



The Naturalist

A Newsletter for and by
Barnegat Bay Master Naturalists and our Affiliates

Looking out over Great Bay Boulevard, photo by Bailey Sanders





Cattus Island County Park, Nikki Vernachio on a SUP, photo by Bailey Sanders

SPRING & SUMMER ARE IN BLOOM!

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An exciting time of the year is upon us as the weather begins to warm up! There are so many opportunities to get outside and experience nature. The Barnegat Bay watershed provides unique ecosystems to explore and appreciate this spring and summer. If you are looking to volunteer or get outside with a group, check in with the Barnegat Bay Partnership or your favorite local environmental organization and offer your time! In this issue of The Naturalist Newsletter, take a glance at what our watershed has to offer. Have your skills gone dormant for the winter? Brush up on your identification using the bird, plant, and fish ID quizzes (pages 5-7). Happy Spring!

The Master Naturalist Course is BACK!

By Karen Walzer, Senior Outreach Coordinator, Barnegat Bay Partnership

Do you enjoy learning about the wildlife, ecology, and traditions of the Barnegat Bay and sharing what you've learned with others? Then join us this spring for a training course to become a Barnegat Bay Master Naturalist volunteer! The 2023 course is a combination of online classes and in-person field trips covering a wide range of wildlife and natural resource topics specific to Barnegat Bay and its watershed. During the outdoor field sessions, participants will learn from experienced naturalists and scientists while exploring both bay and upland habitats at various locations throughout Ocean County.

Course sessions will be on Wednesdays and Fridays, May 3rd to June 23rd, from 9:00 am to 12:00 pm. The one exception is an all-day trip (9:00 am to 3:00 pm) to the Sedge Island Natural Resource Education Center on June 21st.

Interested? [Register here](#) for the course. Learn more about becoming a Volunteer Master Naturalist on the [Barnegat Bay Partnership website](#).



The New Jersey Bay Islands Initiative

By Christine Moran, Barnegat Bay Master Naturalist, Class of 2019

The New Jersey Bay Islands Initiative (NJBII) was started in 2020 to assess and restore the small, largely uninhabited islands in the Barnegat Bay. These 166 islands provide protection from storm surge and habitat for shorebirds, shellfish, and terrapins. The islands are subject to erosion from wind and waves from storms and tides. Erosion is also caused by boat wakes.

History

Historically, the islands have hosted gun clubs and their structures and blinds. Waterfowl hunting was very popular in Barnegat Bay in the early part of the 20th century. Birds were hunted both for sport and for the restaurant industry. Some gun clubs had large enough buildings to house kitchens, lounge areas, and dormitories for the sportsmen. A few of the gun clubs still survive today. Clam and oyster beds were often found close to these small islands. Families commonly camped out on the islands in the summer months to get a head start on clamming in the morning. The harvest of both eelgrass from the bay waters and saltmarsh cordgrass from the marshes was common and may have taken place on and near the bay islands. Some islands were used to dump dredge spoils.



Image Credit: Barnegat Bay Partnership

Habitat

The terrain of the islands is varied and can be classified as low marsh, high marsh, or maritime forest. An individual island can have one or more of these ecosystems. The plant life on one island was cataloged this past summer, and the results show species diversity. The 62 species identified include trees, shrubs, plants and vines. Birds and terrapins are protected by this vegetation. On islands without vegetation, skimmers, oystercatchers and royal terns nest without the threat of predation by foxes and raccoons.

New Jersey Bay Islands Initiative

This initiative includes a broad coalition of conservation agencies and academic institutions who know the value of these bits of sand, marsh and trees.

Represented are:

- * US Fish & Wildlife Service
- * The Nature Conservancy
- * Stockton University Coastal Research Center
- * Monmouth University
- * American Littoral Society
- * Barnegat Bay Partnership
- * Save Barnegat Bay
- * Mordecai Land Trust
- * Long Beach Land Trust
- * Jacques Cousteau National Estuarine Research Reserve
- * Rutgers University
- * Ocean County Soil Conservation District
- * Army Corps of Engineers
- * NJ Department of Environmental Protection
- * NJ Department of Transportation
- * Private Landowners & Volunteers



Members of the NJBII tour the bay islands. (Photo by Krystal Aguilar, sourced from OCSCD website)

The New Jersey Bay Islands Initiative (continued)

Headed by Virginia Rettig of the Edwin B. Forsythe National Wildlife Refuge (U.S. Fish & Wildlife Service), the NJBII participants meet monthly to discuss ongoing restoration projects. They developed the New Jersey Bay Island Restorative Planner (NJBIRP), which is an online mapping tool that can access a variety of data about each island, including erosion rates, acreage, elevation, and water depth around the islands. Submerged aquatic vegetation around the islands can also be visualized. The tool is available to the public. The group's goal is to engage local municipalities and the public in preserving and protecting important resources.

One of the successes of Barnegat Bay island restoration has been Mordecai Island, located in the bay west of the Borough of Beach Haven. Mordecai sits very close to shore and was previously owned by the Little Egg Harbor Yacht Club. It is now owned by the Mordecai Island Trust. The ongoing restoration along the western shore of the island has included sand-filled geotubes, shell bags containing oyster spat, oyster castles, and wave attenuation devices (WADS). The restoration activities are monitored and modified as needed. (See the article in the Fall 2021 issue of *The Naturalist* for more information about living shorelines.)

Other local projects have created living shorelines using rock jetties, oyster spat-seeded shell bags, and *Spartina* (smooth cordgrass) plantings behind the rock jetties. These remediations could also be used for the bay islands.

A current project monitored by the group is Stafford Township's dredging project and Long Beach Township's grant from the National Fish & Wildlife Foundation. Long Beach Township was awarded a grant in 2022 to test the NJBIRP as conceptual designs for island restoration are developed. Initial steps involve collecting data on the 1978 shoreline contours, outlining a plan for island restoration, and obtaining permits for the work to be done. The first assessments for the new work will be made when a tide gauge is installed to collect current data on tides, pH, dissolved oxygen and water quality. These data will set the baseline for the work as it progresses. The next steps will be planning restoration.

NJBII provides a networking opportunity for any group seeking to do island restoration anywhere in the bay. For more information, access the NJ Bay Island Initiative site at <https://njbayislands.org> and the NJ Bay Island Restorative Planner tool at <https://maps.coastalresilience.org/nj-bay-islands/>.

Watch a video about nesting shorebirds at https://www.youtube.com/watch?v=7UTVuRU_aCQ.



Bird ID Quiz

By Sarah Stewart, Master Naturalist, Class of 2014

Are You a Bird Brain? How are your bird ID skills? Can you identify the 2 birds below? Click the pic to hear their calls!

(Answers on the last page of the newsletter.)

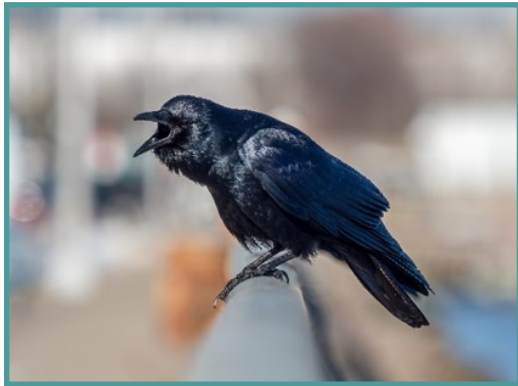


Image Credit: Rhododendrites [CC-BY-SA-4.0](#)



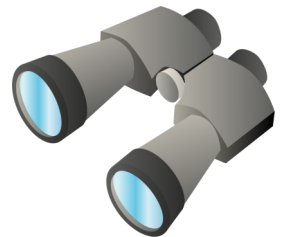
Image Credit: Peterwchen: [CC-BY-SA-4.0](#)

Species #1: I can be easily mistaken for a similar bird in my family. However, there are some clues which help identify exactly who I am. My range is all along the eastern seaboard. I frequent both saltwater and freshwater habitats (marshes, beaches, rivers, lakes). I have been expanding my range over the years, and you can now find me claiming territory along inland waterways. I am a true scavenger at heart, and will eat just about anything, foraging on the ground or in shallow waters for crustaceans, mollusks, fish, insects, and other invertebrates, other birds' eggs and nestlings, fruits, nuts, and small reptiles and carrion. Oh, and I'll take scraps from humans too. Omnivore extraordinaire am I! We like to forage in large numbers. Our nests are built in coastal pine and cedar trees, or higher up in deciduous trees in inland wetlands.

We look very much like some other black birds. However, my call is much more nasal, and when calling from the ground, I often puff out my neck and feathers, creating a ragged ruff on my throat, which is what many people use to identify me correctly.



Image Credit: Daniel Berganza [CC-SA-BY-3.0](#)



Species #2: I am a bird who prefers walking to flying. Some say my walk is entertaining as I walk with neck stretched out, tail erect, and a somewhat lurching gait. I'm a great swimmer and diver when I sense a threat. I'm a shy, secretive type, and most of the time, I prefer to hide deep within saltwater marsh vegetation. Listen for my cackling call in these habitats. If you're lucky to catch me in your sight, you will likely see me along the edge of these marshes. I enjoy a varied diet, so much of my time is spent foraging in the water and probing the mudflats with my long bill for crustaceans, mollusks, eggs, and fish. Fiddler crabs are a favorite. During winter, I tend to eat more plants and seeds. My mate and I build our nest in thick ground-level vegetation or higher-up in shrubs with less dense cover, balancing nest exposure to predators with avoidance of flooding risk. However, our buff-colored eggs with gray or brown blotches can hatch in water levels of 18 inches!

Fun fact: I have a special salt gland that allows me to drink sea water. Climate change forces (extreme flooding, high temperatures) along with loss of habitat are present-day pressures on me and my flock.

Plant ID Quiz

By Sarah Stewart, Master Naturalist, Class of 2014

**Are You a Botanical Genius? How are your plant ID skills?
Can you identify the plants below?**



Image Credit: Suzanne Cadwell [CC BY-NC 4.0](#)



Image Credit: Famartin_ [CC BY-SA 3.0](#)



Image credit: Derek Ramsey [CC BY-SA](#)

Species #1: A conifer for sure. Its range is eastern United States, commonly found at high elevations in old fields, growing in pure stands versus with mixed species. Its comparatively small form grows well in poor and dry soils, but grows best in acidic, sandy, well-drained soils with full sun. Its branches are flexible, and will bend when pressure is applied. The seed cones are small, non-serotinous with hairy bracts. With many pines, the number of needles is a key identifier. This tree's needles are short, twisted and each fascicle has 2. It is susceptible to various pests (*e.g.*, southern pine beetle, pine sawfly), disease (pitch canker) and wind damage. Many birds eat its seeds, and the bark is deer resistant. Historically, the wood was used for railroad ties, fuel and tar. Current day, it is used in reclamation efforts for coal mining sites. Cherokee indigenous tribes had many uses for the tree: bathing in water soaked in the bark, various infusions (such as needles in fruit juice) and drinking it as a toast to the wind and as treatment for many symptoms afflicting the body, and use of needles as a soap.



Species #2: Most flora lovers can identify the family of this plant, but what is its name? Typical of this family, it thrives in organically rich and slightly acidic and consistently moist soil with good drainage and moderate temperatures. It grows best in protected settings across all regions in NJ in partial to full shade. Direct sunlight can be very damaging. In spring, pink fiddleheads emerge, then turning green on this perennial favorite. The plant is edible with its fronds used as a garnish, and dried fronds used in a tea or fruit juice drink. The tea or syrup made has many uses around the world, historically by indigenous peoples to treat nasal congestion, respiratory issues, and burns. Chewing the fronds, then applying them to wounds, has been used to stop bleeding. An additional beneficial use provided is shelter for lizards and toads. Lastly, its genus name refers to its **water-repellent** attributes. What plant is this?

Image Credit: [wackybadger](#) is licensed under [CC BY-SA 2.0](#).

Fish ID Quiz

By Sarah Stewart, Master Naturalist, Class of 2014



Image credit: Brian Gratwicke [CC-BY-SA-2.5](#)

Something's fishy! How are your fish ID skills? Can you identify these 2 closely related and very common fish species that inhabit coastal waters in NJ and all along the eastern seaboard?

(Answers on the last page of the newsletter.)

Fish #1:

Habitat: shallow coastal waters, saltwater marshes, tidal creeks and less common in freshwater

Appearance: small, approximately 5 inches, sexually dimorphic (males olive above, lighter below with vertical side stripes; females are silver/yellow with no stripes). Color-changing defense system for changes in water depth and available light.

Food: insects, crustaceans, mollusks, small fish, plants

Breeding: spawns up to 8 times/season in summer during new and full moons. Eggs laid on sand, plants, shells

Lifespan: 3 years

Predators: herons, egrets, gulls, large predatory fishes

More info: Commercially harvested for baitfish (flounder) and educational purposes due to resilience to being handled. High tolerance for salinity and temperature fluctuations, low oxygen, pollution – indicator species

Fun Facts:

- * 1st fish sent into space aboard Skylab 3
- * Can eat up to 200 mosquito larvae per day – used as natural method of mosquito control
- * Can jump across land from one tidal pool to another!
- * Common name is Native American word for “going in crowds”



Image credit: Stephen G. Johnson [CC-BY-SA 3.0](#)

Fish #2

Habitat: prefers high salinity, shallow coastal waters, salt marshes, in-shore areas near submerged structures. Moves to deeper waters during colder months. Almost never enters freshwater environments. More tolerant of sandy environments than fish #1, burrows into the mud during winter.

Appearance: small, approximately 7-8 inches in length, sexually dimorphic (gray/silver – males have vertical black stripes, females have horizontal stripes). 14 – 15 dorsal spines (distinct from other related species)

Food: flying insects, small crustaceans, worms, plant seeds

Breeding: spawns in shallow waters, near vegetation. Females lay multiple clutches up to 50 eggs

Lifespan: 3-5 years

Predators: herons, egrets, terns, gulls, predatory fishes

More info: Commercially harvested for baitfish.

Fun Fact: If stranded in tidal pools, able to flop head over tail on land for several yards to reach the water again.

What is eDNA & How is it Used in the Barnegat Bay?

By Bailey Sanders, Stewardship Specialist, Barnegat Bay Partnership

What is eDNA?

Environmental DNA, or eDNA, is genetic material released from an organism into the environment in the form of feces, mucous, gametes, skin, hair, and carcasses.

What is eDNA used for?

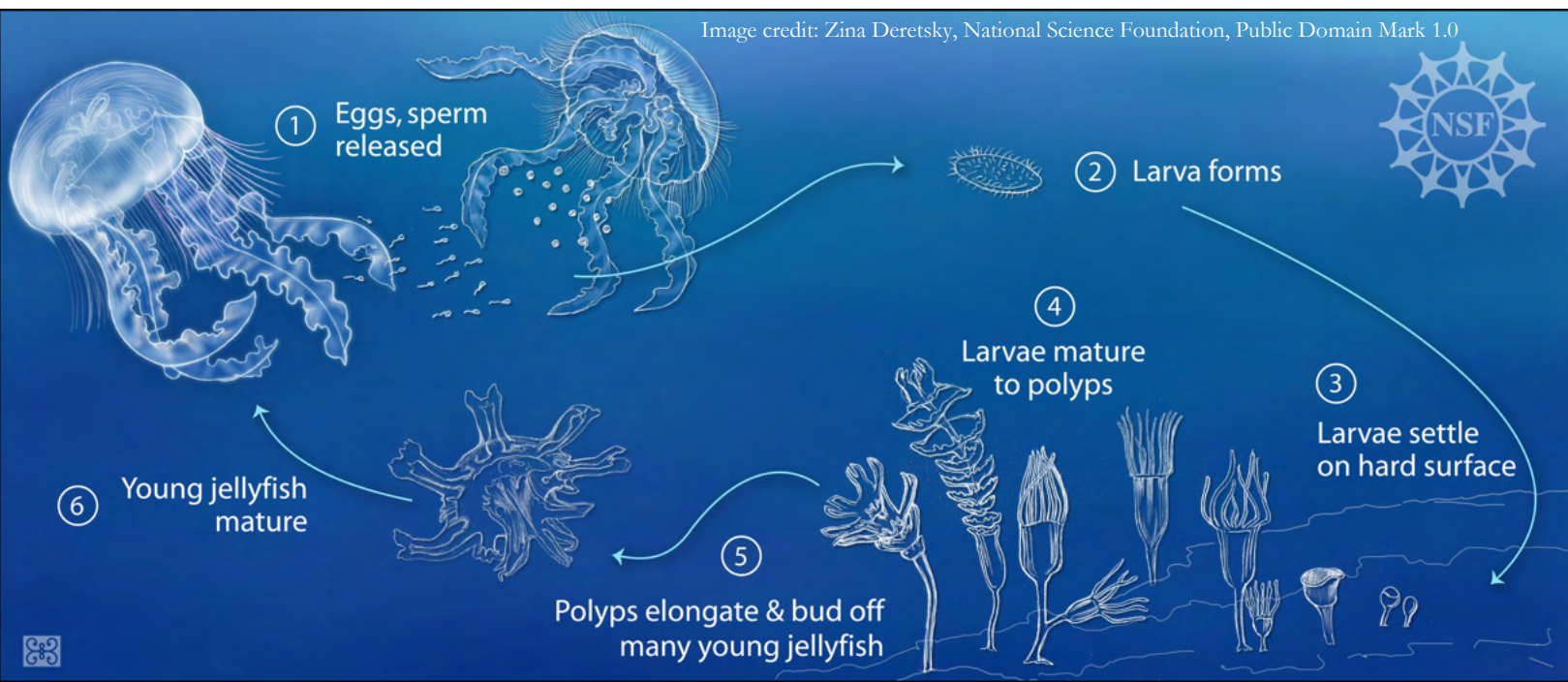
eDNA can be used for inventorying and monitoring of native, invasive, and sporadically distributed species. This method of monitoring has proven to be valuable in aquatic systems because it accurately detects organisms that may not be captured or seen using traditional sampling methods.

How are they using this technique in the Barnegat Bay?

Monmouth University's Dr. John Gaynor spearheaded a project looking at Atlantic Bay Nettles (*Chrysaora chesapeakei*), previously thought to be Atlantic Sea Nettles (*Chrysaora quinquecirrha*) before a study in late 2017 (Gaynor et al., 2017; NOAA Fisheries, 2017). There's a large resident population of Bay Nettles due to their tolerance to low dissolved oxygen and salinity conditions. Atlantic Bay Nettles have both a sessile (fixed) and a pelagic (free-moving within the water column) stage. Adult nettles release gametes into the water to be fertilized, resulting in a free-swimming planula (larva). These larvae will fix themselves to a hard substrate after a day or two, transforming into a polyp with tentacles to feed on organisms within the water column. The polyps will reproduce asexually and release an ephyrae (larval jellyfish), which will develop tentacles and become a juvenile jellyfish.



Image credit: Kolitha de Silva, CC BY 2.0.



What is eDNA...(continued)

When large blooms of nettles occur, it is easy to see the large jellyfishes swimming throughout the area; however, Dr. Gaynor and his team realized that eDNA may serve as a potential indicator of a nettle bloom by detecting the presence of ephyrae (larval jellyfish) before the bloom happens. The larval jellyfish are notoriously small and difficult to observe compared to the adults. Sampling them using traditional methods would be time-consuming. Using the presence of their eDNA in the water column, the presence and abundance of the nettles can be estimated in a marine system. Looking at the early stages of these organisms can help us understand why they're so dominant within the Barnegat Bay and help us monitor the health of our bay, as well.

Dr. Gaynor and his team sampled eight locations throughout the Barnegat Bay. Each location consisted of two sampling sites: an east site (closer to mainland) and a west site (closer to the barrier island).

These locations included:

- * Metedeconk River
- * Silver Bay
- * Toms River
- * Forked River
- * Double Creek
- * Harvey Cedars
- * Westeconk Creek
- * Tuckerton

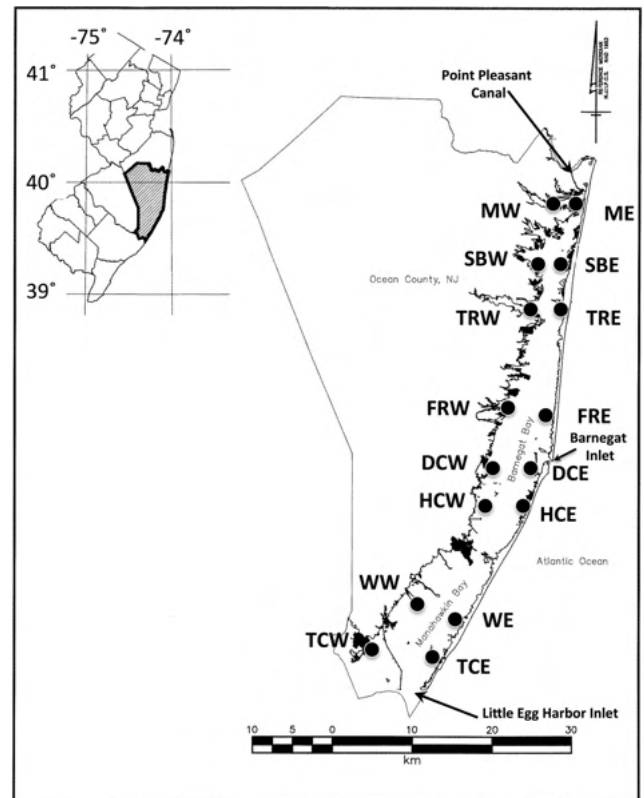


Figure Credit: Gaynor et al., 2017

Water was filtered through different-sized mesh to separate the larval stages. Samples were processed and a qPCR, or quantitative polymerase chain reaction, was conducted. A qPCR is a method for measuring DNA, replicating a small amount of DNA into millions of copies using a primer.

eDNA for Atlantic Bay Nettles were found at all eight paired locations within the Barnegat Bay. The presence of this eDNA varies across different spatial and temporal scales, making this “the first comprehensive field-based survey mapping, both spatially and temporally, the early life history stages of a scyphozoan in a major estuary using environmental DNA” (Gaynor et al., 2017). Moving forward, this method might be useful in tracking and understanding bay nettle blooms in the Barnegat Bay.

References:

United States Geological Survey. (n.d.). *Environmental DNA (eDNA)*. Retrieved April 6, 2023, from <https://www.usgs.gov/special-topics/water-science-school/science/environmental-dna-edna>

Gaynor, J. J., Bologna, P. A. X., Restaino, D. J., & Barry, C. L. (2017). QPCR Detection of Early Life History Stage *Chrysaora quinquecirrha* (Sea Nettles) in Barnegat Bay, New Jersey. *Journal of Coastal Research*, 78 (10078), 184–192. <https://doi.org/10.2112/SI78-014.1>

NOAA Fisheries. (2017, October 13). *New Jellyfish Species Discovered Hiding in Plain Sight* | NOAA Fisheries (National). NOAA. <https://www.fisheries.noaa.gov/feature-story/new-jellyfish-species-discovered-hiding-plain-sight>

Saving our Ecosystem, One Yard at a Time: A Book Review

By Richard Biolsi,

Barnegat Bay Master Naturalist, Class of 2013

I have a friend who plays golf and he regularly tells me about the beauty of the courses where he plays. I cannot disagree that the rolling expanse of fairways and the manicured greens are pleasant to the eye. In contrast are those ominous-sounding hazards (including lakes, ponds and creeks) and roughs (taller grasses), both of which must be avoided at all costs by the golfers. I do not know if Dr. Douglas W. Tallamy, author of the book *Nature's Best Hope: A New Approach to Conservation That Starts In Your Yard* (Timber Press, 2019), plays golf, but I cannot help but think that if he had his preference, the area of roughs and hazards would be greatly increased and the lawns would be diminished to paths. In fact, Tallamy blames lawns for the destruction of diversity of wildlife and a waste of precious water that they do not absorb, causing it to run off with fertilizer into our natural waterways.

Tallamy's goal is quite simple. As we continue to see the extinction of wildlife throughout the world, he wants to, "convince people that we will lose most plants if we lose most of our animals, and we will lose all of those animals if we don't take care of our plants." Ultimately, he believes, this will result in the loss of human life, a condition we can see taking place with our own eyes when we watch news casts of famine and starvation in developing countries. He relates this crisis to our own yards when he talks about the fact that gardening only for beauty, "without regard to the many ecological roles our landscapes must perform," results

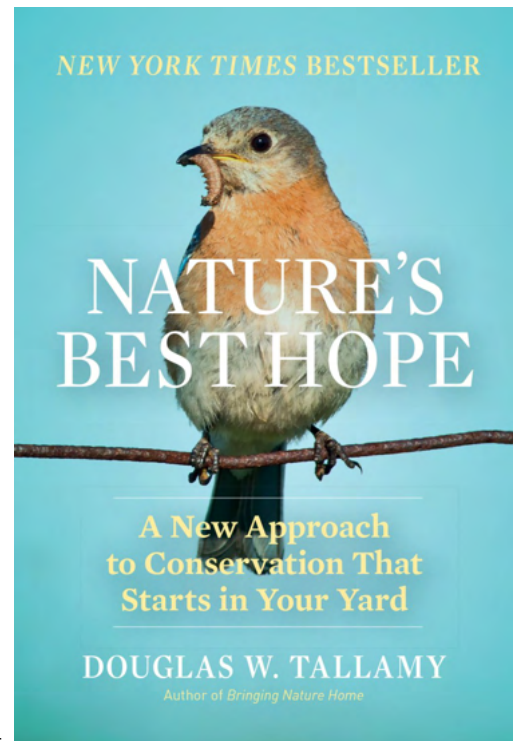
in landscapes that are low in "ecological function," that is the support of life on the planet. Tallamy wants a cultural transformation in which we embrace the building blocks of a viable and thriving ecosystem to replace lawns and expensive ornamentals, neither of which support wildlife. He wants to replace them with native plants, including certain weeds, and insects, things that we often see as mere annoyances.

The author lauds the work of ecological pioneers, such as Henry David Thoreau and Theodore Roosevelt's development of the national park system, but he bemoans the often-held belief that "humans and nature cannot mix, that humans are here and nature is somewhere else." He believes that national, state and local parks and natural



Dr. Doug Tallamy, Photo
Credit: [University of Delaware](https://www.universityofdelaware.edu/)

areas, while supporting wildlife on their own, have not stemmed the increasing numbers of extinct and endangered species. A major reason for this, he believes, is that the parks are not contiguous and the large distances between these natural areas do not aid in sustaining wildlife.



Book Cover for *Nature's Best Hope: A New Approach to Conservation That Starts in Your Yard*. Click the photo to be redirected to Amazon.

Saving Our Ecosystem...(continued)

Tallamy believes that the trend toward the continued shrinking of nature gives us just three options: 1) humans continue to reduce natural areas until we reach the point where ecosystems collapse, 2) humans disappear, leaving the world to revert back to its natural state, or 3) we learn how to better share the land with other living creatures. He, of course, prefers option number three and he is betting that the readers will also. How we are going to achieve this goal, as he sees it, is the development of [Homegrown National Park](#), a totally voluntary commitment by private property owners, both individuals and institutions, filling their own yards with native plants, limiting the amount of lawn space, and providing one continuous natural area that stretches across the country.

Tallamy focuses on insects as crucial to ecosystem survival, saying that if insects were to disappear from our planet, humans “would last only a few months, because insects are so vital to the food chain and our ecological health.” He uses the example of caterpillars to illustrate the important role of insects in our ecosystems. It turns out that caterpillars are the food of choice for many birds – not all caterpillars for all birds, but specific types of them for different birds. He suggests that if we do not see certain types of birds or fewer of them, it might be the result of fewer caterpillars. They are particularly important when birds are raising their young. While some species of birds can raise their young on seeds and berries, most North American bird species feed their nestlings insects, the vast majority of which are caterpillars. One estimation of the number of caterpillars required for parent birds to feed their nestlings over a five-day period is over 4,000! Needless to say, the type of environment that supports this number of caterpillars does not include our long rolling lawn nor imported ornamental trees and shrubs, but requires native plants. Who would have thought that the many oak trees in our yard, with their heavy brown leaves that I curse every fall, provide an ideal cover and feeding area for caterpillars. Perhaps that is a contributing factor to why we have so many birds in our yard all year around.

Tallamy makes the same kind of plea for the support of native bees, the numbers and types of which have been declining for quite some time. Throughout the book the author makes many suggestions for plantings that are friendly to wildlife. Towards the end of the book, Tallamy lists a number of suggested actions that individuals can take, each of them very doable for someone with the will to preserve a strong ecological system. Two examples are planting for pollinators with native species like goldenrods, native willows and asters, and removing invasive plant species from our yards.

Nature's Best Hope: A New Approach to Conservation That Starts In Your Yard is an insightful and thoughtful book, often with wry humor (Sneezeweed “does not make you sneeze unless you dry its leaves, crush them to a powder, and stuff it up your nose.”). To some it might seem radical, like Tallamy's suggestion to oppose mosquito spraying in one's municipality. It is also, in its own way, inspirational. I do not know whether Homegrown National Park will ever come to pass, but I find myself excited about participating in its development with our own little piece of the world.

A Newsletter for and by
Barnegat Bay Master Naturalists and our Affiliates

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- **Connect with other Barnegat Bay Master Naturalists through our [Barnegat Bay Master Naturalists Facebook Group](#).**
- **Join the Barnegat Bay Master Naturalist [iNaturalist](#) group and share photos of your nature sightings with fellow BBVMNs.**

Find us at www.BarnegatBayPartnership.org!

LEARN, PROTECT, EXPLORE



Answers to Species ID Quizzes

Are you a Bird Brain?: Species 1: Fish Crow (*Corvus ossifragus*), Song Source: Paul Marvin, XC460997. Accessible at <https://xeno-canto.org/460997>. 2: Clapper Rail (*Rallus crepitans*), Song Source: William, Whitehead XC468713. Accessible at <https://xeno-canto.org/468713>

Are you a Botanical Genius?: Species 1: Northern Maidenhair ([Adiantum pedatum](#)), Species 2: Virginia Pine/Scrub Pine ([Pinus virginiana](#))

Something's Fishy: Species 1: Mummichog (*Fundulus heteroclitus*), 2: Striped Killifish (*Fundulus majalis*)



Dense Blazing Star (*Liatris spicata*), photo from Jersey Friendly Yards Facebook Page.