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Restoring Native Fisheries to Maine's Largest Watershed: The Penobscot River Restoration Project

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Flowing from Mount Katahdin to the Gulf of Maine, the Penobscot River drains fully one-third of the state of Maine. It is the largest river within Maine and the second largest in New England. The headwaters, mainstem and tributaries, estuary and the Gulf of Maine form a dynamic ecosystem that was once fueled by vast native sea-run fisheries. Silvery schools of fish once surged through the river in vast numbers—alewives and blue-back herring, American shad, striped bass, American eel, Atlantic and short-nose sturgeon, rainbow smelt, tomcod, and the fabled wild Atlantic salmon.

These phenomenal fish migrations held a prominent place in the life of the region. For instance, the Penobscot River has been home to the Penobscot Indian Nation for more than 10,000 years, and Penobscot Indian people took clan names such as Sturgeon Clan and Eel Clan. Penobscot fish nets, baskets, and spears are reminders of the sustenance and subsistence significance of fish to the tribe. Federally recognized rights to sustenance fishing rights today remain relatively meaningless for lack of sea-run fish and because resident fish are contaminated.

Traditions took root that reflected the significance of sea-run fish in people's lives; the first-caught salmon of the season was sent to the President of the United States; families passed fishing traditions through the generations; salmon clubs sprang up along the river. Their names are still etched on the inland landscape—Shad Pond, for instance, where shad can no longer migrate due to the barriers posed by hydropower dams.

Like other rivers in the industrial East, the Penobscot River was heavily used for driving logs, assimilating

waste from factories, farms, and cities, and dammed for mechanical power for mills, log transport, and eventually hydropower generation for the market. Commercial and recreational fish harvest also took their toll, until the fishery became what is today—a mere remnant of the healthy populations that once provided nutrients for wildlife and people throughout the riverine ecosystem, including the sea.

Atlantic salmon are listed as federally endangered on several Maine rivers; their status is under review on the Penobscot. Short-nose sturgeon also are protected as federally endangered and American eel have recently been proposed for listing as well.

Sea-run species' populations have plummeted on the Penobscot; Atlantic salmon, for instance have declined from historic levels ranging from 75,000 to 100,000 fish to an average of 1000 fish per year over the last ten years.

Diminished Fisheries are a Serious Loss to People and Wildlife

As Penobscot fisheries declined, so too did a rich tapestry of traditions and cultural practices, economic and recreational opportunities, and fundamental rhythms of life for people in the region. Atlantic salmon fishing, for instance, is no longer a draw to the Penobscot region; visitors from within and outside of the state no longer spend their money in local inns, restaurants, tackle and bait shops, and other businesses. Although it is unlikely that there will ever be a commercial fishery for American shad, the fish once was abundant enough to support both a commercial and recreational fishery. Shad also were, like Atlantic salmon, significant to the Penobscot Nation culture.

Today, log drives have ended and water quality is much improved. Both commercial and recreational fishing has been curtailed, most recently in response to the listing of Atlantic salmon as a federally endangered species in several rivers in Maine. Unfortunately, little progress has been made on restoring populations of Atlantic salmon and other sea-run fisheries despite river conditions generally favorable to fisheries recovery.

Hydropower dams have taken center stage as among the most significant remaining barriers to restoring the once-prolific native sea-run fisheries of the Penobscot. The Federal Energy Regulatory Commission (FERC) grants hydropower licenses for extended periods of 35-50 years determining the life in a river for multiple generations. Moreover, license terms of dams on a river system are often staggered and dam ownership patterns make a comprehensive, ecosystem-wide solution challenging or impossible.

An Historic Agreement Offers a Roadmap to a Restored Penobscot

The Penobscot dams have been the subject of intense debate, with the last several decades punctuated by contentious attempts to relicense existing dams and to build new ones. The results have been mixed from all perspectives. In the early 1980s, the Bangor Dam deteriorated and its remains were eventually removed from the Penobscot, making the Veazie Dam the first dam from the sea (Figure 1). In the late 1980s, Bangor Hydro proposed a new 38 megawatt dam at the confluence of the Penobscot mainstem and the Stillwater. FERC denied the license for the proposed Basin Mills dam but issued new licenses for the Veazie and Milford dams. All parties appealed the decision. In 1999, a contentious relicensing process began for the Howland Dam, located at the mouth of the Piscataquis River and one quarter of salmon spawning habitat in the basin.

In 1999, with ownership of the Penobscot dams consolidated under a new entity (PPL Corporation), the company, the Penobscot Indian Nation, several conservation groups, and federal and state agencies embarked on discussions that would lead to an historic agreement designed to maintain hydropower generation while also restoring Atlantic salmon, American shad, river herring and other sea-run fisheries.

In June, 2004, on the banks of the Penobscot River, a diverse and unlikely cast of characters signed an innovative agreement that promises to change the future of the Penobscot River and its fisheries. PPL Corporation, the company that owns all of the hydropower dams on the lower Penobscot River, conservation organizations including American Rivers, the Atlantic Salmon Federation, the Natural Resources Council of Maine, Maine Audubon and Trout Unlimited, the State of Maine, the Department of the Interior, and the Penobscot Indian Nation forged an agreement to restore the lower Penobscot River, thereby striking a new, improved balance between hydropower production and fisheries, recreation, and other values of the river.

The Penobscot River Restoration Project is an historic effort designed to reverse centuries of decline in the Penobscot ecosystem. The Lower Penobscot River Comprehensive Settlement Accord, a multiparty legal agreement filed with FERC in June 2004, is the centerpiece of the plan designed to restore wild Atlantic salmon, American shad, and other sea-run fish by reconfiguring hydropower on the river. The result is significantly improved access to more than 500 miles of river habitat, restoring fisheries, recreation, and economic opportunities, and maintaining energy production.

Under the agreement, the not-for-profit Penobscot River Restoration Trust acquired a 5-year option to purchase three dams—Veazie, Great Works, and Howland—for approximately \$25 million dollars. The Trust will remove the Veazie and Great Works dams—those closest to the sea—to allow fish to freely migrate upstream and downstream. PPL Corporation will improve fish passage at the Milford Dam beyond that required in their current license. The Trust will also buy and decommission the Howland Dam and proposes to construct an innovative fish bypass that will allow fish to swim around the dam. The first dam will likely be removed around 2010. Project implementation, including costs of engineering and dam removal, mitigation, and community and economic development investments, are also expected to cost approximately \$25 million.

Fully implemented, the Penobscot River Restoration Project is expected to pay off in ecological terms—for fish, wildlife and water quality. The National Research Council of the National Academies of Science (2004) recommended both dam removal and a focus on the Penobscot as priorities for the recovery of Maine's last remaining

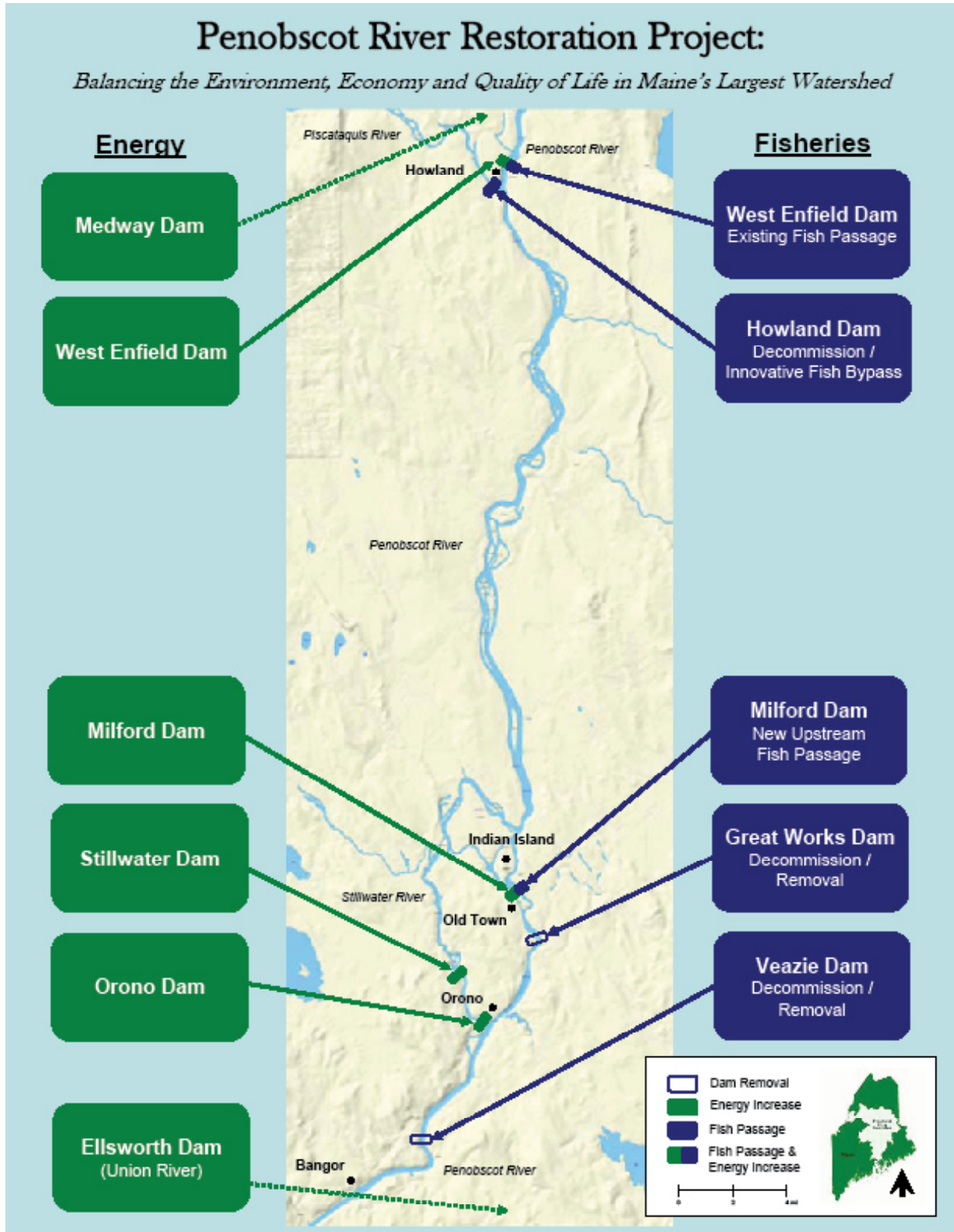


Figure 1. The Penobscot River Restoration Project.

wild Atlantic salmon, as well as to restore other species that historically ran with them and played important roles in their life cycle. Scientists who have dedicated their lives to Atlantic salmon consider the Penobscot River Restoration Project effort the most significant chance to restore wild Atlantic salmon.

For PPL Corporation, the agreement provides business certainty and the opportunity to increase energy generation at several dams, maintaining almost all of its current energy production. No jobs would be lost as a result of its shift of hydropower assets. The company's options include an innovative plan to recycle turbines from dams that will be removed into existing facilities to boost energy production. Essentially, PPL would reconfigure its production of hydropower so that it better shares the Penobscot River system with the fishery and the people of the region.

Recognizing that the short and long-term impacts of the project on communities will vary, the State of Maine has committed to securing \$3-5 million economic and community development assistance to help communities benefit from a restored river. The conservation organizations and the Penobscot Indian Nation are committed to working with communities, businesses, and other interested parties to succeed.

The Penobscot River Restoration Project will best succeed with the support of communities in the region, and will most benefit them if they are involved in making the project happen. Restoring the Penobscot River is about far more than fish and wildlife—it is about economic opportunities, community assets, cultural traditions, and recreation that depend upon or are improved by a restored river. New energy directed at restoring the river can catalyze creative, innovative approaches to creating economic and community values from the natural assets of the region.

Communities immediately began to engage in an exciting dialogue about both the impacts and the opportunities that could flow from a restored Penobscot River. In several well-attended public informational meetings and visioning sessions, people, organizations, towns and others shared their ideas of the role that a restored river could play in the region. The Town of Veazie, in collaboration with several interested towns, secured a grant to help towns to develop a shared vision of how a restored river's assets might be developed; the regional economic planning organization Eastern Maine Development Corporation held community visioning sessions and

researched project impacts and benefits. The Town of Howland, in coordination with the Trust, is exploring the options for redevelopment of its downtown industrial site in conjunction with a fish bypass; Old Town is considering ways to take advantage of the fact that when the dams are removed, there will be an open paddle from Old Town to the ocean for the first time in more than a century.

Support for the project is also enthusiastic, diverse and widespread, boding well for its successful implementation. Guide services, individual citizens throughout the Penobscot basin, businesses ranging from Old Town Canoe to the Maine Innkeepers Association, business people and community leaders have all aligned in support of the project.

The Penobscot River Restoration Project, when complete, will be one of the country's most ambitious and innovative river restoration efforts. Imagine the majestic Penobscot River restored, paddling the free-flowing Penobscot from Milford to the sea or all the way from Howland with only one portage around a dam instead of four. Imagine thousands of wild Atlantic salmon completing their transatlantic migration by swimming past revelers at the new American Folk Festival on the Bangor waterfront. Imagine millions of silvery herring and shad feed otters, mink, osprey, and eagles. Imagine economic and community development that once more includes the full range of recreational, economic and cultural opportunities offered by a free-flowing river. The potential for a restored Penobscot has generated new focus and discussion on the ecological assets and the full range of values that a healthy river can provide to a region.

Of course, many of these values are less tangible yet quite an inspiration for revitalizing the Penobscot River as part of building a stronger future for the state of Maine. An emergency room physician in Bangor hopes that the salmon weir rights attached to his Bucksport home might someday have new meaning. A Penobscot elder tells me that he never thought that he would see a free-flowing paddle from Indian Island to the sea in his lifetime. A young entrepreneurial river guide wishes for sea-going fish beyond the Milford dam. A town manager considers the possibilities of featuring a fish bypass and education center as part of the plans for turning a defunct mill property into an asset. At public meetings, people offer visions of paddling runs, riverside trails, and reinvigorating the traditions of fishing for sea-run fish on the river.

Concluding Remarks

The Penobscot River Restoration Agreement is an unparalleled opportunity for ecological renewal and a new future for the Penobscot region and its people. The Agreement is, however, just the beginning of a decade-long effort to successfully implement the agreement so that its economic, cultural, social, recreational, and ecological benefits are fully realized.

Successful project implementation will require continuing collaborative leadership from all parties—the Penobscot Indian Nation, the communities, state and federal governments, PPL Corporation, conservation groups, and many others. All must demonstrate the commitment, vision, and ingenuity needed to make the promise of a restored Penobscot River a reality.

Acknowledgments

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