COMMONWEALTH OF MASSACHUSETTS
Department of Fish & Game
Division of Ecological Restoration

The Commonwealth of Massachusetts
Deval L. Patrick, Governor

Executive Office of Energy and Environmental Affairs
Maeve Vallely Bartlett Secretary

Department of Fish and Game
Mary B. Griffin, Commissioner

Division of Ecological Restoration
Tim Purinton, Director

2014 Annual Impact Report
Personal Connections

"THE BRIGGSVILLE DAM REMOVAL KEPT US IN BUSINESS & MAINTAINED OUR STATUS AS THE LARGEST EMPLOYER IN CLARKSBURG."

~Pete Cote, President, Cascade School Supplies

In the work that we do, the stories of how our work has impacted someone's life sometimes goes untold. The story of restoration is positive and redemptive. This report attempts to capture some of these powerful stories.






Three years after DER helped remove a dam owned by Cascade School supplies, the family-owned business is still productive and poised to grow. Through grant writing and technical assistance, DER saved Cascade significant capital expenses, almost three-quarters of a million dollars, which helped sustain an 85-year old business.

Dear Partners,

In the work that we do, we often focus on ecological improvements, wildlife benefits, and economic stimulus, while the personal narratives of how restoration projects touch people's lives go untold.

Recently Jameson Bastarache emailed us to proudly report that after the Bartlett Dam was removed he went to Wekepeke Brook where his grandfather used to fish and caught a wild trout where there had been none for many decades. David Bunting, a streamflow monitoring volunteer, reported that the work he does with his eight-year old daughter feels like a positive contribution to the health of Martin's Brook. One of the most compelling stories comes from Western Massachusetts. Pete Cote, President of family-owned Cascade School Supplies, explained that without DER's help removing a costly and hazardous dam, the company may have had to close its doors and lay off workers after 80 years of doing business in the town of Clarksburg.

The story of restoration is positive and redemptive, and often revolves around one's connections of youth, livelihood, or recreation to a river or marsh. This report attempts to capture some of these powerful stories.

Sincerely,

Mary B. Griffin, Commissioner, *Department of Fish & Game*

Tim Purinton, *Director*

Hunt Durey, *Deputy Director*

237 Communities

DER provided technical support and guidance in more than **237 communities** in Massachusetts in all 27 major watersheds.

$14.8M

Using Commonwealth funds to the fullest, we leveraged **$14.8 million** in non-state funds.

$144,253

Volunteers worked in 124 communities, devoting more than **$144,253** worth of labor towards protecting and restoring our rivers and wetlands.

3,500

DER completed an Urban River Revitalization Project in Lawrence on approximately 3,500 linear feet of the Spicket River.

74.9 Acres
69.2 River Miles

We removed 5 dams and completed 3 wetland restoration projects, restoring **74.9 acres** and opening up **69.2** river miles.

Our Partners, Our Waters

DER succeeds because of our strong partners. We collaborate with colleges, grassroots organizations, cities and towns, private businesses and landowners, professional associations and government agencies to advance on-the-ground restoration projects that spur economic growth and sustain good paying jobs. In each of these partnerships are many stories of personal and community benefit that make a positive difference in people's lives.

Here are some of DER's strong partnerships in 2014.

Groundwork Lawrence

Lawrence, a Gateway City, recently built a greenway along the Spicket River. The Spicket River runs through one of the densest neighborhoods in the city. DER partnered with Groundwork Lawrence to improve in-stream habitat and create dedicated river access.

Boston College & Wellesley College

Researchers from Boston College and Wellesley College, with funding from the Town of Norwell, are co-locating water level and water quality sensors at three existing DER stream gages on Third Herring Brook on the Norwell/Hanover line, improving our data collection efforts and advancing the education of the next generation of river stewards.

City of North Adams & the Hoosic River Revival

In 2014 DER received $500,000 of Environmental Bond funds to advance the Hoosic River Revitalization. The Hoosic River is encased in concrete as it flows through downtown North Adams. A recent study from the Williams College Center for Creative Community Development estimates that the initial restoration pilot project (a portion of the overall restoration) will generate $13.8 million in economic impact in Berkshire County, including $12.5 million in North Adams and adjacent towns and create 108 short-term jobs.

Massachusetts Municipal Association, The Nature Conservancy, Boston Society of Civil Engineers & American Council of Engineering Companies of Massachusetts

In 2013 the Massachusetts Municipal Association, The Nature Conservancy, Boston Society of Civil Engineers and the American Council of Engineering Companies of Massachusetts worked with the legislature to establish the Dam and Sewall Repair or Removal Fund. In 2014 the fund was used to remove the Bartlett Pond Dam in Lancaster, a DER Priority Project. According to the Lancaster Town Administrator Orlando Pacheco, "DER helped save taxpayers approximately $600,000 by choosing dam removal over dam replacement."

South Shore YMCA & North and South Rivers Watershed Association

In 2014, DER partnered with the South Shore YMCA to remove what will be the first of many dams along Third Herring Brook in Hanover and Norwell. With help from DER and the North and South Rivers Watershed Association, the YMCA was able to raise over $100,000 in construction funding from federal, state, and private sources. The full Third Herring Brook Restoration will provide access to over seven miles of stream for native fish and wildlife.

Trout Unlimited

Volunteers from Trout Unlimited Chapters across the state are some of DER's best community-based partners. For example Trout Unlimited's Nor'East Chapter is funding use of automatic loggers to boost streamflow monitoring in the Ipswich River, a flow stressed river. This data is essential in advancing river restoration.

"I CAUGHT MY FIRST WILD TROUT IN THE SPOT WHERE THE DAM ONCE STOOD. I BELIEVE YOU CAN SAY THE PROJECT WAS A SUCCESS..."

James Bastarache
Lancaster resident

Restoring Streamflow in Massachusetts

Above: Low Flows at Weir River. Compare flows in Fall of 2014 (left) with the fall of 2013 (right).
Below Left: DER Laila Parkers leads a RIFLS training. Below Right: RIFLS Volunteer Joley reads stream gage.

"[VOLUNTEERS] ARE OUR PEOPLE ON THE GROUND MAKING OBSERVATIONS & COLLECTING DATA..."

Ryan O'Donnell
Ipswich River Watershed Association

Many Massachusetts rivers, especially in the eastern part of the state, lack enough water in certain times of year to sustain native wildlife. Statewide policies and regulations such as the Interbasin Transfer Act and the newly adopted revised Water Management Act regulations serve to balance water demands from businesses, municipalities, and recreational interests with environmental flow goals.

DER works at the watershed level through our River Instream Flow Stewards (RIFLS) program to proactively restore natural flow regimes, partnering with exceptional volunteers, organizations, and communities to document flow stress and restore flow regimes.

One place we work is the Ipswich River Watershed, where low flows have been an ongoing issue for many years. While water levels have recovered to some degree as communities have changed their water management practices and use alternative sources, the upper watershed area continues to experience chronic low flows in the summer.

In 2012 the Ipswich River Watershed Association (IRWA) asked DER to begin streamflow monitoring in the upper watershed. Under the dedicated guidance of IRWA staff member Ryan O'Donnell, RIFLS volunteers have made 509 gage readings since spring 2012 (Ryan's made another 395!). Two volunteers in particular, Bill Reed and Kevin Davis, have been observant, meticulous, and frequent gage readers, building detailed records of water levels at sites on Martin's Brook and the Ipswich River, both in North Reading. Ryan says these volunteers "are our people on the ground making observations and collecting data that allows us to do the analysis needed."

Indeed, DER and IRWA staff have used the data collected to date to make some initial assessments of flow conditions. To expand our ability to understand daily and sub-daily trends, which will better enable us to understand the impacts of water use on streamflow, in mid-2014 we installed continuous water level loggers at both sites, funded by the Nor'East Chapter of Trout Unlimited.

RIFLS monitoring serves multiple purposes, and a key one is education. RIFLS volunteer David Bunting and his eight-year old daughter began reading the Martins Brook and Ipswich River gages in 2013, in order to work together on an ongoing project to help the environment. Together they have been disheartened in late summer by how low the Ipswich falls, but at the same time feel more connected to the watershed.

Now nine, Joley and her dad continue monitoring, motivated not just by snacks at Ryers Country Store but as David Bunting puts it, "it's nice to feel like we're contributing to the health of the river."

DER has **37 streamflow monitoring** sites in 14 watersheds. Most of our sites experience significant stress to their normal streamflow. Of note **65%** are in sub-basins which are categorized under the Massachusetts Water Management Act Regulations as groundwater **withdrawal categories 4 and 5,** indicating significant stress to streamflow due to groundwater withdrawal.

Where We Work

Out West

Kinne Brook, Chester

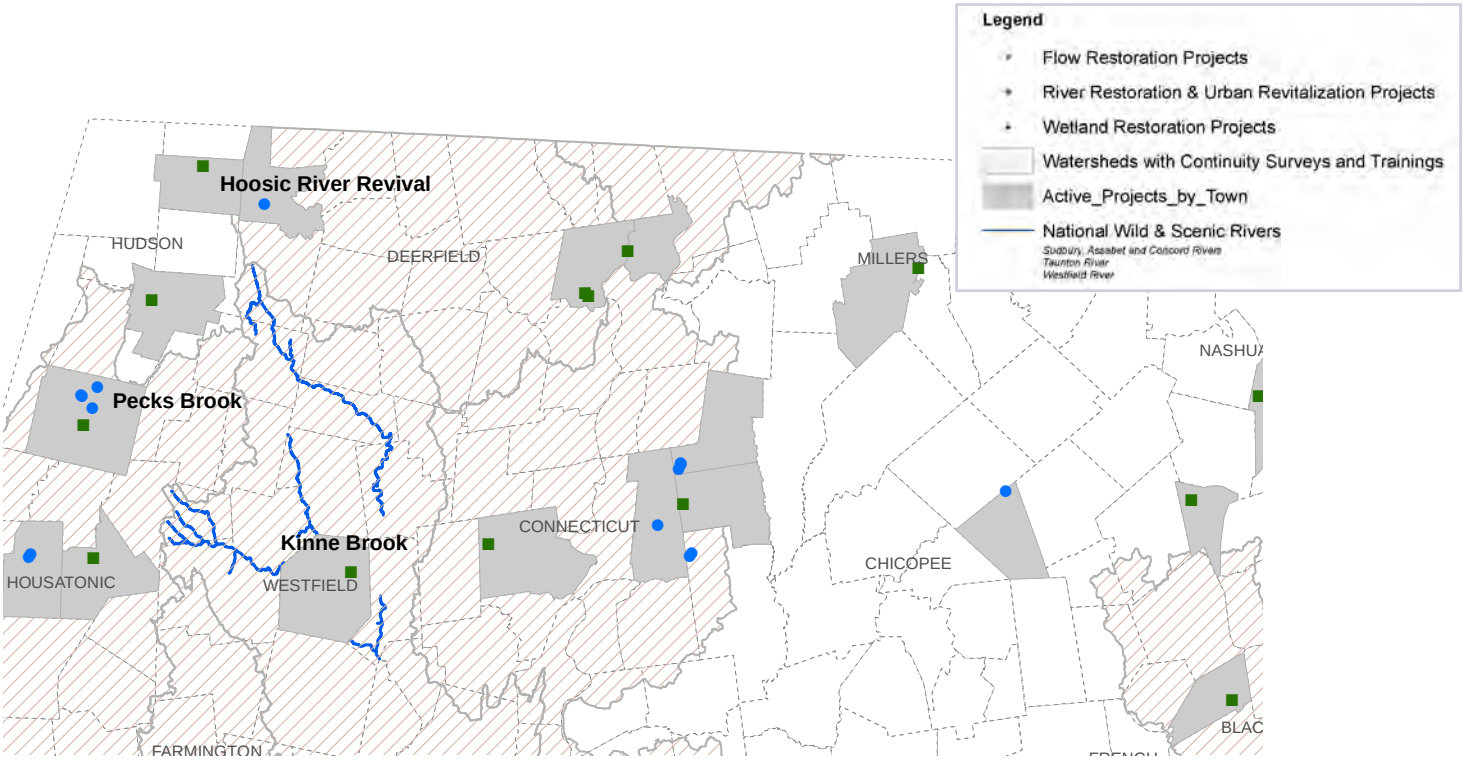
DER removed the Stroud Dam in Chester MA. Located on Kinne Brook, a high-quality coldwater stream, this removal benefited trout and other coldwater dependent species. Work continues to improve fish passage by replacing two culverts on the brook which currently are a barrier for fish.

Hoosic River Revival, N. Adams

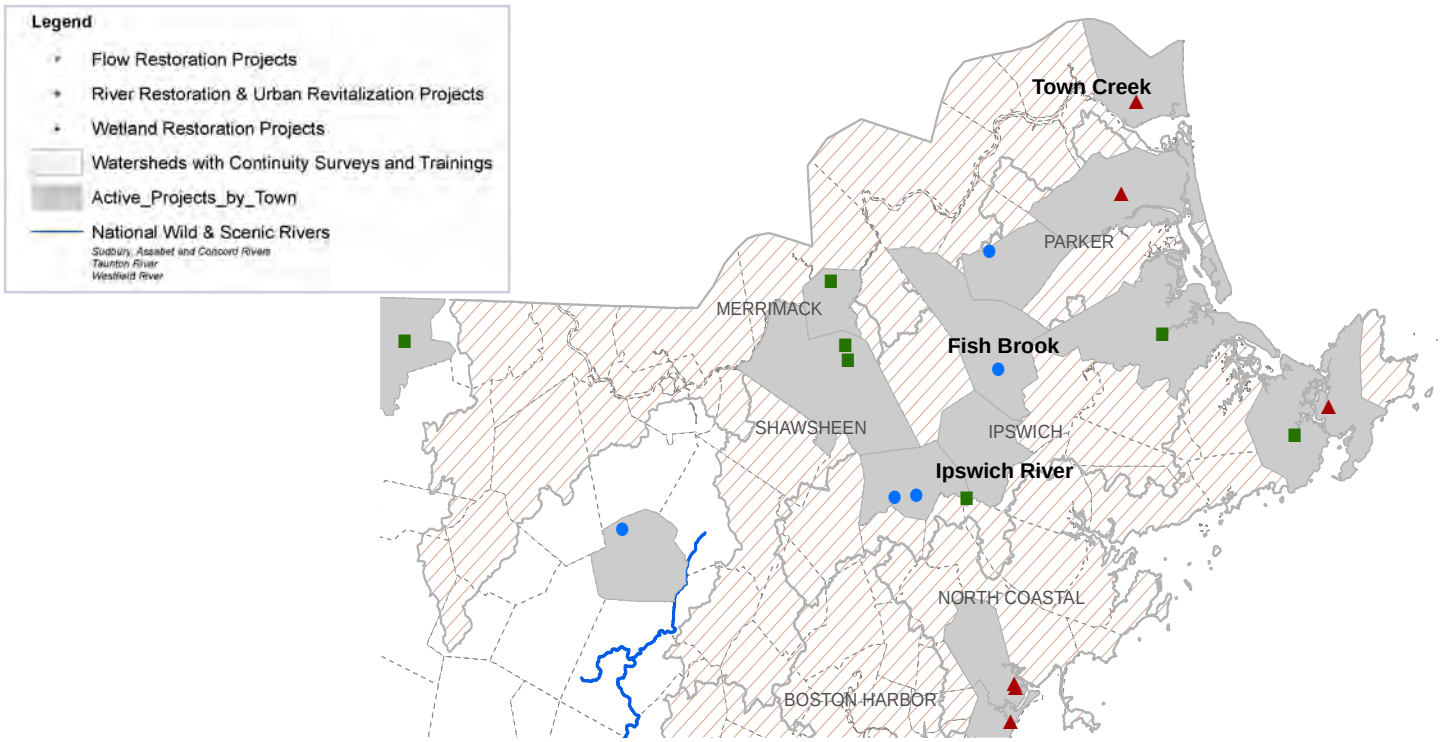
The revitalization work took a big step forward this year with $500,000 of funding to be used to create cutting-edge flood control techniques and improve the river, habitat and aesthetics of North Adams through an innovative redesign of the 60-year-old concrete chutes.

Pecks Brook, Pittsfield

DER is working with multiple partners to improve streamflow below recreational dams in Pittsfield and Stockbridge. In 2014, the City of Pittsfield began implementing a pilot program to change lake management, based on a guidance document developed by DER with significant partner input.



Up North



Town Creek Estuary, Salisbury

Major flood events at the Town Creek Estuary in 2005, 2006, and 2007 flooded out several businesses. Restoration completed this year will greatly reduce the risk of flooding, improve water quality and restore historically impounded coastal wetlands, saving the town and businesses almost $2.5 million in avoided flood losses over the next 30 years.

Fish Brook, Boxford

DER staff installed a new staff gage to monitor streamflow in Fish Brook in Boxford. Data from this site will complement other streamflow monitoring efforts in the Ipswich River Watershed.

Ipswich River, Middleton

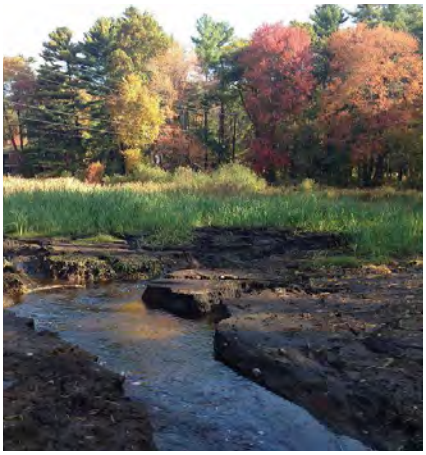
DER kicked off the engineering and design work for the removal of South Middleton Dam in partnership with Bostik (dam owner), the Ipswich River Watershed Association, and American Rivers. Removal of the dam will reconnect 57 miles of mainstem and tributary habitat to the Ipswich River.

Where We Work

Down South

Mill River, Taunton

Biologists observed sea lamprey, a native fish, spawning on the restored Mill River for the first time in nearly 200 years. Sea lamprey build large nests in which they lay their eggs. Henry David Thoreau once commented that the fish nests “look more like art than anything in the river.”

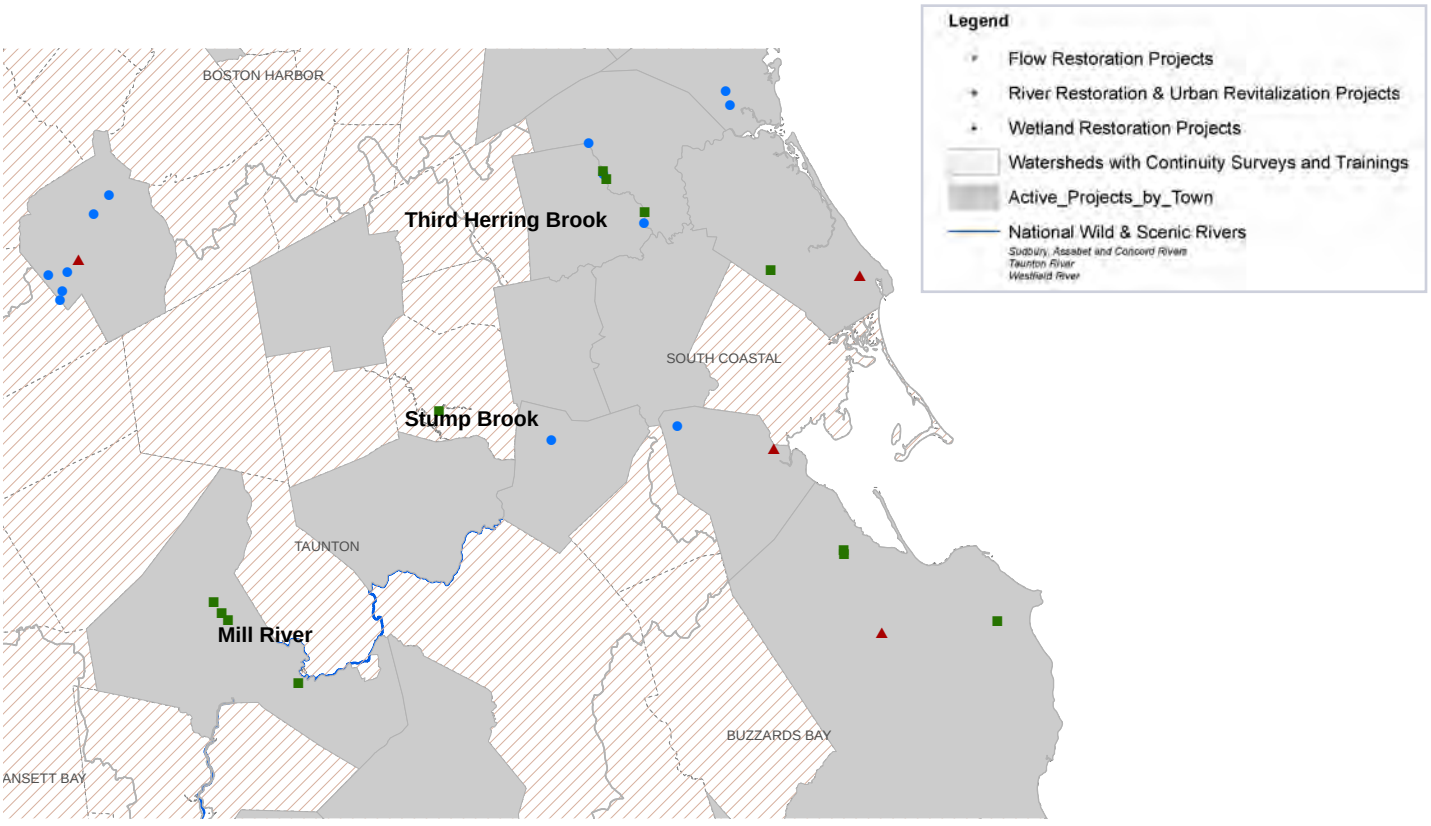


Third Herring Brook, Hanover

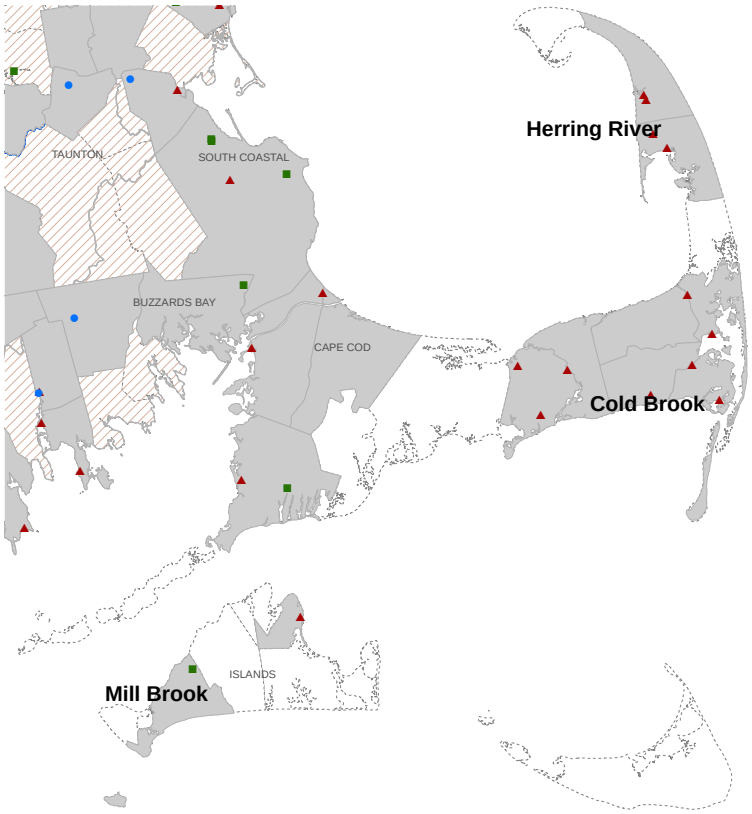
The Third Herring Brook has several fish and wildlife barriers. The Mill Pond Dam, the second barrier on the brook, was removed this year. Planning for the Tack Factory Pond Dam removal, the first barrier, is in final stages with a projected removal in 2016.

Stump Brook, Halifax

DER is working with a number of partners to improve natural flows downstream of the Stump Brook dam in Halifax. Increased flow is expected to improve downstream habitat and water quality in the Monponsett Ponds.



On the Cape & Islands



Mill Brook, Chilmark

This year DER took on our first culvert replacement project on Martha's Vineyard. This project will restore ecological functions including fish and wildlife passage at the headwaters of Mill Brook.

Cold Brook, Harwich

One of our quickest dam removals to date was the removal of the Carding Mill Dam. Facing imminent collapse, DER and partners took quick action to secure the required emergency approvals and remove the dam. Restoration planning continues for this 66 acre property.

Herring River, Wellfleet

This project will restore tidal exchange to approximately 1,000 acres of degraded salt marsh and estuarine habitats. In the coming year DER and partners will prepare engineering designs for multiple infrastructure elements.

Saving Taxpayers Money & Restoring Rivers

Above Left: Wekepeke Brook before dam removal. Above Right: Dam removal during construction. Below Left: Wekepeke Brook just after dam removal. Below Right: Wekepeke Brook a few months after removal.

“WE SAVED THE TAXPAYERS APPROXIMATELY $600,000 BY CHOOSING DAM REMOVAL OVER DAM REPLACEMENT.”

Orlando Pacheco
Town Administrator, Lancaster

From the salt marshes of Cape Cod to the tumbling streams of the Berkshires, DER helps communities deal with aging dams and culverts while also restoring the health of rivers and wetlands.

In June 2014, DER, the Town of Lancaster, and partners removed town-owned Bartlett Pond Dam on Wekepeke Brook, a coldwater tributary to the North Nashua River. The dam degraded water quality and prevented fish and other wildlife from moving freely throughout the watershed. The Bartlett Pond Dam Removal Project saved the Town money, restored an important coldwater stream, and improved a popular picnic area. In 2010, the Town of Lancaster learned that it faced more than $600,000 in repairs to bring Bartlett Pond Dam up to modern safety standards.

The spillway of the dam had crumbled and the earthen berm attached to the spillway was in bad shape. The Town compared the cost of removal with the cost of repair and opted to pursue removal. In 2011, the Town applied to DER’s Priority Projects Program.

DER’s Alex Hackman guided the design process, assisted with permitting, and brought other partners into the project. The result was a cost-effective dam removal project that eliminated a public safety threat and improved the health of Wekepeke Brook.

“We saved taxpayers approximately $600,000 by choosing dam removal over dam replacement,” said former Town Administrator Orlando Pacheco, who led the project on behalf of the Town.

He added that the cost to remove the dam was around $100,000. The Town also created a picnic area and a display for historic mill machinery at the site.

The Bartlett Pond dam removal was the first in the state to be completed using funds from the Commonwealth’s Dam and Seawall Bill, a fund set up by the Legislature to remove or repair dams and seawalls.

DER received the following email from a Jameson Bastarache only two months after the dam removal: “My grandmother told me her grandfather always used to catch brook trout for the dinner table at the stream before the dam [was built]. I thought I might give it a shot,” he wrote. “I caught my first wild brook trout in the spot where the dam once stood. I believe you can say the project was a success and so I thank you for your work into restoring a local stream habitat.”

Project partners included the Town of Lancaster, the Department of Fish & Game’s Division of Ecological Restoration and MassWildlife, the Nashua River Watershed Association, Lancaster Friends of the Nashua River and the Rushing Rivers Institute.

In the Field with DER
Students Track the Benefits of Restoration

"THERE IS NO WAY OF CALCULATING THE TREMENDOUS VALUE THIS AFFORDS THE WSU STUDENTS."

Robert Thompson
Westfield State University

Tucked away on the Westfield State University (WSU) campus is the western office of DER. The location has many advantages with the most exciting being a blossoming partnership between the school, its students and DER to undertake real world research and stewardship throughout the Westfield River Watershed.

DER staff worked with the students to develop their ideas - from the public health implications of bacteria in waterways to learning how to analyze and interpret the data they collect. Much of the research work was presented at a student conference at Bridgewater State University- a new experience for several of the students.

In 2014 several talented interns as well as three separate classes worked with DER staff on river assessment, surveys, outreach and research. This hands-on opportunity built practical skills and increased the students' awareness of both issues and career opportunities.

Robert Thompson, Director of the Westfield River Environmental Center Biology Department at WSU is excited about DER's participation saying it provides students with "...the opportunity to expand on and apply their traditional academic knowledge through internships, special projects and collaborations. There is no way of calculating the tremendous value this affords the WSU students."

The outcomes from the student's work illustrate the benefits of student involvement. Summer intern Lindsey Lowinski felt she benefited most from interactions with environmental professionals. Not surprisingly she also relished a summer spent walking the Westfield River and its tributaries.

Intern Crystal Birdsell was able to pinpoint the source of elevated bacteria in a tributary to the Westfield River and learn both field and laboratory procedures. Crystal also learned she has a natural affinity for the techniques and care needed for lab analysis.

Three different WSU classes and their professors elected to work with DER on special projects. Senior seminar students continued with bacteria testing and wildlife tracking as a focus of their capstone project. An aquatic biology class launched a post restoration monitoring effort on a recent dam removal site. A stream ecology class did pre-restoration assessment and survey work. Future classes will follow-up with a post-restoration repeat of the survey and assessment.

In addition to the joy of working with students and faculty, the data collected has been an invaluable tool to DER staff in tracking the ecological benefits of restoration projects, assessing problems in the watershed and working with communities to identify solutions.

Above left: Boston College professor Gabrielle David and students collect data at site of former Whittenton Dam. Above Right: WSU intern Crystal Birdsell in the field. Below Left: WSU Intern Lindsey Lowinski in the field. Below Right: DER Cindy Delpapa teaches WSU students how to perform water quality monitoring.

DER In The News

For more information on DER restoration work this year view some of the following news and video clips.

Read an opinion piece focused on the **Herring River Estuary Restoration Project** in Wellfleet.

Is tide turning? Salt marsh project could set a new high-water mark
Cape Cod Times

Ipswich River Watershed Association (IRWA) Ryan O'Donnell blogs about the work IRWA, DER, RIFLS volunteers, and Trout Unlimited have been doing to **monitor flows** in the upper portion of the watershed.

Partnerships Expand Streamflow Monitoring

WSU students are **studying the site** of Kinne Brook Dam in Chester both before and after the dam removal to see the effect dam removal has on the site.

Electrofishing at Kinne Brook with Westfield State University students
MassLive

View **dramatic video footage of sea lamprey spawning** in the Mill River in Taunton, in the restored reach just above the site of the Hopewell Mills Dam Removal.

Division of Marine Fisheries YouTube Channel

DER's Nick Wildman joined "Living Lab", a weekly presentation of the show called "The Point" on WCAI to talk about **saltmarsh restoration.**

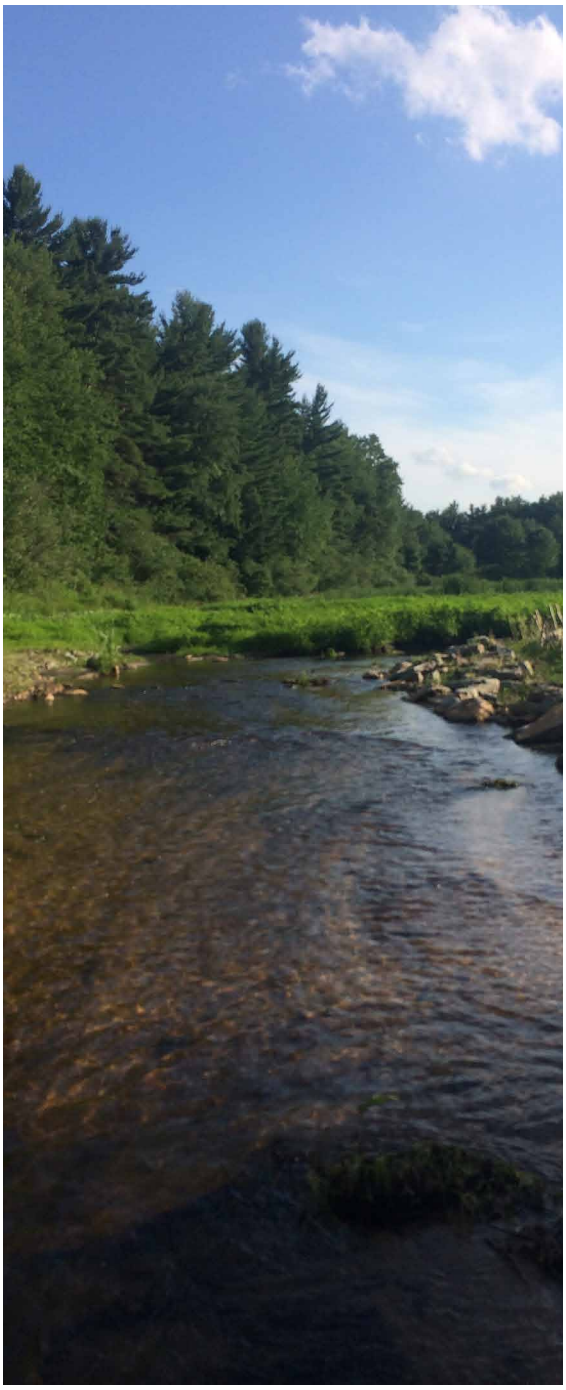
Salt Marshes the Unsung Heroes of our Coasts
WCAI

The **Millie Turner Dam Removal** in Pepperell Dam is underway, read about initial work and presentation to selectmen.

Millie Turner dam slated for removal
Nashoba Publishing

2015 Preview

The Division of Ecological Restoration looks forward to working with partners in 2015 on many exciting projects, a few of which are described below:



Through an award of $4.5 million from the Department of Interior's Hurricane Sandy Coastal Resiliency Competitive Grant Program, DER will remove ten high risk fish barriers that exacerbate flood damage. The projects will increase flood resiliency, open up 189 river miles and restore 90 acres of wetlands.

In 2014 the U.S. Army Corps of Engineers approved the Department of Fish and Game (DFG) to be the sponsor of the Massachusetts In-lieu Fee Program. This state-wide program will allow those seeking permits to make a monetary payment in-lieu of doing the required mitigation when their projects impact aquatic resources, as required under the Clean Water Act and the Rivers and Harbors Act. DFG is charged to implement mitigation projects that permanently protect aquatic resources and upland buffers or restore impacted aquatic resources. DER, MarineFisheries and MassWildlife will assist DFG in the identification and implementation of ecological restoration projects as well as land acquisition.

DER's new Stream Continuity program will be ramping up in 2015. This state-wide program is designed to help road managers and municipalities build capacity to implement improved road-stream crossing projects that meet the Massachusetts Stream Crossing Standards, thus improving river continuity and passage for fish and wildlife. Replacing undersized culverts and bridges with properly sized structures will also reduce flooding hazards to local communities. In fall of 2014, DER hired a new staff member dedicated to leading this effort.

DER and its partners, including the Nature Conservancy and the National Fish and Wildlife Foundation, are initiating the design process for the removal of the Cotton Gin Dam on the Satucket River in East Bridgewater. Removing the dam will open 13 miles for blueback herring and provide alewife with access to more than 700 acres of spawning habitat, making this one of the highest ecological priorities for dam removal in southeastern MA. The team's ambitious goal is to implement removal by fall 2016.

DEPARTMENT OF FISH AND GAME
Division of Ecological Restoration

The Division of Ecological Restoration restores and protects the Commonwealth's rivers, wetlands, and watersheds for the benefit of people and the environment.

Website: www.mass.gov/der
Twitter: @MassEcoRestore
Flickr: http://www.flickr.com/photos/der_riverways/

DER Staff Profile: Beth Lambert

"It's a privilege to use my science background to restore rivers for the benefit of the Commonwealth's residents and future generations."

Beth Lambert

Beth Lambert coordinates the ecological restoration program at DER and is shown here receiving a Special Recognition Award from Bill Napolitano of the Southeast Planning and Economic Development District for her work on the restoration of the Mill River in Taunton.

Beth is a fluvial geomorphologist and community-based watershed restoration expert. Over the last 15 years she's worked on river and wetland restoration in Oregon, Alaska, New Hampshire, and Massachusetts. Under Beth's leadership Massachusetts went from near the bottom in dam removal to seventh in the nation, according to data collected by American Rivers.

In the past four years, Massachusetts has consistently been one of the top three states in the nation in dams removed per year thanks to Beth and her dedicated team.

Tim Purinton
Director

Hunt Durey
Deputy Director

Eileen Goldberg
Assistant Director

Carrie Banks
Stream Team & Wild & Scenic
Westfield River Coordinator

Timothy Chorey
Stream Continuity Specialist

Russell Cohen
Rivers Advocate

Michelle Craddock
Flow Restoration Specialist

Cindy Delpapa
Riverways Program Manager

Kristen Ferry
Habitat Restoration Specialist

Alex Hackman
Restoration Specialist

Franz Ingelfinger
Restoration Ecologist

Georgeann Keer
Project Manager

Beth Lambert
River Restoration Program Manager

Laila Parker
Flow Restoration Program Manager

Megan Sampson
Program Administrator

Nick Wildman
Restoration Specialist