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MAINE INDIAN
TRIBAL-STATE
COMMISSION

SPECIAL REPORT

SEA RUN

A Study Regarding the Impact of Maine Policies
on the Quality and Quantity of Traditional Tribal
Fish Stocks and Sustenance Practices

DECEMBER 2022

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The Commission acknowledges the work of the many scientists who have studied Maine's rivers, fish, ecology, and Native lifeways—whose research forms the backbone and structure of this report; and the contributions of the many Riverkeepers, Native and non-Native, who have worked and continue to work to restore Maine's complex riverine ecology to its natural balance.

The Commission recognizes those who, over the past several centuries, resisted the changes being made to Maine's rivers and ecology—through acts of petition or protest, or simply by continuing traditional practices as best they could under changing and challenging conditions. Finally, and perhaps of most importance, the Commission acknowledges the many who kept the traditional lifeways knowledge alive in their communities.



Executive Summary

Pursuant to its responsibilities under the Maine Implementing Act, the Commission directed this study to review the impact of the State of Maine's fisheries policies on the quality and quantity of traditional tribal fish stocks and Wabanaki sustenance lifeways practices. Rather than look primarily at the impact of current state policies, this study undertakes a general historic review of both direct and indirect policies, that have affected Maine's fisheries and their use by Wabanaki people since European settlers first arrived—when traditional sustenance lifeways were practiced.

At the time of first contact, the annual anadromous fish runs in Maine's rivers, streams, lakes, and ponds were massive. They were a major food source for Wabanaki people and a significant strand in Wabanaki social and spiritual life. However, as their traditional lifeways economy gave way to a settler economy—based on the accumulation of wealth and the needs of a growing population—Wabanaki access to the fisheries was limited. Then, due to impassable dams, overfishing, and pollution, the fisheries themselves declined by the middle of the 20th century when they were largely gone. Limited Wabanaki access to the fisheries and the near demise of the fisheries themselves were the result of conscious policy choices by Massachusetts and after 1820, by Maine. This report examines those policy choices, initially up to 1980 when the Wabanaki land claims case was settled, and then up through the present day. What happened to the fisheries, and the limited Wabanaki access to the remaining fisheries and sustenance lifeways practice, was not anything that Wabanaki people did or failed to do, but instead were the direct and indirect results of state policy.

This study reviews the different ways, based on language, culture, and economy, that Maine's policymakers and Wabanaki people have alternatively understood concepts of sustenance and sustenance lifeways practice. The land claims settlement legislation recognized the right of Wabanaki people to take fish for "sustenance" within their respective reservations regardless of any state law, rule, or regulation. This study uses the more complicated phrases "sustenance lifeways practice" or "Wabanaki lifeways practice"



Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine.

rather than the English word “sustenance”. The primary reason is that “sustenance” does not translate directly into the Wabanaki languages.

This report examines, from the perspective of both history and policy, the specific factors that limited Wabanaki access to the fisheries; and caused the decline of the fisheries themselves including dams, pollution, overfishing, the interactions between native and non-native species, and state policy on tribal status. It looks at some of the factors that are largely beyond state control, such as international agreements, commercial ocean fishing practices, and climate change. It reviews the way those factors have impacted the St. Croix, Penobscot, and Meduxnekeag river fisheries and Wabanaki access to those fisheries and sustenance lifeways practice. To add perspective and depth to an often-technical discussion of policy and biology, the voices of individual Wabanaki tribal members are interspersed throughout the report in the form of excerpts from interviews conducted.

Based on this discussion, the report makes recommendations for consideration by the Commission; the Wabanaki Nations; and the State government and its related agencies.

Appendices A, B, and C are a collation of transcripts of interviews conducted with members of Maine’s Wabanaki Nations.



Atlantic Salmon

I.

Introduction

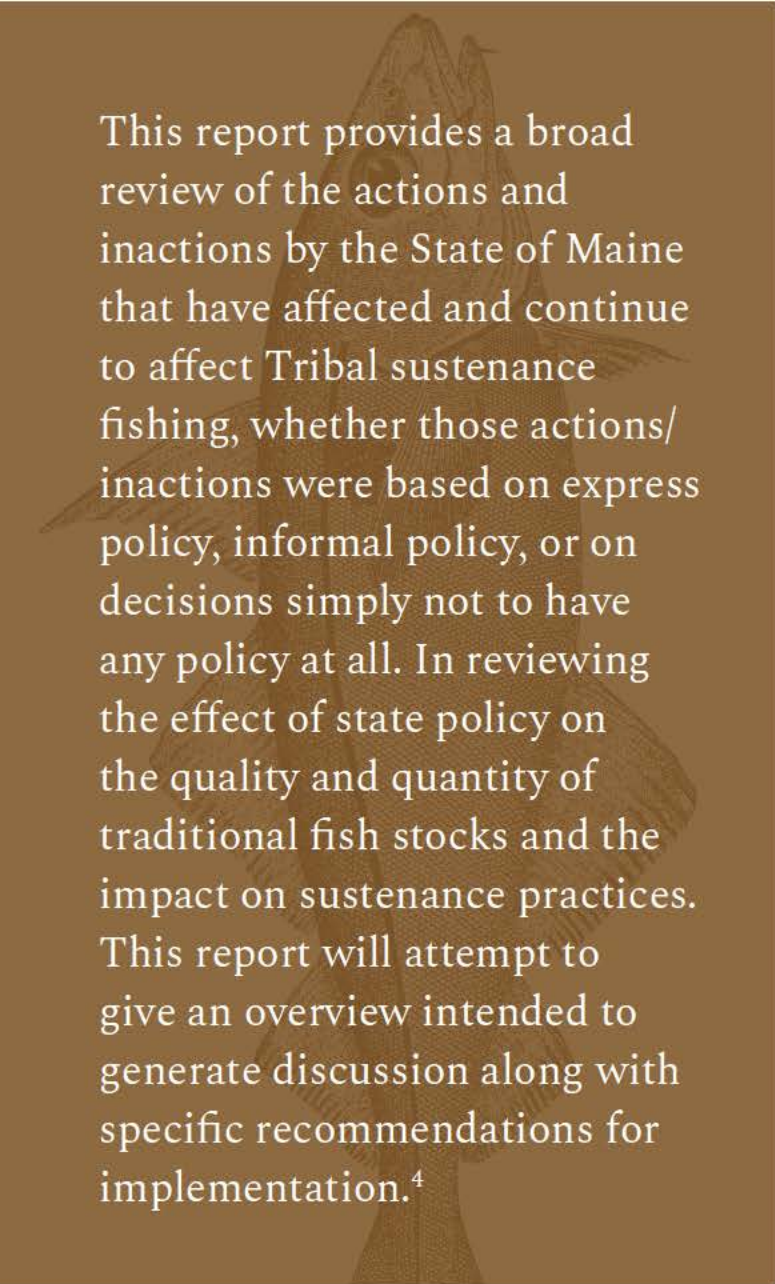


Pursuant to its responsibilities under the Maine Implementing Act¹, the Commission directed this study to review the impact of the State of Maine’s fisheries policies on the quality and quantity of traditional tribal fish stocks and Wabanaki sustenance lifeways practices.²

The Maine Implementing Act (hereinafter the MIA) at 30 MRSA § 6207(4) provides that regardless of any rule, regulation, or State law:

... [m]embers of the Passamaquoddy Tribe and the Penobscot Nation may take fish, within the boundaries of their respective Indian reservations, for their individual sustenance.³

The MIA does not define “sustenance,” but the language certainly suggests that there were, or would be, fish in sufficient quality and quantity for tribal members’ sustenance rights.



This report provides a broad review of the actions and inactions by the State of Maine that have affected and continue to affect Tribal sustenance fishing, whether those actions/inactions were based on express policy, informal policy, or on decisions simply not to have any policy at all. In reviewing the effect of state policy on the quality and quantity of traditional fish stocks and the impact on sustenance practices. This report will attempt to give an overview intended to generate discussion along with specific recommendations for implementation.⁴

Section II of this report discusses the concept of “sustenance” fishing from historical, legal, cultural, and linguistic perspectives. The report will reference the status of the fisheries in pre-contact/colonial times when they were an integral part of the Wabanaki economy and a major food source for Wabanaki people; and then discuss the current state of those fisheries. It will examine Wabanaki and State of Maine goals for the sea-run fisheries, baselines for measuring progress, and State policies on Wabanaki sustenance rights. Although “sustenance” is the operative word in the MIA,

there is no direct equivalent in the Wabanaki languages. Hence, to see how Wabanaki people understand their retained rights to “sustenance” fishing, the report will examine equivalent Wabanaki concepts by looking at language structure and culture through the eyes of tribal members.

In Section III, this report will review some of the factors and policies that, as a historical matter, altered the fisheries and resulted in their current status. This includes physical barriers such as dams, the degradation of water quality from industrial use of the waterways, economic policies that affected fisheries, specific fishery policies, and the State/Tribal history of both cooperation and conflict regarding those fisheries. It will also look at some broader issues that affect Maine’s fisheries but are largely beyond the scope of State policy including climate change; the interests of other jurisdictions; and international economic interests including ocean fishing practices and policies.

This report will focus on Maine policy since 1980, when both the Maine Indian Claims Settlement Act of 1980 (MICSA) and MIA were enacted, and on the current status of the fisheries and recent actions and policy proposals. In addition to looking at the barriers that prevent or impede restoration and/or preservation of sustenance fishing, the report will look at areas of common ground between Maine and the Wabanaki Nations. Primarily the increasing awareness of ecological issues amongst the general population, the marketing of Maine’s fisheries to a broader public, and the desire for improved communication and cooperation.

The legal authority for this report comes from the MIA. While marine fisheries have historically been and continue to be important for Wabanaki sustenance, they are

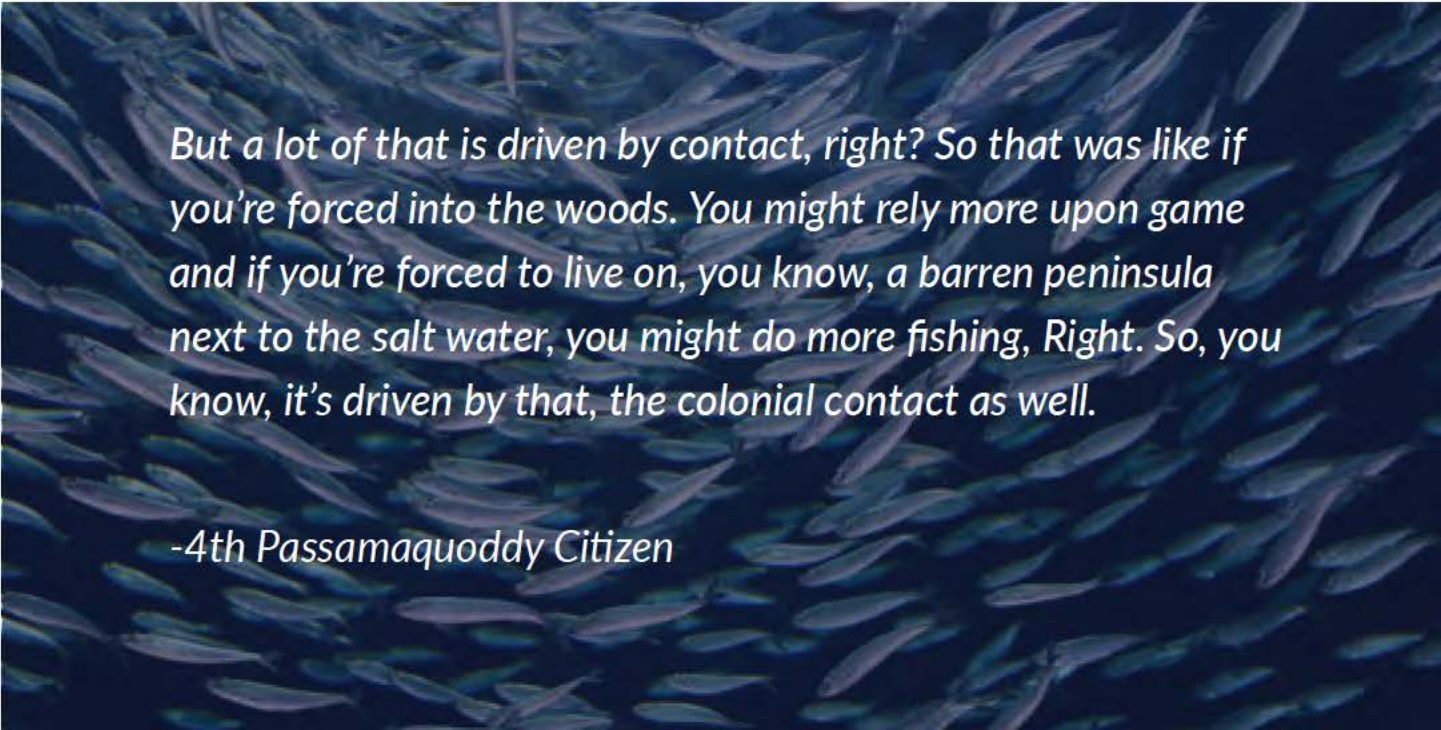
not addressed in the text. Hence, this report concentrates on Maine's inland water bodies. Furthermore, the policies discussed herein will primarily involve sea-run fisheries rather than marine or landlocked fisheries. Maine's sea-run fish migrations, as opposed to its landlocked fisheries, were of primary importance in the traditional Wabanaki diet and have been more profoundly affected by Maine's actions and inactions than the landlocked fisheries.

The causes of the decline in Maine's fisheries and the impediments to restoration have been the subject of many thorough scientific analyses. This report does not attempt to either reproduce those studies or substitute for them; rather it is intended to be a synthesis of existing studies, policy statements, and voices of Wabanaki members to give an overview of how Maine's policies have affected Wabanaki sustenance practices, and to provide a basis for recommendations for the future.

While the body of this report is structured as an independent discussion of each specific factor that has affected the sea-run fisheries, for example dams, pollution, and over-fishing, it is apparent that, like the ecology of the fisheries themselves, these impediments are intertwined and, as a practical matter, often inseparable.

The report drafters are also aware that an analytical structure like this one may arise from a way of thinking inherently connected to the English language and Western culture. As will be discussed below, the Wabanaki languages are structured quite differently, with more emphasis on verb phrases than nouns and on relationships rather than categories. Sustenance for Wabanaki people has always been expressed through a relationship between people and places and the species that share those places. Perhaps the crucial question is whether we manage natural resources by attempting to control specific factors for identified purposes or instead, simply ask, "what does the nature want and how can we help it get to where it wants to be".⁵

As will be apparent from the discussion below, many of the changes in Maine's fisheries from pre-contact to now, whether caused by State policies or by economics or climate change, are irrevocable. Restoring Maine's fisheries is not simply a matter of removing barriers. Nothing can bring back the fisheries the Europeans found when they first settled in what is now Maine, and in any event, the ecology of the land would necessarily have evolved over the course of those 400 years. Restoration must proceed not from where the fisheries once might have been, but from where they are now.



But a lot of that is driven by contact, right? So that was like if you're forced into the woods. You might rely more upon game and if you're forced to live on, you know, a barren peninsula next to the salt water, you might do more fishing, Right. So, you know, it's driven by that, the colonial contact as well.

-4th Passamaquoddy Citizen



Princess Tomah.
Courtesy of Donald Soctomah

II.

Sustenance Fishing and Wabanaki Lifeways Practice



This section looks first at the profound way Maine’s river fisheries have been altered since the first European settlers arrived, specifically in terms of the sustenance the fisheries once provided and what they now provide. It will then look at what Maine and Wabanaki people may mean by “sustenance” and what their goals are for Maine’s fisheries.

After the last ice age, when the glaciers melted and human beings could live in what we now call Maine, there was an abundance of animals such as moose, elk, and caribou living in the wooded inland areas; while porpoise, shellfish, and other fish species inhabited the rivers and ocean and shoreline.⁶ Early Wabanaki people lived by following the rhythms of nature’s yearly cycle, traveling between inland and coastal places based on “complex patterns of local environmental conditions, opportunities, needs and particular circumstances.”⁷ Travel by birch bark canoe allowed easy movement between inland areas and the coast, and the rivers facilitated seasonal movement and a pattern of living oriented around sustenance lifeways species.⁸



Maliseet people standing along the edge of the water at French village, Kingsclear, celebrating Corpus Christi Day, ca 1887. Courtesy of New Brunswick Provincial Archives: P5-170.

"Well, you know for me it's our people's way of life for thousands of years that we depended on fish to survive and they're in trouble now and they're dependent on us to help them to turn things around."

- 3rd Passamaquoddy Citizen

Prior to first contact, bountiful and renewable sea-run fisheries helped sustain the Wabanaki people. For those living along rivers, roughly 35% of total caloric intake came from migratory fish such as salmon, shad, and alewives.⁹ In the 400 years since that time, Maine's fisheries have been irretrievably altered. European settlers displaced Wabanaki people from many of their fishing locations, while the land, the rivers, and the ocean resources were developed in ways that decimated the fisheries.¹⁰ This was unquestionably due to the policies and practices of the settler population and the State of Maine (and Massachusetts before Maine's statehood). And while both Maine and the Wabanaki Nations currently support restoration of the fisheries as a matter of policy, the definition of that goal and the extent to which it can be accomplished remains an open question. To try to answer it, we must know what is meant by "restoration" and what baseline is being used

to measure success. Goals and targets for restoration depend not only on the current distribution and abundance of the fisheries, but also on the historical capacity of each pond, river, and stream to support them.

What Were the Wabanaki Fisheries Like at the Time of First Contact?

“The Penobscot fairly swarmed with the finest fish—salmon, shad, and alewives were taken in quantities that now seem almost incredible.”¹¹

Prior to European settlement, the sustenance lifeways of Wabanaki people included the vast river runs of diadromous fish, meaning fish that inhabit both freshwater and the ocean during their life cycle.¹² For Maine’s rivers, the primary native species of diadromous fish are Atlantic salmon, alewives, blueback herring, American shad, rainbow smelt, American eel, and sea lamprey.¹³ Each of these species has their own significance to the Wabanakis, and each has their own pattern of migration and their own preferred spawning areas as part of those lifeways.

Although no one was recording fish counts in the 1600s, there is little doubt that Maine’s rivers produced an abundance of food from diadromous fish. Estimates from the 1600s and 1700s are either anecdotal from eyewitness accounts or inferential, for example by extrapolating from commercial records of fish barreled and shipped, but all sources suggest, as above, that the fish came in “quantities that now seem almost incredible.”¹⁴ Quoting both modern estimates and 17th



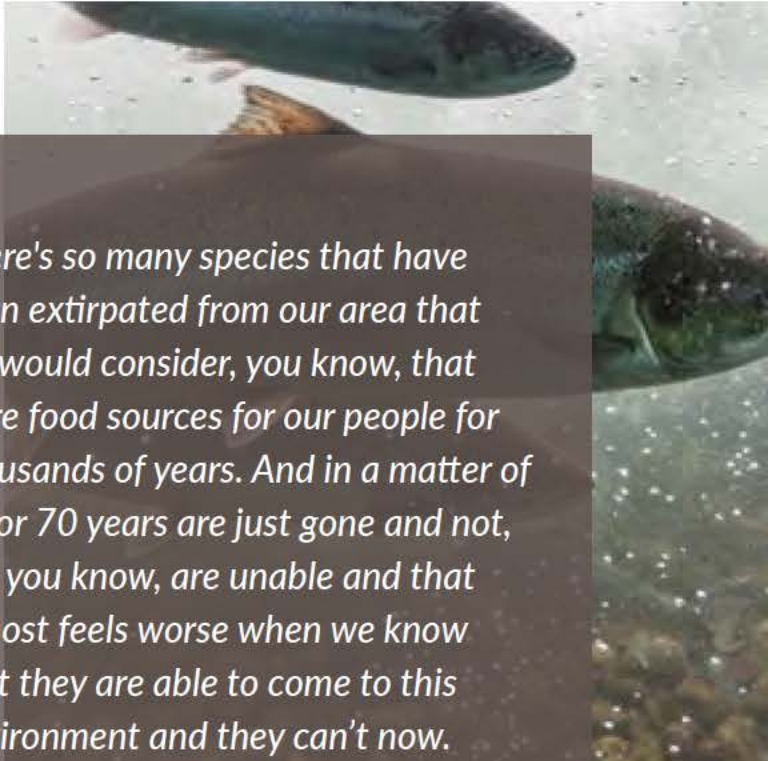
Fish in hand. Photo by Chris Johnson.

century eye-witness reports, the *Wabanaki Traditional Cultural Lifeways Exposure* EPA report from 2009 noted that in the Penobscot River “unheard-of quantities of salmon were taken at Indian Island each year” and that “all early observers recorded abundant anadromous fish.”¹⁵ For example, in those early years along the St. Croix River annual catches of salmon were averaging 18,000, shad 50,000, and 30 to 80 million alewives.¹⁶

Formal attempts to survey Maine's fisheries did not begin until the late 1860s after the Maine Legislature passed a Resolve "relative to the restoration of sea-fish to the rivers and inland waters of Maine."¹⁷ The Resolve authorized the appointment of two Fisheries Commissioners, who upon appointment promptly undertook a systemic study of Maine's then current and historical fisheries.¹⁸ The Commission's work forms the basis for most of the estimates of diadromous fish numbers in Maine's rivers prior to 1800. For example, the Commissioners' 3rd Annual Report (1869) estimated that an unobstructed Penobscot River should yield 168,000 salmon as an annual catch.¹⁹

Modern-day estimates for diadromous fish runs prior to first contact are slightly more conservative, but within the same order of magnitude. Maine's Department of Marine Resources estimated that somewhere between 300,000 and 500,000 Atlantic salmon made annual spawning migrations to the rivers of New York and New England, with 100,000 returning to the Penobscot River alone.²⁰ Saunders, Hachey, and Fay, in their 2007 report, estimated the historical commercial catch for salmon in the Penobscot River at 100,000, alewives at 1 million, and American shad at 2 million.²¹

Although each of Maine's rivers present somewhat different conditions and spawning opportunities for each species of anadromous fish, there does not appear to be any question that prior to colonization, at the proper time of year and in the appropriate locations, Maine's rivers had fish in sufficient numbers to sustain a substantial Wabanaki population.²²



There's so many species that have been extirpated from our area that we would consider, you know, that were food sources for our people for thousands of years. And in a matter of 60 or 70 years are just gone and not, but you know, are unable and that almost feels worse when we know that they are able to come to this environment and they can't now.

- 1st Maliseet Citizen

Historically, the fisheries for Maine's four present day Wabanaki Nations included all of the watersheds from the Kennebec to the St. Croix along with the Aroostook and Meduxnekeag tributaries to the St. John and the marine fisheries.²³ The MIA confirms only a right to sustenance fishing for tribal members "within the boundaries of their respective Indian reservations"—obviously only a portion of pre-contact homeland territory.²⁴ Nevertheless, Wabanaki people continued to practice sustenance fishing in many parts of their traditional homelands during most of the 200 years Maine has been a state.²⁵

What Is the situation Today in Maine's Fisheries?

"Current diadromous species' populations are at historic lows with some at less than 1% of early nineteenth century estimations . . . river herring and Atlantic sturgeon are listed

as species of concern and Atlantic salmon as an endangered species.”²⁶ “Dams, log drives, pollution, and overfishing combined to bring Atlantic salmon to the brink of extinction.”²⁷ Recently, poor survival in the ocean has made the problem worse: “the only remaining naturally spawning Atlantic salmon in the United States return to just eight rivers in the Gulf of Maine.”²⁸ In 2021, “only 561 Atlantic salmon were counted in the Penobscot River. . . marking the lowest returns since 2016, when 503 fish made their way through to Milford and Orono.” According to Sean Ledwin, DMR’s Sea Run Fisheries and Habitat Director, “[T]he reasons for the low runs are likely low survival of fish at sea, the impacts of drought during their time in the river and impacts of impoundments and direct mortality at hydropower projects as the fish migrate from the rivers to the sea.”²⁹

Essentially the sea-run fisheries that two centuries and more ago were a major food source for Maine’s population—for both Wabanaki and settlers—now sustain almost no one, and some species can barely sustain themselves. The loss of the fisheries over that period was not a secret. In 1821, a year after Maine became a state, Decun Sacobason and the Passamaquoddy Tribe petitioned the state asking “that a stop may be put to the destruction of the fish in the Schoodic river and that such a law may be passed as will preserve and increase the fish in said river and its branches.”³⁰ From 1821 to 1849, various non-Wabanaki communities along the

The sea-run fisheries that two centuries and more ago were a major food source for Maine’s population—for both Wabanaki and settlers—now sustain almost no one, and some species can barely sustain themselves.

St. Croix also petitioned the State about the decline in sea-run fish caused by obstructions in the river and overfishing.³¹ The decline was substantial by the 1860s when Maine’s newly appointed Commissioners of Fisheries began to take stock, and it is considerably worse now. In its 1876 Report, the Commission complained about “the mighty wrong that was perpetrated when our rivers were obstructed by special privileges, granted to individuals and corporations, and the rights of the people sacrificed. . . . [T]here was no excuse for exterminating . . . a greater amount of food value, that cost the State not one cent in its production, than all the lumber of Maine was worth. The fish of the Penobscot or the Kennebec was worth, is worth, more than all the lumber on either of those rivers.”³²

The Commission’s 1867 report summarized its initial findings:

*To recapitulate, the history of the fisheries is the same in nearly all of the rivers. In a state of nature the waters were well stocked with the salmon, shad and alewife and other edible varieties. This supply lasted until after the country was peopled. But little decline had been experienced at the beginning of the present century. Since then many rivers have become almost entirely depopulated, and we do not think one in the State can be found that has maintained its fisheries in a fair degree.*³³



Log jam. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

That report was also clear as to the reasons for the decline:

The causes that have led to the present state of things are – First - Impassable dams. Second - Over fishing. Third - Pollution of the water. The first and second are the principal causes with us, the third having operated only in a few localities to a limited extent.³⁴

One hundred fifty years have passed since these reports were issued, but during most of that time the State of Maine largely failed, as a matter of both policy and practice, to address those concerns. Many new dams were built, and many remain. Although there have been recent efforts to promote fish passage, the physical obstruction of spawning grounds remains a serious problem. Overfishing continues, although now with an international dimension. Pollution, as will be discussed below, became much more of an issue in the intervening 150 years, while new issues such as climate change have emerged more recently.

The decline since the early 1800s has not been a steady one, but rather punctuated by several evolving challenges. As will be discussed below, dams which restricted the natural path for anadromous species to their spawning grounds caused the initial significant decline. The first sawmill dam in Maine was built in 1634; and the first dam on the Penobscot River in 1768.³⁵ The first dam on the St. Croix from bank to bank with no fishway was constructed in 1825.³⁶ By 1870 there were over 3,000 dam sites in Maine limiting river access, and by 1887 only about 10% of original spawning habitat remained available for anadromous fish.³⁷ Nevertheless, although the numbers of salmon in the Penobscot River were much lower than historic levels, there was still a recreational salmon fishery on the lower Penobscot until the 1950s.³⁸ Then, from 1957 to 1967, no salmon at all were caught in the Penobscot.³⁹ In contrast, by the 1850s, annual salmon catches on the St. Croix River had dropped as low as 200.⁴⁰ There were similar efforts on the St. Croix to maintain an active recreational fishery.⁴¹ However, when the Passamaquoddy expressed concerns about low fish populations in 1852, Governor Hubbard wrote back claiming that, as a matter of policy, Maine had been protecting the fish and that sufficient numbers still existed to support “your living.”⁴²

Despite a brief resurgence following passage of the Clean Water Act in 1972, salmon in the Penobscot again declined such that by the early 2000s “returns of adult salmon to the river have dwindled to only a few hundred fish, in spite of annual stockings of 500,000-600,000 smolts.”⁴³ Gulf of Maine Atlantic salmon were declared an endangered species by NOAA in 2000.⁴⁴

As with salmon, Atlantic sturgeon have been classified as endangered everywhere on the east coast except for the Gulf of Maine, where they are “threatened”.⁴⁵ The recorded sturgeon catch plummeted from 7 million pounds in

1887 to 400 pounds in 1989.⁴⁶ Blueback herring and alewife (collectively “river herring”) remain well below historical levels, particularly since the 1960s, and in 2006 “American shad now only inhabit four or five rivers in Maine . . . and annual returns are estimated at 2,000 fish or less in rivers with remnant American shad populations.”⁴⁷

On a more upbeat note, the recent removal of dams and/or the creation of passageways around them have resulted in a substantial increase in river herring. In 2019, NOAA decided not to list them under the Endangered Species Act. The EPA explained their decision:

While river herring have declined from historical numbers, recent fisheries management efforts in place at the federal and state levels help to reduce the risks from fishing mortality for these species. Although some areas within the range continue to struggle, robust populations of these broadly distributed species are found in other portions of their ranges, with some areas supporting populations in the millions or hundreds of thousands.⁴⁸

Although Maine has seen some rebound in the alewife and shad populations, that is not the case throughout the historic range of the anadromous species native to Maine. The Atlantic Salmon Recovery Plan Companion Document from 2018 has this to say about species decline:



Mill with logs, Belfast, Maine. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

Range wide population declines are dramatic: American shad, 97 percent; alewife, 99 percent; blueback herring, 99 percent; rainbow smelt, 99 percent; Atlantic sturgeon, 91 percent; Atlantic salmon, 96 percent; and American eel, 72 percent. Similarly, in Maine current population levels are orders of magnitude smaller than historical population levels.⁴⁹

Not only is the quantity of fish returning to Maine’s rivers low in comparison to their historic numbers, but human consumption of those fish is also limited for health reasons because of the chemical contamination in Maine’s rivers. Maine’s Department of Health and Human Services has published guidelines drastically limiting, for health reasons, the number of wild fish caught in Maine’s waters that people should eat.⁵⁰ The Penobscot Nation has also published essentially the same guidelines for fish caught in Penobscot Nation



Historic fishing on the Penobscot River. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine.

waters.⁵¹ They recommend that children under 8 and women who are nursing, pregnant, or expecting to be pregnant should not eat any fish from any inland fishing location in Maine, while the remainder of the population is cautioned to consume species like brook trout no more than once a week, with other species limited to 1-2 meals a month.⁵²

In summary, the MIA's confirmation that Wabanaki people could practice sustenance fishing did not truly offer much in 1980 because of the low quality and quantity of sea-run fish present at that time and the limited access Wabanaki people had to ancestral fishing grounds.⁵³ And it is not clear now whether the will and the tools exist to make sustenance fishing a reality for Wabanaki people, even if doing so was a priority matter of state policy.

The next question is whether the State and Wabanaki people have the same or similar understandings as to what “sustenance” and “restoration” mean.

What Are Maine's Goals for its Sea-Run Fisheries, its Baseline for Measuring Progress, and its Policy Regarding Native Sustenance Rights?

As noted above, for over 150 years, Maine's stated policy has been to “restore” its diadromous fish populations. In 1867, the legislature passed a “RESOLVE relative to the restoration of sea-fish to the rivers and inland

waters of Maine” that created the office of Commissioner of Fisheries and established Maine’s policy goal of “restoring sea-fish to our lakes and streams.”⁵⁴ However, although the Commissioners thereafter published annual, extensive, and cogent reports about the status of Maine’s sea-run fisheries that included specific policy initiatives for promoting restoration, those recommendations were largely ignored in favor of other incompatible policies.

The Fisheries Commission’s first annual report to the legislature clearly explained that the primary cause of fishery decline was “impassable dams.”⁵⁵ Yet in the same year, Governor Chamberlain’s annual address to the legislature emphasized “how abundant and accessible is the water power of Maine,” and he recommended “that a thorough hydrographic survey be made of at least the lower sections of our principal rivers . . . for that purpose.”⁵⁶ The overriding policy of the State of Maine in the 1860s was economic development through industry, without consideration of Maine’s fish, either as a commercial enterprise or even as food for Maine citizens. When the requested hydrographic study was completed in 1870, it showed many sites where dams could be built. Governor Chamberlain enthusiastically and poetically observed:

*Still our power is in the waters. We may lay hands upon their wild career and ask of them a service and a blessing ere they mingle with the sea. We must foster this great interest which is the hope of the State.*⁵⁷

Ten years later, in their 1880 Report, the Commissioners of Fisheries could point to but little progress in restoration and instead described a lack of cooperation by dam owners and lax enforcement of the laws regulating fisheries. And to the extent that a government’s

budget best reflects its true priorities, the legislature in that year did not appropriate any money for fisheries. They stated:

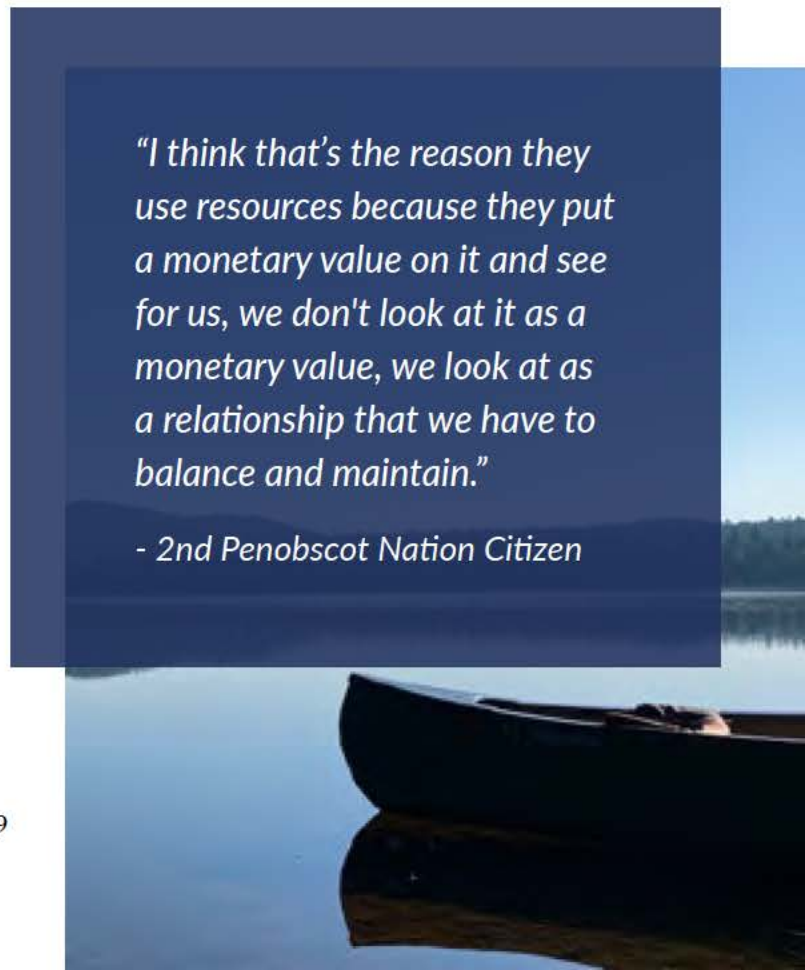
*Your Commissioners of Fisheries have the honor to report, that while the demands upon them for both fishes to stock waters, fishways to restore fish to our rivers, have been greater than ever before, their resources to comply with those requirements were crippled by the neglect of the Legislature to make any appropriation for this department.*⁵⁸

Within another ten years, Maine’s fisheries had completely lost the policy battle against industry. In their 1890 report, the Commissioners of Fisheries complained that:

The admission of pulp mills upon our streams, more especially upon the Penobscot river the only salmon river (with the exception of the St. Croix, which Maine shares with New Brunswick) on the Atlantic

“I think that’s the reason they use resources because they put a monetary value on it and see for us, we don’t look at it as a monetary value, we look at as a relationship that we have to balance and maintain.”

- 2nd Penobscot Nation Citizen



*coast of the United States, was and is a most fatal error . . . No manufacture of any kind whatever should be allowed to throw its waste into a river any more than into our highways.*⁵⁹

Maine's policy regarding its fisheries largely continued in this vein for the next 100+ years; competing policy goals were not always integrated or connected, and actual policy regarding fisheries and rivers was driven more by macroeconomics than by a consistent fisheries policy.⁶⁰ In the present day, fishery policies for Maine are no longer set solely by the State. Various federal agencies (FERC, EPA, NOAA, USGS, U.S. Department of Fish & Wildlife) have concurrent and often overriding jurisdiction in their particular spheres of authority, and there are other parties with varying levels of input and regulatory power that contribute to Maine's policymaking. These include interstate bodies such as the Atlantic States Marine Fisheries Commission (ASMFC), Tribal governments, non-governmental organizations that are focused on conservation

and/or fish and wildlife, and individual citizens and local organizations representing personal, property, and/or recreational interests.

In certain areas, the federal government dictates Maine policy on rivers and fisheries. For example, the Federal Energy Regulatory Commission (FERC) largely controls the licensing of hydropower dams, while NOAA, through its "endangered species" listings, can dictate the steps necessary to protect certain species. Nevertheless, Maine's stated policy goal for its sea-run fisheries continues to be "[T]o recover the Gulf of Maine Distinct Population Segment (DPS) of Atlantic salmon as defined in the final listing rule (2009) of the Endangered Species Act (74 FR 29344) and restore other sea-run fish and their habitats."⁶¹

However, when Maine's talks about "restoration," that does not mean it is contemplating a return to pre-industrial fisheries, but rather recovery of the sea-run fish population from near extermination to a "self-sustaining" level. NOAA's 2019 salmon recovery plan explains that "[R]ecovery will be achieved when conditions have been attained that allow self-sustaining populations to persist under minimal ongoing management and investment of resources."⁶² Maine's "Sustainable Fisheries Management Plan for American Shad," from 2020, includes similar goals.⁶³ Yet even these limited goals remain subject to economic policy and the political process. By way of example, a recent proposal by Maine's Department of Marine Resources (DMR) to require the removal of two dams on the Kennebec River, specifically to foster the restoration of sea-run fish, was withdrawn because of substantial resistance from other parties with interests in the river.⁶⁴



View of Wyman Dam (1928-1931) on the Kennebec River in Moscow. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

Restoration of the sea-run fish population, even to a self-sustaining level, requires not only relatively unobstructed fish passage for spawning, feeding, etc., but also water clean enough for fish to thrive. Maine's policy goals regarding water quality are set out in 38 M.R.S.A. §464.1. Broadly, they are intended to maintain and/or restore water quality through a classification system based on pollution levels, ecological concerns, and existing uses.⁶⁵ The original classes were AA, A, B, and C. The law contains an initial statement of aspirational goals followed by a complicated set of procedures covering classification, discharge licenses, and exemptions, sometimes tied to federal law. The health of aquatic life, wildlife, and habitat are all factors that must be considered in applying the classifications, although human health concerns related to the consumption of fish or wildlife was not originally a factor in the matrix for determining the proper classification.

Consistent with the history of Maine's policy on its fisheries, the river classification scheme tries to integrate the goal of water quality restoration with other economic forces. For example, the law allows the continuation of existing hydroelectric dams and even the construction of new hydroelectric projects even though they "may cause some change to the habitat and aquatic life of the project's impoundment and the waters immediately downstream" as long as the overall classification of that particular river section doesn't change.⁶⁶

Maine's current water classification program was originally created in 1985 in response to the federal Clean Water Act. In 2019, almost 35 years later, it was amended with some fanfare to create a "sustenance fishing designated use" classification intended to protect "human consumption of fish for nutritional and cultural purposes."⁶⁷ The river and stream sections so designated include many of the



International Paper Company's mill, Rumford, Maine. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.



Youth with fish. Photo by Joe Dana.

rivers and streams that were traditionally part of Wabanaki territory and whose fisheries were a major part of Wabanaki economies and lifeways practice. The purpose of the new classification is to enhance water quality criteria for certain river segments “where there is or may be sustenance fishing or increased fish consumption by members of the Indian tribes in Maine or other Maine citizens.” The sustenance fishing designated use areas are defined in terms of human health criteria and assume a fish consumption rate of 200 grams per day set against a cancer risk level of one in 1,000,000. However, the law expressly does

not create “a right to any particular quantity or quality of fish.”⁶⁸ Nevertheless, while noting that “sustenance” can encompass both nutritional and cultural uses, the law does not give a functional definition of “sustenance”, and the bill and its lengthy “summary” specifically exempt certain pollutants, such as ground arsenic and the mercury discharges already covered by existing law, from the water quality standards for sustenance use areas.⁶⁹

The only functional definition of “sustenance” in Maine law, as an expression of State policy, is in Title 12 of the Maine statutes and relates solely to marine organisms.⁷⁰ It is a narrow definition:

“[S]ustenance use” means all noncommercial consumption or noncommercial use . . . by a tribal member, by a tribal member’s immediate family or within a tribal member’s household. The term “sustenance use” does not include the sale of marine organisms.”⁷¹

This definition of “sustenance use” was controversial between Maine and the Wabanaki Nations when it was enacted into law in 2013.⁷² The primary points of dispute were (1) whether despite the MIA, the Wabanaki Nations retained marine fishing rights as inherent rights, confirmed historically by treaty, or, in the State’s view, whether those rights had been abrogated by the MIA; and (2) whether defining “sustenance” in Title 12 amounted to an amendment to the MIA, which does not define “sustenance” and hence could not be effective unless the affected Wabanaki Nations agreed.

The purpose of this report is not to take a position on these or other similar disputes, but rather to describe the Maine policies that have affected the quality and quantity of traditional fish stocks and the impact on sustenance

practices.⁷³ With that in mind, it is possible to discern Maine's goals for its sea-run fisheries and its baseline for measuring progress.

Although Maine's clearly expressed policy goal for over 150 years has been to restore the sea run fisheries, that policy often conflicted with other state policies that trumped restoration. In fact, for most of those 150 years, "restoration" was not only marginally implemented, it coincided with the near extinction of Maine's sea-run fish. Over the last 50 years, restoration has been both a stated and an actual priority, beginning with passage of the federal government's Clean Water Act in 1972. Yet Maine's current goals for restoration are not crystal clear. For example, DMR's goal for the Kennebec watershed is "to restore Maine's native diadromous fishes to their historic range and abundance."⁷⁴ Although this has been Maine's stated long-term goal since the 1980s,⁷⁵ DMR's mission statement has the more limited goal of securing "a sustainable recreational fishery for diadromous species."⁷⁶ When plans get into specifics, such as the 2019 Recovery Plan for the Gulf of Maine Atlantic Salmon, the stated goal is for a "self-sustaining" fish population rather than a return to the bountiful annual migrations seen in colonial times.⁷⁷

However, Maine's policy as to what the MIA means for Wabanaki sustenance rights is not as clear, both as regards the scope of those rights and where they can be practiced. Maine

law on harvesting marine organisms limits Native sustenance rights to non-commercial, household consumption and use, but allows those rights to be exercised anywhere within the state, whereas Maine has argued for a more restrictive definition of sustenance rights under the MIA.⁷⁸

Nevertheless, the sustenance fishing designated-use category in Maine's current law regulating river pollution implies an aspirational goal that the rivers and streams that are traditionally part of Wabanaki territory will become clean enough, through operation of law and the passage of time, to support fish that will not harm human health even when eaten in quantity.⁷⁹

In summary, while Maine's fisheries policy remains restoration, conflicts between that policy and those pertaining to economic growth continue. Policymaking is necessarily

a complex process that often involves multiple parties. Although Maine law as of 2019 declares "that the preservation and restoration of the Penobscot River is of the highest priority,"⁸⁰ only the future can tell how that statement will be interpreted when policy goals conflict. And despite that declaration of priority, the law only directly addresses construction of new dams on the lower Penobscot main stem.⁸¹

Maine's goals for its fisheries are largely limited to the restoration of self-sustaining fisheries rather than the historic abundance of sea-run fish, and Maine's water quality goals are not likely in the near future to allow consumption of fish in sufficient quantity to sustain life

The purpose of this report is not to take a position on these or other similar disputes, but rather to describe the Maine policies that have affected the quality and quantity of traditional fish stocks and the impact on sustenance practices.

without, at the same time, harming human health. And to the extent Maine has taken a position on what “sustenance” means, its definition is limited and was imposed through the legislative process rather than negotiated with the Wabanaki Nations. The choice Maine has made is far from the only possible one. For example, the Supreme Court of Canada, when confronting similar Native sustenance rights stemming from an 18th century treaty, defined sustenance as including the right to secure “necessaries”, construed by the Court “in the modern context as equivalent to a moderate livelihood.”⁸²

How Do Wabanaki People Understand Sustenance Fishing; What Is Their Baseline and What Are Their Goals?

Our traditional teachings tell us that the animal, bird, and fish world promised the creator that they would take care of humans and sustain them because humans were not smart enough to sustain themselves correctly.⁸³

One of the canons of construction in federal Indian law says that treaties and agreements are to be construed as the Indians would have understood them.⁸⁴ Consistent with the policy behind that canon, if the word/concept “sustenance” in the MIA was ever to be defined as between the State of Maine and the Wabanaki Nations, whether by negotiation or litigation, it would be important to know how Wabanaki people have expressed it in the past and engage with it in the present.

As background to that discussion, it is helpful to reflect on the general interplay between language and culture. According to Alex



Algonquin legend: Glooskap and Keanke spearing the whale. Birch bark illustration by Tomah Joseph.

Shashkevich, there are over 7,000 languages spoken worldwide, and “although there is a lot in common among languages, each one is unique, both in its structure and in the way it reflects the culture of the people who speak it.”⁸⁵ Culture is expressed not just in the words of a particular language, it is also embedded in the structure of the language itself. As Mengchen Wang states, “[l]anguage is the key that unlocks centuries of accumulated wisdom. Language is a cultural heritage and the key to cultural transmission.”⁸⁶ For Wabanaki people, the language, and the knowledge it transmits arose from their homeland territory, including the places most important for sustenance such as waterfalls, clam gathering places, hunting territories, etc.

There are many marked differences between the Wabanaki and English languages, and these differences reflect directly on two very different cultural understandings of sustenance. As

part of this report, interviews were done with members of all four Maine Wabanaki Nations. These interviews included a discussion about how the interviewee understood “sustenance.” Some of the interviewees grew up as first language speakers of their particular Wabanaki language. Others learned their language later in life or, in the case of some, have not yet learned their native language. However, all grew up absorbing their culture from elders including sustenance practices, values, and spirituality. Based on these interviews and on direct contact with other native speakers, this section of the report attempts to explain the word/concept of sustenance as Wabanaki people might have understood it.

There are significant differences not only in the way English and Wabanaki speakers might understand the concept of “sustenance”, but also in the way definitions would be formulated in the different languages.⁸⁷ This gap is both functional and cultural. To the extent the word “sustenance” translates into the English language, it contemplates a broader concept than just the need for food.⁸⁸ Ed Bassett, a native Passamaquoddy speaker, when interviewed in September 2020, explained that if “sustenance” were translated into Passamaquoddy, it would mean “to have life”, which would include cultural and spiritual as well as physical sustenance. “This mindset is distinguished by characteristic ways of

structuring words and narratives that suggest a more participatory, interactive relationship with the speaker’s surroundings than do their English equivalents.”⁸⁹



Young man with striper. Photo by Joe Dana.

“Sustenance” in the English language is a noun. The definition in the online Oxford Languages dictionary is:

1. food and drink regarded as a source of strength; nourishment. Example; "poor rural economies turned to potatoes for sustenance."

2. the maintaining of someone or something in life or existence. Example; "he kept two or three cows for the sustenance of his family."

The first definition is directly tied to food and drink, and even the somewhat broader secondary definition is focused, as shown by the example given, on food and drink.

The English word “sustenance” does not translate directly into any of the Wabanaki languages. Ed Bassett, a native Passamaquoddy speaker and member of the Passamaquoddy Nation, said that “the closest translation into Passamaquoddy would mean ‘to have life’, which would include cultural and spiritual sustenance, with cultural sustenance being the most important.”⁹⁰

John Banks, a member of the Penobscot Nation, added that “rather than describing a sufficient amount of food, it describes a way of life, a relationship and a familiarity with a system that gives sustenance.”⁹¹

As explained by Roger Paul, a native Passamaquoddy/Maliseet speaker who also has a master’s degree in linguistics from the Massachusetts Institute of Technology:

The English word “sustenance” does not translate directly into any of the Wabanaki languages.

I don't know of any word in any of the Wabanaki Languages for sustenance. First of all, it's a noun. The English Language tends to reduce everything to people, places, or things. English has a habit of labeling everything to reduce it to a simple object. Wabanaki Languages use verb phrases to describe what they see or experience. To my knowledge, there is actually no concept of it as a noun but if you think about it as a verb phrase, it may be easier. Ed Bassett is correct in that the idea of life would be the closest description. For us, life is a verb. Modern Wabanaki speakers sometimes nominalize our verbs by adding the final morpheme "wakon" because of the influence of the English language concepts. John is also right in that we don't see the world the same way as English speakers see it. The term sustenance seems to speak to someone getting enough to sustain life. Wabanaki people don't usually describe things that we need or want, we usually have words that describe our responsibility to others in creation. With that in mind, there is a word ['totolawosikkhal] meaning someone who is providing for the life needs of another. To reverse that, we could use [Ntotolawsikkhukun] meaning someone else (not necessarily human) is taking care of our needs to live. Even though it does not speak to only food it encompasses all the needs of one to live.”⁹²

Consistent with Mr. Paul’s explanation, the Wabanaki citizens who were interviewed also discussed the difficulties of translating a Wabanaki view of sustenance into English. Some spoke specifically about the linguistic



differences, and all were aware of how Wabanaki culture incorporates the concept of a sustenance economy. What follows is a series of quotes regarding how our interviewees described their understanding of sustenance, their difficulties in defining it, and how a sustenance lifestyle connects them to their

“It’s hard for the outside world to understand what sustenance is because it’s hard for us to explain it. It’s something that’s deep ingrained inside of us. So, if you’re brought up in a society where it just means food on the table, or, you know, it’s more than that.”

- 1st Passamaquoddy Citizen

“Well, when I think you look at the definitions, I think we kind of get caught up in the English translation of sustenance, but I look at sustenance, I guess, it’s more of like a lifestyle that’s been a part of who we are and what we do.”

- 2nd Penobscot Nation Citizen

“It (engaging in sustenance) changes the way you think about things, the same with a canoe, right? When you talk about a canoe (in the language), it’s inanimate, when you’re in it, it becomes an extension of yourself to the earth.”

- 4th Passamaquoddy Citizen

Left: Cobscook Shoreline. Photo by Rachel Bell.

“If we’re talking about fishing (for) animals, sustenance is like English. It’s kind of a disconnect to me. What you’re really doing is taking life, right? Taking life from the creation. And so there’s like a lot more involved in it. I think what we talked about too is that reciprocation, like responsibilities from indigenous teachings of what is our responsibility, and our duty to that relationship of gathering sustenance. The inner web of life, the inner connection, like getting back to that, it’s so hard to touch on just that word (sustenance) without it rippling out to everything else.”

- 3rd Penobscot Nation Citizen

“I feel like it’s hard to communicate to other people, but it’s just like you just feel it? Sustenance fishing, I think, is one of the only things left where we can directly connect with our culture nowadays. I think for me personally that’s the benefit I get from it most, like you can step into your ancestors past even just for a minute when it comes to fishing or gathering. And I feel like it benefits more than just food wise, mentally you know, emotionally, spiritually. All of us have historically enjoyed the same kind of fish species, and it feels like it brings us together closer than just saying, oh we’re all Wabanaki people and we reside in the same state rather than, you know, we all have enjoyed the same food and the same practices.”

- 1st Maliseet Citizen

“Well, you know for me it’s our people’s way of life for thousands of years that we depended on them (fish) to survive, and they’re in trouble now and they’re dependent on us to help them to turn things around.”

- 3rd Passamaquoddy Citizen





“Well sustenance to me is the inherent right to practice cultural traditions. The act of carrying that out is both traditional and spiritual for most tribal members. So it’s just not the act. There is more to it. It’s carrying on a tradition that was, that is part of the culture of the tribe, which defines us, who we are. That’s what it (sustenance) is to me. I was raised at Pleasant Point, and my house was the closest to the shoreline. So, when people were out fishing or hunting, they would land pretty much behind my house. As a young kid I’d run down there and see what they bring in. I watched them prepare the animal or the fish. You know, whatever they were hunting for. And I’d see it was like a ceremonial process of preparing the animal and then listening to them talk about the hunt. And the way it was described, it was a cultural activity that they would refer to back as their grandfather did the same thing, that grandfathers before them did the same thing and that’s the way we learned by watching and listening. And then, sometimes when some of the fishermen would come in and they had a lot of extra fish, we’d end up getting some of the catch. For me, when I do something like that (sustenance), I get right into it and I start floating back into time. My ancestors for the last X amount of years have been doing this with probably the same family of clams. I mean that connection between consuming the clams that have been there and the connection between Passamaquoddy and the clams in the earth.”

- 1st Passamaquoddy Citizen

“I think it does include catching fish and putting them on the table and eating right then, but it also includes storing them up, using them for barter trade to get other things that you need, so I guess for a lack of a better term it would be kind of a form of currency to get to trade for things that you need that you don’t have. So if you have surplus fish, surplus food, I do it all the time, I always have moose meat, and everybody always comes to me for moose meat, and people will trade, my relatives in Pleasant Point, I get scallops or fish or lobster, and I’ll trade them moose meat all the time.”

- 2nd Passamaquoddy Citizen

Left: Salmon jumping.

“It’s kind of who we are, that’s how we have lived for 10 - 12,000 years, because having access to that lifestyle of food and not only that it’s a healthy lifestyle and that right or that resource has become less available to us. You can put that in line with the health of the tribe, and both mentally and physically as declining greatly with that loss of that lifestyle that we had. So if you have a part of your lifestyle (sustenance) that isn’t there, it chips away at the whole kind of aspect of our cultural community, because that lifestyle that we had has a lot that goes into it. It’s not just eating the fish. There’s ceremonies around that, there are community gatherings around that, celebrations around that, so sustenance in all forms is much broader and it’s much bigger than just food on the table. “With that lifestyle of fishing, you know it also promoted other things like salmon spears or to make nets or to do more of that kind of cultural part of who we are. Like right now, nobody’s making salmon spears because there’s no salmon to spear, so if somebody’s making it (now, they’re) making it for show.”

- 2nd Penobscot Nation Citizen

“Well, I guess for me, sustenance is being able to sustain the basic needs in your family, food on a table, something above your head and all this, I’m speaking from a cultural perspective.”

- 1st Mi’kmaq Citizen

Right: River from above. Photo by Chris Johnson.



ancestors, their places, and their community: For all the interviewees, sustenance was a much broader concept than the “food or drink” definition in the English language, which is of course the language generally used to interpret policy. They described it in terms of relationships with others in their community (ceremonies/gatherings); with the natural world (the same family of Passamaquoddy digging the same family of clams for generations); and with their ancestors. There was an active component to it, an interaction with the natural world depending upon place, season, and whatever bounty nature provides. Even when discussion turned to sustenance primarily as food, the interviewees noted that the catch from fishing was not just for an evening’s dinner, but might be shared amongst the community, preserved for the future, or bartered or traded for other commodities.⁹³

Another example of the language and cultural differences between Wabanaki and English comes in the related concept of “home.”⁹⁴ In English, “home” is a noun that generally means a specific place, or at least a place with defined boundaries.⁹⁵ In Wabanaki languages, the concept of “home” contemplates movement between places, historically based on the timing of food availability and species migrations.⁹⁶ These movement patterns were essential for food, trade, and social well-being, all of which were subsumed within the concepts of home and sustenance.⁹⁷ When Henry David Thoreau finished his 2-week canoe trip through the Maine woods in 1857, as he and his Penobscot guide Joseph Polis approached Indian Island and its permanent Penobscot settlement, Thoreau asked Polis if he was glad to be home. Polis’ reply was, “It makes no difference to me where I am.”⁹⁸ While Thoreau was dismissive of that response, Polis’ answer “could very well reflect the Wabanaki understanding of home being anywhere within Wabanaki traditional lands.”⁹⁹

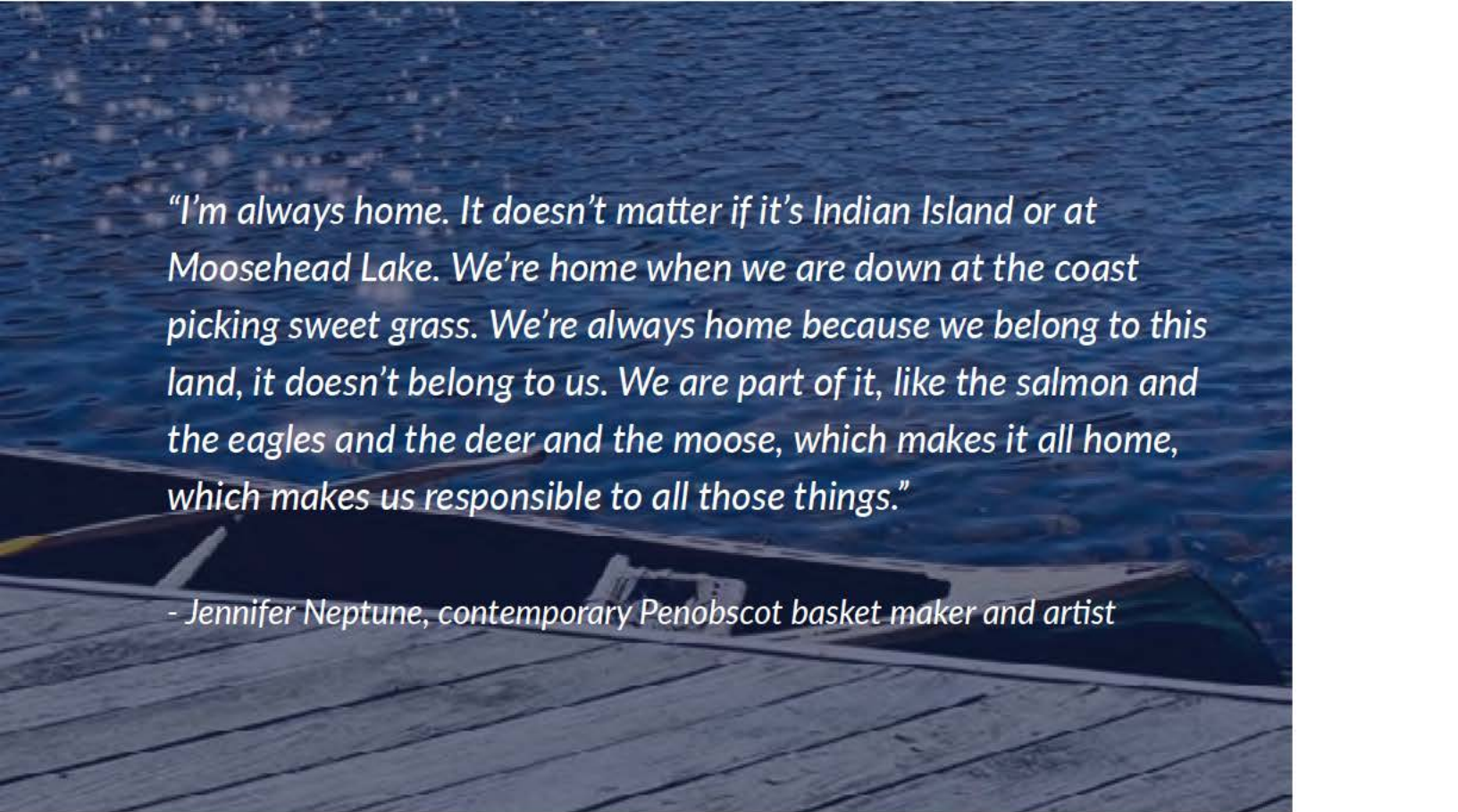


272. Indians and Canoes, Bar Harbor, Mount Desert, Me.
Photo courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

As Jennifer Neptune, a contemporary Penobscot basket-maker and artist, explains;

I’m always home. It doesn’t matter if it’s Indian Island or at Moosehead Lake. We’re home when we are down at the coast picking sweet grass. We’re always home because we belong to this land, it doesn’t belong to us. We are part of it, like the salmon and the eagles and the deer and the moose, which makes it all home, which makes us responsible to all those things.¹⁰⁰

The Wabanaki baseline and ultimate goal for restoration of the fisheries, although rarely stated directly, looks back to the time of first contact and these same concepts. The goal stated in the Maliseet’s Draft Watershed Assessment and Management Plan is simply “restoration of native Atlantic salmon and other native and diadromous fish populations,” but as the shared vision statement in that report explains:



"I'm always home. It doesn't matter if it's Indian Island or at Moosehead Lake. We're home when we are down at the coast picking sweet grass. We're always home because we belong to this land, it doesn't belong to us. We are part of it, like the salmon and the eagles and the deer and the moose, which makes it all home, which makes us responsible to all those things."

- Jennifer Neptune, contemporary Penobscot basket maker and artist

Since time immemorial, the Maliseet people have maintained an inherent connection to the Meduxnekeag River and the natural resources that it supported. This connection is foundational to Maliseet customs, language, and culture. Diadromous fish species were once a primary food resource for the Maliseet people, but now some of those species are absent from the watershed. Through restoration of the watershed ecosystem, the Maliseet Leaders seek the return of native diadromous fish species, particularly Atlantic salmon, to the watershed to re-connect the Maliseet people and their future relations with their heritage. This will also ensure all people living in the Meduxnekeag River Watershed, as well as the greater Saint John River and the Bay of Fundy, will have access to a fully functioning ecosystem.¹⁰¹

Gaps to Bridge and Areas of Consensus on Sustenance Fishing

There are very few areas of agreement about sustenance fishing as between the State of Maine and the Wabanaki Nations and Wabanaki people, and there are some wide gaps to bridge. There are disagreements about what sustenance fishing means, and, regardless of what it means, where if anywhere it might be practiced. There is no agreement as to where in law or history the right to practice sustenance fishing is grounded, and there are immense practical problems for those who want to engage in sustenance fishing because of the relatively low numbers of anadromous fish in Maine's rivers, due to Maine's economic development of the rivers; the health risks inherent in eating them when they are caught;



Elver Fishing. Photo by Donald Soctomah.

"I don't look at fish as a problem for just the Passamaquoddy or the Wabanakis. I think it's just people as a whole, and I think if we have a healthy population and sea run fish everyone and everything is going to benefit, including you know the environment."

- 3rd Passamaquoddy Citizen

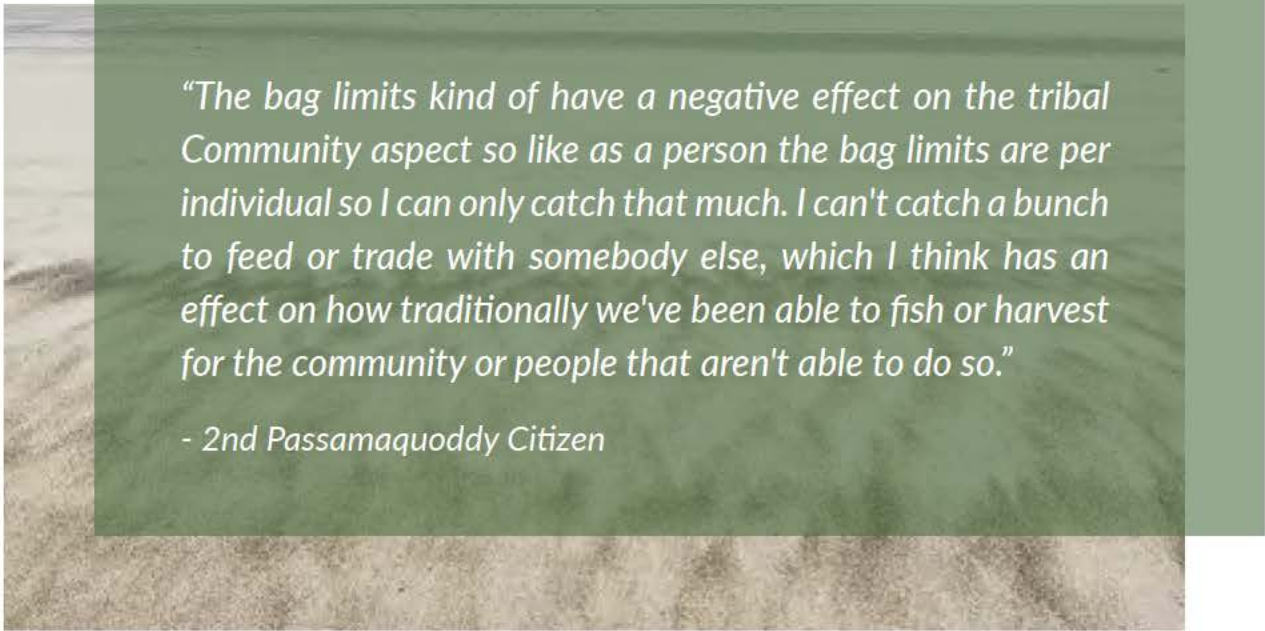
and the policies that restrict access. And although there is currently consensus that the correct policy is restoration of the fisheries, there is no consensus as to what restoration should mean.

For purposes of this report, the discussion begins with the MIA, which at 30 MRSA § 6207(4) provides that regardless of any rule, regulation, or State law, "[m]embers of the Passamaquoddy Tribe and the Penobscot Nation may take fish, within the boundaries of their respective Indian reservations, for their individual sustenance . . ."

The State of Maine's position is that any Wabanaki sustenance fishing rights arise from the MIA or from other state law.¹⁰² The Wabanaki position is essentially that they have always had sustenance fishing rights, that these rights were confirmed by the treaties



Fish in basket. Photo by Chris Johnson.



"The bag limits kind of have a negative effect on the tribal Community aspect so like as a person the bag limits are per individual so I can only catch that much. I can't catch a bunch to feed or trade with somebody else, which I think has an effect on how traditionally we've been able to fish or harvest for the community or people that aren't able to do so."

- 2nd Passamaquoddy Citizen

they signed in the 1700s, and that those rights have never been given away (and certainly not to the State of Maine).

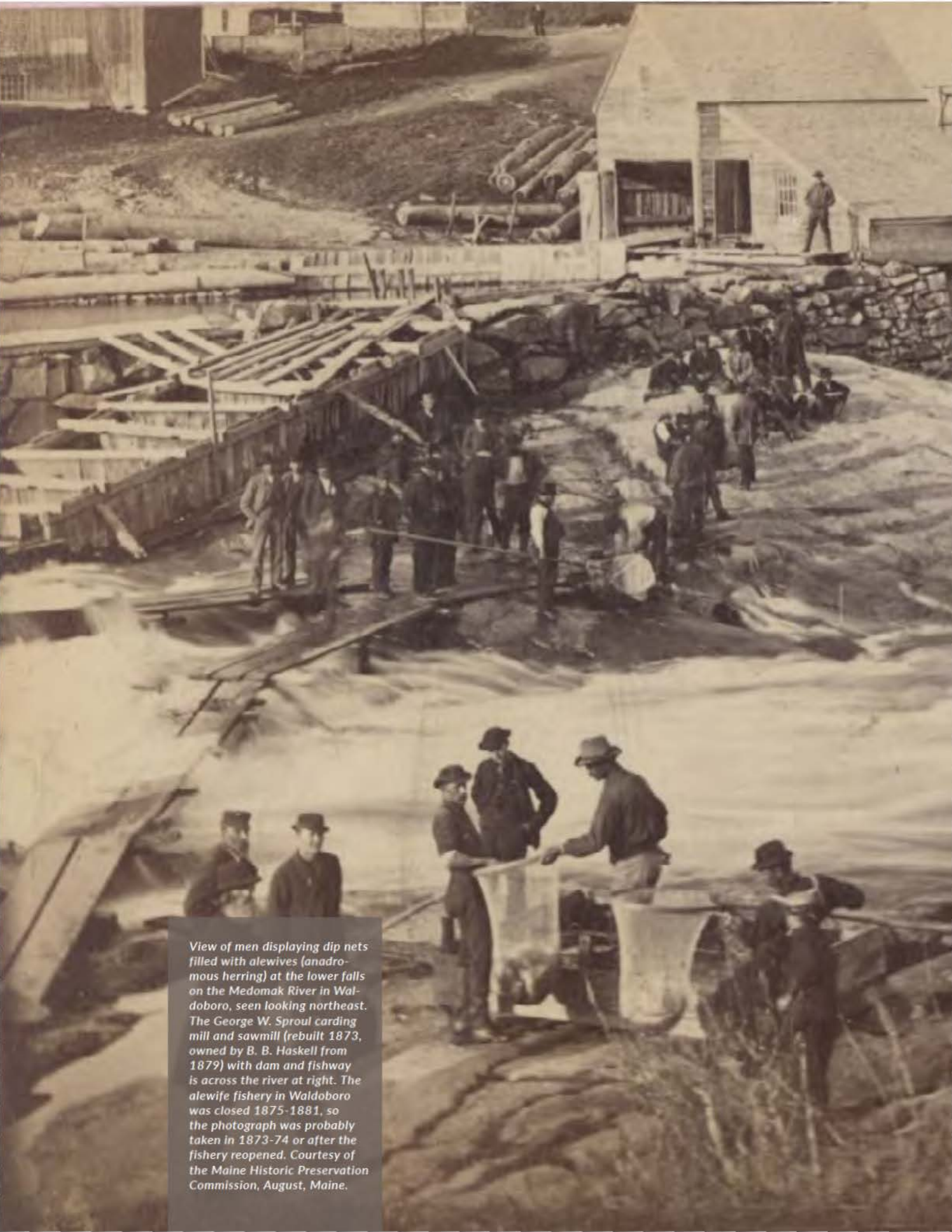
The State's definition of Wabanaki sustenance rights is generally narrow and along the lines of the definition in Title 12 of the Maine Statutes, "noncommercial consumption or noncommercial use . . . by a tribal member, by a tribal member's immediate family or within a tribal member's household."¹⁰³ As the Wabanaki voices consulted for this report point out, sustenance fishing is seen by Wabanaki people as more of a cultural and community practice that can involve trade, barter, and sharing beyond the immediate needs of any individual household. As a matter of history, the treatment of sustenance as noncommercial is also inconsistent with the systems established in the 1700s for trade with the Wabanakis like as the Machias truckhouse/commissary, in effect a trading station.¹⁰⁴

Sustenance, whether as an individual household matter or a broader community concept, cannot really happen unless or until the fisheries are restored. Maine's goal for restoration is to reach a point that

allows "self-sustaining populations to persist under minimal ongoing management and investment of resources."¹⁰⁵ While there is no simple or succinct Wabanaki goal for restoration of the fisheries, it would be more like a point where not only the fish, but all of the interlocking organisms in the Eastern Maine ecology, including humans, are "self-sustaining populations" that will naturally "persist under minimal ongoing management and investment of resources."

In the end, the largest gap to bridge may lie in the different assumptions inherent in a sustenance economy as opposed to a growth economy. The Supreme Court of Canada wrestled with that question in the *Marshall* litigation when it determined that although native sustenance rights were limited, they were broad enough to "be construed in the modern context as equivalent to a moderate livelihood," although they did not "extend to the open-ended accumulation of wealth."¹⁰⁶

But to truly discuss the meaning of sustenance and the goal of restoration, in view of the vast changes in Maine's sea-run fisheries from colonial times to the present, it is important to know what actually happened to the fisheries.



View of men displaying dip nets filled with alewives (anadromous herring) at the lower falls on the Medomak River in Waldoboro, seen looking northeast. The George W. Sproul carding mill and sawmill (rebuilt 1873, owned by B. B. Haskell from 1879) with dam and fishway is across the river at right. The alewife fishery in Waldoboro was closed 1875-1881, so the photograph was probably taken in 1873-74 or after the fishery reopened. Courtesy of the Maine Historic Preservation Commission, August, Maine.

III.

Contributing Factors

What Factors Caused the Changes in the Fisheries Over Time, What Are the Current Barriers to Reaching the Goals Set Out Above, and What Are Areas of Common Ground?



“Dams, log drives, pollution, and overfishing combined to bring Atlantic salmon to the brink of extinction. Recently, poor survival in the ocean has made the problem worse . . .”¹⁰⁷

This succinct statement from Maine’s DMR lists the major factors that caused the collapse of Maine’s sea-run fisheries, including tribal fisheries, and that have frustrated attempts at restoration. The focus of this report is to examine the extent to which state policy contributed to that collapse. Since many of the state policies that affected the fisheries and sustenance practices most profoundly were not specifically directed at fish and wildlife management, this report is not limited to those policies alone. As noted above, macroeconomic policy in Maine often conflicted with fish restoration, and when it did, economic policy generally trumped policies impacting the fisheries. In any event, it was indisputably State of Maine policy that resulted in the end of millennia of Wabanaki sustenance fishing practice.

It is also important to recognize for this discussion that both the intent and the immediate results of a policy or practice may obscure its long-term effects. For example, the erection of impassable dams, initially for saw and grist mills and later for hydro-electric power, was not intended to reduce the population of anadromous fish, but lax oversight and failure to enforce fish passage requirements and pollution standards directly resulted in the reduction in their spawning areas. Furthermore, simply removing the obstructions does not necessarily result in re-population of the fish. Habitat restoration is also needed to improve the composition and form of riverbeds, lake beds, and the surrounding ecology. And the mere absence of the fish, in and of itself, results in ripple-effect changes to the ecology, as they provide food for other species. In the technical language of science, “losing the connections and ecosystem services provided by anadromous species will have lasting ecosystem-wide impacts that

Restoration of Maine’s sea-run fisheries has been official Maine policy since at least 1867, but competing policies, primarily but not solely those favoring broader economic development, have made the goal of restoration difficult to achieve.

In some of the legends you know from the past, there were so many fish out there. Life was so abundant and then every time there was a change it cut down the population, cut down access, changed everything. So trying to find that middle ground, you know where everything starts to come back, start honoring life in the ocean, fisheries.

- 1st Passamaquoddy Citizen

may not be compensated through fish passage technology.”¹⁰⁸

Restoration of Maine’s sea-run fisheries has been official Maine policy since at least 1867, but competing policies, primarily but not solely those favoring broader economic development, have made the goal of restoration difficult to achieve. There are many interests competing for use of the resources that Maine’s rivers bring, and they have understandably and appropriately joined in the discussion and the process of making policy. These run the gamut from manufacturing and economic development interests to governments at the federal, state, and local level, various non-governmental organizations advocating anything from environmental protection to recreational development, and often individual citizens with personal and property interests. And of course, once a policy/practice has been in place for a significant period of time, human activity molds itself to fit that practice, which only makes restoration that much harder. From the fisherman who enjoys catching bass in a dam impoundment to landowners seeking preservation of their current shoreline, there

are many opposing viewpoints that do not favor the steps taken or policies proposed to restore the fisheries and sustenance rights.

This section of the Report looks at what happened to Maine's sea-run fisheries, the policies that affected the fisheries, and the impediments to restoration. The focus will be on what the situation was in 1980 when the MIA and MICS were enacted, which of course included the MIA provision on sustenance fishing. The discussion will note what policies have been effectuated since 1980 and what the situation is now. The specific areas of inquiry are dams and other physical barriers, pollution, overfishing, introduction of non-native fish, and factors beyond the control of the State such as ocean fishing practices and climate change. However, it is important initially to understand the pre-settler history of Wabanaki sustenance fishing and its interruption when

settlers, colonial administrations, and later the states of Massachusetts and then Maine took control of the places where Wabanaki sustenance fishing was practiced.

Limiting Native Access To Fisheries

The Wabanaki and their ancestors have inhabited the geographic area called the Dawnland for millennia.¹⁰⁹ Archaeological evidence going back 13,000 years shows a widespread coastal and inland presence, particularly around major riverways.¹¹⁰ Using a variety of sources and methods including archeological finds such as shellfish mounds, early written histories, oral history, language, and scientific modeling, it is possible to piece together reasonable assumptions about how and where ancient people lived and what they



Passamaquoddy Ancestor Paddle 2022. Photo by Rachel Bell.



Fort Knox (1844-64, principal architect General Joseph G. Totten) in Prospect, seen from Bucksport across the Penobscot River. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

of the names tell us how we interact with the shape and character of the land and how we interconnect with the rivers, lakes, wetlands, falls, eskers, meadows, and rocks across our traditional territory. They indicate where plants, animals and materials for tools are found. They inform us where and when to plant, tan hides and hold our seasonal gatherings and ceremonies. The canoe routes, gathering places, and stories show us how the place names connect and why they are located where they are.¹¹⁴

ate.¹¹¹ Many modern place names were taken from, or adapted from, original Wabanaki names, and those names in and of themselves provide a map to the ways and places Wabanaki people lived; “names were given to specific locations for their geographical characteristics and their importance to the Indian people.”¹¹² Even when places were instead renamed by the settlers, the original names were often preserved in the Wabanaki languages. For example, Bar Harbor was once called Moneskatik (clam gathering place), a name that shows both a location for coastal living and the food eaten.¹¹³

The names offer a window into the past and allow us to view the landscape at the heart of our culture. The meanings

Many of the inland villages and settlement sites were at places where people could take advantage of the anadromous fish runs, while the estuary sites provided stable and reliable shellfish collection and anadromous fishing.

“Inland bands generally inhabited large permanent villages at waterway confluences or large lakes,” while “[C]oastal bands moved along the littoral zone and within an estimated 50 miles of the coast with seasonal inland (upriver) forays to acquire other resources and to trade. The permanent villages were typically located at the heads of estuaries”¹¹⁵

The traditional Wabanaki diet varied across Wabanaki territory, for example game hunting predominated in areas removed

“Three of us were psyched about this big salmon that we just netted on our own and it was pretty exciting, we're going to bring it back to the family and eat it. Then you know game warden came in and took it and the irony of it is right at that Milford dam, that is like our most traditional place that we harvested salmon for the Penobscot, the spot that we did it was right there. You got three Penobscot kids netting a salmon for sustenance for the tribe and then they ended up getting pinched by the game warden and then they took the salmon away.”

- 2nd Penobscot Nation Citizen

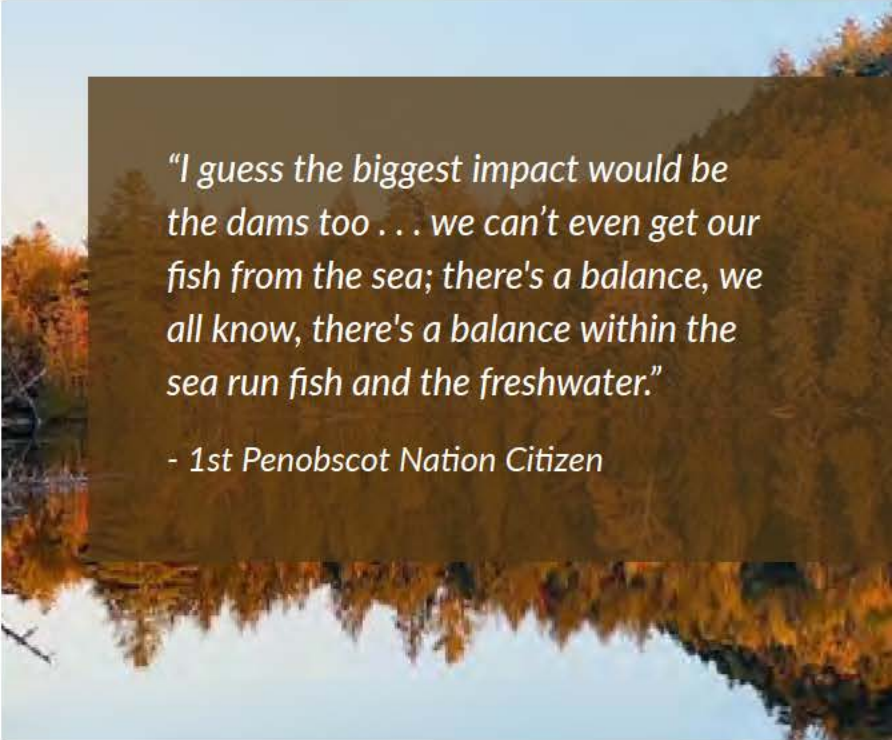
from major waterways, while marine mammals and fish were obviously more important along the coast. As a general rule, about 35% to 40% of the traditional Wabanaki diet came from marine and anadromous fish.¹¹⁶

The earliest colonial developments along rivers like the Androscoggin, Kennebec, and Penobscot were not settlements, but rather forts built to strategically occupy native sustenance sites along those waterways and open those areas for resource development. For example, Forts St. George and Richmond on the Androscoggin, Forts Western and Halifax on the Kennebec, and Fort Pownal on the Penobscot were built at crucial fishing and portage sites far from the then existing colonial settlements themselves.¹¹⁷

In the late 1600s, Massachusetts Governor Andros had eleven forts built for the express purpose of interrupting Wabanaki mobility and food supply. Historian Zachary Bennett describes the site selection and purpose of these forts:

Six of the eleven forts Andros constructed were to be tactically offensive, in that they held key river portage points or waterfalls rather than explicitly defending an English settlement. Henceforth, hostile Indians could no longer use their favored river routes to attack and elude colonists without passing British eyes and muskets. Andros's forts circumscribed Indian mobility, deprived them of food, and expanded sightlines far into their settlements.¹¹⁸

Later in 1737, after the settlement of Brunswick (originally Pejepscot) had been established in the shadow of Fort George, the residents petitioned Massachusetts to maintain the fort, claiming the Wabanaki, "look upon us as



"I guess the biggest impact would be the dams too . . . we can't even get our fish from the sea; there's a balance, we all know, there's a balance within the sea run fish and the freshwater."

- 1st Penobscot Nation Citizen

unjust usurpers and intruders upon their rights and privileges, and spoilers of their idle way of living. They claim not only the wild beasts of the forest, and fowls of the air, but also fishes of sea and rivers, and so with an ill eye looks upon our Salmon fishery, and no doubt would disturb our fishers were it not under the Immediate protection of the fort."¹¹⁹

When the Passamaquoddy and Penobscot fought on the side of the American colonists in the Revolutionary War, one motivation was to disrupt this British military strategy of targeting sustenance. However, after the revolutionary war, further settlement and the construction of dams and sawmills occurred at many of these same sites.¹²⁰ Because of its huge war debts from the Revolutionary War, the Commonwealth of Massachusetts needed to raise money and did so through land sales. The Committee of the State of Eastern Lands became the vehicle for Revolutionary War veterans to obtain new lands in the Province of Maine, then part of Massachusetts.¹²¹ In

the history of settler/Wabanaki hostilities, treaties, and land occupation, the same basic patterns emerged across Wabanaki territory; important portage and fishing places were appropriated for settlements, and the Wabanaki people were removed. For example,

There is an ancient Passamaquoddy fishing village known as “Siqoniw Utenehsis” located at the head of tide near the mouth of the St. Croix River. This village spans the banks on both sides of the river in what is now known as Calais, Maine, and St. Stephen, New Brunswick, just 20 miles north of Pleasant Point. It is at the head-of-tide, more commonly known as Salmon Falls where the fresh river water and salt water meet. At this fishing village the Passamaquoddy people would converge each year to capture sea-run fish. This was a major source of food for the people. In the 1700s the Passamaquoddy were forcibly driven

out of the village by European settlers. Settlers were then able to seize control over the fish at this village site and began to exploit the fish resources for their own purposes, which included worldwide market consumption.¹²²

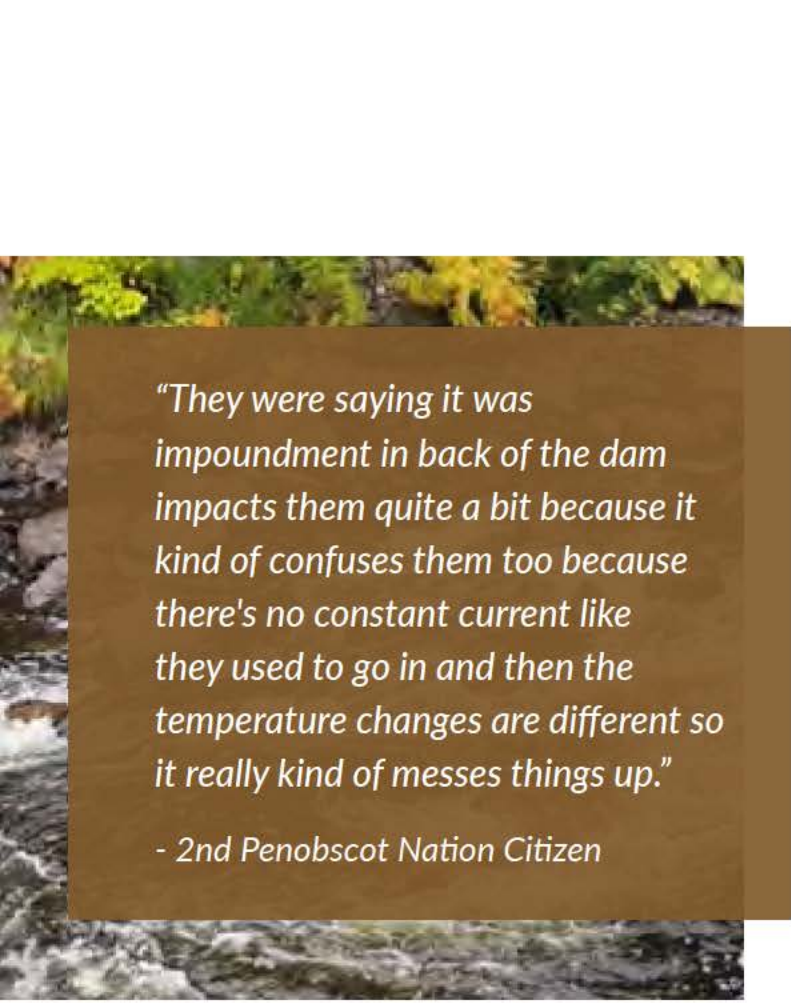
The dams, pollution, and overfishing that devastated Maine’s anadromous fish runs were predicated first on the removal of Wabanaki people from their customary river locations, which opened space for the economic and industrial development of Maine’s rivers and for the policies that impacted the sea-run fish.

In sum, the dams, pollution, and overfishing that devastated Maine’s anadromous fish runs were predicated first on the removal of Wabanaki people from their customary river locations, which opened space for the economic and industrial development of Maine’s rivers and for the policies that impacted the sea-run fish.¹²³

Dams and Other Physical Barriers

Physical obstructions, mostly in the form of dams, were the primary reason for the initial dramatic decline of Maine’s diadromous fisheries. The First Report of the Maine Commissioners of Fisheries in 1867 noted that “[T]he erection of impassable dams is alone sufficient to account for the entire extinction of the migratory fishes in all waters above the obstructions; and if they are erected below all the breeding grounds, the race is extinguished from the whole river.”¹²⁴

Much of the material discussing the effect of dams on the rivers of Maine focuses on the role dams play in preventing access by anadromous fish to their upriver spawning grounds and/or, to a lesser extent, their passage as young fish to the ocean. However, the purpose of the dams was not to stop the fish; it was to stop the water. The fish were affected because there was little or no incentive to create or enforce fish passage and pollution rules. Dams



"They were saying it was impoundment in back of the dam impacts them quite a bit because it kind of confuses them too because there's no constant current like they used to go in and then the temperature changes are different so it really kind of messes things up."

- 2nd Penobscot Nation Citizen

change river ecology in many ways. They alter the flow of the stream, their impoundments flood non-riverine land, and they change the form and make-up of the riverbed. All these things, in turn, affect not only fish but the other animals and plants inhabiting the river and the land nearby. The result, of course, is change on a vast scale, often in unintended and unpredicted ways. The same processes occur with estuary causeways that block, channel, or impede ocean currents and similarly affect the animals, plants, and physical geography of the coastline and the areas, both oceanic and terrestrial, around it. In proper scientific language:

Dams fundamentally alter the flow, temperature, sediment dynamics, and connectivity of rivers, which results in changes to aquatic and riparian biota. Such biotic changes include reduced biodiversity in impoundment habitat,

reduction in habitat quality for riverine fishes, and shifts in fish assemblage structure. The impoundments created by dams convert riverine habitat from lotic to lentic which favors fluvial generalist fish species and facilitates establishment of invasive species.¹²⁵

1. HISTORY

The first dams in Maine were constructed in the 1630s, although dam construction in the area from the Penobscot watershed east to the St. Croix did not begin until the 1760s.¹²⁶ There were attempts in the early 1800s to question the policy of dam construction, but "vigorous opposition to blocked fish passage at a number of dam sites nevertheless failed to promote a universal, environmentally-considerate approach to harnessing Maine's rivers and streams for water powered industry."¹²⁷ "From 1634 to 1850, mill dam construction on tributaries and small watersheds reduced Maine's river herring lake habitat by more than 95%. Large dams on primary rivers at the head of tide led to a near total loss of accessible habitat by the 1860s."¹²⁸ This led to the catastrophic reduction in Maine's sea-run fisheries and was a direct result of state policy favoring industry. As Maine's Commissioners of Fisheries reported in 1875:

[T]he mighty wrong that was perpetrated when our rivers were obstructed by special privileges, granted to individuals and corporations, and the rights of the people sacrificed. . . . exterminating . . . a greater amount of food value, that cost the State not one cent in its production, than all the lumber of Maine was worth. The fish of the Penobscot or the Kennebec was worth, is worth, more than all the lumber on either of those rivers.¹²⁹

The earliest dams were for grinding grain, sawing lumber, cutting ice, harvesting



View of the timber dam (1836) on the Rangeley River at the outlet of Rangeley Lake near Oquossoc in Rangeley. Two women and a guide stand below the dam, and a man sits atop it. View looks east. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

cranberries, etc. The Massachusetts Mill Act of 1714, which evolved into Maine's Mill Act after 1821, regulated the competing rights of riparian owners upstream and down and allowed dam construction by requiring maintenance of some natural flow for downstream riparian owners and by providing a process for payment of damages to upstream owners' loss of property caused by impounded water.¹³⁰

Maine's policy in the 19th and 20th centuries continued to favor dams for purposes of economic development.¹³¹ The policy was successful. Records show that by 1837, there were more than 250 sawmills (each with a milldam) along the Penobscot River and its tributaries.¹³² By 1875, there were 78 active mills or other forms of machinery positioned on the St. Croix between Milltown and Baring alone.¹³³ Because of the topography, many of these were at important fishing locations guaranteed to the Wabanaki Nations through treaty rights. For example, Lewey Island, a parcel of land identified by the Passamaquoddy as an important fishing location, was flooded in 1841 when the Princeton Dam was built.¹³⁴

Maine's economy underwent a significant re-adjustment following the Civil War, as the slow decline of Maine's ship-building and logging industries gave way to a desire and need to develop alternative industries through hydropower from Maine's rivers.¹³⁵ Maine's Commissioners of Fisheries initial 1867 report may have emphasized that "impassable dams" were the primary cause for the decline of Maine's fisheries, but in that same year Governor Chamberlain encouraged the legislature to expand the use of hydropower dams.¹³⁶ At the same time the Commissioners of Fisheries were completing their survey of dams and other obstructions limiting fish passage in Maine. Maine was conducting a comprehensive survey to show where new dams could be built to harness hydropower. The number of dams in Maine, both small and large, proliferated in the late 19th and early 20th centuries, increasingly for hydroelectric power to run industry.¹³⁷

2. SITUATION IN 1980

By 1980, all of Maine's major watersheds were encumbered by multiple dams. There were nine major dams on the Penobscot River and 116 in the full Penobscot River watershed.¹³⁸ As a result, only about 5% of alewives historic spawning grounds were available.¹³⁹ There were 20 dams on the St. Croix watershed; 3 were major hydroelectric dams, while the others had various purposes including flood control, water supply, and recreational use.¹⁴⁰ Although the upstream dams (which were owned and managed by the same company as the hydroelectric dams at Grand Falls and Woodland) did not have turbines, they were used to help feed and support downstream hydroelectric power when needed for the Grand Falls and Woodland dams. The upper watershed dams held back water for later use by the downstream generating facilities and were also used to supply water (especially

"So that dam pretty much taken away from all anadromous species that used to be present in our river and there's historical data on you know alewives, American eel, elvers, salmon that aren't present anymore, but we have historical records of them being pretty plentiful in our area."

- 1st Maliseet Citizen

during dry season) to dilute the wastewater discharge effluent dumped into the river at Woodland.¹⁴¹

Regardless of the purpose for each dam, the net result was that the sea-run fisheries had been markedly reduced because fish could no longer access spawning grounds or, if they did, return to the ocean. The St. Croix alewife fishery, which once boasted 20 to 30 million fish returning each year, had only about 170,000 by the early 1980s.¹⁴² Salmon runs on the Penobscot once numbered 100,000 or more, but by 1980 had been reduced to less than 5,000, and even this was a significant increase over the 1960s due to of the beneficial effects of the 1972 Clean Water Act.¹⁴³

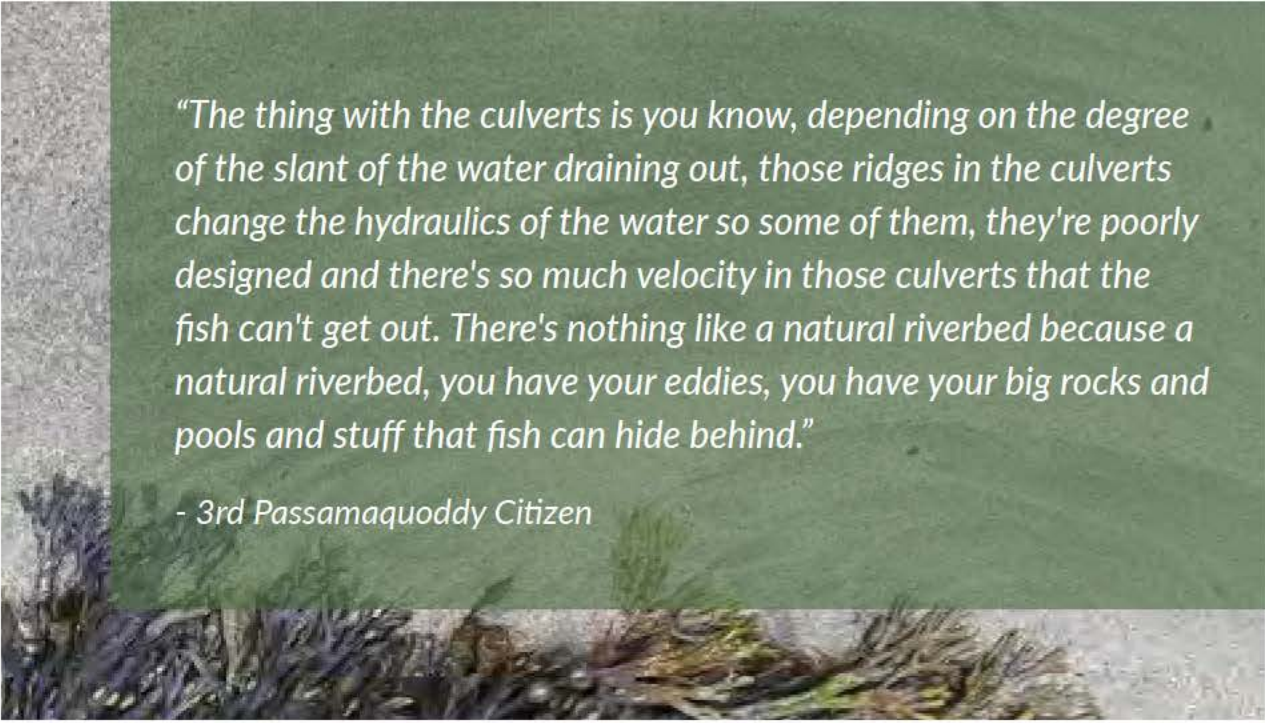
The basic problem caused by dams—the inability of anadromous fish to go upriver to spawn and of young anadromous fish to get to the ocean—should be fairly obvious to anyone with an understanding of Maine's environment. It certainly was to Wabanaki people in the early 1700s when the first dams were being constructed:

Wabanaki leader Polin travelled from Maine to Boston in 1739 to protest the damming of the Presumpscot River, on which his people depended on for sustenance. Meeting Governor Jonathan Belcher, Polin said he desired "only that a place may be left open in the dams so that the fish may come up in the proper seasons of the year."¹⁴⁴

By 1980, in addition to blocking fish passage, the dams resulted in other environmental changes that affected the fisheries.¹⁴⁵ Water level fluctuations caused by dam management "negatively impact both plant and animal communities."¹⁴⁶ Dam impoundments slowed the water, raised temperature levels, and altered water chemistry. The conversion of forest to pasture and farmland, initially connected to saw and grist mill development and later to logging, caused shifts in species and habitats and in the composition of the soil.¹⁴⁷ Dams changed the nutrient content of the water and the structure of the soil and sediment and resulted in disjointed ecosystems alongside rivers and streams rather than the natural connectivity associated with free-flowing water. This affected stream networks

"There's not much to fish in the Aroostook River, I would say at the most probably trout and some, um, just some basic fish, really. Growing up, we had cod fish, we had eels, we had salmon, we had trout, so we had a variety, flounder, and so on."

- 1st Mi'kmaq Citizen



"The thing with the culverts is you know, depending on the degree of the slant of the water draining out, those ridges in the culverts change the hydraulics of the water so some of them, they're poorly designed and there's so much velocity in those culverts that the fish can't get out. There's nothing like a natural riverbed because a natural riverbed, you have your eddies, you have your big rocks and pools and stuff that fish can hide behind."

- 3rd Passamaquoddy Citizen

and even the boundaries between fresh and salt water. Limiting fish passage upriver also limits the transportation of ocean nutrients to freshwater spawning grounds and into the inland food chains. "Today, the terrestrial, riverine and marine landscape of Maine favors shorter-lived rapid growing species compared to pre-colonial ecosystems."¹⁴⁸

And dams were not the only physical obstructions to fish passage. Different anadromous species spawn in different river/stream habitats, including the smaller brooks, streams, and ponds in the upper reaches of watersheds.¹⁴⁹ Fish passage to spawning grounds can be blocked by road culverts, logging operations, and other obstructions that do not initially appear as "dams".¹⁵⁰ Culvert crossings are one such impediment, summarized by the DMR:

About 40% of Maine's culvert crossings remain barriers to fish or aquatic wildlife passage, while roughly another 40-50% show signs of being at least potential barriers. With tens of thousands of problem road crossings in Maine, and 1,000+ dams with no accommodation for adequate fish passage, the scale of the connectivity problem can seem insurmountable.¹⁵¹

In summary, by 1980 when the Indian Land Claims case was settled and enacted into law, Maine's sea-run fisheries were at or near their historic low-point in numbers, and the ecology of the rivers and adjacent land had been substantially altered.¹⁵²

3. POLICY SINCE 1980

After 1980, Maine finally began implementing policies aimed at improving fish passage, and the State reaffirmed the general policy goal in 1982: "[T]o restore, maintain, and enhance anadromous fish resources for the benefit of the people of Maine."¹⁵³

While Maine policy has focused on the larger hydro-electric dams, it has not neglected the many smaller obstructions that, collectively, impede fish passage. Due to changing economic conditions, there were fewer dams on Maine's rivers and streams by the 1980s than there had been in the early 20th century; for example, many smaller logging dams had been removed or had simply deteriorated. However, small dams at the heads of ponds remained, along with many improperly constructed and/or maintained culverts/ATV crossings.¹⁵⁴ Approximately 25% of Maine lakes have a dam

at the outlet, many of which are too small to be registered or regulated by Maine DEP.¹⁵⁵

In 2009 Maine convened a Stream Connectivity Working Group (SCWG) with 30+ member organizations representing state and federal agencies, conservation groups, the timber harvesting industry, and the Penobscot Indian Nation. SCWG works to “increase the pace and quality of cooperative stream restoration efforts in Maine.”¹⁵⁶ The SCWG has done educational work with its Stream Smart road crossings material and trainings and the online comprehensive Stream Habitat Viewer. It conducts educational seminars, develops restoration tools (such as Stream Smart), and helps with funding partnerships. But by its own admission, to be successful, it needs a formal structure, increased funding, and a full-

time coordinator.¹⁵⁷ Nevertheless, as a matter of policy, Maine has continued its work on smaller stream connectivity issues through guidelines for construction and repair of stream crossings, by mapping non-functional or questionable stream crossings, and by assisting with funding for repair projects initiated by non-governmental organizations.¹⁵⁸

Of course the greatest impact on fish passage comes from the larger, main stem dams that are generally related to the production of electricity through hydropower.¹⁵⁹ Maine’s policy on these dams is constrained by the federal government which, through the Federal Energy Regulatory Commission (FERC), controls the licensing for most non-federal hydro-power dams.¹⁶⁰ The State, however, has a formal role in the licensing process and



Old stone dam. Photo by Rachel Bell.



Woodland, Me. Dam and Pulp Mills.

Woodland, Maine dam and pulp mills

must “certify that continued operation of the project will comply with Maine’s water quality standards” including the waterbody’s physical characteristics as well as its designated uses.¹⁶¹ Other entities are also generally involved in the licensing process as interested parties including citizen groups, non-profits, municipal governments, corporations, and the Wabanaki Nations. How these various parties interacted with the State of Maine’s evolving policy is illustrated by what happened in the permitting and regulatory process after 1980 for the large hydroelectric dams on three major Maine rivers; the Kennebec, the Penobscot, and the St. Croix.

In 1980, fish passage on the Kennebec was almost completely blocked by the Edwards dam at the head of tide in Augusta and by multiple other large upstream dams.¹⁶² Nevertheless, in 1985 the DMR began a program to reintroduce alewives and shad to the Kennebec.¹⁶³ It’s optimistic goal, as per the 1985 “Strategic Plan

for the Restoration of Shad and Alewives to the Kennebec River Above Augusta,” was “annual production of six million alewives . . . and . . . 725,000 American shad . . .”¹⁶⁴

The DMR was able to reach an agreement with the owners of the upriver dams but was not able to secure the participation of the owner of the Edwards dam, which at that time was producing electricity for Central Maine Power. When the Edwards dam license approached its expiration date in 1993, a group of anglers and conservation non-profits formed the Kennebec Coalition to advocate with FERC for fish passage as part of the relicensing process. In 1991, when the Edwards dam owner applied for another 50-year license from FERC, then Governor McKernan called for removal of the dam. However, in 1992 the City of Augusta became a co-licensee with the Edwards dam and, contrary to the Governor’s position, supported its continued use for generation of hydropower. Negotiations continued

for another seven years. In the end, FERC denied the license request, and a settlement was reached that allowed demolition of the Edwards dam. It was given to the State as a gift, the money for demolition was provided by upriver dam owners and Bath Iron Works, and the State agreed to help the City of Augusta financially with its waterfront restoration project.

The Edwards dam was finally removed in 1999. The settlement agreement included a commitment by the owner to remove the Fort Halifax dam upriver, although this was not finally done until 2009 following years of litigation by a citizens group that wanted to preserve the impoundment water level.¹⁶⁵ While that litigation was pending, yet another upriver dam, the Madison Electric Works Project Dam, was demolished in 2006.¹⁶⁶

Yet controversy continues on the Kennebec. The FERC license for one of the remaining major upriver dams, the Shawmut, had an expiration date of January 2021.¹⁶⁷ In conjunction with FERC relicensing, negotiations had begun in 2017 about appropriate fish passage and a potential purchase of the dam, but ended unsuccessfully in 2020.¹⁶⁸ Maine, through the DMR, supported the purchase and decommissioning of the Shawmut dam, and in December 2020 published a “Kennebec River Management Plan Diadromous Resources Amendment” that would have required decommissioning.¹⁶⁹ The dam owner sued, and the Amendment was withdrawn four

months later.¹⁷⁰ In July 2021 FERC filed a draft environmental assessment that said the Kennebec River's population of endangered Atlantic Salmon could be protected without removing the Shawmut dam, thereby giving the dam owner bargaining power since FERC ultimately determines licensing.¹⁷¹ However, since a companion application with Maine's



View of Wyman Dam (1928-1931) on the Kennebec River in Moscow, seen looking north. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

DEP was in danger of being denied, Shawmut's owner, Brookfield Renewables, withdrew its DEP and FERC re-licensing applications and indicated it would file new applications.¹⁷²

In September of 2021, several conservation organizations filed a lawsuit under the endangered species act against the owners of four upstream dams, including Shawmut, because they were killing some of the few salmon able to migrate to that point in the river.¹⁷³ The matter remains pending with



Turtle with Fish. Photo by Chris Johnson.

FERC, with a draft Environmental Impact Statement scheduled for release and public comment in August 2022, and the final statement expected in 2023.¹⁷⁴ Fish counts remain low for the capacity of the Kennebec. While annual alewife numbers have rebounded and have been in the hundreds of thousands, only a few hundred shad and about 50 salmon have been counted.¹⁷⁵ The Maine agencies concerned with fishery policy have generally been in favor of decommissioning dams and, as noted above, were initially in favor of decommissioning Shawmut, but the State's formal position now is to try to restore the fishery without removing the dams.¹⁷⁶ In February 2022, legislation was proposed that would require "any river management plan to consider existing hydropowers uses and make those plans subject to legislative approval

. . ."¹⁷⁷ That is where matters stand now with the Kennebec. In a statement that unintentionally but succinctly sums up the centuries long policy struggle over Maine's sea-run fish, the bill's sponsor admitted that "the only way to fully restore the Atlantic salmon to the river is likely to remove the dams [but] the Legislature needs to balance that interest with the economy."¹⁷⁸

Similar regulatory issues on the St. Croix illustrate the recent evolution of Maine's policy on fish passage and dam removal. There are seven major dams on the St. Croix: Forest City and Vanceboro on the East Branch; Sysladobsis and Grand Lake Stream on the West; Grand Falls at the confluence of the east and west branches of the river; and Woodland and Milltown on the main stem with the last one, Milltown, located at the head of tide.¹⁷⁹ Using alewife population as a gauge, the alewife returns at Milltown in 1980 were about 169,000. The Milltown dam fishway was improved in that year, and by the mid-1980s more than 2 million alewives were returning to the watershed.¹⁸⁰ Around the same time some anglers believed that the increased alewife population was impacting the smallmouth bass sport fishing industry in the upriver lakes and impoundments.¹⁸¹

Smallmouth bass are not native to the St. Croix but were introduced and re-stocked by the State for sport fishing for many years following the collapse of the anadromous fisheries caused by the original dams.¹⁸² The political pressure from sport-fishing groups resulting from the bass/alewives controversy led to fishway closures. In 1995, the Maine Legislature passed a law requiring closure of both the Grand Falls and Woodland dams to alewife passage.¹⁸³ Predictably, by 2002 only 900 returning alewives were counted.¹⁸⁴ However, the political battle was not over, and,

after several scientific studies and a renewed political push, legislation was enacted in 2013 requiring Maine officials to remove barriers to alewife migration at the Grand Falls dam.¹⁸⁵ Maine Congressman Poliquin then introduced federal legislation to exempt the upper St. Croix dams from FERC regulation.¹⁸⁶ However that legislation failed to pass, and in 2019 FERC relicensed the Vanceboro dam with an approved Fishway Operations and Maintenance Plan.¹⁸⁷ By 2020, the St. Croix migrating alewife population had rebounded dramatically and was approaching one million fish.¹⁸⁸

The St. Croix story illustrates the often-contentious interactions between different interests, including State agencies and the Wabanaki Nations. Although Maine's expressed policy for the last 150 years has been in favor of the restoration of sea-run

fish, DIFW actively opposed the re-opening of the St. Croix.¹⁸⁹ Similarly, the Passamaquoddy Joint Tribal Council was not supportive until 2012, but in that year passed a joint resolution supporting restoration of the alewives and other sea-run fish in the St Croix and thereafter became a crucial voice in favor of the 2013 legislation.¹⁹⁰ As with each of Maine's rivers, the re-opening of the St. Croix to sea-run fish involved intense political battles in both the legislative and regulatory arenas and was more dependent on the resolution of local issues than on any persistent, overriding State policy. The result of those battles is that since 2013 much of the St. Croix watershed has been open again for sea-run fish, although the situation is much the same as in the Kennebec as regards fish counts; the alewives are returning in significant numbers, but the shad population has remained low and there have been no salmon officially counted.



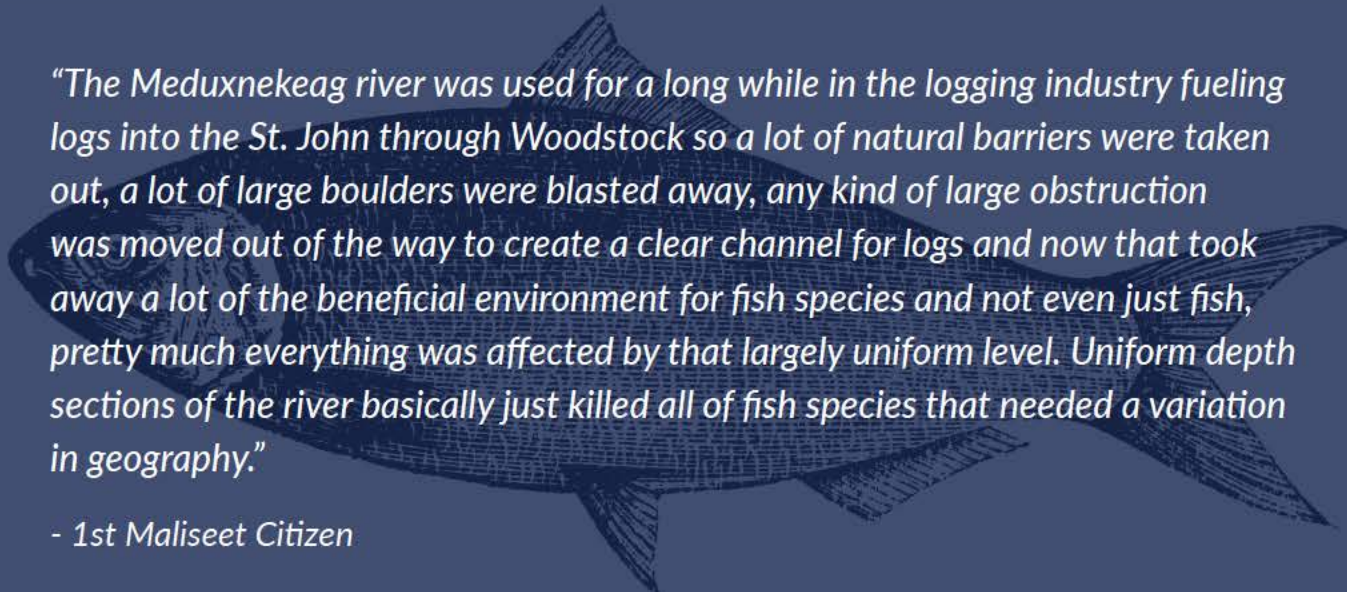
Fish ladder on the Pennamaquan River, Pembroke, Maine. Photo by Chris Johnson.

In contrast, while the re-opening of the Penobscot also involved extensive negotiations, there was not the same level of controversy and conflict as with the Kennebec and St. Croix. In 1999, PPL-Maine, a private energy corporation, bought several hydro-electric dams on the Penobscot and started discussions with the Penobscot Indian Nation and then with several environmental groups “in hopes of creating a more cooperative and creative model for the dam re-licensing process.”¹⁹¹ An agreement was reached in 2004 between these parties and various State and federal agencies that resulted in the sale and demolition of the two dams furthest downstream (Great Works and Veazie). When combined with a new fish lift at the next dam upriver (Milford) and a natural stream channel bypass at the Howland dam, a significant portion of the Penobscot watershed was re-opened to anadromous fish. In the case of the Penobscot, the various branches of Maine’s government worked together and were significant participants in project completion.¹⁹² In 2019, the Maine legislature passed legislation preventing any new dams on the Penobscot main stem downstream from the Milford dam.¹⁹³ As a matter of policy, the law provided that “[T]he Legislature declares

that the preservation and restoration of the Penobscot River is of the highest priority.”¹⁹⁴

4. CURRENT SITUATION

As illustrated by these examples, Maine’s policy towards dams and fish migration, while generally in favor of restoration, has varied since 1980 based on political and economic factors that are often beyond the control or authority of specific state agencies. Nevertheless, considerable progress has been made in the last 40 years, and the State agencies responsible for fishery policy remain officially in favor of restoration. Further progress is planned. The Milltown dam at the head of tide on the St. Croix is slated for decommissioning and removal in 2022.¹⁹⁵ The licenses for approximately 25 dams in Maine expire within the next five years and hence will be subject to the FERC licensing process.¹⁹⁶ This includes the North Twin, Millinocket, Dolby, and East Millinocket dams on the West Branch of the Penobscot and the Millinocket Lake Storage Development on Millinocket Stream, the licenses for which expire in 2026.¹⁹⁷ That re-licensing process has already begun.¹⁹⁸ DMR runs a number of programs aimed at river



“The Meduxnekeag river was used for a long while in the logging industry fueling logs into the St. John through Woodstock so a lot of natural barriers were taken out, a lot of large boulders were blasted away, any kind of large obstruction was moved out of the way to create a clear channel for logs and now that took away a lot of the beneficial environment for fish species and not even just fish, pretty much everything was affected by that largely uniform level. Uniform depth sections of the river basically just killed all of fish species that needed a variation in geography.”

- 1st Maliseet Citizen



Tanks on river. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine.

and fish restoration, focused primarily on the Penobscot and Kennebec rivers and on specific species (alewives, salmon, and American eels), while the Stream Connectivity Work Group continues to confront the myriad culverts and road crossing that impede the movement of fish and other biological linkages through Maine's smaller water bodies, the capillaries of ecological circulation.¹⁹⁹

Throughout Maine's 200-year history, dams have been recognized as the primary cause for the decline of anadromous fish and the resulting impact on Wabanaki sustenance rights. Recently it has become apparent that while removal of the dams and/or the addition of functioning fish passageways improves river connectivity, it does not guarantee that the ecology will rebound. More work will be needed to support sustenance. While alewives are returning in significant numbers, and shad to a much lesser extent, the salmon rebound has been small. Eight years after the removal of the Veazie and Great Works dams on the Penobscot, and with the addition of a natural fishway at Howland, the alewife count had grown from 54 fish to almost 2 million, while the shad count, starting at zero in 2013, is now about 11,000.²⁰⁰ During that same time period salmon barely doubled from 381 to 849.²⁰¹ For historical context, the estimated fish numbers on the Penobscot ranged from 14 to 20 million alewives; 75,000 to 100,000 Atlantic salmon;

and 3 to 5 million American shad.²⁰² While alewives, shad, and salmon all need passage and access to the rivers, the disparity in numbers may reflect the different habitat each species needs for spawning (e.g. rocky substrates in streams for salmon).

The situation is essentially the same in Maine's other rivers. The Kennebec now has alewife runs in the millions, but only small shad and minimal salmon runs.²⁰³ Despite the alewives' apparent success, the substantial decline in other fresh water fisheries, such as shad, continues for reasons that are not fully understood.²⁰⁴ Unquestionably the demolition of dams has had a positive effect on river ecology and on the relationship people have, socially and culturally, with Maine's rivers.²⁰⁵ That positive effect must be balanced against the profound and lasting impact creation of the dams and the industrial use of the rivers has had on habitat. And while dams may have been the initial cause of the reduction in fish populations, they are far from the only factor that must be considered in policy decisions on restoring anadromous fish.

Pollution

If dams and other obstructions have been the foremost factor limiting the quantity of fish in traditional Wabanaki fisheries, then pollution has been the primary factor limiting the quality of fish for human consumption. As is true as regards the effects of the dams, the harmful effect of pollution has been recognized by Maine policymakers for over 150 years. As noted above, the initial report from Maine's Commissioners of Fisheries in 1867 mentioned the growing problem of pollution:

The causes that have led to the present state of things are – First - Impassable dams. Second - Over fishing. Third - Pollution

*of the water. The first and second are the principal causes with us, the third having operated only in a few localities to a limited extent.*²⁰⁶

Nearly a century and a half later, in 2008, the Maine agencies responsible for fisheries, the DMR and the DIFW, published a strategic plan for restoration of diadromous fish to the Penobscot River. The central problems, reflected in strategic goals #2 and #3 below, are river blockage and water quality, two of the three major problems Maine has recognized since at least 1867.²⁰⁷

*This plan includes four strategic goals: (1) coordinating management activities, (2) providing safe and effective upstream and downstream passage for diadromous fishes, (3) maintaining or improving abiotic (physical) and biotic habitat for diadromous fishes using ecosystem-based management, and (4) rebuilding diadromous fish populations.*²⁰⁸

In 1867 when Maine appointed Commissioners of Fisheries to coordinate policy on its collapsed fisheries, pollution was a relatively minor factor compared to dams and overfishing.²⁰⁹ However, Governor Chamberlain's 1867 exhortation to develop hydropower for industrial uses resulted, within the next 20 years, not only in a marked increase in the construction of large dams, but also in a lethal level of chemical pollution from industry. This pollution would only increase over the course of the next century as Maine's policy of industrialization trumped its policy of sea-run fish restoration.

1. HISTORY

Each of Maine's rivers has its own specific history, but the effects of pollution in all of Maine's rivers has been similar in terms of the

impact on sustenance lifeways fisheries. By way of example, the Androscoggin was widely considered to be one of the most polluted rivers in the nation throughout the 20th century, while in 1997 the St. Croix was ranked as the 11th dirtiest American river.²¹⁰ Discharges from tanneries and textile mills, pulp and paper factories, and municipal wastewater outfalls have included suspended solids, heat, oxygen-depleting substances, chlorinated organics, chromium, copper, dioxin, lead, mercury, phenols, vanadium, zinc, DDT, dioxins/furans, dioxin-like PCBs, and other PCBs.²¹¹

However, while industrial chemicals have been Maine's most serious riverine pollutants, they are not the only ones, and they were certainly not the first. In the colonial period, land cleared for farming changed the vegetation and drainage patterns near waterbodies, resulting in sedimentation and warming of the water.²¹² The effect was subtle at first, but over time this affected fish mortality rates, the survival rate of newly hatched fish, and the suitability of riverbed surfaces for spawning.²¹³

"I wouldn't want to eat the fish that's coming from the Aroostook River, cause I don't know what they did to that there river. I don't mind swimming and all that, I don't know exactly what chemicals there are in that."

- 1st Mi'kmaq Citizen

The logging industry initially focused on the taller pines suitable for sailing ship masts and on lumber for building settlements, but that soon evolved into an international lumber trade with extensive clearing, massive log drives, and tons of sawdust dumped into Maine's rivers. By 1830, ten years after Maine gained statehood, Bangor was the world's largest lumber shipping port.²¹⁴ In addition to exports, a significant amount of lumber went to Maine's shipbuilding industry which, up to the Civil War, was considered to be the largest and best in the world and produced half of America's ships.²¹⁵

The lumber boom lasted for fifty years, into the 1880s, and did significant environmental damage.²¹⁶ Log drives were the easiest way to get timber to market, but they had a devastating effect on river ecology. "Log floating in the 19th to mid-20th centuries has profoundly changed the environmental conditions in many northern river systems of the world."²¹⁷ Some of the dams that blocked the rivers were built primarily to regulate flow rate to keep the log drives moving. The resulting water impoundment and alternating flow rates compounded the problem of sawdust and bark residue sinking to the river bottom, which smothered spawning grounds and reduced the dissolved oxygen necessary for aquatic life.²¹⁸ Natural river obstructions such as boulders and rocky outcrops were removed, often with blasting powder, and dams and stone piers were built to channel river flow. Channelization made the log drives easier,

"A lot of the River runs along agricultural areas and farmers didn't want trees in the way of their crops or they want their fields to be planted on as much land as possible, so a lot of riparian area was taken out and dealing with that and also dealing with the problem of runoff into the River after storm events. And a lot of the pesticides or herbicides, trace amounts remained in the soil and then, once stuff eroded and made its way into the river. Things like algal blooms would be increasing in the area and then that, in turn, with the rising temperatures, less oxygenation was really, really bad for a while."

- 1st Maliseet Citizen

but it also "reduced land-water interactions, increased current velocities and the erosion of gravel and fine sediments, and simplified the river ecosystem."²¹⁹ This led to "erosion and degradation of the channel bed, destruction of pool-riffle variability, and increased sedimentation and flooding downstream," which in turn "destroyed spawning and rearing habitats for fish" and adversely affected "macroinvertebrate communities" upon which many fish feed.²²⁰ Log drives in Maine continued until 1976.²²¹

Adding to the waste from log drives, sawmills produced a massive amount of sawdust, edgings, slabs, shavings, and bark that further changed the ecology of the rivers and altered their depth. In 1760, ships of any size could navigate the Kennebec up to Brunswick, but

"You know they used to blow up the ledges and the rocks and dredge the river so they could send the logs down there and stuff. That has really hurt the River too."

- 3rd Passamaquoddy Citizen

a century later they could not, as the estuary had become shallow from sedimentation and sawmill residue.²²² Sawmills on the St. Croix similarly created "navigational hazards," with up to 6 feet of sawdust blocking the tidal estuary.²²³ By the mid-1800s, there were "over 250 sawmills on the Penobscot River and its tributaries above Bangor."²²⁴ Two hundred years of logging and sawmill waste and sedimentation altered the aquatic environment in ways that will continue to affect Maine's rivers for decades to come.²²⁵

As Maine's population grew, so did the municipal wastewater discharged directly into Maine's rivers. In the late 1960s, all the towns on the Penobscot River from Millinocket to Bucksport discharged their waste directly into the river, along with the waste from seven paper mills.²²⁶ Bangor built the first wastewater treatment plant on the Penobscot watershed in 1968, but it proved inadequate. When passage of the Clean Water Act in 1972 made federal funds available for municipal waste treatment, Brewer, along with

Eastern Fine Paper, built a treatment plant that became operational in 1975.²²⁷ Bangor's treatment plant, on the other hand, was the subject of ongoing negotiation and litigation with Maine and federal authorities until the signing of a consent decree in 1987.²²⁸

The most serious pollution affecting fish, however, came from the industries that, starting in colonial times, were located along the rivers. Although the industries changed over time, the reasons for locating beside rivers



Historic sawmill and lumber camp. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

remained the same; ease of transportation, a source of power, and a simple and inexpensive way to dispose of waste. Sawmills were followed by tanneries, then textile and shoe plants, and finally pulp and paper mills.²²⁹ By 1944, the Penobscot watershed had eight shoe factories, four woolen mills, and eight pulp and paper mills discharging their waste directly into the river.²³⁰ The tanneries and textile industries released acids, fibers, and dyes, but the most destructive pollutants came from the sulphite pulp and paper mills which, starting in the 1880s, discharged highly acidic dissolved organic waste into the rivers with devastating results including massive fish kills.²³¹

In their 1889 report, Maine's Commissioners of Fisheries wrote, in exasperation:

*The admission of pulp mills upon our streams, more especially upon the Penobscot river the only salmon river (with the exception of the St. Croix, which Maine shares with New Brunswick) on the Atlantic coast of the United States, was and is a most fatal error. Our rivers should all be carefully cultivated to fish, and can be made to constitute an important feature of our food product. No manufacture of any kind whatever should be allowed to throw its waste into a river any more than into our highways. No argument or demonstration is necessary here. Take the line of current from any pulp mill and the dead perch, chub and other fishes will tell the whole story. Look at the rocks washed by the current direct from the mill, they are as white as if specially colored with lime. The salmon in ascending the river, carefully avoid the side on which is the deadly flow; to yearling fish or to newly bred fish it is fatal.*²³²

Maine's paper industry started small, with the first mill opening in 1739 in Westbrook



Logs from the forest delivered at the stream, Aroostook County, Maine. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

on the site of the later S. D. Warren plant.²³³ Initially rags were the raw material used in the process, but wood pulp was substituted in the 1880s, and S. D. Warren became the largest papermaking mill in the world, using the sulfite process whereby liquefied wood fiber was heated with a sulphur solution. By 1930, Maine produced more paper than any other state.²³⁴ However, the sulfite process left a "waste liquor" that stimulated microbial growth in the rivers, depleted oxygen levels, and resulted in unlivable conditions for fish.²³⁵

Paper mill pollution did not affect only fish. Along the Androscoggin "houses freshly painted white turned to black as hydrogen sulfide rising from the water reacted with the paint, a direct result of pollution" from the sulfite mills.²³⁶ And there was the terrible smell; in the city of Lewiston "[D]uring some of the hottest days of the year, sweaty homeowners were forced to keep their windows shut at night while they burned pine candles to combat the miasma. One local resident, Nere Duval, remembered how he became weak because he could not sleep or eat' "Leo Good 'came across the bridge one morning and threw up' in the middle of the street."²³⁷



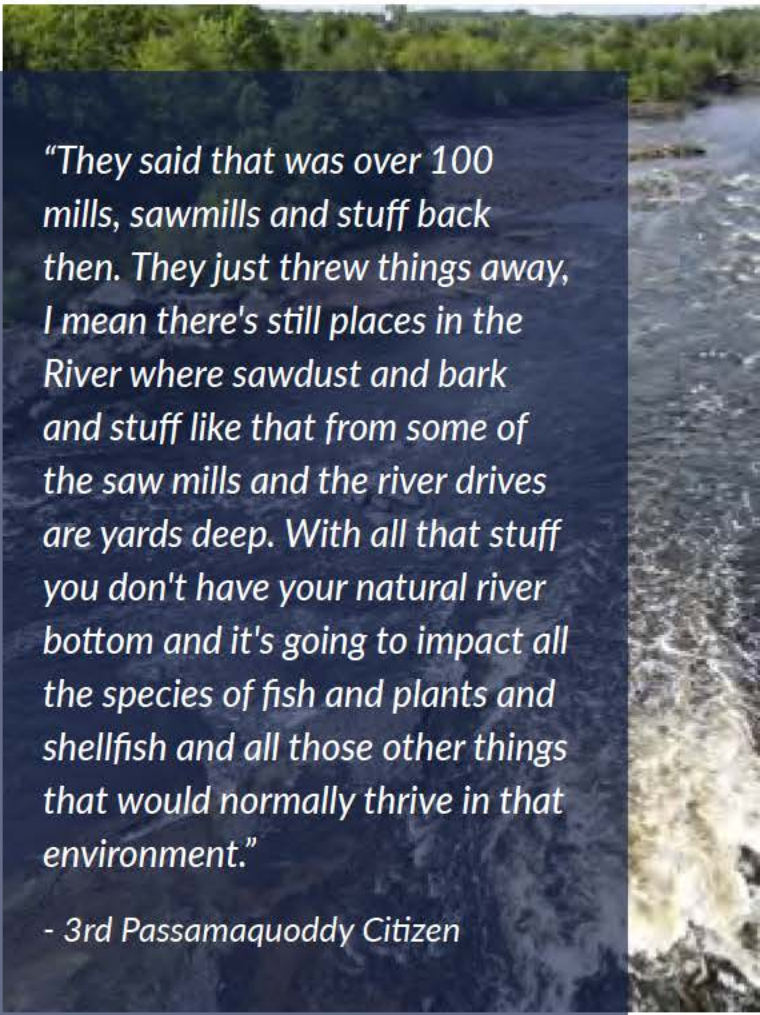
Trucking logs by rail to conveyor at a paper factory in Bangor. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

Political and legal pushback against the unregulated pollution began in the 1940s. In 1942, Maine's attorney general secured a decision from the Maine Supreme Court declaring the sulfite mills a "nuisance" and limiting the amount of waste liquor that could be discharged.²³⁸ In 1948, the Court appointed a Bates College chemistry professor as Rivermaster for the Androscoggin with the authority to set weekly sulfite pulp quotas.²³⁹ The 1950s saw the formation of the first public conservation organizations advocating for cleaner rivers, and in 1955 seven bills were introduced into the Maine Legislature that "ranged from prohibiting all pollution to authorizing additional studies of pollution before taking regulatory action."²⁴⁰

The writing was on the wall, and, partly as a response to the legal and political pressure, paper companies began investing in the Kraft papermaking process, ostensibly both to reduce pollution and to create a stronger paper, but also to get out from under the court order in the Androscoggin case, which was directed solely at sulfite waste.²⁴¹ In reality, while the Kraft process did produce a stronger paper, it merely substituted new

forms of pollution for the older ones, including chlorates, heavy metals, and dioxins, which can disrupt the endocrine systems of both fish and humans.²⁴² For example, extensive testing in the St. Croix from 1950 to 1970, in the section below the Woodland Pulp Mill from Woodland to Calais, demonstrated levels of pollution lethal to fish,²⁴³ while dioxins were found in lobsters fished from the ocean in the St. Croix Estuary.²⁴⁴

Pollution in Maine's rivers reached its peak in the 1960s. By 1967, the pollution load per day in the Penobscot was equivalent to the human waste from 5 million people.²⁴⁵ The dissolved



"They said that was over 100 mills, sawmills and stuff back then. They just threw things away, I mean there's still places in the River where sawdust and bark and stuff like that from some of the saw mills and the river drives are yards deep. With all that stuff you don't have your natural river bottom and it's going to impact all the species of fish and plants and shellfish and all those other things that would normally thrive in that environment."

- 3rd Passamaquoddy Citizen



Hollingsworth & Whitney Company paper mill (1892) on the Kennebec River in Winslow. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

oxygen content in the river was, in places, down to zero, and no salmon had been caught in the Penobscot for 10 years.²⁴⁶ The “horrendous” levels of pollution in all of Maine’s major rivers in the 1960s meant that “essentially no fish could live in those rivers.”²⁴⁷

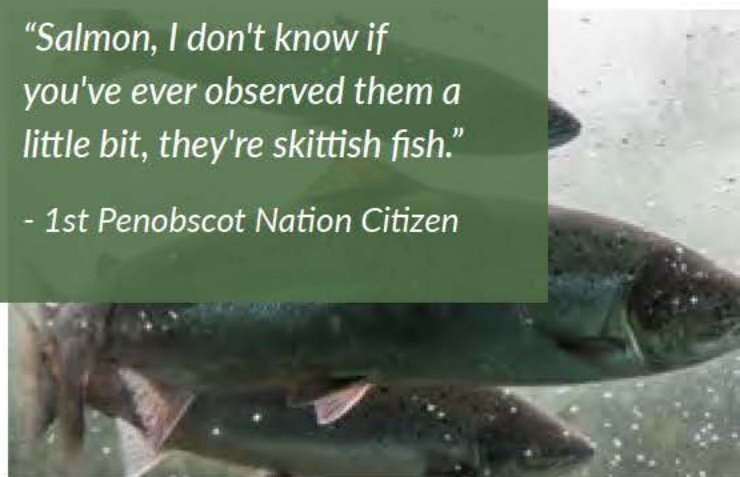
In 1967, the Maine Legislature took a significant first step in the opposite direction. In response to the federal Water Quality Act of 1965, which directed states to develop water quality standards, Maine passed legislation that required the assignment of water quality standards to all Maine waterways and prohibited the discharge of any material into a waterway that would lower the water quality below the assigned classification level.²⁴⁸ This legislation only established a floor for pollution; i.e., rivers could not be degraded below their current classification, although improvement was not required, but up to that point, despite occasional pronouncements to the contrary, Maine’s paramount policy for its rivers since statehood had been economic

development, a general policy that outweighed any policies specifically directed toward preserving or restoring fish.

The tide was turning. 1970 saw the first Earth Day where 20 million people in the United States participated in rallies, demonstrations, and teach-ins about the environment.²⁴⁹ In 1972, DDT was banned for general use, and the federal Clean Water Act (CWA) was enacted, sponsored by Maine’s Senator Muskie who grew up along the Androscoggin.²⁵⁰ In a direct

“Salmon, I don't know if you've ever observed them a little bit, they're skittish fish.”

- 1st Penobscot Nation Citizen





Leaf on water. Photo by Rachel Bell.

turnabout from previous policy, the CWA was based on ecological principles rather than economic ones. It gave the Environmental Protection Agency (EPA) the authority to set wastewater standards for industry and to require permits for the discharge of pollutants, and it authorized money for municipal waste treatment facilities.²⁵¹ As a direct result, by 1976 all of the pulp and paper mills on the Penobscot River had invested in pollution control systems of some sort, and, with the availability of federal funding, the towns along the Penobscot began building wastewater treatment plants.²⁵²

2. SITUATION IN 1980

The low point for pollution in Maine's rivers came in the 1960s, but by 1980 the CWA was having a positive impact on water quality, and environmental issues were resonating with the public. In compliance with the CWA, Maine reclassified its rivers, and Maine's Department of Environmental Protection (DEP) created a permitting process for reviewing and licensing river discharges. Dissolved oxygen levels in the lower Penobscot rose from at or near zero in the mid-1960s to, by 1980, 5 parts per million for the entire river, and the Penobscot was "upgraded" from a class D to a class C river for pollution purposes.²⁵³ Similarly, while pollution in the St. Croix downstream from the Woodland paper mill was described in 1972 as "gross to moderate", the river was starting its recovery and by 1978 had "the ability to support a variety of benthic invertebrate life", although St. Croix toxicity levels at that time were still described as "non-acutely lethal to Atlantic salmon fingerlings."²⁵⁴

Then, after several years of a focused stocking policy, salmon returned to the Penobscot in 1978 when 400 salmon were caught.²⁵⁵ The numbers continued to trend upwards.²⁵⁶ Alewives and shad were also coming back, and by 1980 Maine had recreational fishing seasons for both salmon and shad.²⁵⁷ In the St. Croix, largely due to the fishways built in the 1960s at the three lower dams, alewives were returning.²⁵⁸ With improved fish passage and progress on pollution, the federal government began a major salmon restoration program on the St. Croix in 1981.²⁵⁹

The year 1980 saw the settlement of the land claims case and, in the resulting MIA, recognition of Wabanaki rights to sustenance fishing. But while Maine's policies regarding



Salmon swimming upstream.

rivers and fish had changed direction by 1980, and at least small steps had been taken towards pollution control and river access for fish, neither the quantity nor quality of fish in Maine's rivers at that time were sufficient for sustenance lifeways fishing.

3. POLICY SINCE 1980

Maine's policy on water pollution since 1980 has essentially been to continue the slow cleaning of its rivers. The primary vehicle for doing this is its water classification system, codified in Title 38 of the Maine Revised Statutes.²⁶⁰ Although Maine had had a water classification system for several decades, it was substantially revised in 1985 with standards based on scientifically defensible criteria.²⁶¹ The aspirational goal is for water quality to be "sufficient to provide for the protection and propagation of fish, shellfish and wildlife and provide for recreation in and on the water".²⁶² The idea is that once rivers have been classified, the anti-degradation provisions in the law will

result in water quality being maintained and hopefully improved over time. The law does not allow discharges that degrade any river below its classification or below the floor set by the Clean Water Act, and although pre-CWA discharges are largely grandfathered, the expectation is that they will die out in time. Even in Maine's Class C waters, the lowest class, licensed discharges must allow the river to "support all species of fish indigenous to the receiving waters," while in Class A waters, pre-existing discharges can "continue only until practical alternatives exist." The initial classifications were:

- **Class AA.** Waters in this class are "managed for their outstanding natural ecological, recreational, social or scenic qualities. Discharges, dams or other significant human disturbances are prohibited."
- **Class A** waters are like class AA except that limited human interference is allowed; direct pollutant discharges are highly restricted.

- **Class B** waters are “general-purpose waters and are managed to attain good quality water. Well-treated discharges of pollutants that have ample dilution are allowed.”
- **Class C** waters are managed to “at a minimum attain the fishable/swimmable goals of the Clean Water Act and maintain the structure and function of the biological community”.²⁶³

The factors for setting water quality standards include pollution levels, ecological concerns, and existing uses—including fishing. However, the original criteria did not include any assessment of risk to human health from consumption of fish caught in the rivers. In 1987, shortly after Maine’s 1985 revision of the river classifications, the EPA began testing for contaminants in fish. As a result of those tests, both the federal and state governments issued consumer warnings about fish consumption because of the dioxins found.²⁶⁴ These advisories were substantially updated in 1997 to include PCBs and mercury as well as dioxins.²⁶⁵ The Penobscot Nation began issuing similar advisories in 1998.²⁶⁶ The advisories remain in force today and recommend no more than two meals of fish per month, and none for children or pregnant women, because of the mercury pollution, with even greater restrictions applying to fish from certain specified waters due to “high levels of PCBs, Dioxins or DDT.”²⁶⁷

Even after Maine revised its river classifications in 1985, the state, federal, and tribal governments disagreed about what pollution standards were consistent with fish consumption for sustenance rights, particularly in the Penobscot River. Those



Maine river in fall. Photo by Rachel Bell.

disagreements continue to the present day and have involved negotiation, litigation, and legislation.²⁶⁸ In brief summary, Maine promptly reported its water quality standards (WQS) to the EPA as required by the CWA, but as of 2014, nearly 30 years later, the EPA had neither approved nor denied Maine WQS for waters in Wabanaki lands, apparently because Maine’s standards did not “protect the sustenance fishing designated use in waters in Indian lands and in waters subject to sustenance fishing rights under the Maine Implementing Act.”²⁶⁹ The EPA’s non-approval

was based on a study commissioned jointly by EPA and the Wabanaki Nations.²⁷⁰

In 2014, Maine sued the EPA to force a decision one way or the other; in response, the EPA “disapproved a number of Maine WQS as not adequately protective of human health or aquatic life” and promulgated its own standards for waters near Wabanaki lands.²⁷¹ Finally in 2019, as a negotiated resolution of Maine’s still pending lawsuit against the EPA, the Maine legislature added a sustenance fishing designated use category to the water classification system, and the EPA withdrew the standards it had imposed.²⁷²

The legislative summary of the sustenance use bill explained that it “creates a sustenance fishing designated use as a subcategory of the applicable fishing designated use for certain specified water body segments within Maine’s water classification program where there is or may be sustenance fishing or increased fish consumption by members of the Indian tribes in Maine or other Maine citizens.”²⁷³ The change in the law required DEP to calculate the criteria for water contaminants in “sustenance fishing designated use” areas based on a fish consumption rate of 200 grams per day (about 7 ounces) rather than at the rate of 32 grams per day (about 8 ounces per week) that Maine requires for other state waters.²⁷⁴ However, the bill summary noted a number of disclaimers including that the new classification did not “affect the mercury discharge limits” otherwise provided for in existing law and was not “intended to alter or affect in any way any provision of any of the State’s state and federal Indian settlement acts.”²⁷⁵

The sustenance use classification had little immediate effect on actual discharges into the designated river sections.²⁷⁶ However, the new

classification, while aspirational in nature, sets a policy goal for water quality that may someday allow a sustenance diet that includes river fish. And in addition to the areas placed in the sustenance use category, the legislature changed the classification of other parts of the Penobscot from Class C to Class B and designated the Penobscot River as deserving of special protection as regards its sea-run Atlantic salmon and other anadromous fish.²⁷⁷

4. CURRENT SITUATION

Unquestionably the last 50 years has seen a dramatic turnaround in the water quality of Maine’s rivers. The changes are both scientifically measurable and observable to the naked eye (and nose). These positive steps clearly resulted from state policy changes, whether it be policy on classification of surface waters or restoration plans for anadromous fish, but it is also true that the changes would not have been as quick or as dramatic, or perhaps would not have happened at all, absent pressure and even coercion from EPA and the insistent voices of the Wabanaki Nations and the non-profit conservation and fishing



Joe Dana with striper. Photo courtesy of Joe Dana.

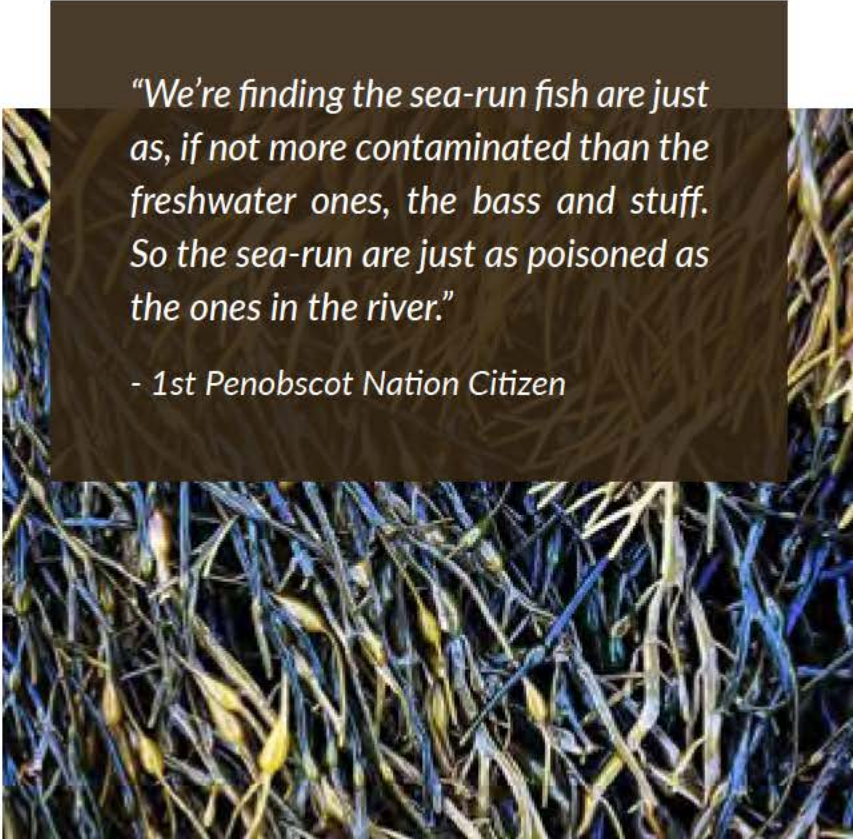
groups that became their allies. Nevertheless, significant pollution-related challenges remain before fish from Maine's rivers could ever be a significant part of anyone's diet.

Some of the most serious pollutants remain in the water and in the soil around and under the river. The Penobscot continues to have high mercury levels, both from a now defunct chemical plant that has been the subject of extensive litigation and from more global atmospheric deposition.²⁷⁸ Recently, significant levels of Per- and Polyfluorinated Substances (PFAS) have been found in rural Maine and in the leachate from the Juniper Ridge landfill in the Penobscot watershed.²⁷⁹ PFAS can impact consumption rates for game such as deer as well as for fish, both of which would impact sustenance lifeways practice. The State of Maine is currently trying to establish a policy regarding PFAS chemicals and how to limit their impact on human health, but this is a newly identified contaminant and potential solutions remain unclear.²⁸⁰ Finally, acid rain remains a problem, as salmon cannot live in acidified rivers. In this regard Maine's DEP is currently experimenting with liming the East Machias River with clamshells, a tactic tried first in Norway with some success, to increase juvenile salmon abundance.²⁸¹

Despite the new sustenance use river classification, health advisories remain in effect for the waters in which Wabanaki people might engage in sustenance lifeways fishing. In the end, despite a vigorous fish restoration program, success has been at best mixed. And although the alewives are coming back with runs of about 2 million in the Penobscot and over 600,000 in the St. Croix, shad numbers have been disappointing (11,000 in the Penobscot

but only 2 in the St. Croix), and the salmon runs have almost disappeared.²⁸² Less than 600 salmon were counted in the Penobscot in 2021, down from 1,500 in 2020, and no salmon have been counted in the St. Croix for over a decade.

While the return of alewives in significant numbers is great news for Maine's river and their ecology, the resulting increased connectivity can also spread the residual chemicals in the rivers. For example, the largest point source for mercury in the Penobscot comes from a defunct chemical plant in Orrington.²⁸³ Mercury is present both upriver and downriver from the site.²⁸⁴ Mercury is also present in the alewives that are now migrating upriver in significant numbers.²⁸⁵ Studies are ongoing to determine the extent to which mercury from the chemical plant is present upriver and the extent to which it is a hazard to humans consuming fish.²⁸⁶ However, it is absolutely clear that the current level of contamination does not allow for a healthy sustenance lifeways diet that might include fish and that the removal of residual chemicals from Maine's rivers is a process that will take many, many years.²⁸⁷



"We're finding the sea-run fish are just as, if not more contaminated than the freshwater ones, the bass and stuff. So the sea-run are just as poisoned as the ones in the river."

- 1st Penobscot Nation Citizen

Overfishing

For thousands of years before European settlers arrived in the Wabanaki homeland, the Wabanaki people lived on the resources provided by their environment. This does not mean, however, that the region was a steady-state, unchanging ecology where the land and waters would, year in and year out, produce enough food for the people provided that the people did not take too much. Rather, Maine's ecology changed dramatically over time, and Wabanaki culture had to adapt to that changing environment when the ice-age glaciers retreated, tundra gave way to forest, and forest composition went from spruce-fir to mixed hardwood-conifer.²⁸⁸ Similarly the animals that inhabited Maine changed over time; hunting for large (now extinct) mammals gave way to a more marine-based diet and finally, around 3,000 years ago and coinciding with cooler waters from the Labrador current, a diet with moose, beaver, marine mammals, and both marine and anadromous fish predominated. However, in the last 300 years, changes to the environment have been primarily anthropogenic, with change occurring much quicker than before and affecting a greater number of species.

In sum, the historical Wabanaki experience has been one of constant adaptation to changing conditions and of finding a balance between sustenance lifeways and the prevailing environment, but the rate of change since



Painting of Passamaquoddy people with fish. Courtesy of Donald Soctomah.

colonization has made adapting difficult. Initially the Wabanaki tried to accommodate a relatively small number of settlers, and both settlers and Wabanaki people tried to live on what the land and waters provided. But the number of settlers kept growing and with them came a commercial economy that was very different in nature from the traditional Wabanaki lifeways economy.

1. HISTORY

In the 1860s when Maine began to look seriously at the depleted state of its fisheries, overfishing was identified as one of the primary culprits.²⁸⁹



View of Thomas Martindale (1848-1916, far right), a prominent Philadelphia merchant and big game hunter, posing with a trout on the shore of the West Branch Penobscot River downstream of Fox Hole Rapids, possibly in Lobster Township or T4 R14 WELS. Other sportsmen and their guides stand in canoes along the riverbank. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

However, it is hard to pinpoint the extent to which overfishing was a factor in the decline of the sea-run fisheries because detailed catch records were not kept until the later 1800s. By that time many dams had already been built, and the industrial pollution that destroyed what was left of the fisheries began. Overfishing is also a relative term that depends upon the total amount of fish available to catch; if dams limited the available spawning grounds such that only 10% of the historic fish population remained, commercial fishing that at one time would not have depleted the population could devastate the remaining 10%. In essence, the problem of overfishing is an interactive one between the fishing itself and the other factors that limit the fish population.

In the 1760s, after the French and Indian War, European settlement in Maine grew dramatically and surpassed the pre-contact Wabanaki population.²⁹⁰ This increased

the demand for fish for local consumption and, in a commercial economy, produced an industry where fishing was not only for consumption and regional trade, but also for markets abroad.²⁹¹ “The harvest of alewives created economic opportunities throughout the northeastern United States as a principal bait in the current American lobster (*Homarus americanus*) and historical Atlantic cod (*Gadus morhua*) fisheries, for local consumption, and as an export to the West Indies to feed slaves and laborers.”²⁹² In New Brunswick, fish merchants on the St. John discovered that river herrings (alewives) were “better suited to West Indies trade than their saltwater kin because they kept better in heat.”²⁹³ There is little doubt but that overfishing from Maine’s commercial fishing industry was, in part, connected to “a flourishing trade in smoked salted alewives sent to the West Indies to feed the slave populations of the ‘sugar islands’ of the Caribbean.”²⁹⁴

If one looks at anadromous fish migrations solely from a commercial context, the one who fishes nearest the mouth of the river will have the largest yield and may not be concerned with

the resulting reduced opportunity upstream. When Wabanaki people were removed from prime fishing locations, those fisheries were opened to settlers and to commercial competition amongst the settlers. As early as 1788, “the town of Brunswick petitioned the Commonwealth of Massachusetts to outlaw

In the 1860s when Maine began to look seriously at the depleted state of its fisheries, overfishing was identified as one of the primary culprits.

weirs, seines, and dip nets and to stiffen the penalties for infractions on Merrymeeting Bay and the Kennebec River.”²⁹⁵ In the early 1800s, “the majority (more than 80%) of Maine’s alewife harvest took place” in Penobscot Bay and the lower reaches of the river, well below Penobscot Nation territory.²⁹⁶ Historian Harald Prins notes:

In the summer of 1820, when Penobscot tribal chief Lt. Governor John Neptune visited the governor of the newly-established State of Maine in Portland, he complains that “the white people take the fish in the river so they do not get up to us. They take them with weirs; they take them with dip-net. They are all gone before they get to us. The Indians get none. If you can stop them so that we can get fish, too, we shall be very glad.”²⁹⁷

The next year, “the chiefs of the Penobscot Nation petitioned the legislature of the state of Maine to outlaw the use of weirs in the Penobscot River because the ‘fish grow more scarce every year’.”²⁹⁸ That same year saw a similar petition from the Passamaquoddys asking Maine to pass laws to preserve and protect the fish in both branches of the St Croix River.²⁹⁹

Through the 19th Century, as more dams were erected and as pollution from industry increased, the dwindling fish stocks remained under pressure from commercial fishermen trying to maintain a livelihood. On the St. Croix, by the mid-1800s, “dam construction associated with the escalation of timber harvesting throughout the watershed began to block alewife runs, as

commercial fishing continued to remove large quantities of fish.”³⁰⁰ Overfishing was a major factor in the collapse of the sturgeon population in Merrymeeting Bay and contributed to the



Penobscot Reservation, Indian Island. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine.

demise of the salmon and shad runs.”³⁰¹ By 1870, Maine’s Commissioners of Fisheries were recommending substantial restrictions on catch size and season.³⁰² Although some laws were passed in this regard, enforcement proved almost impossible, as there were only four wardens in the entire state at that time (and dismissal had been recommended for one of them who was apparently breaking the laws himself).³⁰³ Although the fish from Maine’s rivers had sustained the Wabanaki people for millennia, the fisheries had been largely destroyed after only three or four generations of settlers.³⁰⁴

2. SITUATION IN 1980

By 1980, overfishing in Maine's rivers was no longer a major problem. New technologies had made ocean fishing more efficient, so fewer fish reached the rivers, and Maine had many laws and rules to regulate fishing including when they could be caught, how many, and where. However, anadromous fish were beginning to return to Maine's rivers as the CWA began to have some actual effect. Recreational seasons for salmon and shad recommenced after decades of almost no fish in the rivers, and alewives were returning in larger numbers.³⁰⁵ Hence, in 1980 there were no remaining commercial fisheries for anadromous fish in Maine except for a small and shrinking market for alewives,³⁰⁶ and even recreational opportunities were limited. The last commercial salmon industry on the East Coast of the United States closed in 1948.³⁰⁷ In 1978 only 400 salmon were caught in the Penobscot River.³⁰⁸ Essentially there were not enough fish for commercial river fisheries, and recreational fishing was highly regulated.³⁰⁹

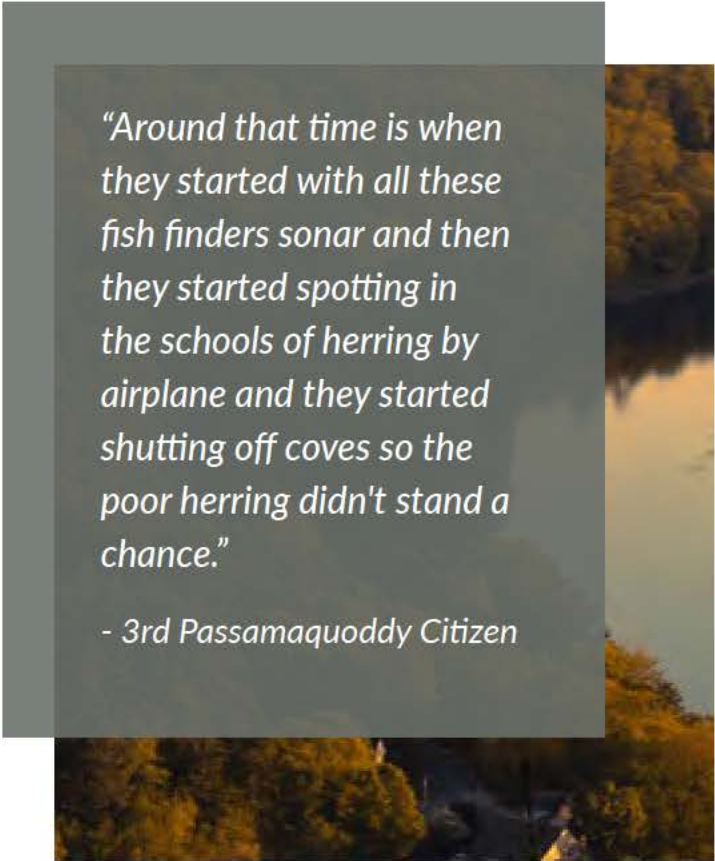
3. POLICY SINCE 1980

As noted above, since 1980 Maine's stated policy on anadromous fish has been one of restoration. The New England Fishery Management Council, building on the earlier work of Maine's Atlantic Sea-Run Salmon Commission, published an extensive restoration and species management plan for salmon in October 1987.³¹⁰ The plan, however, did not meet with success, and in 2000 NOAA listed Atlantic Salmon as an endangered species.³¹¹ This led to a series of new restoration plans, the most recent of which was published in 2019.³¹² The goal is no longer restoration of the historic salmon fishery, but rather simply to create a self-sustaining population, and neither commercial nor recreational

salmon fishing is allowed because of salmon's endangered status.³¹³

Similarly, the commercial shad fishery had closed by the 1940s and focused restoration efforts did not begin until 1984.³¹⁴ By 1998, Maine had closed all state waters to commercial fishing for shad and was closely regulating recreational fishing.³¹⁵ Currently, "the proportion of recreational anglers fishing for American shad is low and harvest of American shad is almost nonexistent."³¹⁶

The alewife population has responded much more favorably to the opening of historic spawning grounds after the removal of some of Maine's large downriver dams. Although NOAA considered placing alewives on the endangered or threatened lists in 2012 and again in 2019, they declined to do so.³¹⁷



"Around that time is when they started with all these fish finders sonar and then they started spotting in the schools of herring by airplane and they started shutting off coves so the poor herring didn't stand a chance."

- 3rd Passamaquoddy Citizen

One other species of diadromous fish warrants discussion here; the American eel, which is catadromous, meaning that it spawns in the ocean but lives most of its life in fresh water. Young eels return to Maine's rivers as "glass eels" or "elvers," which then transition through "yellow eels" during most of their life and finally to "silver eels" when they reach sexual maturity and return to the ocean to spawn.³¹⁸ Traditionally, eels were a part of the Wabanaki diet.³¹⁹ However, largely due to overfishing of yellow and silver eels in the 1970s and 1980s, the population was depleted, and in 2014 the silver eel fishery was closed by the Atlantic States Marine Fisheries Commission.³²⁰ "Although yellow eels were harvested for food historically, today's fishery sells yellow eels primarily as bait for recreational fisheries. Glass eels are exported to Asia to serve as seed stock for aquaculture facilities."³²¹

With the prices for elvers rising significantly because of the Asian market, a dispute developed between Maine DMR and the



Elvers. Photo by Joe Dana.

Wabanaki Nations over elver fishing.³²² The Passamaquoddy Joint Tribal Council issued a comprehensive American eel management policy in 2013, allowing limited harvesting of yellow and silver eels for sustenance and ceremonial purposes, but allowing elver fishing for commercial purposes, again within strict guidelines.³²³ An agreement between Maine and the Passamaquoddy was reached in 2016 and then passed into law by the legislature.³²⁴ The State and the Passamaquoddy continue to manage the elver harvest within strict limits.³²⁵

"So again, it goes back to the individual take and it doesn't address any of the food and ceremonial type of practices that we have, so it limits us. For freshwater, it limits the amount you can take to provide for other families or to give to somebody else and I guess that's probably conservation based, but sometimes it goes against the traditional practices of tribal sustenance harvest."

- 2nd Passamaquoddy Citizen

Although the dispute about the elver harvest does not directly fall within the scope of this study, the dispute highlights the difference between Maine's restrictive definition of sustenance as being limited to personal or household consumption and the alternative "moderate livelihood" definition from the Canadian Supreme Court's Marshall decision.

4. CURRENT SITUATION

Overfishing is not currently a major problem for Maine's diadromous fish populations, as fishing in Maine waters is either prohibited or regulated. (The issue of ocean fishing for Maine's diadromous species is discussed below). Rather, the current issue is how to restore or, at the least, establish conditions that allow a self-sustaining population. Atlantic salmon have been listed as an endangered species since 2000 (extended in 2009), and detailed restoration plans were published in 2005 and 2019.³²⁶ No recreational or commercial fishing for Atlantic salmon is allowed. Fishing for shad in Maine has been limited by law since 1998 to recreational fishing by hook and line with a catch limit of two per day; a detailed shad restoration plan was published in August 2020.³²⁷ Although alewives are not listed by NOAA as either endangered or a species of concern, Maine also has a sustainable fishing plan specifically for alewives.³²⁸

"[T]he restoration of single species cannot be viewed independently, and ecosystem-based management requires that forage fish be included in predator restoration planning."³²⁹ As an example, success in the restoration of coastal striped bass populations, but without similar restoration of their historic forage fish (alewives), resulted in "negative impacts on salmon and other anadromous fish through predation."³³⁰

"I think it's the department of marine resource, they got so many regulations on alewives, but they're regulating it because they're looking at it again as a resource or a monetary value, so they're looking at the alewives as a monetary value. So the marine resources, to my knowledge don't base anything on more of like a lifestyle like we are, like a traditional lifestyle. I'm not making money, I'm using it, you know, for sustenance, you know, for gardens to do what we always did to make the soil better and what not."

- 2nd Penobscot Nation Citizen

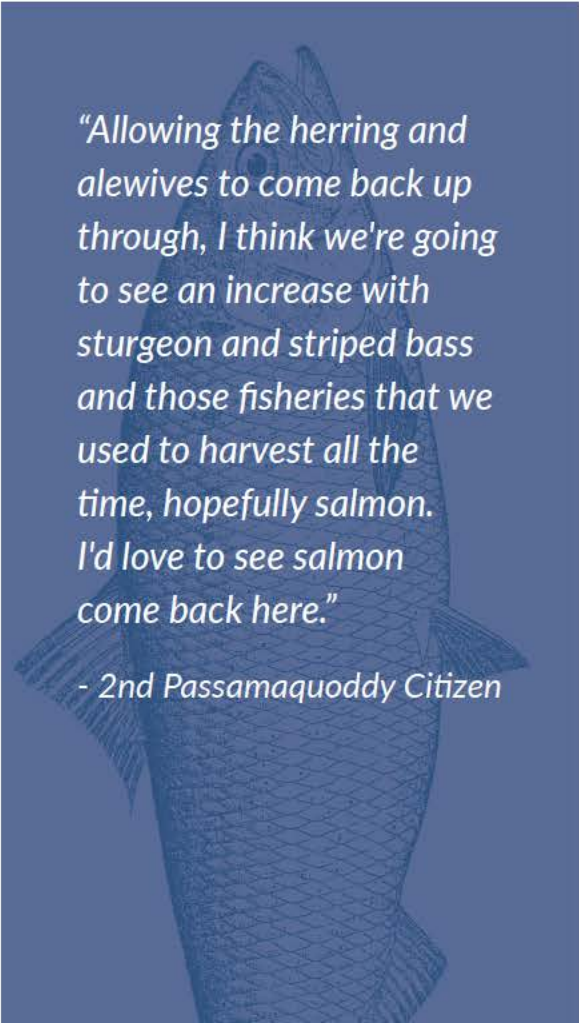
Alewives are forage fish for many species and once ran in Maine's rivers in the tens of millions. "During spawning runs—especially at sites of constricted passage—alewives are easy and predictable targets for human, fish, and bird predators."³³¹

In systems that have large anadromous fish populations, the marine-terrestrial connection is important for ecological functioning, which suggests that lost connections between land and sea result in impaired ecosystems. Furthermore, several of the declining anadromous species are important forage fish,

whose loss may leave only a small portion of the original prey base and may limit nutrient exchange between freshwater and marine habitats.³³²

Interaction between Non-Native and Native Species

In our interconnected world, we are often warned about various “invasive species,” such as Japanese Knotweed or the Emerald Ash Borer, or that climate change is bringing us in contact with unfamiliar species that previously lived to Maine’s south such as deer ticks or the browntail moth caterpillar. If these invaders find a unique ecological niche or an unexploited food source and as a result expand rapidly, they may have no natural predators, and/or they may prove harmful to native/existing species of plants or animals (including humans). In short, whether as predators or competitors, invasive species may upset a tenuous natural balance.



“Allowing the herring and alewives to come back up through, I think we’re going to see an increase with sturgeon and striped bass and those fisheries that we used to harvest all the time, hopefully salmon. I’d love to see salmon come back here.”

- 2nd Passamaquoddy Citizen

Pre-contact Maine did not have a static environment, but rather was an ecology in loose balance that could self-correct over time; it was resilient and had the capacity to recover from stress.³³³ With colonial settlement, the loose balance in Maine’s rivers and lakes was profoundly upset by dams that blocked spawning grounds and interrupted marine and freshwater connectivity, by pollution that poisoned the waters, and by overfishing to near extinction. In addition, new species of fish were introduced that inevitably altered the residual ecological balance. Some introductions were inadvertent, but others were welcomed and/or facilitated as a matter of Maine policy.

In 1867 when the Maine legislature first adopted as policy “the restoration of sea-fish to our lakes, and their tributary streams,” the legislative Resolve included a second policy; “the introduction of new varieties of fresh water fish.”³³⁴ There is no indication, given the level of scientific understanding at the time, that anyone thought these two policies might be in conflict. The Legislature specifically recommended that “the spawn of the black bass” be released in Maine waters.³³⁵ Pursuant to that directive, in 1868 smallmouth bass were stocked in Cochnewagon Pond, Phillips Lake, Sebasticook Lake, and Cobbosseecontee Lake.³³⁶ Largemouth bass followed soon thereafter. Currently there are self-sustaining bass populations in over 600 Maine lakes and ponds, primarily in the southern two-thirds of the state, and in many rivers. Other non-native fish have been introduced into Maine’s waters, both wittingly and unwittingly, including pike, muskellunge, and brown and rainbow trout; while native lake trout (togue), smelt, and land-locked salmon have been stocked in Maine waters where they are not native.³³⁷ The history of non-native fish species in Maine, and of native species in non-native settings, is older than the state itself. Chain pickerel first came into Maine 1819, while as recently as 1966

land-locked alewives were stocked in Echo Lake on Mount Desert Island.³³⁸ At some point, the US Fisheries Bureau apparently released 114,700 Pacific Ocean Silver Coho Salmon into the St Croix, although any returns have gone unrecorded.³³⁹



View of men fishing from boats and from a rock on the Kennebec River rapids upstream of the falls in Stetson-town Township. View looks southwest. Courtesy of the Maine Historic Preservation Commission, Augusta, Maine.

When a non-native species turns out to be successful in a new environment, there are often unpredictable ecological effects. As an example, smallmouth bass, which were probably introduced into the St. Croix watershed before 1900, forever changed the balance of fish species in that watershed. It is likely that their “introduction either directly or indirectly reduced diversity of small-bodied fish species, created more homogeneous fish communities, increased competition among small-bodied fish, reduced energy flow to native game fishes, altered planktonic and benthic communities, and potentially changed habitat complexity.”³⁴⁰ Although the debate about the resulting ecological changes was focused on a “bass versus alewives” theme,

the most salient long-term result of the bass introduction now appears to be the failure of salmon restoration efforts in the watershed.³⁴¹

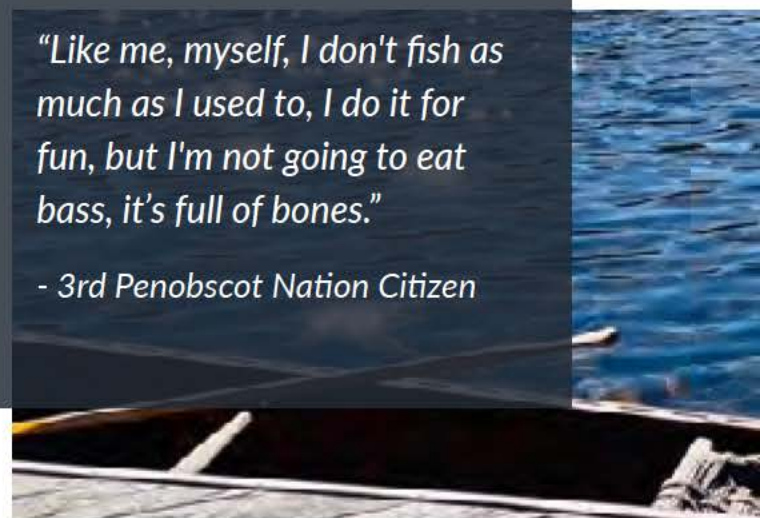
While most Maine conservation non-profits are focused on habitat, the number one threat to our wild native fish is nonnative fish introductions, not habitat degradation. To be fair, while dams are the primary cause of the decline in endangered Atlantic salmon and other anadromous fish, nonnative fish introductions have compromised more inland native fish populations than anything else. Unlike dams, most of which were constructed generations ago, many nonnative fish introductions are relatively recent events, and it is still happening.³⁴²

And once non-native fish are here, their presence can give rise to a constituency in favor of keeping them. “Like most bass introductions, the ecological consequences of introduction were overshadowed by the popularity and economic benefits of the fishery that developed in the drainage.”³⁴³

“Nonnative fish introductions come in three primary flavors: Deliberate acts of ‘bucket biology,’ accidental releases from the use of live fish as bait, and state-sponsored stocking.”³⁴⁴ Private stocking is illegal, as is the use of live bait in many places. However, “[o]nce an

“Like me, myself, I don't fish as much as I used to, I do it for fun, but I'm not going to eat bass, it's full of bones.”

- 3rd Penobscot Nation Citizen



invasive aquatic species has established in a body of water, it is extremely difficult for it to be eradicated. These efforts are costly, often risky, and not always successful.”³⁴⁵ While many stockings, whether purposeful or accidental, may not harm anadromous fish and could even be advantageous, they can also be harmful.

In 1981, with new fishways at the first 3 dams on the St. Croix reopening access to spawning habitat, and after pollution treatment facilities were installed for the Woodland papermill and the wastewater discharges from river communities, it seemed that the river was ripe for salmon restoration.³⁴⁶ Over the next ten years, from 1981 to 1991, a federal government funded re-stocking effort was made; 1 million fry, 1/4 million parr, 1/2 million smolt, and 444 adults were released into the river.³⁴⁷ The results were minimal, with less than 2,500 returning adults counted during that entire timespan. Local restoration efforts continued thereafter with 200,000 fry, 1/2 million parr, 1/4 million smolt, and 1274 adults stocked between 1992 and 2006. Yet the returns were even less, with only 559 adult salmon counted, a number that barely exceeded the number of aquaculture escapees. In 2006 salmon restoration efforts in the St. Croix were abandoned because “[s]mallmouth bass have entirely adapted to salmonid habitat, displacing other species, to become the river’s primary fish.”³⁴⁸

Similar problems have been identified in the Penobscot “with smallmouth bass now found throughout the mainstem, in the West Branch up to at least Nesowadnehunk Falls, and throughout the East Branch as well as in Wassataquoik Stream and Seboeis River up to the first natural barrier.”³⁴⁹ Small-mouth bass have also affected the smaller Downeast rivers, and large-mouth bass have been found

in the Dennys River.³⁵⁰ And unfortunately, the problem is not just bass. “The Kennebec River and its primary Atlantic salmon spawning tributary, the Sandy River, are being actively



“The thing is there's mostly bass and that's really not our traditional food here. That's an invasive. They were introduced to the system a long time ago and that's another impact.”

- 1st Penobscot Nation Citizen

stocked with nonnative browns. And nonnative landlocked salmon are found throughout the Penobscot system, as well as some Downeast rivers.”³⁵¹ According to NOAA,

Prior to 1800, the resident riverine fish communities in Maine were made up of native species. Today, Atlantic salmon coexist with a diverse array of nonnative resident fishes, including brown trout, largemouth bass, smallmouth bass, and northern pike. The range expansion of these non-native species is of particular concern, because they often require similar resources and can exclude salmon from preferred habitats, reduce food availability, and increase predation.³⁵²

Both native and non-native fish that prey on juvenile salmon have increased in numbers, which along with decreased abundance of alternative prey “have likely increased predation mortality on juvenile Atlantic salmon, especially at the smolt life stage.”³⁵³

The net effect is a reduction in the number of adult salmon that survive to return and spawn. NOAA is now conducting a “field study to assess the effect of predation by small-mouth bass on salmon smolts in the impoundments of

hydroelectric dams, as well as the development of a spatial model that will quantify the degree to which predation and competition by bass in rearing habitat may constrain smolt production.”³⁵⁴

Theoretically, the solution is the natural balance of the anadromous fish migrations:

*A fully functioning riverine ecosystem (i.e., an ecosystem in which the co-evolved diadromous species are abundant and resilient) is essential to the recovery of Atlantic salmon. Accumulating scientific evidence suggests that the co-evolved suite of diadromous fish can provide benefits to the Gulf of Maine DPS of Atlantic salmon by providing important ecological services at key points in the Atlantic salmon life cycle. These services include being prey for salmon, “conditioning” rearing and spawning habitats, serving as alternative prey for predators of salmon, and delivering nutrients and energy from the marine environment to freshwater habitats. Passage improvements and active management of other species are therefore important for the recovery of Atlantic salmon and their ecosystems.*³⁵⁵

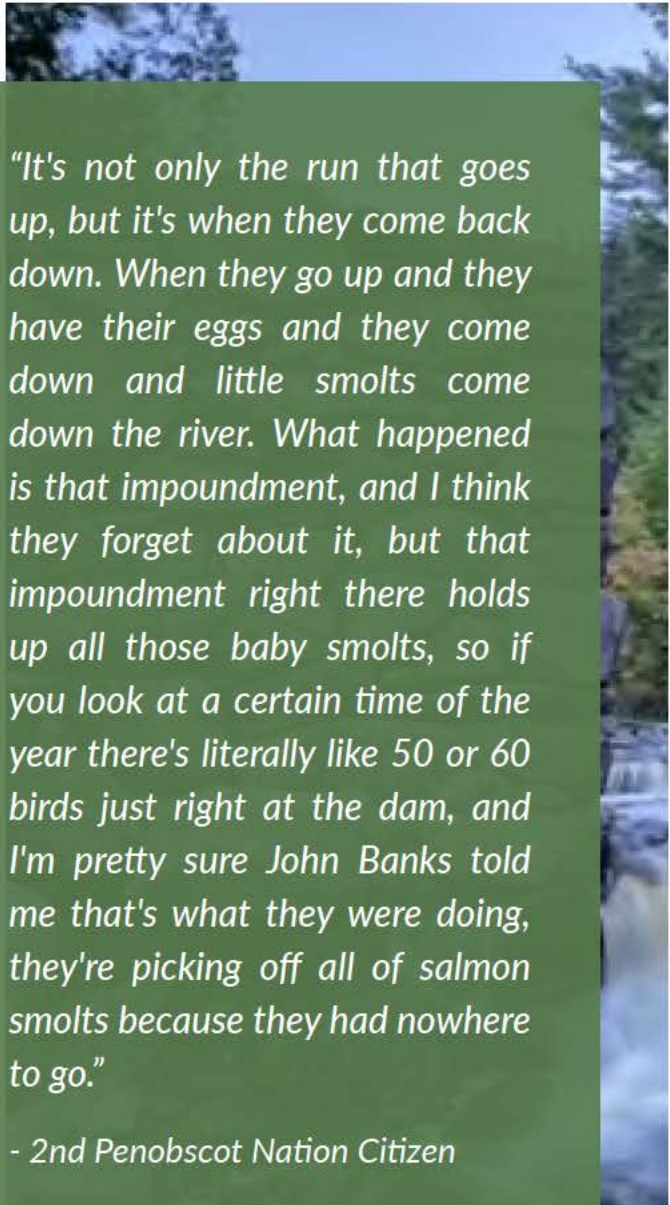
The DIFW has extensive stocking programs for brook trout, brown trout, landlocked salmon, and splake.³⁵⁶ The DMR stocks salmon and some alewives and has started a rainbow smelt stocking program.³⁵⁷ The DIFW’s recent draft 2021–2035 Statewide Fisheries Management Plan includes a discussion about stocking and about non-native species, many of which were originally stocked by the state, but concedes that “[e]ven though the



Fish restoration. Photo by Chris Johnson.

presence of introduced fish species can compromise or displace native species, discussions on the topic are complicated by the popularity of sport fisheries created by such introductions.”³⁵⁸ Since the DIFW manages only freshwater fisheries, while the DMR manages the sea-run fisheries, the draft plan does not seriously address coordination with the DMR’s efforts or the effect of non-native species on the sea-run fisheries. Some have accused the DIFW of thinking “that they can do a better job than Mother Nature of managing our resources,” but the fact remains that 150 years of non-native fish introductions and aggressive stocking of native fish into new waters has resulted in a collective fishery map that bears little resemblance to what once was.³⁵⁹

It is hard to tell, among all the other policy choices, the extent to which non-native species have been a factor that contributed to the decline of Maine’s sea-run fisheries, but it has certainly become clear, in view of the St. Croix experience with bass and salmon, that non-native fish are a significant adverse factor in programs for the restoration of sea-run fisheries.



“It’s not only the run that goes up, but it’s when they come back down. When they go up and they have their eggs and they come down and little smolts come down the river. What happened is that impoundment, and I think they forget about it, but that impoundment right there holds up all those baby smolts, so if you look at a certain time of the year there’s literally like 50 or 60 birds just right at the dam, and I’m pretty sure John Banks told me that’s what they were doing, they’re picking off all of salmon smolts because they had nowhere to go.”

- 2nd Penobscot Nation Citizen

State Policy on Tribal Status

Any serious study of the effect of State fishery management policies on the quality and quantity of traditional tribal fish stocks and sustenance lifeways practices must look both at the specific reasons for the decline of the fisheries and at the policies that gave rise to, or allowed, those reasons to exist. Wabanaki people frequently protested State policies that affected fish, but until the land claims case had little if any participation in shaping

policy. The extent to which Wabanaki voices went unheard or were not considered relevant was also a function of State policy.

Much has been written about the litigation in the 1970s, the land claims settlement and its legal implementation, the ongoing litigation on tribal status that continues through the present, and the legislative initiatives on the same issue. However, Maine’s policy on

tribal status developed in a much less visible way for 150 years before the 1970s litigation began, and that policy was clearly a factor in how the state viewed, or overlooked, Wabanaki sustenance lifeways fishing concerns.

Before the United States became a country, the Wabanaki were considered sovereign nations with political and military power. The treaty in 1725 that ended a 3-year war between the Wabanaki Confederacy and the British reads like a peace agreement negotiated between nations that respected both the sovereignty and the military capacity of each.³⁶⁰ In fact the very first treaty negotiated in the name of the newly minted United States of America was the Watertown Treaty of 1776 between “the Governors of the State of Massachusetts Bay, and the Delegates of the St. John’s & Mickmac Tribes of Indians.”³⁶¹ Its purpose was to enlist those Wabanaki Nations as American allies in the

Before the United States became a country, the Wabanaki were considered sovereign nations with political and military power.

revolution against the British. They were to provide 600 Wabanaki soldiers and promised “to use their utmost influence with the Passamaquoddy, and other Neighboring Tribes of Indians to persuade them to furnish and supply for the said service as many strong of their respective Tribes as possible”³⁶²

Wabanaki soldiers fought with the Americans in a number of engagements in that war including a contingent of “Maliseet, Passamaquoddy, and Penobscots” at the Battle of Machias, and whose participation was crucial in the American victory.³⁶³ For Wabanakis, their involvement was to protect their homeland, as well as their hunting and fishing rights.³⁶⁴ Part of the negotiations for their involvement in war were trade facilities referred to as truck-houses, which were described as providing “necessaries” for living by means of the trade in wildlife.³⁶⁵

By the time Maine became a state in 1820, both the power relationships between settlers and Wabanaki and the tone of that relationship had changed drastically. At the ceremonial signing of the 1820 treaty between Maine and the Penobscots, wherein Maine accepted the obligations that Massachusetts had made to the Penobscots, Captain Lolar, speaking on behalf of the Penobscot Tribal Council, said;

Brother.—The Good Spirit who made and placed the red men here, before white men came, gave us all the land from whence the waters run into the Penobscot. He caused the forests to abound with game, and the rivers with fish, for our use and subsistence- we then were contented and



“It’d be nice to have a more active role in the stewardship of these species that we still love.”

- 1st Maliseet Citizen



Tomah Joseph. Photo by President Franklin Delano Roosevelt.

*happy. When the white men came over the great waters to our country, we received them as friends and brothers: we then were many and strong: they few and weak: we gave them land, and permitted them to live peaceably among us, and have remained their friends. The white men are now very strong; we are weak, and now want them to be our friends.*³⁶⁶

Despite the Wabanakis involvement in the Revolutionary War as allies and previous treaties declaring them sovereign nations, the new State of Maine would soon redefine

the legal status of the Wabanaki nations. By 1850, in the case of *Moor v. Veazie*, 32 Me. 343 (1850), the Maine Supreme Court opined that the Wabanakis were among the “small tribes or remnants of tribes yet denominated tribes, which had before that time and have ever since continued to be under the control and guardianship of a State and were without power to carry on commerce or trade, except by permission and under the regulation of the State laws.” Twenty years later, in the case of *Penobscot Tribe v. Veazie*, 58 Me. 402 (1870), the Maine Supreme Court dispensed with the doctrine of aboriginal title to land by saying,

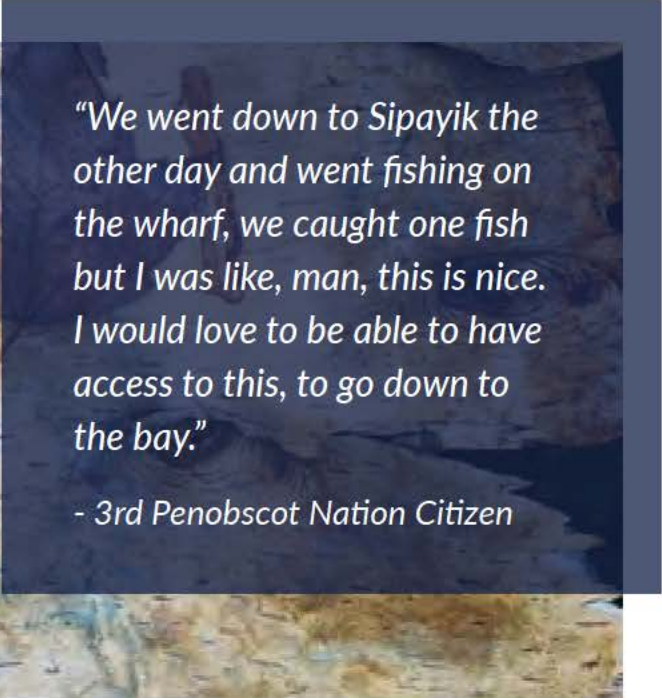
“when the title to any particular tract of land has been called in question, in the courts of justice, no such doctrine has been admitted. The courts have uniformly held that the title of the government is superior to that of the aborigines.”

By 1892, the Maine Supreme Court was able to convince itself that Wabanaki people had no rights or privileges other than what the Maine Legislature provided and that the original treaties no longer had any independent existence:

Though these Indians are still spoken of as the ‘Passamaquoddy Tribe,’ and perhaps consider themselves a tribe, they have for many years been without a tribal organization in any political sense. They cannot make war or peace; cannot make treaties; cannot make laws; cannot punish crime; cannot administer even civil justice among themselves. Their political and civil rights can be enforced only in the courts of the state; what tribal organization they may have is for tenure of property and the holding of privileges under the laws of the

*state. They are as completely subject to the state as any other inhabitants can be. They cannot now invoke treaties made centuries ago with Indians whose political organization was in full and acknowledged vigor.*³⁶⁷

These cases show that during the course of the 19th century, starting at a point when the Wabanaki, the United States, and Maine were dealing with each other as separate sovereign entities (even if, from Maine’s point of view, not as equals), by the end of that century Maine had not only dispensed with the concept of aboriginal rights to land and resources, it had questioned the very existence of the Wabanaki Nations themselves. By 1900, in Maine’s view, its relationship to the Wabanaki Nations was simply that of a guardian to a ward. Wabanaki people were not given the right to vote until 1954 when the Maine Constitution was amended to so allow.³⁶⁸ And for much of the 20th century, the Penobscot and Passamaquoddy “lived in abject poverty, were viewed as wards of state government, and existed in an unwanted, paternalistic relationship with the State of Maine government.”³⁶⁹



“We went down to Sipayik the other day and went fishing on the wharf, we caught one fish but I was like, man, this is nice. I would love to be able to have access to this, to go down to the bay.”

- 3rd Penobscot Nation Citizen

The situation changed dramatically in the 1970s. In June 1972, the Passamaquoddy filed a lawsuit against the federal government that led to federal recognition of the Passamaquoddy and Penobscot Nations (and later the Maliseets) and to the federal lawsuit that was eventually settled in 1980 with federal and state legislation.³⁷⁰ These two pieces of legislation, MIA and MICSA, established a different framework for Maine’s policy regarding tribal status and the Maine/Wabanaki relationship, although many points of contention remained. Fortunately, or unfortunately, any conflicts since that time have been dealt with more through litigation than negotiation.³⁷¹ Nevertheless, since 1980 the State has increasingly recognized,

or been compelled to recognize, Wabanaki interests when making policy regarding Maine's rivers and fisheries.

Maine's relationship with the Wabanaki Nations and their status will continue to evolve. Two significant challenges in 2022 to existing Maine/Wabanaki relationships proved unsuccessful but suggest that the power imbalance may continue to shift in the future. In 2021-22, the Maine Legislature considered LD 1626, a bill that, if it had been enacted, would have substantially amended the MIA.³⁷² Although the bill ultimately failed to pass, it "passed to be enacted" in the Maine House, and died in the Senate when the Legislature adjourned Sine Die.³⁷³ Meanwhile, although the federal litigation in *Penobscot Nation v. Frey*, the case intended to determine "whether the Penobscot Reservation encompasses the Main Stem of the Penobscot River", ended when the U.S Supreme Court decided not to hear an appeal, the question of Penobscot rights in the river remains a live issue.³⁷⁴ Regardless of the outcome of specific pieces of legislation and litigation, Maine now clearly sees the Wabanaki Nations as necessary parties in policymaking when sustenance fishing is affected.

Factors beyond the Control of the State or the Tribes

Although this report is about Maine State policies that have affected, for better or for worse, lifeways fishing opportunities for Wabanaki people, there are several additional factors over which Maine has had little or no control that either contributed to the decline of



Rally in Augusta in support of Clean Drinking Water for the Passamaquoddy Tribe. Photo by Rachel Bell.

the sea-run fisheries or now impede restoration. The State of Maine may not have the power to regulate or control these factors but must take them into account when considering policy in areas that Maine is able to control.

1. CANADIAN POLICY/ INTERNATIONAL AGREEMENTS

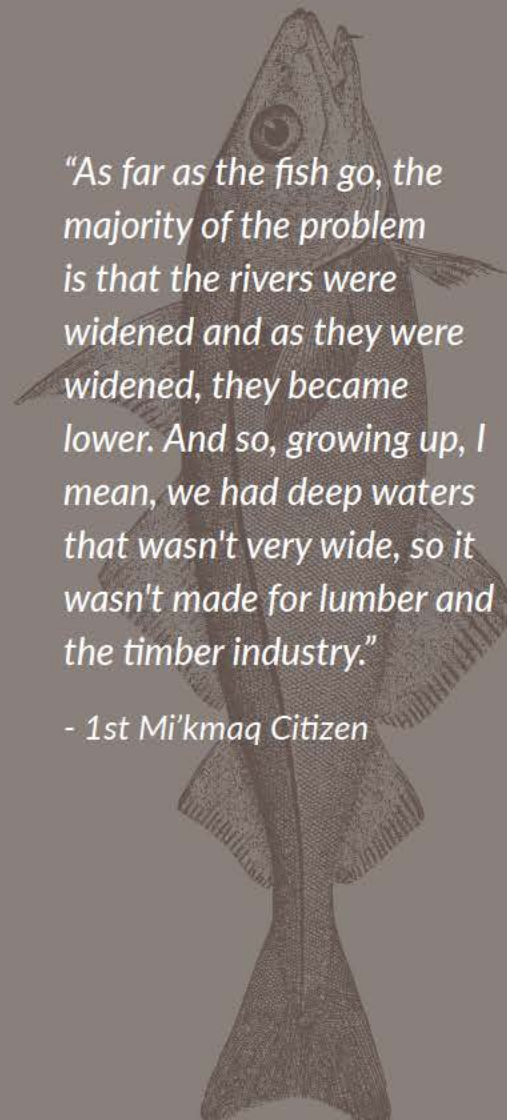
Canada shares a long border with Maine, the first 71 miles of which follows the St. Croix River north from Passamaquoddy Bay, and the two countries share responsibility for the river. Although they have a long history of cooperation as regards the St. Croix, including recent restoration efforts, the same pattern of historical development with dams and pollution had the same result for the St. Croix anadromous fisheries as it did in other Maine rivers.

Maine and New Brunswick were actively cooperating on the St. Croix in the late 1860s when Maine first adopted a policy favoring restoration of the sea-run fisheries. As an example, Maine's Commissioners of Fisheries noted in their 1869-70 report that "[I]n the fishery law of Canada, there is a provision against the throwing of mill rubbish into any stream frequented by fish. There is also a special law of Maine forbidding such rubbish to be thrown into the Saint Croix River."³⁷⁵ However, neither country fully enforced those laws, and mutual attempts in the 1880s and 1890s to revive the St. Croix salmon runs through stocking were unsuccessful due to the "questionable efficiency and maintenance" of fishways and the level of pollution from sawmills and tanneries.³⁷⁶

In 1909, the United States and Canada signed the Boundary Waters Treaty (BWT) as a framework for boundary water use and conservation for all waterways on the U.S./Canada border.³⁷⁷ That treaty created the International Joint Commission (IJC), which has the authority to approve projects that affect water levels and flows and to investigate transboundary issues, taking into account drinking water, commercial shipping, hydroelectric power generation, agriculture, ecosystem health, industry, fishing, recreational boating and shoreline property.³⁷⁸ The BWT stipulates that boundary waters "shall not be polluted on either side to the injury of health or property on the other."³⁷⁹ And under Article III of the BWT, the IJC has licensing authority for "uses or obstructions or diversion, whether temporary or permanent, of the boundary waters to either side of the line, affecting the natural level or flow of boundary waters on the other side of the line," including dams.

Despite this authority, the IJC initially did little to impact either the dams on the St. Croix that prevented fish passage or the industrial pollution that poisoned the water and the fish. For example, in 1915 the IJC issued an opinion that the Grand Falls Dam had been built without proper authorization from the United States Congress, but then approved the project anyway, after the fact.³⁸⁰ A 1918 IJC study found that while there was industrial and wastewater pollution in the St. Croix sufficient to affect health and property, the problems were "local" in nature, and hence the IJC did nothing:

The pollution complained of in the case of the pulp mills was chiefly due to chemical waste resulting from the manufacture of pulp. This form of pollution is also injurious to fish life and the fishing industry. The pollution from sawmill and pulp-mill wastes has in every instance transboundary effects detrimental to property and health.



"As far as the fish go, the majority of the problem is that the rivers were widened and as they were widened, they became lower. And so, growing up, I mean, we had deep waters that wasn't very wide, so it wasn't made for lumber and the timber industry."

- 1st Mi'kmaq Citizen

*Contamination from these sources is at present so limited and local in its extent that the commission did not regard it as of sufficient moment from an international standpoint to call for any extensive scientific investigation. Unquestionably in the future, unless preventive measures are taken, pollution from all these wastes will have a very injurious effect . . .*³⁸¹

The IJC took essentially the same position on municipal waste disposal; that it was a local rather than an international problem and that responsibility lay with local governments. On this subject, the 1918 report said that “while conditions exist in many instances which are in substantial contravention of treaty obligations, their immediate local effect is much more serious than their effect upon the stream as a whole. Remedies sufficient to meet the local conditions would be ample to meet the international situation.”³⁸²

The IJC has taken a more proactive role since the 1960s. In 1962 it created the International St. Croix River Watershed Board (SCRWB) “to report on compliance with international water quality objectives and on pollution abatement efforts of industries and municipalities along the river.”³⁸³ The SCRWB “reports to the IJC on compliance with water quality objectives and ensures that four privately owned dams are operated consistent with conditions set by IJC Orders of Approval.”³⁸⁴ The SCRWB’s mandate was broadened in 2007 “to proactively assist in preventing and

resolving disputes regarding the boundary waters of the St. Croix River by working with stakeholders within the watershed.”³⁸⁵ In this new role, the SCRWB helped resolve the St. Croix “bass versus alewives” controversy by taking a conciliatory role with the governments and various other parties involved and by issuing cogent reports on the science behind the fluctuating bass population.³⁸⁶

The SCRWB’s efforts have continued in this vein, and it recently produced reports on water quality trends from 2008 to 2019 and on the removal of obstructions to fish passage including the practical alternatives and the effect on specific species.³⁸⁷ The IJC has been working with and consulting with the Passamaquoddy Nation since 2013. They



St. Croix Paper Mill, Woodland, Maine. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine

funded fish tracking and counting of alewives and fish ladder effectiveness and provided funds through the International Watersheds Initiative for the examination of fish passage

needs at the Woodland and Grand Falls dams.³⁸⁸ The U.S. and Canada will obviously continue to have joint authority over the St. Croix watershed, and although Maine and the Wabanaki Nations are interested parties in any decisions made, Maine is not in full control of policy on sea-run fish in the St. Croix, but must instead adapt its policies to those agreed by the federal governments.

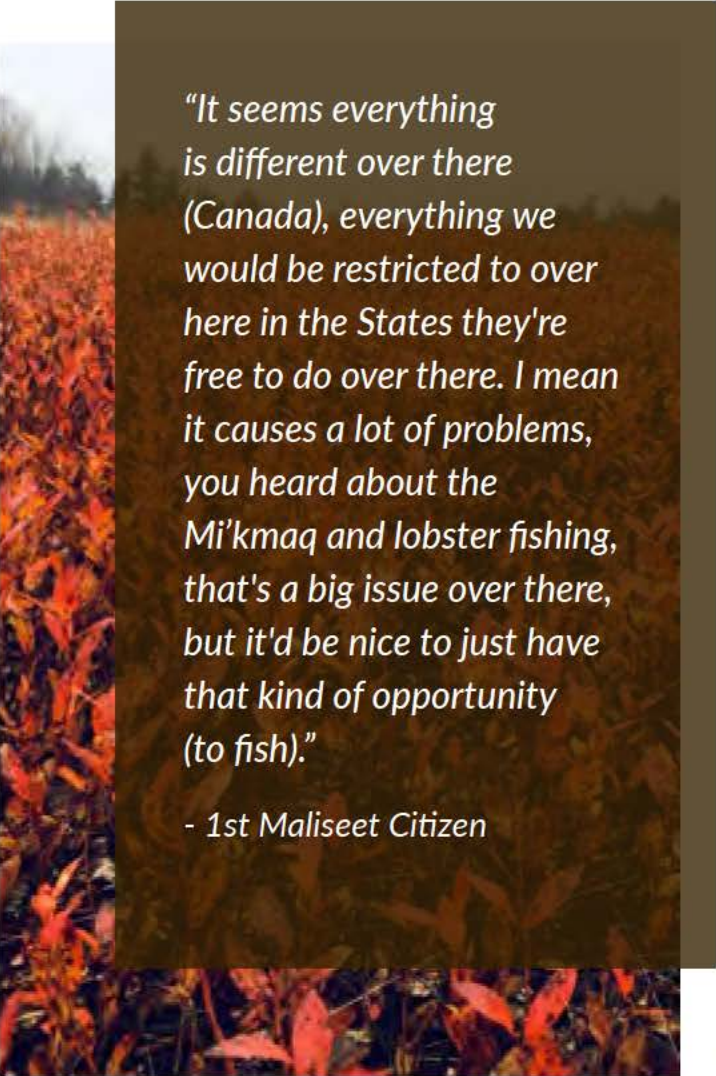
On Wabanaki lifeways fishing rights, including in the St. Croix and St. John watersheds, Canada and its First Nations have a different relationship than Maine has with the Wabanaki Nations. Over twenty years ago, the Canadian Supreme Court decision in *R. v. Marshall*, 3 SCR 456 (1999), held that sustenance fishing rights for First Nations must be “construed in the

modern context as equivalent to a moderate livelihood” rather than just fishing for personal and family consumption.³⁸⁹ The court’s ruling hasn’t been fully realized, as the Canadian Government remains in negotiations with its First Nations including the Maliseet First Nations and the Peskotomuhkati Nation at Skutik.³⁹⁰ Canadian law continues to evolve in ways that could affect the Wabanaki Nations. For example, in 2021, the Canadian Supreme Court ruled that Natives whose territory straddles the international border can claim Aboriginal rights in Canada, even if they aren’t residents or citizens of Canada.³⁹¹

In addition to the relationship between Canada and the USA, there are international agreements and bodies concerned with anadromous fish that can affect Maine policy on sea-run fish. For example, the Convention for the Conservation of Salmon in the North Atlantic Ocean in 1984 led to the formation of the North Atlantic Salmon Conservation Organization (NASCO), which obligates Canada, the United States, and four other governments, along with the European Union, to co-operate to conserve wild Atlantic salmon.³⁹²

2. INTERNATIONAL COMMERCIAL FISHING PRACTICES

The slow, episodic reopening of Maine’s rivers and the reduction of the most noxious pollutants has led to a significant return of anadromous fish, but that return has been uneven, both across the different species native to Maine’s rivers and even from river to river.³⁹³ Alewives have seen a surprising resurgence, and while shad returns have been at least encouraging, striped bass and sea lamprey numbers have been poor, and salmon have been almost non-existent.



“It seems everything is different over there (Canada), everything we would be restricted to over here in the States they're free to do over there. I mean it causes a lot of problems, you heard about the Mi'kmaq and lobster fishing, that's a big issue over there, but it'd be nice to just have that kind of opportunity (to fish).”

- 1st Maliseet Citizen



Underwater picture of Largemouth Bass, a fresh water fish.

As with most ecological problems, many factors are at play, and each factor may affect each species differently. For example, some fish can thrive at higher temperatures, while salmon require cooler water. Dams were the most important factor in the decreasing salmon population in Maine's rivers, but this was not only from the obstruction of spawning grounds. The higher water temperatures in impoundments and pollution also played roles. Now, however, the primary factor impeding recovery is a factor over which Maine has little control. "Decreased marine survival is the primary factor driving the decline of Atlantic salmon populations throughout their southern range and impedes recovery of Gulf of Maine populations."³⁹⁴ "Our ability to increase the number of spawning adults partially depends on understanding more about where they go and what they do while at sea, including time spent around Greenland."³⁹⁵

Salmon from Maine's rivers spend their time in the ocean in an area that extends from the Maine coast past Canada to Greenland.³⁹⁶ "One source of marine mortality is the mixed

stock fishery in West Greenland. Contrary to many years of scientific advice that there be no fishery off West Greenland, Greenland continues a small Atlantic salmon fishery. International efforts to control and better manage foreign fisheries to reduce the impacts of these fisheries on Atlantic salmon of U.S. origin occur primarily through the North Atlantic Salmon Conservation Organization (NASCO)."³⁹⁷

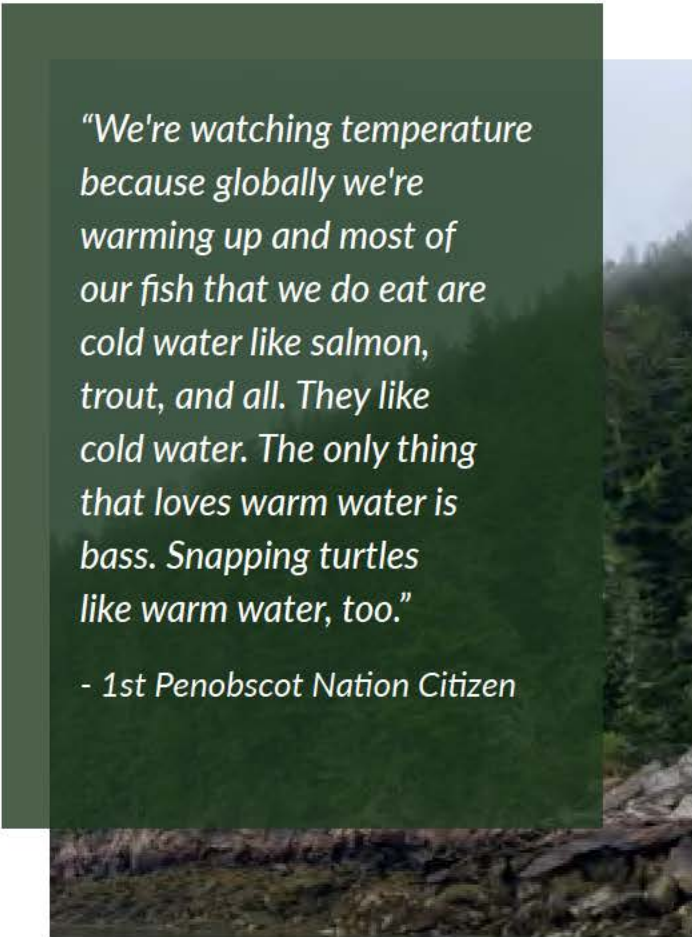
Prior to the 1960s, commercial fishing for salmon in the North Atlantic was at a national level.³⁹⁸ International commercial fishing operations intensified in the 1970s off West Greenland and in the Northern Norwegian Sea. Falling fish counts resulted in the United Nations Convention on the Law of the Sea in 1982 and, the following year, in the Convention for the Conservation of Salmon in the North Atlantic Ocean.³⁹⁹ These agreements sharply reduced the commercial exploitation of salmon at sea, which had been a "major factor in population decline" throughout the North Atlantic.⁴⁰⁰ The Convention essentially created a large protected zone beyond 12 nautical

miles from coastlines, which effectively ended the salmon fisheries for the signatories to the Convention, including in the northern Norwegian Sea, which at its peak in 1970 harvested almost 1,000 tonnes of salmon.⁴⁰¹ In the late 1980s and early 1990s, NASCO also addressed salmon fishing in international waters by vessels registered to non-NASCO parties. There have been no reports of such activities since.⁴⁰²

Nevertheless, Greenland's commercial salmon industry remains an ongoing source of marine mortality.⁴⁰³ "Since 2002, the scientific advice has been that there be no fishery off West Greenland given the stated management objectives for the stock complex. However, Greenland has allowed a commercial Atlantic salmon fishery to operate annually."⁴⁰⁴ This remains an issue under negotiation through NASCO, with a recent agreement signed in 2018. While Greenland's salmon harvest only affects a small percentage of Maine fish, any percentage is important because Maine has so few native salmon left. On the other hand, Maine's fish counts are not a significant concern in Greenland, which has, so to speak, its own fish to fry. Since 1980, Greenland has been moving towards independence from Denmark, and its salmon fishery is important both for commercial/trade purposes and for feeding its population. In fact, Greenland was the first nation to leave the European Union (although not the last), which it did in 1985 largely because of EU policy on, and regulation of, member states fisheries.⁴⁰⁵ As Greenland moves towards full independence, its finances will increasingly depend upon natural resources, primarily fisheries and minerals.⁴⁰⁶

A final issue regarding ocean commercial fisheries is bycatch, meaning the unintended harvest of riverine anadromous species in ocean fishing operations targeted at other species. "For example, bycatch of alewives

in the Atlantic herring fisheries can have a large impact" on riverine and spawning populations."⁴⁰⁷ Bycatch of Atlantic Sturgeon is similarly a recognized problem.⁴⁰⁸



"We're watching temperature because globally we're warming up and most of our fish that we do eat are cold water like salmon, trout, and all. They like cold water. The only thing that loves warm water is bass. Snapping turtles like warm water, too."

- 1st Penobscot Nation Citizen

Forty years ago, when Maine began re-opening and cleansing its rivers, commercial ocean fishing was a major factor affecting the number of anadromous fish that could return to Maine's rivers. It is a smaller factor today, with only Greenland's commercial salmon industry and ocean bycatch continuing to directly affect Maine fisheries.

3. CLIMATE CHANGE

Another development during the past 40 years that has increasingly affected Maine's fisheries is climate change. That simple phrase encompasses a complex set of interconnected issues, many of which affect fisheries. For example, rising global temperature means both warmer rivers and warmer oceans, while more frequent and more severe drought and storm events can alter stream/river flow rates and in-stream habitat including stream acidification. And each of these issues can affect both Maine's anadromous fish and their competitor species, including non-native fish, upsetting whatever tenuous balance may exist from year-to-year. The sheer number of factors at play, and the uncertain course of climate change, brings to mind the words of that great American philosopher, Yogi Berra; "It's tough to make predictions, especially about the future."⁴⁰⁹

The Gulf of Maine is now the southern edge of the Atlantic salmon's range.⁴¹⁰ The northeastern part of the United States, including Maine, "is expected to experience increased temperatures and increased variability in precipitation, which increases the risk of floods and droughts, and reduces water quality."⁴¹¹ The average temperature in Maine has risen 3.2 degrees Fahrenheit since 1895, with the warmest years clustered in the current century.⁴¹² The climate change forecast for the North Atlantic region "is for milder and wetter winters, with more precipitation falling as rain and less as snow, decrease in ice-covered periods and frequent periods with extreme weather."⁴¹³ "There is reason to expect a northward movement of the thermal niche of anadromous salmonids with decreased production

and population extinction in the southern part of the distribution areas, migrations earlier in the season, later spawning, younger age at smolting and sexual maturity and increased disease susceptibility and mortality."⁴¹⁴

Anadromous fish are, by definition, not affected only by climate changes within Maine and its rivers because they spend much of their lives at sea. The ocean is also warming and changing, and "the Gulf of Maine is one of the fastest-warming ocean ecosystems on the planet."⁴¹⁵ Alewives and shad spend part of their

As with most ecological problems, many factors are at play, and each factor may affect each species differently.



Stream in winter. Photo by Chris Johnson.

ocean-going lives in the coastal waters around the rivers where they spawn, including in the Gulf of Maine.⁴¹⁶ The temperature changes in the Gulf of Maine have already caused substantial changes in which species can successfully live there. For example, cod “are basically gone from the Gulf of Maine; while up in Iceland, they’re catching a ton of cod right now.”⁴¹⁷ The salmon “leave Maine rivers in the spring and reach the seas off Newfoundland and Labrador, Canada, by mid-summer. They spend their first winter at sea south of

Greenland and their second growing season at sea off the coast of West Greenland and sometimes East Greenland.”⁴¹⁸ Yet the waters around Greenland are also changing rapidly, and increased morbidity of Maine salmon at sea has been “linked to a changed ecology in the Northwest Atlantic Ocean triggered by changes in Arctic circulation in the early 1990s” that affected the foods salmon eat.⁴¹⁹

Although much of the research has focused on salmon due to their endangered status, the same changes in migration and spawning cycles are relevant to Maine’s other anadromous fish.⁴²⁰ Clearly, the anticipated effects of climate change pose multiple challenges for Maine’s environment, including its wildlife and fish. Although the changes are hard to predict with any degree of precision, those changes, and in particular temperature fluctuations, “may substantially affect spawning success of fish, especially migratory species with a limited spawning window.”⁴²¹

*Migratory and riverine Salmonid species throughout North America also are being affected by decreased snowpack, decreasing summer stream flow, higher storm intensity and flooding, physiological and behavioral sensitivity, and increasing mortality due to warmer stream and ocean temperatures. Warmer summer air temperatures lead to increased stream temperatures and reduced suitable habitat available for trout. Increased storm activities cause erosion and an increase in sedimentation, thus reducing food sources and limiting trout movements.*⁴²²

The coming changes will not affect just Maine’s anadromous fish population, but also other competitive species, whether native or invasive. NOAA’s action plan for salmon includes studies to identify climate-resistant habitats and determine “whether



“Our watershed temperature seems to be rising despite our efforts, pretty much all the native species in our area are all colder water species, especially the trout. The summertime temperatures are getting to where the fish will be stressed, and the level where it would be lethal for these cold water fish, that temperature threshold is being hit more and more every year.”

- 1st Maliseet Citizen

global climate change may affect rearing habitat in such a way as to favor smallmouth bass at the expense of Atlantic salmon.”⁴²³

Removing the barriers for anadromous fish that were put in place over the course of several centuries, is a significant step forward in restoring fisheries. But Maine’s policymakers and Wabanaki people must now confront new complex challenges in federal and international management. Maine certainly has a role in policymaking on climate change issues, but as a low population state with relatively modest carbon emissions, that voice is necessarily a small one.⁴²⁴ Maine’s anadromous fisheries were brought from a state of abundance in pre-colonial times to near extinction by the mid-twentieth century by an increasing human population, the shift to a commercial economy favoring the accumulation of wealth, and policy choices favoring industrial development. These, of course, are the same forces that are causing the worldwide climate changes that affect all life on earth in a way that mirrors what happened to Maine’s fisheries.⁴²⁵

Summary of Barriers and Areas of Agreement and Cooperation

The purpose of this report is to review Maine’s fishery management policies on the quality and quantity of traditional tribal fish stocks and how those policies have impacted Wabanaki sustenance lifeways practices. It’s a broad question, and the answers depend in



Historic log drive. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine.

part on what one designates as the baseline. Do we look simply at 1980 as a baseline and then talk about Maine’s fishery management policies since that time and how they may have impacted the level of sustenance fishing that was going on in 1980, or do we use as a baseline the point when the Wabanaki and European settlers first met, and their very different economies clashed? This report has chosen the longer view and recognizes the Wabanaki’s long-term engagement in negotiations with both European and American governments around hunting and fishing rights. Sustenance fishing in 1980 was not like sustenance lifeways fishing was at first contact or even in the 1800s when Maine became a state, and it was primarily Maine’s fishery management policies (or lack thereof) during that span of years that led to the marginal opportunities for sustenance lifeways fishing in 1980.

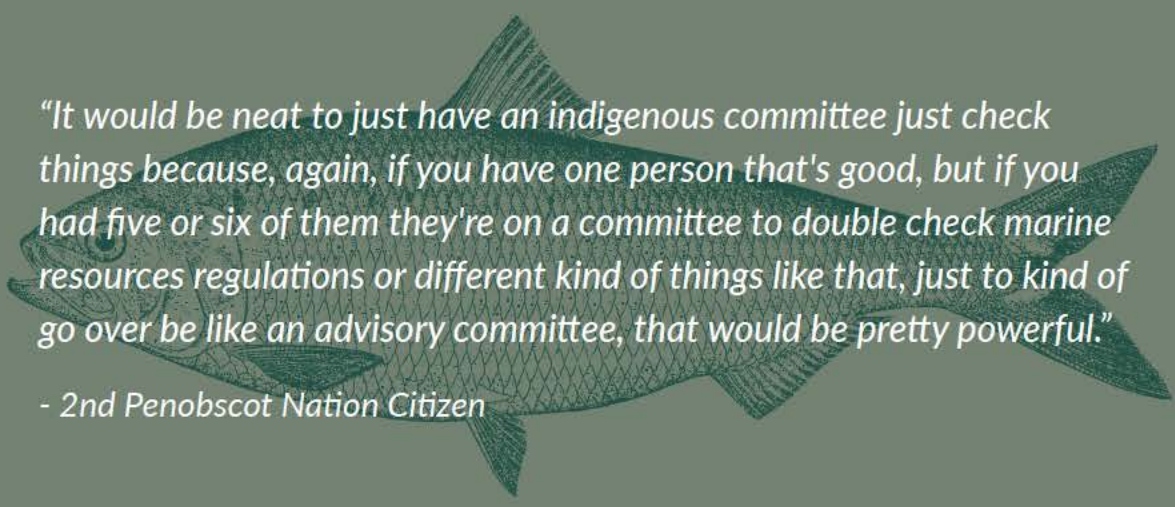
The initial barrier, and the one that underlies all the others, is the difference in viewpoint between a lifeways economy and a commercial

one. For Wabanaki lifeways, the “economy” was not a separate concept from that of life itself, or sustenance. Although there would of course have been natural fluctuations from year to year with the Wabanaki lifeways forms of use and management, the loose ecological balance governing the interactions between humans, animals, and plants would have asserted itself, and there would be enough from year to year to sustain the people.⁴²⁶ In the settler view, resources existed both to supply daily needs and as a method for accumulating wealth. This led directly to the Wabanaki petitions in the 1800s complaining that settler fish-harvesting downstream was taking the fish that Wabanaki people depended upon for food. Individual settlers who were also dependent upon fishing for daily sustenance similarly complained that commercial interests, initially commercial fishing and later other industries, were taking the fish that they depended upon.

The purpose in noting the distinction between a sustenance economy and a commercial economy is not to designate either one as right or wrong, but instead to point out

a fundamental difference that drove and continues to drive Maine’s policymaking as it regards fisheries and has complicated and inhibited Wabanaki fishing rights and practice. Of course, over the last several centuries, many individual Wabanaki people have had to accept a commercial purpose for their economic endeavors, while on the other hand many individuals and groups in the settler population have come to understand how ecologies work and to advocate for the preservation of resources. Yet an underlying fundamental difference remains in the way sustenance lifeways are viewed by Wabanaki people and by settlers, and that difference is economic in nature.

The specific policy decisions that decimated Maine’s fisheries, and hence ended fishing as part of a sustenance lifeways economy, come from this dichotomy. Whether it be securing the most important fishing places under settler control, the construction of increasingly massive dams for power and industrial purposes, the pollution of rivers and streams with industrial and human waste,



“It would be neat to just have an indigenous committee just check things because, again, if you have one person that's good, but if you had five or six of them they're on a committee to double check marine resources regulations or different kind of things like that, just to kind of go over be like an advisory committee, that would be pretty powerful.”

- 2nd Penobscot Nation Citizen



Atlantic salmon.

or the commercial exploitation of Maine's fisheries, all of these are based on an economy of growth and wealth accumulation, and all remain points of contention despite the recent recognition that there can be common ground and shared goals.

The "legal" boundaries of Wabanaki land and Wabanaki access to historical fishing places, both as a legal and a practical matter, have been relatively fixed since the first half of the 19th century. While the land claims case and settlement brought the opportunity for the Wabanaki Nations to add some additional territory, it did not significantly increase access to historic fishing grounds, and the debate continues over what rights the Penobscot Nation may still have in the Penobscot River.

It is true that in the last few decades some major dams have been removed and effective fishways and bypasses have been created at others. Although this has been in conjunction with the decline of the paper industry and the rise of the technology needed to consolidate hydro-power production, it has led to some shared goals. Each new proposal for removal of a dam, generally for ecological reasons, now results in a debate between multiple parties with very diverse interests, but the Wabanaki Nations are recognized as necessary partners in each such debate. And the knowledge that the dams have severely harmed anadromous fish is widely shared and accepted, and, by law, must be considered in dam licensing and repair. Once the mainstem dams on the Penobscot were removed, Maine enshrined the concept of



Where stream meets sea, Lubec, Maine. Photo by Rafi Hopkins.

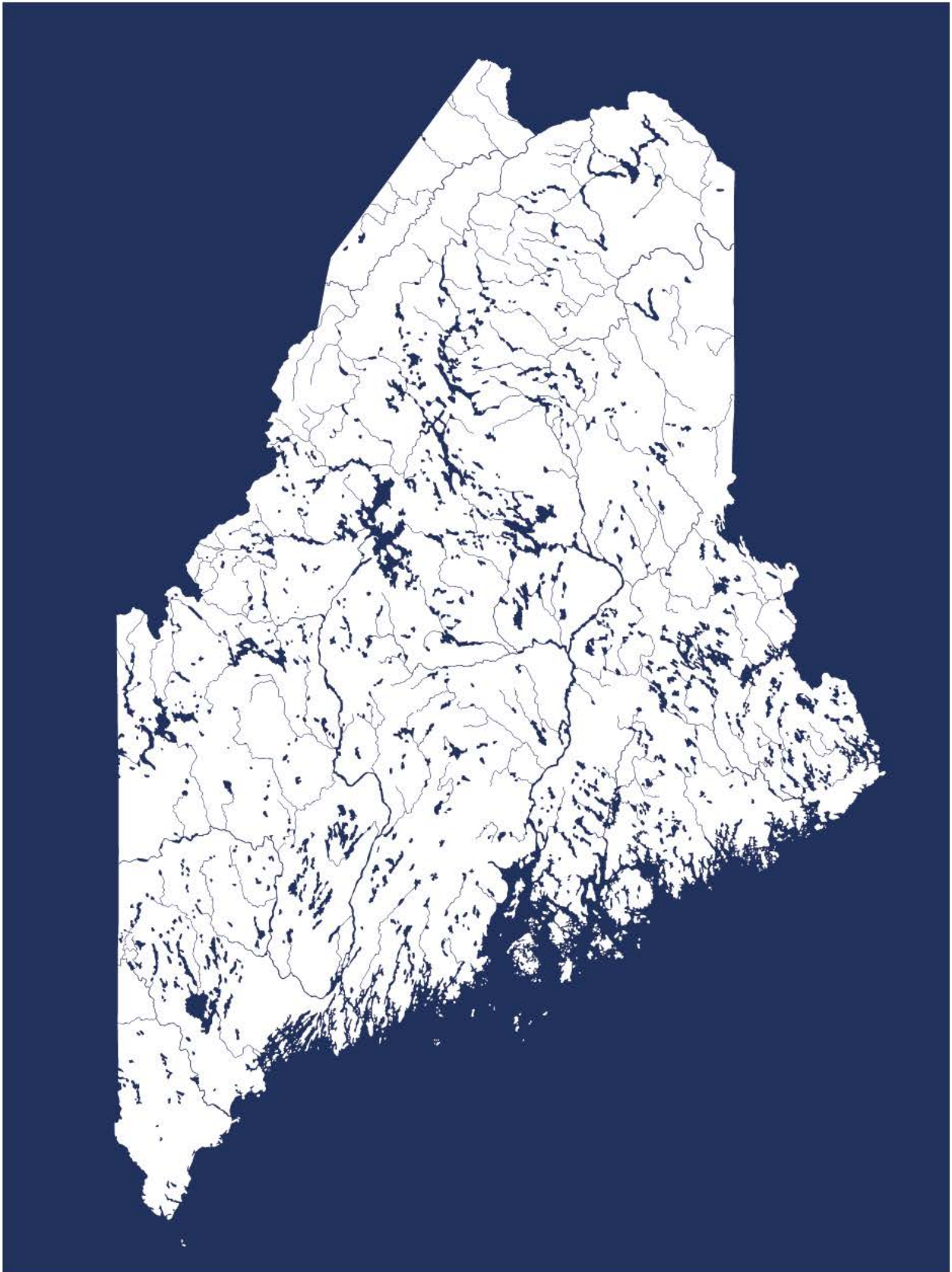
a free-flowing lower Penobscot River into law, and the various non-governmental advocacy groups that are calling for more dam removals have a significant voice that is generally aligned with Wabanaki interests. Maine has a policy of fostering stream connectiveness on both a large and small scale, and Maine's river classification system, although required by the CWA, represents a policy intended to clear the most serious river pollutants over time. All of these are shared common ground between Maine and its population and the Wabanaki Nations.

Major challenges remain, both for the fish and to support Wabanaki fishing rights.

Major challenges remain, both for the fish and to support Wabanaki fishing rights.

Many portions of many rivers and streams remain blocked. Available and suitable spawning grounds are not nearly as extensive as they once were. Pollution is still at a level that makes a diet of fish unhealthy for humans and other animals. Climate change and the international competition for resources are becoming more important issues than anything Maine does in

its efforts to restore anadromous fish to its rivers. Yet there are now areas of common ground between the Wabanaki Nations and the State, and Wabanaki people in Maine no longer stand alone in the fight to restore the fisheries.



Lakes and rivers in Maine.



Fish Ladder.
Photo by Chris Johnson.

IV.

Examples of Various Attempts at Collaboration



Schoodic/St. Croix

The Schoodic/St. Croix River is the backbone of Passamaquoddy territory. Although what was once a central artery for travel and trade is now a border between nations, the history of the river and Maine's policy on fish gives a fascinating example of how the various issues discussed above have played out. As with Maine's other rivers, in pre-settlement times the St. Croix had large annual runs of salmon, shad, alewives, and other anadromous species. Alewives in particular came in the tens of millions. The centrality of the river to the Passamaquoddy Nation is noted in the 1794 treaty with Massachusetts that guaranteed "the privilege of fishing on both branches of the river Schoodic without hinderance or molestation and the privilege of passing the said river over the different carrying places thereon."⁴²⁷ Within a generation after that treaty was signed, obstruction of the river and over-fishing led to petitions by both Passamaquoddy and white settlers to the State regarding decreasing fisheries. These had little effect, and by the early 20th century the St. Croix was spanned by 6 major dams.⁴²⁸ Meanwhile, by



Passamaquoddy Ancestor Paddle 2022. Photo by Rachel Bell.

1890 smallmouth bass had been introduced into the lakes and impoundments that feed into the river, and sport fishing for bass became a significant part of the local economy.⁴²⁹

The last of the six major dams, Grand Falls, was built in 1915. Its construction casts light on the power wielded by the many stakeholders on the St. Croix. Since the river is an international border, those stakeholders include the United States and Canadian federal governments, which since 1909 have largely acted through the Boundary Waters Treaty and the International Joint Commission (IJC). The State of Maine and the Province of New Brunswick are also involved parties, as well as business interests, the Passamaquoddy Nation, non-governmental entities, and private citizens.

The Grand Falls dam was initiated in 1913 by St. Croix Paper Company, a private business, as a

source of hydroelectric power for its Woodland papermill.⁴³⁰ The State of Maine authorized the development of Passamaquoddy land near Indian Township to support paper companies, including the land sold to the St. Croix Paper Company to build the Grand Falls Dam.⁴³¹ Maine also gave the company permission to flood Passamaquoddy Tribal land for the dam's reservoir, and despite its stated policy of supporting the restoration of sea-run fish, Maine made an oral agreement with St. Croix Paper that no upstream fish passageway would be required as long as the company put in a fish screen at the outlet of West Grand Lake to prevent landlocked fish from going downriver.

However, the IJC, whose jurisdiction over boundary waters included fish passage, required a fishway. Nevertheless, the dam was completed in 1915 without any upstream fish passage. The IJC then ordered St. Croix Paper

to install one. The company initially agreed but did not implement any of the IJC requirements. The IJC then issued an opinion that the dam was constructed without proper authorization. Despite IJC's actions, no fishway was built at Grand Falls until 1965, fifty years later. The dam flooded about 6,000 acres for its impoundment, almost all of it on the West (American) branch of the St. Croix and about half of which was Passamaquoddy land. There is no record that the Passamaquoddy Nation was given any voice in the process, and although both federal governments were represented on the IJC, their orders were essentially ignored by Maine and St. Croix Paper.

When a Grand Falls fishway was finally installed in 1965, along with a modern fishway at the Woodland dam, part of the St. Croix was again open to sea-run fish migration, although a significant barrier remained at the Milltown dam downstream. Then in 1981 a modern fishway was constructed at Milltown, and by 1987 annual alewife returns had increased from about 170,000 to over 2,500,000.⁴³²

However, rather than being a cause for universal celebration, this resulted in yet another controversy. Although the 1988 Report of the Saint Croix River Steering Committee (SCRSC) confirmed the existing management plan goal of restoring sea-run fish, it prioritized its work to benefit sport fishing and commercial harvesting.⁴³³ The report says:

*In regard to the harvesting of Atlantic salmon, American shad, smelt and striped bass species, precedence will be given to sport fishing. Future allocation of these species for commercial harvest will be warranted only on wild, self-sustaining stocks not needed in the sports fishery. For the harvesting of alewives and American eel, precedence will be given to the commercial fishery.*⁴³⁴



Paper mill of Georgia Pacific Paper Company on the St. Croix River in Baileyville, Maine.

Meanwhile, the increase in alewives coincided with a decrease in the smallmouth bass population in Spednic Lake, a part of the impoundment, which also coincided with the end of the 25-year lease on the Grand Falls and Woodland fishways.⁴³⁵ The sport-fishing industry, important to the region's economy for over 100 years, blamed the bass fishing decline (a non-native species) on the increase in alewives (a native species). As a result, the Vanceboro and Grand Falls fishways were closed.⁴³⁶ The State of Maine then became involved and passed legislation in 1995 requiring that alewife passage at both the Woodland and Grand Falls dams be blocked.⁴³⁷ This predictably resulted in the alewife counts plummeting to almost zero.⁴³⁸

Multiple stakeholders joined in both the conflict and, later, the negotiations.⁴³⁹ After the Maine Government shut down alewife passage at Vanceboro and Grand Falls in



Osprey fishing for alewife

1995, New Brunswick began transporting alewives by truck past the barriers.⁴⁴⁰ Non-governmental conservation groups advocated for the alewives, and the Conservation Law Foundation sued first the federal EPA and then the State of Maine to restore passage under the Clean Water Act.⁴⁴¹ The IJC, which has jurisdiction over the St. Croix, confined itself to a negotiating role and to scientific research on the interactions between bass and alewives.⁴⁴² Scientific studies showed that the presence of alewives was not negatively impacting smallmouth bass.⁴⁴³ However, Maine guides and bass fishermen still wanted the upper river closed to alewives. Although some Passamaquoddy tribal members were employed as guides in the bass fishing industry, in 2013 the Passamaquoddy Joint Tribal Council successfully lobbied to re-open access, and Maine both repealed the legislation that

had closed the fishways and passed legislation that required passage for alewives through the Woodland and Grand Falls Dam fishways.⁴⁴⁴

The end result is that alewives have returned to the St Croix in increasing numbers. Recent counts have been above half a million.⁴⁴⁵ The dam farthest upriver, the Vanceboro dam at the outflow from Spednic Lake, now also has operational fishways allowing both upstream and downstream passage for anadromous fish based on an agreement between the interested parties and adopted into an order by the Federal Energy Regulatory Commission (FERC) in 2019.⁴⁴⁶ New Brunswick Power is planning to decommission the Milltown dam in 2023, which “will make about five million square metres of spawning habitat available to the various sea-run (diadromous) fish species.”⁴⁴⁷ However, fish counts for species other than alewives remain very low, and no salmon have been counted in years, at least partly due to predation by bass.⁴⁴⁸

The St. Croix controversy continues. The possibility of decommissioning the Forest City dam led to legislative efforts in Maine and by the Premier of New Brunswick to exempt

“They never would have opened up that river if it wasn't for the Passamaquoddy tribe. We lead the way and we're continuing to lead the way and I don't see that changing.”

- 3rd Passamaquoddy Citizen

it from the FERC licensing requirements, as the potential change in water levels would leave shoreland homeowners well above the waterline and dramatically alter the fishing industry in East Grand Lake.⁴⁴⁹ The Forest City dam was originally built in 1840. The current dam was built in 1965 for the purpose of regulating water flow for the downstream dams that produce hydropower.⁴⁵⁰ Essentially, an artificial barrier to natural waterflow and to native fish passage now cannot be removed because people have put homes on the artificial shoreline of a lake that supports a lucrative fishery in invasive, non-native fish. The alewives return is a first step in restoring the ecology in and along the St. Croix River, and a very positive one, but each subsequent step will involve all of the same stakeholders and their differing interests and points of view.

Meduxnekeag

In 2009, the Houlton Band of Maliseets (HBM) asked the Army Corps of Engineers (ACE) to do

a watershed assessment of the Meduxnekeag River, which starts at Meduxnekeag Lake in Aroostook County west of Houlton and flows 38 miles generally west to east through current and historical Maliseet territory to join the St. John River near Woodstock, New Brunswick. The ACE agreed to do the study if HBM “engaged stakeholders from both the United States and Canada to work together to apply a systems approach to solve fisheries issues within the Meduxnekeag River watershed and downstream inter-related resources.”⁴⁵¹

The HBM and ACE put together a shared vision statement for the study, which could, with minor revisions, serve as a vision statement for all efforts to restore sustenance lifeways fishing, with “sustenance” here meaning not only food but also “customs, language, and culture”:

Since time immemorial, the Maliseet people have maintained an inherent connection to the Meduxnekeag River and the natural resources that it supported. This connection is foundational to



Looking south to lenticular through truss on North Street in distance. Photo by Edward B. White.



Meduxnekeag River.

*Maliseet customs, language, and culture. Diadromous fish species were once a primary food resource for the Maliseet people, but now some of those species are absent from the watershed. Through restoration of the watershed ecosystem, the Maliseet Leaders seek the return of native diadromous fish species, particularly Atlantic salmon, to the watershed to reconnect the Maliseet people and their future relations with their heritage. This will also ensure all people living in the Meduxnekeag River Watershed, as well as the greater Saint John River and the Bay of Fundy, will have access to a fully functioning ecosystem.*⁴⁵²

The challenges of restoring sea-run fish to the Meduxnekeag are many and are similar to those facing other Maine rivers that suffered the historic loss/degradation of sea-run fish populations: dams and other obstructions, pollution, alterations of the stream bed and stream banks, and non-native invasive species. Although salmon are only one of the native species that HBM seeks to restore, they have particular importance in Maliseet culture.⁴⁵³ There are currently no salmon in the United States portion of the Meduxnekeag watershed, and at the present time it is considered a “historical” salmon river rather than an “occupied” one.⁴⁵⁴

To accomplish the daunting task of restoring salmon and other anadromous fish to the Meduxnekeag, HBM decided upon a collaborative rather than a confrontational strategy. In addition to commissioning the ACE study, HBM and other Maliseet First Nations in Canada signed an Interim Statement of Cooperation with all the Canadian and American federal agencies that might have an interest in restoring sea-run fish throughout the St. John watershed. The Statement committed all parties “to continue working together toward the common goal of restoring sea-run fish to this beautiful River, the watershed and ecosystem they support and the cultural connection between the Maliseet people and the Welastekw/Saint John River watershed and ecosystem.”⁴⁵⁵

The ACE study made multiple recommendations for practical steps that could be taken in furtherance of the shared goal. Consistent with its overall strategy of collaboration, HBM has been working with other entities to effectuate those steps. The most important issue is, as with most Maine rivers, the barriers to fish passage on the Meduxnekeag and the St. John. The Mactaquac Dam on the St. John, just downstream from its confluence with the Meduxnekeag, has no fishway and prevents both upstream and downstream fish passage.⁴⁵⁶ “Currently, fish have to be captured below the head-pond and trucked upstream to artificially complete their sea-run fish passage.”⁴⁵⁷ Clearly “trap and truck” is not an optimal solution to the barrier problem. HBM, along with other Maliseet First Nations, continues to work with New Brunswick Power (NBP) on the problem of fish passage.

In 2015, because of deterioration in the dam’s concrete structure, NBP actively considered several options including replacing the dam, removing it, or maintaining it only through its anticipated lifetime (2068).⁴⁵⁸ NBP chose the latter course,⁴⁵⁹ despite knowing that “retrofitting a facility to add or alter fish passage structures has proven to be the least effective for improving passage solutions at large dams.”⁴⁶⁰ NBP continues to engage with other interested parties, including Maliseet First Nations, as it studies and plans for fish passage improvements.⁴⁶¹

Although it has a voice on Mactaquac issues, HBM has little power to effectuate meaningful fish passage through the St. John to the Meduxnekeag. However, HBM is taking the steps it can to remove other barriers. As per its



“There's so many species that have been extirpated from our area that that we would consider food sources for our people for thousands of years. And in a matter of 60 or 70 years are just gone and not gone but you know, are unable and that's almost feels worse. We know that they are able to come to this environment and they can't now.”

- 1st Maliseet Citizen



Mactaquac Dam and hydroelectric building, New Brunswick on the Saint John River. Photograph by Scott Davis, 2005 under the Creative Commons Attribution 2.5 Generic license.

strategic plan, it worked with an impressive number of collaborators including the Town of Houlton, the State of Maine, various agencies of the federal government, and The Nature Conservancy, to replace a largely impassable culvert on Moose Brook, a significant tributary that joins the Meduxnekeag just upstream from Houlton.⁴⁶² HBM is also working to restore the damage caused by timber drives to improve habitat for fish. At present, the Meduxnekeag is “overly straight, shallow, and wide due to historical logging and agricultural activities . . . the streambed is fairly homogeneous and provides relatively poor substrate for spawning and rearing of salmon and native riverine fishes.”⁴⁶³ As recommended by the ACE study, HBM has “placed large boulders and trees within the river system to replicate natural habitat structures that would have been in the river before the timber industry removed them in Maine.”⁴⁶⁴

Agricultural activity along the Meduxnekeag, largely potato farming, has resulted in nutrient rich run-off and erosion. A Southern Aroostook Soil and Water Conservation District (SASWCD) watershed study in 2015 found that “excessive nutrient

enrichment has been identified as the primary cause of low DO concentrations and . . . erosion throughout the watershed, primarily attributable to agricultural activities (but also to forestry activities, streambank erosion, and urban stormwater), adds substantial sediment loading.”⁴⁶⁵ Proposed solutions included “cropland erosion control, livestock nutrient management, streambank stabilization, forestry best-management practices, riparian buffer restoration, and reduction of urban sources.”⁴⁶⁶ The SASWCD has identified potential funding sources for these steps and continues to work with HBM and local farmers and municipalities in this regard.⁴⁶⁷ Finally, there are “historic chemical and petroleum storage sites” along Pearce Brook,

“Yep, I’d say it’s (Meduxnekeag) kind of the end destination (for fish), unfortunately, we have between us and the St. John, a couple natural barriers and then unfortunately there’s the Mactaquac dam near Fredericton in New Brunswick that’s real bad and we’re trying to do things in spite of that but it’s probably never going to be removed, but we’re always hoping.

- 1st Maliseet Citizen



Penobscot River with the base of Mt. Katahdin in background.

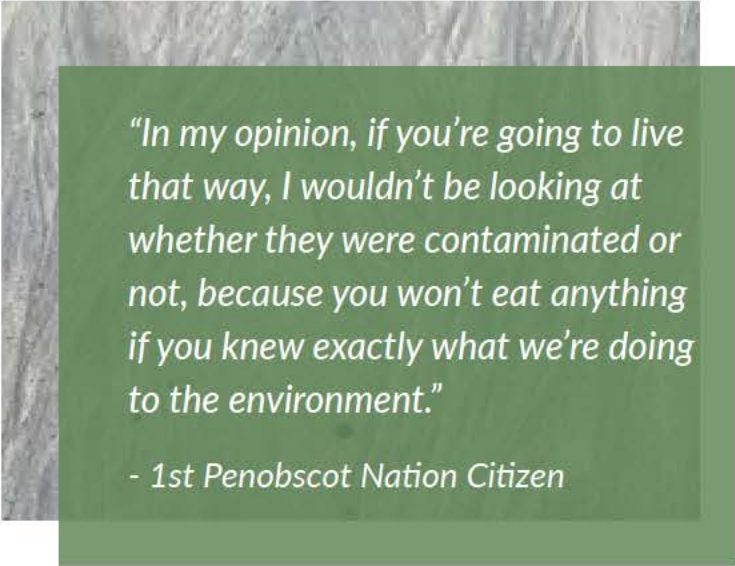
a Meduxnekeag tributary.⁴⁶⁸ HBM is working with other entities to stabilize the river banks to prevent erosion and keep contaminants from these sources away from the river, but the actual cleanup of previously contaminated soil is expensive and highly technical in nature. At present, HBM is ultimately dependent upon the water quality goals of the federal EPA and Maine DEP for the watershed.⁴⁶⁹

It took centuries to alter the Meduxnekeag into its present state. The process of restoration is, likewise, a long-term project. HBM has set itself long-term goals and, realizing that its own resources are not sufficient to accomplish those goals, has adopted a strategic plan of collaboration with other entities that have a stake in the Meduxnekeag and/or the St. John. They are making progress.

Penobscot

The Penobscot provides yet another example of how crucial collaboration is in trying to restore Maine's rivers and the fishing they once provided. It is also an example of how difficult that process can be when the resources to be restored have been degraded for centuries. By the 1990s, despite the positive effects of the Clean Water Act, the number of anadromous fish in the Penobscot River remained small because dams still limited access upriver to spawning grounds and safe passage downriver to the sea.

The FERC process for dam relicensing in the 1990s was often a contentious process between industry and conservation interests. However, in 1999, with FERC re-licensing approaching,



"In my opinion, if you're going to live that way, I wouldn't be looking at whether they were contaminated or not, because you won't eat anything if you knew exactly what we're doing to the environment."

- 1st Penobscot Nation Citizen

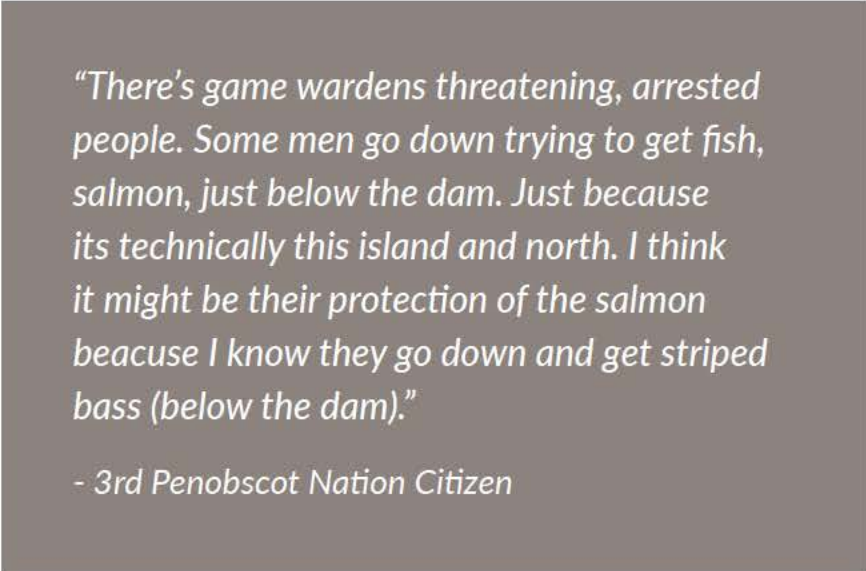
the company (PPL) that owned the Penobscot River mainstem hydro-electric dams began talking with the Penobscot Indian Nation about ways to cooperate on the relicensing process. The Penobscot Nation then joined with various non-governmental conservation organizations to form the Penobscot River Restoration Trust (PRRT). Negotiations between PPL and PRRT, and with various State of Maine and federal agencies, continued for five years and finally resulted in an agreement. On June 29, 2004, PPL and 12 other "stakeholders" filed a "Comprehensive Settlement Accord" with FERC that embodied a "phased approach to resolving all fish passage, energy generation, and tribal issues associated with PPL's Lower Penobscot River hydroelectric projects."⁴⁷⁰

To implement the settlement, PRRT raised money to buy and decommission the two dams farthest downstream and to construct "an innovative, river-like bypass around the third dam on the river."⁴⁷¹ When finally completed in

2016, these steps opened up 2,000 miles of river and stream to sea-run fish including Atlantic salmon, shad, and alewives, while actually increasing hydropower production, making the Penobscot one of the nation's most innovative river restoration projects.⁴⁷²

In response to this success, the Maine Legislature confirmed by law in 2019 that "preservation and restoration of the Penobscot River is of the highest priority", declaring that the river "is again beginning to support, the greatest run of Atlantic salmon and 11 other species of anadromous fish in North America."⁴⁷³ However, while the Penobscot Restoration Project has unquestionably been a success and may represent the last best chance for saving Maine's Atlantic Salmon from extinction, significant problems for sustenance lifeways fishing remain.

The importance of the steps taken by PRRT to let fish access their traditional spawning grounds cannot be underestimated. Anadromous fish are now returning in significant numbers to the upper reaches of the Penobscot watershed in the East Branch and some tributaries, places where they have not been seen for over a



"There's game wardens threatening, arrested people. Some men go down trying to get fish, salmon, just below the dam. Just because its technically this island and north. I think it might be their protection of the salmon beacuse I know they go down and get striped bass (below the dam)."

- 3rd Penobscot Nation Citizen



Old Town, Maine. Image courtesy of Special Collections, Raymond H. Fogler Library, DigitalCommons@UMaine

century. However, although 2 million alewives and over 11,000 shad have been counted, salmon runs have been disappointing with only about 1,500 returning.⁴⁷⁴

Furthermore, although prioritizing Penobscot River restoration is part of Maine law on water pollution, the fish that now return are barely edible. The Wabanaki Traditional Lifeways Scenario diet, if followed, has adults consuming 286 grams of anadromous fish per day and children 143 grams per day for a sustenance lifestyle.⁴⁷⁵ However, at present even consumption of only 10 grams a day would leave consumers exposed to harmful levels of dioxins, chlorinated dibenzofurans, and PCBs including dioxin-like PCBs.⁴⁷⁶ Adverse health impacts would include “a significantly increased risk for liver cancer . . . adverse immune effects, such as a decreased antibody response” and “exposure-associated damage to glands associated with the eyes and changes in toenails and fingernails.”⁴⁷⁷ More recently, PFAS chemicals have been found in the leachate coming from the Juniper Ridge landfill in the Penobscot watershed and

are making their way untreated into the river.⁴⁷⁸ The State of Maine has not yet developed a plan for dealing with this newly discovered problem.⁴⁷⁹

At the present time, the laws intended to implement Maine’s policy priority of “preservation and restoration of the Penobscot River” remain

aspirational in nature. Active collaboration and respectful, honest negotiation have significantly increased river passage and the numbers of anadromous fish returning to the Penobscot, but the numbers of fish are not yet as robust as was hoped, and the challenge to render those fish edible for human sustenance remains. The Penobscot River may be the last best chance for Maine’s

Active collaboration and respectful, honest negotiation have significantly increased river passage and the numbers of anadromous fish returning to the Penobscot, but the numbers of fish are not yet as robust as was hoped, and the challenge to render those fish edible for human sustenance remains.

Atlantic Salmon to escape extinction, but even if the river should someday be fully restored and the pollution problems resolved, it is just one part of a broader functioning ecology that includes the ocean and the changing climate of the North Atlantic.



Rock formation.

Recommendations



MITSC conducted this study pursuant to multiple provisions of the MIA. Sec. 6207 Sub-section 8 directs MITSC to conduct appropriate studies and make recommendations “with respect to implementation of fish and wildlife management policies on non-Indian lands in order to protect fish and wildlife stocks on lands and water subject to regulation by the Passamaquoddy Tribe, the Penobscot Nation or the commission.” In addition, Section 6212.3 of the MIA directs MITSC to “continually review the effectiveness of this Act and the social, economic and legal relationship between the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe and the Penobscot Nation and the State and shall make such reports and recommendations to the Legislature, the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe and the Penobscot Nation as it determines appropriate.” As a result, the recommendations below are not strictly limited to policies involving fish and wildlife management but include potential structural changes in the relationship between Maine, the Wabanaki Nations, and MITSC.



Old Town, Maine.

There is, of course, no separate ecology between the “non-Indian” parts of Maine and the areas subject to regulation by the Wabanaki Nations and/or MITSC. It is similarly true that Maine’s ecology is not separate from that of the Atlantic region of the United States and Canada or the Gulf of Maine and the North Atlantic. And, when looking at Maine’s fisheries, whether in non-native or Wabanaki territory, it is not possible to separate the current status of those fisheries from their history. Hence this study has looked at policies and decisions, both current and historical, that affected fish and river management even when those policies or decisions were not expressly intended as such.

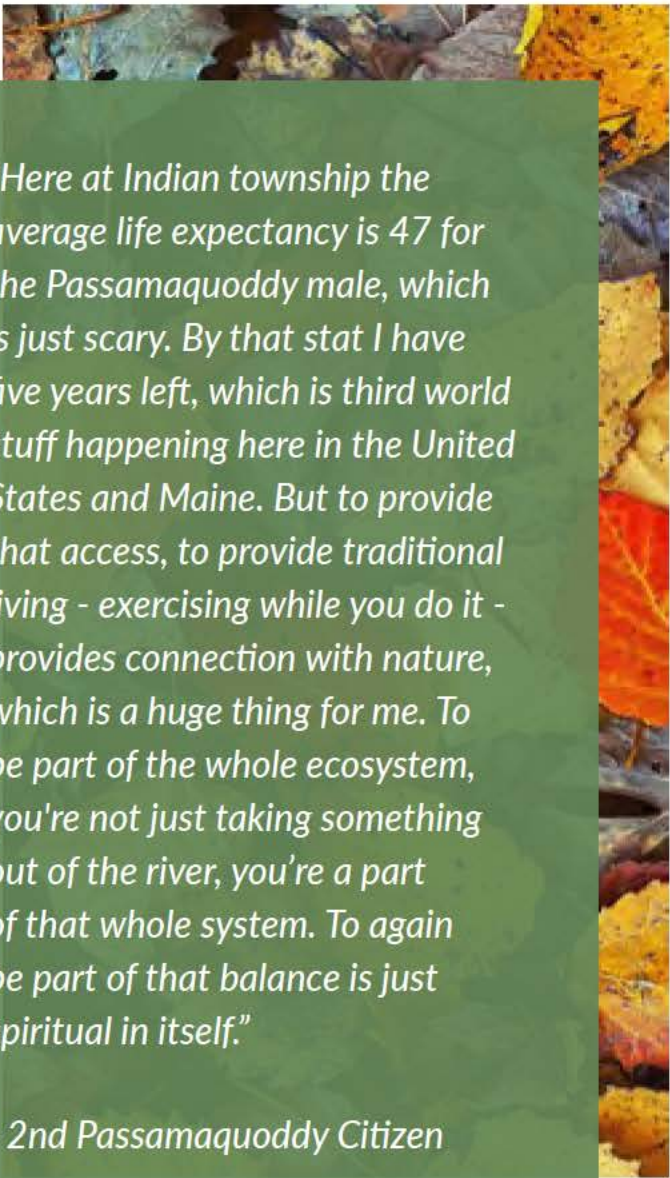
Nothing the Wabanaki Nations or Wabanaki people did or failed to do caused the degradation of the fisheries that supported their economy and contributed to their sustenance lifeways; all of it was a matter of State policies, whether witting or unwitting, that inhibited Wabanaki fishing rights, and the lifeways associated with the sites of sustenance. The restoration of the sites where sustenance fishing was practiced would thus be transformative for Wabanakis and would recognize the impacts State policy has had.⁴⁸⁰ And when considering policies to foster restoration, it is crucial to remember that the same macro-economic forces that led to the near extinction of Maine’s anadromous fisheries are responsible for the most serious challenge to those fisheries in the future: climate change.

Specific Recommendations:

1. The State of Maine and the Wabanaki Nations, perhaps through MITSC, should discuss and attempt to reach a mutual understanding of sustenance practices that takes into account the way Wabanaki people understand that phrase.

As was noted in the body of this report, the word/concept “sustenance” is not defined in the MIA. Absent discussion and mutual agreement, any attempt at a definition would have to be accomplished through litigation. The focus in litigation would necessarily be on the words in the law or, if the words were ambiguous, on the understanding of the parties and the legislature at the time of the land claims settlement. But a judgment in a court of law, no matter how carefully reasoned, cannot change the way Wabanaki people understand their traditional economy. Discussion with mutual respect is far more likely to open up ways of thinking about Wabanaki sustenance or lifeways practices and how to foster those practices at the present time, taking into account the interests of all the people of Maine.

The first order of business in a discussion of this nature would be to recognize that while “sustenance” is a word that carries meaning in the English language, there is no such word in the Wabanaki languages.⁴⁸¹ Rather than persist in trying to force a translation when there isn’t one, the State and the Wabanaki Nations should consider a different word/phrase and definitional concept that resonates in all the languages. Some suggestions might be “life needs” or “traditional cultural lifeways.”



“Here at Indian township the average life expectancy is 47 for the Passamaquoddy male, which is just scary. By that stat I have five years left, which is third world stuff happening here in the United States and Maine. But to provide that access, to provide traditional living - exercising while you do it - provides connection with nature, which is a huge thing for me. To be part of the whole ecosystem, you're not just taking something out of the river, you're a part of that whole system. To again be part of that balance is just spiritual in itself.”

- 2nd Passamaquoddy Citizen

In 2019, Maine’s legislature declared that “preservation and restoration of the Penobscot River is of the highest priority” because the river “supported, and is again beginning to support, the greatest run of Atlantic salmon and 11 other species of anadromous fish in North America, providing a unique fishing opportunity for Maine residents and members of the Penobscot Indian Nation.”⁴⁸² The

legislature was not talking about sport fishing for Penobscot Nation citizens, but rather the sustenance lifeways fishing practices of Penobscot Indian Nation members. If the legislature can find that “the Penobscot River is a unique and valuable natural resource” because of the anadromous fish runs it historically supported and might support again, they could find that the Wabanaki cultures, based in part on the lifeways practices from those same anadromous fish runs, are also unique and valuable natural resources and are equally worthy of preservation and restoration.

Maine’s 2019 legislation is aspirational in nature; much work remains to be done to actually restore the anadromous fish runs if, in fact, that can ever be accomplished. A related aspirational goal would be to open opportunities for Wabanaki people to practice traditional fishing (and hunting and gathering) on a community-wide basis.



Glooskap and Whale, an Algonquin legend. Birch bark illustration by Tomah Joseph.

2. Foster coordination between DIFW and DMR on sea-run fisheries policy.

Any discussions about coordination should include the Wabanaki Nations and MITSC (in light of their inherent interest in sea-run fish policies and their authority under the MIA to set certain fishing rules and regulations). DIFW and DMR coordination discussions should include the following points:

- a.** Prioritize native anadromous fish over non-native species;
- b.** Set a goal of fully functioning riverine ecosystems (i.e., an eco-system in which the

co-evolved diadromous species are abundant and resilient),⁴⁸³

- c.** Study the effect of bass on salmon recovery efforts;
- d.** Determine whether or not to list salmon as an endangered species at the State level;⁴⁸⁴
- e.** Start restoration projects for sea-run fish in and around Wabanaki reservation and trust land and waters through stocking programs, for example at Sysladobsis Lake which is mostly surrounded by trust land; and
- f.** Work with federal, Canadian, and tribal partners to start an American shad hatchery

to restore populations in Maine rivers that historically produced large shad runs.

The DIFW has responsibility for inland fish, including non-native species. The DMR has responsibility for ocean and anadromous fish. Both agencies have extensive stocking programs, the DIFW primarily for sport-fishing purposes, while the DMR stocks both for sport-fishing and to save and restore Maine's sea-run fish. At the most basic level, these two programs are incompatible. A couple of decades ago, DIFW policy for the St. Croix was to block anadromous fish (alewives) in order to preserve sport-fishing for non-native bass. Appropriate studies established that the alewives were not responsible for the decreasing bass population, but it now appears that the tables have turned, and that bass may be hindering the restoration of salmon and perhaps other anadromous fish in the St. Croix. That issue needs proper scientific study.⁴⁸⁵ And in any event, failure to resolve the conflicting policy goals as between the DIFW and the DMR can clearly result in wasted effort and poor results.

Although Atlantic salmon are listed as endangered by the federal government, they are not listed at the state level. Whether they should be or not remains a live controversy. The DMR has argued that a state salmon listing would not increase conservation efforts but would increase their administrative burden. However, listing salmon as endangered at the state level would clarify the priority level of Maine's efforts to restore salmon along with a fully functioning riverine ecosystem for all anadromous, native fish. Any discussions about the coordination of sea-run fish policy as between the DIFW and the DMR should



Baby eel. Photo by Chris Johnson.

include a full examination of this issue with an emphasis on the practical benefits, if any, of a state endangered species listing for salmon.

Stocking programs on reservation and/or trust land would necessarily involve the Wabanaki Nations in policy decisions throughout the affected watersheds. As regards the restoration of shad, another cornerstone anadromous fish in Maine, the Pamunkey Indian Tribe in Virginia are successfully restoring Shad to the waters around their land using hatchery raised Shad.⁴⁸⁶



Spiderweb over stream. Photo by Rachel Bell.

3. Study and list water quality standards for salmon and other anadromous fish recovery for all stages of their development.

Preservation and restoration of anadromous fish in the Penobscot River is, by law, Maine's highest priority. To achieve a self-sustaining salmon population, further study is needed to determine what water quality standards might have to be incorporated into Maine's river classification system to foster sea-run fish restoration.

4. The State of Maine and the Wabanaki Nations discuss and agree to a general policy to restore, over time, Wabanaki traditional practices, including specific policies on:

- a.** Movement to, and access to, key sites historically important for sustenance practice;
- b.** Recognition that traditional practices require a balance in hunting, fishing, and gathering as between land-based, freshwater, and saltwater foods;
- c.** Reduction in residual pollution levels in the waters and in fish that allow for the consumption of 7 oz of fish a day as part of a traditional diet, as per the "sustenance use" definition currently in Maine law;
- d.** Until such time as residual pollution levels can be reduced, consider supporting existing practices such as increased access to clamming (currently lower levels of pollution) and/or Wabanaki aquaculture such as the Mi'kmaq Farm brook trout project;
- e.** Consider traditional sustenance or lifeways practices as they apply to Wabanaki communities as opposed to solely individual or family/household sustenance;
- f.** Expand Wabanaki participation in management and policies around fishing to see what policies can currently be amended to support sustenance lifeways and to support future policy development consistent with sustenance lifeways; and

g. Develop a historical understanding of the collaborative context focusing on how or if Wabanaki leaders were involved in the various water and saltwater policies that regulate sustenance today and create space for voices and/or positions within the systems of management to help support better co-management of species and sustenance rights.

The purpose of this recommendation is to recognize the importance of traditional sustenance lifeways practices, as understood by Wabanaki people, both for individuals and for Wabanaki communities. If the preservation and restoration of anadromous fish and functioning riverine ecosystems is a high priority policy for the State of Maine, then an equally high priority could be to support Wabanaki people in preserving traditional culture based on history, traditional economy, spiritual practice, and community cohesion.

5. Require “Traditional Ecological Knowledge” (TEK) in every study/plan for Maine’s rivers similar to the way environmental impact statements are often required.⁴⁸⁷

The traditional ecological knowledge (TEK) idea comes from Canada. As described in *The Saint John River: A State of the Environment*, a report from 2011 published by the Canadian River Institute of the University of New Brunswick:

[T]he concept of TEK has emerged from the environmental impact assessment (EIA) process for developments and projects in Canada. TEK refers to traditional knowledge held by indigenous peoples about their local environment. The time-

sensitive nature of the EIA process has resulted in TEK being recorded as if it is a uniform system of knowledge based in the past. In fact, TEK is a fluid, diverse system of knowledge based in the ongoing relationships of indigenous peoples with their environment.⁴⁸⁸

Scientific knowledge and traditional ecological knowledge are parallel systems that benefit from informing one another.

One is not greater than the other. Combining these two systems will create a more complete assessment of what is happening and has happened in an ecosystem. Traditional knowledge is already being used in assessing restoration plans for anadromous fish in the United States. For example, in assessing the history of the Meduxnekeag fisheries, the Army

Corp of Engineers in their recent Watershed Assessment and Management Plan for the Meduxnekeag said that “[T]he Meduxnekeag River once held self-sustaining populations, as confirmed by Tribal accounts, oral history, and published documentation.”⁴⁸⁹

Use of TEK would add to current scientific information and would give Wabanaki people an expanded role in the creation of policies and plans for restoration of river ecology including anadromous fish.

Scientific knowledge and traditional ecological knowledge are parallel systems that benefit from informing one another.



Fire on beach. Photo by Rachel Bell.

Appendix A.

Environmental Changes

Interviews with Wabanaki Tribal Members



Description: Nine interviews were completed across the five recognized Wabanaki nations in Maine; Penobscot Nation (n=3), Passamaquoddy in Motahkomikuk (n=2), Passamaquoddy in Sipayik (n=2), Maliseet (n=1), and Mi'kmaq Nation (n=1). Interviewees are either active fishers or come from families with fishing traditions. Their presence isn't to analyze themes or to be used as data, but to provide space for Wabanaki knowledge to be represented throughout the report. These appendices serve as places for larger and nuanced discussions about topics from the report. Each interview was completed separately but was organized topically to support the different areas of the report. Specific care was taken to make sure each response was not taken out of context but grouped in ways to help demonstrate how multiple people think similarly and differently about a topic. Appendix A is focused on environmental changes broken down into four subtopics: hydropower, impacts to fish, fish passage, and water pollution.

Hydropower

First Maliseet Citizen: There's so many species that have been extirpated from our area that we would consider food sources for our people for thousands of years. And in a matter of 60 or 70 years are just gone and not gone but you know, are unable and that almost feels worse. We know that they are able to come to this environment and they can't now.

First Penobscot Nation Citizen: The thing I guess the biggest impact would be the dam too, because we can't even get our fish from the sea. Cause there's a balance, we all know, there's a balance within the sea-run fish and the freshwater.

Third Passamaquoddy Citizen: They (Maine/United States) wanted to do hydropower, but what happened with that was the only work that was done was in the U.S. There wasn't any work done on the Canadian side, so we have to live with the remnants of that. The beginnings of that and the causeway between Sipayik, Carlow Island, and Moose Island and then they did another one. I don't know if you're familiar with that island off of Eastport looking towards Lubec way.

First Passamaquoddy Citizen: I remember, a story that David told me, and it was about the lobster, the moment they put the highway in. First, it was a railroad that went across the causeway. And then they filled in the railroad bridges with gravel to make the highway and that blocked the access to half-moon cove which was the best ground for the lobster. He said fishing went downhill after that and it changed that whole ecosystem, so it made it harder for people to fish traditionally.

Second Passamaquoddy Citizen: I think the system of dams have definitely had an effect on those stocks here in the Passamaquoddy Bay and I think that allowing the herring and alewives to come back up through, I think that we're going to see an increase with sturgeon and striped bass and those fisheries that we used to harvest all the time, hopefully salmon. I'd love to see salmon come back here.

First Maliseet Citizen: Yep, I'd say it's kind of the end destination, unfortunately, we have between us and the St. John, a couple natural barriers but and then unfortunately there's the Mactaquac dam near Fredericton in New Brunswick that's real bad and were trying to do things in spite of that but it's probably never going to be removed, but we're always hoping.

First Maliseet Citizen: Pretty much every fish is affected by that dam whether its anadromous fish, trout and other fish that like to move say during the summer. We see a lot of movement from smaller tributaries that may warm up quicker to larger bodies where there's more access to cold water. That dam pretty much holds back everything.



Fourth Passamaquoddy Citizen: In this article and within real life too, and talking to some of the people at Sipayik, that when the alewives went away, so did the ground fish. If you're talking about sustenance and sustainability, the alewives are a key part of that process.

Fourth Passamaquoddy Citizen: To me, when we talk about alewives, the fish that feeds all, including the bread that you put on the table. Right? What I think they meant by that is that once the alewives went away, the person's ability to sustain their own life diminished so that they couldn't be putting bread on the table.

Impacts to Fish

Second Penobscot Nation Citizen: When I was a kid, I would see salmon just exhausted swimming on the top of the water with a fin up - just barely moving - along the shoreline and they're just zapped from trying to get up over that dam. Because they kept trying to jump up over the dam and they can't. And I don't think that they find that one little fish passage, right off. I think it takes time. They keep working away so they get pretty exhausted. That deep water or the change, I think really wears them out - based on my observations.

First Maliseet Citizen: The head pond created by it (Mactaquac dam) - we had read studies that have been done. Where the head pond flow is so slow, it's hard to discern what's upstream or downstream to a fish, and they say it adds hundreds of more miles to the journey of an Atlantic salmon. Once it managed to get past it (the dam), it adds a one hundred mile journey from the sea, which is already a pretty hard, long journey. So the dam pretty much has taken away from all anadromous species that used to be present in our river, and there's historical data on alewives, American eel, elvers, and salmon that aren't present anymore, but we have historical records of them being pretty plentiful in our area.

Second Penobscot Nation Citizen: I was reading some research, it was a long time ago, so I can't remember exactly what it was, but they were saying it was impoundment in the back of the dam - it impacts them quite a bit, it confuses them too because there's no constant current like they are used to. A temperature change is different - so it really kind of messes things up.

First Maliseet Citizen: When the dam was installed, it was upstream from a community called Kings Clear First nation, and all their land in that area, once that dam was put in the head pond, [the dam] just kind of overtook it. There was a lot of areas - there's one place called Bear Island that used to be a small island that you could see from the St. John, where it was sort of channelized,





so that a lot of fish would concentrate between the island and the riverbank. That would be a common gathering spot for bear to get salmon out of the river. Islands like that were gone when the dam was put in.

Second Penobscot Nation Citizen: Those are the kind of battles that we have. We used to catch our salmon at the Milford dam and we can't do that now because there's a dam there so our weirs would have to be set up a little further upstream where it's more shallow because it's kind of created a little pond in back to the dam.

Second Penobscot Nation Citizen: Salmon go up and have their eggs. It's not only the run that goes up, but it's when they come back down. So when they go up and they have their eggs and they come down as little smolts coming down the river. What happened is that the impoundment, and I think they forget about it, but that impoundment right there holds up all those baby smolts, so if you look at a certain time of the year there's literally 50 or 60 birds just right at the dam, and I'm pretty sure John Banks told me that's what they were doing, they're picking off all the salmon smolts because they had nowhere to go.

First Passamaquoddy Citizen: I think if they reopen that, and it's right on the line between Eastport and Pleasant Point at low tide, you can see the Half-Moon Cove draining under the highway. It's trying to come back.

Third Passamaquoddy Citizen: Without that water flowing in and out, it doesn't flush out (Half-Moon Cove). Some of the people mentioned seals being over here during the high tides and porpoise chasing the sardines and herring in the cove, and stuff like that. Now, with that causeway there, that eliminates - and I think you know - one of the fish species that feeds just about everything, the sardines.

Third Passamaquoddy Citizen: Well, I would think especially by Split Rock and those areas, even in the fall, you could still see the salmon trying to get on the Cobscook side from the Passamaquoddy side. And so the salmon can't get through there, so they probably end up at Little River and places like that.

Fish Passage

First Penobscot Nation Citizen: Right now, it's the dam. They [the fish] can get upriver, but when they come down, the turbine sometimes - they're bad. We know the dams are very, very bad for the fish. You know the elevators, they [the fish] don't know elevators.



First Penobscot Nation Citizen: You've given them a way; they have a passage but it's not natural to me. Especially the salmon. I don't know if you've ever observed them a little bit - they're skittish fish. They don't like the real loud noises, so they stay away from the dam completely. They'll even try to go way over to the other side, the Old Town side, and try to go up that way. Then they get caught over there and die. It's not a passage. I think they should call it for what it is - an elevator or some fish ladder, it's not a passage. I think passage would be that one in Howland. I think you can even Google earth it, you can see it now.

Second Penobscot Nation Citizen: Yep, so I think we forget about that part of the journey, that coming down part of it. I think not only with salmon, I think it's eels too. You have eels, which have an important relationship to us as well, when the eels come down what happens is a lot of them get chopped up in those turbines.

Third Passamaquoddy Citizen: The other thing with the culverts, depending on the degree of the slant of the water draining out those ridges in the culverts, it changes the hydraulics of the water so some of them they're poorly designed and there's so much velocity in those culverts that the fish can't get up. There's nothing like a natural riverbed because a natural riverbed you have your eddies, you have your big rocks, pools, and stuff that fish can hide behind.

Water Pollution

Third Penobscot Nation Citizen: The history that I know here is not only the mills, but the logging era really damaged the river and riverbed.

Third Passamaquoddy Citizen: What we hear about all the time is that the mill is bringing in millions of dollars to the economy, and this and that, and again, it's like at what price?

First Maliseet Citizen: The Meduxnekeag River was used for a long while in the logging industry fueling logs into the St. John through Woodstock so a lot of natural barriers were taken out; a lot of large boulders were blasted away; any kind of large obstruction was moved out of the way to create a clear channel for logs and now that took away a lot of the beneficial environment for fish species. Uniform depth sections of the river basically just killed all of fish species that needed a variation in geography.

First Mi'kmaq Citizen: I think as far as the fish go, the majority of the problem is that the rivers were widened and as they were widened, they became lower. And so, growing up, we had deep waters that weren't very wide, so it wasn't made for the timber industry.

Third Passamaquoddy Citizen: They used to blow up the ledges and the rocks, and dredge the river. To make it totally available for the river drives, so they could send the logs down there and stuff. That has really hurt the river too.

Third Passamaquoddy Citizen: I don't know the exact total, but they said there were over 100 mills on the river (St. Croix), sawmills and stuff back then. They just threw things away, I mean there's still places in the river where sawdust and bark and stuff like that from some of the sawmills are yards deep. With all that stuff on the bottom you don't have your natural river bottom and then it's going to impact all the species of fish and plants and shellfish and all those other things that would normally thrive in that environment.

First Penobscot Nation Citizen: Now that we got no more mills, maybe it won't be so drastic. That Lincoln mill was terrible. You could see paper particles coming out and you could only see three feet down into the water column. Where usually it's at least 10 feet or more.

Third Passamaquoddy Citizen: The other thing with that paper mill, [it] doesn't have a waste treatment plant. And in the past 7-8 years that [mill] has had several spills that seeped into the river, and the same thing on the Canadian side. Hundreds of thousands of gallons of sewer have seeped into that river. And you don't see people levying heavy fines, or all this other stuff, not a big outcry. A lot of times it doesn't even make the papers, so there is still pollution going on

First Penobscot Nation Citizen: There's no way fish can get up there ever with all those dams and there's so many on the West branch and I don't even want to think about what's behind the dams up there because they're holding back all the pollution that are in the sediments, so I mean I don't know it's kind of scary.

First Maliseet Citizen: And a lot of the pesticides or herbicides, trace amounts remained in the soil and then, once a lot of stuff eroded and made its way into the river, things like algal blooms would be increasing in the area and then that, in turn, would you know with the rising temperatures less oxygenation was really, really bad for a while and that's gotten better in recent years.

First Penobscot Nation Citizen: At some point there's phosphoric acid that's in the sediments, and it's gonna come out. There will be a bloom - so that's what we're calling the dams - they're slow cookers. They keep all that phosphorus.

Third Penobscot Nation Citizen: The oxygen levels went down. And so only the bass and pickerel that don't require much oxygen [survived]. That history greatly influenced the loss of our trout, salmon, white fish, and all the good eating fish that require a lot of oxygen.



Second Penobscot Nation Citizen: The other thing too you got to keep in mind, you have all the dioxins and the chemicals from the mills from way back when they were coming down the river so that was pretty impactful too.

Third Penobscot Nation Citizen: This Mohawk woman said, as she prayed over the food, “Bless this food and let this food help us to make good decisions today.” Putting the energy into the food. That affects how you think and how you feel, the water’s all throughout the food too, right?”

Third Passamaquoddy Citizen: The other thing is about sustenance. It’s pretty sad when you have to limit the amount of fish to eat because of mercury, other contaminants, and stuff like that. I think we’re going to have to monitor all of that to make sure that whatever is harming the fish - we need to make sure that if we consume them, they don’t harm us because it’s very real now.

First Penobscot Nation Citizen: Well down below we’re finding the sea-run fish are just as, if not, more contaminated than the freshwater ones, the bass and stuff. So the sea-run are just as poisoned as the ones in the river.

Third Penobscot Nation Citizen: I wish all the time I could go down there and fish. It’s such an important part of the diet, especially for the kid’s brain development, but there’s just so much poison - from even rainfall now, mercury - that’s even questionable for some fish.

First Mi’kmaq Citizen: I wouldn’t want to eat the fish that’s coming from Aroostook County, especially the Aroostook River. Cause I don’t know what they did to that river. I don’t mind swimming and all.

First Penobscot Nation Citizen: In my opinion, if you’re going to live that way, I wouldn’t be looking at whether they were contaminated or not, because you won’t eat anything if you knew exactly what we’re doing to the environment.

Third Penobscot Nation Citizen: That’s a two-hour drive (to Katahdin), just to get some really good, clean fish. The whole day trip, a good trip, but it’s a lot just to get a handful of fish. Just the water quality here has prevented us from fishing.

First Penobscot Nation Citizen: I started going to these conferences, and they’re starting to talk about [how] the plants can take [pollution] up, and the moose can get it from the water - eating the grass around the water’s edge. It’s just like, “wow, man we’re really killing ourselves.” There’s so much out there that they don’t even know.





Bold Coast. Photo by Rachel Bell.

Appendix B.

Policy and Sustenance

Interviews with Wabanaki Tribal Citizens



Description: Nine interviews were completed across the five recognized Wabanaki nations in Maine; Penobscot Nation (n=3), Passamaquoddy in Motahkomikuk (n=2), Passamaquoddy in Sipayik (n=2), Maliseet (n=1, and Mi'kmaq Nation (n=1). Interviewees are either active fishers or come from families with fishing traditions. Their presence isn't to analyze themes or to be used as data, but to provide space for Wabanaki knowledge to be represented throughout the report. These Appendixes serve as places for larger and nuanced discussions about topics from the report. Each interview was completed separately but were organized topically to support the different areas of the report. Specific care was taken to make sure each response was not taken out of context but grouped in ways to help demonstrate how multiple people think similarly and differently about a topic. The authors of this report removed filler words and made minor edits to correct grammar only where necessary for clarity. Appendix B is focused on statements about various policies and impact to sustenance, which are divided into sections titled policy, access, fishing regulations, and hydropower policy.

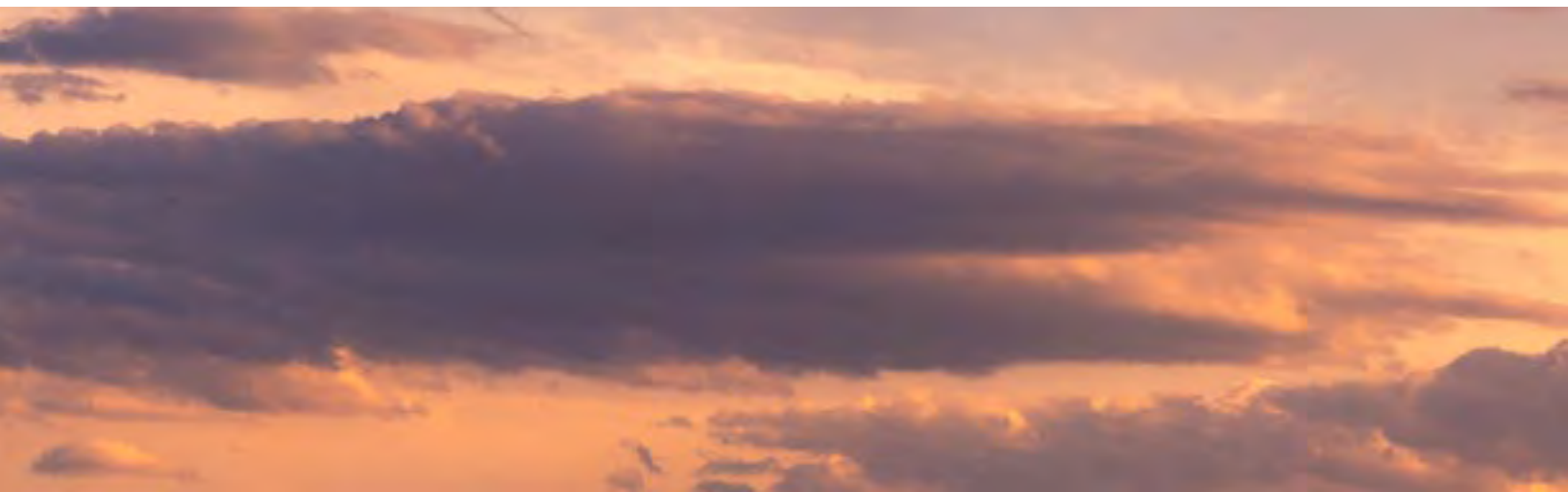
Policy

First Passamaquoddy Citizen: I think changes need to occur to access good and traditional fishing places because we live on the border, we're denied access to the whole bay where our ancestors would have been fishing. There's things going on in Canada right now policy changes or recognition of our rights to fish on both sides of the bay. And a lot of the good fishing spots are on the east side of the Passamaquoddy Bay. Every little island out there every little spot has a history, has a story that goes way back where people would go fishing and then over the years with the denial of access to these traditional fishing places. We lose that connection and lose a bit of the story in our culture. But it's never too late to get the story back. We just have to define it on our own.

Second Passamaquoddy Citizen: Also, the limitation of the Settlement Act - [that] limits the Tribes to a maximum of 150,000 acres into Trust - which I think is not a good thing. I don't like the idea of the limit, and I don't know [if] that goes back to the Settlement Act negotiations. I think that just limits the ability to provide those practices. Like when I was talking about the amount of hunters out there. Especially moose season. Moose are big, they have large areas that they move around on, but they need a large area. So there's not as many in one place then say, a muskrat. So you go out in the marsh, there's hundreds of muskrat because they don't need as big an area. The moose need a larger area, so that limits the amount that are actually in a parcel of land, and when you limit that parcel - and put more people on there hunting - it limits the opportunity for all tribal members.

Second Penobscot Nation Citizen: Based on the court's ruling, they haven't defined exactly what [is sustenance]. So they define sustenance in the land claims, but it's not exactly defined what that is. We have rights to sustenance fishing in the river, but we don't have rights to the river, so I'm like, "What about trapping or hunting?" I said, "Can I do that?" Well, we don't know - nobody knows apparently.

First Passamaquoddy Citizen: What I see in Canada, the Department of Fisheries, they're starting to realize the tribe has that right, and it's based on the courts over there, so what they're doing is they're buying out some of the non-tribal license holders. And then that gives a spot for a tribal fishermen. Because, in a way they're trying to control the population of the fish, of the harvest, so they see this as a way to increase the tribe's right. You know what I mean on control basis sort of. I don't like to use the word control because the tribe, has the right to do that. In every one of our treaties everyone one right from the very beginning, the right to hunt and fish was always stated and always agreed upon.



Second Penobscot Nation Citizen: This relationship is here, the relationship that we have with these fisheries are here because of how well we were in balance with it and now because the reason everybody else can catch these (fish) and do whatever is because of that 10,000 years of history that we had of keeping everything in balance.

First Maliseet Citizen: It'd be nice to have [a] more active role in the stewardship of these species that we still love.

Second Penobscot Nation Citizen: They should have a say. It would be neat to just have a whole kind of indigenous committee just check things because, again, if you have one person that's good, but imagine if you had five or six of them on a committee to double check marine resources regulations or different kind of things like that. Just to be an advisory committee - that would be pretty powerful.

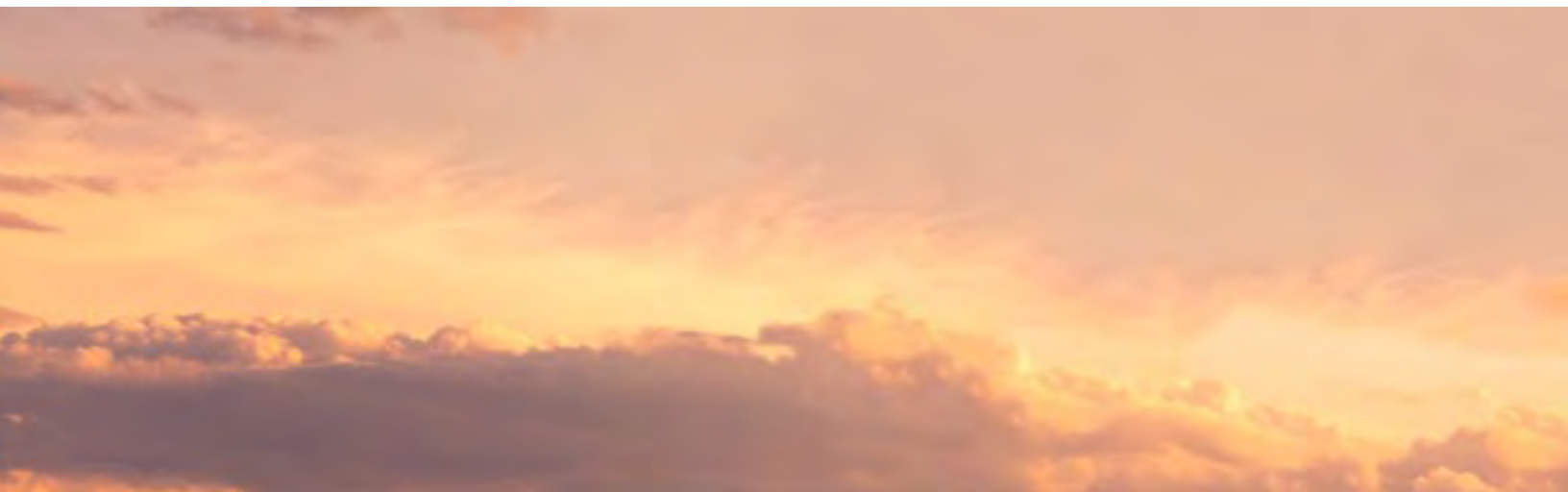
Third Passamaquoddy Citizen: [MITSC could] take over, as far as their jurisdiction over certain lakes if they have a minimum of 50% ownership of the shoreline. They could implement their own fishing ordinances and stuff like that, and charge people to fish. We need to show people, especially the state of Maine, that we're serious about this river waterway, the access that fish have to it, and that we're a major player in all of this - not just one of those adolescents that they treat us like.

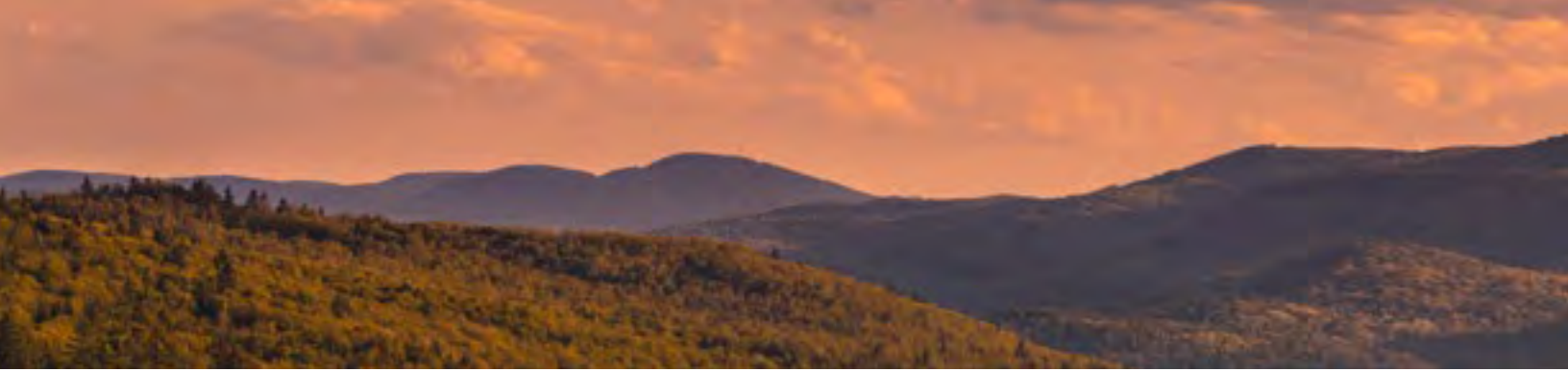
First Maliseet Citizen: The wider public seems to think, if we had the opportunity to do that, that would be something we would do. We heard about it in the water rights case talking about we have a lot of information to regulate hunting and fishing on our own lands up here but for some reason (the public) seems to think that if we had gotten those powers, we're gonna hunt everything, we're gonna fish everything.

First Mi'kmaq Citizen: As far as that sustenance goes and the thing is, is like a lot of people make the assumption that we would hunt too much.

Access

Fourth Passamaquoddy Citizen: But a lot of that is driven by contact, right? So that was like if you're forced into the woods. You might rely more upon game and if you're forced to live on, you know, a barren peninsula next to the salt water, you might do more fishing, Right? So it's driven by the colonial contact as well.





Second Penobscot Nation Citizen: We're pretty cut off, not a huge deal, but we still gonna like cut through the woods to go down and what not but, the access absolutely is challenging to kind of get to some of the spots that we want to.

First Micmac Citizen: If you're Passamaquoddy and Penobscot, they have their own places to hunt. But as far as the Mi'kmaq and Maliseets, we don't have a place where we can hunt. We can hunt in certain areas but not for moose.

Second Passamaquoddy Citizen: Moose [hunting], I think we have pretty good territory. I wish the tribe had more land, obviously. For deer hunting practices, obviously more land back is the ultimate goal. I think the settlement act having it a limit on the amount of land that we can put into trust will greatly impact hunting areas and different practices that we've always done. Since I started (hunting) to now there are more people hunting.

First Maliseet Citizen: It'd be nice to have more of a uniform access to our river, so that harvest can be spread out throughout an area and not have these concentration points where after a fishing season or a fiddlehead season can become pretty barren for a couple months.

Second Penobscot Nation Citizen: I don't know how they could address that, but if they had some way to give us access to certain points, maybe those points [could be] identified. I could go up the river, I could tell anybody exactly [the] kind of points that we need to access. I could tell exactly where it is. It wouldn't be that difficult for me to go upriver and say, "Look, this is what we used to access. We can't anymore. This is the access we need.

Third Penobscot Nation Citizen: If we had more moose grounds, we could rotate. Give one place time to rest (like a year), no hunting in this area for this year, so they can fully replenish.

Third Penobscot Nation Citizen: Yeah, I guess it's kind of restricted too by the seasons. So you have windows of opportunity. And I think for moose it's limited because of the land plots we have that *have* moose on them. And it's only for that couple of months, a year. [With] fish, you got a bigger window [of] opportunity and you can go down river. I mean, there are, uh, other than this mill that came back into town, they seem like they're migrating better up the river so you can get some of the sea runs. So there's that season. I think you're more limited with moose, deer is more accessible. Like we can go right up to the next island and get deer. You can't do that unless you're really lucky and come across a moose.

Fourth Passamaquoddy Citizen: I can tell you that if someone doesn't have any food and it's like this time of year (January), they might go get a deer because they need to eat right. So does that mean, what does that mean? Are they poaching? Is that what you call that? Or are they sustaining?

Second Penobscot Nation Citizen: They say striper is not really safe to eat. Because they got a lot of bad stuff in them, but still, they got the limit for stripers. I think tribal members should be



able to access striper, the smaller fish, the less dioxins, but you can't keep a fish unless it's like this big honkin fish. So those ones (the small fish) that we would target for our lifestyle, however, we can't do that either.

Fishing Regulations

First Passamaquoddy Citizen: We do have limited rights on fishing. It's always determined by quota system. Even within the tribe there's a quota system of how many people can go out and fish and lobster. If you have a quota system and it says, you only can have let's say eight boats out there lobstering. Well, those 8 boats have a lifetime license pretty much. So the next generation that's coming up, you know what can they do? They should have the same right of access but because of regulations put in by the state, it limits that right.

First Passamaquoddy Citizen: I really don't like the way that Maine has this law in place where you have to get a permit from the town and I think, fishing and clamming, like you know you put them together in one bucket right there. To me that's the same thing. The tribe has never given up that access to clamming or fishing.

Second Passamaquoddy Citizen: I've always traded moose meat for clams for the most part so I don't actually have to do the work, but the access to clams obviously has been limited around Pleasant Point because of pollution or conservation, so I think creating better management and better environmental policies that will help them to grow better to have a healthy stock, so that people can harvest those and those things need to be changed, I think.

Second Penobscot Nation Citizen: I think it's the Department of Marine Resources. They got so many regulations on alewives, but they're regulating it because they're looking at it as a resource. They're looking at the alewives as a monetary value. So the [Department] of Marine Resources, to my knowledge do not base anything on more of a lifestyle, like we are. Like a traditional lifestyle. I'm not making money. I'm using of for sustenance, for gardens, to do what we always did to make the soil better.

Second Passamaquoddy Citizen: Fresh water I think access is good. The bag limits kind of have a negative effect on the tribal community aspect so like as a person the bag limits are per individual so I can only catch that much. So I can go out I can't catch a bunch to feed or trade with somebody else, I have to only take my personal amount, which I think has an effect on how traditionally we've been able to fish or harvest for the community or people that aren't able to do so, I think that has an effect.

Second Passamaquoddy Citizen: So again, it goes back to the individual take and it doesn't address any of the food and ceremonial type of practices that we have, so it limits us, for freshwater, it limits the amount, you can take to provide for other families or to give to somebody else or as a smaller amount in and I guess that's probably conservation based but it goes against the traditional practices of tribal sustenance harvest.

First Maliseet Citizen: Those affect it towards lower end of the fishing seasons, we found with through our history, not just anadromous fish but things like trout, the best fishing would be around fall time but that's just something everybody has to deal with so that's all right.

Third Penobscot Nation Citizen: Technically, we don't have any - I'm not a hundred percent sure - if we have any licenses to go down to harvest seafood like lobster. It wasn't written into our settlement, but I am not a hundred percent sure. I just don't know anybody that does that. I know it's illegal though, for us to even get salmon below the dam.

Second Penobscot Nation Citizen: See, that's just a small example. All three of us were all psyched about this big salmon that we just netted on our own. It was pretty exciting; we were going to bring it back to the family and eat it. Then the game warden came in and took it - the irony of it is [it was] in that Milford dam. That is our most traditional place that we harvested salmon for the Penobscot. So you think about that, you got three Penobscot kids netting a salmon for sustenance for the tribe, and then they ended up getting pinched by the game warden and then they [game warden] took the salmon away.

Second Passamaquoddy Citizen: I think the marine mammal side of it with the Federal prohibition is tough, especially with porpoise seals.

First Maliseet Citizen: It seems to be like anything, everything is different over there (Canada), everything we would be restricted to over here in the States they're free to do over there. I mean it causes a lot of problems, you heard about the Mi'kmaq and lobster fishing, that's a big issue over there, but it'd be nice to just have that kind of even have that opportunity.

Third Penobscot Nation Citizen: We went down to Sipayik the other day and went fishing on the wharf, we caught one fish but I was like, man, this is nice. Like, I would love to be able to have access to this, to go down to the (Penobscot) bay.

Third Penobscot Nation Citizen: Yeah. Yeah. Cause we technically, we don't have any like, I am not a hundred percent sure, if we have any like licenses to go down to harvest seafood like lobster, it wasn't written into our settlement but I am not a hundred percent sure. I just don't know anybody that does that. I know it's illegal though, for us to even get salmon below the dam.



Second Passamaquoddy Citizen: I think there's sufficient territory, both salt and freshwater. I think the stocks or the amount of fish is not so great, like in the Passamaquoddy Bay the ground fishing is not like it used to be, I remember as a kid go out there and get the flounder all the time now, if you have to really search to go get some flounder. And to catch pollock and cod and haddock, it's a lot more work now to get that stuff.

Hydropower Policy

Third Passamaquoddy Citizen: But the thing is that they're spending millions of dollars to grow those landlocked salmon and they say that it brings in millions of the economy, but with the alewives all you're going to do is give them access, you don't have to have a hatchery. You don't have to do anything but give them access to the river and multiply by millions and they'll feed every other fish.

First Penobscot Nation Citizen: Yeah, I mean look at the dams, do we need them all? A big policy would be the dams. I would remove some of these major dams. I mean not just the Penobscot, but if you look at New England it's ridiculous how many dams are in New England. It's just crazy.

Third Passamaquoddy Citizen: The obstacle which I'll call the dam and then the fish can go up around and then come down because you know, one of the things we haven't talked about is a lot of the fish get chopped up in the turbine.

First Penobscot Nation Citizen: Yeah, there's going to be some point that all the herring the blue herring coming up, there's going to be so many of them that the fish elevators are going to be killing the fish, they're going to be at capacity. They're going to be really large numbers coming up, and they can't get all the fish in there, and so, by the time it drops off one load goes back some will die. There will be massive fish kills.

Third Passamaquoddy Citizen: I'd like all the dams gone myself but that's probably not going to happen, so we need sufficient fishways, you know and in Europe, what they do is that fish ways can be kilometers long you know just not a couple hundred feet or a few hundred yards. And they've got built into them, you know, in the event of heavy rains flood this and that and they've factored that all in so they build a channel all the way around.

First Penobscot Nation Citizen: There's a natural fishway (Howland), no one can fish if it no one can be around it, they wanted to keep the dam there so they could keep the headwaters up but there's this natural fish way that goes around the dam And it really is cool I mean the you can see the fish running up there, and so I mean if every damn had one of those that i'd be alright with that.





Ash and sweetgrass basket.
Photo by Rachel Bell.

Appendix C.

Sustenance and Healing

Interviews with Wabanaki Tribal Members



Description: Nine interviews were completed across the five recognized Wabanaki nations in Maine; Penobscot Nation (n=3), Passamaquoddy in Motahkomikuk (n=2), Passamaquoddy in Sipayik (n=2), Maliseet (n=1), and Mi'kmaq Nation (n=1). Interviewees are either active fishers or come from families with fishing traditions. Their presence isn't to analyze themes or to be used as data, but to provide space for Wabanaki knowledge to be represented throughout the report. These appendices serve as places for larger and nuanced discussions about topics from the Report. Each interview was completed separately but was organized topically to support the different areas of the report. Specific care was taken to make sure each response was not taken out of context but grouped in ways to help demonstrate how multiple people think similarly and differently about a topic. The authors of this report removed filler words and made minor edits to correct grammar only where necessary for clarity. Much of the history in this report involves trauma to Wabanaki lifeways and this Appendix is about healing as respondents consider what the impact of having more robust sustenance species would have for their communities.

First Passamaquoddy Citizen: In some of the legends from the past, there were so many fish out there. Life was so abundant and when every time there was a change - it cut down the population, cut down access - it changed everything. Trying to find that middle ground, where everything starts to come back. They started honoring life in the ocean, fisheries.

Third Passamaquoddy Citizen: I don't look at fish as a problem for just the Passamaquoddy or the Wabanakis. I think it's just people as a whole, and I think if we have a healthy population and sea-run fish everyone and everything is going to benefit, including the environment.

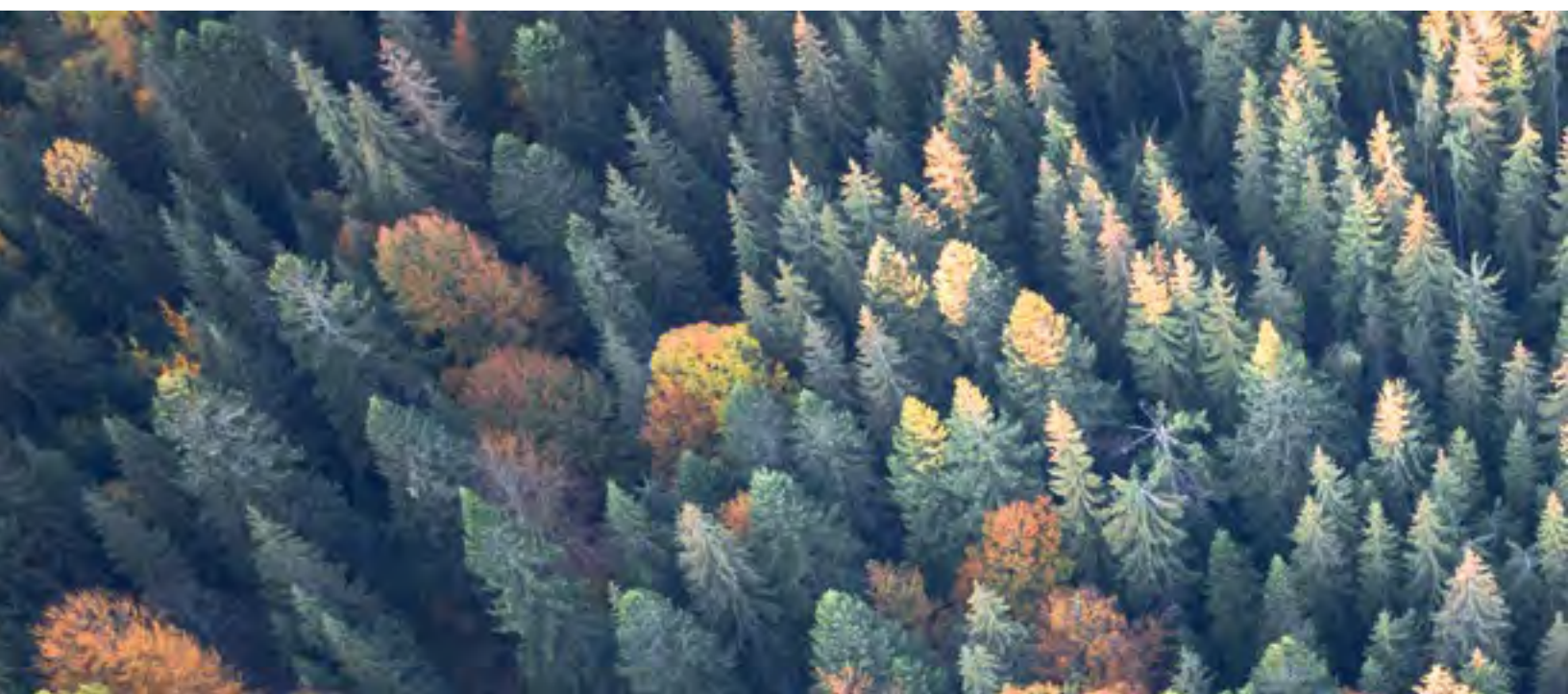
Third Passamaquoddy Citizen: They never would have opened up that river if it wasn't for the Passamaquoddy Tribe. We led the way and we're continuing to lead the way and I don't see that changing.

Fourth Passamaquoddy Citizen: If we're talking just about sustenance and sustainability, we have to include the other fisheries as well because they [the alewives] are going to support all of that as well, right?

Second Penobscot Nation Citizen: Oh, it would be huge. I mean it would be life changing. Both mentally and physically. To be able to have [open] access to that. If we had free access to get salmon below the dam, and have free access to stripers, alewives - any of that that we've always traditionally had - that would be huge. Just like I said, getting hose little bit of alewives has been impactful. Now I get phone calls around that time, like, "Alewives running yet?" So that would be the same thing with salmon or striper. We have a lot of elders here that want that, and single parent homes. They want access to that traditional food that we have.

Third Passamaquoddy Citizen: Wouldn't it be nice if we had our ceremonial weekend, and we were all eating salmon from our own river? Rather than getting it from another river. I think that someday that will happen. But the first thing we have to do is allow the alewife and blueback herring as close to unfettered access as possible to spawn and I think the other species will come back.

First Penobscot Nation Citizen: And it brings us back together, working together and things happen when people gather and talk even if it's just small talk. It builds a bond, and I think it



would be more prideful and I think would have less drug and alcohol problems. I think it would just be a healthier community if we got back to what we used to do.

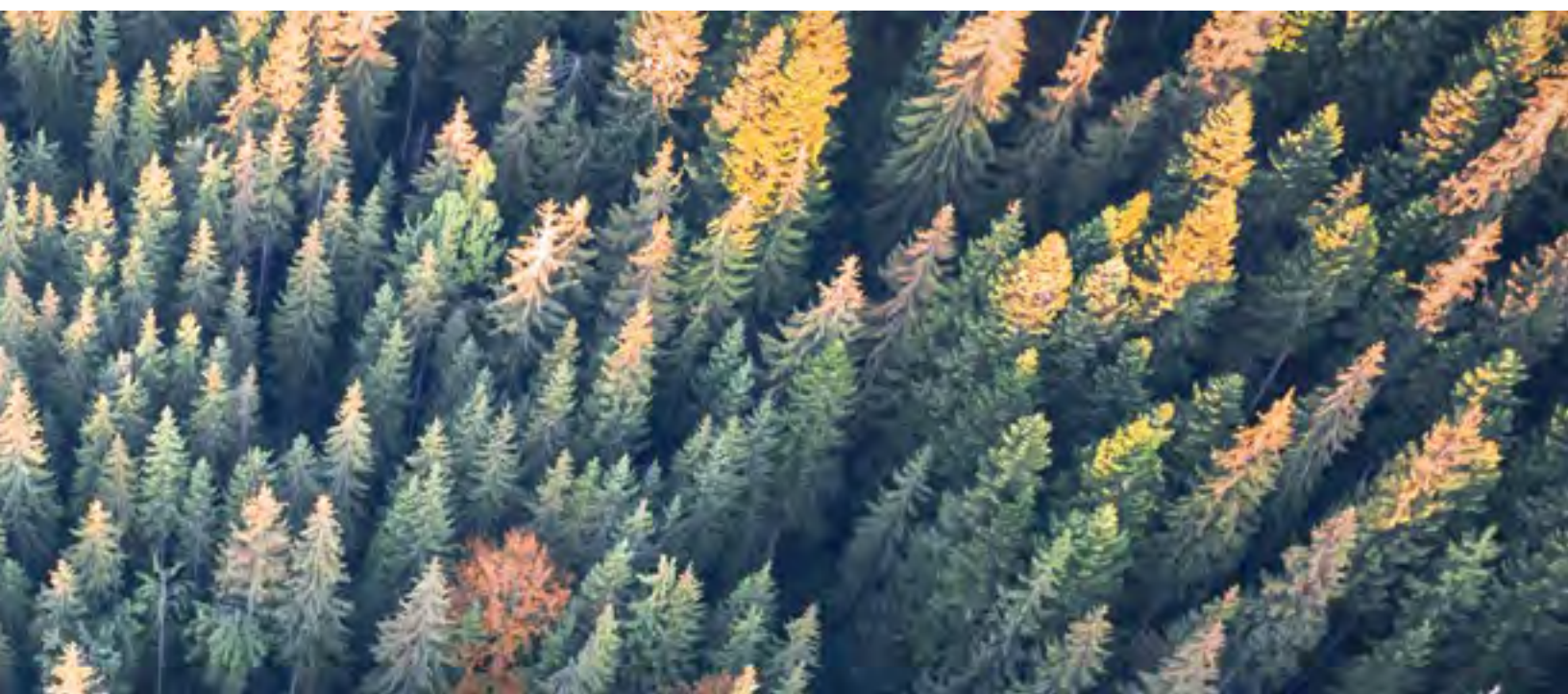
First Passamaquoddy Citizen: Well, it would be allowing people to get back to their roots. I think a lot of activities that that we do as a tribe is part of our DNA. A lot of us don't realize that why we do things because it's in our system. I see more employment in the tribe. I see a closer connection with the environment when we're out there actually able to work in the environment. And forming relationships with life around them and underneath them and the ocean.

Second Passamaquoddy Citizen: I think it helps us to continue our traditional practices to eat healthy food. Instead of processed and I think that brings back our number one resource, is the people of the Passamaquoddy so to be able to eat healthy and live a longer life to teach the kids about these traditions and ceremonies and to continue to be Passamaquoddy that's the most important thing.

Second Penobscot Nation Citizen: Carol always said that they have the strawberry ceremony. They [have] different ceremonies that they have to give thanks and celebrate. Celebrate that relationship that we have with whatever is that time of year. It would generate a lot of excitement and it would get our youth, which is important, get our youth back out there participating and getting involved. Kind of getting more to the roots of who they are. That kind of pride is powerful - if you have that.

Third Penobscot Nation Citizen: Well, I think it would better a lot of our diets. It would be a little bit of a shifting with people learning how to use it, but I also think it would motivate people to be like, hey, I want to do that. Fresh fish, it might inspire their taste buds, their DNA. Like me, myself, I don't fish as much as I used to, I do it for fun, but I'm not going to eat bass, it's full of bones.

Second Penobscot Nation Citizen: That is extremely important, I mean we get cancer rates now that are somewhat higher on the island, then we do anywhere else, because of chemicals that are in the river.





Second Passamaquoddy Citizen: Here at Indian township the average life expectancy is 47 for the Passamaquoddy male, which is just scary. By that stat I have five years left, which is just kind of its third world stuff. It's happening here in the United States and Maine.

Second Passamaquoddy Citizen: But to provide that access to provide traditional living is exercising while you do it obviously providing doing that practice provides exercise, provides connection with nature, which is a huge thing for me. To be part of the whole ecosystem, not just, you're not just taking something out of the river you're being you're a part of that whole system to again to be part of that balance is just spiritual in itself.

Fourth Passamaquoddy Citizen: But if they had an opportunity and the space and the resources to grow some of their own food, not only would they be more healthy, but they'd also feel better about themselves. Right? Which is kind of compounds itself into a better sustained life. Thinking about the alewives again, I keep going back to that, those have to come back in large, large numbers. I think that's going to help overall with the fishery and that's going to help overall with the economy, you know, and if that means putting a loaf of bread on your table, then, you know, that's part of that as well.

First Penobscot Nation Citizen: I mean we should have our own farms and I'm thinking we should talk about aquaculture, raising our own fish because at some point, out there is going to be really bad fish, and so what if we start raising our own fish? That in itself it's money and we could feed our own people. Raise our own deer, you know deer farms, do farming and if we did all of this together and hired our own people, we would sustain ourselves.





First Mi'kmaq Citizen: One thing I will say about COVID is that it's nice to see people planting gardens, and it's nice that people are finding their culture again, through beadwork and finding their language and all this and so on. As far as sustenance, and creating a garden, I know, out of six or seven people, I know that four, four of them still continue to do their gardens because it just feels so great.

Third Penobscot Nation Citizen: It would be nice to have more smokeable fish available, you know, maybe I know they have like a trout farm or something. Maybe there could be an exchange where we get striped bass coming up here, you know, could we like stock up and dry fish that way it would be easier to store and distribute.

First Mi'kmaq Citizen: I wouldn't mind really seeing like, even just basic smaller gardens behind people's houses that barter and trade. Hey, how are your peas doing? I'll trade you some peas. I got some carrots here and so on. I'm seeing that in the community, giving and sharing.

First Penobscot Nation Citizen: For me, I would like for us to be fishing for the tribe as a whole, like we hire our own people to go fish for us, we either get into lobstering, get into doing elvering not as individuals, but as a group, so that was we're doing it for the whole betterment of the tribe as a whole, so I would I would love to see us branch out and do lobstering like Passamaquoddy in Township are doing.



Endnotes

- 1 Maine’s “Act to Implement the Maine Indian Claims Settlement” (MIA), 30 M.R.S.A. §6201 et seq., along with the federal Maine Indian Claims Settlement Act (MICSA), 25 U.S.C. §1721 et seq., form the legislative settlement of the land claims litigation in *Joint Tribal Council of the Passamaquoddy Tribe v. Morton*, 528 F.2d 370 (1st Cir. 1975).
- 2 The Maine Implementing Act covers the Penobscot Nation, the Passamaquoddy Tribe, and the Houlton Band of Maliseets. This report will refer to these political units collectively as Wabanaki Nations.
- 3 Whether the Penobscot River is “within the boundaries” of the Penobscot reservation is an issue that was recently in litigation. The Penobscot Nation’s petition for certiorari to the Supreme Court was denied on April 18, 2022. The First Circuit opinion, *Penobscot Nation v. Frey*, 3 F.4th 484 (1st Cir. 2021) is <https://casetext.com/case/penobscot-nation-v-frey-1>.
- 4 The Recommendations at pages 105-111 of this report.
- 5 Quoted from interview with the authors and John Banks, former Department of Natural Resources Director for the Penobscot Nation.
- 6 David A. Francis & Karen Schaumann, *Sunrise at Sipayik: A Passamaquoddy Tribal and Personal Oral History*, Maine Folklife Center, 2016 https://books.google.com/books/about/Sunrise_at_Sipayik.html?id=FXphDQEACAAJ.
- 7 Prins, H. & McBride, B, *Asticou’s Island Domain: Wabanaki Peoples at Mount Desert Island 1500-2000 Vol 1*, National Park Service, 2007, at 27. *See also, Id.* excerpt *Eastern Wabanaki Seasonal Hunting and Gathering Cycle* https://www.researchgate.net/figure/Eastern-Wabanaki-seasonal-hunting-and-gathering-cycle-Prins-McBride-2007a_fig3_331314392.
- 8 Harper, B. & Ranco, D., *Wabanaki Traditional Cultural Lifeways Exposure Scenario*, Dartmouth College, July 9, 2009, <https://www.epa.gov/sites/production/files/2015-08/documents/ditca.pdf>.
- 9 *Id.*
- 10 “Diadromous” fish migrate between fresh and salt water. Subcategories “anadromous” fish, such as salmon and alewives, migrate upriver from the ocean to breed in fresh water, while “catadromous” fish, such as the American eel, spend most of their life in fresh water but migrate to the sea to spawn.
- 11 History of Penobscot County, Maine, Williams, Chase and Co., Cleveland, Ohio, 1882 at 902.
- 12 Bassett, E., *Cultural Importance of River Herring to the Passamaquoddy People* (amended Feb. 11, 2015), Sipayik Environmental Department, http://www.wabanaki.com/wabanaki_new/documents/Passamaquoddy%20and%20River%20Herring-Cultural%20Importance%20v5.pdf; *see also, supra* note 8, anadromous fish are the subset of diadromous fish that spawn in fresh water and live most of their lives in the ocean.
- 13 Saunders, Hachey, & Fay, *Maine’s Diadromous Fish Community: Past, Present, and Implications for Atlantic Salmon Recovery*, Fisheries Magazine, Vol 31 No. 11 (November 2006) <http://www.gulfofmaine.org/kb/uploads/1717/saunders%20et%20al.pdf>; *see also* “Penobscot River Fisheries” Penobscot River Restoration Project <https://www.nrcm.org/programs/waters/penobscot-river-restoration-project/penobscot-river-fisheries/>.
- 14 *See, Hall, Jordaan & Frisk, Centuries of Anadromous Forage Fish Loss: Consequences for Ecosystem Connectivity and Productivity*, BioScience, Vol. 62, No. 8 (August 2012), Oxford University Press on behalf of the American Institute of Biological Sciences, <https://cpb-us-e1.wpmucdn.com/you.stonybrook.edu/dist/1/956/files/2015/03/Hall-et-al-2012-In-print-1cjen88.pdf>.
- 15 *Supra* note 8.
- 16 Interview with the authors and Ed Bassett, Passamaquoddy Environmental Department, referencing Maine Commissioner of Fisheries Atkins. Ed explained that the higher number of 80 million alewives came from a 2017 analysis by Canadian DFO, calculated at 845.7 fish per acre of water surface.

- 17 Maine Legislature, *Acts and Resolves of the Forty-Sixth Legislature of the State of Maine 1867*, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1867v1/PD1867v1_H010.pdf. The Resolve actually had two separate charges for the Commissioners which, when viewed in today's light, appear almost contradictory: (1) "restoring sea-fish to our lakes and streams"; and (2) "introduce into such waters as they may deem best suited therefor, the spawn of the black bass, land locked salmon, and other varieties, if they deem it expedient."
- 18 A Mr. Foster and a Mr. Atkins were appointed as the first Commissioners. Mr. Atkins did most of the report writing.
- 19 "A simple calculation shows that . . . the Penobscot should yield 168,000, and the Kennebec 107,000 yearly; while in the same proportion the number of salmon produced for the market by the whole State, excluding that portion drained by the Saint John, would be 500,000. The number now produced in the State does not exceed 10,000." Maine Legislature, *Annual Reports, 1869-70*, at 6 http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1869-70/PD1869-70_12.pdf.
- 20 "Salmon for Maine's Rivers," Department of Marine Resources <https://www.maine.gov/dmr/fisheries/sea-run-fisheries/programs-and-projects/salmon-for-Maine-rivers>.
- 21 *Supra* note 13; in 2006 there was no commercial fishing on the Penobscot for any of these three species.
- 22 "Beginning in 1616, epidemics wiped out as much as 75% of the Wabanaki population in Maine, and many coastal villages were entirely abandoned." *supra* note 8. While this tragedy is not directly relevant to this report, it is worth noting that the population sustained in part by diadromous fish prior to the 17th century was substantially larger than the entire population of Maine in the 17th century; the estimate of the Native population prior to contact is 20,000, while Maine's settler population probably did not reach that figure until the 1760s after the French and Indian War. *Timeline of Maine History: Massachusetts and the Colonial Period*, Maine an Encyclopedia, <https://maineencyclopedia.com/timeline-of-maine-history-03-massachusetts-and-the-colonial-period/>.
- 23 The relevant watersheds include the Penobscot, Union, Narraguagus, Pleasant, Machias, East Machias, Orange, Dennys, Pennamaquan, St. Croix, Aroostook, and Meduxnekeag rivers.
- 24 30 M.R.S.A. §6207.4. This report neither intends nor attempts to resolve the legal issue of the extent of the sustenance fishing rights referenced in the MIA. For example, the Passamaquoddy reservation is defined in the MIA by reference to "those lands reserved to the Passamaquoddy Tribe by agreement with the State of Massachusetts dated September 19, 1794 . . ." That treaty included "the privilege of fishing on both branches of the River Schoodic without hinderance or molestation," and while the recent litigation in *Penobscot Nation v. Frey*, 3 F.4th 484 (1st Cir. 2021) determined that the Penobscot River was not part of the geographic Penobscot Indian Reservation, in the end it did not address riparian or sustenance fishing rights in that river. These remain open legal questions.
- 25 Pawling, *Wabanaki Homeland and Mobility: Concepts of Home in Nineteenth-Century Maine*, *Ethnohistory* 63:4 (2016) <https://umaine.edu/nativeamericanprograms/wp-content/uploads/sites/320/2017/07/Pawling2016.pdf>.
- 26 Hall, Jordaan, & Frisk, *The historic influence of dams on diadromous fish habitat with a focus on river herring and hydrologic longitudinal connectivity*, *Landscape Ecol*, <https://cpb-us-e1.wpmucdn.com/you.stonybrook.edu/dist/1/956/files/2015/03/Hall-et-al.-2010-1z05hnf.pdf>.
- 27 *Supra* note 20.
- 28 *Id.*
- 29 Warner, Pete. (February 13, 2022). Atlantic Salmon Count Drops in 2021. *Bangor Daily News*. <https://bangordailynews.com/2022/02/13/outdoors/maine-atlantic-salmon-count-drops-in-2021-joam40zk0w/>.
- 30 Petition of Decun Sacobason to the Senate and House of Representatives, January 31, 1821, handwritten petition, https://digitalmaine.com/acr_choosing_survival/3/, *transcription*, <http://www.maine.gov/sos/arc/dsacobason.pdf>.

- 31 Watts, D., *Historic Documents Related to the Anadromous Fisheries of the St. Croix River, Maine and Canada*, May 2005, <https://schoodicriverkeepers.com/wp-content/uploads/2018/08/Watts-St.Croix-REPORT-petitions-on-alwives.pdf>.
- 32 The introduction to Atkin's 9th report is, standing alone, a powerful sociopolitical essay discussing the economic panic of 1873, the resulting interest by the unemployed in catching fish to eat, and the policy, mistaken in Atkins view, of favoring the lumber industry. Maine Legislature, *Annual Reports*, 1876, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1876v1/PD1876v1_08.pdf.
- 33 Maine Legislature, *First Report of the Commissioners of Fisheries*, 1867, https://digitalmaine.com/cgi/viewcontent.cgi?article=1023&context=ifw_docs.
- 34 *Id.* Mr. Atkins took great care to describe and even locate the downstream weirs that contributed to overfishing before the fish could even begin their journey to spawning grounds and noted the general lack of compliance with laws and regulations meant to ease the pressure on the fisheries.
- 35 *Supra* note 26.
- 36 Forkey, Neil, *Anglers, Fishers, and the St Croix River, Conflict in a Canadian-American Borderland*, 1867-1900, *Forest & Conservation History*, Vol 37, No 4, October 1993, at 179-187, <https://schoodicriverkeepers.com/wp-content/uploads/2018/08/Forkey-1993-anglers-and-fisher-in-St-croix.pdf>.
- 37 *Supra* note 26.
- 38 Hennessey, T., *A clubhouse on the banks of the Penobscot River recalls the days when salmon — presidential or otherwise — were plentiful*, *Down East Magazine*, May 2017, <https://downeast.com/arts-leisure/fish-story/>.
- 39 *A Water Quality Success Story*, EPA, December 1980, <https://nepis.epa.gov/Exe/ZyPDF.cgi/9100PB9K.PDF?Dockey=9100PB9K.PDF>.
- 40 *Supra* note 30.
- 41 *Supra* note 36.
- 42 Buesing & Conckling, *Nineteenth Century Wabanaki Politics in Maine*, Bangor, Maine, August 1974, at 53-55 in Hubbard, "To our Brethren, the Passamaquoddy Tribe of Indians", 1/1852, at 69. Maine State Library, Augusta, Record of Letters, 4:222-6) (on file with Ed Bassett).
- 43 *Id.* As salmon have been the most popular anadromous fish for both food and sport, the health and viability of the salmon population is a bellwether of sorts for all anadromous fish and have been studied more extensively than others.
- 44 National Oceanic and Atmospheric Administration (NOAA), *Atlantic Salmon*, NOAA Fisheries, <https://www.fisheries.noaa.gov/species/atlantic-salmon#>.
- 45 *Id.*
- 46 National Oceanic and Atmospheric Administration (NOAA), *Atlantic Sturgeon*, NOAA Fisheries, <https://www.fisheries.noaa.gov/species/atlantic-sturgeon#>.
- 47 *Supra* note 13.
- 48 National Oceanic and Atmospheric Administration (NOAA), *NOAA Announces Determination Not to List Alewife or Blueback Herring under the Endangered Species Act*, <https://content.govdelivery.com/accounts/USNOAAFISHERIES/bulletins/24bd1c3>.
- 49 Dan Kirchels, *Atlantic Salmon Recovery Plan Companion Document*, 2018, Atlantic Salmon Restoration.org, https://atlanticsalmonrestoration.org/resources/documents/atlantic-salmon-recovery-plan-2015/atlantic-salmon-recovery-plan-companion-document/index_html.
- 50 *Freshwater Fish Safe Eating Guidelines* (last accessed Nov 3, 2022), Maine Division of Environmental and Community Health, <https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/fish/2kfca.htm#>.
- 51 U.S. Department of Health and Human Services, *Health Consultation: Review of Anadromous Fish: Penobscot River*, May 19, 2021, https://www.atsdr.cdc.gov/hac/pha/PenobscotRiver/Penobscot_Indian_Nation_HC-508.pdf#.

- 52 *Id.*
- 53 Colonial era treaties recognized broad rights in this regard. For example, *Dummer's Treaty* between the Penobscots and other tribes and the Massachusetts Bay Colony guaranteed the 'Natives' "Privilege of Fishing, Hunting, and Fowling as formerly." Located in Gerald R. Ford Presidential Library, Bradley H. Patterson Files, Box 4, folder "Passamaquoddy/Penobscot Land Claims" at 10, <https://www.fordlibrarymuseum.gov/library/document/0142/1103413.pdf>; and Paul, D. *Treaty of 1725*, www.danielpaul.com, <http://www.danielpaul.com/TreatyOf1725.html>; the 1794 treaty between Massachusetts and the Passamaquoddy guaranteed the "privilege of fishing on both branches of the river Schoodic without hinderance or molestation . . ." Passamaquoddy at Sipayik: Pleasant Point Tribal Government, *Treaty Between the Passamaquoddy Tribe and the Commonwealth of Massachusetts, 1794*, http://www.wabanaki.com/wabanaki_new/Treaty_of_1794.html. The federal litigation *Penobscot Nation v. Frey*, 954 F.3d 453, 453 (1st Cir. 2020), involved sustenance fishing rights in the Penobscot River, but the 1st Circuit Court of Appeals decided not to decide that question.
- 54 *Supra* note 17.
- 55 *Supra* note 33.
- 56 Maine Legislature, *Address of Governor Chamberlain*, January 1867, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1867v1/PD1867v1_00C.pdf.
- 57 Maine Legislature, *Public Documents of Maine: Annual Reports, 1869-70*, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1869-70/PD1869-70_03.pdf.
- 58 Maine Legislature, *Public Documents of Maine: Annual Reports, 1880*, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1880v1/PD1880v1_08.pdf.
- 59 Maine Legislature, *Public Documents of Maine: Annual Reports: Public Officers and Institutions, 1889*, at 8, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1889v1/PD1889v1_07.pdf.
- 60 *See supra* note 36.
- 61 This statement of policy comes from the Atlantic Salmon and Sea-Run Fish Restoration Project, a partnership that includes the State. *See* <https://atlanticsalmonrestoration.org/about/our-work>.
- 62 National Oceanic and Atmospheric Administration (NOAA), *Recovery Plan (2019) for the Gulf of Maine Distinct Population Segment of Atlantic Salmon*, NOAA Fisheries, <https://www.fisheries.noaa.gov/resource/document/recovery-plan-2019-gulf-maine-distinct-population-segment-atlantic-salmon-salmo>.
- 63 "A sustainable American shad fishery will not diminish future stock reproduction and recruitment of American shad in Maine." Maine Department of Marine Resources, *Maine Sustainable Fisheries Management Plan for American Shad*, August 4, 2020, http://www.asmf.org/files/Shad%20SFMPs/ME_AmShadSFMP_2020.pdf.
- 64 The DMR, rather than the Department of Inland Fisheries and Wildlife (DIFW), has authority over policy on sea-run fish. *See* WABI News Desk, (Apr 9, 2021), *Maine Department of Marine Resources drops dam removal plans*, <https://www.wabi.tv/2021/04/09/maine-department-of-marine-resources-drops-dam-removal-plans/>; and Andrews, C, *Maine plans to deny key certification for Kennebec dam*, (Aug 19, 2021), Bangor Daily News, <https://kennebecriveralliance.org/>.
- 65 38 M.R.S.A. §464.1.
1. Findings; objectives; purpose. The Legislature finds that the proper management of the State's water resources is of great public interest and concern to the State in promoting the general welfare; in preventing disease; in promoting health; in providing habitat for fish, shellfish and wildlife; as a source of recreational opportunity; and as a resource for commerce and industry. The Legislature declares that it is the State's objective to restore and maintain the chemical, physical and biological integrity of the State's waters and to preserve certain pristine state waters. The Legislature further declares that in order to achieve this objective the State's goals are:
 - A. That the discharge of pollutants into the waters of the State be eliminated where appropriate;

[PL 1985, c. 698, §15 (NEW).]

B. That no pollutants be discharged into any waters of the State without first being given the degree of treatment necessary to allow those waters to attain their classification; and [PL 1985, c. 698, §15 (NEW).]

C. That water quality be sufficient to provide for the protection and propagation of fish, shellfish and wildlife and provide for recreation in and on the water. [PL 1985, c. 698, §15 (NEW).]

The Legislature intends by passage of this article to establish a water quality classification system which will allow the State to manage its surface waters so as to protect the quality of those waters and, where water quality standards are not being achieved, to enhance water quality. This classification system shall be based on water quality standards which designate the uses and related characteristics of those uses for each class of water and which also establish water quality criteria necessary to protect those uses and related characteristics. The Legislature further intends by passage of this article to assign to each of the State's surface water bodies the water quality classification which shall designate the minimum level of quality which the Legislature intends for the body of water. This designation is intended to direct the State's management of that water body in order to achieve at least that minimum level of water quality. [PL 1985, c. 698, §15 (NEW).]

- 66 38 M.R.S.A. §464.4.H & §464.9-A. There are of course many competing interests involved in the creation of fisheries policy and in how Maine's waters are to be utilized. A primary purpose of this report is to set out what those policies are and how they may affect sustenance practices.
- 67 38 M.R.S.A. §466-A. *See also* <https://www.maine.gov/governor/mills/news/governor-mills-signs-law-her-bill-protect-sustenance-fishing-maine-tribes-2019-06-21>. The sustenance use areas include the Maine Stem and East Branches of the Penobscot, portions of the Main Stem of the St. Croix and the Meduxnekeag and some of their tributaries, and portions of the Aroostook River, Prestile Stream, West Branch of the Mattawamkeag, and upper St. John.
- 68 38 M.R.S.A. §466-A.
- 69 Maine House of Representatives, Environment and Natural Resources, *Committee Amendment to H.P. 1262, L.D. 1775, Bill, "An Act To Protect Sustenance Fishing,"* <http://legislature.maine.gov/legis/bills/getPDF.asp?paper=HP1262&item=2&snum=129>.
- 70 12 M.R.S.A. §6302-A. "Marine organisms" include "any animal, plant or other life that inhabits waters below head of tide" and hence includes anadromous fish species such as salmon, shad, and river herring. 12 M.R.S.A. §6001.26.
- 71 12 M.R.S.A. §6302-A.2.
- 72 *See* "Assessment of the Intergovernmental Saltwater Fisheries Conflict Between Passamaquoddy and the State of Maine", Maine Indian Tribal State Commission Special Report 2014/1 June 17, 2014.
- 73 *Infra* at 4.
- 74 Department of Marine Resources, *Kennebec River Diadromous Fish Restoration Project*, <https://www1.maine.gov/dmr/fisheries/sea-run-fisheries/programs-and-projects/kennebec-river-restoration-project>.
- 75 *Kennebec River Fish Restoration Management Plan*, DMR, 1985, <https://www.maine.gov/dmr/sites/maine.gov/dmr/files/docs/60.pdf>.
- 76 Department of Marine Resources, *Division of Sea-Run Fisheries and Habitat: Division Mission*, <https://www.maine.gov/dmr/fisheries/sea-run-fisheries>.
- 77 National Oceanic and Atmospheric Administration (NOAA), *Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon: Final Plan for the 2009 ESA Listing*, Jan 31, 2019, <https://atlanticsalmonrestoration.org/resources/documents/atlantic-salmon-recovery-plan-2015/final-atlantic-salmon-recovery-plan-2019/index.html>.
- 78 Although the MIA limits sustenance fishing to the Wabanaki reservations, Title 12 allows sustenance harvesting of marine organisms by tribal members and/or their households "at any

location within the State.” 12 M.R.S.A. §6302-A. *See also Penobscot Nation v. Frey*, 3 F.4th 484 (1st Cir. 2021).

79 38 M.R.S.A. §466.10-A & 38 M.R.S.A. §466-A.

80 38 M.R.S.A. §418-A.

81 *Id.* at §418-A.

82 *R. v. Marshall*, [1999] 3 S.C.R. 456. “The accused’s treaty rights are limited to securing “necessaries” (which should be construed in the modern context as equivalent to a moderate livelihood), and do not extend to the open-ended accumulation of wealth. . . What is contemplated is not a right to trade generally for economic gain, but rather a right to trade for necessities.”

83 Roger Paul, Passamaquoddy, email dated October 14, 2020. Roger holds a masters in linguistics from MIT and works as a Wabanaki Languages teacher with the Penobscot Nation, the University of Maine at Orono, and the University of Southern Maine. He takes an active and diligent role towards the preservation, continuing growth, and prosperity of the Wabanaki language, culture, and people.

84 *See e.g.*, § 2.02 [1] Cohen's Handbook of Federal Indian Law, Newton, 2005.

85 Alex Shashkevich, “The power of language: How words shape people, culture” Stanford University News, <https://news.stanford.edu/2019/08/22/the-power-of-language-how-words-shape-people-culture/>.

86 Mengchen Wang, “Reflections on Culture” Pennsylvania State University, <https://sites.psu.edu/seerwang/reflections-on-culture/>.

87 Although Maine has statutes defining “sustenance” in other contexts, none are dispositive as to how the word should be defined in MIA because that Act itself has no definition. Conversely, none of the Wabanaki Nations has attempted a specific definition of sustenance. Hence, the comments herein regarding Wabanaki views of sustenance are synthesized from interviews with Tribal members and from historical practices. For those interested, the legislative history of the MIA can be found, <https://www.maine.gov/legis/lawlib/lldl/indianclaims/index.html>.

88 *See A Passamaquoddy-Maliseet Dictionary*, Francis & Leavitt, 2008, <https://pmportal.org/browse-dictionary>.

89 *Id.* at 6-7, subsection “Language and Culture”.

90 Interview with the authors and Ed Bassett, Passamaquoddy Tribal member.

91 Interview with the authors and John Banks, former Department of Natural Resources Director for the Penobscot Nation.

92 Roger Paul, Passamaquoddy Tribal member, email dated October 14, 2020. His credentials can be reviewed, <https://ovee.itvs.org/screenings/s54s0> or <https://umaine.edu/nativeamericanprograms/people/rogerpaul/>

93 Recognizing the importance of understanding sustenance from a Wabanaki perspective, this report includes a fuller discussion of Wabanaki voices on sustenance in Appendices B and C.

94 Margaret Apt, a Native Passamaquoddy speaker, described the Passamaquoddy language as “a unique mindset, in which I feel completely at home.”; for a definition of “home” *see also, supra* note 8 at 6.

95 The primary definition of “home” in the Merriam-Webster English Dictionary is “the place (such as a house or apartment) where a person lives.”

96 Pawling, M, A '*Labyrinth of Uncertainties*' - *Penobscot River Islands, Land Assignments, and Indigenous Women (2018)*, Academic Literature and Research Reports 2, https://digitalcommons.library.umaine.edu/maine_women_acad_all/2.

97 *Supra* note 6.

98 *Supra* note 25.

99 *Id.*

100 Monson Arts, *Always Home: Traditional Wabanaki Arts at the Monson Arts Gallery* (Aug 1 2021), <https://monsonarts.org/gallery/new-exhibition-of-wabanaki-art-at-the-monson-arts-gallery/>.

- 101 U.S. Army Corps of Engineers, *Tribal Partnership Program: Section 729 Watershed Assessment: Draft Watershed Assessment and Management Plan* (Feb 2019), <https://www.nae.usace.army.mil/Portals/74/docs/Topics/Wolastoq-Watershed-Assessment/Draft-WolastoqPlan-Feb2019.pdf>.
- 102 See *Penobscot Nation v. Frey*, 3 F.4th 484 (1st Cir. 2021) and related opinions, briefs, and litigation. In agreeing with the State, the 1st Circuit Federal Court of Appeals said that there was “no serious dispute about whether the Settlement Acts give the Nation sustenance fishing rights in the Main Stem. *They do.*” *Id.* at 507 (emphasis added).
- 103 12 M.R.S.A. §6302-A.2.
- 104 Prins, H., *Twelve Thousand Years: American Indians in Maine*, *American Anthropologist*, Vol 104, Issue 2 (June 2002). See also, *Massachusetts Truckhouse and Commissary (Machias, Me.): Truckhouse Books*, Massachusetts Archive, <http://chc.library.umass.edu/state-archives/2017/04/24/truckhouse-books-massachusetts-truckhouse-and-commissary-machias-me/>. “The defense of the eastern Maine coast from the British during the Revolutionary War was a concern of the Massachusetts General Court and the Continental Congress, addressed by two ventures: (1) establishment at Machias of a truckhouse for regional Indian tribes to encourage their participation in the war effort under the Continental Army agent (later superintendent) for Indian affairs in the Eastern Department, Col. John Allan [and] (2) stationing of troops and naval forces in the area, serviced by a commissary whose functions were closely tied to those of the truckhouse.” *Id.*
- 105 *Supra* note 62.
- 106 *Supra* note 82. The litigation involved the historic sustenance fishing rights of the Mi'kmaq nations, which were based on a similar truckhouse/commissary system to that established in the American colonial period with the Wabanaki Nations.
- 107 Department of Marine Resources, *Salmon for Maine's Rivers*, <https://www.maine.gov/dmr/fisheries/sea-run-fisheries/programs-and-projects/salmon-restoration-and-conservation-program-asrcp>. Although this is directed solely at the salmon fishery, the same factors were at play regarding Maine's other anadromous fish.
- 108 *Supra* note 14.
- 109 *Supra* note 12; see also National Park Service, *Wabanaki Heritage, Culture & Craft*, Acadia National Park, <https://www.nps.gov/acad/learn/historyculture/wabanaki.htm>.
- 110 Maine Memory Network, *Holding up the Sky: Wabanaki people, culture, history & art*, <https://www.mainememory.net/sitebuilder/site/2976/page/4665/print?popup=1>, “Wabanaki people, including the Maliseet, Micmac, Passamaquoddy, Penobscot, and Abenaki Nations . . . have inhabited what is now northern New England since time immemorial according to oral histories, and for at least 13,000 years according to the archaeological record.” *Id.*
- 111 *Supra* note 8.
- 112 Weddle, T., *Geologically Speaking, What's in a Place Name?*, Maine Geological Survey, https://digitalmaine.com/cgi/viewcontent.cgi?article=1372&context=mgs_publications.
- 113 *Supra* note 10.
- 114 Penobscot Nation Cultural & Historic Preservation Department, *Penobscot Language Map - This is How We Name Our Lands*, Indian Island, Maine. See also, https://www.youtube.com/watch?v=SYBmhQmp_zE; Wabanaki Place Names of Western Maine; and <https://bates.maps.arcgis.com/apps/webappviewer/index.html?id=c6e578016e9541b988a12d4a0a912056>.
- 115 *Supra* note 8.
- 116 *Id.* See Prins, H., *The Penobscot Nation's Reservation of the Penobscot River [in] the 1796 and 1818 Treaties*, 2013, https://www.researchgate.net/publication/328412614_The_Penobscot_Nation's_Reservation_of_the_Penobscot_River_in_the_1796_and_1818_Treaties.
- 117 Bennett, Z., *A Means of Removing Them Further from Us: The Struggle for Waterpower on New England's Eastern Frontier*, *The New England Quarterly* 2017; 90 (4): 540–60, at doi: https://doi.org/10.1162/tneq_a_00640. As per the Casco Treaty of 1703, curtailment of this development was a crucial

- objective of the Wabanaki Nations. See [https://en.wikipedia.org/wiki/Treaty_of_Casco_\(1703\)](https://en.wikipedia.org/wiki/Treaty_of_Casco_(1703)).
- 118 *Id.*
- 119 *Supra* note 110.
- 120 *Id.*
- 121 Collins, C., *A Brief History of Dixfield, Maine*, Western Main Foothills Region, Maine Memory Network, <http://foothills.maine-memory.net/page/3742/print%3Fpopup=1.html>.
- 122 *Supra* note 13.
- 123 *Supra* note 25.
- 124 *Supra* note 33.
- 125 Watson, J., *Effects of Dam Removal on Assemblage Composition and the Interactions of Fishes in the Penobscot River, Maine*, University of Maine, 2017, <https://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?article=3745&context=etd>.
- 126 *Supra* note 26.
- 127 Moore, S., *Maine Stream Connectivity Work Group: Summary of Initial Sustainability Planning*, June 2017, Maine Department of Marine Resources, <https://www.maine.gov/dmr/sites/maine.gov/dmr/files/docs/2017%20Stream%20Connectivity%20Group%20Report.pdf>.
- 128 *Supra* note 26. Although this particular study focused on alewife spawning habitat, it noted that the same general pattern held true for “other diadromous species, including salmon, American eel (*Anguilla rostrata*) and shad.”
- 129 Maine Legislature, *Ninth Report of the Commissioners of Fisheries of the State of Maine*, 1875, http://lldc.mainelegislature.org/Open/Rpts/PubDocs/PubDocs1876v1/PD1876v1_08.pdf. The Wabanaki, of course, did not need Maine’s Commissioners of Fisheries to explain the effect river obstruction would have on the fisheries. The introduction to Pawling’s *Wabanaki Homeland* includes a detailed description of the Penobscots’ 19th century efforts to prevent the destruction of the Penobscot River fisheries by settler dam building. Pawling, M., *Wabanaki Homeland and the New State of Maine: The 1820 Journal and Plans of Survey of Joseph Treat*, University of Massachusetts Press (2007).
- 130 See *Bean and Land Co. v. Power Co.*, 133 Me. 9 (1934).
- 131 *The Mill Act, the Abandoned Dams Act and the Neglected Dams Act – Encouraging Small Dam Hydroelectric Power Development in Maine*, prepared for the Office of Legislative Assistants by Martha Freeman, Summer 1979, http://lldc.mainelegislature.org/Open/Rpts/kf5588_z99f7_1979.pdf.
- 132 Apse, C., Banks, J., Day, L., Opperman, J. & Royte, J., *The Penobscot River, Maine, USA: a Basin-Scale Approach to Balancing Power Generation and Ecosystem Restoration*, Ecology & Society, Vol. 16, No. 3, Art. 7, <https://www.ecologyandsociety.org/vol16/iss3/art7/main.html>.
- 133 Knowlton, IC., *Beginnings: The Settlement of the St Croix Valley, Annals of Calais, Maine and St. Stephens, New Brunswick*, Print 'N Press, 1st Ed. (January 1, 1984), reprinted by St Croix Historical Society, at 110.
- 134 See 1866 drawing of Lewey Island, <https://www.maine-memory.net/artifact/100357/zoom> and see image of the Princeton Roll Dam that flooded Lewey Island, Maine Historical Society, Maine Memory Network, <https://www.maine-memory.net/artifact/80877>.
- 135 See *Maine Shipbuilding and Boatbuilding History*, Sailing Ships Maine, <https://sailingshipsmaine.org/maineshipbuilding>; and *A History of Maine Logging*, (Feb 11, 2020), Wood Splitter Direct, <https://www.woodsplitterdirect.com/blogs/wsd/a-history-of-maine-logging>.
- 136 See *supra* note 33; and *supra* note 56; Gov. Chamberlain speech to the legislature in 1867 promoting hydropower; the state appointed a fisheries commission and authorized a hydrological survey of all Maine’s rivers in the same year. Gov. Chamberlain addressed the legislature again in 1870 after the river survey was completed clearly stating that the creation of dams to power manufacturing industries was primary state policy. *Supra* note 57.
- 137 The major dams on the St. Croix and Penobscot rivers were built or reconfigured for hydro-power in the period from 1880 to 1910. See https://en.wikipedia.org/wiki/St._Croix_River and <https://>

- en.wikipedia.org/wiki/Great_Works_Dam.
- 138 For reference to the Penobscot River dams, see *Penobscot River Dams*, American Rivers, <https://www.americanrivers.org/penobscot-river-dams/>. For the watershed, see Hall, C., and Frisk, M., *The historic influence of dams on diadromous fish habitat with a focus on river herring and hydrologic longitudinal connectivity*, Landscape Ecol. Feb 23, 2010, at <https://cpb-us-e1.wpmucdn.com/you.stonybrook.edu/dist/1/956/files/2015/03/Hall-et-al.-2010-1z05hnf.pdf>.
- 139 *Id.* Removal of the Great Works and Veazie dams, which took place in 2012 and 2013, was projected to restore 37% of historic alewife spawning grounds, resulting in 42% of the Penobscot watershed available for spawning.
- 140 *Id.* See Maine Department of Agriculture, Conservation & Forestry, *Maine River Basin Report*, Oct 2007, https://www.maine.gov/dacf/flood/docs/maineriverbasin/maineriverbasinreport_chap8and9.pdf.
- 141 Interview with the author and Ed Bassett, retired from the Passamaquoddy Tribe's environmental department at Pleasant Point: "The mill permit allows discharge into the river up to 40 million gallons per day of treated waste waters, landfill leachate, and miscellaneous waste waters associated with the pulp and papermaking."
- 142 Flagg, L., *Historical and Current Distribution and Abundance of the Anadromous Alewife (Alosa pseudoharengus) in the St. Croix River*, https://www.nrcm.org/documents/historic_alewives.pdf; Dill, R., Trial, J., Atkinson, E., et al. *An Adaptive Plan for Managing Alewife in the St. Croix River Watershed, Maine and New Brunswick*, International Joint Commission, https://legacyfiles.ijc.org/tiny_mce/uploaded/st_croix_amp.pdf.
- 143 *Supra* note 49.
- 144 *Supra* note 110.
- 145 *Supra* note 26.
- 146 Maine Dept of Agriculture, Conservation & Forestry, *Maine Aquatic Biodiversity Project Technical Report: Ch 4: Management and Conservation of Freshwater Ecosystems: Threats and Challenges*, <https://www1.maine.gov/dacf/mnap/publications/aquatic/techrept.htm>.
- 147 *Supra* note 26.
- 148 *Id.*
- 149 *Supra* note 14.
- 150 See Maine Coastal Program, Dept of Agriculture, Conservation and Forestry, *2012-2013 Maine Stream Connectivity Working Group Report*, Dept of Marine Resources, <https://www.maine.gov/dmr/sites/maine.gov/dmr/files/docs/2012-2013%20Stream%20Connectivity%20Group%20Report.pdf>.
- 151 *Id.*
- 152 This report recognizes that the impacts to these ecologies in relation to sustenance may not be accessible to the broader public, although they can be readily observed and experienced with Wabanaki located within the state. For a fuller discussion on how dams disrupt sustenance on rivers, see Appendix B.
- 153 Maine Dept of Marine Resources, *Status of the Kennebec River Watershed Anadromous Fish Restoration Program*, January 2004, *specifically*, Statewide River Fisheries Management Plan (June 1982), http://cybrary.fomb.org/pages/20040100_KennebecWatershedRestoration.pdf.
- 154 *Supra* note 146.
- 155 *Id.* The most recent comprehensive list of Maine's dams was compiled in 1987. It lists 1,369 functional dams, of which approximately 50% were too small to be registered by MDEP. On another note, there are also more beaver dams now than there used to be, but while these can affect water temperature and sedimentation, they are ephemeral.
- 156 *Supra* note 150.
- 157 *Supra* note 127.
- 158 The Nature Conservancy, *The Comeback: Restoring Free-Flowing Rivers in Maine*, (Sept 2018), <https://www.nature.org/en-us/about-us/where-we-work/united-states/maine/stories-in-maine/the-comeback->

- alewives-return-to-maine-rivers/. See also, Maine Dept of Agriculture, Conservation & Forestry, *Stream Smart Crossings*, Maine Forest Service, https://www.maine.gov/dacf/mfs/policy_management/water_resources/stream_smart_crossings.html; and Maine Dept of Inland Fisheries & Wildlife, *Maine Stream Crossings: new designs to restore stream continuity*, <https://www.maine.gov/ifw/docs/Amherst.pdf>.
- 159 For example, as of 2008 the St. Croix watershed had 38 “impoundments with 6 of those being larger dams on the mainstem,” while the Penobscot watershed had 27 hydropower dams and “at least 102 non-hydropower dams.” International St. Croix River Watershed Board, *State of the Watershed Report: Maine and New Brunswick*, 2008, International Joint Commission, http://cybrary.friendsofmerrymeetingbay.org/pages/2008-StCroixWatershed_report.pdf; and Dept of Marine Resources & Dept of Inland Fisheries and Wildlife, *Strategic Plan for the Restoration of Diadromous Fishes to the Penobscot River*, March 2008, http://cybrary.fomb.org/pages/20080300_PenobscotPlan.pdf.
- 160 FERC was established in 1977 as a successor agency to the older Federal Power Commission. FERC does not regulate the hydroelectric dams in the St Croix at Woodland or Grand falls because they were built before the effective date of the Federal Power Act and hence are exempt. The first dam in the St. Croix, located at the head of tide in Calais/Milltown, is regulated by the Canadian government and is scheduled to be removed in 2023.
- 161 Maine Dept of Environmental Protection, *Information Sheet Hydropower Relicensing*, Land Resources, https://www.maine.gov/dep/land/dams-hydro/documents/is_hydropower_relicensing.html. The legal right of the States to insist that dams meet their water quality standards to receive a FERC license was established by the Supreme Court in a case that arose in Maine, *S. D. Warren Co. v. Maine Bd. of Environmental Protection*, 547 U.S. 370 (2006).
- 162 Maine Dept of Marine Resources, *Kennebec River Diadromous Fish Restoration Project*, <https://www.maine.gov/dmr/fisheries/sea-run-fisheries/programs-and-projects/kennebec-river-restoration-project>; and Natural Resources Council of Maine, *A Brief History of Edwards Dam*, <https://www.nrcm.org/programs/waters/kennebec-restoration/history-edwards-dam/>.
- 163 *Supra* note 153: *The Strategic Plan for the Restoration of Shad and Alewives to the Kennebec River Above Augusta*, 1985, http://cybrary.fomb.org/pages/20040100_KennebecWatershedRestoration.pdf.
- 164 *Id.*
- 165 Natural Resources Council of Maine, *Fort Halifax Dam Removed to Open Fish Passage in Seabasticook*, July 17, 2008, <https://www.nrcm.org/waters/fort-halifax-dam-removed-to-open-fish-passage-in-seabasticook/>.
- 166 *Breaching Will Allow Migration of Sea-Run Fish*, Boston Globe (July 28, 2006), https://npdp.stanford.edu/sites/default/files/other_materials/august_2006_some_dam_hydro_news.pdf.
- 167 *Supra* note 161. This was extended to January 2022. See Revello, K., *Future of Shawmut Dam, Sappi Mill Remain Uncertain*, (Aug 25, 2021), The Maine Wire, <https://www.themainewire.com/2021/08/future-of-shawmut-dam-sappis-somerset-mill-remain-uncertain/>.
- 168 Andrews, C., *How an Effort to Remove 4 Controversial Kennebec River Dams Fell Apart*, (August 2, 2021), *Bangor Daily News*, <https://bangordailynews.com/2021/08/02/politics/how-an-effort-to-remove-4-controversial-kennebec-river-dams-fell-apart/>.
- 169 “As a state agency responsible for managing diadromous fish and their habitat, MDMR recommends that the Shawmut Project and the Lockwood Project be decommissioned, and the dams removed.” Maine Dept of Marine Resources, *Kennebec River Management Plan, Diadromous Resources Amendment*, 34, https://www.maine.gov/dmr/sites/maine.gov.dmr/files/docs/Final%20Amendment_12_22.pdf.
- 170 Levinsky, G., *State Pulling Proposed Amendment to Kennebec River Management Plan*, (April 8, 2021), Morning Sentinel, <https://www.centralmaine.com/2021/04/08/marine-resources-commissioner-says-agency-is-pulling-proposed-amendment-to-kennebec-river-management-plan/>.
- 171 Bever, F., *Energy Regulators Say Endangered Salmon Can Co-Exist With Kennebec Dams, Dismaying*

- Conservation Groups, (July 6, 2021), Maine Public, <https://www.mainepublic.org/environment-and-outdoors/2021-07-06/energy-regulators-say-endangered-salmon-can-co-exist-with-kennebec-dams-dismaying-conservation-groups>.
- 172 *Supra*, Revello note 167.
- 173 *Atlantic Salmon Federation U. S. et. al v. Brookfield Renewable partners, L. P. et. al*, <https://www.nrcm.org/wp-content/uploads/2021/09/kennebec-complaint-case-1-21-cv-00257-JDL.pdf>.
- 174 Natural Resources Council of Maine, *The Path to Restoring Maine's Kennebec River*, (July 14, 2022), <https://www.nrcm.org/blog/path-to-restoring-kennebec-river/>. The main competing policy issues are salmon restoration on the one hand and the jobs at the Sappi papermill on the other.
- 175 Maine Dept Marine Resources, *Historical Trap Counts*, <https://www.maine.gov/dmr/sites/maine.gov/dmr/files/docs/trapcounts2021.pdf>. The Sebasticook, a relatively unobstructed Kennebec tributary that branches east below the Lockwood dam, has seen alewife counts of several million, but almost no shad and only 1 salmon in the last 10 years.
- 176 Andrews, C., *Janet Mills Tacks Carefully with Kennebec Dam Debate Colliding with Business Future*, (Aug 27, 2021), Bangor Daily News, <https://bangordailynews.com/2021/08/27/politics/janet-mills-tacks-carefully-with-kennebec-dam-debate-colliding-with-business-future/>.
- 177 Andrews, C., *Top Democrat Hits Janet Mills for Games Around Future of Kennebec River Dams*, (Feb 28, 2022), Bangor Daily News, <https://bangordailynews.com/2022/02/28/politics/top-democrat-hits-janet-mills-for-games-around-future-of-kennebec-river-dams/>.
- 178 *Id.*
- 179 The Milltown dam is regulated by the Canadian government, while Woodland and Grand Falls were built before the Federal Water Power Act was passed and hence are exempted from FERC regulation. However, even though the other 4 dams do not generate power directly, they provide water storage and water regulation for the downstream dams that do produce power and hence are regulated by FERC.
- 180 *Supra* note 124.
- 181 Willis, T., *Restoration and Recovery of the St. Croix River Alewife*, https://umaine.edu/mitchellcenter/wp-content/uploads/sites/293/2017/04/Willis_MWC-2017-Willis.pdf. Subsequent studies established that the presence of alewives did not impact this fishery.
- 182 Bass are popular for sport-fishing because they put up a fight for anglers and can be caught all year long, unlike the sea-run fish which are only present during their inland spawning migration.
- 183 In 1995 the Maine Legislature passed L.D. 520, An Act to Stop the Alewives Restoration Program on the St Croix River. Prior to that, Maine State Agencies had participated in the blockage of alewife passage. http://www.wabanaki.com/wabanaki_new/documents/Vanceboro%20Dam%20History.pdf.
- 184 International Joint Commission, *Alewives and the IJC – A Short History*, May 2013, <https://ijc.org/sites/default/files/Alewives%20and%20the%20IJC.pdf>.
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- 186 French, E., *FERC Licensing of Four St. Croix Dams Debated by Edward French*, (July 22, 2016), Quoddy Times, <http://www.quoddytides.com/ferc-licensing-of-four-st-croix-dams-debated7-22-2016.html>.
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- 190 *Supra* note 184. The Passamaquoddy Joint Tribal Council's position is explained – see Pleasant Point

- Tribal Government, *St. Croix River: Schoodic or Skutik River*, http://www.wabanaki.com/wabanaki_new/St_Croix_River.html.
- 191 The Nature Conservancy, *Restoring the Penobscot River*, <https://www.nature.org/en-us/about-us/where-we-work/united-states/maine/stories-in-maine/restoring-the-penobscot-river/>.
- 192 See Natural Resources Council of Maine, *Penobscot River Restoration Project*, https://www.nrcm.org/documents/penobscot_facts.pdf.
- 193 38 M.R.S.A. §418-A.
- 194 *Id.*
- 195 Energie NB Power, *Milltown Decommissioning*, <https://www.nbpower.com/en/about-us/projects/milltown-decommissioning/>.
- 196 *Supra* note 161.
- 197 Federal Energy Regulatory Commission, *Order Issuing New License*, <https://lowimpacthydro.org/wp-content/uploads/2020/12/1996-Millinocket-Dolby-FERC-license.pdf>. FERC's last 30-year license for these projects was issued in October 1996.
- 198 Federal Energy Regulatory Commission, *Notice of Intent to File License*, Aug 2021, <https://www.ferc.gov/media/ripogenus-and-penobscot-mills-projects>.
- 199 *Supra* note 127: "40% of Maine's culvert crossings remain barriers to fish or aquatic wildlife passage, while roughly another 40-50% show signs of being at least potential barriers. With tens of thousands of problem road crossings in Maine, and 1,000+ dams with no accommodation for adequate fish passage, the scale of the connectivity problem can seem insurmountable."
- 200 *Supra* note 175. See also, *supra* note 49.
- 201 Penobscot salmon runs historically ranged from 100,000 to 200,000, while shad were in the millions. See *supra* note 13.
- 202 National Oceanic and Atmospheric Administration, *NOAA Selects Maine's Penobscot River Watershed as Next Habitat Focus Area*, https://www.habitatblueprint.noaa.gov/wp-content/uploads/2016/04/maine_penobscot_factsheet-1.pdf.
- 203 Natural Resources Council of Maine, *Restoring the Kennebec River above Waterville*, <https://www.nrcm.org/programs/waters/kennebec-restoration/restoring-kennebec-river/>.
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- 205 See Opinion, *Celebrating the Canoe Race on a Free Flowing Penobscot River*, (Aug 15, 2014), Bangor Daily News, <https://bangordailynews.com/2014/08/15/opinion/celebrating-the-canoe-race-on-a-free-flowing-penobscot-river-ive-waited-all-my-life-to-see/>.
- 206 *Supra* note 33.
- 207 Overfishing is no longer a problem, as Maine no longer has commercial harvests for most diadromous fish.
- 208 *Supra* Dept of Marine Resources note 159.
- 209 *Supra* note 33.
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- 212 *Supra* note 146.

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214 *Supra* Wood Splitter note 135.

215 *Supra* note 39.

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219 *Supra* note 217.

220 *Id.*

221 Harlow, D., *The Lat Log Drive: When a Maine Way of Life Came to an End*, (Feb 20, 2016), Press Herald, <https://www.pressherald.com/2016/02/20/log-drivings-demise-ended-a-maine-way-of-life/>.

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223 Marshall, T.L., *Historical Perspectives of Resource Development Branch Activities in Restoring Anadromous Fishes to the St. Croix River, New Brunswick-Maine*, Department of Fisheries and the Environment, 1976, <https://schoolicriverkeepers.com/wp-content/uploads/2018/08/HISTOR1.pdf>; and *supra* note 181.

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225 *Id.*

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227 Town of Brewer, *History of Brewer Wastewater Treatment*, 2019, <https://digitalcommons.library.umaine.edu/cgi/viewcontent.cgi?article=1165&context=mainehistory>.

228 Maine Dept of Environmental Protection, *Re: Maine Pollutant Discharge Elimination System Permit*, May 26, 2011, <https://www3.epa.gov/region1/npdes/permits/2011/finalme0100781permit.pdf>.

229 *Supra* note 222.

230 Maine Dept of Labor and Industry, *Maine Industries 1944*, Bureau of Labor Standards Documents, 1945, https://digitalmaine.com/bls_docs/182/.

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239 *Id.*

240 *Id.*

241 *Id.* The last sulfite mill on the Androscoggin closed in 1965.

242 *Supra* note 146.

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 mean for Wabanaki people presently.
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 definition rather than the single word “sustenance” as per Title 30 Section 6207(4) where the specific
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