Promoting research, education, and stewardship throughout the Great Bay Estuary
GET TO KNOW GREAT BAY

4,000 SPECIES OF BEES ARE NATIVE TO THE UNITED STATES

SUPER 7

POLLINATORS IN NH INCLUDE BEES, BUTTERFLIES, MoTHS, WASPS, FLIES, BEETLES, AND BIRDS

5 PREFERRED AVERAGE SOIL pH OF LOW-BUSH BLUEBERRIES

5,000 NUMBER OF TICKS A SINGLE OPOSSUM CAN REMOVE PER YEAR

5 YEARS average life span of a garter snake in the wild

4 THINGS TO CONSIDER FOR BACKYARD WILDLIFE food, water, shelter, and nest sites
Gardening for Wildlife

The smell of freshly turned over soil in the spring is a delight to every gardener’s senses. Planting season is always my favorite because it holds so much promise: this year I will try a new compost mixture; this season I will come out every day to stay on top of the weeds; this time I will stake the tomatoes just right. It is the potential of taking better care of my patch of dirt that excites me—an opportunity as fresh as the crisp spring weather. This mood can be extended to the larger environment around us, and I believe that each spring is a time to renew our commitment to be good stewards of the earth. According to the Merriam Webster dictionary, stewardship is the careful and responsible management of something entrusted to one’s care. We are terrifically lucky that as staff of NH Fish and Game, we get to think about how to protect and restore Great Bay professionally with our land management, restoration, and research work. However, a small group of people who own a small portion of the watershed and have control over an even smaller range of activities certainly cannot do what is needed for Great Bay. Engaging with children, visitors, decision makers, and the citizens of New Hampshire to connect people with natural resources and ideas about how to be better stewards, is a huge part of our education and outreach mission. This issue of Great Bay Matters highlights the benefits of wildlife gardening and points to some demonstration areas you can find on our properties. Planting not only for yourself, but for the birds, insects, mammals, and even amphibians around us is a simple and intentional way to extend a favorite hobby into a conscious act of stewardship.

Cory Riley, Reserve Manager, GBNERR
Whether you own 10,000 acres or have a room with a small window, there are things you can do to benefit wildlife. Connecting with nature can enhance our health, reduce stress, and instill a sense of wonder. Plus watching wildlife is free!

Nearly three-quarters of New Hampshire is cared for by private citizens. Together, our gardens are a vast living landscape, and what we choose to do there collectively determines what wildlife species will thrive.

In addition to ecologically savvy gardening tips, such as postponing leaf

HABITAT
Habitat is the suite of things each wildlife species needs to survive and reproduce. From monarch butterfly to mighty moose, each needs a specific combination of food, water, shelter, and a place to raise young.

Food is often the first thing to draw wildlife into our yards. Native plant species are most beneficial and can provide seeds, berries, nuts, pollen, or nectar. Insects and other animals that feed on these plants may become food for other wildlife as a wonderful and complicated food web develops when a backyard is full of diversity. Plentyful caterpillars and grasshoppers are one of the main reasons many bird species migrate to New England to raise their young. Trying to provide food sources year round in your yard is particularly important.

Animals need a place to shelter from inclement weather and to escape from predators. All types of vegetation, from fallen leaves to imposing trees can provide shelter. Trees with natural cavities are particularly important because they are used by approximately 45 species of birds and mammals in New England. In addition to plants, snow, rock walls, and water bodies can provide cover. Many animal species make use of natural places to shelter such as red-backed salamanders who spend almost all their lives under fallen logs. Others, such as the paper wasp and beaver, are architects of nature and build their own home to shelter within.

Water is a magnet for wildlife because all species need it. Birds need to bathe because dirty feathers make flight difficult. Frogs and turtles use water to shelter and often as a place to raise young. All types of water bodies are important. A simple saucer full can quickly attract dragonflies and damsel flies. Even muddy puddles matter as butterflies can extract minerals and nutrients from the moist soil. Prevent standing water, such as in buckets or old tires to stop opportunities for mosquito larvae to develop. Dragonflies, frogs, and salamanders are great for natural mosquito control.

Food, water, and shelter help an animal to survive, but a place to successfully raise young is essential for a population to persist. Depending on the species, this important habitat component may be a nest, den, mine, burrow, or even bare soil. Some species such as amphibians and butterflies have totally different habitat needs in their juvenile form compared with when they are adults, so offering habitat for all stages of the lifecycle is advantageous. Some generalist species are very adaptable as to where they raise young. In contrast, some are extreme specialists. Monarch butterflies using milkweed as the only successful host plant for their caterpillars is a classic example.
raking until spring, allowing some of your lawn to grow into a meadow, and minimizing pesticide use, there are physical features we can add to our yards that will encourage wildlife to visit. Create your own recipe by choosing components that are likely to attract species you would especially like to see.

**Thinking Outside the Lot**

There are many tips online and in books for wildlife gardening within an individual yard. However, wildlife knows no boundaries, so considering your property in the context of its surrounding neighborhood is an important piece of the puzzle. By choosing to add a habitat feature that is locally uncommon, your yard will likely become a haven for wildlife as they seek out this novel resource.

Whatever the size plot you are gardening in, you can enhance existing habitat and attract beautiful and often beneficial wildlife. If you live in an apartment building, adding the herb dill to your window box will attract swallowtail butterflies. They love it! If your “back forty” is primarily forest, creating an opening of early successional habitat, either grassland or shrubs, will bring in different wildlife species. Roughly one third of New Hampshire’s breeding bird species are declining, and many are associated with this kind of young habitat, so providing some can do nothing but help.

Considering habitat connectivity is also important. Many animals rely on connected patches of habitat to move around their territories, forage, to reproduce, and for the gene pool to remain adequately mixed.

**Good for Wildlife, Good for Us**

Gardening on the wild side not only creates habitat for wildlife, drawing animals in closer for us to watch, but it can also be very therapeutic. Whether you choose to “forest bathe” or sit by a calming stream or estuary, an ever-increasing body of science is documenting the physiological and psychological benefits of spending time in nature. Whether the space you have to garden is large, or none at all, the Reserve has nearly 3,000 acres of land spread out over six communities open for your enjoyment. From field to wetland, forest to rocky shore, the Reserve’s properties are open year round so there are lots of opportunities to explore.

No yard is an island. Choosing to add locally uncommon wildlife-friendly features to your yard will be a particular draw as animals seek out this novel resource.

*Great Bay Community Wildlife Garden is one of the smallest properties managed by the Reserve but there is a lot to discover in a small space! Located next to Chapman’s Landing boat launch along the Squamscott River in Stratham, it is dedicated to demonstrating wildlife-friendly gardening tips. It is also home to a viewing platform that overlooks the salt marsh and an osprey nest that successfully produced young each year since 1993. Stop by and explore it any time, dawn to dusk.* [Facebook.com/GreatBayCommunityWildlifeGarden](http://Facebook.com/GreatBayCommunityWildlifeGarden)
A bite of a juicy apple, a piece of decadent chocolate, a sip of morning coffee. Thirty-five percent of the world’s food crops depend on pollinators to reproduce. Pollinating animals and insects are responsible for one out of every three bites of food we eat.

Pollinators are declining all around the world, and a new garden exhibit known as the Pollinator “Living Wall” on the exterior of the Great Bay Discovery Center in Greenland, NH, has been attracting bees, butterflies, beetles, birds, and moths this past year.

Born from an opportunity offered by the Wildlife Heritage Foundation of New Hampshire’s Robert Durant Fund, the new vertical garden is eye catching, space saving, and can be enjoyed year round. Installed in May 2020, pollinator-friendly plants, such as lobelia, borage, morning glory, black-eyed Susan vine, and marigolds were planted in the 128 small pots that hook into the self-watering system. Scientists believe that a variety of flowers with vitamins and minerals are healthy for pollinators, and plenty were seen enjoying the blooms as the season progressed.

Living walls are often built inside companies’ hallways and entryways as a way to boost employee moral, help with sound buffering, and create an interior that is alive with greenery. They are as beautiful as they are able to improve health; the plants in the walls work as a natural air-filtration system. Large vertical gardens can be found on the outside of buildings, because they help deter graffiti, while absorbing and/or reflecting the sun’s rays and reducing energy costs in all seasons because of their insulation value.

All of these things increase property value. Whether they are installed on the exterior or interior of a building, these structures of living, breathing plant life create a “wow factor” while displaying sustainability. Living wall kits are available in many sizes and configurations to accommodate a number of projects and budgets.

The best reason for incorporating a living wall into an area inside or outside a facility, if it is thoughtfully planted, might be that it can provide an alternative ecological habitat for pollinating animals. In addition, installations of nesting boxes for birds or bats, or winter hideaways for hibernating insects, can create an undisturbed home on an otherwise inhospitable vertical area.

Robert Durant would likely have agreed because of his particular interest in plants.

“Insects are so important and most people think of them as nothing but a nuisance, if they think of them at all.”

~Robert Durant
An Unexpected Pollinator

Pollinators are incredibly important and play a crucial role in maintaining a healthy environment. What exactly do pollinators do and why do we need them? The answer is in the name itself; pollinators help spread pollen from one plant to the next. When a pollinator visits flowering plants for food like nectar, they collect pollen on their legs or bodies and spread it when landing on other plants. The movement of pollen from the male part of the plant (stamen) to the female part (stigma) is essential for fruit and seed production. Some plant species are self-pollinating, but the majority of crops and flowering plants rely on various pollinators for successful reproduction. In fact, almost three-fourths of flowering plants and 35 percent of our food crops depend on pollinators. We would run out of food without them!

There are several types of pollinators and some are more unexpected than others. Common pollinators include some species of insects like bees, moths, butterflies, beetles, flies, and ants. There are even some birds and small mammals, like bats, that act as important pollinators. Some pollinators, however, get a bad rap, and aren’t thought of as pollinators at all. Hornets and wasps are often viewed in a negative light and can be seen as destructive or unimportant. While they are perceived as a nuisance by some, they are still incredibly valuable pollinators.

The Northern Paper Wasp (*Polistes fuscatus*) is an excellent candidate for an unexpected pollinator with a bad reputation. They have a wide distribution range and can typically be found in temperate regions ranging from southern Canada to Central America. They are common throughout New Hampshire and are easily recognizable by their large gray, paper-like nests. Paper wasps have reddish-brown slender bodies with yellow bands and a distinct waist. They inhabit woodland areas and will use wood and plant stems to build their nests. They produce a unique fluid that turns wood and plant materials into a concrete paste which binds together to create a water-resistant paper-like nest. Paper wasps are incredibly social and depend on one another for protection, food, and shelter. They can be territorial around their nests but are generally less aggressive than other species of wasps and hornets.

Although bees are the most well-known and efficient pollinators, the paper wasp is a strong contender as well. They are considered to be both omnivores and insectivores. The paper wasp will feed on nectar much like bees or butterflies, making them a fairly successful pollinator. By feeding on nectar and using plant stems to build their nests, they are helping to distribute pollen to and from various plants, thus enriching fruit and seed production. In addition to nectar, the paper wasp feeds on insects like flies and caterpillars. Plant-eating caterpillars can be extremely destructive to both flowering plants and crops. Paper wasps act as a natural organic pesticide by eating plant-damaging caterpillars. So be sure to think before you exterminate any “unwanted” wasps, and remember they pollinate and protect your plants.

Kelsey Hanson, Naturalist, GBNERR

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Estuary Almanac

In early December, white lights were draped over greens and red berries collected from the Discovery Center property to give the garden another life.

For more inspiration visit: https://www.hgtv.ca/diy/photos/diy-how-to-make-your-own-living-wall-1927688/

Beth Heckman
Assistant Education Coordinator, GBNERR
GREAT BAY GRASSES: GROWING DEVELOPMENTS

A group of local scientists and managers including GBNERR’s Research Coordinator, Chris Peter, recently published a paper on the current state of science of seagrasses in Great Bay. This paper, found on greatbay.org, and titled “A Case for Restoration and Recovery of Zostera marina L. in the Great Bay Estuary,” highlights multiple stressors (excess nutrients, severe weather patterns, and disease) associated with seagrass decline over the past decades, and recommends further management actions to enable recovery. One of these recommendations is seagrass restoration. To that end, scientists at UNH and Boston University recently identified the most suitable areas of Great Bay for restoration using a site-selection model. This model integrates years of data focusing on water quality, bathymetry, historic presence of seagrass, and expert knowledge, producing a map for restoration practitioners and managers to work from. Additionally, funding has been secured to conduct small-scale pilot restorations this summer, which will further increase the likelihood for successful full-scale restoration projects, increasing seagrass beds that provide vital habitats for fish and improve water quality.

NIMBLE EDUCATION AT THE GREAT BAY DISCOVERY CENTER

Each year, during the spring and fall, approximately 4,000 students visit the Discovery Center on school field trips. Losing that traditional avenue to deliver educational education prompted staff to get creative. While the early stages of the pandemic set in, the question became, “What do we do now, and how do we do it in a new way?” It was decided that the grounds of the Center would remain open, and in early spring as people began to seek out experiences in the outdoors, it became apparent that visitation to the Center was up. While our state’s education heroes (teachers) also struggled to do what they do best, Discovery Center education staff decided to create YouTube videos of all the field trip activities so that teachers could still share supporting experiences as part of their curricula. At that same time, staff met to figure out where to focus efforts next. It was decided that outdoor visitors to the Center was the safest, most appropriate audience for creative education. With that, the Bayventure Grab N Go Activity Kit idea was born. Each week, through the winter and spring of 2021, a new environmentally themed free kit was made available for visitors to pick up. Kits with names such as Frost Fishing Fun, Outside with Owls, and Syrup on Snow were wildly popular. Approximately 200 kits were taken each week. In addition, a “Recycle Your Christmas Tree for Wildlife Trail” was created, and over 50 trees were delivered and decorated with food for wildlife. Trail cams were set up on the trees, and visitors could enjoy their family trees while watching which critters enjoyed them too. With every adversity comes a silver lining, and making us think outside the box may be COVID’s gift to humanity.
Educational Offerings

**BAYVENTURES 2021**
Program schedule for children ages 6-11
Bayventure programs are held outside on Wednesdays from 9:30 a.m.-12:00 p.m.

**July 7**
*Fabulous Fish Hawk*
Who can spot a penny at the end of a football field? Who can lift a fish that weighs more than they do? Who can build a nest on the top of a telephone pole? The osprey can! Our osprey cam will give us an up-close-and-personal look at our local osprey family. Make an osprey kite to take home.

**July 14**
*My Day at Great Bay*
Join us to discover the thrill of mucking around at low tide! Try your hand at finding baby eel or a crab under a rock. Make a wiggly craft to take home.

**July 21**
*“Bee” a Good Neighbor*
What would we do without bees and other pollinators? Scientists say we could not live on earth without them. We will explore the lives of pollinators at our Pollinator Living Wall exhibit and do a honey taste test. You will “bee” a good neighbor to pollinators at the end of the day when you build a mason bee house to take home.

**July 28**
*Turtle Talk*
Did you know there are 7 species of native freshwater turtles in NH? Come learn about the importance of our native turtles and meet a captive non-native species of turtle. We will also learn about sea turtles and how they are affected by marine debris. Make a reusable travel mug to take home and reduce your carbon footprint.

Bayventure programs are for children ages 6-11
Call (603) 778-0015 or email beth.heckman@wildlife.nh.gov to register.

Each Bayventure program is $15 for Great Bay Stewards members and $20 per program for non-members. The camper to staff ratio is a maximum of 5:1.

Make checks payable to: GREAT BAY STEWARDS
Mail to: Great Bay Discovery Center, 89 Depot Road, Greenland, NH 03840, ATTN: Beth

**Pollinator Living Wall Workshop - Friday June 4, 9:30 am- 12:00 pm**
Join Great Bay Discovery Center staff and learn how to design your own pollinator garden living wall. Workshop take-homes include:
- 2’x3’ vertical garden system
- 24 flowering plants
- Expert advice by Megan Loughlin of Pocket Gardens, Rollinsford, NH
- Two books on pollinators
- Mason bee house
- Local honey products

This workshop is made possible by the Wildlife Heritage Foundation of New Hampshire Durant Fund and the Great Bay Stewards
Call (603) 778-0015 or email beth.heckman@wildlife.nh.gov to register for this free workshop. A $50 refundable deposit is required to hold one of the limited spaces. Registration opens May 15 and is on a first-come first-served basis.
A National Perspective: Waterwise Wildlife Garden in Texas

It might not be the bittersweet or phragmites we battle at the Great Bay NERR, but an invasive Bermuda grass patch on the University of Texas, Marine Science Institute campus was replaced with a demonstration garden put in by master naturalists helping out the Mission-Aransas NERR. This area consists of trails, signs about native plants, and tips for conserving water. It is a great addition to the existing Wetlands Education Center trail system and is free to the public to come enjoy and learn about the local habitats. Stewardship Coordinator Katie Swanson (our own Rachel Stevens counterpart at the Texas Reserve), installed this garden back in 2016 with the intention of comparing the water, fertilizer, and mowing costs of caring for the invasive lawn with the costs of maintaining the new garden for birds, butterflies, and other wildlife that would be attracted to it. Unfortunately, Hurricane Harvey hit in 2017 taking that option away. Since Harvey, they have had no irrigation anywhere on campus or regular grounds and maintenance work within the garden. However, and perhaps more interesting, is the fact that the garden is thriving under these minimal conditions, perhaps a silver lining in really understanding how well natives do in their intended habitats.

Volunteer for Great Bay!

- **Join Us!** Interested in flexible, outdoor opportunities? Join our trash patrol, phenology team, watering crew, or weeding crew!
- **Adoption Program:** Do you like to garden? Or maybe you are more into repairs and painting? We have several gardens and two outdoor play boats that are in need of adoptees to care for them throughout the season.
- **Fall Educator Training:** Educate school groups about the cultural history of Great Bay. Training is tentatively scheduled for September 9, 2021.
- **Exhibit Room:** Interact with the public, teach visitors about Great Bay, and help a child hold a horseshoe crab!

Contact Melissa at Melissa.Brogle@wildlife.nh.gov or call (603) 778-0015 with any questions or to register for a training or workday.
Even as I write this there is snow in the forecast, but in my head I’m picturing my spring and summer gardens. Planting numerous beds in sun and shade, experimenting with new tomato varieties, and thinking of how to attract bees and birds got me through the early days of the pandemic, and they bring me solace again this year. I grow milkweed, asters, and zinnias for monarchs; for the butterflies I plant bee balm, lavender, globe thistle, hollyhock, mint, chives, and oregano. Hummingbirds came to my yard last year for the petunias, iris, columbine, foxglove, lupine, lilies, bleeding hearts, heuchera, and sage, and I look forward to their return again this year. I’m also planning to plant Joe-pye weed, anise hyssop, southern arrowwood viburnum, and pasque flower to add more native perennials.

This year is a special one for the Great Bay Stewards, as we celebrate the 25th anniversary of our designation as a nonprofit. One of our favorite accomplishments in recent years is our support of the Community Wildlife Garden at Chapman’s Landing, which demonstrates how everyone can make easy decisions to attract pollinators and other animals to their yard. We’ve funded the installation of a solar water pump and signage and helped hold workshops where participants learn how they can build a wildlife-friendly garden and go home with plants to get started!

Thumbing through past meeting minutes and the binders of former board trustees has given us so many more reasons to be proud of all our accomplishments over the past quarter century. The Stewards were major supporters of rebuilding the boardwalk several years ago, bought the Gundalow to the shores of Greenland for many years, helped with the installation of new gardens at the Center, and through our role as a fiscal agent have supported research projects on everything from climate change to invasive species to sea level rise. More than two decades ago, we launched the Great Bay 5K, to help support the Reserve but also to give more people a chance to see the Bay and visit the Discovery Center. Over a decade ago the Art of Great Bay began, an ongoing celebration of the estuary and the coast through a show of paintings, drawings, sculpture, and fine crafts.

We hope to commemorate all of these accomplishments and many more in 2021. Please stay tuned for anniversary celebration announcements through our e-newsletter, website, or follow us on Facebook and Instagram to find out about events this year. We hope to see you in person at our Flatbread community supper on August 3, when you next visit the Reserve or the Community gardens, or to celebrate our first 25 years of achievements in the months ahead!

It’s a great time to make a difference.

Deb Alberts, Chair, Great Bay Stewards

Great Bay 55K Challenge

Last year saw the launch of the Great Bay 55K Challenge, a chance for runners and walkers to circumnavigate the entire estuary and take in new viewpoints, trails, and historical markers along the way. On October 1, Race Director Bob Kennedy and Reserve Research Coordinator Chris Peter kicked it off by running the entire distance! We were thrilled that so many other participants joined in, doing everything from walking the route all in one go, to committing to just 1.5 miles daily for the 30-day duration of the Challenge. We’re excited to bring it back again in 2021, alongside the virtual Great Bay 5K and plans for an in-person Great Bay 5K. This year we’re also delighted to partner with Victoria’s Victory Foundation, a non-profit started by Exeter Paralympian Victoria Arlen, to encourage wheelchair racers to participate in the Great Bay 5K. We are also excited that all our terrific beer, cider, and oyster sponsors will be joining us again in 2021, and we hope to see you out on the course as well!

Allison Knab, Executive Director

Please Join Us!

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: GBS Membership Committee, 89 Depot Road, Greenland, NH 03840

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

name ___________________________________________

town ____________________________

email __________________________________________

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

name ___________________________________________

town ____________________________

email __________________________________________

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NORTHEAST DERMATOLOGY ASSOCIATES

is honored to partner with the Reserve in its mission to protect and conserve the Great Bay estuarine system. Supporting education, land protection, research, and stewardship of Great Bay is something that will benefit generations for years to come.

At NORTHEAST DERMATOLOGY ASSOCIATES, you are important to us and taking the time to genuinely listen to and care about your needs is how we begin every one of your visits to our office. Our committed staff has the expertise and experience to treat all your medical, surgical, and cosmetic dermatology needs. What makes us different is our 70 years of service caring for our New England community in the exceptional way you deserve. Save time and energy and start your complete skin care journey here.