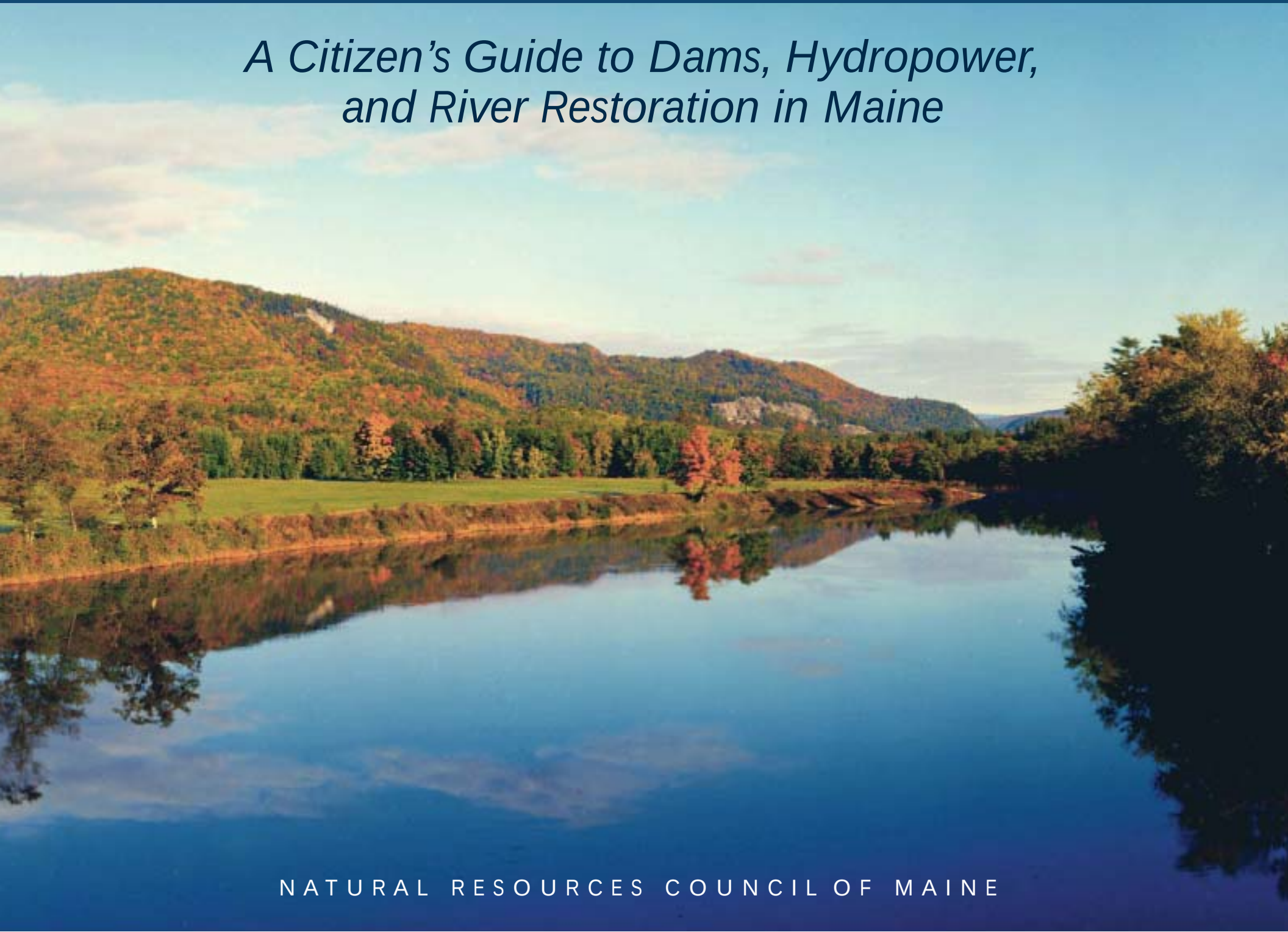
Toward a New Balance in the 21st Century

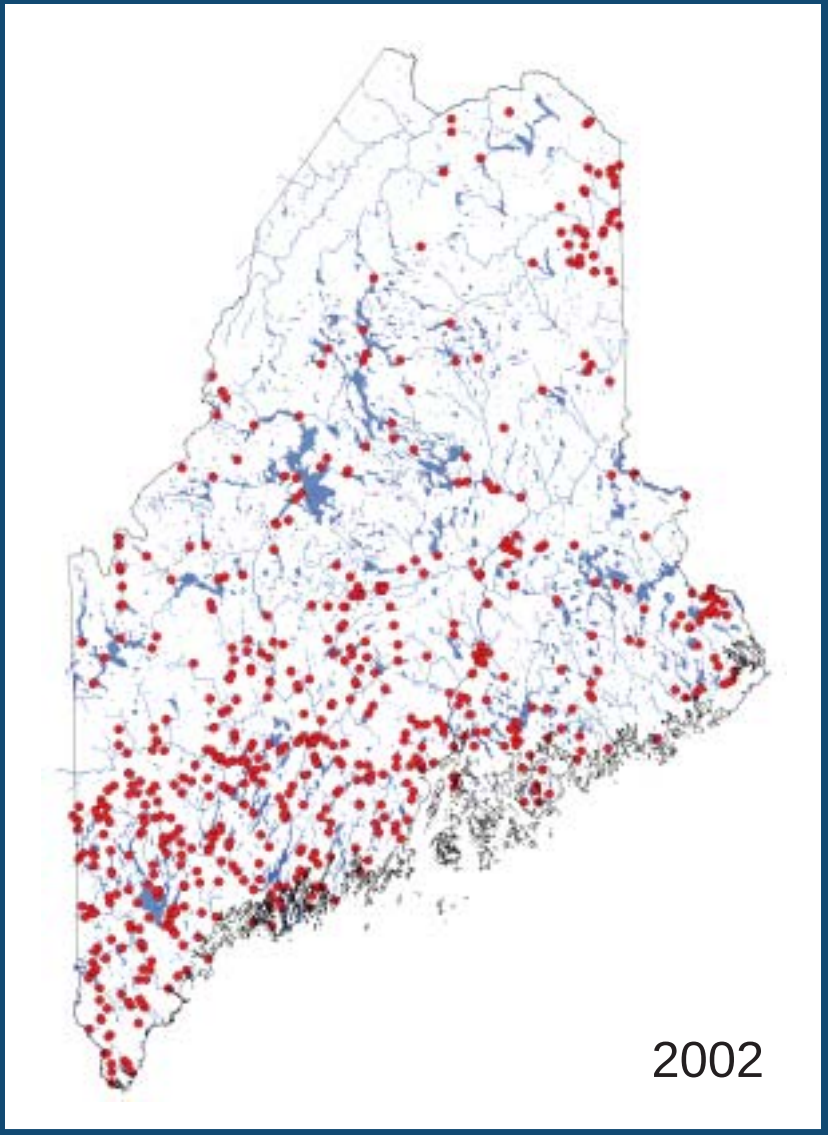
A Citizen's Guide to Dams, Hydropower, and River Restoration in Maine



NATURAL RESOURCES COUNCIL OF MAINE

Maine Rivers

Maine Dams



Maine's rivers and streams once flowed freely to the sea, carrying nutrients and allowing unimpeded fish passage deep inland. Today, more than 1000 dams exist on Maine waterways. The 2002 map depicts 649 dams listed in the National Inventory of Dams database, which includes dams with four feet or greater height. Hundreds of smaller dams are not shown on this map.

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This publication was principally funded by a grant from River Network's Watershed Assistance Program. Additional generous support was provided by the Gilbert and Ildiko Butler Foundation, the French Foundation, the Hillsdale Fund, the Henry P. Kendall Foundation, the Helen and George Ladd Charitable Corporation, Patagonia, Inc., The Pew Charitable Trusts, the Sudbury Foundation, the Sweet Water Trust, the Rau Foundation, the Wallis Foundation, and the members of the Natural Resources Council of Maine.

For information about how you can become a member of the Natural Resources Council of Maine, see the inside back cover.

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Thanks: The Council appreciates the many individuals who provided comments on this publication.

Printer: J.S. McCarthy

Photo and Illustration Credits *(left to right)*:
Cover – Androscoggin River, Scott Perry; **Inside Cover** - Tom Gatto; **p.1** - Jeff Morales; **p.2** - Maine Historic Preservation Commission, NRCM; **p.3** - Paul Smith, Jeff McEvoy (2); **p.4** - (illustration) Jon Luoma, Pejepscot Historical Society; **p.5** - Doug Watts, Maine State Archives; **p.6 & 7** - Jessica Lavin; **p.8** - Doug Watts; **p. 9** - Doug Watts; **p.10** - Jessica Lavin (map), Doug Watts; **p.11** - D. D. Tyler (illustration), Maine DEP; Portland Press Herald; Dan Tarkinson, FlyFishingInMaine.com; **p.12** - Kennebec Journal, Bill Silliker (2), Scott Perry; **p.13** - Jessica Lavin, Doug Watts, Tim Watts; **p.14** - Jessica Lavin, Doug Watts, Aardvaark Outfitters; **p.15** - Jeff McEvoy (2), Doug Watts, Jim Thibodeau; **p.16** - Dwayne Shaw, Jon Luoma (illustration), Coastal America; **p.17** - Coastal America (2), Toki Oshima (illustration), **p.18** - Doug Watts, Bob Wengrzynek (2); **p.19** - Bob Wengrzynek, Maine Natural Resources Conservation Service; **p.20** - NRCM; **p.21** - Calpine Corporation, Randy Spencer; **p.22** – © www.heatherperryphoto.com, Pete Didisheim, Central Maine Newspapers; **p. 23** - Journal Tribune, Jim Thibodeau; **p.24** - Gabrielle Kissinger (2), Paul Smith, Jessica Lavin; **p.25** - Tina Shute (2); **p.26** - Chris Gosselin, Doug Watts, Jeff McEvoy; **p. 27** - Dean Bennett, NRCM (2), Doug Watts; **p.28** - Jeff McEvoy (2).

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Toward a New Balance in the 21st Century

A Citizen's Guide to Dams, Hydropower and River Restoration in Maine

Maine is interlaced with beautiful and powerful rivers: the Saco, Androscoggin, Kennebec, Penobscot, Allagash, Aroostook, and St. John – to name a few. These and countless other rivers and streams shaped Maine's landscape, nurtured our environment, and provided sustenance for people and wildlife throughout history.

For thousands of years, Maine's rivers have served the many needs of tribal people. They were used as trade routes for commerce with neighboring nations, and as a central spiritual force in their cultures. Most of Maine's rivers have derived their modern names from the tribes that occupied these watersheds.

When European settlers came to Maine, their earliest towns were located along or at the mouths of rivers, which eased transportation to and from the sea. Commercial fisheries flourished on the Kennebec River for fifty years before any significant dams were built on the river. The settlers built dams to capture the power of Maine's rivers for mills and factories. These early forms of business and industry – textiles, saw mills, tanneries – attracted immigrants whose descendants remain a vital cultural feature in our communities to this day.

Above: *Dam on the Little Androscoggin, Norway, Maine, December 1864.*

Right: *Maine's rivers served as highways for moving entire forests to processing plants.*

As highways, Maine's rivers have carried entire forests of timber to processing plants. As ecosystems, they once supported a fisheries industry that sold salmon, sturgeon, and shad to markets around the world. And, before modern pollution controls, Maine's rivers also served as open sewers for carrying untreated human and industrial wastes to the sea.

As we move into the 21st century, the roles of Maine's rivers are changing. They continue to generate a significant amount of electricity, although a declining share compared to other sources of power. Maine's rivers also have become an increasingly important resource for recreation and a defining feature for our way of life.

After suffering extreme pollution for nearly 100 years, the water quality of Maine's rivers has improved considerably – allowing the return and recovery of significant fish populations. Maine residents and visitors alike are spending more time fishing, kayaking, canoeing, rafting, camping, hiking, and picnicking along our rivers – creating economic activity for local communities. Most significantly, Maine towns are reorienting themselves back toward the rivers in their backyards.

Dams have extensively altered the natural functioning of Maine's rivers and streams. Most of the dams in Maine are small structures, and most dams continue to serve important purposes, whether for electricity, for recreation in their ponds, or in relation to homes that have been built around some of them. Most are likely to remain in place for years to come. However, some have outlived their original design lives. Several dams in Maine have been

Above: *Maine people are rediscovering rivers in Maine that once were so polluted they peeled paint from waterfront homes.*

Right: *Fishing on inland waters in Maine provided an estimated $293 million in annual revenues in 1996.*

removed in recent years, for economic, safety, and environmental reasons. Additional dam removals are under consideration. Most of these projects have received little public attention, yet some have been highly controversial.

The goal of dam removal projects in Maine is to secure a new balance of economic, environmental, and quality of life factors – a balance that is in line with the priorities and realities of our times. This guide provides interested citizens with an overview of some of the issues associated with Maine's rivers and dams, so that you can be an informed participant in discussions about how Maine's rivers can best be shared by people, fisheries, and wildlife for generations to come.

After suffering extreme pollution for over 100 years, the water quality of Maine's rivers has improved considerably – allowing the return and recovery of significant fish populations.

The Dams of Maine

Dams played a critical role in the settling of the United States, in general, and of Maine, in particular. Dams have been built on every major and minor river system in the lower 48 states and are found in every county in the nation. An estimated 2.5 million dams of various sizes span rivers and streams across America; approximately 76,000 of these dams are greater than six feet tall. The exact number of dams in Maine is not known. More than 750 dams greater than two feet high have been registered with the state, but the total number is estimated to exceed 1,000. Only 111 dams in Maine produce electricity.

As European settlers arrived in Maine, they built dams to enhance water supplies and provide mechanical power for sawmills and gristmills. Large dams were built on the Kennebec at Augusta and Waterville, on the Androscoggin at Brunswick and Lewiston, and on the Penobscot at Bangor and Old Town. The number of dams proliferated not just on the major rivers, but on smaller rivers and streams as well. Dams were built almost everywhere in the state where significant falling water could be used to operate a mill.

Dams are now a major fixture of Maine's landscape, even though many dams in Maine no longer serve their original purpose and are no longer used by their original owners. Water stored behind dams is sometimes used for recreation, drinking water supplies, irrigation, fire control and electricity generation.

The dams of Maine also are aging. Dams typically are designed to last 50 years, yet many dams in Maine are older than that. As dams reach the end of their life expectancies nationwide, hundreds of failures have been documented – raising significant safety issues and cost implications.

Of the 617 largest dams in Maine, 23 were identified in 2000 as being "high hazard" dams – in which a dam failure, if it occurred, would likely result in the loss of life.

As dams age, the cost of maintenance and repair work increases. Aging dams also can cause increased insurance liabilities for the dam owner. In Wisconsin, more than 35 small aging dams have been removed in the past 15 years because it was three to five times less expensive, on average, than repairing the dams.

As Maine was settled, dams – such as the Pejepscot Dam (circa 1890) on the Androscoggin River in Topsham – were built on essentially every major river to provide mechanical power to operate mills.

How Dams Work

Ever since the Greeks discovered how to use falling water to turn water wheels for grinding wheat into flour, people have harnessed the energy produced by rivers to make their work easier.

Water is stored behind a dam to allow power producers to manipulate river flow. By holding water back, upstream water levels are higher than downstream. This creates a "hydraulic head" – the difference in height between the surface of a reservoir and the river downstream. The stored water can be channeled through a turbine to generate power.

Left: *Granite blocks from the Union Gas Dam on Messalonskee Stream in downtown Waterville suddenly collapsed in June 2001. To reduce safety risks, the dam's owner, Florida Power and Light, dismantled a large portion of the dam, allowing the river to run through it.*

Below: *Many dams in Maine are aging and in disrepair, such as the Collins Mill Dam on Cobbosseecontee Stream, West Gardiner.*

Above: *This water powered mill in Andover was on the Ellis River, a tributary of the Androscoggin, circa 1930.*

Right: *The Gardiner Paperboard Dam, on Cobbosseecontee Stream in Gardiner, is slated to be removed.*

Dams typically are designed to last 50 years, yet many dams in Maine are older than that.

The Damming of Maine's Rivers

Although Maine's rivers once flowed freely between inland reaches of the state and the sea, dams have turned our rivers into highly fragmented waters – with stretches that are physically and biologically separated from each other. More than 1,000 dams now exist on Maine's 31,000 miles of rivers and streams. The majority of these dams are small, do not generate electricity and do not create a sizable impoundment. However, the dams that are most familiar to Maine people are the ones on our major rivers, shown here.

Salmon Falls River

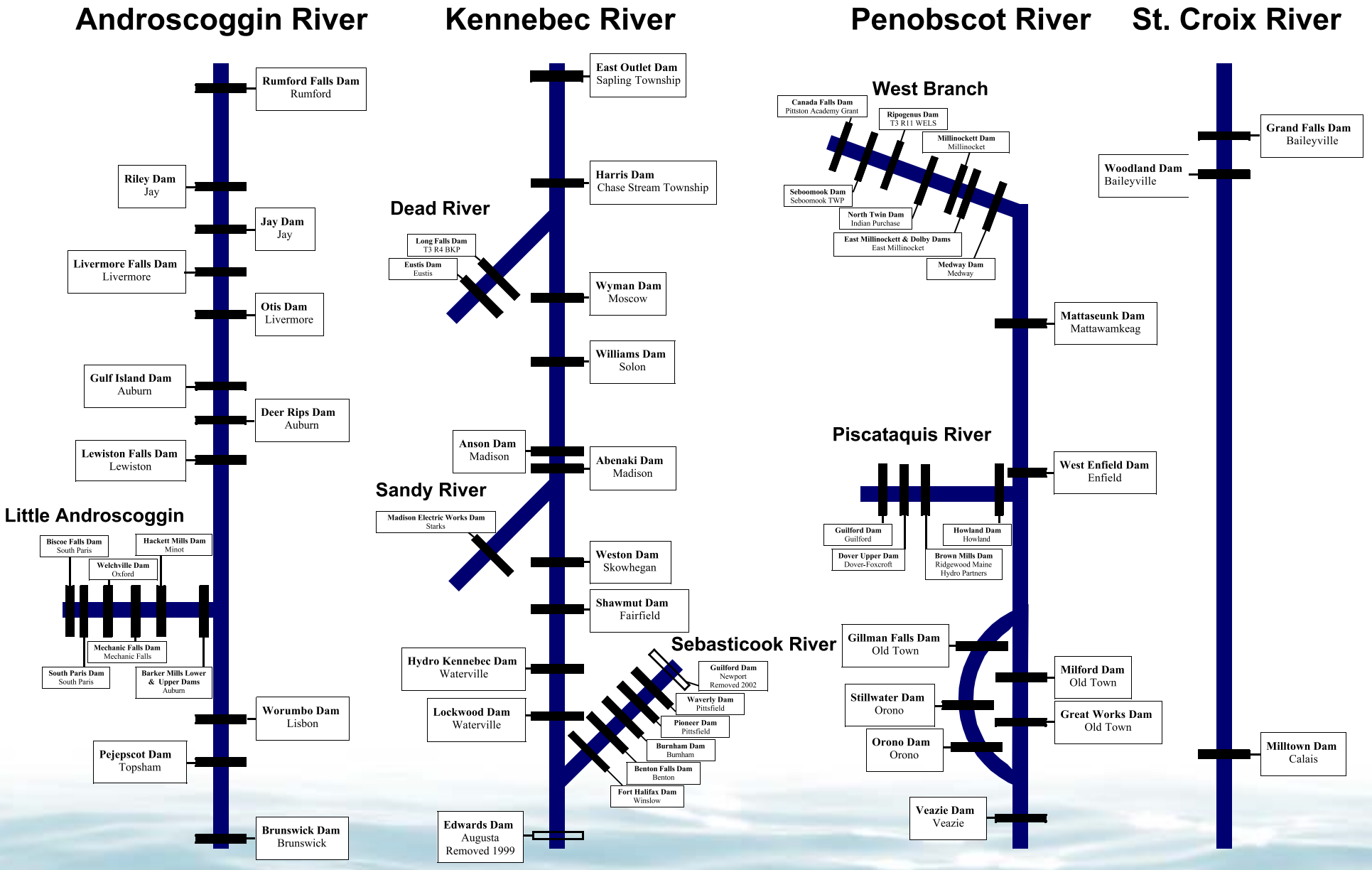
- **Great East Pond Dam** Acton
- **Horn Pond Dam** Acton
- **Rowe Dam** Acton
- **Wambeck Dam** Acton
- **Mill Dam** Acton
- **Milton Three Ponds Dam** Lebanon
- **Milton Leatherboard Dam** (removed 1999) Lebanon
- **South Milton Dam** Lebanon
- **Spaulding Dam** Lebanon
- **Boston Felt Dam** South Lebanon
- **Mast Point Dam** Berwick
- **Upper Great Falls Dam** Berwick
- **Lower Great Falls Dam** Berwick
- **Rollinsford Dam** South Berwick
- **South Berwick Dam** South Berwick

Saco River

- **Swans Falls Dam** Fryeburg
- **Hiram Dam** Hiram
- **Bonny Eagle Dam** Hollis
- **West Buxton Dam** Buxton
- **Bar Mills Dam** Buxton
- **Skelton Dam** Dayton
- **Spring & Bradbury Dams** Saco
- **Cataract Dam** Saco

Presumpscot River

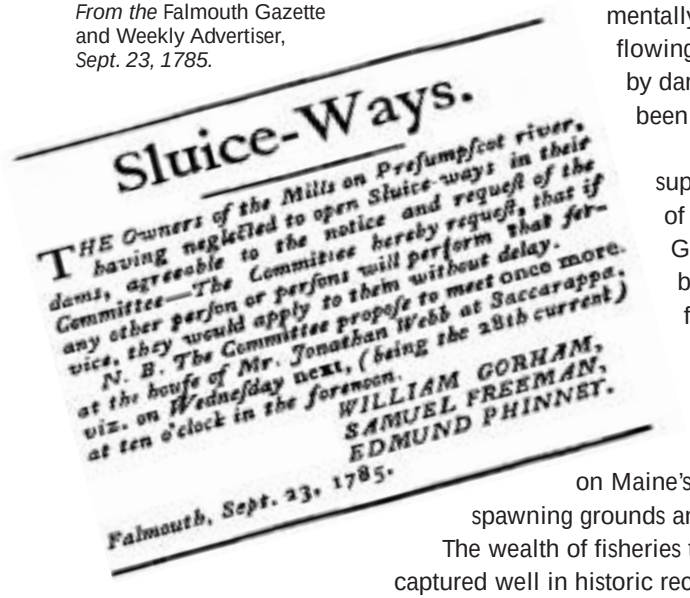
- **Eel Weir Dam** Standish
- **North Gorham Dam** Windham
- **Dundee Falls Dam** Windham
- **Gambo Falls Dam** Windham
- **Little Falls Dam** Windham
- **Mallison Falls Dam** Windham
- **Saccarappa Dam** Westbrook
- **Cumberland Mills Dam** Westbrook
- **Smelt Hill Dam** Falmouth Removed 2002


Androscoggin River
Rumford Falls Dam
Rumford
Riley Dam
Jay
Jay Dam
Jay
Livermore Falls Dam
Livermore
Otis Dam
Livermore
Gulf Island Dam
Auburn
Deer Rips Dam
Auburn
Lewiston Falls Dam
Lewiston
Little Androscoggin
Biscoe Falls Dam
South Paris
Hackett Mills Dam
Minot
Welchville Dam
Oxford
Mechanic Falls Dam
Mechanic Falls
South Paris Dam
South Paris
Barker Mills Lower & Upper Dams
Auburn
Worumbo Dam
Lisbon
Pejepscot Dam
Topsham
Brunswick Dam
Brunswick
Kennebec River
East Outlet Dam
Sapling Township
Harris Dam
Chase Stream Township
Dead River
Long Falls Dam
T3 R4 BKP
Eustis Dam
Eustis
Wyman Dam
Moscow
Williams Dam
Solon
Anson Dam
Madison
Abenaki Dam
Madison
Sandy River
Madison Electric Works Dam
Starks
Weston Dam
Skowhegan
Shawmut Dam
Fairfield
Hydro Kennebec Dam
Waterville
Lockwood Dam
Waterville
Sebasticook River
Guilford Dam
Newport
Removed 2002
Waverly Dam
Pittsfield
Pioneer Dam
Pittsfield
Burnham Dam
Burnham
Benton Falls Dam
Benton
Fort Halifax Dam
Winslow
Edwards Dam
Augusta
Removed 1999
Penobscot River
West Branch
Canada Falls Dam
Pittston Academy Grant
Ripogenus Dam
T3 R11 WELS
Millinockett Dam
Millinocket
Seboomook Dam
Seboomook TWP
North Twin Dam
Indian Purchase
East Millinockett & Dolby Dams
East Millinocket
Medway Dam
Medway
Mattaseunk Dam
Mattawamkeag
Piscataquis River
West Enfield Dam
Enfield
Guilford Dam
Guilford
Howland Dam
Howland
Dover Upper Dam
Dover-Foxcroft
Brown Mills Dam
Ridgewood Maine Hydro Partners
Gillman Falls Dam
Old Town
Milford Dam
Old Town
Stillwater Dam
Orono
Great Works Dam
Old Town
Orono Dam
Orono
Veazie Dam
Veazie
St. Croix River
Grand Falls Dam
Baileyville
Woodland Dam
Baileyville
Milltown Dam
Calais

Environmental Impacts of Dams

Although dams have provided – and in many cases continue to provide – valuable services to our society, they have done so at a significant cost to the original ecosystems of our rivers and streams. Dams fundamentally alter the habitat of a free-flowing river. The damage caused by dams on Maine's rivers has been very high.

From the Falmouth Gazette and Weekly Advertiser, *Sept. 23, 1785.*



Sluice-Ways.

THE Owners of the Mills on Presumpscot river, having neglected to open Sluice-ways in their dams, agreeable to the notice and request of the Committee—The Committee hereby request, that if any other person or persons will perform that service, they would apply to them without delay.

N. B. The Committee propose to meet once more at the house of Mr. Jonathan Webb at Saccarappa, viz. on Wednesday next, (being the 28th current) at ten o'clock in the forenoon.

WILLIAM GORHAM,
SAMUEL FREEMAN,
EDMUND PHINNEY.

Falmouth, Sept. 23, 1785.

Maine's major rivers once supported large populations of sea-run fish and eels. Generally, these species are born in inland streams in freshwater, travel downstream to live most of their adult lives at sea, then return to spawn in the rivers of their origin. With the construction of dams on Maine's rivers, these fish were cut off from their spawning grounds and their populations began to plummet.

The damage caused by dams on Maine's rivers has been very high.

The wealth of fisheries that once surged in Maine's rivers is captured well in historic records. For example, a commercial fisherman estimated that during the 1870s more than 30,000 Atlantic salmon were harvested each year from the Kennebec below Bath alone.

But the construction of dams took a toll on these landings. The first major dam on the Kennebec River in 1837, for example, resulted in dramatic and deep reductions in fish populations. Within a decade, landings of salmon, herring, and sturgeon dropped to a small fraction of their levels before the Augusta dam was built. A man who reported catching 500 salmon at Augusta in 1838, reported that by 1850 a good year might bring four or five salmon.

Above: *Dams create an impenetrable wall for upstream fish migration. Fish passage systems have generally served as poor substitutes to free-flowing rivers.*

Right: *The State has taken enforcement actions in recent years against dam owners in Maine where thousands of fish have been killed while passing through turbines.*

Left: *Alewives were trapped each spring below Edwards Dam, until the dam's removal in 1999.*

Recent research has documented that the water stored behind a dam has neither the habitat of a river, nor the habitat of a naturally occurring lake. As a result, dams produce an ecosystem that is not well designed for the species that occur in either of these habitats.

Environmental impacts of dams

- **Dams block the movement of river life** – preventing fish migration, halting the flow of plants and nutrients, and curbing downstream recreational use.
- **Dams slow rivers** – interfering with the steady flows that some species, such as salmon, need to flush young fish downriver and guide them upstream years later to spawn.
- **Dams flood upland areas** – by creating a reservoir that inundates land that previously served as terrestrial habitat, and may have been valued floodplains.
- **Dams alter water temperatures** – usually increasing temperatures by slowing flow; sometimes decreasing water temperatures by releasing cooled water from the reservoir bottom. Temperature irregularities can harm aquatic life.
- **Dams alter timing of flows and cause water level fluctuation** – by withholding and then releasing water to generate power. These releases can act like a firehose washing away plants and animals downstream, eroding soil and vegetation, and flooding or stranding wildlife, disturbing fisheries and waterfowl. These irregular releases destroy seasonal flow variations that trigger natural growth and reproduction cycles in many species.
- **Dams reduce dissolved oxygen** – reducing circulation of the water and increasing its temperature, which can result in less oxygen than is necessary for the survival of many species.
- **Dams hold back silt, debris, and nutrients** – by slowing flows, dams can allow silt to collect on river bottoms and bury fish spawning habitat. Dams also trap gravel, logs and other debris, eliminating their availability downstream as food and habitat.
- **Dams can harm fish** – by following currents downstream, fish can be drawn into and cut up by power turbines.
- **Dams increase predator risk** – warm, murky reservoirs often favor predators of naturally occurring species. In addition, passage through fish ladders or turbines can injure or stun fish, making them easy prey for flying predators like gulls and herons.
- **Dams reduce productivity of estuaries and bays** – because there are fewer juvenile fish due to the inaccessibility of spawning grounds to sea-run fish. Maine's Department of Marine Resources estimates that for every returning adult fish, 300-400 juveniles return to our estuaries and bays each year, adding tremendously to the ocean food chain.

Left: *"Converting a river to a lake causes many riverine species to perish. Many studies have documented drastic declines in diverse mussel communities following the construction of dams."*

The Freshwater Mussels of Maine, *Maine Department of Inland Fish and Wildlife, 2000*

Right: *Wild Atlantic salmon like this one on Cobbosseecontee Stream in 1997, are nearly extinct in the U.S., in part due to the construction of impassable dams.*

More than 600,000 miles of the nation's rivers and streams have been flooded beneath waters stored behind dams.

Dam Removals

Removal of the seven-foot-high Quaker Neck Dam in 1997 in North Carolina opened up 1,000 miles of upstream spawning habitat for migratory fish.

Dams have been built across the United States, and they have also been removed across the nation for safety, environmental, and economic reasons. A report issued in 1999 documented nearly 500 dams that have been removed across the country, yet other estimates have placed the number at 1,000 or more, most of which have been small, non-hydropower dams. Officials in Wisconsin estimate that as many as 500 dams have been removed in that state alone. Sixty-three dams in 15 states and the District of Columbia were scheduled for removal in 2002.

Dams have been removed throughout history when it made sense to do so in terms of costs or safety, or when the original purpose of the dam had been served. Dams built to generate power for sawmills in remote forests, for example, were removed when the harvesting operation was over.

What is new in recent years, however, is the consideration of environmental benefits that can be achieved through selective dam removals. Communities across the nation are viewing dam removals as a means of creating healthier rivers and streams.

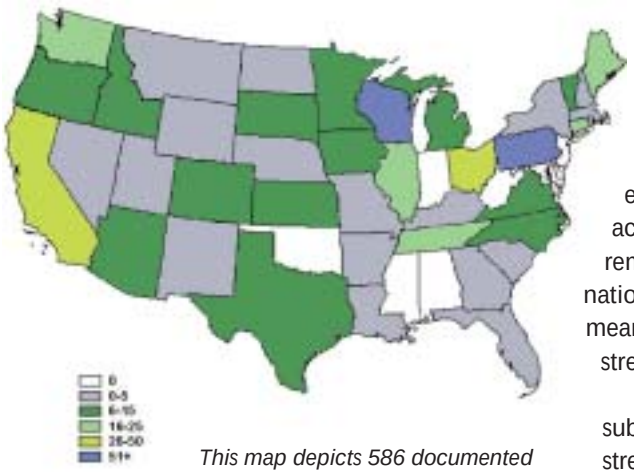
The removal of a dam can have a substantial, positive impact for a river or stream. Most significantly, it can restore access to upstream habitat and spawning areas for migratory and resident fish. Improved water quality, increased species diversity, and enhanced ecosystem function also can be achieved through a dam removal. Most of the dam removals that have occurred or are under discussion in the U.S. involve small dams.

Maine has had several highly successful dam removals – which have resulted in significant benefits for Maine's environment. These projects have been the result of collaborative efforts involving citizens; local, state and federal government agencies; and various organizations.

Removal of the Smelt Hill Dam on the Presumpscot River in October 2002, for example, was called "a resurrection of this river" by Edward Kitchel, chairman of the Falmouth Town Council.

Above: *The Guilford Dam, on the E. Branch of the Sebasticook River in Newport, was removed in 2002 as part of an economic development plan for the community.*

Right: *Atlantic salmon need to be able to return to their native spawning grounds to reproduce.*



This map depicts 586 documented dam removals in the United States, including 63 slated for removal in 2002.

– Source: American Rivers

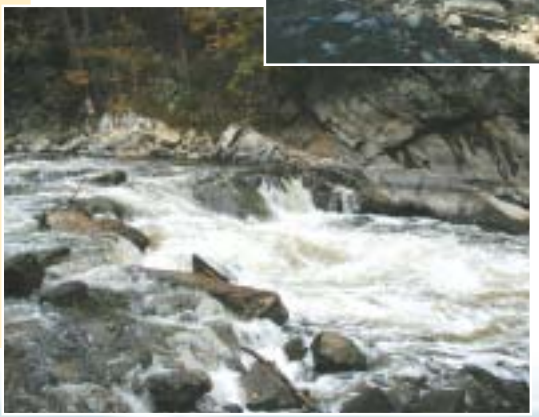
With dam removals the population of living organisms in the sediment, such as this dobson fly larva, an indicator of healthy streams, has increased dramatically.

— Portland Press Herald, September 28, 2002

Recent Dam Removals in Maine

Columbia Falls Dam	*Pleasant River*	1990
Grist Mill Dam	*Souadabscook Stream*	1998
Hampden Dam	*Souadabscook Stream*	1999
Souadabscook Falls Dam	*Souadabscook Stream*	1999
Archer's Mill Dam	*Stetson Stream*	1999
Edwards Dam	*Kennebec River*	1999
Brownville Dam	*Pleasant River*	1999
East Machias Dam	*East Machias River*	2000
Eastland Woolen Mill Dam	*E. Branch Sebasticook River*	2001
Union Gas Dam	*Messalonskee Stream*	2001
Guilford Dam	*Sebasticook River*	2002
Smelt Hill Dam	*Presumpscot River*	2002
Sennebec Dam	*St. George River*	2002

Right: *Smelt Hill Dam was breached on October 2, 2002 at a location where a dam has stood since 1734.*



Left: *Removal of the dam has freed up Presumpscot Falls and other rapids, allowing fish passage to more than seven miles of habitat on the Presumpscot River for the first time in 268 years.*

Benefits Galore

"Dam removal is often touted because it benefits anadromous fish species, but opening up rivers with impoundments helps more than fish. Once floodplain habitat returns on the submerged section of river, avian life such as warbling vireos, northern parulas, northern orioles, American redstarts, wood thrushes, pileated woodpeckers, woodcock, whip-poor-wills, etc. will flourish. This ecosystem also attracts gray treefrogs, wood frogs, wood turtles, spring peepers and ribbon snakes. The brief list just touches the top, too. We live in exciting times, and obviously, the news isn't all bad."

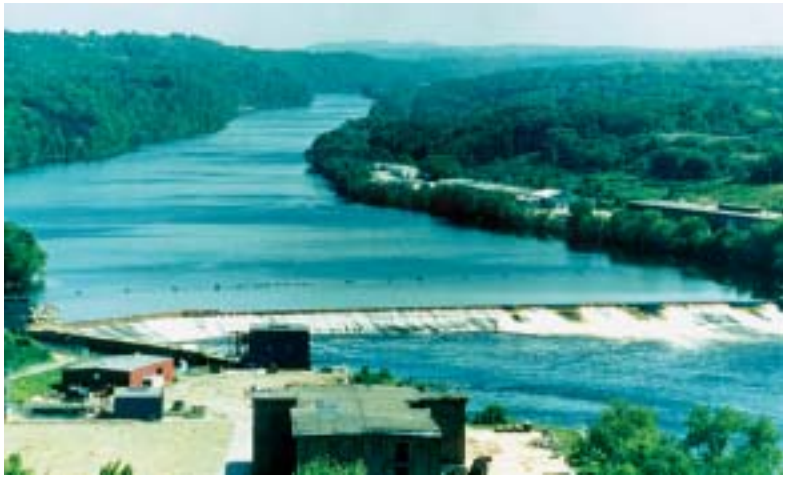
Ken Allen, Maine Sportsman, August, 2002

The Kennebec River – Augusta Rediscovers a Natural Resource

The environmental benefits from the 1999 removal of the Edwards Dam in Augusta have greatly exceeded initial expectations – resulting in a rebirth of the river and new found connections between riverside communities and the Kennebec River.

Swimming and fishing along the Kennebec's western shores in Fairfield are not what Bob Dionne remembers of his childhood relationship with one of Maine's largest rivers. "I grew up on this river and remember when you wouldn't put your big toe in," Dionne said. Now he owns and operates a growing business guiding anglers on the river.

In the 1950s, mill waste, raw sewage and log drives had turned the Kennebec into what many citizens viewed as an open sewer. In Augusta, the Edwards Dam, built in 1837, powered a textile mill, the last of nearly a dozen mills originally powered by the dam. The mill provided hundreds of area jobs but blocked migratory fish from being able to move up the river.



Breaching of the Edwards Dam on July 2, 1999 was recognized with a ceremonial bell ringing, signaling the passage of one era and the beginning of a new one for this stretch of the Kennebec River. Thousands of people, including Maine's Governor and entire congressional delegation, participated in this historic event.

Over a century earlier, the Kennebec River had been a different place.

When Bob Dionne grew up, people still talked of the old Kennebec – the Kennebec with clean water. In an attempt to improve water quality in the river, environmental laws in the 1970s forced an end to the log drives and untreated waste dumping. By the 1980s, water quality and the conditions of fisheries had improved, but sea-run fish were still blocked by dams on all of Maine's major rivers, including the Kennebec, where the Edwards Dam prevented fish from ever reaching the 17 miles of prime spawning ground above Augusta.

By the early 1990s, the mill that was once powered by the dam had burned to the ground and

Back to the Future

Before 1837, from its headwaters at Moosehead Lake to its mouth at Merrymeeting Bay, the Kennebec flowed unimpeded across miles of rich spawning habitat. The river's banks were yet unspotted by mills. Alewives, salmon, American shad, striped bass and sturgeon were in such abundance that in the early 1800s, driftnet fishermen often caught thousands of fish in just one night. Communities looked to the river as a source of food, water and transportation.

The removal of the Edwards Dam in 1999 has helped clear the way for the Kennebec to be this kind of river again.

The Kennebec now flows freely from Waterville to the sea, creating a new "backyard" natural resource that is teeming with life for the City of Augusta.

Benefits of Edwards Dam Removal

- *Water quality has improved and now supports more numerous and diverse forms of river life.*
- *Sea-run fish have arrived in Waterville for the first time in more than 160 years, including shad, striped bass, sturgeon, alewives, and Atlantic salmon.*
- *Nearly two million alewives have arrived each spring at the base of Ft. Halifax dam at the mouth of the Sebasticook River in Winslow.*
- *The 17-mile stretch of river from Waterville to Augusta has become popular for sport fishing for shad and striped bass, with landings of striped bass greater than 50 inches reported.*
- *The free-flowing river from Waterville to Augusta, with restored rapids, has become a popular canoe and kayak trip.*
- *Biological life in the river is healthier, with river sediment samples showing huge increases in the number and diversity of organisms.*
- *Restoration of the river has benefited species that depend on a healthy river, including osprey, eagles, hawks, and great blue herons.*
- *The City of Augusta is creating a riverfront redevelopment plan for the former dam site.*

ceased operating. The remaining hydropower operation employed only three people and produced only a small amount of electricity. For that small economic benefit, it was blocking passage of sea-run fish to a large watershed.

With increased national interest in outdoor recreation, wildlife, natural resources and restoring fisheries, a growing number of Maine people began to see that the economic benefits of continued operation of Edwards Dam were less than the environmental and economic benefits of dam removal. Atlantic salmon fisheries and big game fish such as stripers and

"Now that the Edwards Dam has been removed, the fishing is unbelievable from Waterville to Augusta; 17 miles of angler heaven!"

– **George Smith, Sportsman's Alliance of Maine**
Kennebec Journal, October 2, 2002

Delaine Nye, Augusta City Councilwoman

"I grew up on a farm about 50 miles north of Augusta. Almost 20 years ago, I can remember driving through the city on a hot summer day and smelling the putrid odor from the river. Down the road, I think this will be an incredible location for reinvestment and that real estate values are going to increase. People have been used to turning their backs to the river for so long. I see the removal of the dam and the creation of a riverfront improvement district as a catalyst for the rehabilitation and restoration of the downtown and northern end of Augusta."

sturgeon were stifled because of their inability to reach areas where they could reproduce. The dam blocked the passage of canoes and other boats. Water quality suffered because the dam slowed the flow of the river – reducing oxygenation and natural flushing of silt and pollutants.

Not everyone was in favor of removing the dam. Land owners above and below the dam feared that their property would be devalued if water levels dropped drastically. Others were concerned that a shallower, quicker flowing river would also expose ugly debris left on the river bottom from the last log drives.

Despite these concerns, in 1997 the Federal Energy Regulatory Commission (FERC) made a landmark decision not to renew the dam's license and to order its removal. Following a decade of public meetings, FERC's decision reflected their belief that the benefits of removing the dam outweighed the benefits of relicensing it.

The dam was breached in July 1999. Just months later, striped bass had returned to the Waterville-Winslow section of the river. In January 2000, the river's water quality had improved sufficiently to earn a higher rating from the Department of Environmental Protection. Scientists found that the number and diversity of organisms living in the river bottom upstream from the old dam had increased by several orders of magnitude. This change is a strong indicator of improved ecosystem health.

"The fishing is unbelievable... the river was waiting for the right moment."

– **Bob Dionne**, Aardvark Outfitters

A year later, Bob Dionne was making regular driftboat trips down the river with clients of his fishing outfitter business. “We thought it would be good for the river, but we thought it would take at least a couple years,” he said. “The fishing is unbelievable… the river was waiting for the right moment. In terms of just sheer economic development, the river’s recovery is going to bring incredible results.”

Left: *Spring alewife runs provide bait for lobster fishing.*

Why was the Edwards Dam Removal Significant?

A First for FERC

FERC, the Federal Energy Regulatory Commission, is the government body responsible for licensing hydroelectric dams. In 1997, FERC decided not to renew the license for the Edwards Dam because the benefits of removing this dam outweighed its usefulness. It was the first time the agency had denied a license renewal for an operating dam and ordered that the dam be removed.

The dam was breached in July 1999. Just months later, striped bass had returned to the Waterville-Winslow section of the river.

The East Machias River – Free-flowing and Safer

In January 2002, town officials from East Machias traveled to Washington, D.C. to receive a presidential award for successfully removing an abandoned, unsafe former hydroelectric dam on the East Machias river. A letter of congratulations from President Bush commended the project team, which included civil engineers from the U.S. Air Force Reserve who helped remove the dam from the river as a training exercise.

"We gated the dam and posted no trespassing signs but we still had trouble keeping the kids off."

Selectman Ken "Bucket" Davis

Built in 1926 and owned by the town since the 1960s, the East Machias Dam was an irresistible temptation to youth who often climbed on the structure, posing a potential liability for the town.

"We gated the dam and posted no trespassing signs but we still had trouble keeping the kids off," said Selectman Ken "Bucket" Davis. A lifelong resident of the area, Davis saw the dam as a costly liability and a negative impact on the town's river and its historic fisheries.

Davis remembered years past when the alewives and sea-run smelt had run thick. Fishermen used the alewives as bait for lobster and to trawl for halibut. Alewives and smelt also provided food for striped bass, relieving pressure on young salmon which stripers also consume.

Although the dam had "fish ladders" that could help certain fish species pass by, it was difficult for fish like salmon to pass above the site. Waiting in eddies below the dam, the fish were easy prey for predators and poachers.

Built of hand-mixed concrete and steel by Bangor Hydro-Electric Company in 1926, the 230-foot wide dam was one of several former dams that had blocked this section of the river for over 150 years. By the 1990s, it was the only obstruction from the river's source in Pocomoonshine Lake, near the Canadian border, all the way to Machias Bay. When Bangor Hydro was operating the dam as a hydroelectric facility it was a significant deterrent to the migration of salmon and other anadromous fish species.

The dam on the East Machias River had become a financial liability to the town.

Liability Issues

In the late 1990s, liability issues prompted the town to look seriously into removing the dam. Townspeople overwhelmingly supported an item on the town warrant to raise $5,000 toward a dam removal project. With the help of the Atlantic Salmon Federation, the town attracted support from the Coastal America Partner-

ship, a national initiative created to improve coastal conditions.

Through Coastal America, a collaboration of conservation groups secured help from the military and state and municipal agencies to carry out demolition and restoration – and save the town hundreds of thousands of dollars. In May 2000, a demolition team of Air Force reservists from around the country traveled to East Machias to dismantle the dam as part of a training exercise. Local residents gathered at a small park alongside the river in July 2000 to commemorate the opening of approximately 300 miles of stream habitat.

A team of 12 civil engineers from the Air Force Reserve Command removed the dam as a training exercise, through a partnership with Coastal America.

New possibilities

Fishermen expect to someday see the return of sea-run brook trout, smelt, alewives, striped bass and American shad that once occupied the river. Recreationists are excited about new canoeing possibilities and town officials are discussing what types of trees to plant along the river's shores to shade the water and keep temperatures cool – which is important for the survival of many fish species.

"With the dam out, people will be able to canoe out into the estuary and up to Helen's Restaurant in Machias for a piece of pie," said Dwayne Shaw of the Wild Salmon Resource Center in nearby Columbia Falls.

WHITE HOUSE

"Congratulations... Your project brought together Federal agencies, state and local governments, and a variety of nonprofit organizations to remove an obsolete dam, which opened 300 miles of migration corridors for Atlantic salmon and anadromous fish. My Administration strongly supports efforts like this..."

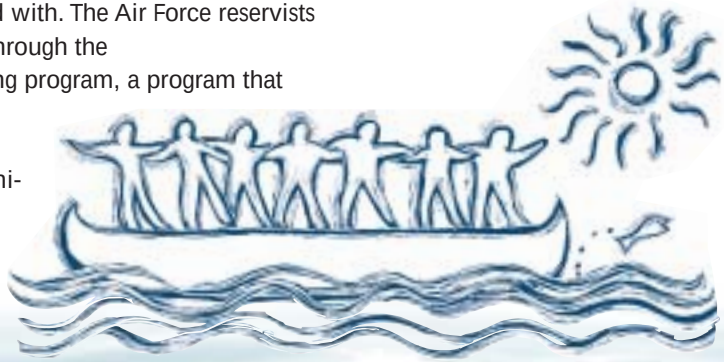
President George W. Bush

Excerpt from letter from President Bush which was presented at the awards ceremony for removal of the East Machias Dam, 1/22/02.

Why was the East Machias Dam Removal Significant?

Collaboration makes dam removal affordable and limits town liabilities

The East Machias Dam was the first dam removal Air Force reservists had been involved with. The Air Force reservists participated in the project through the Innovative Readiness Training program, a program that provides them with training while leaving something of value behind for communities. In this case, the dam's removal helped eliminate a potential legal liability for the town.



Souadabscook Stream – A River Reborn

Souadabscook Stream, a tributary to the Penobscot River, in Hampden, Maine, drains runoff from approximately 160 square miles, including abundant cold water streams, bogs, and ponds. It provides exceptional cold water spawning and rearing habitat for migratory fish.

In the late 1700s, the Grist Mill Dam was built at head-of-tide on the Souadabscook to provide mechanical power for a mill. The 14-foot high, 75-foot wide dam was later converted to a hydroelectric facility that was regulated by the Federal Energy Regulatory Commission (FERC). The dam was the first obstruction fish met when migrating up from the Atlantic Ocean, blocking access to this exceptional spawning habitat.

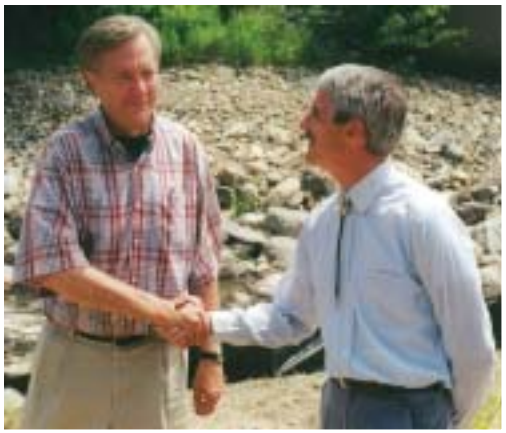
Above: *The fishway for the Grist Mill Dam on the Souadabscook Stream no longer functioned.*

Right: *After removal, upstream fish passage was assured for the first time in 200 years.*

By the late 1990s, the dam clearly showed signs of its age. It was inactive and had an inoperable fishway. It was in poor condition and in need of repairs more expensive than the dam's existence justified. The owner petitioned FERC for approval to remove the hydropower dam. The estimated cost of repairing and maintaining the dam was $150,000. The cost of removal was $56,000. Through a cooperative effort involving numerous government agencies and Facilitators Improving Salmonid Habitat (FISH), the dam was removed in October 1998. Less than three months after the Grist Mill Dam was removed, Atlantic salmon from the Penobscot River returned to the Souadabscook Stream for the first time in over 200 years.

Restoration of the River

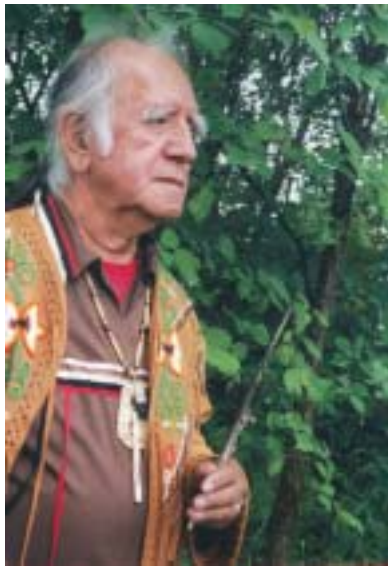
The removal of the Grist Mill Dam benefited migratory fish such as Atlantic salmon, sea-run brook trout, American shad, smelt, striped bass, alewife and the wildlife that depend on them. Alewives have returned in record numbers, while resident brook trout also benefit from lower water temperature, enhanced food availability, and improved flow condi-



Then U.S. Secretary of the Interior, Bruce Babbitt meets with John Banks, Director of Natural Resources, Penobscot Indian Nation, on the banks of the Souadabscook Stream.

"On the Souadabscook, Atlantic salmon wasted no time in showing us just how resilient they are when given a chance by digging egg nests above the dam site less than three months after the removal."

– **John Banks**, Director of Natural Resources, Penobscot Indian Nation



Penobscot tribal elder Arnie Neptune, conducted a ceremonial "smudging" of the Grist Mill Dam before its removal.

tions and habitat. Other wildlife benefit, too, including bald eagles, osprey, herons, and river otters.

Towns along the Souadabscook may find ways to take advantage of the new wildlife resource. Trout, American eel and smelt all are economically valuable species. Canoeists and kayakers frequent the Souadabscook. Many people feel that the Town of Hampden just plain looks better since the dam was removed.

Saving money is a clear benefit not only to the dam's owners, but also to its neighbors. The risk of flooding to nearby properties has been reduced. The dam was considered a serious public hazard due to the precarious position of the impoundment, which abutted US Route 1A. The Maine Department of Transportation reported that the dam caused significant damage and repair costs along US Route 1A and the bridge over the dam. Removing the dam will reduce the cost to taxpayers of road repairs.

"The dam under Route 1A in Hampden had no fish passage and generated a tiny amount of power. Faced with the need to upgrade the dam or remove it, the owner chose removal, and the results for the Souadabscook have been spectacular."

– **Bill Townsend**, Board Member, FISH

Why was the Souadabscook Dam Removal Significant?

Spawning habitat returns

Removal of this dam demonstrated how rapidly Atlantic salmon, alewives, sea-run brook trout and other anadromous fish will respond to the availability of new spawning habitat. If given the chance, these persistent fish will quickly return to river segments that have been blocked by a dam – even if that dam was there for hundreds of years.

Hydroelectric Power in Maine

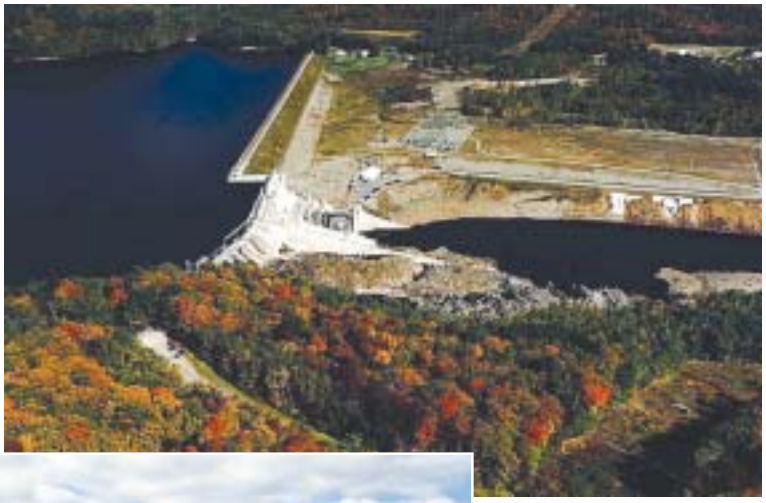
The electricity generated by just two of the natural gas power plants built in Maine during the past few years is more than the total production of all of the operating hydroelectric dams built in Maine over the past 200 years.

Of the 750 dams in Maine greater than two feet high, 111 produce electricity. Virtually all of these dams were built prior to the existence of environmental laws. Thus, there was little consideration at the time of construction of their impact on rivers and fisheries. The overwhelming majority of dams in Maine do not produce power. According to the U.S. Army Corps of Engineers, only three percent of the dams nationwide produce electricity.

The electrical power system in New England has changed dramatically in recent years. Electricity generated in Maine goes into a region-wide electrical grid involving more than 500 generating facilities and 8,000 miles of transmission line, servicing 6.5 million customers in a six state region.

The relative importance of hydropower dams also has changed enormously over the past 100 years. Although dams once were a leading form of electrical power generation in America, dams currently provide only about 10% of the nation's electricity and about 6% of the electricity within New England.

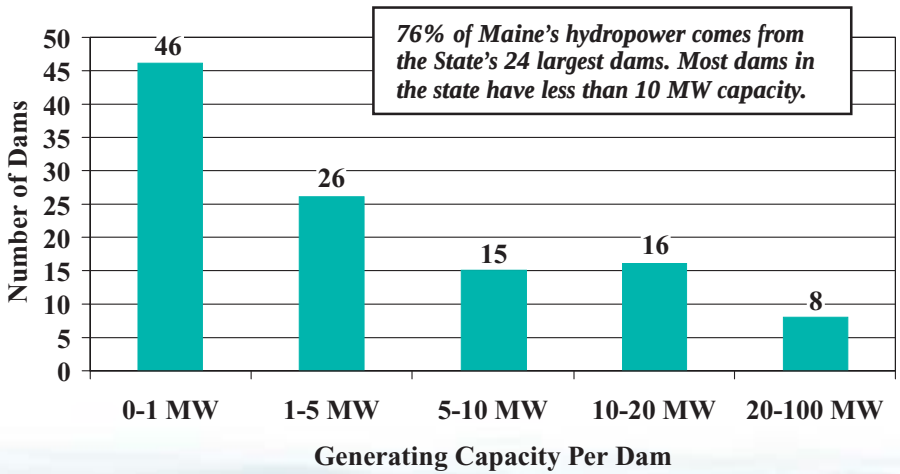
Coal, oil, nuclear, and natural gas plants now dwarf dams in terms of the amount of electricity generated in New England. As an example, the electricity generated by just two of the natural gas power plants built in Maine during the past few years exceeds the total production of all of the operating hydroelectric dams built in Maine over the past 200 years.



Above: *Wyman Dam on the Kennebec River is the second largest hydropower facility in the state, with a generating capacity of 72 megawatts (MW).*

Left: *Mattaceunk Dam, on the Penobscot River, has installed capacity of 19.2 MW.*

Power Capacity of Maine Dams



Most of Maine's operating hydroelectric dams are small facilities; 78% of Maine's hydroelectric dams have a generating capacity of less than 10 MW. By comparison, the Calpine natural gas plant in Westbrook has a capacity of 525 MW. Several small hydropower dams in Maine have become uneconomic to operate in recent years and have been shut down.

Although hydropower is not the dominant form of electricity it once was, it remains a significant form of electricity nonetheless. Unlike coal, oil or natural gas, hydropower dams do not produce other forms of air pollution or nuclear, toxic, or hazardous wastes. Hydropower dams and non-generating dams do, however, have other significant environmental impacts, as discussed elsewhere (see pages 8-9).

Because hydropower remains a significant form of power, major efforts have been made in recent years to reduce the environmental impacts of existing dams so that they can continue to produce electricity. These efforts include the installation of fish passage systems, modifications in water flow, fish stocking programs, and habitat protection agreements. For hydropower dams licensed by the Federal Energy Regulatory Commission, these changes generally have been made within the context of the relicensing process (see sidebar).

Efforts to reduce the environmental impacts, of hydropower dams include the installation of fish passage systems, modifications in water flow, fish stocking programs, and habitat protection agreements.

Above: *Milford Dam, located between Milford and Old Town on the Penobscot River, has 6.4MW of installed capacity, generating enough electricity for approximately 5,000 households. For reference, Maine has an estimated 518,200 households, according to the 2000 Census.*

Left: *Calpine's natural gas-fired Westbrook Energy Center has installed capacity of 525 MW.*

Dam Operating Licenses

Most hydropower dams in Maine have been licensed to operate by the Federal Energy Regulatory Commission. These licenses provide authority to generate power through the use of a public resource – a river – generally for 20-50 years. Many of the original licenses granted to dams across America have expired in recent years. The relicensing process allows federal and state agencies, conservation organizations, the public, and other interested parties to review the environmental impacts of dams and propose ways to mitigate those impacts as conditions of a new license. In the case of the Edwards Dam, FERC decided that the most appropriate mitigation was dam removal.

Fish Passage

The removal of a dam is the most effective means of restoring a river or stream and providing for the passage of sea-run fish to upstream spawning grounds. Dam removal is not, however, a viable option for all dams, due to energy generation considerations, existing land uses, and other issues. As such, fish passage systems have been developed to assist fish in getting around dams which are expected to remain in place or operational for the foreseeable future. Some approaches work reasonably well for some species of fish, while others have proven to be failures. Different types of fish passage include:

Above: *Alewives are stopped by the Fort Halifax Dam in Winslow.*

Right: *Fish ladder on the Androscoggin River in Brunswick. Recent studies show it has not passed American shad.*

Fish Ladders consist of a series of gradually inclining steps with resting pools located at regular intervals. Usually located off to one side of a dam, fish must physically jump from one tier to the next. The ladders usually are effective only for strong swimming fish like salmon and trout, and not for other species. Fish may be damaged during the process. If insufficient water flow exists, then fish will not be attracted to the ladder. If too much flow runs through the ladder, then fish are deterred from using it.

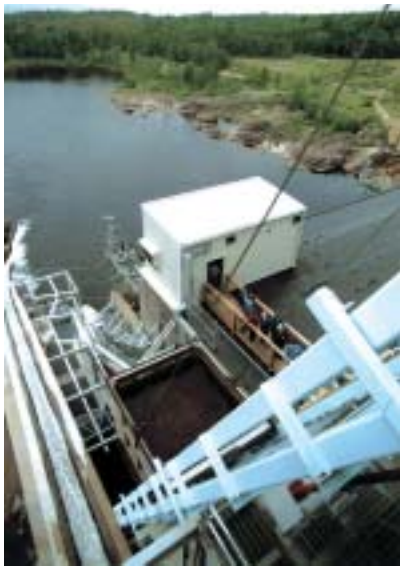
Denil Fishway (pronounced den–neel) is a type of fish ladder designed with a series of sloped channels. Water flows through a chute, with baffles inserted at an up-stream angle providing resting areas for fish as they swim into the current.

Fish Lifts are like an elevator for fish. Fish swim into a chamber at the base of the dam, guided by currents, and the chambers are mechanically lifted up and over the dam, depositing fish on the other side. Advanced fish lifts are among the most successful current means for allowing fish passage, yet have not proven to work for all species.

Trap and Truck approaches involve capturing fish in a tank, usually with the assistance of a pump, and transporting the fish in vehicles to release sites above the dam. This method works best for fish that are easily trapped, such as alewives that often congregate below a dam. A fish pump works only for select species and can cause damage to the fish. Federal and tribal fisheries agencies consider trap and truck only as a temporary measure.

Fish pump at Ft. Halifax Dam on the Sebasticook River.

Some fish passage systems cause injuries or stress that can make the fish more vulnerable to predators. Overcrowding within fish passage systems can increase the incidence of disease. Some fishways fail to create an effective "attraction flow" to guide fish to the entrance. Others fail because they were not designed to pass large fish or bottom dwelling species or fish that do not congregate in schools. Fish mortality can increase due to the cumulative impacts of multiple passages. Downstream



Fish lift on the Saco River

passage must also be provided to allow fish and their progeny to return to the ocean.

Research continues around the world to collect data on fish passage systems to evaluate their success in passing viable numbers of specific species, and to help determine options for improving fish passage. For a fish passage system to succeed, it must take into account the behavior of the target fish species, including swimming capabilities; the water velocity needed throughout the fishway, without inducing spawning partway up the system; and the specific dynamics of the river. Large dams on large rivers may require multiple fish passage systems. Conservation organizations, dam owners, and state and federal agencies have reached agreement on fish passage provisions for several dams in Maine, such as the Harris Dam on the Kennebec River.

The costs of installing effective fish passage can be prohibitive for some dams, particularly small dams. If river and fisheries restoration objectives are more important in such cases than the values associated with other existing uses of the dam (e.g. power generation, land uses), then dam removal may become the preferred option for the dam owner and interested parties.

"No matter how good your engineering is, if the fish don't like, it doesn't work."

– **FPL Energy President Ron Green**
Journal Tribune, June 7, 2002

Dam Removal Controversies

Although most of the dam removals that have taken place in Maine and across the nation have occurred without public controversy, some proposed dam removals have been contentious – with divergent perspectives expressed about the best current and future uses and values for a given segment of a river or stream. Just as the proposed construction of a dam can be very controversial, so, too, can a proposed removal of a dam. Both actions change the river, and how it will be used by humans, fish, and wildlife.

Ft. Halifax Dam

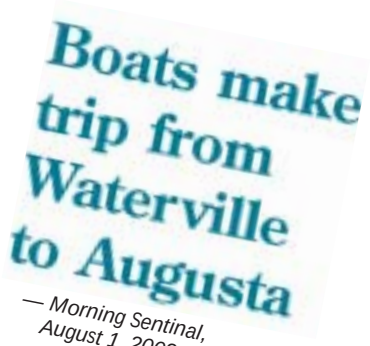
Construction of a dam introduces major changes, sometimes flooding a large area, creating a lake-like impoundment, and altering the ecosystem and water quality. With the changed system come ecological and human adaptations – land use developments, recreational uses, and ecological conditions that favor some species and not others. The proposed removal of a dam may be greeted with opposition by landowners who prefer the existing waterway conditions to a free-flowing river, by anglers who prefer existing fishing conditions to what might exist after removal of the dam, or by communities that are attached to the aesthetic, historic, cultural, or economic (e.g. property tax payments) values of the dam.

Existing state and federal policies provide significant opportunities for the public to comment on a proposed dam removal. For any dam that generates electricity, the Federal Energy Regulatory Commission will hold a public hearing in order to gather broad input from the public, state agencies, and other interested parties before approving a dam removal.

Interestingly, some opponents of particular dam removals have changed their views with the passage of time. This has been true with the Edwards Dam on the Kennebec, removed in 1999. As George Viles, a resident of Sidney said in November 2002: "We had enjoyed the impoundment we lived on. The planned removal of the Edwards Dam started out as an offense to us. But a varied and vibrant river has emerged that's far more interesting than the impoundment. It draws life to it. It's attractive, the water is clear. It's great."

Celebrating Maine's Rivers

The Kennebec River Trail opened in 2001.



— Morning Sentinal, August 1, 2002

Maine's rivers have always been a cherished resource – whether for transportation, water supply, power generation, recreation, or natural beauty. Over the past 30 years, however, they have taken on a new importance as water quality has improved with the passage of the Clean Water Act in 1972, the final log drives in 1976, and extensive investments by paper mills and municipalities in wastewater treatment.

Towns throughout Maine are discovering the importance of rivers as a central part of their quality of life. Many towns are investing in the redevelopment of riverfront properties in a way that would never have happened 40 years ago, when the stench of some heavily polluted Maine rivers kept people away and real estate values low.

Evidence that we have entered a new era for Maine's rivers can be found throughout the state. A recent magazine article heralded the waterfront of Waterville. A bicycle path along the Androscoggin River in Brunswick is in almost constant use. A river festival in Bucksport draws hundreds of people to the banks of the Penobscot each year. New businesses are locating along the Presumpscot since the paper mill in Westbrook stopped its pulping operations. A growing number of annual river festivals are further testament to the changing attitudes of Maine people toward our rivers.

The removal of dams has been a small, yet in some cases significant, factor in the larger context of river restoration in Maine. For some towns, dam removals have created economic, recreation, and quality of life enhancements that didn't exist before.

For the Town of Newport, for example, removal of the Guilford Dam on Main Street in July 2002 was one of the first steps toward an intensive renovation and rebuilding of the downtown area. A new library, historical society, River Walk, gardens, and park are planned along the riverbank in an effort to make the town a destination for tourists.

With the removal of Edwards Dam, many new opportunities have emerged to celebrate the Kennebec River. Scores of anglers

Above: *The 2001 Maine Rivers Conference visited the Penobscot River.*

Right: *The Androscoggin River Bike Path in Brunswick has become a favorite outing for walkers, runners, birdwatchers and families.*

Dam removal first step to renovating Newport

"Construction Divers of Westbrook, an underwater construction and demolition firm, will begin work next Tuesday on the removal of the Main Street dam in Newport.

Removal of the dam is one of the first steps towards an intensive renovation and rebuilding of Newport's downtown area. The town is also building a new library and historical society just steps from the river, while planning a River Walk, gardens and parks along the riverbank itself. There has also been an attempt, not yet finalized, to acquire the century-old Grange building, also on Main Street."

Bangor Daily News, July 4, 2002

A year after dam demolition, river surges with life

— Maine Sunday Telegram, July 2, 2000

Canoeists, kayakers fill St. Croix

— Bangor Daily News, August 5, 1999

Dam removal first step to renovating Newport

— Bangor Daily News, July 4, 2002

Left: *The Georges River Canoe Race attracts hundreds of paddlers each spring.*

Westbrook pins revitalization hopes on once-ignored river

— Portland Press Herald, July 6, 1999

now travel to the Winslow-Waterville area to catch striped bass, keeping river guides in the area very active. Additionally, an annual "water pilgrimage" was started on the river following removal of the dam, with hundreds of kayaks and canoes paddling from the Public Boat Landing in Waterville to Old Fort Western in Augusta – recreating the trip between two outposts of early settlers.

As rivers in Maine are restored, they are attracting Maine people, tourists, and fish and wildlife in significant numbers. This is a cause for celebration.

SOURCE TO SEA

Week's activities focusing on river

— Sun Journal, July 11, 2001

St. Croix River study to gauge recreation use

— Bangor Daily News, July 2, 1999

The Passagassawakeag Canoe Race in Belfast is fun for paddlers of all ages.

Bucksport celebrates mighty river

Waterfront comes alive as Mainers gather in tribute to cleaner Penobscot

— Bangor Daily News, September 15, 1997

Maine River Events

(PARTIAL LIST)

- ***Augusta*** *– Ft. Western Whatever Paddle*
- ***Androscoggin River*** *– Source to the Sea Trek*
- ***Bangor*** *– Bangor Harbor Day, Kenduskeag Canoe Race*
- ***Belfast*** *– Passagassawakeag Canoe Race*
- ***Bethel*** *– Androscoggin Watershed Fish Festival*
- ***Bingham*** *– Kayak-A-Thon (Kennebec River)*
- ***Brunswick*** *– Androscoggin Hand Powered Regatta*
- ***Bucksport*** *– Penobscot River Festival*
- ***Calais*** *– St. Croix Kayak and Canoe Sail*
- ***East Machias*** *– Annual River Day Festival*
- ***Fort Kent*** *– Northern Forest Canoe Trail*
- ***Freeport*** *– Paddle for Hospice Kayak-a-Thon (Harraseeket River)*
- ***Greenville Junction*** *– Moosemainea Rowing Regatta*
- ***Hampden*** *– Souadabscook Canoe Race*
- ***Kenduskeag*** *– Kenduskeag Stream Canoe Race*
- ***Lincoln*** *– River Drivers' Supper*
- ***Old Town*** *– Riverfest on the Penobscot*
- ***Rockwood*** *– Moose River Canoe and Kayak Race*
- ***Searsmont*** *– St. George River Canoe Race*
- ***Skowhegan*** *– Log Days*
- ***Waterville*** *– Voices of the Kennebec Festival*
- ***Yarmouth*** *– Royal River Canoe & Kayak Race*

Toward a New Balance for Maine's Rivers

Maine's rivers serve a broad range of functions. They provide critical habitat for thousands of species of insects, fish, birds, water plants, and mammals. They serve as spawning grounds for Atlantic salmon, sturgeon, shad and other sea run fish. They carry fresh water to the ocean. They generate electricity through hydropower dams. They offer recreation opportunities for anglers, paddlers, and hikers. They also add immeasurably to our quality of life.

For much of the last century, the use of our rivers has been out of balance. Industrial activities including power generation, waste disposal, and log drives seemed like the best way to support and enable a growing economy. But these uses crowded out, or completely ruined, other values and functions of our rivers. The damage caused by these activities has become increasingly recognized, and has stimulated legislation, investments, and changes of behavior that collectively have helped create healthier rivers in Maine.

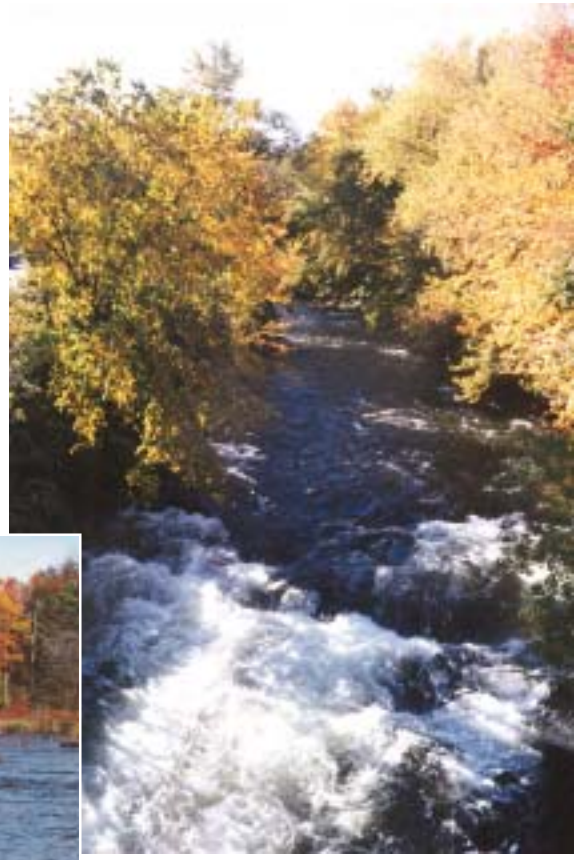
Maine's aging dam infrastructure, combined with a growing appreciation of the ecological impacts of dams, has led to a series of dam removals which have restored important functions to many stretches of Maine's rivers and streams. These dam removals have involved small dams, by-and-large, where the cost, safety, and fish migration issues have clearly weighed in support of the decision to remove the dam.

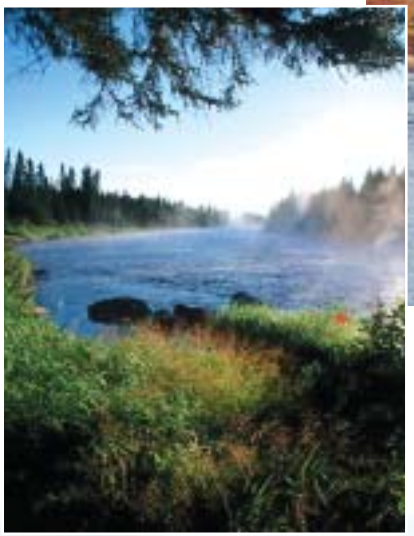
Dams will continue to provide an important source of electricity in Maine. They will continue to create lakes and ponds that are valued by individual landowners, communities, and tourists. They will also create ponds used as municipal and agricultural water supplies, sources of water for fire protection, and structures that help guard against flooding.

As we enter the 21st Century, the many different and at times competing functions of Maine's rivers and its dams are being weighed in a new way in order to strike an appropriate balance for Maine people and our environment. In some cases, fish passage

systems are being required at dams where no effective fish passage has previously existed. In other cases, dams are being repaired or their hydropower capacity is being increased. Elsewhere, dams are being removed.

Each dam in Maine has its own unique set of circumstances, and the fate of each dam must be examined on a case-by-case basis. With the involvement of Maine people and communities, a new balance of values can and will be achieved for Maine's rivers that will serve our needs and interests, and those of the flora and fauna that depend on healthy rivers, well into the future.





Maine's aging dam infrastructure, combined with a growing appreciation of the ecological impacts of dams, has led to a series of dam removals which have restored important functions to many stretches of Maine's rivers and streams.

Resources

Dam Removal: A Citizen's Guide to Restoring Rivers A Joint Project of River Alliance of Wisconsin and Trout Unlimited; 2000 – www.wisconsinrivers.org and www.tu.org

Dam Removal: Science and Decisionmaking, The H. John Heinz III Center for Science, Economics and the Environment; 2002; 220 p. – www.heinzctr.org

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Organizations

American Rivers
1025 Vermont Avenue NW, Ste. 720
Washington, D.C. 20005
202-347-7550
www.amrivers.org

Atlantic Salmon Federation
Fort Andross, Suite 308
14 Maine Street
Brunswick, ME 04011
207-725-2833
www.asf.ca

Coastal America
300 7th Street, SW Suite 680
Washington, DC 20024
202-401-9821
www.coastalamerica.gov

Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017
207-287-7688
www.state.me.us/dep

Friends of the Presumpscot
P.O. Box 223
S. Windham, ME 04082
www.presumpscotriver.org

Maine Rivers
3 Wade Street
Augusta, ME 04330
www.mainerivers.org

Natural Resources Conservation Service
967 Illinois Avenue, Suite 3
Bangor, ME 04401
207-990-9100, Ext. 3
www.me.nrcs.usda.gov/

Natural Resources Council of Maine
3 Wade Street
Augusta, ME 04330
800-287-2345
www.maineenvironment.org

Trout Unlimited
1500 Wilson Boulevard, Suite 310
Arlington, VA 22209-2404
800-834-2419
www.tu.org

You, too, can help make a difference for the environment!

Support the Natural Resources Council of Maine

The Natural Resources Council of Maine is the leading voice for protecting Maine's environment. Supported by 8,000 citizens from across the state, we have been working since 1959 to ensure clean air, clear water, and healthy forests for our future.

Letting people know about the value of Maine's waterways is just one part of our mission.

The Council also:

- Spearheaded efforts to restore the fisheries and water quality in the Kennebec River through the removal of Edwards Dam.
- Continues to lead the fight to save the Allagash Wilderness Waterway, Maine's only National Wild and Scenic River. The Allagash is at risk today from increasing development of bridges, parking lots, and boat launches, which will bring more traffic, noise, and distractions to interrupt the beauty and solitude that makes the Allagash experience so extraordinary.
- Fought successfully for pollution reductions from Maine's largest air polluter, Wyman Station, an oil-fired power plant on the shores of Casco Bay, whose emissions travel up our coast, distressing those with asthma and other respiratory ailments, and causing smog over our scenic vistas.
- Led the campaign to phase out products that contain mercury, a toxic chemical that harms our children's health and the health of our loons, fish, and other wildlife.
- Helped win passage of the land bond that provided $50 million for the protection of land and shorelines in all 16 counties of the state.

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