

To some, dams are quaint, historic, and a boon for birds.
To others, they cause flooding, harm fish, and meddle with nature.
Can one town sort it all out?

RIVER WILD

BY ELIZABETH GEHRMAN

IT'S 72 DEGREES, and the only white in the sky is a contrail streak from a passing plane. Perfect for paddling the Shawsheen River in Andover, as Bob Rauseo does every day he can.

Today Rauseo, a bear-like man with a gray cotton-candy beard, a frayed baseball cap, and bifocals, is joined by Bob Marsh and “Kayak” Jack Brady; both are members of the Shawsheen River Watershed Association, an all-volunteer nonprofit headed by Rauseo that’s dedicated to protecting and restoring the river and its watershed. The three make their leisurely way in kayaks around the river’s narrow bends, commenting on the progress in the battle against purple loosestrife, an invasive weed that’s clogging the shore, and veering left to avoid a pair of geese that hug the right bank with a train of downy chicks. An iridescent dragonfly trails Brady’s boat. For long stretches, the only sound is the cry of chimney swifts darting among the beech and poplar. What could be better?

Well, if you ask Rauseo and his friends, a longer paddle could be better. “It would be marvelous to be able to paddle all the way to the Merrimac River,” says Rauseo, a retired outdoor-education coordinator for at-risk youth. But the only way that can happen is if the three dams blocking their way in the town of Andover are removed. “Portaging is too much work,” he says of carrying their kayaks around obstructions, “so typically what we do is end the trip after a couple of miles.”

Eco-restorationists like Rauseo argue that removing these dams and thousands of others around New England would benefit not only small-boaters, but also entire ecosystems that thrive around flowing fresh water. But these small dams, which once powered the grain and textile mills of the Industrial Revolution, are now as iconic a part of the Northeastern landscape as covered bridges, white church spires, and the low stone walls that slice the region’s rolling hills – and in Andover, they have many defenders.

PHOTOGRAPHS BY MATT KALINOWSKI

WITH THE FLOW
Retiree Bob Rauseo heads the Shawsheen River Watershed Association and would like to see Andover’s three old mill dams come down.



ACCORDING TO a national inventory maintained by the Army Corps of Engineers, there are about 79,000 dams in the United States. But that number is a gross underrepresentation, since the Corps counts only dams that are at least 25 feet high, hold more than 50 acre-feet of water – enough to flood 50 acres with a foot of water – or are considered a significant hazard if they fail. In fact, says Tom Ardito, president of the nonprofit Center for Ecosystem Restoration in Saunterstown, Rhode Island, “virtually every river and tributary in the country is dammed.”

In Massachusetts, the Corps counts 1,602 dams, more than twice as many as in any other New England state. But the Commonwealth’s Office of Dam Safety logs nearly 3,000, and American Rivers, a national nonprofit dedicated to protection and restoration, believes even that number to be at least 25 percent too low. The vast majority of these dams were erected prior to 1910 and used to power businesses that no longer exist.

Whatever the exact number, it’s likely to shrink by at least two this year. In Andover, feasibility and design studies are underway for taking down two of the three dams on Rauseo’s list, the Balmoral and the Marland. The removal project has been designated a priority project by the state’s Division of Ecological Restoration. (A third dam in town, the Ballardvale, has been looked at for eventual removal, too.) “The dams don’t serve a purpose anymore,” says Rauseo. “They’re just relics.”

Tell that to Joel Rosen, a lawyer whose office is in the old Ballardvale Mill, an enormous brick Greek Revival building completed in 1842 for the manufacture of wool and flannel but out of commission for that purpose for decades. His office overlooks the 60-acre pond created by the Ballardvale Dam, which is the farthest upstream of the three dams in Andover and, at nearly 10 feet, also the highest.

“Every day I walk in and open the window and look out at the waterfall and take a deep breath,” says Rosen, “and it just kind of wakes me up and makes me feel like it’s going to be a good day.”

Rosen’s office is part of the Shawsheen River Office Condominium Association, which owns half the Ballardvale Dam and has no intention of seeing it destroyed. “This dam is an important historical feature,” says Rosen. “Without the dam, there wouldn’t be a mill pond, and the mill pond really is the centerpiece of Ballardvale” – a village of Andover that, like the areas surrounding the town’s other two dams, is listed on the National Register of Historic Places. “Once something has been there for 180 years, it defines the area. If we were to eliminate the pond, this would be a much less visually interesting and charming place.”

Few would argue that the mill pond, dotted with lily pads and bordered by picturesque antique buildings, is unattractive. But where Rosen sees a sepia-toned New England scene, eco-restorationists see an artificial water “impoundment” that has implications far beyond its immediate vicinity.

“There’s an older landscape that’s been there for thousands of years and a river that’s been there for thousands of years,” says Ardito of the ecosystem restoration nonprofit. “In the history of the river, a couple hundred years is a very small

PRO-POND

Hydrogeologist Suzanne Robert wants the dams to stay to protect the existing still-water ecosystem.



Ellen Douglas, an assistant professor of hydrology at the University of Massachusetts Boston, will chat about New England's rivers and dams tomorrow from 1 to 2 p.m.

amount of time.”

No one knows that better than Suzanne Robert, a hydrogeologist and a resident of Andover's Marland neighborhood, which was named after the Marland woolen mill built there in the 1820s and '30s. Still, as she stands on the Stevens Street

overpass between the Marland Place Dam and the pond created by it, she's wistful. "Part of me loves this little mill pond that's been established for 200 years," she says, pointing out a blue heron standing in the water a few hundred yards away. "There's a very vital little wetland ecosystem out there. It supports muskrats, beaver, herons, turtles. I've even seen an egret. And the Stevens Street bridge is a beautiful little overlook."

While it's certainly true that a flourishing ecosystem has built up around each of Andover's three dams – including the Balmoral, a 7-foot bar-

rier erected by a private landowner in the 1920s – the pro-removal camp points out that they create a far-reaching chain reaction.

"River systems are linear, and when you put a dam in, you're interrupting the flow not just of fish but also of nutrients, bugs, reptiles, amphibians, and all sorts of wildlife," says Marty Melchior, a fluvial geomorphologist and the Eastern regional director of Interfluve, a river-restoration design firm that's working with the town of Andover.

The wildlife of most concern in this case are anadromous fish – small species like alewife, blueback herring, and shad that spend most of their lives in the open ocean but need rivers like the Shawsheen to breed. They've been on the decline in recent years, and, as a key food source for larger ocean fish like tuna, cod, and striped bass, their depletion could have a significant economic impact on commercial and recreational fishing in New England. In fact, there's a new dam-removal fever around the country driven in part by increased federal funding from the US Fish and Wildlife Service and other agencies looking to revive and sustain fishery stocks.

Some suggest fish ladders, and on many dams where removal is just too contentious, this stop-gap measure has been instituted. But "a lot of fish ladders don't work or are in disrepair," says Ellen Douglas, an assistant professor of hydrology at University of Massachusetts Boston. "Certainly the fish would prefer it if there were no barrier there at all, right? It would be a lot easier for them." Many species won't go through fish ladders, eco-restorationists say; the ladders themselves need almost daily inspection to ensure they don't get blocked with trash and natural debris like leaves, and they are prone to damage from ice and floods.

In other cases, a bypass channel might work, but there must be space around the dam to create one of adequate width and length – so from an ecological point of view, dam removal often seems the only solution.

In 1999, the hydroelectric Edwards Dam in Augusta, Maine, was razed after the Federal Energy Regulatory Commission surprised everyone involved by denying the 160-year-old structure's re-licensing because of its environmental impacts – the first and only time FERC has made such a move. Since then, more than 500 dams have come down nationwide, almost twice as many as were dismantled in the entire 20th century, according to *American Rivers*. "The Edwards Dam removal helped raise awareness that removing dams was a real possibility," says Ardito. Twelve dams in Massachusetts have been taken down since 1999, the organization says, and the pace of project-development is quickening: At the moment, there are about 20 removal projects in some stage of scientific or historic study or engineering design across the state, with many more dam owners making inquiries.

The Shawsheen is one of the few tributaries to the Merrimack, which flows into the Atlantic. "If you drop those dams and open the river to the

migrating fish,” says Jim MacBroom, senior vice president of Milone & MacBroom, a private engineering firm based in Cheshire, Connecticut, “you’d begin to see species that don’t have anywhere else to go.”

And river ecosystems don’t take long to recover, according to UMass’s Douglas. “It looks muddy and yucky for the first season,” she says, “but by the second, you don’t even know the dam was there.” As for the fish, “literally you take out the dam today and tomorrow there’s fish swimming up. You think, ‘What, are they sitting around waiting?’”

Those who think Andover should keep its dams maintain that there is little evidence that renewing anadromous fish populations will help restore larger species – most of the long-term studies on dam removal have been done in Western states, where the dams are larger and the ecosystems built up around them younger. Research is underway in the Northeast, but until it’s finished, many subscribe to the notion that anecdotal evidence will do for now.

“Big fish eat little fish,” says Eric Hutchins, a biologist with the National Marine Fisheries Service who lives in Rockport. “You don’t need a paper to know what’s going on when you catch a striped bass or bluefish and its guts spill out on the deck and they’re filled with baby herring.”

BUT FISH aren’t the only things potentially being harmed by dams. According to the state’s Office of Dam Safety, 254 dams in Massachusetts are in poor or unsafe condition, though the Andover dams are not among them. Still, there have been fatalities on some dams – including a 1984 incident on a now-breached dam below the Balmoral. Bob Rauseo was there the day a pair of fellow contestants in a canoe race went over the crest rather than portaging around it. When the boat flipped, one of the men got caught in debris and drowned when he was dragged under.

That’s the kind of thing that keeps Denis Kelly awake at night. Kelly is a co-owner of adhesive maker Shawsheen Rubber Co., which sits on the bank opposite Joel Rosen’s office and which owns the other half of the Ballardvale Dam. “We have to protect people from doing stupid things on our property,” Kelly says. “We have requests constantly from kayak groups to use our parking lot to launch, and we have to deny those requests.”

Kelly and his business partner would like to see the dam come down. In addition to the liability issue, the Ballardvale, like all dams, will inevitably need maintenance – boards can rot, cement can erode, rocks can get displaced over time – though at the moment it’s rated in fair condition by the Office of Dam Safety. “We’d certainly like to avoid those costs,” Kelly adds. “We’re in the manufacturing business, not in the dam business.”

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The majority of dams in the state are privately owned. The Andover project, first proposed four years ago by Paul Materazzo, the town’s director of planning, gives the owners of the Ballardvale, Marland, and Balmoral dams an opportunity to avoid the costs of repairing their own little pieces of the nation’s crumbling infrastructure, which not every resident finds fair.

“The dams were there when they bought the property,” says Suzanne Robert. “Having the public come in and subsidize their removal for the property owners bothers me a little bit.”

But unless the dam is tiny, most owners simply don’t have the money to undertake the costly



WET BUT NOT SO WILD From top: The Ballardvale, Balmoral, and Marland dams on the Shawsheen in Andover have all been considered for removal so the river can be restored to its natural state.

process themselves. And besides, there may be another upside for the community. Record rains are causing record flooding throughout the Northeast – this year’s March floods took a heavy toll in Andover, with 145 uninsured residents eventually receiving \$204,000 in grants and low-interest loans from the Federal Emergency Management Agency – so preventing future inundations is on everybody’s mind. But whether removing the Andover dams would have any effect is a subject of debate in the town.

“When you have public hearings, people show up and say, ‘What about the floods?’” says Rau-

seo. “They’re given the same answer over and over again – that these dams have nothing to do with flooding, and they say, ‘But they have to. Why are you doing this if it doesn’t impact flooding?’ And after about 20 times, I’m banging my head on the table.”

Of the nearly 3,000 dams the state tracks, only 43 were built for flood control, and the Andover dams are not among them – but there does seem to be some disagreement over whether the dams contribute to flooding, help alleviate it, or simply do nothing at all.

“With smaller floods,” says geomorphologist Melchior, “five- and 10-year events, the Andover dams do make the flooding a little bit worse. With floods of the magnitude we had in March, the dams don’t matter. Those floods are so large the dams are gone. They’re 6 or 7 feet underwater.”

There’s some evidence that the Marland dam may contribute to small-scale flooding at Atria Marland Place, an assisted-living center in the old Marland Mill, because of a complex network of pipes and drains in the building’s basement. “But another structural report by another engineer said that may not be the case,” says Melchior.

Because these are all “run-of-river” dams, as opposed to flood-control dams, water levels in a free-flowing river would still be more dependent on the weather than on anything else, Melchior points out, addressing another concern of Andover residents, many of whom believe the river will run dry if the dams are removed. “If you have a dry year, the river’s going to be low,” he says. “And in a wet year, it’s going to be higher. It’s out of our hands. It’s out of everybody’s hands, really.”

Flooding in Andover, like in most Bay State towns, has more to do with urbanization and the high amounts of impervious surfaces – buildings, roads, and parking lots – capping what were once flood plains. Because so much of the ground is now covered, the water can’t soak in after a storm as fast as it should, and there’s simply nowhere for it to go but up.

For now, according to planners, the Ballardvale project is on hold because there’s just too much disagreement about what to do there. “It’s off the table in the sense that we’re not looking to take that dam down within the next year or two,” says planning director Materazzo. The Balmoral and Marland Place dams, each of which has only one owner, will both likely come down by 2012.

“I’m just brokenhearted that they’re going to drain this mill pond,” says Robert.

Rosen, from his perch a few miles upstream at the Ballardvale, is sorry to see any of the dams go, because dismantling the two downstream dams may bring the Ballardvale, which he likens to “the town church in the middle of the town green,” that much closer to the gallows.

“None of these people are evil people,” he says with a sigh. “None are motivated by self-interest. Their views are as valid as mine are. We just have different ideas of what’s important.” ■