



Commonwealth of Massachusetts

## DIVISION OF ECOLOGICAL RESTORATION

# 2009 ANNUAL REPORT

## Coming Together

to form the Division of Ecological Restoration



## The Merger of the Riverways Program and the Wetlands Restoration Program



Salter Brook Trout, Wareham



Sesuit Creek Marsh, Dennis



Construction underway for the Eel River Restoration, Plymouth



Bronson Brook, Worthington



Poor Farm Brook gone dry, Shrewsbury

**The Commonwealth of Massachusetts**  
Deval L. Patrick, Governor  
Timothy P. Murray, Lt. Governor

**Executive Office of Environmental Affairs**  
Ian A. Bowles, Secretary



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

**Division of Ecological Restoration**  
Tim Purinton, Acting Director

The mission of the Division of Ecological Restoration is to restore and protect the health and integrity of the Commonwealth's rivers, wetlands, and watersheds for the benefit of people, fish, and wildlife.

# DER STAFF & ACCOMPLISHMENTS



## Division of Ecological Restoration Staff

**Tim Purinton**, Acting Director

**Hunt Durey**, Acting Deputy Director

**Eileen Goldberg**, Assistant Director

**Carrie Banks**, Stream Team &

Westfield River Wild & Scenic Committee Coordinator

**Jeremy Bell**, Restoration Specialist

**Joanna Carey**, Instream Flow Specialist

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Dear Colleagues and Partners,

The Division of Ecological Restoration (DER) was created by Energy and Environmental Affairs Secretary Ian Bowles and the Department of Fish and Game (DFG) Commissioner Mary Griffin in 2009 with the merger of the Riverways and Wetlands Restoration Programs. The Division brings together two award-winning programs under DFG. The new Massachusetts DER is a first-in-the-nation state government division dedicated to ecological restoration. Our mission is:

*"To restore and protect the health and integrity of the Commonwealth's rivers, wetlands and watersheds for the benefit of people, fish and wildlife."*

The Riverways Program remains a vital and integrated component of the new Division, and will specifically focus on education, outreach and technical assistance, including the continuation of our popular Adopt-A-Stream Program and River Instream Flow Stewards (RIFLS). An integrated physical habitat restoration program will enhance the estuarine and freshwater habitat restoration capabilities of the merged Wetlands Restoration and Riverways Programs.

The merger of these two programs means that we can holistically address habitat and flow restoration and apply an integrated watershed perspective to our restoration activities. The Division of Ecological Restoration is helping partners advance over eighty-five active projects in design, permitting, and construction that are currently leveraging over twelve million dollars in non-state funds.

Sincerely,

Tim Purinton, Acting Director   Hunt Durey, Acting Deputy Director

## DER & Partners 2009 Key Accomplishments

- Led the removal of 4 dams, including dams in **Wareham** (2), **Plymouth** (1) and **Rowley** (1), restoring continuity and habitat to Red Brook, Eel River and Ox Pasture Brook.
- Completed four salt marsh restoration projects, improving the condition of 70 acres of salt marsh in the towns of **Marshfield**, **Rowley**, **Orleans**, and **Cohasset**.
- Spearheaded the largest Atlantic White Cedar Swamp restoration in the state, the Eel River Headwaters Restoration, which is under construction in **Plymouth**.
- Coordinated 69 active physical restoration projects from the Berkshires to the Cape, leveraging over 12 million dollars in non-state funds and creating construction and engineering jobs across the state.
- Helped secure the designation of the Taunton River as a nationally recognized Wild and Scenic River.
- Worked with hundreds of volunteers statewide to monitor flow stressed rivers and survey streams to increase stewardship and understanding of our watersheds. In 2009, 195 volunteers collected 6,000 stream flow observations at 48 river sites, and staff conducted 12 river continuity and Adopt-A-Stream trainings, training 109 volunteers who put in over 300 hours of donated time.
- Coordinated the *De-Mystifying Dam Removal* training for 50 participants.



# PHYSICAL HABITAT RESTORATION

DER evaluates and undertakes stream and wetland restoration projects by partnering with landowners, local and regional groups, municipalities, and federal agencies. Projects are approached from an ecosystem-based watershed restoration perspective, focusing on the factors that most impact aquatic ecosystem health. Our physical habitat restoration projects include dam removal, culvert replacement and retrofits, fill removal, instream habitat enhancement, and stream daylighting. Each state dollar invested leverages at least three dollars from our collaborating partners. DER-supported projects inject several million dollars of federal funding into the Massachusetts economy every year.

## Estuarine

DER supports a wide variety of coastal estuary restoration projects and has helped partners restore numerous coastal streams and over 800 acres of degraded and destroyed wetlands over the past decade. DER serves as a facilitator of restoration—working to identify projects, organize project teams, provide technical assistance, secure funding, and help coordinate restoration activities from start to finish.

In 2009, DER continued to work closely with partners to advance a suite of over 40 active coastal Priority Projects, in addition to completing 4 projects to restore over 70 acres of tidal wetlands. At the end of the year, we received great news that the \$30 million NRCS Cape Cod Water Resources Restoration Project was approved by Congress, with \$5 million allocated for immediate construction work. This news—combined with many active projects nearing construction—will make for a very busy and productive 2010 with important benefits to the Commonwealth's environment and economy.

### New Lifeblood Flows into Green Harbor River

Many Massachusetts estuaries have been dramatically altered by the construction of dikes and water control structures that block the flow of tides into upstream habitats. Many of these structures were built long ago to "improve" the land for agriculture and development. However, the unintended consequences of blocking the tides have

caused severe environmental damage, and DER is currently working with many towns and landowners to address the negative impacts of these structures by restoring tidal flow.



In December 2009, phase one of the Green Harbor River tidal restoration project was completed in **Marshfield** to increase tidal influence to 60 acres of the former 1,000-acre estuary. Like many similar tidally-restricted systems, development within the historic flood plain now prevents the return of full tidal range due to flooding concerns, so restoration focuses on increasing tidal influence and improving fish passage while maintaining flood protection for low-lying land uses. The initial phase of restoration replaced a water control structure on the dike with an adjustable "fish-friendly" combination sluice gate (see photo). The results will be closely monitored to help partners assess the potential for a much larger tidal restoration project in the future.

### ARRA Stimulus Funding Puts People to Work to Restore Stony Brook

**Proponent:** Town of Brewster

**Project Title:** "Stony Brook Salt Marsh Restoration"

**Site Location:** Brewster, Cape Cod

**Land Owner:** MA Department of Transportation and the Cape Cod Museum of Natural History

**Total number of jobs to be created or maintained:** 46

**Total labor hours:** 7,113 hours

**Total cost:** \$1.5 million

**Partners:** Town of Brewster, National Oceanic and Atmospheric Administration, DER, Massachusetts Bays Program, Association to Preserve Cape Cod, and Cape Cod Museum of Natural History

The Stony Brook Restoration Project in **Brewster** received a major boost in July 2009 when the National Oceanic and Atmospheric Administration announced a \$1.3 million federal stimulus grant award to complete the project. The grant will provide the funding necessary to restore natural tidal flow to a 20-acre degraded salt marsh and enhance fish access to 3,000 feet of coastal stream and 386 acres of ponds used by herring and American eels.

To achieve the project's restoration goals, the town will replace an undersized culvert beneath Route 6A (see photo) with a larger one that will allow the full range of tidal water to once again flow freely into the salt marsh and other wetlands adjacent to the Cape Cod Museum of Natural History. By enlarging the road culvert, the project will enhance the ability of fish and other organisms to pass beneath Route 6A, making their way to important habitats in the upper reaches of the watershed. Construction is expected to be complete by the end of 2010.



# PHYSICAL HABITAT RESTORATION

## Riverine

Freshwater stream restoration projects that DER works on include: stream continuity and aquatic species passage, such as dam removal and culvert replacement and retrofits; aquatic habitat improvement; stream daylighting; and urban stream revitalization.

### The Science of Restoration

Dam removal presents an unparalleled opportunity to study the effects of on-the-ground restoration projects on Massachusetts' stream ecosystems. DER's restoration monitoring program brings together federal, state, and local agencies as well as watershed associations, academic institutions, and citizens. Partners include the Massachusetts College of Liberal Arts, University of Massachusetts-Boston and Amherst, Wheaton College, the NOAA-Restoration Center, US Fish and Wildlife Service, Town of Plymouth, Deerfield River Watershed Association, Jones River Watershed Association, Taunton River Watershed Association, American Rivers, Trout Unlimited, and other state and local agencies.

### Building Local Capacity

In the last two years, interest in dam removal has grown exponentially. To meet this need, DER works to build the capacity of municipalities, land trusts, NGOs, and fellow agency staff to take on and lead dam removal projects. DER trained approximately 50 aspiring project managers through its second annual Dam Removal Demystified training in November. DER staff also responded to requests for information by meeting onsite with more than 20 municipalities and dam owners.

### Eel River Restoration

#### Plymouth

This project involves the restoration of seven former cranberry bogs to native wetland habitats; reconstruction/restoration of 2 miles of natural stream channel, including in-stream habitat features and associated floodplain; replacement of two road crossing culverts to improve flow and fish and wildlife passage; and partial removal of the Sawmill Pond Dam to open upstream areas to fish and wildlife that have been cut off for over 150 years.

- **Wetland acres restored:** 40 acres
- **Miles of stream restored:** 1.7 miles (from headwaters spring to Sawmill dam)
- **Total project area, bogs and dam inclusive:** Approximately 60 acres
- **Number of Atlantic white cedar trees planted:** 17,000
- **Number of other trees, shrubs, and herbs planted:** 7,000
- **Scale of earthwork:** Approximately 30,000 cubic yards
- **Pieces of large wood used to construct in-stream habitat:** Approximately 1,000
- **Construction Cost:** \$ 1.9 million
- **Funders:** Multiple: Local, State, Federal and Private
- **Years to Design, Permit, Fundraise and Complete:** 4
- **Job Creation/ Maintenance:** 2-4 Engineers, Consultants, and Surveyors (part-time), 5-8 Construction Contractors (part-time)
- **Partners:** Department of Fish and Game/Division of Ecological Restoration, U.S. Fish and Wildlife Service, U.S. Department of Agriculture, Natural Resource Conservation Service, American Rivers, The Nature Conservancy, Department of Environmental Protection, Corporate Wetlands Restoration Partnership and Horsley Witten Group (service donation).

### Dam Removal Profile -

#### Ox Pasture Brook

For the first time in a more than a century, the tide now flows past the site of the former lower dam on Ox Pasture Brook in **Rowley**. In the winter of 2009 work crews removed the old stone dam located at the 'head-of-tide' on this small coastal stream. The dam prevented natural tidal flushing from moving upstream, blocked fish passage, impacted wildlife habitat, and degraded water quality. Now that the dam has been removed, tidal waters are extending upstream, and the old river channel is again carving its way through the former impoundment.



# TECHNICAL ASSISTANCE

DER's Riverways Program provides technical assistance to citizens, municipalities and watershed groups to protect and restore river corridors and ecological systems, and to facilitate community riverfront revitalization and public enjoyment. The Riverways Program is based on the belief that local action is the key to river protection. Riverways staff work side-by-side with local citizens, town officials, watershed-based groups and other partners to restore and protect the state's rivers and their ecosystems.



Photo: Paul Nguyen

## Water Quality

Across the Commonwealth, citizen volunteers are pitching in to help evaluate the condition of their neighborhood waterways. The network of volunteer-based water quality monitoring is large and growing in sophistication. The collected data is useful in a variety of ways from identifying problem areas to helping inform the state's own water quality sampling. Staff at DER continue to help groups maintain or initiate strong water quality programs that result in sound and useful data.

During 2009, DER staff drafted a detailed monitoring plan for the Parker River Clean Water Association and is working with their volunteers to finalize the plan for state approval. DER staff is also helping the Herring Ponds Watershed Association start a monitoring program and working with them and the town of Plymouth to a plan for grant-funded, citizen-based monitoring.

### Top Ten Technical Assistance Topics in 2009

1. Water conservation and instream flow
2. Hydropower
3. Funding opportunities
4. Trees and other vegetation in rivers
5. Dams and riverine restoration
6. Public access to and along rivers and streams
7. Riverine habitat
8. Land protection
9. Water quality
10. The Bottle Bill

## Adopt-A-Stream Highlights

- Conducted 9 Shoreline Survey and River Continuity trainings with 109 volunteers.
- Supported Stream Teams and Watershed Associations in approximately 15 watersheds in Massachusetts with over 239 volunteers who logged over 1,100 hours surveying and monitoring river and streams.
- Responded to over 30 information requests.
- Initiated a Train-the-Trainers Program for River Continuity Surveys state-wide, compiled an electronic survey and training toolbox for Survey Coordinators, while training Survey Team Leaders from 7 watersheds.

### Stream Teams Assisted in 2009

- Manchester Coastal Stream Team  
Marlborough Stream Teams  
Quinsigamond River Stream Team (Grafton)  
Middleton Stream Team  
South Branch Stream Team (Hoosic)  
Westfield River Wild & Scenic Stream Teams  
Lexington Watershed Stewards  
Three Rivers Initiative (Hardwick)  
Friends of the Green River (Greenfield)  
Blackstone TU Chapter  
Squan-A-Tissit TU Chapter (Pepperell, Groton, Ayer)  
Organization for the Assabet River (Acton)  
South Coastal  
Neponset River Watershed Association  
Housatonic Valley Assoc./  
Berkshire Environmental Action Team

## Wild and Scenic Rivers

DER served on stewardship committees for the Commonwealth's National Wild & Scenic Rivers, including Westfield River Wild & Scenic Advisory Committee, Taunton River Stewardship Council, and the Sudbury, Assabet and Concord River Stewardship Council.

DER provided specific program coordination and technical support to the Westfield River Wild & Scenic Advisory Committee.

With help from DER staff, the Committee:

- supported 4 riparian conservation projects protecting 465 acres;
- conducted freshwater mussel surveys identifying 7 species in the Westfield River watershed;
- initiated updates to 5 information kiosks;
- coordinated an engineering study of 42 miles of roads along the river to be surveyed for road runoff and erosion;
- collected 56 water quality samples at 7 locations; and
- documented river corridor conditions through Stream Team Surveys and photo-monitoring activities.



# FLOW RESTORATION

The River Instream Flow Stewards (RIFLS) Program continues to play a crucial role in advocating for more natural stream flows on both the local and state levels. Rivers and streams across the Commonwealth suffer from a variety of flow problems. The RIFLS staff train volunteers in watersheds across the state, maintain an interactive web site for the data, and work with the U.S. Geological Survey to develop high quality streamflow data.

Photo: Paul Nguyen

## RIFLS

The vital importance of water quantity in our rivers was brought into the public eye this year with a number of important statewide developments that culminated in EEA's Sustainable Water Management Initiative. As state policy adapts to incorporate the most recent streamflow science, DER continues to monitor instream flow conditions and work with communities to protect and restore streamflow regimes that sustain fish, wildlife, and people.

DER supports a dedicated corps of roughly two hundred River Instream Flow Steward (RIFLS) volunteers, who continued their great work in 2009 by donating over **3,000 hours** to collect **6,000 streamflow observations** on 48 rivers across the state! This includes nine RIFLS "Hall of Fame" volunteers, who each visited their rivers more than 200 times in 2009 to observe and record the streamflow condition:

### HALL OF FAME VOLUNTEERS

Amy O'Neill, Beaver and Billings Brooks, **Sharon**  
Kurt Buermann, Beaver and Billings Brooks, **Sharon**  
Paul Lauenstein, Beaver and Billings Brooks, **Sharon**  
Bob Race, Pecks Brook, **Pittsfield**  
Carl Hebee, Gulf Brook, **Pepperell**  
Carole Smudin, Town River, **Bridgewater**  
Rick Dawe, Saugus River, **Lynnfield**  
Shep Evans, Larrywaug Brook, **Stockbridge**  
Wendell Chamberlain, Pine Brook, **Kingston**

DER extends its heartfelt thanks to all the RIFLS volunteers who donate their time and energy for the protection and restoration of healthy rivers across the Commonwealth.

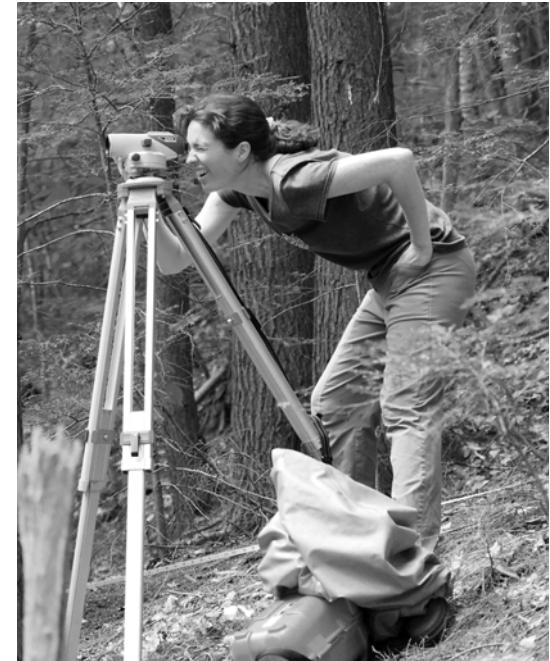
In some rivers, RIFLS data has revealed serious problems with low stream flows and DER has brought together citizens, agencies, and community leaders to explore alternative water management options to restore more seasonally appropriate flows.

## Science Inspiring Action

DER organized RIFLS volunteers on the Nemasket River in April to collect near daily streamflow readings, providing valuable information used by the City of **Taunton**. In addition, DER is collaborating with Bridgewater State College to create a hydrologic model of the Nemasket River that will relate streamflow to dam management and Assowompsett Pond volume. This model will be used to encourage development of a dam management plan for the Assowompsett Pond dam to improve downstream conditions in summer months.



Photo: Paul Lauenstien



## Moving Towards Sustainability: Profiles of Flow Restoration

### PARKER RIVER

In **Georgetown**, the Parker River Clean Water Association and the Georgetown Water Department began the process of streamflow restoration on the Parker River. The objective of the restoration project is to provide more suitable habitat conditions for native aquatic species such as river herring, eel, brook trout and freshwater mussels. The duo won a much-needed Water Conservation Grant from DEP this year. The reduction in water use will not only benefit the Parker River, which has run dry near the Georgetown well field twice in the last decade, but will also reduce the strain on the Town's existing water supply wells.

### FIRST HERRING BROOK

In **Scituate**, 2009 marked the completion of a water management alternatives analysis completed by The Nature Conservancy and Stockholm Environment Institute with EPA funding and assistance from DER staff. The final report evaluates the costs and benefits of reservoir dredging, water conservation and a new water source on the Town's ability to restore seasonal flows to First Herring Brook, while still meeting the Town's water supply needs. The team of stakeholders will use this information to plan future water supply projects, conservation programs and operating rules to restore and sustain adequate streamflow.