

TO: [DEP-Hydropower@maine.gov](mailto:DEP-Hydropower@maine.gov)

RE: Lower Kennebec Dams WQC Opportunity to Comment

Dear Maine Department of Environmental Protection,

I'm writing to urge you to deny the Water Quality Certification (WQC) applications for the Lockwood, Hydro Kennebec, Shawmut, and Weston Hydroelectric Projects along the lower Kennebec River. I am a retired scientist, Chair of the Board for the Hancock County Soil & Water Conservation District, and I am a member of the board for the Downeast Chapter of Trout Unlimited, and a board member for the Union Salmon Association. I am an ecologist by training, and an avid kayaker and canoeist.

My understanding of the current state of fish passage science and engineering is that the proposals for fish passage at these four dams will fail to meet the legal water quality standard for Class B waters in Maine. Dams always cause detrimental changes in the "resident biological community" with especially harsh impacts on migratory fish. (See Table 1 and Figure 1 below).

Table 1. A summary of information from Zydlewski, et al, 2023. "Seven Dam Challenges for Migratory Fish: Insights from the Penobscot River." *Frontiers in Ecology and Evolution*.

### The Seven Challenges for Migratory Fish:

1. Impaired access to habitat, habitat fragmentation, & altered flow
2. Injury and mortality, population declines, extinction
3. Delays in migration, wasted energy, loss of fitness
4. Increased predation, vulnerability at fishways
5. Demographic shifts, high mortality, younger fish dominate
6. Community shifts, river fish shift to lake fish
7. Loss of ecosystem functions, economic losses, loss of treaty fishing rights, food chain disruption



Figure 1: Photo by Brett Ciccotelli of dead young-of-the-year alewives below the Ellsworth dam on the Union River. These fish have blade strike and decompression injuries from passing through the turbines at the hydroelectric facility. Most of the fish mortalities sink to the bottom and are not visible except to divers.

The specific proposals for these Kennebec R dams are outdated and cannot restore populations of Atlantic salmon, river herring, American shad, or American eel. All of which are of conservation concern in Maine (Table 2).

Table 2. By Mark Whiting, a summary of conservation status for selected fish and mussels in Maine from Maine DIFW website.

Species	Status - Concern Level (rank 1-3)	
	Listing Agency	
Alewife	2	ME - DIFW
Atlantic Salmon	Endangered	USFWS
Blueback Herring	1	ME - DIFW
Brook Trout	3	ME - DIFW
Eel	Special Concern	ME - DIFW
Rainbow Smelt	1	ME - DIFW
Sea-run Brook Trout	Special Concern	ME - DIFW
Shad	1	ME - DIFW
Brook Floater	Threatened	ME - DIFW
Tidewater Mucket	Threatened	ME - DIFW
Yellow Lampmussel	Threatened	ME - DIFW

We have seen successful river restorations before, like on the Penobscot River where agencies, communities, tribes, and advocates came together for a shared solution. The Kennebec River is simply too important as a fishery and river ecosystem for failed solutions. For instance, the river will be of key importance to salmon restoration in Maine and has huge potential for river herring (Figure 2).

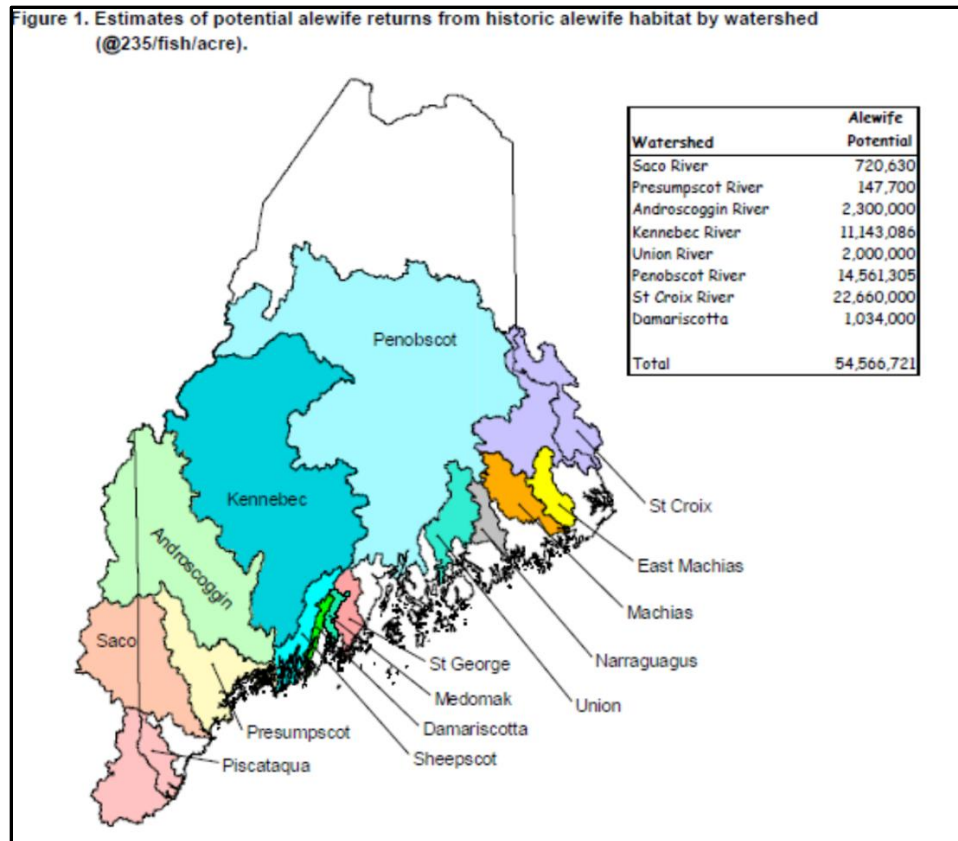


Figure 2. From Atlantic States Marine Fisheries Commission, 2009. Maine ASMFC River Herring Sustainable Fishing Plan. Estimates of potential river herring returns based on historic habitat by watershed. The Kennebec River could sustain a river herring run of over 11 million alewives. Only the St Croix and Penobscot have greater fisheries restoration potential for this species. Not shown is that the removal of the lower four dams on the Kennebec River could be the first successful Atlantic salmon restoration in Maine.

Fisheries restoration and the re-establishing of natural riverine systems are possible in Maine, but barriers must come out and cooperative agreements with all parties will be essential (Figures 3-6). We cannot have wild river ecosystems and fisheries restoration without huge numbers of barriers being removed. Some of the guiding legal principles are Maine's Water Quality Classifications (all indigenous fish species must be present), the Endangered Species Act (critically endangered species must be protected and habitat access restored), and the guarantee of Federal treaty fishing rights for Indigenous People (culturally important food species must be available). State and Federal laws must be respected by any final plan for the dams.

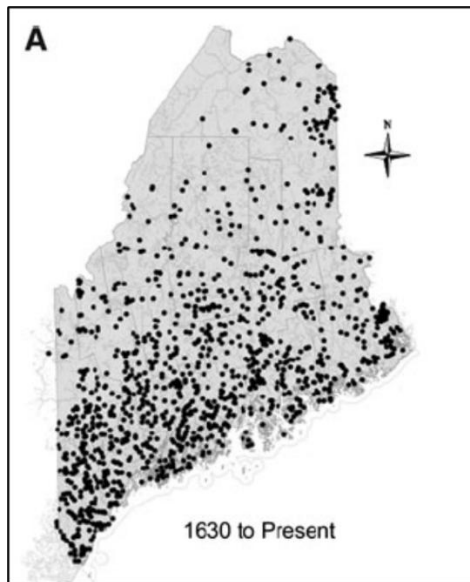
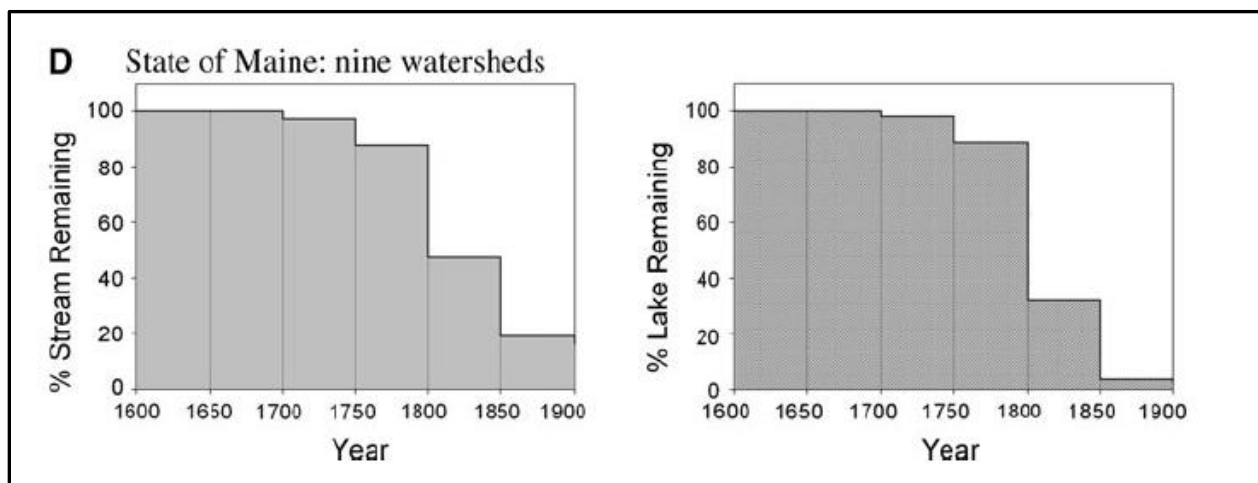


Figure 3. Map of dams in Maine, from Hall et al. 2011, “The historic influence of dams on diadromous fish habitat ...”. Landscape Ecology.



Figures 4. Map of declining normal stream and lake habitat with increasing dam development in 9 Maine watersheds by year, from Hall et al. 2011, “The historic influence of dams on diadromous fish habitat ...”. Landscape Ecology. Notice that “wild” river and lake systems are almost non-existent.

Figure 5-5: Number of dams per state in each tier of the anadromous fish benefits scenario as a percent of total dams in each state.

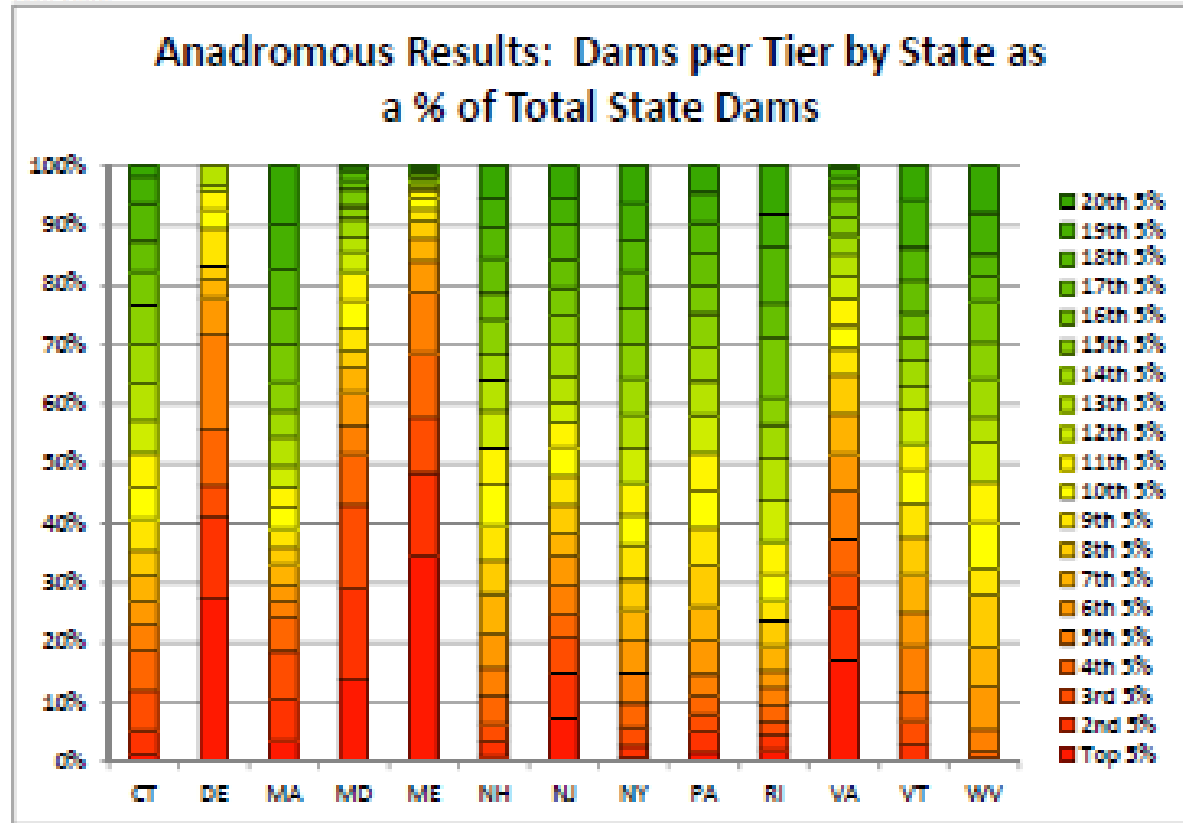


Figure 5, The number of dams in each state by abundance tier for anadromous fish habitat restoration. In Maine, there are unusually high benefits for each dam removal, especially in the lower watershed. From Hall et al. 2011, “The historic influence of dams on diadromous fish habitat ...”. Landscape Ecology

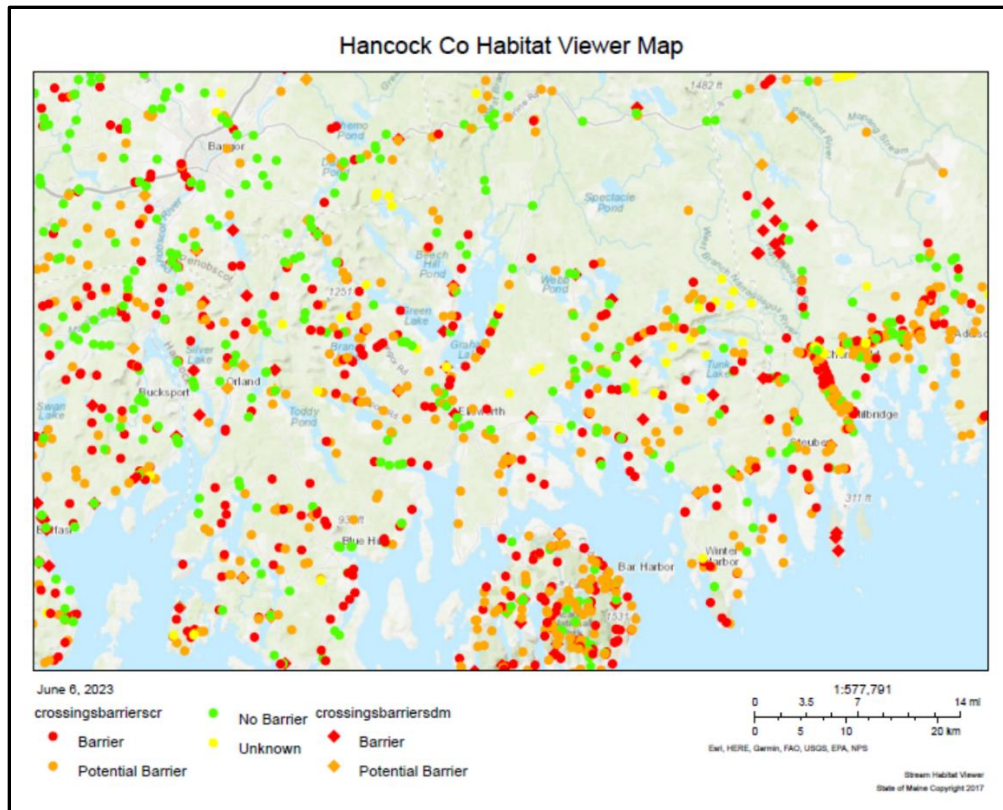


Figure 6, from Maine DIFW Beginning with Habitat, Stream Habitat Viewer (<https://www.maine.gov/ifw/fish-wildlife/wildlife/beginning-with-habitat/maps/maine-stream-habitat-viewer.html>). Dams are not the only obstacles to fish migration. The combination of dams, poorly constructed stream crossings, and other obstacles amount to significant problems in restoring fish runs almost everywhere in Maine. Barriers are color coded (green is OK, yellow is a potential problem, and red is a known problem). Here, the Habitat Viewer is focused on Downeast Maine, but the problem is state-wide.

I hope that I have made my point. I urge you to reject these ineffective Brookfield proposals and instead support a more cooperative solution that meets state and Federal water quality standards.

Thank you for your consideration  
 Dr Mark Whiting  
 Ellsworth, Maine