Massachusetts Wetlands Restoration News

The Newsletter of the Partnership to Restore Massachusetts Wetlands

Fall 2000

A Note to Our Readers

Over a year has passed since the last issue of Massachusetts Wetlands Restoration News. As this lengthy edition of the newsletter illustrates, the Wetlands Restoration & Banking Program has continued the important work of preparing watershed wetlands restoration plans and restoring wetlands. During this period, WRBP has undergone a major transformation. In May 1999, WRBP helped launch the Corporate Wetlands Restoration Partnership, the first program of its kind in the nation. With concerted effort, WRBP has brought the program through a very successful first year. This winter and spring WRBP experienced significant expansion with the addition of five new staff members, bringing our total to seven. I would like to thank our readers for their patience during this time of transition and growth. We are very pleased to be back in touch with you, sharing the many successes of the past year. We plan to keep you regularly informed of wetland restoration efforts across the state by publishing this newsletter on at least a semiannual basis. Thank you for your patience, your interest, and your continued support!!

Christy Foote-Smith, Director, WRBP

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WRBP Staff Directory:
Old Faces and New

Christy Foote-Smith, WRBP Director
(617) 292-5991
christy.foote-smith@state.ma.us

Formerly the Director of the Department of Environmental Protection, Division of Wetlands & Waterways, Christy initiated the Wetlands Restoration & Banking Program in 1993. A past Executive Director of the Massachusetts Association of Conservation Commissions, Christy has served on three municipal conservation commissions and is a Board Member of the Association of State Wetlands Managers.

Chuck Katuska, Wetland Scientist
(617) 292-5824
chuck.katuska@state.ma.us

Chuck is a certified Professional Wetland Scientist with 18 years of experience in a variety of public and private sector positions, including three years with WRBP. He also serves on the Massachusetts Association of Conservation Commissions Board of Directors, the Southborough Conservation Commission, and the Technical Advisory Committee for the Norfolk County Mosquito Control District.

Hunt Durey, Watershed Wetlands Planner
(617) 292-5768
hunt.durey@state.ma.us

Hunt joined WRBP at the beginning of this year after earning a Masters degree in Environmental Law and Policy from Vermont Law School. Before attending law school, Hunt worked for the Town of Boxford as the Conservation Department Head, and as a wetland scientist for a private consulting firm.

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WRBP Staff Directory:
Old Faces and New *continued from page 1*

Julie Keane, Education and Outreach Coordinator
(617) 292-5623
julie.keane@state.ma.us

Julie joined WRBP in February after completing a Coastal Pollution Remediation contract for Massachusetts Coastal Zone Management. She recently received a Master of Urban Affairs, concentrating in Environmental Planning, from Boston University. Julie got her start in environmental education and outreach while working for the Massachusetts Bays Program.

Tim Smith, North Shore Salt Marsh Restoration Coordinator
(617) 292-5808
tim.smith@state.ma.us

Tim has more than ten years of experience in ecological land management and restoration. He worked as Essex County property manager for Massachusetts Audubon Society from 1989 to 1996 and more recently has worked on urban wetland restoration projects in New York City and Boston.

Steve Block, Wetland Scientist
(617) 292-5743
steve.block@state.ma.us

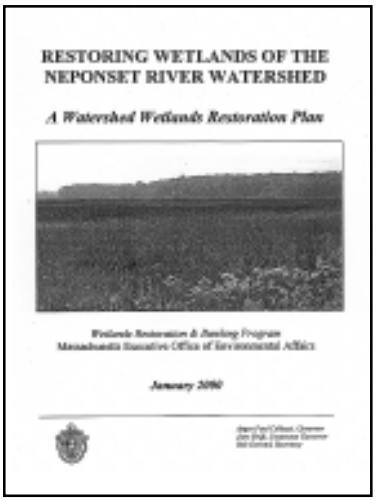
Steve joined WRBP in May after working as a wetland scientist at a private consulting firm for 4.5 years. Steve holds a Masters degree in Wetland Conservation from the University of Massachusetts, Amherst.

Susan Redlich, CWRP Manager
(617) 292-5676
susan.redlich@state.ma.us

Susan directed the citizen Wastewater Advisory Committee to the Massachusetts Water Resources Authority for the past nine years. On occasional weekends she introduces adult students to wetland environments as part of the Springfield College Human Services Program.

Final Neponset Plan is First in State

Drum roll please… In January of this year WRBP published its very first watershed wetlands restoration plan – *Restoring Wetlands of the Neponset River Watershed: A Watershed Wetlands Restoration Plan.*


RESTORING WETLANDS OF THE NEPONSET RIVER WATERSHED

A Watershed Wetlands Restoration Plan

Over three years of effort and lots of participation from the watershed community went into making the final plan a success. WRBP participated in numerous public meetings and discussions with stakeholders including citizens, nonprofit groups, and municipal conservation commissions to identify watershed problems, develop restoration goals, and assess potential wetland restoration sites. The product is a final plan that relies heavily on local knowledge and community action to transform restoration objectives into on-the-ground results.

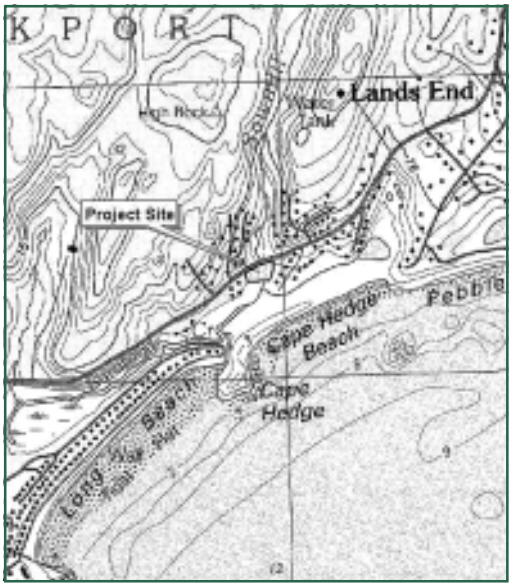
The overall goal for the watershed is to restore 130 acres of wetlands by 2010. Specific goals identified by the communities include restoring salt marshes, improving water quality, and addressing invasive plant species. To make the most of each acre restored, the plan identifies 65 priority sites that, if restored, would make the greatest contribution to the watershed communities' wetlands restoration goals. The plan also sets forth a specific Action Agenda intended to help focus and organize restoration efforts, and to sustain and enhance the momentum created through plan development.

Publication of the plan should be seen as the first step in a long-term, sustained community effort to restore some of the most valuable natural resources of the Neponset River watershed. It is a beginning, not an end. Likewise, publication of this first plan by WRBP represents a major step in our state-wide mission to prepare watershed wetlands restoration plans for all 27 major river basins by 2010. The plan creates a strong foundation for future restoration efforts in the Neponset and throughout the Commonwealth. To receive a copy of the final Neponset Plan, call WRBP at (617) 626-1177.

Hunt Durey, WRBP

GROWetlands Project Updates

With more than fifty wetland restoration projects underway, WRBP's project list is very long indeed. Without slighting ANY of our project sponsors, project partners, or project volunteers, here's a quick rundown on just a few of WRBP's active restoration projects. Please see updates on three additional GROWetlands projects elsewhere in this newsletter - Sagamore Marsh in *CWRP News*, Winsegansett Marsh in the article on *Tidally Restricted Salt Marshes in Buzzards Bay*, and Little Neck Road Marsh in *North Shore Salt Marsh Focus*.



Saratoga Creek.

Saratoga Creek, Rockport: Completed in spring 2000, the Saratoga Creek salt marsh restoration project in Rockport represents the kind of integrated pollution control and remediation work that needs to be considered in many wetlands restoration efforts. The Saratoga Creek marshes are crossed by a local roadway and, like so many older coastal drainage patterns, runoff from the road was conveyed directly to the marsh. Roadway stormwater washed directly into Saratoga Creek and, over time, up to 3 feet of sand and grit accumulated on the marsh surface. The Rockport Conservation Commission, working closely with the Rockport Department of Public Works, secured a Coastal Pollution Remediation Grant from the Massachusetts Coastal Zone Management Office and has replaced the old catchbasins in the street with newer, more efficient units designed to trap and remove stormwater pollutants from road runoff. Once the quality of runoff to the marsh and creek had been significantly improved, the Conservation Commission followed through on their good work by pursuing removal of accumulated roadway sediment from the salt marsh. Working with the Northeast Massachusetts Mosquito Control and Wetlands Management District, the Commission and the DPW developed a plan to remove sediment from the marsh to an upland disposal site, protect the restored marsh surface from recurrent stormwater impacts, and create high value panne systems on the marsh surface itself. Technical and financial support has been provided by the National Marine Fisheries Service, the US Fish & Wildlife Service, and the Massachusetts Wetlands Restoration & Banking Program through its GROWetlands Grant Program. A thorough monitoring program will be conducted for 5 post-construction years. The Rockport Conservation Commission is already seeking new sites for coordinated pollution remediation and wetland restoration projects.

Joppa Flats, Newburyport: Joppa Flats in Newburyport is an internationally significant wintering ground for waterfowl, the breeding ground of countless shorebirds, a mecca for birdwatchers and, while not strictly within their boundaries, is closely associated with the Parker River National Wildlife Refuge and the Parker River/ Essex Bay Area of Critical Environmental Concern. When Massachusetts Audubon Society (MAS) developed plans for an education center at Joppa Flats, it recognized the opportunity to restore degraded salt marshes not only for their inherent value as a part of the estuarine wetland complex, but as an educational opportunity and a model for other restoration efforts. In addition to substantial funds donated by MAS' committed membership, the Massachusetts Wetlands Restoration & Banking Program raised $90,000 from the US Fish & Wildlife Service for the project. After development of thoughtful and detailed design plans and a thorough regulatory review, MAS contractors excavated approximately ½-acre of filled salt marsh, created a series of small creeks, tidal pools and salt marsh pannes, and restored about 450 linear feet of adjacent coastal bank by controlling invasive vegetation and regrading. The result, constructed in 1999, is a beautiful and accessible variety of restored salt marsh habitats that already provide feeding and breeding resources for salt marsh invertebrates, killifish, and no less than 44 bird species. Middle-school children are monitoring salinity and plant life on the site. Through the continuing educational programs sponsored by MAS at the site, the Joppa Flats salt marsh restoration project will undoubtedly document the value of salt marsh restoration for generations of current and future citizens.

Joppa Flats restored marsh.

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WRBP to Launch Salt Marsh Research Program

Since its inception, the Wetlands Restoration & Banking Program has recognized the importance of using on-the-ground project experience to improve our collective understanding of how wetland systems respond to restoration treatments. Last year, WRBP began to develop monitoring protocols and started to gather monitoring data at a number of restoration sites. While tracking the progress of individual restoration projects is essential, there are also important research opportunities associated with these sites.

The discipline of environmental restoration is a young science. WRBP seeks to increase confidence in the ability to achieve the restoration of wetland systems, including their associated functions, by using current on-the-ground experience to inform future restoration projects. The following are just a few of the areas where more information is needed to improve restoration strategies:

- We are interested in learning more about managing exotics, especially *Phragmites australis*. When is *Phragmites* an aggressor and when might it be playing a non-threatening or even useful role? What are the variables controlling its propagation and distribution?
- We would like to better understand brackish marshes – their distribution, condition, and ecological role.
- We would like to understand more about how restored salt marshes benefit both primary and secondary fish production, bird habitat, and the habitat of rare and endangered species.
- We are interested in the impacts of historic salt marsh ditching on surface hydrology and on habitat.

Massachusetts is generously endowed with research institutions having interests related to this field. With the help of a Steering Committee and a Salt Marsh Science Advisory Committee, WRBP will be working to develop an ongoing program of academic research associated with Massachusetts salt marsh restoration projects that can provide information to support and improve the state's restoration efforts by:

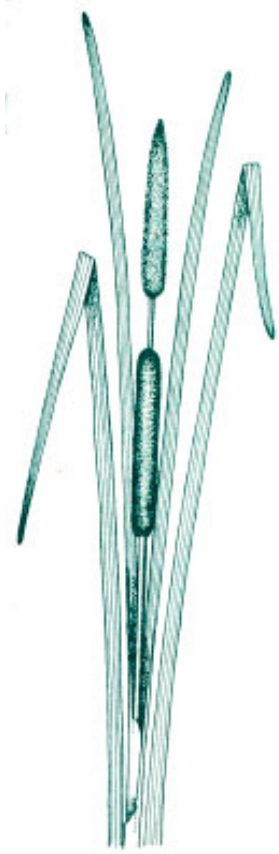
- developing collaborative relationships among research institutions and scientists, restoration programs and projects, and potential corporate and other funders;
- matching research capabilities and interests to restoration sites;
- matching state information needs to research institution projects; and
- attracting public and private financial support (e.g., Corporate Wetlands Restoration Partnership, government research grants, etc.)

To kick the program off, WRBP is organizing a symposium in November 2000 that will focus on salt marsh restoration research. Invitees will include Massachusetts research institutions, Massachusetts restoration and related program staff, federal restoration program partners, environmental non-profits, local and regional interests, nationally-noted wetland scientists specializing in salt marsh restoration, and potential corporate and other donors. Research institutions invited to participate will include, at a minimum: University of Massachusetts (Amherst, Boston, Dartmouth, and Lowell), Massachusetts Sea Grant, MIT, Harvard University, Boston University, Northeastern University, Manomet Center for Conservation Services, Woods Hole Oceanographic Institution, and Provincetown Center for Coastal Studies. Support for the Symposium is being provided through the Massachusetts Corporate Wetlands Restoration Partnership by ERM-New England, Duke Energy, and Battelle. Once established, WRBP hopes to expand the research program to examine freshwater wetland restoration research issues as well.

Christy Foote-Smith, WRBP

"With the establishment of ongoing lines of communication among the state's wetlands restoration program, research institutions, and potential funders of research projects, we can build an effective restoration research program."

Christy Foote-Smith, Director, WRBP



Cattail *(Typha latifolia)*.
drawing courtesy of Abigail Rorer

Citizen's Guide is Complete!

It's here! WRBP's *A Citizen's Guide to Restoring Massachusetts Wetlands: How to Participate in the GROWetlands Initiative* is now available. This guide is for anyone who has an interest in restoring Massachusetts wetlands. There is a growing nationwide movement to restore our environmental resources. Through its GROWetlands (Groups Restoring Our Wetlands) Initiative, the Executive Office of Environmental Affairs (EOEA) is playing a leadership role by encouraging and supporting citizen efforts to restore wetlands. To assist groups that have little or no prior experience with wetland restoration projects, this guide provides simple directions and advice that can help avoid problems, save time and money, and keep projects running smoothly to completion.

The guide outlines steps for developing a wetland restoration project, including: 1) building a project team, 2) evaluating the restoration potential of a particular site, 3) obtaining public support, 4) raising funds, 5) seeking technical assistance, 6) general advice on site evaluations and project design, and 7) obtaining permits.

The guide provides useful examples of community-based wetland restoration projects in Massachusetts. A *Wetland Restoration Primer* appended to the guide provides basic information on wetlands and wetland restoration. The guide has been mailed to conservation commissions, government agencies, and other restoration partners. If you have not received a guide by October 30 and would like a copy, please call the WRBP INFO LINE at (617) 626-1177.

Julie Keane, WRBP

Secretary Durand's Environmental Education Program Focuses on Watersheds, Communities and Biodiversity

Since beginning his Secretariat at the Executive Office of Environmental Affairs (EOEA), Bob Durand has put a strong emphasis on environmental education. Along with his other priorities - Wetlands Restoration, Community Preservation, Open Space, the Watershed Initiative, Pollution Prevention, Biological Conservation and Ecosystem Protection - Bob Durand is committed to reconnecting people to the natural world.

Secretary Durand has challenged the Secretariat's 3,500 employees to volunteer in schools, and has personally visited 35 schools across the Commonwealth. Through his school visit programs, the Secretary emphasizes the important role that students play in our environment and watersheds. By the time Bob Durand leaves each school, students know their home address, their school address, and their watershed address!

Since 1998, EOEA has provided outdoor classroom funding opportunities to help reconnect students with their natural world and their watersheds. Outdoor classroom contracts are available to any municipality, public school, or Massachusetts public institution of higher learning. Applications may be obtained from Melissa Griffiths, Director of Environmental Education at (617) 626-1114.

Currently, Secretary Durand is working closely with David Driscoll, Commissioner of Education at the Department of Education (DOE), to encourage the use of the environment as an integrating context in the classroom and to incorporate environmental education in curriculum frameworks. The growing partnership between EOEA and the DOE is helping to achieve the Secretary's goal of improving student learning by integrating the environment into K-12 curricula and school reform efforts. The Massachusetts Environmental Education Plan, a joint project of EOEA, DOE, Massachusetts Environmental Trust, and the Massachusetts Environmental Education Society, is due this fall. The Plan will incorporate concepts and methods of environmental education into the formal and non-formal classroom.

Another joint effort between EOEA and DOE was the nation's first *Biodiversity Days,* which were held on June 9-11, 2000. One hundred and fifty schools, 7,000 children and over 10,000 citizens, went outdoors to discover the treasure trove of living things with which we share our communities. Bob Durand and Education Commissioner David Driscoll visited several of the schools that participated and helped the students identify and catalogue the hundreds of plants and animals they found. Dr. Edward O. Wilson of Harvard University and other experts led walks and conducted surveys at sites across the state. Once all organisms collected are catalogued, it is likely over 2,000 species will have been identified in a single weekend - a world record!

Secretary Durand is busy preparing for the upcoming school year and looks forward to continuing his work with the Department of Education. From volunteering in schools and libraries, to educating the general public on a daily basis, all employees at EOEA maintain environmental education as a top priority.

Melissa Griffiths, Director of Environmental Education, EOEA

Tides of Progress

Waves of preliminary watershed data will soon be washing over the Wetlands Restoration & Banking Program's shores – allowing us to begin watershed wetlands restoration plan preparation for the Shawsheen, Upper Blackstone, Connecticut (Mill & Manhan), Otter, Paskamanset, and Upper Ipswich watersheds. In each of these watersheds, contractors are working on or have already completed the following tasks: (a) aerial photo-interpretation to locate and classify all wetlands and to identify potential wetland restoration sites; (b) watershed functional deficit analysis to identify watershed-level problems associated with water quality, water quantity, and fish and wildlife habitat; (c) report preparation to characterize the major watershed wetland systems and stressors; and (d) preliminary map development to graphically show the extent and relationships of relevant watershed features. WRBP expects to receive this information in a staggered manner over the next 12 to 18 months, and will use it as the foundation upon which we prepare Preliminary Reports for each watershed. Publication of a Preliminary Report for a watershed marks the beginning of the public participation process, during which WRBP actively seeks extensive input and feedback from watershed stakeholders. Keep your eyes and ears open for future WRBP planning updates and public notices regarding plan development for each of these watersheds.

In early spring the Massachusetts Water Resources Commission gave WRBP the go ahead to prepare watershed wetlands restoration plans for the Concord (SuAsCo), Charles, Ten Mile, and the Narragansett Bay/Mt. Hope Bay Shore watersheds. The state will fund half of the project cost, while the US Army Corps of Engineers will provide the other half of the funding through the Section 22 Planning Assistance to States grant program. The Corps will do the majority of the data collection and analysis for these projects, and will start work early in 2001. Final restoration plans will be completed by WRBP in a staggered timeline between 2003 and 2005.

Given current available resources, watershed plans for the Taunton, South Coastal, and Buzzards Bay watersheds are likely get underway in 2002 to 2003, and will be completed around 2005.

Hunt Durey, WRBP

North Shore Salt Marsh Focus

The Wetlands Restoration and Banking Program (WRBP) has undertaken a new initiative focusing on the salt marshes of the North Shore. With support and guidance from the North Coastal Basin Team and the Ipswich River/Parker River Basin Team, the North Shore Initiative will allow WRBP to focus project management and wetland restoration planning efforts directly on this key resource area. Tim Smith, a half-time project coordinator, has been hired to oversee the program. (See *WRBP Staff Directory*.) Tim will be working closely with the basin teams, municipalities, and regional advocacy groups to plan and implement salt marsh restoration projects and to develop comprehensive salt marsh restoration plans for key areas.

Red Gate Marsh, Rowley.

Massachusetts' North Shore, the coastal area from Revere to Salisbury, is home to some of the most unique natural resource areas in New England. A landscape formed by glaciers and changing sea levels over the past 20,000 years, the region is an ecological transition zone. The enduring headlands of Cape Ann, Marblehead, and Nahant are among the southernmost expressions of the rugged, rocky shoreline commonly associated with the coast of Maine and maritime Canada. In contrast, Plum Island, Castle Neck, and Cranes Beach comprise the northernmost barrier beach system on the East Coast. These broad, sandy beaches, fronting extensive salt marshes, are reminiscent of Cape Cod and other coastal areas southward. The intermingling of the North Shore's diverse landscapes – barrier beaches and dunes, rocky shorelines, and salt marshes – creates a mosaic of habitats supporting a high number of native plant and animal species and making the region an important center of biodiversity for New England.

Located less than an hour's drive from downtown Boston, the North Shore is also home to roughly five-hundred thousand people. Four centuries of extensive agricultural, residential, commercial, and industrial development has had a profound effect on the area's natural resources. Salt marshes, historically regarded as wastelands and breeding grounds for insects, have been used as landfills,

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Tidegates and Salt Marshes

In the Winter 1999 issue of *Massachusetts Wetlands Restoration News*, I wrote that Rumney Marsh in Revere would have the first self-regulating tidegates (SRTs) in Massachusetts. It is important to understand what an SRT is, because there are many standard flapper-type tidegates in Massachusetts and the maintenance or replacement of these can, and often does, adversely affect salt marshes.

A standard or conventional flapper tidegate is typically a metal valve or flat plate located on the bay or ocean end of a culvert and hinged to the top of the pipe. The valve closes on every incoming tide due to water pressure and discharges water at every low tide with the outgoing flow. The culvert is usually placed in a dike or bulkhead to protect a flood-prone area upstream of the tidegate. This design uses no external source of power. It is totally reliant on the force of water acting on the two faces of the valve. The flapper tidegate design, developed in northern Europe, is nearly a thousand years old and is very effective in reducing flooding from tidal sources in low-lying areas such as salt marshes and surrounding upland properties. Unfortunately, this gate design excludes all sea water, including the normal tides that provide many ecological benefits and do not pose flooding problems.

While the flapper design reduces coastal flood hazards, it introduces many new problems due to the isolation of the saltmarsh and the scouring action of the tide. Reduced tidal flushing and trapping of freshwater runoff above the flapper gate results in lower salinity levels in marsh soils. This condition favors the invasion of *Phragmites australis*, a plant species with low habitat value, high fire hazard potential, and a tendency to block small channels and ditches with roots and fallen stems. By changing the marsh vegetation and impeding surface drainage, the conventional tidegate can increase mosquito breeding and back-water flooding of low-lying roads and adjacent properties.

Waterman/Nekton SRT, Revere, Massachusetts.

Approximately 20-years ago, Tom Steinke, a Fairfield Connecticut Conservation Agent, invented a special float-actuated tidegate that he called the self-regulating tidegate (SRT). This tidegate has two useful features. A patented float assembly allows tidal water to flow upstream of the tidegate for the purpose of reintroducing salt water and tidal flushing to the diked salt marsh. An automatic tidgate closure at an adjustable tidal water height prevents inland flooding upstream of the tidegate. Steinke organized a company, Nekton Incorporated, to market the SRT which is now licenced to, and manufactured by, Waterman Industries, a producer of all sorts of water control valves and gates. It is now known as the Waterman/Nekton Self-Regulating Tidegate.

Ten SRTs have been installed in Connecticut, four in Galilee, Rhode Island, and by the end of 2000, ten will have been installed in Revere, Massachusetts. SRTs are now installed on both coasts and outside of the United States as well. Quincy has four adjustable automatic electric sluice gates with manual overrides and Winthrop has one. The electronic sluice gates can also achieve salt marsh restoration consistent with flood protection needs.

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Purple Loosestrife Biocontrol

In conjunction with the Walpole Conservation Commission, the US Department of Agriculture Animal and Plant Health Inspection Service (APHIS), and The Foxboro Company, WRBP recently released 10,000 *Galerucella sp*. beetles in a pilot project for biocontrol of purple loosestrife at Turner's Pond in Walpole. Based on water level concerns and increasing encroachment by invasive plant species, the Conservation Commission nominated Turner's Pond as a candidate project under WRBPs GROWetlands Initiative. On January 5, 2000, WRBP and the Commission entered into a GROWetlands Agreement to restore wetlands at the site. The release of these insects on June 17, 2000, marked the first state-sponsored purple loosestrife biocontrol project in Massachusetts.

By way of background, purple loosestrife *(Lythrum salicaria)* is an exotic wetland perennial responsible for the degradation of many prime wetland habitats throughout the temperate regions of the United States and Canada. Large, monotypic stands reduce the diversity of wetlands by replacing native plant species, thereby eliminating the natural food and cover essential to many native wildlife species. Although noted for the beauty of its late summer inflorescence, which also provides a nectar and pollen source for bees, purple loosestrife has few other redeeming qualities and is listed as a noxious weed in at least 13 states, where its importation and distribution is prohibited.

No effective method is available to control purple loosestrife, except where it occurs in small, localized stands and can be intensively managed. In such areas, uprooting the plant by hand and ensuring the removal of all vegetative parts can eliminate it.

Other control techniques that have been tried include water-level manipulation, mowing or cutting, burning, and herbicide application. Although these

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Massachusetts Tidal Restriction Inventory

WRBP has made great progress toward inventorying tidally restricted salt marshes along the entire Massachusetts coast. In 1996, the Eight Towns and the Bay Committee commissioned the Parker River Clean Water Association to prepare a tidal restriction inventory and assessment for the eight-town region from Rockport to Salisbury. The inventory identified over 125 tidal crossings, some of which are now active or completed restoration projects. At the same time, WRBP completed an *Atlas of Tidally Restricted Salt Marshes* for the entire North Shore from Revere to Salisbury that identified 190 potentially restricted salt marshes.

WRBP has contracted for the preparation of three additional tidal restriction inventories for the South Shore, Cape Cod and Buzzards Bay regions. The Buzzards Bay Project issued a draft inventory last summer and should publish a final version later this year. The Metropolitan Area Planning Council is currently working on a draft inventory for the South Shore. In the Cape Cod region, WRBP recently signed an agreement with the Massachusetts Bays Program and the Cape Cod Commission to begin work on a Cape Cod inventory. Upon completion of these three southeast region inventories, WRBP will have a thorough picture of the number and extent of tidal restrictions and tidally restricted marshes for the entire Massachusetts coast. WRBP hopes to publish a comprehensive Massachusetts coastal tidal restriction inventory and to add this information to our state-wide GIS wetlands restoration data layer.

Hunt Durey, WRBP

Tidally-Restricted Marshes in Buzzards Bay

Buzzards Bay Atlas: In 1999, the Buzzards Bay Project National Estuary Program produced an inventory of tidally-restricted salt marshes in nine towns within the Buzzards Bay watershed in southeastern Massachusetts. This *Atlas of Tidally Restricted Salt Marshes – Buzzards Bay Watershed, Massachusetts*, was initiated under a contract with the Wetlands Restoration & Banking Program (WRBP). The atlas, now in draft form, will be distributed to state and local officials this fall, and will be available at the Buzzards Bay Project's web site at: www.buzzardsbay.org.

The atlas documents salt marshes adversely affected by human activities, especially transportation-related alterations, and prioritizes sites for remediation. Over the past three hundred years, highways, roads, and railroads of various dimensions have been built across salt marshes in Buzzards Bay as elsewhere along the Massachusetts coast. Because much of the Buzzards Bay coastline is sheltered and generally experiences only a 2 or 3-foot tidal range, these wetland crossings were easy to construct. In many instances, culverts were placed under these crossings that were too small to pass sufficient tidal water necessary to maintain natural salt marsh vegetation upstream. Over time, the freshening of these salt marshes has caused a transformation in their plant communities. The normal salt marsh vegetation has been replaced by a nuisance invasive plant species called common reed, known scientifically as *Phragmites australis*. This is the large reed seen increasingly along many of our highways. This plant species has very limited value as habitat for wildlife. *Phragmites* chokes out many native plants and dry-season fires are a serious threat in large stands.

The Buzzards Bay Project hopes that the atlas will be a reference for local or state highway departments whenever road or bridgework is contemplated. The information will highlight locations where something as simple as redesigning a culvert could enhance tidal flow and restore a salt marsh. The atlas may also serve as a source for projects that could be included in the Regional Transportation Plan for state and federal transportation funding.

Salt Marsh Restoration In Buzzards Bay: The information in the draft atlas helped the Buzzards Bay Project and the Town of Fairhaven receive two grants to restore the salt marsh habitat within the Winsegansett Salt Marsh located in Fairhaven. The grants, totaling more than $32,000 were obtained from the Department of Environmental Protection ($22,500) though the "Non-point Source Pollution Program" and from the U.S. Environmental Protection Agency's "5 Star Restoration Challenge Grants" program ($9,700). The Fairhaven Conservation Commission is overseeing the grants for the town.

Winsegansett Marsh.
aerial photo courtesy of DEP Conservancy Program

The Winsegansett Marsh system is a 30-acre coastal wetland on the western shore of Buzzards Bay on Sconticut Neck in the Town of Fairhaven, Massachusetts. Located behind a barrier beach, the marsh is connected to the waters of Outer New Bedford Harbor and Buzzards Bay through a series of tidal creeks. The dominant plant communities within the marsh are the salt marsh grasses *Spartina alterniflora* and *Spartina patens*. A series of tidal creeks connects the marsh with salt water from Buzzards Bay. The salt marsh was divided into two sections long ago by the construction of Winsegansett Avenue. Water flows between the upper and lower portions of the marsh through an 18-inch pipe under

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WANTED!!
Wetland Restoration Projects and Sponsors

Do you know of a destroyed or degraded wetland that can be restored? Are you interested in sponsoring a wetland restoration project? Do you need help developing your wetland restoration project from an idea to a reality, including project support, advice, and technical and financial assistance? We can help! There are many programs that can provide funding and technical support for wetland restoration projects like yours, and some of these resources are not being allocated for lack of projects. WRBP works with its partners to provide the resources needed to implement grassroots wetland restoration projects.

Degraded marsh.

However, the partners can't do it alone. All wetland restoration projects are local, and experience shows that successful projects are driven by grassroots initiative and action. That's why the Wetlands Restoration & Banking Program manages a collaborative restoration effort supported by both partners and citizens. Under the GROWetlands (Groups Restoring Our Wetlands) Initiative, WRBP helps direct public and private funds and assistance to locally sponsored projects.

What We Can Do: A coalition of state and federal agencies, businesses, and non-profit organizations is working to implement a comprehensive, statewide wetland restoration program. Each of the "partners" can provide funds and/or technical assistance to inland and coastal wetland restoration projects. Partners include the National Marine Fisheries Service, Environmental Protection Agency, US Fish & Wildlife Service, US Army Corps of Engineers, Natural Resources Conservation Service, Corporate Wetlands Restoration Partnership, and Massachusetts Wetlands Restoration & Banking Program.

What You Can Do: If you wish to sponsor a wetland restoration project, call Steve Block at (617) 292-5743 to receive a GROWetlands Project Nomination Form. If you do not have a site in mind but would like to sponsor a wetland restoration project, ask for the Project Sponsor Form. The partners will review the nominated projects jointly and will work with project sponsors to make your restoration project a reality. While we will be accepting projects and project sponsors on an ongoing basis, we encourage you to submit your nomination by October 13 for early consideration.

Partnership to Restore Needs Your Support!

The *Partnership To Restore Massachusetts Wetlands* is a loosely-formed coalition of state and federal agencies, non-profits, businesses, and individuals who share a common goal of restoring Massachusetts wetlands. The partnership was launched in 1994 following the signing of a state/federal agreement under the Coastal America Partnership. Signatories include Massachusetts Executive Office of Environmental Affairs and Executive Office of Transportation & Construction, US Fish & Wildlife Service, US Department of Agriculture, US Highway Administration, Environmental Protection Agency, US Army Corps of Engineers, and US Department of Commerce. As a result of the *Resolution to Restore Massachusetts Wetlands*, Massachusetts has received more than $3 million in federal assistance for its restoration program.

The purpose of the partnership is to form a strong constituency for wetland restoration and to provide a means for communication and collaboration among those engaging in restoration activities. A steering committee consisting of the federal and state agencies that signed the resolution, along with environmental groups, meets periodically to coordinate the state's restoration efforts. *Massachusetts Wetlands Restoration News* has served as a primary vehicle for partnership communication. Several statewide meetings of the partnership held over the years also have provided forums for education and information exchange on wetland restoration topics. Stay tuned! WRBP is planning a statewide meeting for Winter 2001.

The partnership continually seeks new members. There are no membership fees or requirements beyond a sincere interest in restoring our wetlands. Members receive the newsletter, notices of meetings, and other mailings. To those of you who have already become partners – Thank You! If you wish to join, please fill out and return the form on **page 16 (back cover)**.

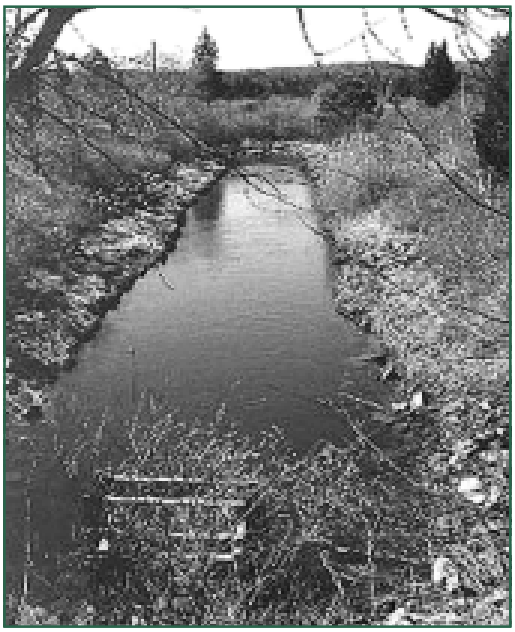
Sagamore Marsh Restoration Site to Host Research Project

Note: *The Gillette Company has provided funding under the Corporate Wetlands Restoration Partnership for research at the Sagamore Marsh restoration project site. The investigation will be conducted under the direction of Dr. Brian Howes of the University of Massachusetts Dartmouth who describes the project as follows:*

In addition to the monitoring that will be conducted by the Army Corps of Engineers at the Sagamore Marsh Restoration project site, we plan to measure sulfate, sulfide and salinity in marsh soils to evaluate the effort to restore the salt marsh habitat.

Phragmites australis is sensitive to high levels of sulfide in marsh soils and usually dies off and/or is outcompeted by cordgrass when soil sulfide concentrations increase. Increasing tidal flushing to *Phragmites*-colonized areas can result in an increase in the availability of sulfate which, in the presence of organic matter, is reduced to sulfide by natural communities of sulfate-reducing bacteria in the soils. The overall goal of increasing tidal flushing would therefore be to enhance the natural sulfur cycle within *Phragmites* marsh to favor cordgrass (*Spartina alterniflora*) over *Phragmites* by producing soil sulfide levels sufficient to reduce *Phragmites* survival.

As these changes in soil chemistry will likely occur sooner than changes in plant communities, we suspect that any changes due to marsh restoration efforts will first become apparent in the soils. We propose to monitor soil salinity, chloride, sulfate, sulfide and pH along transects established by the Corps for monitoring vegetation. Samples will be collected by using non-destructive in-place samplers, developed by our laboratory, which have previously been used in a wide variety of wetland types.



Channel from marsh to Cape Cod Canal, pre-construction.
photo courtesy of William Hubbard

Baseline (pre-construction) measurements will be conducted to reflect existing soil conditions before restoration by the Corps. The study will focus primarily on shifts in the sulfur chemistry, as this feature may provide the mechanism for a shift from *Phragmites* to *Spartina alterniflora* marsh. The sampling program involves two approaches: frequent sampling of selected sites presumed to reflect the greatest and most immediate changes and less frequent sampling across a wider area to document changes on a marsh-wide scale. The goal of the high frequency sampling is to determine the rates of soilwater change under increased tidal flooding and sites will be sampled at approximately monthly to bi-monthly intervals, adjusted based on observed changes in soilwater constituents. The large scale effort will sample 12 to 16 widely distributed sites to reflect baseline conditions, approximately 1-2 months post-alteration, and again in the fall. Plant species at each sampling site will be noted. Soil cores will be collected and archived for potential future sulfur analysis. Data will then be compared with results obtained through the larger Corps monitoring effort.

As the marsh reverts back to a cordgrass-dominated system, this is the perfect opportunity to obtain data with which to further investigate the ecological basis for these plant community shifts. This is an important area of wetlands research with specific applications to wetland restoration.

Dr. Brian L. Howes and Dale D. Goehringer, Coastal Systems Program, Center for Marine Science and Technology, University of Massachusetts Dartmouth

Sagamore Marsh Restoration

Tidal flushing of the Sagamore Marsh was restricted in the mid-1930s when the Cape Cod Canal was widened and deepened, creating a fresh and brackish water system. A 48-inch diameter culvert was constructed to drain freshwater runoff into the Canal at the south end of the marsh. The culvert was inadequate to provide tidal flushing sufficient to maintain the salt marsh and, over time, Common Reed (*Phragmites australis*) invaded the marsh. Various restoration alternatives were examined by the US Army Corps of Engineers. The project design that provided maximum benefits called for replacing the existing deteriorated reinforced concrete culverts beneath the Scussett Beach and the Cape Cod Canal service roads with two 6-foot high by 6-foot wide reinforced concrete box culverts under each road, installing electric sluice gates for primary flow control with manual backup flow control at the gates, deepening the man-made channel which extends 1,100 feet north into the marsh from the canal, and widening the man-made channel from an existing bottom width of 4-feet to 12-feet.

This collaborative project of the Army Corps, WRBP, and the Massachusetts Department of Environmental Management (DEM) will result in the restoration of 50 acres of tidal marsh. The federal government is contributing $1.4 million towards this $1.8 million project, with the remainder being funded by DEM. Work will be completed in late Fall.

GROWetlands Project Updates *continued from page 3*

World's End, Hingham: World's End Marsh is one of the New World's oldest examples of a wetland altered for agriculture. In the 1600's, early settlers constructed a stone and earthen dike, eliminating regular tidal flushing of the marsh from Hingham Harbor and the Weir River. The freshened marsh was then cropped for hay for approximately 300 years. The abandonment of agriculture and the more recent failure of ancient drainage systems resulted in the impoundment of fresh water and invasion by freshwater marsh species - cattail, common reed, and purple loosestrife - reducing wildlife habitat value of this former salt marsh. The Trustees of Reservations, current owners of the property, have decided to restore the original environment at World's End, one of their most spectacular properties. Excellent survey work provided by the faculty and students of Curry College now supports engineering design and archaeological investigations being conducted by the Natural Resource Conservation Service. Other federal partners providing valuable support to this project along with WRBP include the US Fish & Wildlife Service, the National Marine Fisheries Service, and the US Environmental Protection Agency. In addition to supporting recreational fisheries in the Weir River estuary and within the restored marsh itself, restoring salt marsh habitat at this site will provide an opportunity to educate the public at this heavily visited property about the benefits of coastal wetlands and the need for restoration.

World's End Marsh.

Neponset Marshes, Boston: Restoration planning and permitting at the Neponset Marshes on the Dorchester shores of the estuary is moving forward. The final design for the 20-acre salt marsh restoration project (Phase 1) has been approved by the Boston Conservation Commission. Financial support for this project is being provided by the US Fish & Wildlife Service through a National Coastal Wetlands Conservation Grant and by The Gillette Company through the Massachusetts Corporate Wetlands Restoration Partnership. EarthTech plans to donate technical support for Phase 2, restoration of an additional 12 acres, through the Massachusetts Corporate Wetlands Restoration Partnership. In the true spirit of proactive wetland restoration, both the MEPA Unit and the US Army Corps of Engineers have worked to facilitate their individual review processes. The Metropolitan District Commission, as landowner, will be advertising for construction bids this fall or upon receipt of all other regulatory approvals.

Neponset Marshes.
aerial photo courtesy of DEP Conservancy Program

Conomo Point, Essex: The Conomo Point Salt Marsh Restoration project has received all 7 permit authorizations necessary and was scheduled to be constructed this spring. Unfortunately (unless you happen to live in Essex), town meeting approved a massive sewer construction project this spring and the Essex Department of Public Works has been unavailable to install the replacement culvert. Final pre-construction monitoring is scheduled for this growing season. With the help of local wetland professionals, this is likely to be one of the better-documented tidal enhancement projects to date. Kudos to the Natural Resources Conservation Service for their thorough and thoughtful design work, to the US Fish & Wildlife Service for funding the culvert work, and especially to Essex Conservation Commissioner Stephan Gersh for his yeoman's effort on preparing permits for this exciting local project.

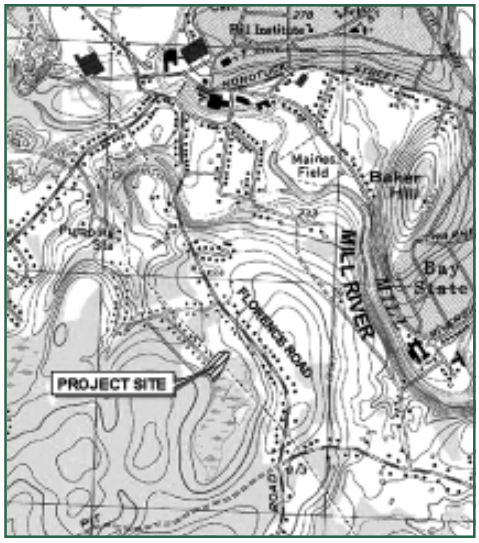
Brookwood Marsh, Northampton: A 1999 GROWetlands Grant project, Brookwood Marsh is the centerpiece of the City of Northampton's Brookwood Conservation Area, a popular destination for trail walkers, wildlife watchers, and educational field trips. The marsh has a history of significant impacts, beginning with colonial period peat mining ("Burt's Pit") and continuing through a 35 year-old residential subdivision. Nevertheless, the marsh provides important flood storage and valuable habitat for spotted turtle and spring blue darner (a dragonfly), two rare and protected species in Massachusetts, as well as a wide range of other native wildlife. Development of residential subdivisions at the marsh outlet altered both surface water and groundwater flows within the entire marsh system, in addition to the direct loss of 2-3 acres

continued on page 12

WRBP Project Updates *continued from page 11*

by filling. Further recent alterations to site hydrology have resulted in the extensive loss of mature trees from approximately 6 acres of the wetland system and facilitated invasion by purple loostrife. The Northampton Office of Planning and Development, as primary sponsor, has partnered with the Northhampton Conservation Commission, EOEA's Connecticut River Watershed Team, the Hampshire County Conservation District, and the Massachusetts Natural Heritage & Endangered Species Program to develop a project plan that improves and diversifies habitat for rare animal species, protects the adjacent residential neighborhood from increased risk of flooding, preserves important historic features, and enhances existing municipally-owned conservation parkland. The project has received its final Order of Conditions and, as this newsletter goes to press, is under construction.

Chuck Katuska, WRBP



Brookwood Marsh.
location map by MassGIS

Tidegates and Salt Marshes *continued from page 7*

While the purpose of old fashioned flapper type tidegates is limited to flood protection, SRTs and manual or electric flood gates can provide both salt marsh restoration and flood control benefits. In some locations, deteriorated flapper gates have leaked, allowing some salt marsh to naturally restore itself. In these cases, replacement of the gate with another flapper gate may result in significant salt marsh deterioration and loss.

It is important for Conservation Commissions, Town Engineers, Department of Public Works officials, state and federal regulators, and consultants to consider alternatives to standard flapper tidegates when salt marshes or former salt marshes exist behind tidegates, especially those targeted for replacement. WRBP staff as well as National Marine Fisheries Service, Environmental Protection Agency, US Army Corps of Engineers, and Natural Resources Conservation Service can offer assistance to evaluate tidegate replacement or repair options when salt marsh impacts may occur or restoration potential is a possibility.

Remember, salt marshes need salt water. Standard tidegates turn salt marshes into brackish or freshwater marshes, depending on how tightly they fit and how much they leak salt water. Most tidegate marshes have *Phragmites* colonies that outcompete other salt marsh vegetation when soil salinity decreases. Control of *Phragmites* is best achieved when sufficient salt water is restored to the marsh soils.

Ed Reiner, Senior Wetland Scientist, EPA Region 1

Tidally Restricted Marshes in Buzzard's Bay *continued from page 8*

the road. The upper marsh has been further divided by privately-owned footpaths that cross through the marsh. Water flows under each footpath through 10-inch diameter pipes. Due to these restrictions, the amount of tidal water reaching the upper marsh has been reduced, lowering the tidal flushing and salinity of the marsh. Under these conditions, *Phragmites* has been able to colonize this section of the marsh. The goal of the Winsegansett Salt Marsh project is to restore the salt marsh habitat in the upper marsh by increasing tidal flow. The Department of Environmental Protection grant will allow the Town to replace the culvert under Winsegansett Avenue with a larger box culvert. Through the 5-Star grant and the generosity of the private landowners, larger culverts will also be installed under the footpaths. The Fairhaven Department of Public Works will be performing the work on Winsegansett Avenue and providing the new pipes for under the footpaths. As the tidal exchange between the upper marsh and Buzzards Bay improves, the increase in salinity is expected to cause *Phragmites* to die off and be replaced by native salt meadow grasses, restoring the Winsegansett Salt Marsh to a more healthy and productive coastal wetland. As an accepted GROWetlands Project, WRBP will support the project with pre-construction monitoring assistance, design and permitting coordination, and post-construction follow-up.

To promote future restoration projects, the Buzzards Bay Project plans to develop an educational fact sheet describing the benefits of the Winsegansett salt marsh restoration project. For more information on the *Atlas of Tidally Restricted Salt Marshes - Buzzards Bay Watershed*, please contact Sarah Wilkes at (508) 291-3625 or see the Buzzards Bay Project's web site at *www.buzzardsbay.org.*

Joe Costa, Director, Buzzard's Bay Project

Note:

Secretary of Environmental Affairs Bob Durand, is in the process of establishing a committee to screen biocontrols before release in Massachusetts.

The committee will consist of the commissioners, or their designees, of the Department of Environmental Management, Department of Food and Agriculture, Department of Fisheries, Wildlife, and Environmental Law Enforcement, Department of Environmental Protection, and the Metropolitan District Commission, and a few outside scientists.

Releases of Galerucella sp. beetles in Massachusetts by the USDA Animal and Plant Health Inspection Service began a few years ago, preceding the establishment of this committee. Studies to date show that the beetle should pose no secondary risks to native species.

The committee will endeavor to coordinate with the USDA in monitoring Galerucella sp. and other historic biocontrol releases and in screening all future releases.

Sharon McGregor, Assistant Secretary of Environmental Affairs, EOEA

Purple Loosestrife Biocontrol *continued from page 7*

control techniques can eliminate small and young stands, they are costly, require continuous long-term maintenance, and are generally nonselective.

Current efforts to control purple loosestrife center on importation and propagation of host-specific phytophagous (plant-eating) insects from the plant's native range in Europe. Of 120 insect species associated with purple loosestrife in Europe, 14 species were considered host-specific to the target plant and 6 of these were selected as the most promising for biological control. The broad distribution, colonizing ability, and dramatic effect on growth and vigor of purple loosestrife of two species of leaf-eating *Galerucella* beetles and a root-feeding weevil *(Hylobius transversovittatus)* were the primary reasons for selecting them for the initial phase of natural enemy introductions into the United States.

These insects have been subjected to a stringent program of screening and testing and, as of June 1992, were approved by USDA-APHIS for release in the United States subject to coordination with state regulatory agencies. Until recently, the Massachusetts Department of Food & Agriculture had blocked the releases, citing concerns raised by beekeepers, but has now dropped their objections. The Department of Environmental Protection retains the authority to review proposed resource enhancement projects on a case-by-case basis, but has recently concluded that simple biocontrol releases involving no other work in wetlands are not a regulated activity.

Purple loosestrife
(Lythrum salicaria)
drawing by Abigail Rorer

The wetlands at Turner's Pond are an ideal site for a pilot project. The pond is owned and managed by the Conservation Commission, there is a clear commitment to invasive species control, and the vigorous stands of purple loosestrife at the site are not generally subject to extensive winter flooding. Based on monitoring data from other loosestrife biocontrol projects, we can expect to document a self-sustaining population of *Galerucella* beetles within two to three years and see reductions in the vigor and dominance of purple loosestrife in the plant community from that point forward, without additional maintenance. With the continuing support of The Foxboro Company, provided through the Massachusetts Corporate Wetlands Restoration Partnership, WRBP will continue its work in the Neponset River watershed to further community-sponsored goals of controlling invasive plant species in wetland areas.

Chuck Katuska, WRBP

North Shore Salt Marsh Focus *continued from page 6*

drained for mosquito control, and otherwise impaired by tidal restrictions and excessive freshwater inputs. As a result, many North Shore salt marshes are dominated by the invasive Common Reed *(Phragmites australis)* and, therefore, provide only marginal wildlife habitat value. Healthy salt marshes provide numerous benefits including flood prevention, improved water quality, groundwater supply, and habitat for fish and wildlife.

A major task of the WRBP North Shore Initiative will be to develop salt marsh restoration plans for the two state-designated Areas of Critical Environmental Concern located within the region: 1) Rumney Marsh, located in Boston, Winthrop, Revere, Saugus, and Lynn, and 2) the Great Marsh, the largest area of contiguous salt marsh north of New York, located in Gloucester, Essex, Ipswich, Rowley, Newbury, and Newburyport. In accordance with WRBP's established watershed wetland restoration planning guidelines, the salt marsh restoration plans will identify specific wetland restoration projects and discuss how each project will address regional water quality impairment, loss of flood storage area, and degraded wildlife and fisheries habitat. Recognizing that salt marsh restoration has been occurring on the North Shore for many years, the plans will also discuss recently completed and on-going projects, such as the Argilla Road culvert improvement in Ipswich and the use of self-regulating tidegates in Rumney Marsh. The plans will build on the watershed planning efforts of the North Shore basin teams and on salt marsh restoration planning previously conducted by WRBP and other North Shore partners, including Massachusetts Audubon Society, Salem Sound 2000, Eight Towns and the Bay Comittee, Saugus River Watershed Council, Parker River Clean Water Association, and the Northeast Massachusetts Mosquito Control and Wetlands Management District. The restoration plans will include conceptual project schemes with estimated costs, permit requirements, monitoring needs, and expected benefits for each project site. They will also discuss prioritization of projects, an overall implementation strategy, funding prospects, and educational and public outreach opportunities. After completing a thorough public review process, the plans will be used by local governments, regional planners, other state agencies, and local advocates to help identify, prioritize, design, and fund restoration projects. The North Shore Initiative will also allow WRBP to provide increased support, focused specifically on salt marsh restoration projects, to municipalities and other project proponents throughout the region. To date, priority projects have been identified in Ipswich, Gloucester, and Newburyport.

Little Neck Road, Ipswich, Massachusetts: This six-acre marsh is a part of the Parker River/Essex Bay Area of Critical Environmental Concern (ACEC), also known as the Great Marsh, and is located in the Town of Ipswich. Little Neck Road has restricted tidal flow to the marsh for decades. The situation was made worse last winter when a culvert under the road collapsed, almost completely eliminating what little tidal flow had existed. Much of the salt marsh is now essentially a brackish pond, as freshwater drainage is impeded by the blockage. Coverage of *Phragmites* has increased, displacing native salt marsh vegetation. With guidance and support from WRBP's North Shore Initiative, the Ipswich Department of Public Works is undertaking a project to replace the old 24-inch culvert with two four-foot wide arch culverts, restoring tidal flushing into and out of the impaired marsh. The Natural Resources Conservation Service is providing design and engineering work. Permitting and pre-construction monitoring are currently underway. Replacement of the culvert is expected this winter.

Throughout Massachusetts, the loss of wetlands has been incremental, with cumulative effects building to a critical mass over many decades. Likewise, the restoration of the North Shore's salt marshes is an incremental process. WRBP's North Shore Initiative is intended to guide and support this process and work toward the long-term protection and enhancement of the region's most critical natural resource.

For further information about the North Shore Initiative, or to discuss potential restoration projects, please contact Tim Smith at (617) 292-5808 or e-mail *tim.smith@state.ma.us*.

Tim Smith, WRBP

Marsh Marigold *(Caltha palustris)*.
drawing by Abigail Rorer

WETLANDS KIT
FOR K-12 EDUCATORS

March 1997

WETLANDS RESTORATION
& BANKING PROGRAM

WRBP's *Wetlands Kit For K-12 Educators* is still available!

This kit provides educators in grades K through 12 with some basic wetlands education curriculum. Although the kit does not include a complete wetlands curriculum, it provides materials and information for educators to plan and execute a wetlands restoration unit in their classrooms.

WRBP encourages educators to use wetland restoration sites for outdoor classroom activities. The kit includes a section titled "WRBP Wetland Restoration Activities in Your Community/Watershed/Coastal Area" which lists a number of state-wide projects that are suitable for outdoor classrooms.

For more information regarding the kit, or other wetland education questions, contact Julie Keane, WRBP Education and Outreach Coordinator, at (617) 626-1177.

WRBP Enters a New Digital Realm!

The recent addition of Hunt Durey as Watershed Wetlands Planner has given WRBP the ability – by going digital – to greatly advance its project management and watershed-level planning functions. Hunt has spent several months creating a WRBP project database and a new state-wide Geographic Information Systems (GIS) wetland restoration data layer. The two data sources are linked electronically and will allow all WRBP staff to efficiently manage and analyze project information for a wide variety of purposes – capabilities that can only be realized through a linked GIS/database system. Eventually, the state-wide wetland restoration GIS data layer will be put on line through the MassGIS program. In the mean time, WRBP will soon be able to provide interested parties with planning level maps and spatial data for all of our restoration project sites.

JUNIOR DUCK STAMP

2001 Massachusetts Junior Duck Stamp Kick-off Event!

The Junior Duck Stamp Program is a conservation education program that is designed to stimulate awareness and personal involvement in waterfowl and wetland conservation for students in grades K-12 through a student art project.

MassWildlife, Ducks unlimited, and MA Wildlife Federation are program sponsors, and an informational event is scheduled for **October 28, 2000** from 12:00 to 4:00 PM at the Spellman Museum of Stamps & Postal History in Weston, Massachusetts. Who Should Attend: educators, parents, students and anyone interested in learning more about the program, wildlife, wetlands and youth artists.

For more information: visit www.masswildlife.org, contact Pam Landry at (508) 792-7270 x 110, or e-mail pam.landry@state.ma.us.

For directions: visit www.spellman.org, or call (781) 768-8367.

Help Save Trees!

If you do not want to continue to receive this newsletter, please leave a message on our info line: (617) 626-1177, or e-mail: julie.keane@state.ma.us

Thank you!

Copies Available!

Managing Common Reed In Massachusetts (*Phragmites australis*)

An Introduction to the Species and Control Techniques

Prepared by Ralph Tiner, U.S. Fish and Wildlife Service
for:
Wetlands Restoration
& Banking Program

This report provides a broad overview of the ecology and management issues related to common reed in Massachusetts. This report serves as a useful guide for anyone interested in this invasive species including conservation commissions and their agents, private and public landowners, and others with an interest in *Phragmites australis* and its control. To receive a copy call WRBP at (617) 626-1177.

Massachusetts Wetlands Restoration News is a publication of the Wetlands Restoration & Banking Program for the Partnership to Restore Massachusetts Wetlands.

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Jane M. Swift, Lt. Governor

Executive Office of Environmental Affairs
Bob Durand, Secretary

Wetlands Restoration & Banking Program
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Editor/Designer: Julie A. Keane

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Drawing on page 5 courtesy of Thomas W. Ford

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JOIN THE MOVEMENT - BE A RESTORATION PARTNER

The Coordinating Committee of the Partnership To Restore Massachusetts Wetlands invites everyone with an interest in wetlands restoration to join the Partnership which is now over 200 strong.

PARTNERSHIP FORM

Name_____Title_____Affiliation_____

Address (Street/City/State/ZIP) _____

Phone _____ FAX:_____E-Mail:_____

I/we support the "Resolution to Restore Massachusetts Wetlands". Please include my (check one): __agency __organization __self as a Partner in the Partnership to Restore Massachusetts Wetlands and put me on the mailing list to receive **Massachusetts Wetlands Restoration News**. I understand that this does not involve any commitment to a specific action or financial contribution.
I/we will make implementation of the Partnership's Action Plan a priority and will do everything within my/our power to restore Massachusetts wetlands.

___Please send a copy of the Partnership's **Action Plan**.

Please return this form to:
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Executive Office of Environmental Affairs
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Boston, MA 02108
PHONE: (617) 626-1177 FAX: (617) 292-5850

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