

## Aging dams cause for concern

*By Samantha Woods / Special To The Mariner*

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Dams and their impacts on rivers have historically been a huge social and environmental issue in the Western United States, but you don't hear as much about them in New England.

That doesn't mean they aren't here, it just means they've been around for so long we think of them as part of the "natural" landscape. Like dams in the West, dams in New England were installed to provide reservoirs for water supply, control flooding, or for hydropower. Many dams in our region were originally built to supply power to support mills and factories in the 18th and 19th centuries. Placed on small tributaries and on the mainstems of our rivers, these dams harnessed flows for industry and created ponds behind them. On the approximately 10,000 miles of streams and rivers in the State of Massachusetts there are estimated to be at least 3,000 dams - that's one dam for every three miles of river.

What's the condition of these structures? In Massachusetts over 85 percent of dams are over 50 years old, about the lifespan for these structures. Unlike the larger dams out West that are government owned and maintained, more than half of Massachusetts' dams are privately owned. Over the years, as mills and factories closed and the land and the dams changed hands, the dams no longer served their intended purpose. Today, many of these dams are in danger of collapsing and some may pose a threat to human safety and property. Many dam owners find that liability concerns and the financial burden of and maintaining their dam to current safety standards outweigh the benefits of keeping these outdated, dilapidated dams. As such, many dam owners are removing these dams that no longer "make sense".

Fortunately, in many cases what makes sense for the dam owner also makes sense for the environment. Dam removal and the restoration of a free flowing river or stream can have tremendous ecological benefits.

When most of the dams in our area were built, there was little understanding of the environment and how our decisions would affect it. The first thing to be impacted was the herring runs, which helped to shape the culture of the area in the early 1800s. Up and down our coastline, dams and pollution led to a dramatic decrease in the population of river herring, alewives and other anadromous fish species that must travel upstream to spawn. The decline in herring population has been estimated to be between one-third and one-half of what it once was. These fish are a vital link in the food chain both in the watershed and at sea. Increasing the population of herring has positive ramifications for other species that rely on them as a food source, such as birds (osprey, black crowned night herons), mammals (river otter), and game fish (striped bass).

Restoring fish passage is just one ecological benefit of dam removal. Dams fragment our rivers and streams, altering their hydrology and sediment regimes by trapping sediment upstream of the dam. The sediments trapped behind the dam often carry pollutants, such as nutrients. Without maintenance, many ponds experience decreases in water quality as sediments and nutrients build up behind the dam, fostering algal growth, oxygen depletion and increasing the water temperature. This altered ecosystem supports fish with higher tolerances for pollution and less species diversity. There are ecosystem impacts downstream of the dam as well. By trapping sediments and nutrients upstream, downstream ecosystems become sediment and nutrient deprived and the free-flowing section of the stream has altered water temperatures. Dam removal reconnects the fragmented parts of the river, allowing organisms to move up and down stream, improving water quality and increasing habitat diversity.

There are many pros and cons that need to be evaluated when discussing whether to restore a dam or restore a river. Oftentimes there are overriding societal benefits and environmental costs that make the case to keep a dam. Societal benefits include public recreational uses of a pond like skating, swimming, boating or water supply. While there may be environmental benefits, there may also be environmental costs to removing a dam, such as the growth of non-native invasive species, the release of contaminated sediment downstream, or alteration of habitat for rare or endangered species that rely on a pond environment. Both the environmental benefits and costs, as well as the value society places on the dam, must be weighed when considering dam removal or reconstruction.

In the North and South Rivers Watershed, there are at least 54 dams. Many are well maintained, owned by a town or local conservation commission and often have fish ladders - but not all. In February 2001, the Mill Pond dam located on the Third Herring Brook (a tributary to the North River) was in eminent danger of collapse. The Massachusetts Office of Dam Safety ordered the dam owner - the South Shore YMCA - to relieve the water pressure behind the dam

by removing the flashboards to avoid causing flood damage downstream. As the water in the pond was released, the water found its natural meandering channel and the pond became a stream with bordering vegetated wetlands. However, there is still a significant portion of the dam remaining that is preventing both fish passage and the complete restoration of the stream.

After consulting with various state and federal programs, the South Shore YMCA proposed to partially remove the dam by dismantling the concrete spillway section of the dam and leaving the vegetated earthen embankment. This will allow the stream to again run freely with minimal disruption, and eventually allow spawning fish to pass upstream. After going through the state's environmental review process, the South Shore YMCA has obtained permission from the state to pursue the project, and is now undergoing local environmental review.

The incident at the dam at Mill Pond spurred interest at the federal, state and local levels to investigate the feasibility of restoring fish passage to the entire Third Herring Brook - up to the spawning grounds of Jacob's Pond in Norwell. The Third Herring Brook has three other dams on it, none of which have fish ladders - one downstream at the Tack Factory Pond (also known as Tiffany Pond), and two upstream, one behind the Hanover Mall and one at Jacob's Pond in Norwell. For each dam, the community needs to discuss the values and costs of the dam in order to make an educated decision about whether the dam is worth keeping or not. Many neighbors are and will be concerned about the loss of a water view, that the change may lower their property value, or that the existing pond ecosystem that the dam sustains will be harmed. I think we can all relate to these concerns. However, if there are overriding societal interests to keep a dam and a pond, those who will benefit must be willing to pay for the associated repair, maintenance, and liability. In the future, we hope to enlist the community to discuss these issues realistically, weigh all the pros and cons (both social and environmental), and help in the decision making process. We encourage your interest and participation in this issue, before the next dam falls down and we have to discuss it after the fact.

The NSRWA has created a free email discussion list for subscribers to openly express their opinions and learn more about the environmental issues of Third Herring Brook. To sign up for this email discussion list, simply send a BLANK email (delete your signature) to: [3HB-subscribe@topica.com](mailto:3HB-subscribe@topica.com). You will be asked for some additional information and then sent a confirmation message. Be assured that the NSRWA and Topica.com will not share or distribute names and/or email addresses to other parties. You can learn more about the list at: <http://www.topica.com/lists/3HB>.

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*The North and South Rivers Watershed Association is a non-profit organization that focuses on the preservation, restoration, maintenance and conservation of the North and South Rivers and their watersheds. For membership information, contact NSRWA at (781) 659-8168 or [nsrwa@nsrwa.org](mailto:nsrwa@nsrwa.org).*

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