

Kennebec River Dam Removal: It is Time to Free the Kennebec Above Waterville

The Kennebec River is at a critical point. Atlantic salmon in the river are on the brink of extirpation, and their continued existence in the U.S. depends on further restoration of the Kennebec more than any other river. The removal of the Edwards and Fort Halifax Dams resulted in significant progress for sea-run fish in the watershed, but the vast majority of historic spawning and rearing habitat for Atlantic salmon is located above Waterville. Other species, such as shad and blueback herring, also have significant amounts of historic spawning and rearing habitat above Waterville. This habitat is inaccessible due to four Brookfield Renewable Power (Brookfield) dams between Waterville and Skowhegan. Federal and state agencies have recognized these dams as the key impediment to restoring the Kennebec and have called for significant action: the removal of the Shawmut Dam and potentially others as well.

A River Reborn, but Only Below Waterville

For more than 160 years, the Edwards Dam in Augusta prevented sea-run fish from reaching upstream spawning and rearing habitat. But Maine people, state and federal agencies, and a tireless group of conservation organizations turned the tide for the lower Kennebec 20 years ago.

After the removal of the Edwards Dam in 1999 and the Fort Halifax Dam on the Sebasticook River in 2008, the lower Kennebec River surged back to life. The Kennebec's run of river herring (alewives and blueback herring) is now the largest restored run in North America, with annual counts exceeding three million. Sturgeon now leap into the air where Edwards once stood, and shad have returned in large enough numbers to support a good recreational fishery. Augusta has benefited from a large riverfront park and access to a free-flowing river, helping spur an economic revival in its downtown. During the spring alewife run, the Sebasticook River has the largest concentrations of eagles on the East Coast, and seals regularly swim upriver as far as the Benton Falls Dam to join the eagles in feasting on alewives.

But this amazing transformation of the Kennebec has stalled. Four dams stand in the way of saving endangered Atlantic salmon and bringing back other sea-run fish that cannot reach crucial spawning and rearing habitat above Waterville.

Four Dams Between Waterville and Skowhegan¹ Block Progress on River Restoration

The Kennebec was once the most productive river in Maine,² with Atlantic salmon runs in the hundreds of thousands.³ In 2019, only 56 salmon⁴ made it past the Lockwood Dam in Waterville. These fish cannot swim to some of the best spawning and juvenile habitat in Maine for Atlantic salmon in the Sandy River

¹ These are: the Lockwood and Hydro-Kennebec Dams in Waterville, the Shawmut Dam in Fairfield, and the Weston Dam in Skowhegan.

² 2020. DMR. Response to the Ready for Environmental Analysis (REA) Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions for the Shawmut Project (P-2322-069). August 28. P.1. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>.

³ 2006. Saunders et al. Maine's Diadromous Fish Community: Past, Present, and Implications for Atlantic Salmon Recovery. Fisheries 31(11):537-547. Table 2. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

⁴ Accessed at: <https://www.maine.gov/dmr/science-research/searun/programs/documents/trapcounts.pdf>.

and its tributaries, which joins the Kennebec just south of Anson. The Department of Marine Resources (DMR) takes them there in trucks.

The Lockwood Dam is the first dam that American shad, river herring, and Atlantic salmon hit on their journey from the ocean to spawn in freshwater. The fish lift at this dam has never worked well since its installation in 2006, and Brookfield has failed to improve it. In a recent filing to the Federal Energy Regulatory Commission (FERC), which has jurisdiction over Lockwood and Brookfield's other Kennebec dams, DMR stated:

Fish passage failures at the Lockwood Project provide a cautionary tale as unexpectedly poor performance has left hundreds of returning endangered Atlantic salmon to die or spawn in subpar habitats below the project and likely tens or hundreds of thousands of American shad and other species to be blocked from historic habitats annually.⁵

In 1998, the Kennebec Coalition⁶ signed a FERC-approved settlement agreement (the Kennebec Hydro Developers Group (KHDG) Agreement) with the owners of the four Kennebec dams between Waterville and Skowhegan. This agreement was supposed to result in “a comprehensive settlement governing fish restoration, for numerous anadromous and catadromous species, that will *rapidly assist in the restoration of these species in the Kennebec River ...*”⁷ (emphasis added)

Twenty-two years later, sea-run fish still cannot swim above the Lockwood Dam because Brookfield has failed to comply with the terms of the agreement, and FERC has failed to enforce them. The small numbers of fish that enter the fish lift at Lockwood pass into holding tanks. DMR staff capture these fish and transport them to various release locations upstream. This is not an effective way to restore sea-run fish that are still only at a small fraction of their historic numbers.

Brookfield's Dams Face Increasing Scrutiny for Damaging the Kennebec

However, the tide may be turning against Brookfield and in favor of native fish and a rejuvenated river above Waterville. In July 2020, FERC rejected Brookfield's proposed Species Protection Plan (SPP) for Atlantic salmon.⁸ The Endangered Species Act (ESA) requires SPPs for endangered species, and Atlantic salmon are critically endangered in the U.S., with small populations remaining only in Maine. Brookfield's plan called for the construction of fish lifts at all four of its dams between Waterville and Skowhegan, but there is no example anywhere in the world of successful Atlantic salmon or American shad restoration above multiple dams with fish lifts. FERC appropriately rejected Brookfield's attempt to use this failed strategy.

⁵ 2020. DMR. MDMR Response to the Ready for Environmental Analysis (REA) Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions for the Shawmut Project (P-2322-069). August 28, 2020. P.3. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>.

⁶ The Kennebec Coalition consists of the Atlantic Salmon Federation, Maine Rivers, the Natural Resources Council of Maine, and Trout Unlimited and its Kennebec Valley chapter. All of the groups except Maine Rivers are signatories to the 1998 agreement.

⁷ 1998. KHDG Agreement. Page 2. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>.

⁸ 2020. FERC. Rejection of Species Protection Plan. July 13. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

At the beginning of 2020, Brookfield applied for a new license for its Shawmut Dam, the third dam up from Waterville. Both state and federal agencies reacted strongly to the application and recommended removing the dam. DMR stated in its comments on the Shawmut relicensing:

The Shawmut project represents less than 0.1% of the production of electricity in the State of Maine yet, if relicensed with underperforming fishways, would hasten the extinction of an iconic Maine species, Atlantic salmon, and could result in millions of sea-run fish not reaching historic habitats over the term of the license...*MDMR believes the Shawmut project is particularly suited for decommissioning and removal.*⁹ (emphasis added)

The National Marine Fisheries Service (NMFS) has also called for Shawmut's removal:

The Kennebec River watershed once produced large runs of Atlantic salmon, American shad, blueback herring and alewife, as well as other sea-run fish including shortnose and Atlantic sturgeon (MSPO, 1993). Diadromous fish once contributed to substantial commercial, recreational, and subsistence harvests (MSPO, 1993) that were economically important to coastal communities. Anadromous fish production within the Kennebec River experienced dramatic declines throughout the past 150 years. Multiple plans since the 1980s, including the Kennebec River Resource Management Plan (1993), KHDG Settlement Accord (1998) and Atlantic salmon recovery plan (2019), highlight the importance of fish passage and habitat restoration as critical to supporting a restored anadromous fishery. Significant spawning, rearing, and migratory habitat exists above the Shawmut Project. Existing dams prevent access to those historical habitats. Atlantic salmon were virtually extirpated from their historical range within the Kennebec River watershed. Accordingly, *a decision to decommission and remove the Shawmut Project and thereby remove a significant barrier to recovering an endangered species, and support the restoration of several anadromous fish, would fulfill the Commission's mandate under the FPA to ensure the best comprehensive use of a waterway.*¹⁰ (emphasis added)

Dam Removal Brings Rivers Back to Life

Each time Maine has removed dams, rivers and their native fish and wildlife have responded quickly. Again, the Kennebec River below Waterville is alive and thriving with good recreational fisheries for shad¹¹ and commercial fisheries for alewife (and blueback herring)¹² that would be better if fish could get above Waterville.

⁹ 2020. DMR, *Op. Cit.*, Page 3. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

¹⁰ 2020. NMFS. Comments, Recommendations, Preliminary terms and Conditions, and Preliminary Fishway Prescriptions for the Shawmut Hydroelectric Project (FERC No. 2322). August 28. Pp. 43-44. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

¹¹2020. John Holyoke. *Bangor Daily News*. How you can catch 20 fish in just a few hours. May 28. Accessed at: <https://bangordailynews.com/2020/05/28/outdoors/heres-how-you-can-catch-20-american-shad-in-just-a-few-hours/>.

¹²2020. Molly Shelly. *Morning Sentinel*. Millions of alewives running the Sebasticook River, scaling Benton Falls Dam ladder. May 4, updated May 25. <https://www.centralmaine.com/2020/05/04/millions-of-alewives-running-the-sebasticook-river-scaling-benton-falls-dam-ladder/>.

The dam removals on the Penobscot have brought similar results for fishing¹³ and paddling¹⁴ alike.

On the Kennebec, further dam removal would bring ecological and economic gains. According to NMFS:

Diadromous fish support key ecological functions as a mechanism for nutrient transport, prey for commercially and recreationally important fish, and baitfish for the lobster industry. For example, the current price for harvested river herring in the lobster bait industry in Maine is approximately \$75 per crate (MDMR, 2020). A crate is roughly equal to 400 river herring. A restored river herring run in the Kennebec River would result in a potential annual harvest worth over \$640,000 assuming an escapement of 43%. Dam removal will support restoration of these key species in support of these ecological and social functions and values.¹⁵

Brookfield's Four Dams Provide Insufficient Benefit to Maine

The Kennebec River will never fully come back to life until sea-run fish can reach their historic spawning grounds above Brookfield's four dams between Waterville and Skowhegan. These dams are incompatible with a thriving river ecosystem. They also generate a small amount of power. The damage they do far outweighs their limited benefits.

For too long, Maine has not properly balanced the need for hydropower with the need for maintaining healthy rivers and migratory fish runs. As DMR has stated:

While hydropower is an important resource for the State of Maine, the four lowermost projects in the Kennebec River, including the Shawmut Project, have a disproportionately large impact on the natural resources in comparison to their authorized capacity because of their location relative to spawning and rearing habitat...¹⁶

The State of Maine supports domestic hydropower as an important component of energy in the State and a renewable source of energy critical to meeting climate goals. However, the State also believes that the best approach to meet our management goals for the Kennebec River is to decommission and remove some or all of the dams in the Lower Kennebec and is in the process of developing an amendment to the 1993 Kennebec Management Plan to submit to FERC as a comprehensive plan that will include dam decommissioning and removal.¹⁷

¹³ 2020. John Holyoke. *Bangor Daily News*. Fish are thriving in the Penobscot as shad returns shatter record. June 19. Accessed at <https://bangordailynews.com/2020/06/19/outdoors/penobscot-shad-returns-shatter-record/>.

¹⁴ 2014. Butch Phillips. *Bangor Daily News*. Celebrating the canoe race on a free-flowing Penobscot River I've waited all my life to see. August 15. Accessed at: <https://bangordailynews.com/2014/08/15/opinion/celebrating-the-canoe-race-on-a-free-flowing-penobscot-river-ive-waited-all-my-life-to-see/>.

¹⁵ 2020. NMFS, *Op. cit.*, P. 18. Accessible at <https://1drv.ms/u/s!AkLihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>.

¹⁶ 2020. DMR. *Op. Cit.*, P. 5. Accessible at <https://1drv.ms/u/s!AkLihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

¹⁷ *Ibid.*, P. 2. <https://1drv.ms/u/s!AkLihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

The four dams between Waterville and Skowhegan represent only six percent (46.9 MW out of 742 MW total)¹⁸ of Maine's overall hydroelectric capacity. Factor in Maine's 93 MW¹⁹ of solar generation and its 996²⁰ MW of installed wind generation, and the percentage of renewable capacity of the four projects becomes smaller still. Moreover, Maine's solar generation capacity is expected to grow by an additional 1,128 MW over the next 5 years.²¹ Even assuming that the capacity factor of the Kennebec dams is 67%²² and only 15%²³ for solar, expected new solar generation capacity dwarfs the capacity of Brookfield's four Kennebec dams by about 5 to 1.

The Kennebec Needs More Help Now

The Kennebec River has waited long enough for change. Atlantic salmon will go extinct in the U.S. without a viable population in the Kennebec. They need access to the Sandy River to spawn now. Because of the 2006 removal of the Madison Electric Works Dam that used to block the mouth of the Sandy, salmon would be able to reach their historic spawning and rearing areas as soon as they can get up above Skowhegan.

Opening up the Kennebec River to its confluence with the Sandy River would produce millions more shad and river herring as well. These fish are critical to the Maine lobster industry, to the countless animals that prey on them, and to any hope of restoring coastal ground fish (such as halibut and cod) populations in the Gulf of Maine.

The Kennebec Coalition applauds NMFS and DMR for recommending the removal of the Shawmut Dam. When fish are once again able to reach their historic spawning grounds above Waterville, a lively and rejuvenated river will applaud as well.

¹⁸ Kleinschmidt Associates. 2015. Maine Hydropower Study. Prepared for Maine Governor's Energy Office. Tables 1-1 and 2-1. Accessed at https://www.maine.gov/energy/publications_information/001%20ME%20GEO%20Rpt%2002-04-15.pdf.

¹⁹ Solar Energy Industries Association. Accessed at <https://www.seia.org/state-solar-policy/maine-solar>.

²⁰ American Clean Power. Accessed at: https://cleanpower.org/wp-content/uploads/2021/02/ACP_MarketReport_4Q2020.pdf, P. 11.

²¹ *Ibid.*

²² 2020. Kleinschmidt Associates. Brookfield White Pine Hydro LLC. Application for New License for Major Water Power Project – Existing Dam. Shawmut Hydroelectric Project (FERC No. 2322). January 30. P. B-2. Accessible at <https://1drv.ms/u/s!AkLlihAdyxqVklBuZIG6A5I9pnd8?e=sWgbBm>

²³ Energy Information Administration. Accessed at <https://www.eia.gov/todayinenergy/detail.php?id=39832>.

