North Shore's 'Great Marsh' faces modern-day pressures

This is the first in a series of columns that will be appearing throughout the year one of the region's most interesting ecosystems — the Great Marsh.

The North Shore salt marshes look like open fields of grass at first glance, changing colors with the seasons.

But take a closer look, or talk to people who have lived and worked in the marsh, and you will find that marsh resources have more than just aesthetic and environmental value — they are also tied to our economy, public health and recreational activities.

Commercial shellfish harvesters depend on area clam flats; while beachgoers, boaters, bird watchers and fishers flock to the region seeking relaxation.

Guest column

Katie Busse

This North Shore ecosystem, commonly known as the "Great Marsh," covers more than 20,000 acres along the northern Massachusetts coast from West Gloucester to the New Hampshire border. This means we have the largest continuous acreage of salt marsh north of Long Island, N.Y. right in our back yard.

This "back yard" includes not only land directly in or adjacent to the marsh, but areas further inland connected by river networks and streams. So whether you live in a coastal town from Newburyport to Gloucester or are a resident of Groveland or Topsfield, you are part of this sensitive, dynamic and important system.

Just what was the marsh like in the past, what are current concerns, and what does the future hold for this regional treasure?

History of the marsh

Generations of people have worked, lived and played in the Great Marsh.

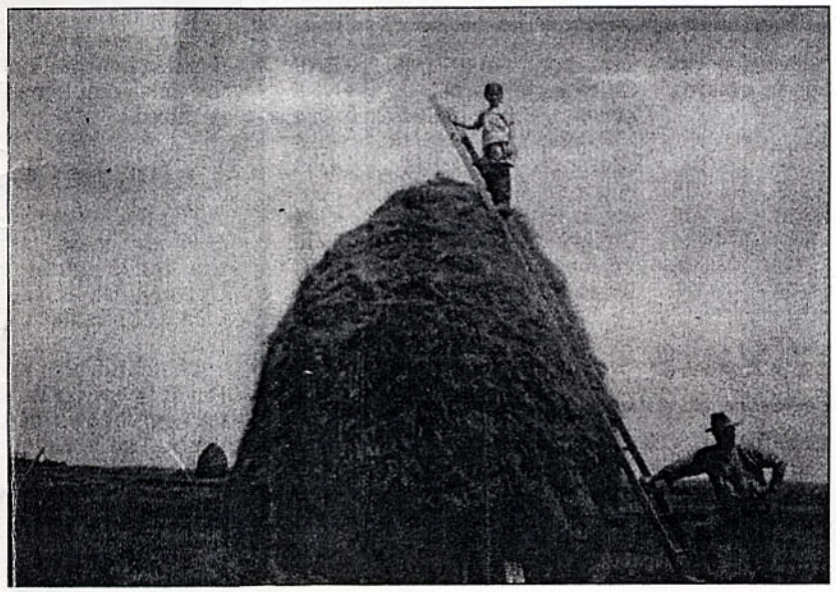
When we listen to these voices of the past, the historic marsh comes to life with vivid images of clamming, haying, boating and other timeless activities. One of these voices that still rings loud and clear is that of Ruth Alexander, resident of Rowley and a 20th century advocate for marsh conservation. Alexander brings the historic marsh to life with stories of birding, hunting camps, haying and sliding on winter ice sheets.

As a child, Alexander would spend the summer at a family camp off the Rowley River. The marsh, she says, "was a wonderland to grow up in as a child. I was so, so lucky." Photos from Alexander's childhood illustrate that the marsh has historically been a source of both recreation and work for the community.

Another voice speaking of the past is that of Pike Messenger, who is now a conservation agent in Middleton and grew up on the North Shore. In the article, "Haying, Other Salt Marsh Things, and Time," he writes, "We knew the marsh only because of what we did there — much swimming, a little haying, fall and winter duck hunting for some, and late winter ice cake jumping. One of my chores as a child was to find the cows each late afternoon and drive them home to be milked."

Historical perspectives such as these paint a picture of the past and tell us about the present and future.

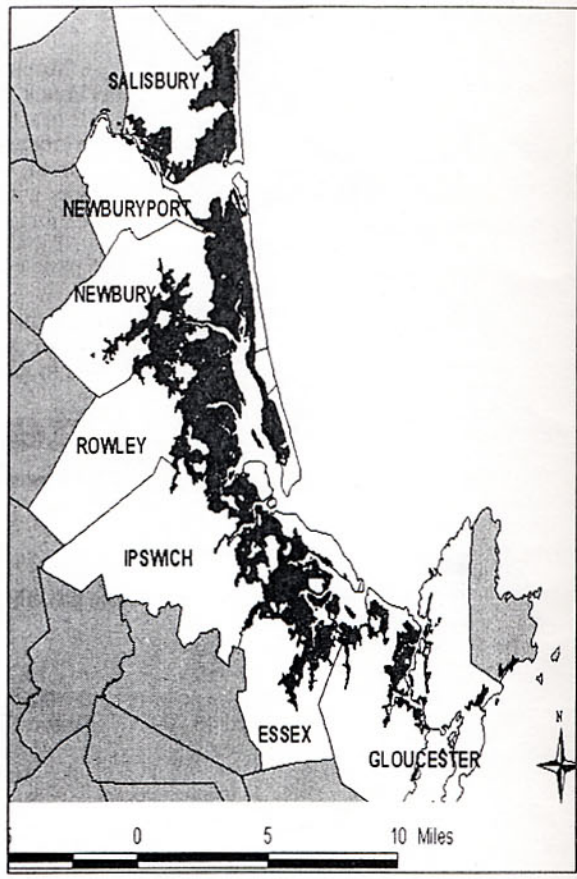
Photos courtesy of Ruth Alexander



Above, a farmer harvests salt hay the only way available in a Rowley marsh some years ago.

Far upper right, this map shows where the marshes from Gloucester to Salisbury are located.

At right, as a child, Ruth Alexander climbed to the tops of the freshly harvested stacks of hay.



Development, conservation

Alexander speaks of how growth and development are changing the landscape as she sees modern homes being developed on former agricultural land.

Driving down Stackyard Road she describes how birding has changed as native woodlands are now stripped of older trees. Yet some local sites in the marsh have remained the same. Near Clamshell Road, local shellfishermen continue to harvest the dinner that is brought to our tables.

Although some things in the marsh remain the same, there are growing concerns. Water quality, fish migration, invasive plants (such as phragmites), salt marsh degradation, population growth, and development, are all issues currently being addressed by government agencies and other regional organizations. For example, 1999 marks the 20th anniversary of the state Executive Office of Environmental Affairs designating much of the Great Marsh as an Area of Critical Environmental Concern (ACEC).

This Parker River/Essex Bay ACEC includes 25,500 acres of barrier beach, dunes, saltmarsh and water bodies. The ACEC designation highlights the area as having significant natural resources and ensures greater levels of environmental protection.

Although things are being done to protect Great Marsh resources, it is important to keep an eye on changes taking place like declining fisheries, the closing or opening of shellfish beds, and degradation or improvement of saltmarsh habitat. These signs are a key to what our future back yard may look like, how we make a living, and where we go to seek solitude.

Outlook for the future

Two students from Sue Corneliussen's sixth grade class at the Essex Elementary & Middle School were especially interested in describing what the future marsh will be like. These students are studying saltmarsh resources and, 20 years from now, may be adults still living, working and playing on the North Shore.

Patricia Lyons writes, "I can see the salt marsh two ways in 20 years. If we take care of it, I see my dad, my husband, my cousin and the whole 'marsh gang' going out to the marsh where we go camping every summer. I see it looking the exact same way it does now — the beautiful grass that sways in the wind, the beautiful water when the light shines on it, and the sweet smell of marsh gas which is all the nutrients of the marsh.

"I can see it another way, too, if we don't take care of it. I can see grocery bags on the grass and beer cans in the water. I also smell the scent of gasoline."

Doug Wilkins, another sixth-grader, writes, "If we don't protect the marsh it will be a dump. ... The fish would die or mutate, which would wreck the whole life cycle of animals and other fish who depend on those fish."

It is hard to say what the future will be, but if efforts to protect the Great Marsh continue and succeed, this valuable resource will continue to provide habitat for fish and fowl, recreational opportunities and economic benefits for all of us to share.

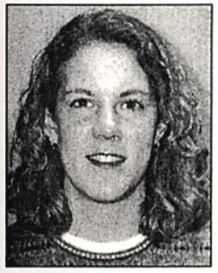
Katie Busse is a Beverly resident who works in the Massachusetts Coastal Zone Management Office in Gloucester. She can be reached at (978) 281-3972 or via e-mail at katie.busse@state.ma.us

Traveling through time in the Great Marsh

Step aboard the Great Marsh boat tour and you will hear of times when clipper ships and schooners ruled the Ipswich River, see evidence of the oldest tidal creek in the country, and view part of the largest salt marsh ecosystem north of Long Island, N.Y.

Four hundred years of coastal history told in just 90 minutes.

Guest column



Katie Busse

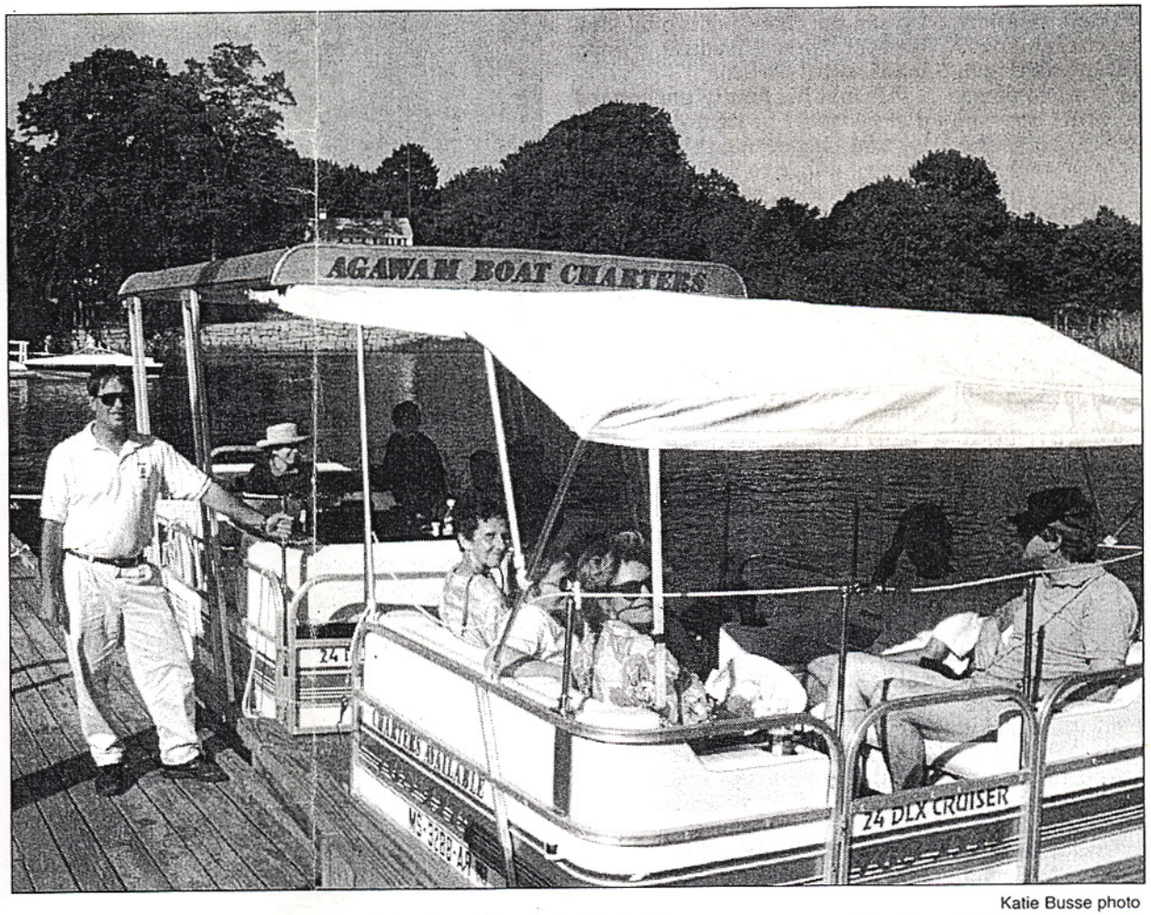
During the Ipswich River Festival held last month, the summer's first Great Marsh boat tours were sponsored by Massachusetts Coastal Zone Management (MCZM) through Agawam Boat Charters. Their purpose was to give people a chance to view the Great Marsh while learning about how important this resource is to the North Shore's ecology, economy and recreational opportunities.

Although the day began on the Ipswich River at low tide, and passengers wondered if there was enough water to float, Capt. Ted Marshall skillfully navigated a sunny day tour through history. He began by telling about the early settlements on the river. Church records in Ipswich, then known as Agawam, date back to the early 1600s. Capt. John Smith, who lived in Gloucester, helped settlers through the first winter in Ipswich, where barrier beaches and islands gave shelter from storms.

During these times, the forested areas around the Great Marsh were cleared for supplies and the Fox Creek Canal was constructed and used to transport lumber. The canal ran from the Merrimack River, past Plum Island and Ipswich, and into the Essex River via Fox Creek. From the boat, passengers could see old pilings as evidence of this historic trade.

The marsh itself also became an important economic resource. As people moved to the region, they camped and set up farms. In the process, they found that marsh grass made excellent thatch for roofs, insulation for walls, woven floor mats, and even animal feed.

Marshall also told stories of four-masted schooners and clipper ships with 18-foot drafts traveling up the Ipswich River. Passengers on the Great Marsh tour were amazed as they looked over the boat's edge at the shallow water and learned how deep the river once was.



Katie Busse photo

Capt. Ted Marshall conducts tours of the Great Marsh that bring his passengers on a trip through time.

Before this summer, the historic low flow in the Ipswich River was 7.6 cubic feet per second (cfs). This July 1, flow reached new historic low levels as the gauge read 6.9 cfs. This caused passengers on the boat tour to begin asking questions. Why are water levels now so much lower? What are some other impacts on the Great Marsh?

People are taking water from the river as they water their lawns and golf courses and wash their cars. Many towns in the area get their water supply from the Ipswich River, including Wilmington, Reading, Ipswich, Topsfield and Hamilton. The combined effects of this water withdrawal, extreme drought and sediment inputs from the upper watershed have turned the Ipswich River into a shallow stream this summer.

In addition to showing people the perilous level to which the river has dropped, the Great Marsh boat tours were also a great way to point out examples of growth and development, water quality issues, and recreational impacts.

As the boat rounded a bend in the river, Great Neck and Little Neck in Ipswich appeared ahead. Viewing the concentration of homes led to discussion of pavement runoff, lawn fertilizers and failing septic systems, in addition to upper watershed concerns involving agricultural runoff of contaminants like manure and pesticides. These are examples of non-point source pollutants that degrade water quality and impact shellfish resources and swimming beaches.

Many groups are working in the region to identify and reduce sources of pollution through storm water management regulations, upgrades of drainage systems, education about the use of fertilizers and the importance of fixing failed septic systems.

At times, speedboats and Jet Skis whizzed by the boat tour. Marshall told passengers that a third of the fuel put into a Jet Ski leaves it unburned, thus contaminating the water. One passenger who lives near the marsh commented that he occasionally "sees a film of oil next to the marsh at the river's edge."

Boat waste and discharge are also concerns. For a list of local boat pump-out facilities in your area, call the MCZM office at 281-3972.

The boat tour eventually wove its way through the mouth of the Ipswich River and entered the clear, blue waters of Plum Island Sound. In the distance, passengers could hear the laughter of children playing and swimming in the water off Crane Beach. The white sand dunes dotted with bank swallow nests were evidence of the Great Marsh being one of the most important Atlantic migration routes for birds like the swallow, least terns and piping plovers.

In this open water, the tour was complete as passengers viewed the Great Marsh as an ecosystem, where an intricate network of rivers and creeks come together as they meet the open sea.

With more than 100 requests, the trip was such a success that MCZM will be offering another chance for more people to come aboard. If you are interested in joining the next Great Marsh tour on Aug. 28 on the Essex River, call 281-3972.

Katie Busse is a Beverly resident who works in the Massachusetts Coastal Zone Management Office in Gloucester. She can be reached at (978) 281-3972 or via e-mail at katie.busse@state.ma.us

SYMPOSIUM

Restoring road blocks in Great Marsh

While driving on North Shore roads, drivers often get a chance to see expansive views of salt marsh habitat, locally known as the Great Marsh.

Something people in their cars may not realize is that culverts or bridges restricting the natural flow of seawater are often found beneath some of these roads. Restricted tidal flow causes a salt marsh to become "brackish" signifying an overabundance of freshwater. This change can result in the loss of native salt marsh plants and degradation of wildlife habitat.

Guest Column

Katie Busse

With a lack of tidal flow, fish and certain species of birds no longer have access to many portions of the marsh that provide important feeding and spawning areas.

In 1996, the Tidal Crossing Inventory and Assessment Report completed by the Parker River Clean Water Association assessed over 125 of these tidal crossings along the coast from Salisbury to Gloucester. This region includes approximately 40 percent of all the tidal wetlands in Massachusetts. From this study and report, impediments such as culverts or bridges were prioritized and those that appeared to be significantly impeding tidal flow were brought to the attention of local municipal officials.

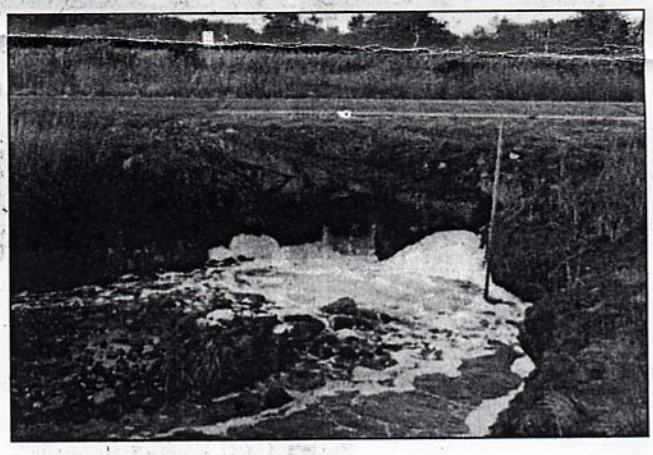
The state's Wetlands Restoration and Banking Program and the Eight Towns and the Bay Committee, a regional coastal group, are collaborating to begin addressing problems at some of these sites. Along with other federal agencies, these groups hope to bring funding and technical assistance to local officials for road improvement projects that will result in salt marsh restoration.

With successful collaboration of federal, state, and local officials as well as conservation organizations, Great Marsh restoration projects are currently under way at tidal restriction sites at Long Wharf in Gloucester, Argilla Road in Ipswich, and Conomo Point in Essex.

Last fall at Argilla Road an existing, 32-inch culvert was replaced by an eight-foot-wide concrete box culvert in hopes of restoring 20 acres of tidally restricted salt marsh. Before and after the culvert was installed, groups have been monitoring fish, vegetation, birds, and tidal flow past the newly installed culvert.

This type of monitoring is an essential component of any well-designed restoration project.

The newly restored culvert beneath Argilla Road in Ipswich, above, allows the free flow of nutrient-rich saltwater in the marsh there.



At the same spot before work began, right, shows how the flow was restricted, causing the water on the other side of the road to turn brackish.

Results from samples collected are used to help determine if the restoration has been successful and what project modifications may be needed.

Tangible evidence of the ongoing success of these efforts was illustrated during sampling this summer at Argilla Road. Eric Hutchins of the National Marine Fisheries Service (NMFS) saw the first stickleback and silverside fish swimming around in the restored upstream marsh. "I like to think they were enjoying the enhanced habitat," reported Hutchins.

Restoration projects like that at Argilla Road create "an opportunity to educate the public about restoration and to offer techniques to local communities that sponsor similar projects" writes John Catena of NMFS. If you are interested in volunteering during monitoring and sampling activities at the Argilla Road site in the future, please call Eric Hutchins at 978-281-9313 or Katie Busse at 978-281-3972.

Katie Busse of Beverly, who works at the Massachusetts Coastal Zone Management office in Gloucester, has written regularly for Symposium on the problems and potential of the North Shore's Great Marsh.

The return of herring to the Great Marsh

Walking along area riverbanks this spring, you may notice a flash of silver when looking in the water.

Look more closely, and you will find that these silver streaks are fish traveling upstream. Springtime is the season when river herring begin appearing in our coastal waters.

Guest column

Katie Busse

The herring are an "anadromous" fish, or fish that live most of their lives in the ocean but migrate to fresh water to spawn. So what you might be seeing as you stand at the water's edge are river herring fighting and jumping through currents and small waterfalls as they travel upstream.

River herring are actually two closely related species — the alewife and blueback herring. Anglers call both types of herring "river herring" because of the difficulty the average person has distinguishing between the two.

Early each spring, Alewife migrate up the river until they reach quiet, slow moving waters to deposit their eggs. Blueback herring migrate later in the spring and breed in fast-moving river currents.

Shortly after breeding, the adults of both species return to the ocean while the newly hatched juveniles live in freshwater until the fall when they begin migrating downriver. Heavy rainfall, high water and a sharp decline in water temperature signal the start of this migration.

Robert Buchsbaum, a coastal ecologist at the Massachusetts Audubon Society, notes that river herring are "important to the local ecosystem, including the Parker River National Wildlife Refuge, a number of state wildlife areas, and the rich waters of Plum Island Sound."

A bit of History

American Indians first called this marshy area "Agawamme," a name meaning "place where fishes of passage resorted." For centuries, river herring have been an important source of food to humans, first to Native Americans and then to European settlers. As a common part of people's diets, the fish were eaten fresh, salted, smoked, or pickled.

During these early days, thousands of barrels of alewives were taken at Choate Bridge near the Ipswich town center by fishermen using seine nets. They were then salted and shipped to the West Indies in exchange for molasses, sugar and fruit.

However, as early as 1730, the fishing industry had begun to decline due to increases in the shipbuilding industry and the effects of the Industrial Revolution. Dye and waste from mills polluted the rivers, and sewage discharges impacted water quality, harming fish and other types of aquatic life. Rivers and lakes were dammed to impound water for power mills and towns began to take precious spawning grounds for water supply.

Photo provided by Katie Busse

Volunteer observers look for spawning herring in the Parker River. They are often hard to spot because they look much like silver streaks in the water.

The Parker River Clean Water Association writes, "We know little about how alewives fared during the 19th century New England industrial revolution, but it is likely that their populations, as well as those of other remaining anadromous species, were devastated as passage to spawning areas was blocked by the dams."

Efforts to restore valuable resources

Local communities, conservation organizations, and government agencies have been working to restore important fishery resources and habitat. These partners provide funding and technical assistance or work directly in the field to improve anadromous fish runs. Two of the groups working on the North Shore are the Massachusetts Audubon Society and the Massachusetts Division of Marine Fisheries.

As part of the Massachusetts Audubon Society's Great Marsh Anadromous Fish Team, groups of people from government agencies and local organizations have been meeting for more than two years to address the issue of dams and fish on the Parker River. Some issues that the team is working on include maintaining and upgrading old, deteriorating fishways (structures that allow passage around dams), working with private landowners to deal with dams on their property, addressing low flow in the rivers that impact juvenile fish migration, and removing sticks and mud that beavers place at the top of fishways.

The state Division of Marine Fisheries has, for the past few years, been taking adult river herring from the Charles River and stocking them in the Ipswich River. It is hoped that this effort will help restore the river herring run that was once an important part of the Ipswich River's ecology. DMF also works cooperatively with dam owners and has offered technical assistance, materials, and labor to help restore fishways.

How you can get involved

The Parker River Clean Water Association and the Ipswich River Watershed Association are also helping to restore anadromous fisheries. These associations work to ensure that the Parker and Ipswich rivers and their watersheds are clean and healthy. Both groups are holding volunteer fish counts this spring to determine how many fish are making it upstream.

In April, these watershed associations need volunteer help for the upcoming fish counts. To count the fish, participants stand at the fishways for any 10-minute period of time and record the number of river herring they see passing upstream. Other important data that volunteers record include air temperature, water temperature, cloud cover, and observations of other fish, river conditions, and wildlife.

Here's how you can participate:

• The Ipswich River Watershed Association is seeking volunteers to help watch for river herring as they migrate up the Ipswich River from April 15 to May 30. The fish are expected to use the recently renovated fish ladder at the Sylvania Dam in Ipswich. To find out how to get involved in Ipswich fish counts, call the IRWA at 887-8404 or the EOEA Ipswich watershed team leader, Richard Tomczyk, at 661-7817.

Having volunteers collect this information is one way to help document the abundance of current river herring populations. This is important if we are to continue ensuring the survival of these species and an important piece of North Shore history.

Katie Busse, a Beverly resident who works in the Massachusetts Coastal Zone Management Office in Gloucester, will be writing a series of columns for the Symposium page this year on the North Shore's Great Marsh. She can be reached at (978) 281-3972 or via e-mail at katie.busse@state.ma.us