took their home away – you clearcut the place where they lived – you know the forest is their cover. And with the seaweed – if we do that to the seaweed, what’s going to happen to the species that depend on that seaweed?” – Brian Altvater, Peskotomuhkati Tribal Member

> “Seaweed harvesting… they don’t know what the short-term effects are, let alone the long-term effects, I mean, it’s ridiculous.” – Eric Altvater, Peskotomuhkati Tribal Member

> “Every time we harvest anything, we overdo it. And the provincial department wasn’t terribly interested in listening to ideas for limiting the harvest.” – Dr. Tony Diamond, ornithologist

In terms of current conservation of rockweed, there is a public map of these closed areas, which include research areas, and sites closed for long-term studies (Langridge, 2023). DAAF mentioned that if PRGI would like to discuss closing off other areas, this could be possible through meetings and discussions with the province (Bergeron, H., personal communications, July 2024).

An industry also managed by DAAF in New Brunswick is aquaculture – in particular, finfish aquaculture was a hot topic on steps needed to make the Bay healthy again.

4.1.1b Finfish Aquaculture

Passamaquoddy Bay is home to a high density of Atlantic salmon open net aquaculture pens. Some interviewees discussed signs of overproduction of finfish aquaculture within the Quoddy Region[12]. “Site development here was not a coherent rational process (…) if you look at the density...” (Matt Abbott, Fundy Baykeeper, CCNB). Dr. Peter Lawton, a DFO researcher talked about his career of witnessing aquaculture grow in the lower Bay (Quoddy Region), and “a period in the early 90s when it developed very rapidly, and actually over-developed, so we saw evidence of issues with organic loading in a number of embayments, and disease in farms.” He described how there’s been a ‘rationalization’ in the amount of sites now, with fewer sites in operation, but many of those sites are now much larger, “where we have potential for effects on the seabed”.

[12] This aligns with some lawsuits being filed against Cooke Aquaculture in Chile (Molyneaux, 2024).

Another well-known researcher, Art MacKay, who, sadly passed recently, helped introduce aquaculture to the Quoddy Region as a way for local fishermen to make a living. Art was under the impression that operations would remain small, not balloon into global companies. As Dr. Claire Goodwin explained: "[Art] was quite concerned of the number of sites present in the area, the way it all snowballed. And I think he did feel it was having quite a big effect – potentially the number of sites were too high".

Concerns about the proximity of various sites (containing 6-24 cages each) include the further impacts of pesticide use and excess nutrient-loading. The entire industry is described by Peskotomuhkati interviewees as counter to their values, where "animals are grown in cages", injected with hormones and given pesticides to treat outbreaks (i.e. sea lice), with their contaminated feces and extra feed ending up on the sea bottom, smothering sensitive benthic ecosystems in several metres of toxic muck.

This industry, through a Health Canada (2017) renewed approval, may use certain pesticides (azamethiphos and hydrogen peroxide) for the prescribed treatment of sea lice on salmon in pens. These pesticides are considered deleterious substances – killing crustaceans, so would not be allowed within an MPA (Fisheries & Oceans, 2023a). However, there are concerns that a protected area adjacent to an aquaculture site would still be extremely vulnerable to the pesticides that are frequently used within the salmon pens, due to the high degree of mixing that naturally occurs in Passamaquoddy Bay and the surrounding waters. These concerns are shared among many fishermen and scientists (Smith, 2018; CBC News, 2015). The pesticide Salmosan (azamethiphos) has a warning label that states: "very toxic to aquatic life with long lasting effects" and the company admits that the pesticide's bioaccumulation effects are unknown (Benchmark Animal Health, 2021). Matt Abbott explains that aquaculture pesticides are under-studied. "The little research we had done on it ended in the 2012 cuts in DFO Science", programs that were never re-instated.

> "… we know that a 3D plume [that touches the bottom] can remain toxic, either lethal or sublethal[13] for a long time – even the ones that aren't acutely toxic – [are] this steady stress in the environment – and generally at the most productive times of the year… The sublethal impacts… aren't really considered at all in the management/ regulatory space… we struggle making good decisions when we can't easily quantify something bad." – Matt Abbott, Fundy Baykeeper, CCNB

Nearby aquaculture, even with no pesticides in use, would still impact bird and seal populations due to light and noise pollution, and human disturbances from constant boat traffic.

> "Aquaculture… has been blamed partly for the loss of the migration stopover sites of Deer Island channel for red-necked phalaropes. …it's hard to imagine aquaculture being good for the system in any way, other than economically for those lucky enough to be in those businesses. Specifically for birds… the pens attract gulls, cormorants, and herons… But again, the contamination of the water has to have knock-on effects well beyond the site itself." - Dr. Tony Diamond, ornithologist

[13] Sublethal: less than but usually only slightly less than lethal (dose). https://www.merriam-webster.com/dictionary/sublethal

There is acknowledgement by some researchers that the aquaculture industry supports many people in the Quoddy Region, and that a balance must be reached between the economic benefits and protection of marine environments. Dr. Goodwin mentioned: "Obviously you don't want to deprive an area of something that's economically valuable, but I think there must be a way of balancing it with protecting the marine life."

4.1.1c 'Secondary' Fisheries Management

The collapse of groundfish fisheries led to the opening of other 'secondary' fisheries (DFO). A secondary fishery is one that is typically self-regulated by the fishers themselves due to a lack of funds allocated to government (NB DAAF and DFO) monitoring (Acadian Seaplants, 2019; Dr. Claire Goodwin, personal communication, August 2024).

A concern raised by several researchers and practitioners, as well as Peskotomuhkati tribal members, was the under-managed, under-regulated 'secondary' fisheries. Most were reported to have only one Fisheries Manager working on them, and minimal monitoring. Interviewees are concerned about the lesser degrees of enforcement and management of some commercially fished species in Atlantic Canada including Sea Cucumber, Green Sea Urchin, and Soft-shell Clams.

"And it's not DFO's fault, it's just they're completely under-resourced, because it is seen as a secondary fishery and not as important as the 'important fisheries'." - Dr. Claire Goodwin, HMSC

"[In] the Passamaquoddy Bay – in [Dr. Theo Willis'] report it showed that they'd deplete one species of fish or shellfish and move on to the next… until they totally deplete *that* species. And that historically, the fish landings and history has proven that. We have to change that way of thinking." - Brian Altvater, Peskotomuhkati Tribal Member

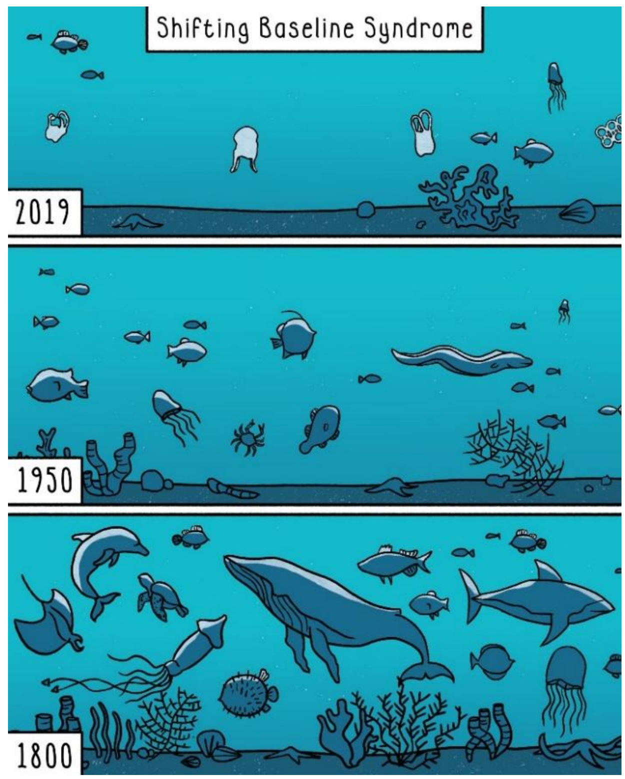

Figure 14: Shifting Baseline Syndrome. Art by Cameron Shepherd

There was a common theme of generational amnesia or Shifting Baseline Syndrome (Pauly, 1995) within colonial governments' fisheries management practices. This happens when a whole generation forgets the abundance that their parents or grandparents spoke of and think that the current status of things is 'healthy' (Figure 15). "**Shifting baseline syndrome** (…) the 'new-normal' (…) looking at a body of water and everything is normal to them, all the resources are beautiful, the **water looks great**, but it ain't, it's the **new normal**." – Peskotomuhkati Tribal Member 1

Meanwhile, it is evident through the interviews with Peskotomuhkati community members, that this generational amnesia does not exist within the Indigenous traditional oral histories. The abundance of what was before colonization is still known and talked about, because “you can’t get to where you’re going without knowing where you’ve been.” – Staff Member 1, Sipayik Environmental Department

The Quoddy Region, according to many interviewees, has gone from a Garden of Eden to a wasteland in the last two centuries. As Todd Watts mentioned: “It’s hard not to be saddened by it when you think about how special this place once was and how quickly it’s falling apart.”

> “When [Peskotomuhkati Tribal Member 1] started a film on educating people about the river, he was working with Dr. Theo Willis and he had done a study on the Bay. And he said that pre-European contact in the Quoddy region, there were approximately 150,000 whales. So if this is accurate, just think of the food they would have had to consume to sustain themselves. That’s a lot of fish.” – Brian Altvater, Peskotomuhkati Tribal Member

There is a contrast between the generational amnesia in euro-centric management regimes, and the long-lasting Indigenous oral history traditions where there is a collective memory of abundance, of health. One of the things that Peskotomuhkati Tribal Members and other researchers pointed out were the changes in fishing practices, and the overfishing and dwindling of populations they had personally witnessed in their lifetimes. Examples include sea cucumber and green sea urchin fisheries, of which several concerns were raised, including evidence of stocks declining, fisheries collapse, and fishing down the food chain:

“I’ve been concerned about the development of those fisheries as in each case we’re now seeing evidence that stocks have declined. ...I believe we have allowed fisheries to develop that are being prosecuted in areas that, prior to that, had high diversity potential.” – Dr. Peter Lawton, DFO

“I’m also worried that… we’re fishing lower down the food chain. … Whenever that happens, it’s not a great sign – we are not dealing any longer with a robust, resilient and healthy ecosystem that is allowing populations of wildlife to achieve the levels that they need to be able to withstand any changes in the environment let alone climate change.” – Roberta Clowater, CPAWS NB

> “The collapse is now, it’s not in the future… we have to learn those lessons and say, Wow! We have to stop it now. There is no future stop it (…) we have to do it now. And that’s why these questions – ‘what activities would be allowed, and what would be restricted?’ I can tell you both, simply by saying, if there are no fish – what activity would be allowed? They’re still going to fish by the way. It doesn’t matter if you’re down to the last fish – it doesn’t matter if there are only a few porpoise left, it doesn’t matter that the whales are going to disappear, they’re still going to take whatever is there, and don’t be surprised as you see what they’re taking from the bottom of the ocean (…) That goes back to Inka Milewski’s report from the Conservation Council – (…) and it has to do with the tier system. We fish a pyramid, there’s your original pyramid scheme, we took everything at the top, and then we took (all the groundfish), because these are disappearing, and now that we’re down here – what are we harvesting, sea cucumbers??” – Chief Hugh Akagi

4.1.1.1 ‘Secondary Fishery’: Sea Cucumber

The Orange-Footed Sea Cucumber (*Cucumaria frondosa*) is an under-studied marvel in the region.

“I don’t know much about their life cycle to be honest. But I think the issue is that no one really does.”
– Dr. Claire Goodwin, HMSC

In 1995, the Maine Sea Cucumber fishery began to export these edible invertebrates to Asian markets (Department of Marine Resources, 2022), followed by a Southwest New Brunswick fishery in 1999 (Martin et al., 2023). The fishery in the Maritimes is described to be in an ‘exploratory stage’, having recently reduced the total allowable catch (TAC) in both 2019 and 2022 (Martin et al., 2023). Sea cucumber fisheries globally face overexploitation and long-term ecological damage from depletion (Anderson et al., 2011). There is no Integrated Fishery Management Plan in Atlantic Canada, as is customary for most Canadian commercially-fished species, however efforts to implement such a plan are underway. Current management is through ‘conservation harvesting plans with temporal and spatial fishing restrictions and a TAC’ (NS Perennia, 2022). Figure 15 shows fishing Zones (blue) and fishing reserves (red).

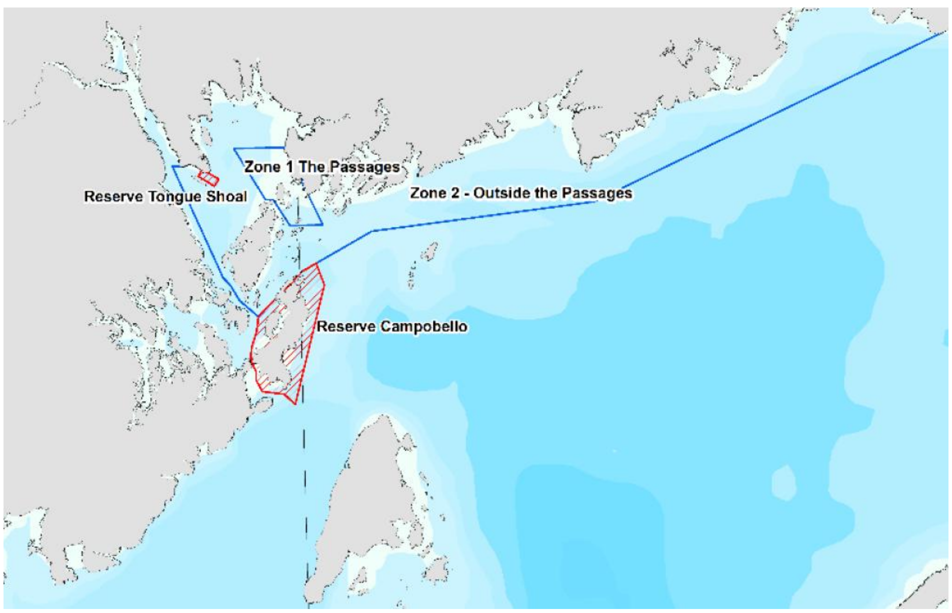

Figure 15: Current Maritimes Region Sea Cucumber fishing Zones 1 and 2 of SWNB (Martin et al., 2023)

Sea Cucumber landings peaked at 3,506t in 2012 (Martin et al., 2023), and the TAC was reduced in 2020 to only 760t (Fisheries & Oceans Canada, 2020). Holothurians are known to be vulnerable to overfishing and they are slow to recover from mid to high levels of exploitation because of their slow recruitment (Uthicke 2004, Uthicke et al., 2004). Dr. Claire Goodwin recalls a presentation from a former Master’s student at the Biological Station mentioning that “because we don’t know enough about their biology, pretty much all of them crashed.” Rotational fishing is an option, however Martin et al (2023) did not recommend this approach without careful catch rate monitoring. Reserves were meant to align with Ecologically and Biologically Significant Areas (EBSAs), which has not been done for the Little and Big Letete Passages (an area within two overlapping EBSAs, see Zone 1, Fig. 15).

Sedimentation from drag fisheries, including sea cucumber, is known to damage the sea bottom, and smother nearby areas, damaging sensitive species such as corals and sponges. “[T]he sea cucumber fishery (…) that's one of the things that's causing a lot of sedimentation and it's just so deleterious, and historically worldwide." – Dr. Claire Goodwin, HMSC

Surveying techniques were described by researchers from both the regulator and a third party as lacking sophistication. Drag surveys are used, run by the fishery itself, however the Eastern Charlotte Waterways was asked by DFO to investigate alternative monitoring options such as camera surveys.

4.1.1.2 'Secondary Fishery': Green Sea Urchins

"[Green Sea Urchins] are such a structural keystone community feature because of the way they affect kelp forests and everything else." - Dr. Claire Goodwin, HMSC

The green sea urchin (*Strongylocentrotus droebachiensis*) feeds primarily on seaweeds, especially kelp, playing a critical ecological role in determining kelp abundance and distribution (Scheibling & Hatcher, 2001). This is an important species for providing habitat and nutrition for many marine species. "Sea urchin is a very common food of eider – when I'm at Point Lepreau watching birds that are feeding there, that's the most common prey item that eiders surface with – are sea urchins… perhaps more so in the spring when the sea urchins have roe." - Todd Watts, Ornithologist, PRGI

Fished in the Bay of Fundy for their edible gonads for the Japanese fish markets (The Canadian Press, 2007), the fishery is regulated by Integrated Fisheries Management Plans (Fisheries & Oceans Canada, 2022b). The fishery has been precarious since early on, and scientists and fishermen alike had concerns about the population in the region – leading Grand Manan's fleet to close the fishery in 2005-2006, and in 2007, 'reduce their self-imposed catch limit by two-thirds to 176 tonnes from 540'. Scientists wanted an even greater reduction for precautionary reasons; David Robichaud of DFO mentioned that there was not enough information on the population (The Canadian Press, 2007). According to interviewees who work closely with these creatures, these same problems have persisted. A fishery collapse, lack of adequate monitoring, overfishing, and lack of a local market are top concerns regarding the green sea urchin fishery. Regulations and monitoring of sea urchin harvesting was brought up as lacking and in need of investment.

Dr. Claire Goodwin is so concerned about urchin populations in the Quoddy Region that she suggests having areas closed to hand-collection fisheries as well: "[W]hen we did surveys a couple of years ago, there were no green sea urchins that used to be everywhere (…) Regulation of even dive fisheries, which aren't necessarily damaging to the habitats in themselves, but because they're controlling populations of something that is structuring benthic communities… at the moment I think [the sea urchin industry] may have crashed due to overfishing."

4.1.2 The Bay Needs: Urgency & Adaptation – 'Integrated Stops'

Every person interviewed was concerned about the loss of species as outlined in 4.1.1. and many expressed a sense of urgency to protect the habitat that remains and to work to improve conditions so that species can return to the area. Climate change, overfishing, poorly managed or poorly regulated ocean uses, aquaculture, seaweed harvesting, marine debris – these are some of the urgent concerns that interviewees discussed.

> “What they’re telling us is that we can’t impact aquaculture and we’re not going to stop fisheries so if we can’t do those things, the question is how are we supposed to protect things? Because they’re the things we need to protect them from… [DFO] comes back and what do they ask for: we need a plan, we need a strategy. We need… those are all delay tactics not to do something. We’re saying, we’re beyond all of this, and it’s time to do something.” – Chief Hugh Akagi

In terms of management changes – adaptive management concepts were discussed, learning from increased monitoring efforts, and past fisheries errors such as the cod collapse in Newfoundland & Labrador. DFO has adapted its approach to fishing and management of fisheries over the years as new information comes to light, including gear types, catch size restrictions, requiring licenses, Integrated Fisheries Management Plans and banning harvesting of berried lobster (Gough, 2006). Interviewees criticized DFO for not adapting swiftly enough in recent decades, knowing that fish populations are unwell. Purse seining was in fact banned from 1891 – 1940 in Atlantic Canada, due to conservation concerns of mackerel and herring (Department of Fisheries of the Dominion of Canada, 1891). This was a form of adaptive management, the gear type was allowed after the Great Depression to ease the burden on fishermen in feeding hungry people (Gough, 2006). The decision to ban a gear type is one that can be considered once more in light of the many sources pointing to population declines of alewives (Willis et al, 2016) and emaciated and dying marine life (NOAA Fisheries, n.d.).

Chief Akagi has had people come to talk about Integrated Management: “I said, the species here are already in trouble we need to do some sort of an integrated **stop**. (…) “No! Your integrated management plan is just a delay tactic.””

> “[Re: Trawling]: I’m not convinced that those are the best ways to accomplish harvesting fish from the ocean for food or export even and also accomplish having robust and resilient coastal and marine ecosystems that help protect us in a time of climate change.” – Roberta Clowater, CPAWS NB Chapter

The urgency of stopping the destruction of not just the ecosystem, but the future of the Quoddy Region is top of mind for Chief Akagi: “we’re dividing it up and that takes the focus from the real damage, which is our whole – it’s not just ecosystem, our lives are being destroyed, the future is being destroyed.”

Holistic thinking could involve Ecosystem-Based Management (EBM), which takes environmental, socio-cultural, and governance factors into consideration to achieve more balanced resource use. Many argue that Indigenous Nations have been practicing EBM since time immemorial, sustaining rich cultures, ecosystems, ways of life, and connections to nature (Coastal First Nations, 2022; Jessen et al., 2021). Rather than only thinking of one species during planning, EBM, like Indigenous ways of knowing, looks at an interconnected approach to managing human behaviour.

> “[I]f you’ve already removed the fish, if you’ve destroyed the ecosystem, if you’ve destroyed diversity… so, my goal of saving the last fish, I’m not even sure that’s possible or a reality anymore. … looking at the future, what would you like to see? I would like to see the past... I’ve seen the past, I would like to see the past in the present, I would like to see it in the future. But not the path we took which was totally destructive, because that means there is no future.

> That's why I'm saying: why are we discussing a goal, and that's the question I asked: how do you protect something that's not there?" – Chief Hugh Akagi

The interconnectedness of time through history repeating itself, and patterns of habitat loss were also discussed. Chief Hugh talked about learning from our mistakes, and recognizing the patterns of fisheries collapses. The solutions to healing the Bay are in the past.

4.1.3 Species health and monitoring - Interdisciplinarity

Several interviewees discussed the lack of capacity for DFO and the province to conduct more complex monitoring on various market species including herring, lobster, sea cucumber, green sea urchin, rockweed and dulse, let alone any non-market species in decline. There is acknowledgement of a need to focus research more holistically and rely on collaboration between various sectors to address the health of the Bay to prepare for climatic species shifts. Matt Abbott (Fundy Baykeeper) described a shift in perception after the 2012 ocean heat wave. "I remember talking to fishers and others who are like oh, the water is so clear. This is terrifying." He explained, water should not be clear, it should be full of food and nutrients, "plant and animal life, and detritus." More people outside of the science world were realizing there was a big problem.

> "I'm worried that the number of species at risk in the Bay of Fundy and the Gulf of St. Lawrence as well, is increasing. The level of their risk is increasing. Things that when I started my career weren't even considered to be at risk, are now endangered. The trend is speeding up. I'm worried that research is showing that the Bay of Fundy is warming up faster than a lot of other bodies of water in the ocean." – Roberta Clowater, CPAWS NB

> "[An] overriding concern is about climate change and the oceanographic effects (…) There's new species of marine life appearing from the south and that's going to continue and possibly accelerate." - Dr. Tony Diamond, ornithologist

Loss of Arctic species, including a northern sea star (*Pteraster militaris)* that used to be common, was discussed by Huntsman researchers, and they suspect that climate change was the driver, though they are investigating other possible causes.

There are linkages between a lot of the knowledge gaps on species declines. Avian researchers were frustrated at the lack appetite of federal departments to discuss partnering on fisheries science. Strategies such as including data from ornithology studies on seabird diets, and data demonstrating a steep drop in juvenile herring numbers in nests.

> "[On Machias Seal Island,] when we started in the mid '90s (…) everybody was eating herring; puffins, razorbills, and terns. By the year 2000 there was very little herring coming in. And we documented that, I mean it's a really striking point. We told DFO that the 1-group herring (those less than one year old) that our birds were eating, were declining, so you can expect reduced productivity in the stock. Puh, they weren't interested in hearing from bird people. And guess

> what? They've had no recruitment for 20 years or so, and they flatly refused to incorporate our information in their own fisheries model." – Dr. Tony Diamond, ornithologist

The State of Maine has begun incorporating seabird diet information into their fisheries quota decision-making. The first year of a herring's life is a challenge to gather information about, but these are the very fish that seabirds are catching for their young, a natural overlap (McBride, 2023).

Certain species were described as being severely under-valued and under-researched, even species that are known to be critical to ecosystem function like green sea urchins, copepods, and seagulls. Commercially fished species have also experienced significant changes as of late. Dr. Peter Lawton a researcher at DFO described dives at Grand Manan by DFO from 1980s-2013, where in 600 m^2 transects, they would see "a very distinct seasonal aggregation of large berried female lobsters in the coves on the eastern side of the Island." Dr. Lawton said they recorded over 170 at one time, an "average size would be 5 lbs or more, and up to over 200mm carapace – so massive lobster". When the crew returned in 2022-2023, they found no berried females in Whale or Flagg Coves – something happened within the last decade.

4.1.4 Paradigm Shift: Land, River, Sea, & Human Interconnectedness

For millennia, the Peskotomuhkati Peoples have relied on the lands and waters for sustenance, and in turn, they looked out for their kin, and only took what was needed, kept the waters clean, honoured Mother Earth. This interconnectedness is critical to the well-being of the planet, and to cultural survival. Sadly, it is evident from interviews that this balance and connection is severely at stake.

"I think a lot of people in my generation or younger, their baseline, unless they're taught by somebody who's really knowledgeable around here, is, well, there's nothing here. And that's kind of horrible. Or, there might not even be an opportunity for commercial or sustenance. I know myself I would struggle if I said I'm going to stop going to WalMart to shop for groceries – I'd struggle to survive out here. And that's not the way it should be." – Billy Longfellow, Peskotomuhkati Tribal Member

Many concerns raised by ornithologists, environmental NGO interviewees, and Peskotomuhkati Tribal members related to land-based pressures acting on the health of the Quoddy Region. Many are concerned about various species as they are lacking food and adequate habitat free from pollutants and other harms (Willis et al., 2016; NOAA Fisheries, 2024).

Forestry practices such as use of pesticides, and harvesting techniques such as clearcutting have effects on not only lands and land-based wildlife, as Todd Watts described, but also the land's ability to hold and filter water – run-off from the land during storms is then carried to the rivers and out into the Bay.

New Brunswick's Wetland and Watercourse Alteration (WAWA) Regulation under the Clean Water Act states that before clearing of trees, shrubs, or coarse woody debris within 30 metres of a watercourse or wetland, a landowner must seek permission from the Department of Environment and Local Government. This is meant to protect the waterways, yet, according to interviewees, permits are not often obtained for this work. Under the WAWA regulation, unless an Environmental Impact Assessment is triggered, a landowner pays just $25 for a permit. (New Brunswick Clean Water Act, C-6.1, 1989)

> “There’s too much disturbance of coastal and riparian areas occurring, far too much. What we have right now is a permit system where somebody could pay x amount of dollars and clear coastlines of rivers and shorelines so they can have a fantastic view. (…) [On the Maguagadavic] there are literally kilometres of shoreline that have been lost in just a decade. That’s supposed to be protected area, riparian zones are really really important. If we are to protect anything, riparian zones are probably going to be number 1 – we don’t mess with them, but we are.” - Todd Watts, Ornithologist, PRGI

Barriers to connectivity include causeways, which were discussed as being just like dams, and destruction of critical habitat through blocked flow of water, altering tidal patterns, causing siltation, long-term habitat degradation and changes in fish migration (U.S. Army Corps of Engineers, 2023). There are multiple causeways in the Quoddy Region that affect the health of the Bay in both New Brunswick and Maine. It is a priority of the Nation to see causeways removed for long-term improvements to the health of marine and estuarine ecosystems. In partnership with the community of Sipayik, the U.S. Army Corps of Engineers conducted a study on siltation and the impact of the causeway to Half Moon Cove within Cobscook Bay (2023). In the 1930s, the Passamaquoddy Tidal Power Project was underway, and the plan was to fully block Cobscook from Passamaquoddy Bay – the project halted in July 1936, after two earthen dams were constructed between Pleasant Point and Eastport, Maine. Route 190 was built atop the causeway, still connecting Moose Island with Perry, cutting through Peskotomuhkati Tribal Lands in Sipayik (see Figure 16).

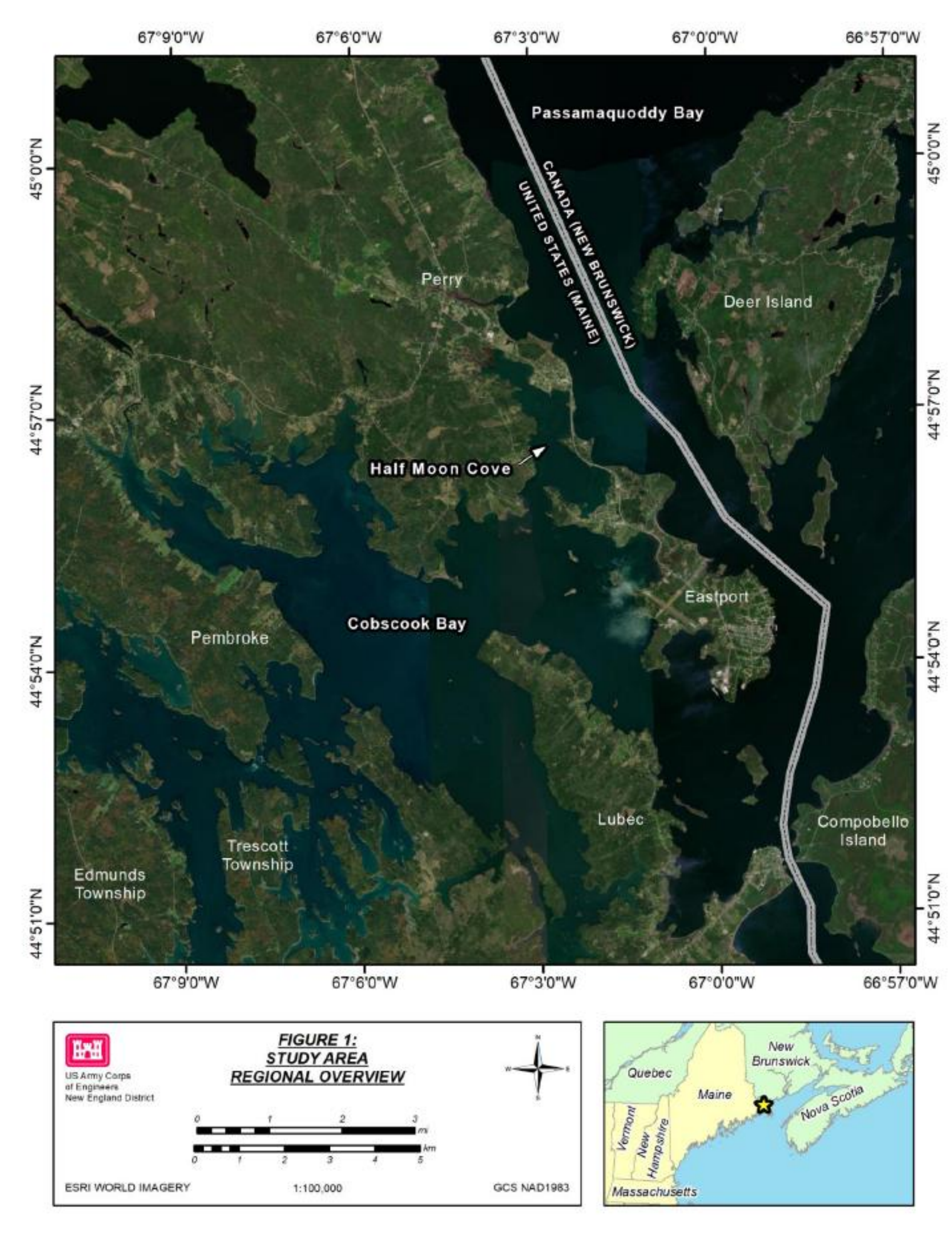

Figure 16: earthen dams forming causeway from Perry to Eastport, ME (U.S. Army Corps of Engineers, 2023)

> “What was shocking when (the U.S. Army Corps of Engineers) were doing the studies out here – the old channel between Split Rock and Half Moon Cove where 12 ft. of muck and silt has clogged up that channel on the Half Moon side of the Bay since they put that causeway in (…) [T]o me it’s a dam, because they used to have all kinds of fish weirs for herring further down in Cobscook Bay, you know and smelts, and they would even fish for frostfish. And since they put the causeway there – that migration stopped – not just the herring, but salmon and other species of fish. And it’s a shame. (…) [I]t was spawning ground for lobster – that stopped. I believe, 1975 in there, I could be wrong, I caught the last lobster in Half Moon Cove. We were fishing for crab and I caught a 4-lb lobster. I’d really like to see the causeway removed. (…) I’m gonna do whatever I can to restore not just the River, but everything that’s attached to the River cause it’s interconnected. And I look at everything as one body of water… all the water’s connected. The aquifers, rivers, streams, bays, sea, ocean, rain, salt – it’s all connected. So you’ve got to treat it as one body.” - Brian Altvater, Peskotomuhkati Tribal Member

Scarcity of quality food for wildlife because of the interconnected pressures was a frequent theme among interviewees including ornithologists. Eider and scoter and other migrants do not have the abundant prey bases they once did in the Bay of Fundy for their long journeys, burning many calories. “[T]hey’re out in really harsh conditions dealing with Nor’easters and rough seas – all sorts of stuff. And they’re supposed to be feeding heavily here in the Bay of Fundy, one of the richest places in the world, but they can’t feed like they used to. So that’s very concerning for the welfare of those birds.” - Todd Watts, Ornithologist, PRGI

Similarly, effects of commercial fishing practices on ‘non-target’ species in the Bay is a grave concern. Accidental netting causes unnecessary pressure on the creature, which is especially concerning when the species being caught are endangered, such as cetaceans.

> “(There are) fishing practices that are going on in the area that affect the overall function – they’re not thinking about herring seining, scallop dragging, rockweed harvesting and also what (Chief is) talking about – the timing of harvest! No one’s looking at that and connecting it with the major species that come in to feed. I know there’s been areas around Grand Manan where people have done herring seining and caught at least 2 fin whales in their net! Things like that that should be managed more appropriately.” – Dani Deonarine, PRGI

As Chief Hugh mentioned, “if I answer these questions the way you expect me to, or the way you want me to, then… I’ve just done what I’ve accused others of doing, and that is I’ve destroyed the Native in me.” This was in response to being asked if this could be managed in a better way if the Nation were to be in charge of setting what fisheries were allowed. This is why the research question was added: What does the Bay need to become healthy again? It requires a societal shift; adopting of Indigenous worldviews within all decision-making spaces, and, as Chief states: “I bring it back to that very simple concept of saving the fish. And it’s no longer saving the fish – it’s saving everything! Save the algae, save the crustaceans, save the mollusks, save the mammals… every form of life.” Chief reminds us that we need to remember everything is interconnected, and the way that the Bay is cared for must also be centered locally, and in the view that all things are connected and reliant upon one another. A paradigm shift is necessary to bring the Bay back to health – one where each creature and element of life is valued and cared for – thinking of life above profit.

4.2 How can marine practitioners and researchers best support Peskotomuhkati-led marine conservation?

There were themes from interviews as to what would be most helpful for marine practitioners and researchers to support efforts by the Peskotomuhkati Nation to protect the Quoddy Region, whether through spatial conservation tools, or management changes.

4.2.1 Holistic Thinking & Restoration

An overarching theme from all Peskotomuhkati interviewees was the fact that government action on both sides of the border appears to be siloed with decisions made on a species-by-species basis rather than using more holistic thinking, as Peskotomuhkati decision-makers have always done. Themes discussed previously about acting urgently, interconnectedness and that the Bay is currently unhealthy as a whole were common, and that the status quo is not an option.

> "Is the Bay sick? Yes the Bay is sick. We need to raise the red flag, call 911, tell them the Bay is on life support. (…) because that little shrimp that used to be driven on to the beach on the outgoing tide, would be there, and there would be 10s of thousands of sandpipers there, you'd walk along the beach and all of the sudden they'd just take off, and it was a sight to see, I mean, it was unbelievable how beautiful it was – and as they turned you'd see the grey and then you'd see the white. Two years ago, my wife and I were over on McMaster Island and were sitting there, were just having a picnic, and I said – look, look, look! There's two sandpipers over there, two of them! I was getting all giddy because I saw two." – Eric Altvater, Peskotomuhkati Tribal Member

> "…I'm worried about what species are going to exist in the future… I can look at it as Western Science, but I can also look at it as a community member, and that's my worry – I want it to be productive as much as it can – not just in Passamaquoddy Bay, of course that holds affinity being a Passamaquoddy tribe member, but the whole Gulf of Maine – it is all connected." – Billy Longfellow, Peskotomuhkati Tribal Member

Marine conservation was discussed as being one part of the puzzle. Another key piece is restoration, ensuring that when an area is conserved, there is a plan in place to restore its productivity and function.

> "Marine conservation is one tool – but **restoration** is critical. Not just sustaining what is there. Sustainability is a favourite word of DFO's – you have to watch for this. We cannot just sustain what is there, we need to make conditions better." – Sakom (Chief) Hugh Akagi

> "[We need to focus on] restoring the functionality and the way that the Bay and the whole system is able to function because it's just lost so many of its components and its ability to work together, because so much has been taken away or altered." – Dani Deonarine, PRGI

There has been a lot of effort and time put in to restoring the Skutik River and fish passage (Scully, 2023; Abbott, 2022), but without ensuring the health of the Bay's Quoddy Region – fish health will not rebound. Hope and inspiration can be drawn from the benefits seen in the restoration efforts on the Skutik, even after only a few months of the Milltown Dam removal at Salmon Falls.

> "[W]e had 600,000 fish go up a crappy fishway without attraction flow, right? Like the Woodland fishway is not good. That fishway was hard to find. It's in terrible shape. And over half a million (siqonomeq) went up, like that blew my mind." – Matt Abbott, Fundy Baykeeper, CCNB

Interviewees are also pushing for urgent action, and governmental integrity in upholding its own laws of the precautionary principles and ecosystem-based/ holistic thinking and management.

> "The precautionary approach… it's a LAW. It's already a LAW, it's in the *Fisheries Act*, that's a law, it's not a theory… if it's in the *Fisheries Act*, the precautionary approach, it has to be law. I know I'm on a rant, but 'start a dialogue of goals for the Bay', it's too late." – Sakom (Chief) Hugh Akagi

> "[T]he precautionary principle, (…) I've noticed people don't really talk about that outside of government anymore because it just feels like this empty buzzword. But it's a powerful concept, right? And as we've seen with the Skutik efforts if you make space, nature will come back more." – Matt Abbott, Fundy Baykeeper, CCNB

4.2.2 Treaty Relationships – Integrity & Responsibility

Integrity is an important value to the Peskotomuhkati Nation – it comes along with relationship-building, establishing trust, and earning respect. Honouring the Peace and Friendship Treaties is all about building relationships, and respectful collaboration for the betterment of the lands and waters where we all reside. This section discusses themes relating to our collective responsibility to care for the Bay.

"This is being done without conscience, we have to put conscience back into the system. Maybe that's where our role is as Indigenous Peoples, maybe we need to be the conscience." – Chief Hugh Akagi

The process of establishing protected areas within the Quoddy Region has been on-going since the 1990s, and Chief Akagi has been involved from the beginning. Interviewees from the Sipayik talking circle and environmental groups discussed the need to put the interests of the Bay and future generations above the interests of today's industry, and there is a perception that government continues to appease industry, including through the MPA Network Planning process.

> "It sounded like when they first struck the (DFO) MPA group that they were going to build in the integrity that's been missing over the years with the incestuous relationship between (DFO) and the industries, so I had hoped for that. It sounds like there's slippage.(…) It sounds like industry are the tail wagging the dog and are starting to find ways to take control again. (…) Now it usually happens at a very high political level – but we're just working our way up through the DFO system." – Chief Hugh Akagi

It is not only government that ought to be held accountable for honouring treaty relationships, but all who live and work in this area. Chief discussed the importance of recognizing our responsibility to the

Bay and all the creatures who live in it, and to the well-being of the Bay for future generations, themes shared within the Water Back framework (Leonard, et al., 2023). Roberta emphasized that we all have a role to play in re-thinking the ways people treat the ocean and coastal environments.

> "[These folks], a lot of them are fishermen, that are saying this is all wrong… have they stopped fishing? …No, they're still blaming DFO, they're still complaining, but are they doing it? They still *have* to do it. I sat with a group right here: Hugh, my fishermen …said: "if we don't take the last lobster, somebody else will" ...they can do all the incredible projects of cleaning up their own mess, finding ghost traps… these feel-good things, making them look good, then they can come out to the public and say DFO should have stopped this long ago!" – Chief Hugh Akagi

> "At CPAWS New Brunswick, we're really committed to doing whatever we can to pave… UN-pave the way – to create a path that allows this to be a successful concept and that it actually comes to fruition. Because I think that we all have to do some heavy lifting to get people who have a more traditional industrial or development-oriented mindset on board with this kind of new way of thinking." – Roberta Clowater, CPAWS NB

Transparency is another aspect of integrity. Governmental decisions at the provincial and federal level on ocean management have been criticized as not being transparent.

> "[David Robichaud]'s still around and he's still furious because of (…Whale Cove) – he dove in that cove, he worked with the islanders, he knew that that was a very precious part of the cycle, he fought DFO to keep aquaculture out of there. He… told me the story about a meeting in North Head, when they were discussing whether or not aquaculture should come in to the cove … They were **building** the aquaculture site while they were having a meeting about whether or not there was going to be an aquaculture site there. ...he knows what was there, he dove on it, tried to protect it – he dove on it after aquaculture, and he told me, Hugh it was all gone. It was all gone. They moved in aquaculture, we said no, the people of Grand Manan said no – they put it in there, and they haven't had a lobster there since." - Chief Hugh Akagi

> Regarding Integrated Fisheries Management Planning, Chief Akagi: "I said, the species here are already in trouble we need to do some sort of an integrated **stop**. …"No! Your integrated management plan is just a delay tactic." So I was not on board, and they got funding… [They] said you were consulted at such and such a time, I said yes, they sent a friend in, he tried to talk me into it, and I said no – so where in there does it say, the Nation is NOT on board, does not support it, and the answer is no? That's not in there anywhere, it just says that you were consulted, and we assumed you were on board."

Anecdotes like these demonstrate the long path required to re-build respect and trust between colonial governments and the Peskotomuhkati leadership, to work toward any shared project such as revitalizing the Bay.

4.3. What would a successful collaborative process look like to protect the Quoddy Region?

Elements identified by interviewees as important for a collaborative process include many of the elements discussed above: acknowledgement of interconnectivity, precautionary principle, honouring Treaties, working with integrity, truthfulness. Section 4.3 will detail some additional considerations for what a successful collaborative process may look like to protect the Bay and Quoddy Region.

4.3.1 Localization

Concerns were raised by a few interviewees about the level of industrialization and export happening in the fisheries of the Bay of Fundy. Some described economic, social, ecological, and cultural benefits being abundant from a local economic model, in which the people who live in and love the area are the decision-makers, and the food caught or grown here is purchased and consumed here, stimulating the local economy and feeding local people.

> "We can have a lobster fishery – we didn't get here by not harvesting lobster… We went wrong when we stopped using it to support the area. This is what local is. It's not: buy something here and use it here – it's about using the resources in a territory to support that territory. Here is where they divided us. And it's not about just supporting 'Indians', no. What if we had caught lobsters in the area, sold lobsters in the area, fed the people in the area? We could have a really healthy, vibrant lobster population right now, and not just lobster. Haddock, halibut, cod, pollock, they'd all be vibrant. But when you send them out to make money in that world, you can't. It's not whether or not we can harvest, should harvest, or do it in such a way… first you look at local… I'm talking about looking after everybody in the territory." – Chief Hugh Akagi

> "[W]hen we had depression of the groundfish fisheries, the department actually had quite a significant focus on developing alternatives – some of those alternatives were invertebrates such as sea cucumber and sea urchins. There's really no domestic market for (…) most are for export out of this area. It's really not sustaining local restaurants and consumers in the same way that lobsters and scallop would for example." – Dr. Peter Lawton, DFO

Chief and others from Sipayik discussed that local people are the ones who care most about the health of the environment and future generations. "…instead of who would be the decision-making body? I would say 'who **cares**'? and if you keep it local, you might be able to find somebody who **cares**. (…) I think we need to start thinking about things like cooperatives. Bringing some of that decision-making home just like I said, dealing locally. … it's time to take things back, and one of those things – control, real voices in our own 'resources', our own territory, we need to get that back."

Caring for and supporting the local area, making decisions on a local level would mean a positive ripple effect throughout not only the ecosystem, but society as a whole. If we were thinking and acting locally, Chief said: "we couldn't possibly have hurt those populations. (…) There wouldn't be poverty here, there wouldn't be homelessness, and I guarantee there wouldn't be people starving, I guarantee it. So, the solution, it's been there all along, and at one time we lived with that… (We could eat what is fished here) instead of sending everything to China and Japan – and don't fall for that: "we're feeding masses of the world". We're feeding the people that can afford it, and that's not the same."

A local economy would help realign with Peskotomuhkati values of living in balance with nature, with reciprocity and responsibility to nature and to future generations at the core of the economy.

4.3.2 Considerations for establishment of a future protected area

As stated, marine conservation must be paired with restoration and management changes in the Bay to be successful. This section explores considerations for a potential protected area if the Nation were to be interested in pursuing Peskotomuhkati-led conservation measures, and/or continue to collaborate with DFO on its Marine Protected Area (MPA) Network Planning process.

Size considerations were brought up by many interviewees. Small MPAs (i.e. under 10 acres) are not seen as adequate by many interviewees.

> "I would say (small MPAs) would be very difficult to manage, and I'd be concerned about having this effective boundary around the features you're trying to protect. I don't think there's any merit in having little tiny, single island MPAs. I think I'd rather have a couple of bigger MPAs rather than this patchwork, it's going to be very hard to monitor, and potentially not going to be able to do what you want it to do." - Dr. Claire Goodwin, HMSC

Buffer zones were discussed as being critical, including a large enough area around the core targeted conservation area. This provides protection from sedimentation through dragging and aquaculture impacts taking place outside of the MPA boundary. In addition, there is a feeling from the Conservation Council of NB team that a small MPA may be the best possible outcome currently; the fact that MPAs are on the table is a huge win. "They're trying to protect what they can politically. We should acknowledge that is a big part of it, right? It's like we're trying to protect what we can pull off, the politics are limiting the science from the get-go." – Matt Abbott, Fundy Baykeeper, CCNB

Dr. Goodwin emphasized understanding and transparency by MPA designers regarding key conservation features in need of protection, to ensure that in the design process, these areas are truly protected and so that the network represents the range of habitats that make the area special.

Many interviewees were displeased by the number of different maps that have been shared by DFO on the MPA Network Plan and found it to be a frustrating task to attempt to weigh in on constantly changing zones – particularly when they are becoming smaller and smaller.

> "[T]he most recent version (of the MPA Network Plan) was quite split up, and that does concern me because of the effects of the mobile gear and sedimentation, and the effects of aquaculture, so you actually need quite a big buffer zone around your proposed protected areas to protect the features that you're aiming to protect – these benthic habitats. So it's not enough to say you can't trawl here – but you can trawl here, and you're trying to protect the sponges and corals growing on this rock – cause they'll still get the effects of sedimentation from the dredging."
> – Dr. Claire Goodwin, HMSC

A critical message from the Sipayik talking circle was that the whole of Peskotomuhkati territorial lands and waters are important to protect and revitalize. What follows are key notes from researchers where special areas are mentioned. This is by no means a comprehensive summary of available literature or knowledge on this subject.

"[T]he Western Isles, … the east side of Deer Island, the whole area is really quite unique… it's much more diverse than other areas of the Bay of Fundy and Nova Scotia… having it protected as a marine protected area, at least parts of it, that would be really valuable. But my concern is that those areas (proposed) are going to be too small to meaningfully protect anything." – Dr. Claire Goodwin, HMSC

Breeding bird colonies are in need of formal protection both on land and in the marine environment. Important Bird Areas as well as Key Biodiversity Areas do not have any marine protection, yet delineate areas known to be of utmost importance to many species.

> "[T]he main areas of concern would be breeding bird colonies that I mentioned. So there's the Salkeld Islands here in Maces Bay, the Wolves for sure, now these are historic sites, they're unfortunately at historic lows right now, but they're still significant sites and these sites could come back… Head Harbour Passage – that would include White Horse Island, and then… the south Grand Manan area all the way out to Machias… most of these islands either have bird colonies on them, or at one point had bird colonies." – Todd Watts, Ornithologist, PRGI

> "…the horse mussel beds, the steep rock with the dense cover of sponges and anemones… the more gently sloping bedrock with the boulders that's good lobster habitat… and the gravelly sediment with the C*erianthid* anemones – that whole area on the east coast of Sandy Island seems to be particularly good for them – so it'd be nice to make sure all of those different habitats are included." – Dr. Claire Goodwin, HMSC

As mentioned by Chief Hugh Akagi in numerous quotes – the whole territory is important and significant. As mentioned in the talking circle – the protection cannot stop at the border.

> "I would suggest that this be expanded to include areas, like Cobscook (Bay)… I'm going beyond the politics, this is a regional thing, not a country thing – so, all of this, including here – all of these islands – we can't exclude… I mean, that's a good start (proposed MPAs), but the whole thing (deserves protection)." – Peskotomuhkati Tribal Member 1

> "[I]t feels right to be protecting the wider area, because as a Tribe, the State, the Province, the feds on both sides, we're all working on restoring the river with sea-run fish so, you know, the groundfish will come back, and we'll enhance the flow of nutrients up and down river – so I just don't see why we shouldn't do this. We should!" – Peskotomuhkati Tribal Member 1

4.3.3 Wabanaki Collaboration

Interviewees discussed the importance of having a shared vision among all three Peskotomuhkati communities, and within the Wabanaki Confederacy as well, from all generations young and old. The Peskotomuhkati Nation is one of four First Nations active in the Bay of Fundy region, along with the Mi'kmaq, Wolastoqiyik, and Pαnawάhpskewi Nations. All Nations within the Confederacy have been in relationship with the Bay of Fundy for thousands of years.

As PRGI staff member, Dani Deonarine mentioned: “an Inter-Tribal meeting with (Qonaskamkuk), Motahkomikuk and Sipayik would be a great idea just to get everyone’s common goals for the Bay…”, in conversation with Chief Akagi: “I think it’ll help if we have the same message going to Ottawa for example, that’ll help, and that means not just the reserves (three Peskotomuhkati communities) – but trying to get together with some of the natives over here.”

It is important to community members that all ages have input into a planning process for marine conservation, and that the Nation remain the leader of the initiative, ensuring that Indigenous sovereignty is at the heart of the initiative.

> “I have a recommendation, I know you wanted to hear from the Elders, some of the community members here, but I really think we need to bring in the younger people, because I know the Elders are for the most part the knowledge keepers, but at the same time, our youth carry a lot of knowledge, and they have to be aware of what we’re doing – learn from what we say, what we’ve done, where we’ve been. They’re going to be the knowledge keepers down the road.” - Brian Altvater, Peskotomuhkati Tribal Member

> “I’d also like to see a protection zone – I think it should be seen with the Tribal perspective (…) nothing that can negatively affect our sovereignty or rights, even if it’s just acknowledge, although we may have the right to, we also have the choice not to, so that should be in our control. Let’s just say with the porpoise – although we have a right to (fish), we choose not to. I don’t want to have anything that would dilute sovereignty, but reinforce sovereignty.” – Billy Longfellow, Peskotomuhkati Tribal Member

4.3.4 Lessons Learned from Collaborations and from Other Nations

Another theme is how much there is to learn from other Nations across Turtle Island, and globally, in taking back power, caring for lands and waters, and re-thinking collaborative conservation efforts with the federal government and other partners. As Chief Akagi said: “We need to strike a better relationship with BC (…) we’ve got to start finding our allies.”

The restoration of the Skutik River is an incredible success story that sparks hope, joy, and new life in to the hearts of those who have been paying attention, and is a wonderful model that interviewees referred to for the creative collaborations that will be needed for further Quoddy Region rehabilitation.

> “[W]e really didn’t have a lot of friends when we started the Riverkeepers – but we partnered up with almost 100 different groups and organizations that helped us pass LD 72 (a Maine Emergency Measures Act passed in 2013), to open up the St. Croix River, mainly the fishway in Grand Falls, by the Grand Falls Dam, and I think we need to do the same thing with this movement – you know, get partners, get allies, and start designating areas that we think should be targeted so we don’t continue to exploit and abuse the different species and the environment.” - Brian Altvater, Sipayik Community Member

> “I think the Skutik restoration is testament to thoughtful, meaningful local action being helpful.” – Matt Abbott, Fundy Baykeeper, CCNB

4.4 Limitations

As with many research projects, having merely one summer to conduct all data collection was certainly a challenge, and further interviews would be incredibly beneficial. Relationship-building was required before each interview, therefore interviews with Peskotomuhkati tribal members were limited to the community of Sipayik, and to staff of the Passamaquoddy Recognition Group. The community of Motahkomikuk was not yet included due to time constraints and needing to conduct interviews in a good way (i.e. establishing relationships with interviewees ahead of time, going out on the land with them, sharing a meal perhaps, and having a community member introduce the author to interviewees – this was done for the Sipayik interviews).

The Peskotomuhkati Nation at Skutik through the Passamaquoddy Recognition Group will benefit from understanding the various areas that Peskotomuhkati tribal members and practitioners spoke about. Though it is outside the scope of this graduate research paper, QGIS was used to map out areas of high importance for conservation, and areas where concerning activities are happening. Map layers were used from Department of Agriculture, Aquaculture and Fisheries (DAAF) and Fisheries and Oceans Canada's Marine Planning Atlas, and additional points were added from anecdotal evidence during interviews (i.e. birding hotspots, areas where many juvenile lobsters were spotted). Data is being made available online in the coming year from Dr. Claire Goodwin's research team at the Huntsman Marine Science Centre as they review and digitally archive Art MacKay's extensive underwater research from 1980 (Goodwin, C., personal correspondence, August 2024). This mapping process will be on-going with the Passamaquoddy Recognition Group.

Social identity theory and research (Tajfel et al., 1971) explores the concepts of social identity effects where those working or relying on coastal and marine resources are likely to feel strongly tied to their own cause, which can hinder co-operation among stakeholders. This concept was not deeply explored within the research, and there is a clear bias to more environmentally-conscious views.

An array of stakeholders from different sectors (i.e. fishing associations, commercial fishers, aquaculture or tourism business operators) were not interviewed during this research due to time constraints and a desire to first focus on suspected conservation allies. Rightsholders from Wolastoqiyik & Mi'kmaq Nations were also not interviewed due to time and ethics constraints. Additional federal and provincial government staff from fisheries and aquaculture departments could also have been added as most government staff interviewed were from the Marine Planning group. The social identity dynamics were thus not explored, but may be useful to examine in future studies, to gauge the causes of delay on protecting the Quoddy Region, or other social strains.

There are challenges in interpreting a) an orally based language and b) the concept of the ecosystem as a whole, and everything is connected into maps and written word. There were many topics covered in each interview because of this interconnectedness, which also made choosing and distilling quotes quite challenging.

Chapter 5: Discussion & Recommendations

Overarching key themes for supporting Peskotomuhkati-led marine conservation emerged from this research. Results showed that marine protection will not be effective unless changes are made to the way fisheries, harvesting, and other industries are managed, the health of the ocean is monitored, and adaptive management is applied. Anyone working on this must uphold the following values:

(1) **Honour Treaties** to ensure that there is healthy and abundant sustenance available for all, for future generations, forever. Canadians and Americans have all benefitted and continue to benefit from the Peace and Friendship Treaties and the peaceful lives that we are able to live on the unceded and unsurrendered lands of the Wabanaki. Treaty obligations have not been upheld to Wabanaki Peoples – their lives have been upended by colonization, and continual oppression prevents meaningful and equitable engagement, as discussed in the Water Back framework (Leonard et al., 2023). Canadians have a moral and legal obligation as Treaty people and signatories of the Declaration on the Rights of Indigenous Peoples to uphold the spirit and intent of these sacred agreements. The Peace and Friendship Treaties as described by the Wabanaki: Lakutuwakon (kinship, to make or extend family), must be taken to heart to bring integrity to the work of revitalizing the Quoddy Region, Bay of Fundy.

(2) **Centre the Health of the Bay** and all creatures in decision-making – this means putting the health of the Bay above all economic decisions. If the Bay is not healthy, it will not be able to sustain future generations, and this breaks our Treaty promise. For instance, when proposing zoning for the Ecologically and Biologically Significant Areas, and proposing that they become future marine protected areas, Maria Buzeta said:

> *"When scientific data are lacking, but expert opinion is available, managers should have the confidence to proceed with conservation decisions (CBD, 1992), especially when evidence for an area's significance is supported/validated by more than one source (Breeze 2004)."* (Buzeta, 2014).

The views from the interviews conducted strongly supports this encouragement for managers to make the right decision based on knowledge, to protect the Bay.

A more comprehensive collective understanding of common species and any changes in their health or populations over time may lead to an improved early warning system for any ecosystem harms. Incorporating an Indigenous worldview of viewing creatures not as resources, but as relatives, would help shift the narrative from one of profiting from the ocean, to viewing how the ocean can be healed.

(3) **Centre and uphold Indigenous Knowledge Systems** – Canada, the U.S., Maine and New Brunswick must all relinquish power they have assumed in the Quoddy Region, as the current approach to marine management has proven to be failing. Equitable marine conservation will take acknowledgement of the deep power imbalance between colonial government and Indigenous government – and a shift of this power. A polycentric governance approach has been taken in many other regions and seems most appropriate to

ensure the long-term health and vitality of the Quoddy Region and greater Bay of Fundy and all who depend upon it for survival. There is no one better equipped to lead this work than the Peskotomuhkati Peoples who have lived in harmony and relationship with the Waters, Lands, and creatures here since time immemorial. Colonial governments must humble themselves and look at the science with open eyes. A new era of collaboration is desperately needed for long-term healing of the Bay of Fundy, and this must begin by listening to those who know best.

5.1 Recommendations for Peskotomuhkati-led Marine Conservation

The work of Peskotomuhkati-led marine conservation is ongoing at the Passamaquoddy Recognition Group and continues to be supported by ENGOs, government staff, and researchers. There is currently federal appetite and funding available for this work in Canada, and good relations with staff of the Marine Planning Department at Fisheries and Oceans Canada. There are environmental departments at all three Peskotomuhkati communities. Discussing a vision of what Peskotomuhkati-led cross-border marine conservation would look like between knowledgeable staff could help develop a strategy. This paper could be utilized as a launching point for this visioning phase. The community of Sipayik has ties to the National Oceanic Administration Association (NOAA) and could strengthen this partnership to learn more about how the U.S. federal government could support long-term monitoring and eventual protection efforts in Cobscook Bay and the western Quoddy Region.

Establishment of a National Estuarine Research Reserve (NERR) would be a wise first step for Cobscook Bay, as this would lead to more federal funding for the Quoddy Region, and long-term monitoring. A NERR could potentially support the removal of causeways connecting Moose Island to Sipayik which would restore the natural flow of nutrients and allow for important habitat restoration over time. The downfall of a NERR is that it does not provide any permanent protection – therefore it must be coupled with other conservation efforts, such as an Indigenous Protected and Conserved Area (IPCA), or U.S. federal protections once the government can be convinced of Cobscook Bay's significance. The current situation in both Canada and the U.S. is that because Indigenous laws and sovereignty are not truly recognized, an IPCA would take a great deal of time and effort in working with stakeholders and colonial governments to discuss changes in ocean uses. The author suggests that it would likely work best coupled with federal government tool(s) with legislation so that colonial commercial marine industries can be better held accountable for protection measures. For Marine Conservation Tools used in the U.S., Table 3 shows a brief analysis of each tool based on the results of the legislative review:

Table 3: pros and cons of the use of 2 U.S. Marine Conservation Tools in the Quoddy Region, and whether the tools have been used in conjunction with Indigenous Protected and Conserved Areas in the past.

U.S. Marine Conservation Tool	Pros	Cons	IPCA overlap
Marine National Monuments – Antiquities Act; 1906	Quick to create with buy-in from Congress; more flexible in reasoning for designation.	Controversial tool due to lack of local consultation/ governance required under Antiquities Act.	None known
National Marine Sanctuary - Marine Protection, Research, and Sanctuaries Act; 1972	Consultation and collaboration are at the core of the establishment, leads to more buy-in upon creation.	Take time to create.	No, Co-stewardship potential[14]

In Canadian waters, though the Marine Protected Area (MPA) Network Plan from DFO continues to change shape, and is much smaller than the Nation would like to see – it is an important first step to see Ecologically and Biologically Significant Areas (EBSAs) protected and more well-researched with MPA monitoring efforts in the Quoddy Region. This cannot be the only effort to protect the Quoddy Region, as is often emphasized in interviews of DFO staff, 'it is only a piece of the puzzle'. Evidenced by the multiple interviews throughout this project – fisheries, aquaculture, and other ocean uses require a holistic and precautionary approach with adaptive management. DFO and DAAF would greatly benefit from working more closely with the Peskotomuhkati and other Wabanaki Nations to adopt a more integrated approach to human behaviour management. It is natural and expected to have conflicts arising from this work, and as is emphasized in the TRC final report, drawing on traditional First Nations, Inuit, and Métis approaches to conflict resolution and relationship restoration ought to guide the reconciliation process (TRC, 2012).

Below is a brief analysis (Table 4) of the positives and negatives of all the previously introduced federal marine conservation tools used under Canadian laws. These would need to comply with the MPA Protection Standard in their design. For more details on the tool descriptions, see 2.4.2.

[14] On November 30, 2024, the Chumash Heritage National Marine Sanctuary was established in Californian waters. NOAA "looks forward to a future partnership and collaborative co-stewardship to protect and honor this special place." It's unclear whether the Chumash nor the Salinan Peoples were involved in establishment. (National Ocean Service, 2024)

Table 4: Comparison of Canadian Marine Conservation Tools, the pros and cons of their use in the Quoddy Region, and whether the tools have been used in conjunction with Indigenous Protected and Conserved Areas in the past.

Canadian Marine Conservation Tool	Pros	Cons	IPCA overlap
Marine Protected Area – Oceans Act; 1996 Fisheries and Oceans Canada Pêches et Océans Canada	There is already a great focus and research led by DFO on the Quoddy Region, it is highlighted as a very important area with an MPA Network Plan already drafted; Positive relationships have been establishing with PRGI and the Marine Planning Team. DFO can lead discussions with other marine users, as other oceans uses are also under their jurisdiction – relationships are already in place.	Cannot protect intertidal zones or adjacent lands; DFO has a dual mandate to both protect the Ocean, yet to continue to increase ocean-based economies – can be seen as a conflict of interest, there is fear of overexploitation (some Peskotomuhkati Tribal Members mentioned that this is how they saw it).	Kitasoo Xai'Xais
National Marine Conservation Area – Canada National Marine Conservation Areas Act; 2002 Parks Canada Parcs Canada	Parks Canada is known for its efforts to advance Truth and Reconciliation and has been advancing co-governance efforts. Canada in 2021 committed to protecting 10 new NMCAs by 2026, working with Indigenous communities on co-management agreements for these NMCAs. NMCAs can go beyond the ocean to protect intertidal zones and lands; aligns with the Peskotomuhkati view of interconnectedness. Language and cultural revitalization are central to Parks Canada's mandate. (Parks Canada, 1995; 2024b)	Potentially longer process [this may also be a pro] – involvement of DFO is necessary for discussions with other marine users.	Haida Gwaii
National Wildlife Area – Canadian Wildlife Act; 1973 Environment and Climate Change Canada Environnement et Changement climatique Canada	Canadian Wildlife Service is "responsible for the conservation of migratory birds, the recovery of species at risk, and the protection of nationally-important habitat for wildlife". They have expertise on monitoring and identifying habitats at the land/ sea interface that may be most at risk.	Least precedent for Marine NWAs as there is for other conservation tools – only one in Canada from 2018, Scott Islands marine NWA in British Columbia. Thus far, this does not seem to be a preferred tool for marine conservation, nor for Indigenous co-leadership (no examples).	N/A

From this research, the author suggests: (1) continual work to discuss the option of creating a whole Quoddy Region Indigenous Protected and Conserved Area (IPCA) that spans all of Peskotomuhkati territorial waters, regardless of the border; (2) continue to work with DFO to ensure that the Bay of Fundy MPA Network Plan is established with co-governance principles, and can work to protect as many significant areas as possible; (3) approach Parks Canada to discuss possibilities for establishing a National Marine Conservation Area in this region (could complement the IPCA work).

Interconnectedness of the harms to Wabanaki Peoples throughout colonization have perpetuated harms to the Skutik watershed, to the Quoddy Region and Monahnuk ecosystems due to a change in dominant ideals within governance – viewing Water and creatures as resources rather than sacred beings, relatives. A fundamental shift of perspective is required for settlers to embrace Water Back principles, remembering Water Responsibilities as well as Rights, and managing human behaviours that impact the health of the Bay, and the wellbeing of current and future generations.

5.2 Recommendations for the Peskotomuhkati Nation at Skutik

1) Gatherings with Motahkomikuk, Sipayik, and Qonaskamkuk communities, from Elders to youth, to discuss shared values and come up with a cohesive message and goal for conservation in Peskotomuhkati homelands and waters.

2) Gathering with the Wabanaki Confederacy to discuss a shared vision of protection in the Quoddy Region and Bay of Fundy. All Nations must be involved in an ultimate decision about conservation objectives.

3) Rallying partners is critical to a successful project, and the Peskotomuhkati Nation has learned this firsthand with the Skutik Restoration project. This should include meeting with all levels of government to discuss the importance and urgency of marine conservation efforts. This could begin with the International Joint Commission – the same entity that is working to revive the mighty Skutik River. Continuous meetings and relationship-building with the Fisheries and Oceans Canada staff, but also higher-level decision-makers at the Ministerial level will be critical to influence change. In terms of rockweed and aquaculture management, meetings with the NB Department of Agriculture, Aquaculture and Fisheries will also be necessary to ensure they are doing everything in their power to work toward co-management and protection of the Bay.

4) Learning from and collaborating with other Nations both locally and across Turtle Island and the globe will be critical to advancing efforts. Wabanaki Nations are all deeply connected to the Bay of Fundy, and any conservation efforts ought to be openly discussed with Mi'kmaq, Wolastoqiyik, Penobscot Nations to ensure support and willingness to partner on long-term efforts to care for the Bay. These discussions are challenging as of course inherent rights must also be protected and respected when discussing efforts to 'conserve' an area – as Chief Hugh has mentioned, this must be approached with care and sensitivity. Other Nations including the Haida, Kitasoo Xai'Xais, Heiltsuk, and Mamalilikula Nations as well as Inuit from Nunatsiavut and other communities have set examples. All of these Nations have worked to legally safeguard some or all of their territories, working in varying degrees with levels of colonial governments to do so.

5) Marine conservation options: establishing an Indigenous Protected and Conserved Area (IPCA) over the entire Quoddy Region would be an important first step to symbolize its significance and sacredness to the Peskotomuhkati Nation, exercising Peskotomuhkati law and inherent governance over Peskotomuhkati territory. This step of course must be discussed thoroughly between all three Peskotomuhkati Chiefs and Councils, and community members, and with other Nations to learn more about the dangers and benefits of this action.

5.3 Lessons learned from Indigenous-led or co-led projects

Kitasoo Xai'Xais Nation attempted for many years to collaborate with Fisheries and Oceans Canada, and eventually in 2022, decided to create their own MPA, approaching commercial fishers on their own and convincing them not to fish in certain areas for example (Kitasoo Xai'Xais Nation Council, 2023).

For an IPCA to be possible and successful, a transfer of power is needed, away from colonial governments to the Peskotomuhkati and other Wabanaki Nations. In many of the examples within the Indigenous Knowledge Basket, Nations cannot wait for the Crown to give up this power. Indigenous laws were asserted in many, if not all, of the successful IPCA cases. Hopefully with more and more emphasis on the importance of Indigenous rights recognition, including the right of Nations to conserve their territorial lands and waters, power sharing can start to happen without a court battle. As Dasiqox-Nexwagwez'an Governance Advisor, Russell Myers Ross advises Nations looking to establish an IPCA, 'a committed, unifying cause, with mutual values' is an important starting point. He suggests it is important to have 'leadership that cares deeply about the area', with an eagerness to work collaboratively through a shared vision for the area. (Youdelis, 2023)

In Section 2.4.1, Figure 7 demonstrates a range of possible co-governance solutions for an IPCA, and the author suggests the ideal option would be Exclusive Indigenous Leadership with other partners and colonial governments involved – particularly since the Quoddy Region would need an International and cross-jurisdictional approach – the Peskotomuhkati Nation is best suited to lead this endeavour. Considerations from a legal, public relations, and future generations perspective might include engagement with other locals including the fishing and marine industry at large to discuss and define guiding values and what management changes (i.e. extra monitoring, gear restrictions, adaptive management for harvesting techniques and amounts). Peskotomuhkati community members and knowledge holders may not want to utilize federal government conservation tools to protect marine spaces because the tools and legislation creates a power imbalance. Ultimately the decision on what to protect and in what way is up to the Wabanaki Confederacy as the Quoddy Region is unceded and the UN Declaration states that Indigenous Peoples have a right to self-government and control over their lands and waters. The federal government has a duty to uphold the Peace and Friendship Treaties, the UN Declaration, and the best way of working toward reconciliation is through relationship building and taking leadership direction from the Nations. Management power is not traditionally balanced, and with many tools, a federal Minister has final say. As stated in multiple interviews, this must change to help achieve true shared governance and management. If the long-term management of a marine protected site is to be fully led and governed by the Peskotomuhkati Nation, then care must be taken to ensure that the proper protection tools are considered and used. Here is one example of an establishment process for a nearby IPCA:

> In developing Pemsɨk Mawa'tasikl Anko'tmu'kl, an IPCA that is in the works in Mi'kma'ki, Melissa Labrador has shared that once there was a vision of what should be conserved in her home territory, she gathered the federal government departments with a mandate to conserve lands and waters, the province of Nova Scotia, land trusts, and shared the vision to ask how they could help make this a reality.

A similar approach could be taken for a potential Peskotomuhkati IPCA, that would build on the successes that the Schoodic Riverkeepers and Peskotomuhkati Nation at Skutik have had in the watershed in protecting land and opening up the river. The project can remain steered by the Nation, yet collaborations can be sought from colonial jurisdictions and other entities.

5.4 Recommendations for Colonial Governments

Management decisions must all Honour Treaties, Centre the Health of the Bay, and uphold Indigenous Knowledge Systems. In practice, what does this look like?

1) Ethical Space principles can be used to guide any meetings and shared decision-making between the Nation and the state, provincial, and/or federal governments in question. This concept describes a theoretical space where mutual respect of uniqueness and diversity between thought worlds is upheld, and the strengths of each are celebrated. All parties within 'Ethical Space' must acknowledge biases and injustices, and equally adopt a willingness to respect one another, ensure a balance of power, and peaceful conflict resolution. Ethical space principles are grounded in the values of 'respect, trust, humility, and responsibility' (Ermine, 2007). Positive change will require 'systematic rebalancing of the power equation that interrupts the persistent expectation of subservience in favor of equality and partnership' (Dana-Sacco, 2020).
2) Truly adopting the Precautionary Principle; caring for the Bay and defending it from harms. This also means moving away from appeasing industry as has been reported by many interviewees who have seen harmful practices continue, 'for the mighty dollar', despite warnings from scientists, ENGOs and community members.
   "[If our goal is the past – do you see IPCAs or MPAs as part of the solution?] Not the way it's being put before us. Even the one that says: oh, if there's an aquaculture site, yeah forget it. No – are we going to protect areas? Or are we only going to protect what industry will allow us to protect. That's a real question." - Chief Hugh Akagi
    a. Stricter considerations on the use of deleterious substances used in the Bay are recommended based on interviews. This complements the *Fisheries Act* Subsection 36(3) which 'prohibits the deposit of deleterious substances into water frequented by fish, or to any place, under any conditions, where they may enter waters frequented by fish' (*Fisheries Act* (R.S.C., 1985, c. F-14)). Finfish aquaculture companies in New Brunswick use Salmosan, an azamethiphos, for sea lice treatment which is permitted in Canadian waters (Health Canada, 2017). ENGO interviewees and Peskotomuhkati Tribal members interviewed are opposed to this practice. Indigenous Water cosmologies as shared during the Peskotomuhkati talking circle, interviews, and as described within the Water Back framework (see section 1.1.1), where Water is seen as a relative, while also asking 'What does Water need?' is central to the worldview (Leonard et al., 2023). As mentioned in the background section, Health Canada approves the use of pesticides in Canada (Health Canada, 2024a). The author recommends further research to review the Health Canada approval process for pesticides, to examine whether the process can

better align with UN Declaration principles (Article 29), ensuring that Indigenous Peoples have Free, Prior, and Informed Consent (FPIC) prior to any new or 're-approved' hazardous materials being stored or disposed in their traditional and ancestral territories (United Nations, 2007). In 2022, one seat for the Assembly of First Nations (AFN) was added to the Pest Management Advisory Council that provides advice to the Minister of Health relating to federal pest management regulatory system (Robert Martin – Regulatory Information Officer, personal communication, November 2024). This is a good step toward reconciliation, however this is not true co-governance by having one member of the AFN on a 20-person ***advisory*** council, where the federal minister makes the ultimate decision (Health Canada, 2024b). This forces Indigenous representation into a colonial board structure, representing Nations outside of their own for decisions that will affect all Nations across Turtle Island. Power sharing is needed in these decisions, on a regional or local basis, and Water health must be put first. The Peskotomuhkati Nation has the right to refuse the use of hazardous materials such as pesticides being used in their traditional territories – Canada must start honouring the United Nations Declaration on the Rights of Indigenous Peoples that it signed.

b. There are concerns about several gear types. Decisions on fisheries harvest restrictions should be co-governed. Bottom trawling, purse seines, long line and gillnetting have been criticized for bycatch, particularly during the peak summer months when cetaceans are more actively feeding in the Bay. Trawling in particular for benthic habitat destruction and sedimentation, smothering sensitive habitats and organisms. Trawling closures have been shown to drastically improve fisheries production and biodiversity inside and outside of closures (Kincaid & Rose, 2017). Only bottom-trawling is banned within the minimum standards of Oceans Act MPAs, however other gear types are highly concerning to interviewees. Purse seining in Canada was once banned for conservation purposes from 1891-1940 (Gough, 2006)[15]. Conservation actions such as this can be taken once more, particularly if they are shown to be causing irreversible ecological and cultural harms.

c. Rockweed is a critical habitat for juvenile fish and seabirds. More emphasis is recommended for enforcement, ensuring that harvesting is closely monitored and that no take areas are truly protected. Some Peskotomuhkati interviewees felt strongly that all seaweed harvesting cease – this must be more thoroughly discussed with the Peskotomuhkati Nation as a whole, and in follow-up meetings with DAAF as well. At the very least, the author recommends more in-depth and long-term research be transparently communicated with the Nation and public and that larger areas be closed to harvest, particularly surrounding all Ecologically Biologically Significant Areas and

[15] Purse seining, invented by Americans in 1826, soon began to be used extensively in Canada, leading to declines in mackerel with the advance of steam-powered engines. Fearing declines, Canada approached the U.S. regarding an international ban on purse-seines, which was not achieved, yet Canada still banned the gear type in 1891 (Department of Fisheries of the Dominion of Canada, 1891), in Atlantic waters, the gear was banned until 1940. Purse-seining was re-introduced altogether after the Great Depression to make it easier for people to make an income (Gough, 2006) [see Appendix A for detailed accounts].

Important Bird Areas. Adaptive management, and increased monitoring and research efforts must be applied, and if the harvesting is found to be damaging for juvenile fish, seabirds, and marine mammals, then a moratorium or greatly reduced harvest rate must be considered.

d. Fisheries and other harvesting cannot continue to be managed with greed as a driving principle and cannot be ethically managed without sharing power with Indigenous Nations. If a fishery is known to be dwindling, harvesting must cease. Ideally, total allowable catch (TAC) would be decided by a co-management board with the final decision resting with not only a federal Minister, but representatives of the Indigenous Nations within whose territory the fishing activity is taking place. Science advice must be used as precautionary, and TACs ought never to go beyond that advice.

3) Holistic, big picture, long-term thinking should be applied to all uses and harvesting decisions in the Bay, adopting a blended approach of local Indigenous Knowledge Systems and Ecosystem-Based Management. As Chief Akagi stated, the solutions to healing the Bay are in the past – through localized decision-making, and caring for all beings, living in an interconnected way. Colonial governments cannot continually revert to taking the lead and thinking that the patriarchal system knows best. To truly uphold the rights of Indigenous Peoples, the spirit and intent of the Peace and Friendship Treaties, and carry out the TRC Calls to Action, North Americans must respect self government and self-determination of Indigenous Peoples (Jessen et al., 2021). This means respecting Indigenous laws and ways of knowing, and working hand in hand to revitalize the ecosystems and ways of being and living within a community that has been damaged by colonization and greed. EBM's goal of sustainability cannot be achieved by a colonial federal government alone. In reviews of Fisheries and Oceans Canada's Integrated Fisheries Management Plans, implemented in the 1990s to adopt EBM principles, they fall short in the social and cultural pillar, where there is 'very little evidence of information relating to aspects including community well-being and adaptive/social capacity' (Paul & Stephenson, 2020). Holistic and adaptive management must be a collective undertaking, acknowledging the critical role of intergenerational community dialogue, it cannot be achieved by any one fisheries manager or department. It must center relationships with all Treaty people, and the view that Water is life, Water is kin and relative, and must be cared for above all else. As outlined in the Water Back principles (Leonard et al., 2023), humans have rights to Water, this comes with Responsibilities to care for Water, which is fundamental to the Peskotomuhkati worldview, and must be remembered by settlers in order to heal the Bay collaboratively.

Chapter 6: Conclusion

This research found that many policy and best management practice changes are required before Indigenous-led or any marine conservation can be considered successful in the Quoddy Region. The Bay of Fundy is facing many pressures, exacerbated by climate changes, and the Peskotomuhkati Nation, environmental NGO leaders, and federal research staff interviewed are all concerned about the declining health of the Bay. Many interviewees were frustrated with the lack of urgency that colonial governments show on the topic of ensuring a vibrant and healthy Bay for generations to come. Collaboration from all sectors is essential to revitalizing the Bay.

To become healthy again, the Bay needs holistic caretaking instead of the current practice of single species management. This means abandoning actions of Water colonialism, and centering the health of Samaqan (Water) in every decision. Long-term, in-depth, and unbiased research on critical habitat elements and keystone species is essential to understanding the Bay's well-being, and adaptation, including cessation of harvesting is needed. Activities within the Bay that were mentioned as being of concern for overharvesting and habitat degradation may require 'Integrated Stops' rather than further management measures (i.e. pesticide use, certain fishing gear types). Embracing interdisciplinarity and collaboration is deemed essential to better prepare for the increasing threat of climate change to the health of the Bay. Humans have lost the ability to live off the land, and the well-being of the planet is tied to cultural survival and healing. Restoring the health of the Bay will truly require a paradigm shift away from financial gain and toward ensuring the health of the beings we share space with. Moving forward requires reconnection; remembering the interconnectedness of all things within decision-making spaces will advance healing. Physical and jurisdictional barriers to this connectivity must be removed to make space for Water rematriation and healing of nature and people.

Marine practitioners and researchers can support Peskotomuhkati-led marine conservation efforts by acting with integrity. Particularly, by upholding the government's own laws of the Precautionary Principle. Urgent action is needed to restore the function of the Bay, not merely to conserve the Quoddy Region as it is now. The Peskotomuhkati Peoples have been leading the Skutik River restoration project; this can be drawn on for inspiration on what collaboration with a shared vision can achieve. Remembering and honouring the Peace and Friendship Treaties means to continue on a path of relationship-building, earning respect, working together, and gaining trust through transparency and an equitable balance of power. Governments appeasing industry during decision-making on ocean management must cease – and the conscience must be brought back into the system, each person taking accountability and responsibility to care for the Bay.

A successful collaborative process to protect the Quoddy Region would be Wabanaki-led, as local decision-making, particularly by Indigenous leaderships, leads to well-balanced results for social, cultural, environmental, and economic considerations. Water rights and responsibilities must be upheld by re-aligning with Peskotomuhkati values of care and respect for all beings. Input from all ages is important. Youth are the future; Elders understand both the abundance of the past, and the decline, which can offer a vision for the future of recovery. If spatial conservation tools are to be used, considerations include ensuring core conservation goals can be achieved with the size and configuration of the area, and that the whole of Peskotomuhkati territorial lands and waters are important to protect and revitalize. In any conservation effort, it is essential that Indigenous sovereignty is reinforced, never diluted, such that Indigenous rights and decision-making power are not infringed upon. Lessons can be learned, and collaborations drawn from other First Nations, Inuit, and Métis communities working toward land and Water Back in their homelands. Ethical Space principles can be used to ensure a respectful and productive dialogue between the Nation and any other regulators.

To revitalize the Quoddy Region in the Bay of Fundy, all collaborators must honour Treaties, centre Indigenous knowledge systems, and the health of Samaqan (Water) and all creatures that depend on her, in each decision made. Wichukemine, help us revive the Bay.

Ethics statement

The studies involving humans were approved by Marine Affairs Program Ethics Review Standing Committee, Dalhousie University, under approval number: 2024-002. The studies were conducted in accordance with OCAP principles, local legislation, and institutional requirements. The participants provided their written informed consent to participate in this study both before interviews and for certain quotes to be included.

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Appendices

Appendix A: More detail on Indigenous Protected Area Case Studies

More details on Kitasoo Bay MPA:

Overfishing by others could send the Nation into another generation of severe unemployment and food insecurity as has been seen in the 1980-90s. Establishing "a co-management agreement would codify these practices in Canadian law, giving the Nation more power to enact them". There is a current Rockfish Conservation Area in Kitasu Bay, which is an OECM or fisheries closure that prohibits mid and bottom-trawling, and trap, hook-and-line fishing for rockfish species, tuna, and salmon, established in 2019 (Fisheries & Oceans Canada, 2024c), but it does not go far enough in the view of the Nation in terms of protecting the Bay (von Herff, 2023; Stimpson, 2022; Service et al., 2014; von der Porten et al., 2019; Berkes et al., 2000). The new MPA includes harvesting restrictions such as the amount of herring/ eggs; working not to startle herring away: (i.e. Not letting blood touch water; Reducing noise during spawn (including wrapping cloth around paddles)). (von Herff, 2023)

> "Kitasoo/Xai'xais have been fighting for decades to keep their environment intact (through...) protests, lawsuits, and industry alliances – to maintain their way of living. Now, the Gitdisdzu Lugyeks MPA represents a new opportunity: if the Canadian government comes to the table, the Kitasoo/Xai'xais will have a renewed chance to safeguard their resources under their own laws and practices, just as they did before European colonization. They are using a vast wealth of traditional knowledge, bolstered by decades of their own scientific research, to guide their management practices and ensure their waters and resources will still be there for generations to come. The Kitasoo/Xai'xais, however, are striving for something bigger than themselves: they believe this MPA can demonstrate the power of Indigenous-led conservation both in Canada and around the world." (von Herff, 2023; Ban et al., 2019)

Agreement Summary of Thaidene Nëné

"Thaidene Nëné is the homeland of the people whose ancestors here laid down the sacred, ethical and practical foundations of their way of life. This land has nurtured and inspired countless generations whose prosperity continues to be ensured by a deep intimacy between the people and the land. For the well-being of future generations, this way of life needs to be exercised, nurtured, and passed on. The living connection between land and people, between water and land, between forest and barrens makes Thaidene Nëné a National Treasure of Canada. Carrying these relationships into the future, the ecological integrity and Dene way of life of Thaidene Nëné will be a living legacy for all, where the Łutsël K'é Dene First Nation and the Parks Canada Agency/GNWT will welcome the world." (Thaidene Nëné: Establishment Agreement Summary) (Youdelis et al., 2023)

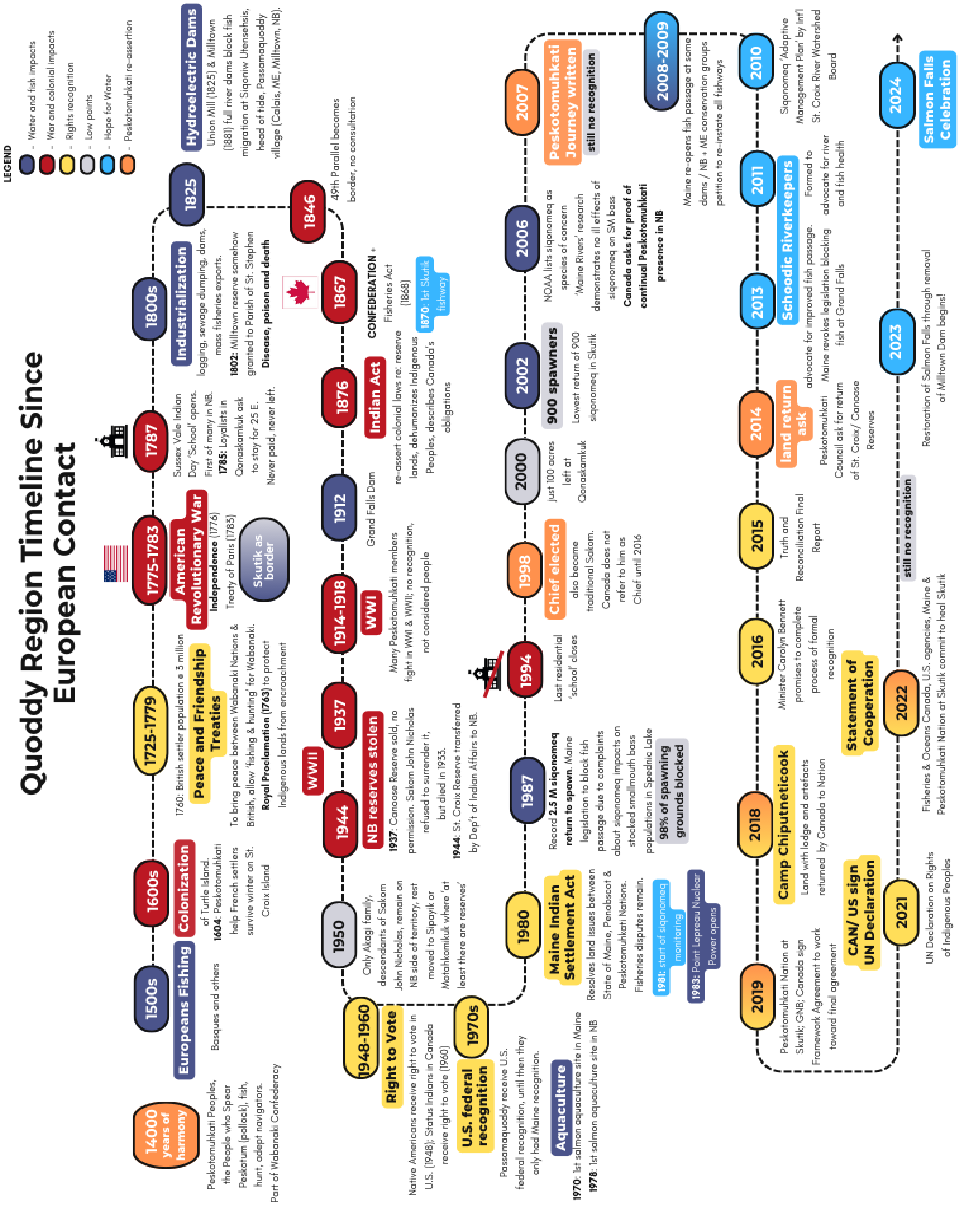
Haida Gwaii case study:

“In the various establishment agreements, the Haida Nation and Crown governments ‘agree to disagree’ about underlying sovereignty to the protected areas and instead focus on their shared interest of conserving these unique areas.” (West Coast Environmental Law, 2021). In order to plan the SGaan Kinghlas-Bowie Seamount MPA, six guiding Haida principles were adopted, thus Haida laws and ethics are fundamental and center the governance decision-making for the protected area:

- “Yahgudang (respect);
- Gin’laa hl isdaa.uu. (responsibility);
- Gin ‘waadluwaan gud ahl k waagiidang (interconnectedness);
- Gin’waadluwaan damaan tl’kinggang (balance);
- Gin k’aaydaangga Giiy uu tl’a k’anguudangs (seeking wise counsel);
- and ‘Isda isghyaan diigaa isdii (giving and receiving).”

(West Coast Environmental Law, 2021).

Appendix B: Larger version of Figure 3 – Quoddy Region Timeline



Appendix C: Interview Questionnaires

1) **Template Questionnaire for Peskotomuhkati knowledge-holders:**

These are questions that may be asked to help guide the semi-structured interviews to gather values on marine elements. The researcher may decide to skip some questions or change the order depending on what seems most pertinent based on the flow of the conversation.

Script to mention at the beginning:

Hello, my name is Bethany Pohl, and I was raised in Quispamsis (Little Lake in the Woods) within unceded, unsurrendered Wolastoqiyik territory. I am honoured to be here today with you on unceded, unsurrendered Peskotomuhkati territory, and very grateful that you have agreed to share information for this project on marine protection. I would like to first share a tobacco tie with you, and thank you for your time. **[share tobacco tie]**

My ancestors came from Wales and England, one I know of was John Howland, an indentured servant who was aboard the Mayflower which landed in present-day Boston in 1620. He fell overboard during a storm, but was able to grab hold of a rope and was rescued – I joke that this is where I get my love of swimming, the ocean, and maybe even my clumsiness.

Logistics

At any point, if you have a question about a term I used or want to clarify anything, please feel free to ask.

As you may know, I am a Master's student at Dalhousie in Kjipuktuk (Halifax), studying in the Marine Affairs Program, and I am eager to learn more about Peskotomuhkati values that may help shape the desired outcomes of future Peskotomuhkati-led marine protection in your territory. The research paper that this discussion is helping to inform will be reviewed by the Passamaquoddy Recognition Group, and Maxine Westhead at the Marine Affairs Program at Dalhousie. Your names will not be included in the paper, but the topics we discuss today will be described and grouped in guiding values and themes. Your name and information you share (with your permission) will be kept with the raw interview notes with the Passamaquoddy Recognition Group staff, and I will share a summary of our discussion here today with you via email or mail to ensure I captured the points you wanted to convey – names will be removed for confidentiality in the final product.

Before we begin, I would like to gauge your comfort level on the use of a recording device for our meeting today. If you are uncomfortable with this approach, I will simply work on summarizing the information from memory and use my notebook to capture key messages.

Questions:

1. [If recording, Please state your name, where you are from, and] how would you describe your own interpretation of relationship (or kinship) to lands and waters?
2. What does living with nature in a good way look or feel like?
3. We have talked a lot about what it does look like to live in reciprocity with nature – can we talk about what that doesn't look like?
4. Explain a Marine Protected Area (share table to compare between different conservation tools – National Wildlife Area, OECMs, National Marine Conservation Areas) – these all have the structure to protect biodiversity in different ways. PRGI is considering protecting IPCAs
5. What does a protected area mean to you? Do you see any benefits or negative aspects?
6. What would a Peskotomuhkati-led marine protection process look like, done in a good way? [Who would be involved, and what considerations should be made?]
7. In what ways do you envision the Canadian government supporting Indigenous-led marine conservation?
8. What worries you about the state of the Bay of Fundy? Do you think there is a role for marine protection to play in addressing those worries?

Show them a paper map of all Ecologically and Biologically Significant Areas, and currently nominated Marine Protected Areas. Mention: this research is independent of the DFO MPA Network plan and engagement – we can discuss any area you wish.

- ➢ Are there certain activities that you feel should be allowed to continue in the Bay? If so what are they and where should they happen?
- ➢ Are there areas you do not want to see protected, even Peskotomuhkati-led?
- ➢ Are there certain activities that you feel should not be allowed to continue in the Bay? If so – everywhere or just in certain areas?
- ➢ Are there areas you wish to see protected? In what way?

Closing

Thank you very much for trusting me and sharing your valuable knowledge and stories. I have learned so much from you, and look forward to bringing this research forward to help inform future Peskotomuhkati-led marine protection in this special area.

I will compile our notes and send them along to you for review within the next month should you wish to review what I have, please feel free to come to the office in person, or I can email/mail you a copy. The graduate project that this interview helps inform will be presented at the Summit of the Bay Conference in Qonaskamkuk, St. Andrews in October, and at the Sustainable Oceans Conference in Kjipuktuk, Halifax, in November at Dalhousie. You are all welcome to attend in person or via Zoom – I will send the link to PRG to share with you all.

Thank you so much, and I hope we can meet again soon.

2) **Template Questionnaire for Practitioners**

These are questions that may be asked to help guide the discussions with practitioners to gather values on regional marine elements. The researcher may decide to skip some questions or change the order depending on what seems most pertinent based on the flow of the conversation.

Script to mention at the beginning:

Hello, my name is Bethany Pohl, and I was raised in Quispamsis (Little Lake in the Woods) within unceded, unsurrendered Wolastoqiyik territory.

As you may know, I am a Master's student at Dalhousie in Kjipuktuk (Halifax), studying in the Marine Affairs Program, and I am eager to learn more about Peskotomuhkati values that may help shape the desired outcomes of future Peskotomuhkati-led marine protection in your territory. The research paper that this discussion is helping to inform will be reviewed by the Passamaquoddy Recognition Group, and Maxine Westhead at the Marine Affairs Program at Dalhousie. Your names will not be included in the paper unless you want your name included, but the topics we discuss today will be described and grouped in guiding values and themes.

Before we begin, I would like to gauge your comfort level on the use of a recording device for our meeting today? If you are uncomfortable with this approach in any way, I will simply work on summarizing the information from memory, and may use my notebook to capture key messages.

Questions:

What worries you about the state of the Bay of Fundy? Do you think there is a role for marine protection to play in addressing those worries?

- What would a successful collaborative process look like for Peskotomuhkati-led marine conservation?
- In what ways do you envision the Canadian government supporting Indigenous-led marine conservation?
- In April 2024, the Department of Fisheries and Oceans Canada unveiled a draft Marine Protected Area (MPA) network plan for the Scotian Shelf-Bay of Fundy region. My research is completely independent of this MPA network plan, however I brought a map to show the areas in question, along with Ecologically Biologically Significant Areas. The Peskotomuhkati Nation is looking to establish some marine Indigenous Protected and Conserved Areas (IPCAs). Are you aware of critical areas that should be protected outside of the draft network plan?
- Are you aware of areas that are particularly contentious or that in your opinion should not be protected?
- Are there certain activities that you feel should be allowed to continue in the Bay? If so what are they and where should they happen?
- Are there areas you do not want to see protected?
- Are there certain activities that you feel should not be allowed to continue in the Bay? If so – everywhere or just in certain areas?

- Are there areas you wish to see protected? In what way?
- Are there any resources you can share with me that make a case for or against conservation in the region?

Closing

Thank you very much for sharing your valuable knowledge. I have learned so much, and look forward to bringing this research forward to help inform future marine protection in this special area.

I will compile our notes and send them along to you for review within the next month should you wish to review what I have, please feel free to come to the office in person, or I can email/mail you a copy. The graduate project that this interview helps inform will be presented at the Summit of the Bay Conference in Qonaskamkuk, St. Andrews in October, and at the Sustainable Oceans Conference in Kjipuktuk, Halifax, in November at Dalhousie. You are all welcome to attend in person or via Zoom – I will send the link to PRG to share with you all.

Thank you so much, and I hope we can meet again soon.