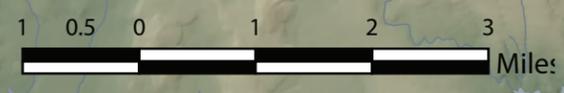
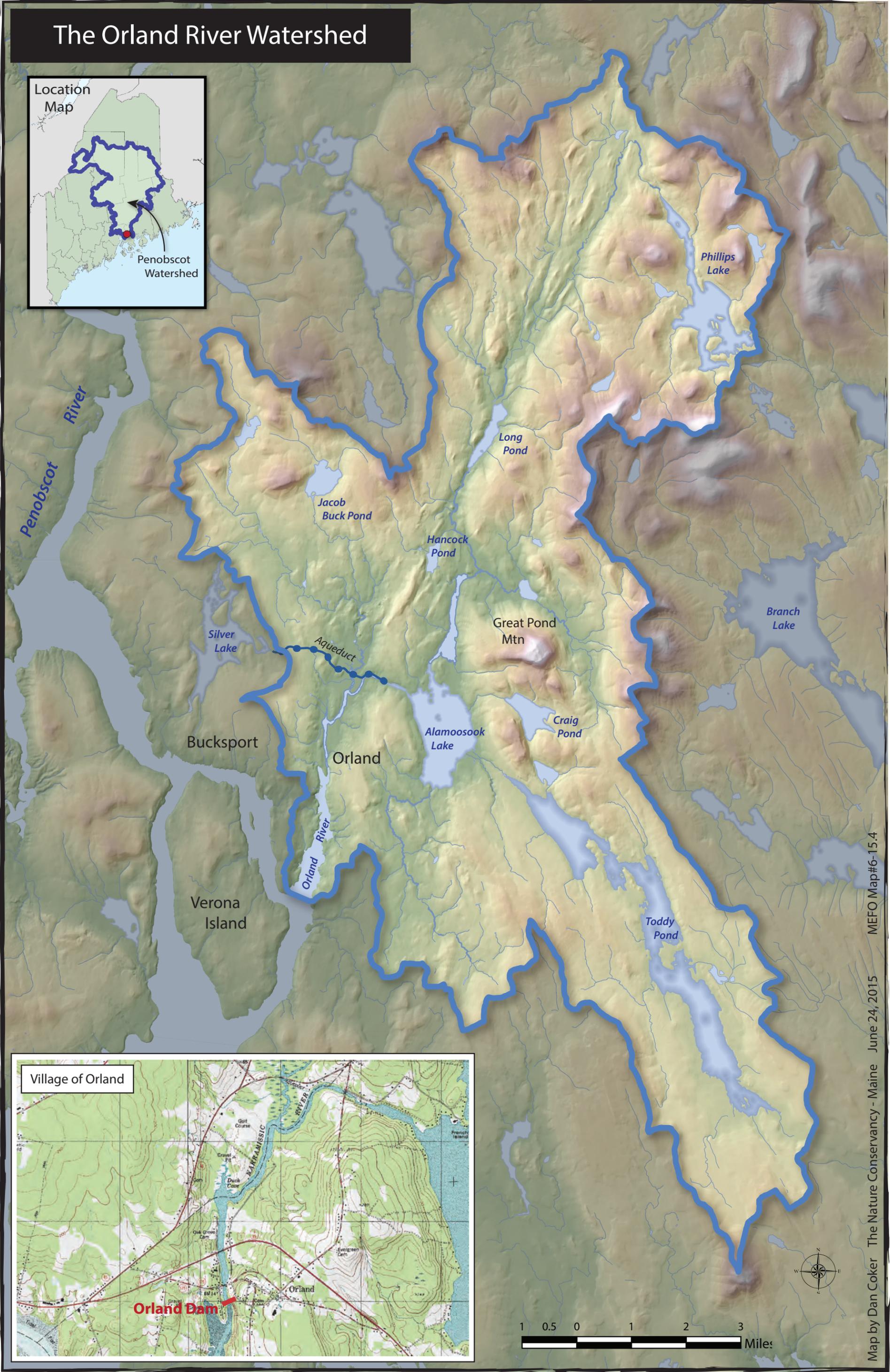


The Orland River Watershed



Highlights of the Orland River Watershed

The Orland Dam

All available evidence indicates that the Orland Dam was built at the head of tide across what had been called the “Lower Falls.” A place where fish concentrated on their migration from the ocean, the Orland River and connected lakes were—are—important locations for the region’s native Wabanaki people and their ancestors, as demonstrated by numerous protected archaeological sites along the shorelines.

The falls powered sawmills in the late 1700s, and were large enough to prevent ship traffic, because in December 1816 the Massachusetts Legislature incorporated the Eastern River Lock & Sluice Company to move vessels and goods over the falls. The company was allowed to make a sluice and lock or locks “from the outlet of Eastern River Great Pond, so called, to the waters below the falls, at the head of the tide in the town of Orland” and to erect a dam, provided that their activity did not interfere with an 1814 law protecting fish passage. Company owners John N. Swazey, Joseph R. Folsom, and Joseph Lee constructed a series of locks at Lower Falls shortly afterwards, enabling navigation to their mills near the outlet of “Great Pond” or Alamoosook Lake. The company could thus charge a toll for moving boards, planks, bark, timber, clapboards, shingles, etc. through the locks to the Penobscot waterfront.



In 1869, Walter Wells noted in his report, *Water-Power of Maine* that the river fell 15-16 feet from the outlet of Alamoosook to the “stone dam at tidewater.” “The dam at the head of tide is substantially built of granite, head and fall 10 feet, ponding the water back two miles to the Great pond dam; saw, grist, and stave mills.”

Archaeologist Warren Moorehead, who investigated ancient Wabanaki “red paint” cemeteries in 1912, wrote of Orland: “At Orland we found the Narramissic flowing in a picturesque little valley. There is a dam here which furnishes power for a saw mill and a grist mill. Above the dam the water is fresh; below, it is salt, and small schooners tie up at the wharf below the dam. In Indian times there were falls two or three meters in height where the dam is now located. On either side of the stream at this point there are high, steep hills, as the river has cut out a miniature gorge on its passage to the Penobscot. The banks flanking these hills were favorite resorts for aboriginal fishing parties...”

In a 2013 study, Stantec consultants suggested the dam may be built over a “reversing” or tidal falls, where saltwater moves upstream on a high tide, at about the same level of the current impoundment, while low tide revealed the falls created by freshwater

flow downstream. Similar dynamic features can be seen at nearby Blue Hill Falls, Bagaduce Falls, and Goose Cove Falls; on the Sheepscot and Damariscotta rivers; at Basin Cove in Harpswell; and Cobscook Bay.

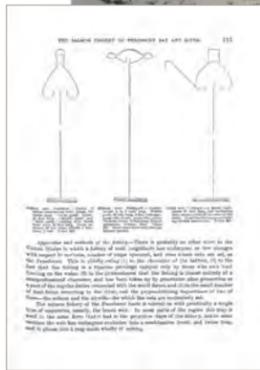


Lots of fish, then...

Fishing for cod and other groundfish, as well as salmon, shad, alewives, and other river fish, was a major occupation for nineteenth-century Orland residents. The Maine State Archives contain numerous petitions from Orland fishermen pleading that the fisheries be protected and restored.

Fish flakes (drying racks), stores, cargo ships, and other infrastructure filled the Orland waterfront. Between the 1850s and 1870s, 26 vessels were launched at local shipyards, most built for and by townspeople for fishing the Banks and the coastal trade. Cooper shops assembled barrels, mainly for fish storage. Fish weirs lined the banks of the Penobscot and Eastern [Orland] rivers.

As other Penobscot River towns lost their alewives to dams, pollution, and overfishing, Orland managed to maintain its run. In 1953 it was the only commercially harvested alewife run in the Penobscot. In 1982, Orland had the third-largest alewife fishery in the state, with 436,021 fish annually.



...and now

The Orland River is a major tributary of the overall Penobscot River watershed and its habitat for sea-run (migratory or diadromous) fish, including endangered Atlantic salmon and alewives, which the Town of Orland harvests and sells for lobster bait (generating \$5,000-\$10,000 per year). A recent assessment placed Orland in the top 5% for anadromous fisheries potential among Northeastern U.S. rivers. This is largely because the river still has fish, including a harvestable run of alewives, but also because of the large area of lake habitat upstream, intact forests in the watershed, and clean water.

Fisheries scientists believe that restoring these migratory fish, millions of which once filled the Penobscot River and Gulf of Maine, will also help bring back marine fish like cod and other groundfish, which eat alewives. These changes are already being documented in Penobscot Bay.

Fish in the Narramissic include largemouth and smallmouth bass, yellow perch, brown bullhead, pumpkin-seed sunfish, chain pickerel, and brown trout. Wild brook trout are present in the river, supplemented with stocked fish by Maine Department of Inland Fisheries and Wildlife. Sea-run fish include American eel, river herring, and Atlantic salmon.

Beneath the surface below the dam are Atlantic salmon, American eel, river herring, shortnose sturgeon, Atlantic sturgeon, sea lamprey, rainbow smelt, tomcod, and American shad. Both eel and alewife are the target of active commercial fisheries, although at lower levels than in the past. When the alewives are running, the area below the Orland Village Dam fills with eagles, osprey, gulls, cormorants, and seals.



A center of Atlantic salmon conservation

Using the cold, clean waters of Craig Pond Brook and Alamoosook Lake, the U.S. Fish and Wildlife Service Craig Brook National Fish Hatchery was founded in 1871; in 1889 it became the first federal fish hatchery in the United States. Biologist Charles Atkins purchased adult salmon from commercial weir fishermen at Verona Island and transported them up the Orland River via specially designed salmon “cars” for breeding at the hatchery. This breeding program helped sustain Atlantic salmon populations during periods when the river was too polluted and blocked by dams for fish to survive. Today the hatchery is at the core of Atlantic salmon conservation efforts.



An altered hydrology

Since the 1930s, the now-shuttered paper mill in Bucksport (constructed at a location known as “Salmon Point”) retained water rights to much of the Orland River system. Water withdrawn from the Narramissic at the outlet of Alamoosook Lake was pumped to Silver Lake and then apportioned between the mill for power generation and processing water (11 to 12 million gallons per day) and the Town of Bucksport for drinking water (0.5 to 1 million gallons per day). Uncertainty about water rights and usage persisted into 2015.

The Orland Village Dam does not regulate the river’s flow; dams on Toddy Pond and Alamoosook Lake control the overall flow of water in the system. However, the dam does restrict tidal flows, limiting saltwater flow above the dam at lower tides. At low tide, alewives have trouble ascending the fish ladder at the dam. Water levels are lower from July through mid-October, especially during August and September. Low flows affect water quality within the shallow Narramissic reservoir, favoring growth of oxygen-consuming algae.

The Toddy Pond Association, Alamoosook Lake Association, and Great Pond Mountain Trust, among other local groups, help to address water issues and concerns.

