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The Economic Value of a Restored Fishery on the Presumpscot River

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*Heron with alewife on the Nequasset River,
tributary of the Kennebec River*

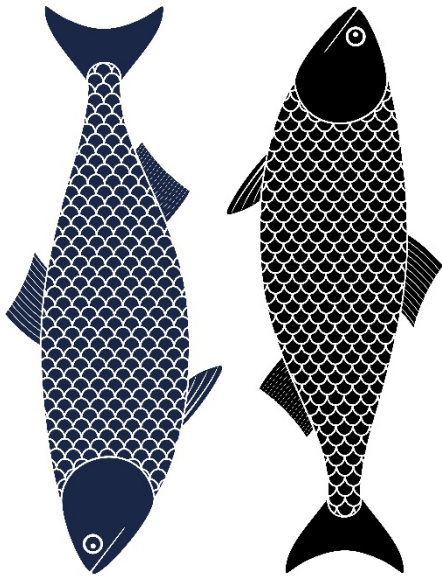


*Festival-goers attending the Damariscotta Mills
Fish Migration Festival*

Prepared by Rachel Bouvier and the Friends of the Presumpscot River

May, 2015





INTRODUCTION

Within the past several years, towns in Maine and elsewhere in New England have begun to re-discover and restore a once overlooked asset: native fish runs. The rivers and streams of New England were once teeming with alewife, American shad, and blueback herring, and communities living alongside the river, including those bordering the Presumpscot, benefited significantly from them. These sea-run fish brought in revenue for the harvesters, were used by local fishermen as bait for lobster, and were relied upon by residents of the towns as a plentiful source of protein. (In fact, in many towns in Maine, widows and orphans can still ask for a bushel of alewives during the harvest!)

During the Industrial Revolution, New England's rivers were given over for another purpose: as a source of hydropower energy to power mills. Rivers throughout New England – and especially the Presumpscot – were dammed heavily, and the once mighty native fish runs were all but eradicated by the mid-20th century. Yet today, runs of native species are returning for some Maine and other New England rivers that have been the focus of ecological restoration efforts. Although these restored fish runs are still a trickle compared to their former abundance, towns located alongside these rivers are again recognizing the importance of these native fish, yet in some new and significant ways. These towns are discovering that both their residents and people “from away” are hungry to reconnect with nature and with natural history. Families with children are actively seeking out activities that bring them closer to the natural world. Tourists from more urban areas who do not interact with nature on a day-to-day basis are rediscovering the beauty of Maine rivers and wildlife, without having to travel too far from comfortable amenities. And increasingly, businesses and their workers are realizing the value – both monetary and otherwise – of natural amenities near downtown areas.

DAMARISCOTTA MILLS, ME

Damariscotta Mills is home to the oldest fish ladder in Maine and a very productive alewife fishery. The restored fish ladder at Damariscotta Mills attracts thousands of visitors every year. Educational programs bring in busloads of children (and their parents).

The Maine Eastern Railroad's passenger train, which runs between Brunswick and Rockland, makes a special stop in Damariscotta Mills for the annual alewife festival. Until 2009, "trains hadn't stopped in Damariscotta Mills for 50 years," says Dick Chase, Newcastle resident, train fan and fish ladder restoration committee member. "We're very excited to have trains stop for the festival."

Other activities include smoked alewife demonstrations, an alewife puppet show, fish-science discovery centers, and live music.

For more information, visit the Damariscotta Mills Fish Ladder Restoration Project at

<https://damariscottamills.org/>

The benefits occurring from a restored fishery are varied and wide-reaching. They include:

- Enhanced property values and attractiveness for business location;
- Increased tourism revenue from water-based "passive" recreation (including birding and other wildlife viewing, hiking, and photography);
- Community revitalization and civic pride;
- Increased revenue from angling (both commercial and recreational); and
- Ecological values.

That these small and mid-size New England towns are seeing the value of a restored fishery comes as no surprise to resource economists and community planners.



VALUES OF A RESTORED FISHERY: CORPORATE RELOCATION AND INCREASED PROPERTY VALUES

Recently, community planners have become aware of the importance of "amenity migration" – the idea that as the structure of the economy changes, businesses (especially those that employ a relatively high percentage of professionals) are more likely to consider amenities such as natural scenery, environmental quality, recreational opportunities, climate, and "cultural richness" (National Park Service, 1995). Surveys of new residents and businesses in rural counties with high levels of natural amenities found that these amenities were actually more important reasons for relocation than job opportunities or cost of living (Johnson & Rasker, 1995). And recent literature on amenity migration suggests that people want to live within an hour's drive of good fishing, skiing, and hiking (Hansen, A. et al., 2002). All of this suggests that natural amenities within close

AMENITY MIGRATION

Amenity migration may be defined as “the movement of people based on the draw of natural and/or cultural amenities” (Gosnell & Abrams, 2009).

Amenity migrants “may be part-time or full-time residents to their new communities; they may be retirees, professionals able to telecommute; or entrepreneurs looking to serve the other new residents” (Donoghue & Sturtevant, 2010).

Globalization, telecommunication, and the rise of the “footloose worker” have all led to a shift in the places Americans live and work.

No longer tied to urban areas or large industrial centers, workers are free to move to more attractive area – areas endowed with natural amenities such as forests, open space, lakes, rivers, and the ocean, as well as hills and mountains (Marcouiller, Clendenning, & Kedzior, 2002).

proximity to more urban activities, such as shopping and cultural offerings, are well poised to bring about economic development.

- The economic benefits of a restored fishery can extend to current residents as well. Unlike other parts of the country, where having a house located on a river is a boost to its property value, until recently the same could not be said for a house situated on one of Maine’s badly polluted rivers. Yet that is changing. Economist Lynne Lewis of Bates College and ecologist Curtis Bohlen of the Casco Bay Estuary Project found that proximity to the Kennebec River had in the past been associated with a “penalty,” a vestige of its industrial history. However, when Lewis and Bohlen investigated housing prices after the removal of the Edwards Dam and the beginning of restoration of the river, they found that the “penalty” had decreased. Given that the study was written in 2008, it may be that the penalty has completely reversed itself as of this writing, as it takes time for current events to capitalize into housing prices (Lewis, Bohlen, & Wilson, 2008).

- The executive director of the Blackstone Valley Community Pollution Prevention Project in Massachusetts, Alison McDeedy, echoes the sentiment about her community’s restoration efforts: “When I began working in 1992, people were very derogatory about the river,” she said. “Back in those days, people would build houses and make sure they faced away from the river. Now we field questions all the time from people interested in the river and interested in spending time on it. It seems that everything is snowballing” (Wyss, 2000).

WOOLWICH, ME

The Bath Water District owns and maintains a fish ladder on the Nequasset Dam in Woolwich. By 2011, the fish ladder was in disrepair. Woolwich, the Bath Water District (BWD), the Kennebec Estuary Land Trust (KELT), the Woolwich Fish Commission and the Woolwich Historical Society all joined forces to replace the crumbling structure. BWD was especially interested in the removal of phosphorus by the alewives, helping to keep Nequasset Lake, a reservoir, clean.

Today, hundreds of individuals sign up for volunteer fish counts, and KELT leads school groups and scouts on educational trips. According to Ruth Indrick, Project Manager at KELT, "There are people who have lived over 50 years in the town and never come down to see the fish. Now they're hearing a lot more about it, and they're coming!"

According to Bill Potter, Chairman of the Woolwich Fish Commission, "The project has given people something to rally around. The fish count gave people a sense of ownership. You see the eagles flying overhead and the osprey sitting there. It gave people a way to be involved. A way that they could contribute."

Visit the Nequasset Dam Fish Ladder Restoration Project Facebook page, or <http://kennebecestuary.org>.



VALUES OF A RESTORED FISHERY: BIRDWATCHING AND WILDLIFE VIEWING

In a time when more active outdoor recreation activities are declining, "non-use" wildlife-associated activities are actually increasing. According to senior research scientist H. Ken Cordell at the USDA Forest Service, "viewing, photographing, and studying nature in all its forms, for example, wildlife and birds, have grown strongly" (Cordell, 2008). In fact, wildlife watching is one of the fastest growing outdoor experiences in Maine. Statistics show that of all outdoor activities in Maine, wildlife watching is one that attracts the widest demographic - from the very young to the very old, and all walks of life in between (U.S. Fish and Wildlife Service, 2009).

- In 2006, Maine had the second highest birdwatching participation rate in the nation (U.S. Fish and Wildlife Service, 2009), and birdwatching contributed approximately \$346 million to the Maine economy in 2000 alone.
- The Downeast Birding Festival, for example, draws people from all over the country. In 2014, at least half of the registered participants were from outside Maine, from as far away as California, Texas, and Florida (Cox, 2014). William Kolodnicki, the supervisor of the Moosehorn Wildlife Refuge (part of the Festival), says that the revenue and visitors the festival attracts is meaningful, especially during a time of year when the more active outdoor season has not yet begun. "This is really pretty significant for Maine at this time of year," he said (Mack, 2010).

MIDDLEBOROUGH, MA

Middleborough, MA, a mid-size town in eastern Massachusetts, held its first herring run festival in 2014, although it has had an established fish run for centuries. The run brings in 8,000 visitors a year even before the festival, says Leilani Dalpe, Vice Chairman of the Board of Selectmen and Chair of the Tourism Committee. But the first festival brought in 3,000 people just for the weekend, from as far away as Maine and New Jersey.

“We had vendors who sold out two, three times during the two-day festival. They couldn’t keep food in their trucks, they couldn’t keep stuff on their tables... People just bought everything,” said Ms. Dalpe.

This year, in addition to participating restaurants offering a “Herring Run Fish Special” (a discount on fish dinners), participating hotels in town offered a discount. Attendance at the 2015 festival more than doubled, to 6,600. “The fish have put us on the map,” says Ms. Dalpe. “We weren’t on the map before. We are now.”

For more information, visit DiscoverMiddleborough.com.

- Birds of prey are actually the second-most watched bird type in the country, second only to water fowl (U.S. Fish and Wildlife Service, 2009), implying that a restored fishery is good news for the birdwatching industry in Maine. Although there are no studies that directly measure the impact of a restored fishery on the growth in birdwatching, we know that eagles, osprey, and other birds of prey concentrate where food – like alewife, blueback herring, and shad – are seasonally abundant and accessible.
- After the Fort Halifax dam on the Sebasticook River was removed in 2008, and with the subsequent explosion of river herring, Maine’s Department of Inland Fisheries & Wildlife (IF&W) began tracking the numbers of eagle and osprey on the river. On a single day in June 2011, officials counted 35 eagles on the portion of the river upstream of the former Fort Halifax dam site (Todd, 2011). In 2014, during the river herring run, IF&W “consistently observed 40-50 eagles” in the same stretch of river, with a single-day peak of 64 eagles noted. The Department official in charge of these counts believes that the true eagle numbers are likely greater, but that the estimate still constitutes “the largest observed aggregation of eagles ... in all of New England.” The influence of the river herring run on the eagle population, she believes, “extends well beyond the summer months, and benefits several hundred eagles over the course of an entire year” (Call, 2015). IF&W officials had earlier recorded a cluster of nearby osprey nests related to the restored river herring run.
- Will an increase in birds of prey along the Presumpscot from a restored fishery translate into economic value? The experience of Middleborough MA says “yes.” David Cavanaugh, chairman of the Middleborough-Lakeville Herring Fisheries Commission (see sidebar) says, “Obviously, since the ban [on the commercial harvest of herring],

BENTON, ME

The Benton Alewife Festival began in 2012, after the Fort Halifax Dam on the Sebasticook River was breached in 2008.

The event features a live underwater camera feed of the migrating alewives, a fly-fishing demonstration, an Alewife Chowder contest, and an alewife fish smoker demonstration.

The festival also incorporates characteristics unique to Benton's history, such as the ringing of the Paul Revere Bell at the Benton Falls Congregational Church.

Benton selectman Antoine Morin said that the festival, which drew 400 attendees in its first year, is a way to "build a sense of community among residents, increase traffic to local businesses, and showcase Benton's appeal to prospective residents."

For more information, visit the festival's Facebook page, or the Benton, Maine website:

www.bentonmaine.info.

people who usually take herring for bait aren't there. But the tourist traffic has been just as busy. People like to see the wildlife come for the fish that they wouldn't normally see, like a mink or an eagle. The kids can dip their hands in and grab a fish. It's great" (Conroy & Rizer, 2007).



VALUES OF A RESTORED FISHERY: ANGLING REVENUES

- The town of Benton, in possession of a harvesting license, received \$13,000 in alewife revenue sales in just one week in 2013, a meaningful percentage of its overall budget (Hongoltz-Hetling, 2013). However, this amount only constitutes a small portion of the economic benefits that the alewife run has brought to the community. Benton is now preparing for its 5th annual Benton Alewife Festival, and expects hundreds of people in attendance this year. While a good portion of those individuals and families may live in town, more and more are coming from "away" as Benton achieves a place on the map. Those families are traveling to witness an event that gets them not only closer to nature, but actually interacting *with* nature.
- A 2008 study on the Kennebec River (post-removal of the Edwards Dam) found that the restored recreational fishery in the freshwater section of the Kennebec generated over \$27.6 million annually in revenue from anglers alone. This study, the first to compare results of angler surveys both pre- and post-dam removal, found that freshwater anglers are paying more to visit the enhanced fishery than they were before the dam removal. Furthermore, survey respondents indicated a willingness to pay for increased fishing opportunities. The authors note that the value represents an underestimate of the total value of the restored fishery, as non-use

EMBRACING URBAN RIVERS

“Rivers connect us. They link our cities and towns, create opportunities to be outside fishing and swimming with our families and friends, and shape a sense of place that ties people together” (American Rivers, 2014).

Even though many of our cities and towns were founded on the banks of rivers, those same cities turned their backs on the rivers during their industrial era. Now, towns are rediscovering that rivers can be a key economic development tool.

Urban river revitalization and “daylighting” (literally uncovering streams that were forced underground) can provide residents with access to much needed green space, while at the same time help to manage water flows and improve water quality (Patten, 2012).

value was not included (Robbins & Lewis, 2008). Total revenue from the sale of river herring in Maine averaged over \$300,000 annually from 2009 to 2014 (Maine Department of Marine Resources, 2015), and numbers are strongly rebounding from their low in 1995.



VALUES OF A RESTORED FISHERY: COMMUNITY REVITALIZATION, QUALITY OF LIFE, AND CIVIC PRIDE

Less measurable than the impacts on tourism, relocation, or property values is the impact of a restored fish run on a community’s sense of civic pride. In their study on the social and economic benefits of the restored alewife run in Maine, a research team at Colby College found that civic pride was one of the most common themes mentioned in their interviews with residents and town officials alike (McClenachan, Lovell, & Keaveney, 2014).

- Carrie Kinne, the executive director of the Kennebec Estuary Land Trust, says of the ongoing efforts to restore the fish ladder on the Nequasset Dam (see sidebar on page 4): “This restoration project has not only effectively improved this historic fishery and retained an important local economic asset, but has galvanized the local community. Hundreds of concerned citizens and a wide array of conservation organizations have been involved, and we’ve increased the awareness of and pride in this critical natural and cultural resource” (Kennebec Estuary Land Trust, 2015).
- Although community pride in sustainably using and managing a natural resource, increasing its natural beauty, and deepening residents’ awareness of their own natural history does not immediately translate into dollar figures, it does translate into a sense of place – and perhaps, nurture deeper human needs.



UNDERVALUING NATURE

Despite all of our gadgets designed to increase connectedness, a recently published study profiled in Psychology Today observes that “our hunger for the natural world still endures.”

Psychologists Elizabeth Nisbet and John Zelenski found that study participants who took a short outdoor walk in an urban park showed a statistically significant decrease in stress level and increase in positive affect, compared to those who took a similar walk indoors.

However, participants *expected* there to be no difference in the two experiences, indicating that perhaps people fail to appreciate the beneficial effects that “nearby nature” can have on their own well-being.

Experiences in nature have been shown to increase our attention span, reduce stress, and speed recovery from illness. These attributes suggest that spending more time connecting with nature may be beneficial for our health!

For more information, see (Nisbet & Zelenski, 2011).

Scientists are just beginning to fully appreciate the value of river herring to the ecology of Maine. Researchers at Bowdoin and Bates Colleges and the University of Maine, for example, can connect the decline of New England’s groundfish population to the disappearance of the alewife in Maine rivers. Ted Ames, 2005 recipient of the MacArthur Award (better known as the “Genius Grant”) and 2011 Coastal Studies Scholar in Residence at Bowdoin College, believes that “if you look at alewives as a major reason why large coastal populations of cod, pollock and haddock were here, then you’re looking at a powerful economic engine and an opportunity to ... create a sustainable fishery.” He adds, “It may mean that managers have a new tool to rebuild populations of cod, pollock and haddock in areas where they haven’t had any in decades, even centuries” (Bowdoin College, 2011).

CONCLUSION

It's not often that we get a second chance at something, from an ecological perspective. Rarer still when that second chance can be a "win-win" for all. Restoring the native fish run on the Presumpscot River will have multiple benefits: increased revenue for local businesses from tourism and fishing; heightened quality of life and civic pride for residents; and enhanced natural beauty and ecological quality. No other river-based activity has such appeal to such a wide variety of users: old and young, families and individuals, wildlife lovers and nature enthusiasts. The return of the small, humble, native fish could mean big things for the Presumpscot!

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Photo Credits: Heron with fish, courtesy of Howard Cederlund; Entrance to the Damariscotta Mills Festival courtesy of Damariscotta Mills Fish Ladder Restoration.