Promoting research, education and stewardship throughout the Great Bay Estuary
Happy Birthday, CZMA!

I grew up in New England, and like so many of us who did, fall is my favorite season. On a perfect fall morning I throw on a fleece, grab a steaming hot cup of coffee, and my dog and I enjoy a sunrise over the tidal river we live on while everyone else is still cozy in bed. It is a good time of day for reflection, and a perfect setting for feeling grateful. The peace I feel on these quiet autumn mornings is facilitated by a view, and a walk by the water. Thousands of people around the country start their day or end their day this way: catching a view, a wave, or a ride on the water. I have a hunch that many are similarly gripped by a thankful mood, but I doubt that most would think to feel grateful for something as mundane as piece of legislation called the Coastal Zone Management Act.

The Coastal Zone Management Act was created in 1972 to “preserve, protect, develop and where possible, to restore or enhance the resources of the nation’s coastal zone”. The legislators noticed that the demands from industry, energy, trade, recreation, and the need for environmental protection were headed for a serious conflict as the coasts became more populated. This Act is not one that imposes federal regulations, but rather it gives states support and resources to create and implement plans for managing the social and natural needs on the coast. States were given authority and funding to work on public access, working waterfronts, wetland regulations, habitat protection and restoration, and water quality enhancement. To do this wisely, it was recognized that the states needed sound science about how coastal systems function. That is why the Coastal Zone Management Act created the National Estuarine Research Reserve System: to be places to do research and translate that science to understand and ultimately protect and manage our estuarine systems better. The Great Bay National Estuarine Research Reserve was designated in 1989 and is now one of 28 reserves around the country. The Great Bay NERR and Reserves around the country continue to do the important work of understanding how to balance the needs of a coastal population with the restoration and protection that is critical for our natural systems.

This year the Coastal Zone Management Act turns 40. Without the CZMA, there would be no Great Bay NERR, no Great Bay Stewards, and no Great Bay Matters. I ask that you use one of your quiet moments by the coast this fall, to recognize the act that is protecting your public access to the beach – that is working to bring appropriate development to traditional working waterfronts – that is prioritizing coastal restoration and protection-- and that authorized and created the National Estuarine Research Reserve System. I cannot promise that I will be thinking about acts of Congress every day while I sip my coffee, but I think I can spare one of my favorite morning moments, in my favorite season, reflecting on the CZMA and wishing it a happy birthday.

Cory Riley
Reserve Manager, GBNERR
GREAT BAY NATIONAL ESTUARINE RESEARCH RESERVE

Great Bay National Estuarine Research Reserve (GBNERR) is an estuary comprised of 7,300 acres of tidal waters and 2,935 acres of coastal land. Acquired through land purchases and conservation easements, GBNERR was designated on October 3, 1989 to be preserved for the purposes of education, research, and resource protection.

Cory Riley
Reserve Manager, GBNERR

Great Bay Matters is published cooperatively by GBNERR and the Great Bay Stewards

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Design and Composition: Victor Young
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Winter can be a challenging time for New Hampshire’s wildlife, especially for the State’s cold-blooded amphibians. Unlike birds and mammals, amphibians are unable to regulate their body temperatures and are thus dependent on, and at the mercy of, the environment. As temperatures begin to drop during the fall, many of our amphibians need to find safe places to protect themselves from the frigid days of winter. Land salamanders, some frogs, and New Hampshire’s two species of toads can be found hibernating underground, some in burrows, others near the roots of trees or under leaves. Non-hibernating aquatic salamanders seek out the unfrozen sections of ponds and streams, as do several species of hibernating frog. Within these sheltered habitats, New Hampshire’s amphibians safely wait out winter’s chill in anticipation of the warmth of the coming spring.

It’s one of the first signs that spring is coming. Peep-PEEP. Peep-PEEP. The call of the spring peeper (Pseudacris c. crucifer) is one of the first, and loudest evening calls we hear in the spring. Once evening temperatures are warm enough, usually around 40 degrees Fahrenheit, these little frogs start singing from the freshwater ponds they call home. The song of the spring peeper is not only a nice reminder to their human neighbors that spring really is coming but, it is also a helpful reminder that a migration is about to start, a migration of salamanders.

Three of the twelve species of salamanders known to breed in New Hampshire migrate during the spring. On the first warm, rainy night in early spring, Spotted (Ambystoma maculatum), Blue-spotted (Ambystoma laterale), and Jefferson’s (Ambystoma jeffersonianum) salamanders begin leaving their underground burrows and migrate to vernal pools – non-permanent, shallow bodies of freshwater located in forested landscapes, to breed. In the pools, the female salamanders lay their eggs directly in the water, usually attached to submerged vegetation or a submerged branch. After breeding, the salamanders return to their burrows leaving their eggs to mature in the pools. A few weeks later, the eggs hatch into aquatic, larval salamanders. Two-to-three months after hatching, larval salamanders metamorphose into adults. These new adults leave the vernal pools and seek out territories and burrows in the forest floor.

While this is a very interesting life history strategy, there is a problem – a recent problem from an evolutionary standpoint – and that problem is roads.

Roads often cut through what would have been continuous woodlands and can separate the salamander’s breeding pools from their non-breeding burrows. In fact, New Hampshire Fish and Game lists “road mortality” as one of the top conservation concerns for all three of these salamander species.

So, what can we do?

Listen for the peepers. Spring peepers begin calling at about the same temperature needed for salamander migration. If peepers have been calling and it’s raining, limit night driving during the early spring. This will not only save the salamanders but will also help the frogs and toads breeding at the same time.

Report what you see. New Hampshire Fish and Game’s Reptile and Amphibian Reporting Program (RAARP) makes it easy to report sightings of not only salamander but of all species of reptiles and amphibian known to exist in New Hampshire. Information can be found at wildnh.com/nongame. Click on the “Reptiles and Amphibians” link.

Get involved. Work with state and local organizations to protect salamander breeding and non-breeding habitat. Like most habitat management, protecting salamander habitats will protect needed habitat for many other plants and animals.

Kellee Duckworth, Assistant Stewardship Coordinator, GBNERR
River Herring and Climate Change

In July, I had the opportunity to participate in a National Marine Fisheries Service River Herring Climate Change Workshop. Attended by 29 River Herring experts from Florida to Maine, as well as climatologists and climate modelers. The workshop offered me a window into the complexity of managing an important living resource in times of great uncertainty. I left with a renewed sense of respect for the work of those who study living resources and the government agencies tasked with their management.

River Herring is a collective name for Alewife and Blueback Herring. The two species can be difficult to tell apart where both occur. Blueback Herring range from Florida to Maine and Alewife range from the Carolinas to Maine, and here in NH we have both species. Populations of both species have declined to the point there is a concern that the limited runs remaining throughout their ranges are in peril. Reasons for the decline include all the usual suspects: poor water quality in rivers and streams caused by stormwater and nutrient pollution, habitat loss and degradation, fish passage impairments that keep the fish from reaching traditional spawning habitat, past overfishing and now fishing by-catch issues in coastal and offshore fisheries. To top it all off, there is now climate change to consider.

The first day of the workshop was full of presentations on the current status of the fishery and a review of the biology and ecology of River Herring from a climate perspective. The second day of the workshop focused on discussions around key questions – What are the likely climate stressors to River Herring in the future? What additional science is needed? What are the likely impacts, and how can managers mitigate the additional stressors of climate change on River Herring? The discussions were mentally challenging. The participants engaged in serious and thoughtful debate as you would expect from a group of professionals, who have dedicated their lives to understanding and researching fish and fish management.

I was struck that even with the extensive knowledge we have of these fish; sustainable management is a seemingly impossible task. I believe the knowledge to successfully manage is there, but the actual management can only realistically deal with some of the variables that control healthy populations. For example, the management of the river systems these fish depend on for spawning and nursery grounds are under the control of many diverse interests; power generating, pollution disposal, transport of commerce, recreation, and flood control to name a few. There is no one agency or organization with the authority and responsibility for dealing with water quality, habitat health and balancing the needs of competing interests, all the while maintaining healthy populations of these living resources. There is a compartmentalization of the science and management that make effective management difficult at best. Society does not seem to have interest in wholistic strategies required to solve issues of this magnitude and the new stressors of climate change present additional challenges on top of this.

There is no doubt River Herring are in trouble. It is hard for me to imagine that the populations which sustained coastal communities for centuries are in jeopardy and could be lost. Yet there is hope. The fish are amazingly adaptable, as is evident in their tremendous ranges. If managers can limit by-catch of River Herring by coastal and offshore fisheries and protect spatially distinct spawning habitats to adapt to annual climate and river flow variability, the fish will have spawning habitat options, meeting the environmental needs of eggs and fry. In addition, if continued efforts to improve water quality through better storm and waste water management are successful, we have a chance at building sustainable populations. Part of the discussion at the workshop talked about forming a new collaborative to take on these issues of management and search for ways to more effectively implement the many diverse actions that will be required to sustainably manage these fish. Not only did the workshop build the foundation for how to manage these fish under the new challenges of climate change, it also added to effort to build the collaborative foundation necessary to effectively tackle complex environmental issues.

Steve J. Miller
CTP Coordinator, GBNERR
Phenology as the Canary

Phenology is the study of the timing of natural events – events like migrations, egg laying, flowering and leaf out. This is not a new science or practice, nor is it particularly difficult to do. Local Native American tribes developed seasonal calendars to include “months” such as “moon of little nuts”, or “frost fish moon”, anticipating and defining seasonal periods of food availability. Shadbush, a local native shrub, is one of the first to bloom in spring, and was given its name by the early settlers who noticed the lovely white blossoms coinciding with shad’s spawning runs.

Keeping track of when things happen in nature is interesting and important to many people and cultures, but scientists from all over the world know that Phenology is telling us much more. Today, what we are learning by keeping track of when things happen in nature is that rapid change is occurring. There are local, regional and global examples all supporting a changing climate through observations of not only ocean temperatures, levels, precipitation and chemistry, but on the ground, real-life examples of things happening too fast, too differently, too extreme.

In any one year, a species arriving too early, or too late, or ice never forming on a lake or bay means little. Just as winning one baseball game by pitching a no-hitter or hitting a few home runs doesn’t mean that the player is necessarily taking performance enhancing drugs, but winning an entire season, or several in a row, could point to problems. The cumulative effects of rapid and extreme change will inevitably have lasting negative impacts on ecosystems and economies that depend on predictable events such as ice in, or ice out.

For several years, staff of the Great Bay Reserve has been keeping track of many natural events that occur around the estuary. This year we were shocked to find horseshoe crab eggs on the shore on April 16th. In most years past, evidence of their arrival was not usually seen until mid-May. Last year, the crabs arrived in early May. Of course there are many variables that could account for this, and it may be insignificant. However, taken collectively, a shift in the spawning period of horseshoe crabs could impact food availability (eggs) for hundreds of species all along the east coast.

Keeping track of when natural events occur is what the USA National Phenology Network does. This Network brings together citizen scientists, government agencies, non-profit groups, educators and students of all ages to monitor the impacts of climate change on plants and animals in the United States. The network harnesses the power of people and the Internet to collect and share information, providing researchers with far more data than they could collect alone.

You can assist in this effort by observing plants and animals in your own backyard and recording those observations in Nature’s Notebook, the national plant and animal Phenology observation program that is part of the USA National Phenology Network site: usanpn.org/how-observe. In addition, visit http://phenocam.unh.edu to learn how scientists are recording real-time digital images of forest canopies to assist them in understanding what role Phenology plays in the global carbon cycle.

Every plant, bird, mammal, insect or fish follows some kind of a natural rhythm and pattern. Watching and recording that rhythm is not only vitally important to understanding how the earth may be changing, but it allows us a way to connect with seasonal variations in nature. What we observe can range from minute to spectacular, yet like a canary in a coal mine, never insignificant.

Kelle Loughlin
Education Coordinator, GBNERR
Director, Great Bay Discovery Center

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… and the Piscataqua Garden Club…and…the US Coastguard… to make the Great Bay Discovery Center beautiful! During the cold gray days of February and March, a dedicated and creative group of women from the Piscataqua Garden Club gathered at the Great Bay Discovery Center to design a new garden for the “zig-zag” handicapped accessible trail. After many years, the once wonderfully designed gardens had become overgrown with invasive species and unruly to walk through. Led by a creative and highly skilled team, including Marylyn Benson, Ann Tarlton and Great Bay Stewards board member/Discovery Center volunteer, Nancy Cauvet, the team designed an aesthetically pleasing garden that would be attractive to wildlife, yet hardy and beautiful at the same time.

Once the garden was designed, a larger group of volunteers from the Garden Club descended upon the grounds to get to work planting. Students from Phillips Exeter and Berwick Academies also assisted in the project as well as volunteers and staff of the Discovery Center. Garden Club member, Danna Dearborn also joined the design team by constructing a dramatic driftwood sculpture in the middle of one of the garden beds.

Once many of the plants were in place, Officers and crew of the USCGC Tahoma finished the job by planting more shrubs, and spreading hundreds of pounds of mulch. The Tahoma, currently in dry-dock, is a multi-mission 270 foot Medium Endurance Cutter and her 110 officers and crew are charged with alien and migrant interdiction missions, counter narcotics enforcement, search and rescue operations and enforcement of federal maritime treaties and fishing regulations. With this down time, they have been assisting organizations and agencies throughout the Seacoast to complete difficult and necessary projects. The crew also designed and erected three children’s garden structures in the parking lot area. These men and women were well-fed by the newly-opened Meat House.
in Stratham. Their generous donation of sandwiches satiated this hungry crew!

Donations of many beautiful perennials from the personal gardens of the design team, along with many hours of volunteer labor, has enabled the Center to create the new garden at a fraction of the cost of what a full design/install firm would charge. Initial prep of the garden beds was flawlessly and enthusiastically completed by Fat Cod Plantscape and plants were also purchased from VanBurkems Nursery and Northern Nurseries in Barrington, NH.

Many thanks to all the hard working volunteers who dedicated many hours to making us beautiful! The new gardens are always in need of upkeep and we are now looking for volunteers who might enjoy weeding, watering and maintenance as they become more established. Please call 778-0015 if you would like to become a GBDC garden volunteer!

Friends We Will Miss...

Jack Jette “A Good Man”

The Center lost a dear friend and volunteer when Jack Jette passed away in June. Originally Jack joined us because his wife Jane had signed them up to volunteer. Jack settled in the Exhibit Room and greeted countless visitors, answered the phone, helped out with cleaning, and in the store. He and Jane were among the first volunteers to lend a hand at the Striped Bass Tournaments and at Duckers Day. He was always on hand to help stuff T-shirts into race envelopes and he and Jane showed up to help out at the 10th anniversary celebration, the Art Shows, and all Great Bay Steward Events. In 2000 they were the first couple to be awarded the Evelyn Browne Conservation award and received Presidential Volunteer Awards as well as “gold” name badges for serving more than 20 years. When I first took over the Bay Views lecture series, I never knew if anyone would show up, but Jack and Jane never missed a program. They constantly offered their support to the staff and the Center. This summer Jack’s granddaughter, Sara, is helping out in the Exhibit Room and with kids’ programs. How happy Jack would be to know that she is sitting in “his” chair.

Michelle Dionne

Michele was the Research Director at the Wells National Estuarine Research Reserve; our closest neighboring NERR and a partner on many joint projects throughout the years. Michele was an enthusiastic and brilliant coastal scientist who was committed to the Gulf of Maine and adamant that National Estuarine Research Reserves be leaders in coastal science and management. She passed away in early July and will be missed terribly by the NERRS, and by the coastal scientific community here in New England.
Tracking Great Bay’s Vital Signs

Each day we interpret bottom-line indicators of status or condition that help us make good decisions and alert us to problems relevant to our lives and society. Outdoor temperature indicates how hot or cold it is, and we respond with our selection of clothing, deciding that maybe it’s not the best day for the beach, and perhaps cover up the tomatoes against frost. We also look at indicators for explanations of how things are going – economic (stock market) and health (flu incidence) indicators help steer us toward prosperity and good health.

We effortlessly process these and a myriad of other familiar statistics that represent an enormously complex interplay of technology, society, economy and the ecosystem surrounding us without being specialists. This positions us to reap and sustain the rewards of a healthy lifestyle, vibrant economy and an abundance of natural resources. Much like a report card charting our individual and collective progress towards goals, indicators alert us to looming threats and deficiencies that direct our actions, thus allowing us to improve our condition.

But, how do we know the correct course of action in response to an indicator? Indicators do improve our understanding of condition of human structures (gross domestic product indicates economic health) as well as natural systems (eelgrass acreage indicates Great Bay’s health). If our actions are to improve condition, we also need to link cause with condition, and to choose an appropriate remedy. How do we correct the economic decline? What actions do we take to restore eelgrass?

Scientists often simplify environmental problems and solutions using three types of indicators: pressure, state and response. To illustrate, consider: Increased junk food consumption causes weight gain that impacts human health. This example identifies a health problem using a measurable indicator of State or condition – body weight and compromised health. It also identifies one possible cause of the problem, or pressure – empty calories consumed from junk food. If the link between junk food calories and poor health is strong amidst multiple possibilities, the action or response – eat less junk food. Research and life experiences might suggest other linkages, such as poor overall diet and a sedentary lifestyle. This would lead to a better but more complex response – diet and exercise.

Scientists and managers struggle with ways to present indicators that accurately reflect condition in a socio-economic context and effectively guide and motivate the public and policymakers to take appropriate action. Accurate assessments of State are abundant but their link to causative Pressures can be uncertain leading to controversy over Responses with no consensus on the best course of action. Concessions are often made based on conflicting priorities or perceptions among economics, public fears and desires and environmental benefits.

Great Bay’s environmental health is not exempt from these imperfections of scientific understanding and human process. Indeed, there are no perfect indicators or benchmarks that effectively and fully capture the interplay of the physical, chemical and biological alterations we unavoidably and pervasively make in Great Bay and its watershed. If ecosystems least impacted by humans are the ideal, then the management benchmarks, goals and criteria we set involve some compromise to accommodate our societal and economic needs.

Researchers, managers and the public enjoined in the Piscataqua Regional Estuaries Partnership (PREP) are updating environmental indicators for our estuaries and their contributing watersheds. Assurance of “good science” is fundamental to the accuracy and objectivity of State indicators. More difficult are setting benchmarks that define estuarine health and the management actions we must take, especially if constrained by economic and technical capabilities. Everyone’s input is needed to ensure an outcome that balances the health of our estuaries with the environmental services we all depend upon and enjoy.

Paul Stacey
Research Coordinator, GBNERR

Want to know the latest on the condition of Great Bay?

Stay tuned for the Piscataqua Region 2013 State of Our Estuaries report. The PREP is part of the EPA’s National Estuary Program, established under the Clean Water Act to protect and enhance nationally significant estuarine resources. The Great Bay NERR boundary sits right inside the PREP boundary and, as close partners, we work together to advance our common interest in the health of Great Bay. Every three years PREP publishes a State of Our Estuaries report that describes the trends of key environmental indicators in this region based on the latest available science. Keep an eye out for the 2013 State of Our Estuaries report in this fall and stay tuned to StateOfOurEstuaries.org for information on the events surrounding the report’s release.
Giving our Rivers a Helping Hand

“The care of rivers is not a question of rivers, but of the human heart.”

Here at the Center one of the first things our visitors see is the quote on the wall that defines an estuary. Distilled down to a few words, it is “where fresh water from the rivers meet and mix with salt water from the ocean.” It is a concept that is very easy to understand and standing on the floor map, visitors can see the rivers and how they are connected to Great and Little Bay, the Piscataqua and the Gulf of Maine. But what they don’t see is how extensive the river system is in the Great Bay Watershed. And what few of them realize is that for each river there is a dedicated group of people, the Department of Environmental Services NH Volunteer River Assessment Program (VRAP) and other organizations, working hard to make sure that each river flowing into the Bay is healthy. Our volunteers here at the Center are, in a way, the beneficiaries of this network of local volunteer groups that are all working for the same thing, the well being of Great Bay.

The rivers surround Great Bay like the fingers of a hand with the Winnicut forming the thumb, the Exeter/Squamscott the index finger, the Lamprey the middle finger, the Oyster River the ring finger and the Bellamy the “pinkie” finger.

The Winnicut, located in Hampton, Greenland and Stratham is only 9 miles long but has 45 miles of streams. The Winnicut River Watershed Coalition is a group of volunteers who have taken on water quality projects, water sampling, and last year completed an aquatic insect survey. In 2012 they worked with Dr. Steve Jones of Jackson Estuarine Lab on a study to assess citizen involvement in storm water monitoring. The river is the only one in the estuary without a dam and is working toward meeting the qualifications to be enrolled in the NH Rivers Management Protection Program. The group has a great web site, winnicutcoalition.org with wonderful photos showing the river, volunteers and information about how you can get involved.

The Exeter/Squamscott River Local Advisory Committee (exetteriver.org) was founded in 1996 and has volunteers from the 10 communities that the 33 mile river runs through. They have done stenciling of storm water drains, designed public education and outreach programs and work to increase awareness of the natural resources of the river’s watershed. They have been involved in the public information meetings for the potential dam removal. The river is one of 17 protected rivers under the NH Rivers Management Plan.

The Lamprey River covers 47 miles before it becomes tidal in the center of Newmarket. This river is the largest tributary to the Great Bay Estuary. The lower portion of the river is one of only two rivers in NH designated by the National Park Service as Wild and Scenic. Two times a month from June to September volunteers from the Lamprey River Watershed Association monitor the quality of the water at specific “stations.” In 2008 and 2009 volunteers inventoried the entire 47 miles of the main river. They have also developed a curriculum for use in 4th grades in all the watershed schools. On their web site lrwa.org various volunteer opportunities are described.

The Oyster River Local Advisory Committee was created when the river met the qualifications to be enrolled in the NH Rivers Management and Protection Program in 2008. Although only 17 miles long, its history, extensive floodplains, and oyster restoration project make the Oyster River an important tributary. As a significant source of drinking water for the town of Durham and UNH, the water quality monitoring is vital. For more information, go to oysterriverlac.org.

The last river, the Bellamy River, is part of the Bellamy and Oyster River Watershed Protection Partnership (borwpp.org). Two major conservation areas, the Bellamy River Wildlife Management Area and NH Audubon’s Bellamy River Wildlife Sanctuary, cover over 600 acres along the shore between Dover and Newington. A Wildlife Habitat Important Project is currently underway to re-establish native grasses for bird habitat and the area is home to the New England Cottontail Rabbit, a state endangered species. The river is also the site of oyster restoration and other shellfish projects.

The volunteer groups, state agencies, and organizations that partner with the Reserve all keep the “heart” of Great Bay healthy. For more information about the rivers and how to get involved visit their websites or go to greatbay.org.

Sheila Roberge
Volunteer Coordinator,
GBNERR
In the last issue of Great Bay Matters, I wrote about the efforts to restore Great Bay to good health and referenced organizations that are working collaboratively to develop solutions to the problems caused by nitrogen loading. A new coalition, Rescue Great Bay, has formed as an advocate for “clean waters and a healthy, thriving Great Bay Estuary.”

The mission of Rescue Great Bay is, “to work together to advance and foster public support for meaningful and immediate regulatory actions and sound management of the Great Bay Estuary and associated marine resources consistent with the Clean Water Act and other environmental laws.” The Great Bay Stewards are pleased to join this distinguished and diverse group in the effort to return Great Bay to good health.

As an advocate for a healthy Great Bay, Rescue Great Bay will work to educate the public on various issues related to the health of the Bay; promote regional cooperation rather than confrontation; attempt to address misinformation being published about the science supporting regulatory decisions; and will emphasize the current rate of ecosystem degradation and the importance of taking corrective action quickly. We will do our part to help Rescue Great Bay meet its goals. To learn more about RGB and its founding members visit clf.org.

GREEN ALLIANCE

The Green Alliance is a consortium of businesses and organizations in the coastal regions of New Hampshire. The mission of the Green Alliance is to help businesses and organizations minimize their impact on the environment through mentoring and strength in partnership, and to encourage consumers to make more sustainable decisions in regard to the products they buy and services they use. The Great Bay Stewards are one of the newest Green Alliance Business Partners. We will benefit from the environmental consciousness of the organization, and will have our story added to that movement. Incoming Great Bay Stewards members will be able to purchase a discounted membership in the Green Alliance and will receive discounts from dozens of diverse businesses and organizations in the region, including energy efficiency consultants and installers, retailers and restaurants. Part of ensuring a healthy Great Bay is to encourage sustainability and environmental awareness in the communities around Great Bay, which is part of the reason that this is such a good fit for the Great Bay Stewards.

We are pleased to announce that Crystie McGrail has joined the Great Bay Stewards as our Administrative Coordinator. Crystie’s background includes a B.S. in Wildlife Ecology with a minor in Forest Ecosystem Science from U. Maine. She has worked at the USGS Patuxent Wildlife Research Center, (Laurel, MD) as a Biological Technician, and at the Frost Valley YMCA, where she lead programs in Environmental Education. We are very pleased to have Crystie on our team.

All interested parties are cordially invited to become Great Bay Stewards. Members receive Great Bay Matters and other pertinent mailings.

Annual dues may be paid by check made payable to the Great Bay Stewards and sent to: Membership Committee, 89 Depot Road, Greenland, NH 03840

☐ Guardian $150  ☐ Protector $75
☐ Steward/Family $35  ☐ Student $20  ☐ Other $_______

name
address
town
state zip
email

Jay Diener
President, Great Bay Stewards
The Sport of Citizen Science

I enjoy watching birds in my yard and I’m not alone. According to the U.S. Fish and Wildlife Service bird watching has exploded into the number one sport in North America, with over 50 million birders in the U.S. alone. Some might argue that it isn’t a sport, but serious birders will walk miles to see a particular “life bird” for their “life list”, a stealthy competition in its own right. Every year birders start out with a clean slate and try to break their record of number of birds seen or earliest sighting of a particular bird (which they list as FOY or first of year). The bird watching sport has many accessories that you can use from field guides to binoculars, spotting scopes, bird recording apps and of course bird feeders and feed of every kind imaginable, to attract birds to your own piece of the Earth.

In 2000, I learned of a Citizen Science monitoring project called Project FeederWatch based out of the Cornell Lab of Ornithology in Ithaca, New York. At that time, they were in their 14th year of a continent-wide survey of North American feeder birds. We decided to introduce the survey to our Great Bay Kids Ecology Club participants who attended sessions at the Discovery Center on Saturdays. We took time out of our mornings to have the students learn common feeder birds and help tally them. Not only were they discovering some of the birds they might see around their own houses, but they were helping to collect data for a national program as citizen scientists. A sport and science all in one, the perfect combo!

We have continued to conduct bird surveys from the Discovery Center since 2000. This means that we have over a decade of our own data to look at and learn from. A couple interesting things jumped out at me after looking back over the online tally sheets. The most species we ever recorded in one day was 20, but we’ve had 34 different species visit our feeders over the last 12 years. If I had to pick one species that has been the most exciting to watch, it would be the Eastern Bluebirds. We didn’t start seeing these during our count periods until 2008. Each year since then their little brilliant blue flock has increased. This past winter we saw 10 at our suet feeders on one count day alone. A record high number of these beautiful birds was set this past year in New Hampshire during another great citizen science count administered by NH Audubon; the Backyard Winter Bird Survey.

If you enjoy feeding the birds during the “bear free” months of November to March you can participate in Project FeederWatch. You need only to keep a feeder full and peek out your window every so often to see what birds might be enjoying the fare. Record those birds, the weather and a few other details over a two-day span each week and you too can become a citizen scientist. Why not give it a try? Visit birds.cornell.edu to get started.

Beth Heckman
Assistant Education Coordinator, GBNERR

Eastern bluebirds
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© STEVE BYLANDE / DREAMSTIME.COM
The Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERR), designated in 1991, is located within the York River Basin, about an hour north of Norfolk, Virginia. This Reserve encompasses 3,072 acres which are divided among four sites: Sweet Hall Marsh, Taskinas Creek, Catlett Island and the Goodwin Islands.

Chesapeake Bay, the largest estuary in the country, includes a number of different habitats including oyster reefs, sea grass beds, tidal wetlands, sandy shoals and mudflats, maritime-forest uplands and submerged aquatic vegetation beds. This multi-site Reserve aids in preserving some of the Chesapeake’s diversity, as each site component is comprised of a different variety of habitats. For example, Sweet Hall Marsh, an area of 1,094 acres, includes an extensive tidal freshwater marsh system in the Pamunkey River (one of the two major tributaries to the York River), whereas the Goodwin Islands, an area of 366 acres, are an archipelago of saltmarsh islands surrounded by submerged aquatic vegetation beds and shallow open estuarine waters near the mouth of the York River.

The Virginia Institute of Marine Science, College of William and Mary (VIMS/W&M), is designated as the entity responsible for the overall operation and management of CBNERR. In June, over 40 individuals representing local, state and federal organizations, gathered at the VIMS/W&M to celebrate the 40th Anniversary of the Coastal Zone Management Act (CZMA); the National Estuarine Research Reserve System was created under CZMA as a partnership between NOAA and participating states. Speakers at this celebration, who included Tayloe Murphy, former VA Secretary of Natural Resources, Douglas Domenech, VA Secretary of Natural Resources, and Sally Yozell, Director of Policy and Senior Advisor to the Undersecretary of Commerce for Oceans and Atmosphere at NOAA, highlighted the importance of CZMA and how this Act has helped coastal states improve and maintain ecological health. Guests enjoyed a boat tour of one of CBNERR’s site locations, the Goodwin Islands.

Public access to CBNERR is limited on a site-specific basis. The Catlett Islands and Sweet Hall Marsh are privately owned, so access is limited to research and education purposes for CBNERR. The other two sites of CBNERR, the Goodwin Islands and Taskinas Creek, do allow public access.

Limited public access is allowed on the Goodwin Islands from dawn to dusk. Goodwin Islands are accessible only by shallow draft boats and there is no dock or walking trails. Visitors may enjoy walking around the islands, picnicking, or spending time on the beach, as long as they obey all public access rules.

Taskinas Creek Reserve lies within the boundaries of the York River State Park; access is controlled by state park regulations. The grounds are open year-round, 8:00 a.m. to dusk. There is also a Visitor Center and outdoor amphitheater which are opened seasonally (closed for winter months) and visitors are encouraged to enjoy over 25 miles of hiking, biking, and equestrian trails as well as the York River fishing pier and boat ramp.

For more information on this diverse Reserve, check out their website: vims.edu/cbnerr/.

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