



The Naturalist

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

Wintery Day in an Atlantic White Cedar Forest, photo by Becky Taboy



Barnegat Bay Master Naturalists, Class of Spring, 2018 at the Forest Resource Education Center



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HAPPY NEW YEAR!

Winter in the Barnegat Bay watershed offers a natural wonderland to explore and enjoy! In this issue, read about native plants and wildlife who are out and about in the wintertime, then go explore on your own. Take some photos and share with us on our Barnegat Bay Master Naturalist Facebook page. Also in this issue, learn about some volunteer opportunities including beach grass planting at Island Beach State Park and the on-going micro-plastics citizen science project. Finally, for our readers with a green thumb, learn to compost in the wintertime and prepare your beds for spring. Enjoy a variety of articles in this season's *The Naturalist*. Wishing you and your family a happy, healthy 2022!

What's Bugging You? - Species ID Quiz

By Sarah Stewart, Master Naturalist, Class of 2014

Some insects are busiest during the coldest months of the year. Like me! Winter is when I mate and lay eggs in cold streams, rivers and lakes. I look for mates by carefully walking atop the snow and ice rather than flying. As a male, I flirt with females by drumming my abdomen against a stone or twig to get her attention - [watch me!](#) I am attracted to very cold, clean and fast-moving water. The oxygen-rich cold water that moves to the top of the water column is what I need for this critical mating period. The colder weather also reduces predator threats and allows me to expand my territory, as many other species are absent now. How do I tolerate such ice-cold water temperatures? One reason is that water has a higher specific heat capacity. More importantly, my body produces anti-freeze compounds that allow my body fluids to 'super-cool' and not freeze. I am very sensitive to water pollution, so that makes me an excellent biological indicator species of freshwater quality. If you see me near water, the water is pristine. My adult diet consists of lichen, algae or vegetation. In my nymph stage, I am usually self-sufficient. Many fish find me extremely tasty, especially trout. Fishermen create artificial look-alikes to leverage this attraction when they fish with these imposters. *Who am I?* (Answer on the back page.) **Test your knowledge with my other Species ID Quizzes on pages 6-7.**

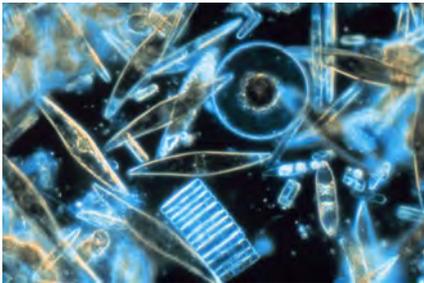


Photo: BugGuide.net

Winter Under the Barnegat Bay

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

During winter, the waters of Barnegat Bay drop in temperature and the creatures beneath adapt in different ways. From microscopic plankton to larger game fish, each species follows its own path.



Diatoms are one example of phytoplankton. [Photo](#) by Prof. Gordon T. Taylor, Stoney Brook University.

Phytoplankton that are at the bottom of the lower trophic levels of the marine food web continue photosynthesizing in the winter sun. Some studies have found increased chlorophyll (an indirect indicator of phytoplankton presence) concentrations in colder water. The thought is that the cold water retains more oxygen and more of the nutrients that are necessary for growth.

Zooplankton feed on phytoplankton and some coastal copepods are more abundant in the Barnegat Bay in winter. This may be due to incoming tidal currents and lack of predators in the winter. One of their predators, the ctenophores, do not reproduce in winter so the population of that predator is reduced in colder weather.

Other mature jellyfish die off in the winter or remain dormant in the bay waters. Polyps of some species survive. Lion's Mane jellyfish have been known to drift into the Bay from their native Arctic waters.

Animals like clams, ribbed mussels and oysters remain in place. They continue to feed and grow slowly but do not reproduce during winter. Blue crabs also stay in the bay and burrow into the substrate in November and do not emerge until May. They do not reproduce during those months.

Many forage fish, the smaller fish that are eaten by larger animals, remain in the bay although some do migrate. The sand lance actually reproduces in the colder December waters. Mummichogs, [killifish](#) and sticklebacks are here in winter. Adult bay anchovies reappear in March.



Banded Killifish (*Fundulus diaphanus*).
Photo by Richard King.



Winter Flounder (*Pseudopleuronectes americanus*).
[Photo](#) courtesy of NOAA Fisheries.

Larger fish like summer flounder migrate offshore in the fall, but winter flounder and sea bass can be found in the winter waters. Most sea bass migrate out of the bay in winter but recent studies have shown that some of the population remain here year round. Some tautog (i.e. blackfish) can be found in limited numbers.

Barnegat Bay also acts as a nursery for larval fish at all times of the year. Some fish breed just before the temperatures drop and their larvae overwinter in the Bay. In December, Atlantic menhaden, summer flounder, croaker and American eel can be found. In January, the same species are present but in lower numbers. February is the peak for the American eel larvae as they migrate through the bay from the ocean on their way to freshwater streams to grow to maturity until it is time for them to migrate

back to the ocean to mate. In March, [winter flounder](#) eggs begin to appear.

As the cold winds blow and ice forms on the bay, life slowly continues in preparation for spring.

Mother Nature, M.D.

By Rich Biolsi

Barnegat Bay Master Naturalist, Class of Spring 2013

“I was talking about Nature and why we traditional Indians consider it sacred; how Nature is a teacher and healer to us...”

*~Bobby Lake-Thom, *Spirits of the Earth**

During the Spring of last year, after a brief hospitalization in December, Kathy and I were out riding our bikes and walking through parks in Ocean County, watching nesting great blue herons, deer running through the woods and frogs, turtles, Canada geese and swans in the lakes and ponds. I loved making the short circuit around Lake Fishigan in Ocean County Park. In the many times that I tried to sneak up on the sunning painted turtles, I was rarely able to get close enough to get a good shot with my phone. I enjoyed the hunt, though, and when, down the trail, I was able to look back at their log, I'm sure they were laughing as they climbed back on it.

We also drove to marshes and watched egrets fishing and ospreys feeding their young. One of our favorite places, both to ride and walk, is the De Camp Trail at the Edward B. Forsythe National Wildlife Refuge section in Brick. A beautiful mile and a half wooded trail, with lots of holly trees, meanders out to Barnegat Bay, with plentiful bird life. During one walk we watched hundreds, if not thousands of young fish (I believe Atlantic menhaden, often know as bunker) swimming up a narrow channel under a footbridge into the Reedy Creek, where they will stay for a while before heading out to the ocean. Little did I know that the memories of these experiences would help me recover from serious illness.

At the beginning of July, this all came to an end when all hell broke loose. I was rushed by ambulance to the emergency room and spent much of the summer in an induced coma with a ventilator down my throat as surgeons opened up my chest to remove fluid from around my heart, with tubes draining my lungs and kidney failure. For good measure I contracted a *Clostridioides difficile* infection. I suppose I should count my blessings that I was unconscious much of the time, although I can remember the nightmares, including those in which all my doctors were conspiring to torment me. Due to the brilliance of the medical team, my heart began to improve, my lungs cleared up and, amazingly, my kidneys, which required a period of dialysis in the hospital, also bounced back.

When I regained consciousness, I was frightened, extremely weak and unable to sit up on my own. I was transferred to a rehab facility, but I had to be carried to a wheelchair because I had lost my ability to walk. At the rehab I contracted Covid 19, despite having been fully vaccinated, and was put in isolation for 14 days. Of course, I was unable to see my family during that time. I have many people to thank for helping me through this difficult time by staying in contact with me by phone, among them my two brothers, my best friend, my fraternity friends, my former colleague from work and my wife and adult children. Oh, my wife and kids, who did so much to help me through the crisis with their care and sacrifice on my behalf. I don't know if I would have survived the ordeal emotionally without them.

But this story is about the healing effect of nature. Common knowledge has long held that a walk in the woods is calming and refreshing, and now more and more research has confirmed that nature has a healing power for both the mind and the body. A statement from the Earl E. Bakken Center for Spirituality and Healing at the University of Minnesota says, “Being in nature, or even viewing scenes of nature reduces anger, fear and stress and increases pleasant feelings. Exposure to nature not only makes you feel better emotionally, it contributes to physical wellbeing, reducing blood pressure and the production of stress hormones.” Native Americans, as illustrated in the quote at the beginning of this article, have believed that nature is sacred and humans are part of nature, not its ruler.

I have often meditated in the woods with nature touching all of my senses, but here I was isolated in a poor excuse for a rehab facility. I began to experience nature in my mind's eye, recalling the sound of gulls over the bay, the feel of the wind, the smell of the scent of pine, the taste of wild blueberries and the view of a sunset over the Beaver Dam Creek. I found that I was able to leave my surroundings and my physical weakness and be in those experiences. After a while, I was able to bring up the image of Kathy and me sitting in our guide's vehicle in a national park in Tanzania. We sat for hours in the same spot, watching a pride of lion's sneaking through tall grass toward a baby elephant and then being chased away by the adult elephants. When we left, the baby elephant was still being protected by its elders. As I lay in my room, I could hear the grass rustling, I could smell the animals and I could distinctly see their movement. I was no longer in isolation in a rehab, but I was transported to Africa, where I could feel the power of beings much stronger than myself infusing me with strength.

After that, I began trying to envision other experiences in nature, including my instructional hikes with elementary kids at Cattus Island Park and my walks down a dirt trail at Shenandoah County Park, where I was able to hear a rooster crowing from a home adjacent to the trail, feeling the breeze coming off the water and seeing swans on the lake. I became very good at this and could transport myself to those wonderful locations. I began dreaming about these experiences at night, gladly trading my nightmares in the hospital to watching the bunker fish swimming under the bridge.

One of my favorite places in the world is Schoodic Point, a part of Acadia National Park in Maine. It is simply an outcropping of rocks at the tip of a peninsula, extending out into the Atlantic Ocean. One can walk onto the rocks, sit down and enjoy the warmth of the sun, experiencing the water crashing on the rocks, the gulls and terns sweeping the water and the view of the majesty of Cadillac Mountain in the heart of Acadia. I often think about this wonderful place, but as I lay there disabled it took on a greater meaning, pushing me toward recovery with hopes of visiting there again.

I am sure that none of this is especially unusual. Many people use images and visions of nature for psychological and physical recovery. It is just amazing to me that the more I meditated, the more the experiences became a part of me and, with the help of my family and others, moved me further toward recovery. Oh sure, I would have recovered anyway, but the images softened the feeling of isolation in the rehab and allowed me to focus on the bigger picture of life rather than wallow in self-pity. When I woke up today, I saw Pepper, our cat, at the very top of his tower, staring intently out the window. I wasn't able to see what he was looking at, but I heard birds chirping at our feeder and understood the intensity of his gaze. I looked out the window closer to me and could see the beautiful canopy of oak trees which surround our yard. I looked over at Kathy, my partner in nature exploration and appreciation for over fifty years. I listened to her rhythmic, soothing breathing and thought that, while I don't know what the future, or even tomorrow, holds in store for me, right now, this morning, I am very much alive. I will hold on to that with all my might.



*Bridge at Shenandoah County Park - a peaceful place to contemplate nature's beauty.
Photo by Rich Biolsi*



Rich and Kathy Biolsi enjoying a walk through the salt marsh at Cattus Island County Park.

Bird ID Quiz

By Sarah Stewart, Master Naturalist,
Class of 2014

Are You a Bird Brain? How's your bird ID skills?

Can you identify the 4 birds below? Click the pic to hear their calls!

(Answers on the last page of the newsletter.)



Photo: US Fish & Wildlife



Photo: Peter K. Burian

Species #1: I am your quintessential 'snowbird'. I fly south from my breeding grounds in the Arctic to more temperate climates to spend the winter. The Jersey shore is a prime destination. You may see me walking, running or even hopping as I forage for weeds, insects and seeds. You may even find me under your bird feeder! I migrate at night in a flock. We rely on our geomagnetic compass in our eyes to find our way. Some call me a 'snowflake' because when I fly with my flock across the sky, we resemble a snowstorm, rolling in a fluid motion, as those in the back of the flock fly over the top of those in the front. During the Arctic summer, we make our nests in the crevices between rocks in the tundra for protection from the weather and predators. Climate change is a real threat to my species. Warmer springs disrupt our synchronous breeding behavior that coincides with peak food resources.

Species #2: I'm big, I'm bad and if you don't recognize me by my horn-like tufts, you may be by my hoot! I am a raptor of extraordinary skill targeting small mammals, rodents, frogs, scorpions and even skunks and other owls. My diet is considered the most diverse of all North American raptors. Some call me the 'tiger owl'. With a talon force of 28 lbs, I use them to sever the spine of my prey. I am a year-round resident in forests, wetlands, grasslands, deserts, cities and backyards. I roost in trees, heavy brush, in cavities, and will consider human-made structures too. I hunt at night, though in winter, I may hunt during daylight. My feathers are soft and warm, and extra quiet in flight. My short, wide wings help me to navigate around the forest with precise movement. Since I am a danger to so many species, I am often harassed by birds, especially crows. If you hear a loud chorus of crows or songbirds, I just might be nearby....

Species #3 & 4: Can You Tell Us Apart?

We look so similar, it's hard to tell us apart. Closer inspection of our form and especially our calls should confirm who is who!



Photo: NPS



Wikimedia Commons



Photo: Daron Miller



Wikimedia Commons

Species #3: I am very social; I like to live in large groups called "Murders", in which we all invest in the care of our young. I am an opportunistic consumer, eating small animals, insects, fruit, grains and carrion. I store excess food in trees, rain gutters, or cover it with grass to be retrieved later. With a wingspan of about 2 ½ feet, I am smaller than my look-alike, and am half their weight. My black feathers have a deep purple sheen in sunlight. My tail feathers are fan-shaped if you see me in flight. I call most open spaces home, including fields, orchards, tidal flats and maybe your backyard! I avoid dense forests due to the predator threat they hold. I am recognized for my intelligence. Some people call me the "Bird MacGuyver" as I will leverage gravity to help split open a mollusk, and craft a tool with raw materials. I have a repertoire of calls and can communicate multiple messages (threat, warnings, cheer, tauntings); I can also mimic the sounds of other animals.

Species #4: I spend most of my time alone or with one or two other BFF's (bird flock friends). I am more of a scavenger than a hunter and like #3, I will eat just about anything including fish, grain, eggs, pet food, garbage and even wolf and sled-dog dung. Physically, I am close in size to a hawk with a wingspan of 3 ft - 4ft. My glossy black plumage includes iridescent green, blue and purple sheens. I soar when I fly showing my wedge-shaped tail feathers. I call just about any habitat home, including forests, mountains, desert, agricultural fields and even tundra and ice floes. My aerial acrobatics are fun to watch: rolls, dives and I drop items in play and catch them in midair. Some say when I walk, I swagger. My call is not so distinctive as #3's, but I do have the great distinction of being immortalized in literature!

Plant ID Quiz

By Sarah Stewart, Master Naturalist,
Class of Spring 2014

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

(Click on photos to reveal each plant's identity. Answers also found on the last page of the newsletter.)

Roots, stems, leaves, flowers, fruits and seeds - all parts of the plant provide botanical clues for identification. Habitat is also an important component of field ID. Can you guess the common name of each of these species? How about the scientific name?

Plant Species #1: Deck the Halls! I am your quintessential holiday plant. Most people recognize me and identify me by my common name, but not often by my scientific name. Can you? My leaves are waxy and thorny but still I am much sought after for holiday decorations. I grow best in moist, wet, acidic and sandy (I do not do well in clay) soil in forests and coastal areas. I am slow-growing and eventually can reach 50 feet tall in the wild. I am dioecious, so only female trees bear fruit. My small white flowers (on both female and male trees) draw honeybees, butterflies and other insects in the spring for my sweet nectar. My red berries in autumn and winter are a reliable food source for many birds and small mammals, but are toxic to humans. Indigenous peoples would use my red berries as buttons which were traded and highly prized. Since my wood absorbs dye so well, it is often used in musical instruments such as black piano keys as well as furniture, knife handles and canes.



Photo: [Missouri Botanical Garden Plant Finder](#)



Photo credit: [Sten Porse](#).

Plant Species #2: Most people can identify this tree at the genus level given the leaf pattern with its deep sinuses and pointed lobes. The branching pattern on this tree can also be a key identifier; lower branches droop downward, middle branches grow horizontal and the upper branches reach upwards. This is a fast-growing tree which is remarkable considering its family is known for its slow growth rate. It can take 15-20 years before it bears green acorns which eventually turn black. It is monoecious so it blooms male and female catkins in the spring. It tolerates poorly-drained soils and flooding, growing best in wet, acidic soils. It is commonly seen in marsh environments.

As author David Icke once said (with redacted clue),
"Today's mighty _____ is just yesterday's nut that held its ground".
Leaves turn a red-orange in autumn, and remain in winter

(an adaptive behavior called [marcescent](#)) particularly on the lower branches of both young and mature trees. Benefits to wildlife include nesting space, shelter and food. The acorns are valuable to deer, turkeys, small mammals, songbirds and especially ducks. Wildlife support includes butterflies, moths and beetles which in turn support many birds.



Photo: [Dida Selim](#)

Plant Species #3: I am a creeping, ground-hugging evergreen shrub slow-growing to 6 – 12 inches tall. My preferred habitat is acidic, well-drained, sandy or rocky soils in full sun. I do well in coastal environments as I am salt-water resistant and I grow very well in in poor nutrient soils. My leaves are small and paddle-shaped, leathery green then turning dark red in autumn. In spring, my bell-shaped pink and white flowers blooming on red stems attract butterflies, bees, and hummingbirds. I provide host support for butterfly and moth larvae. My red fruit looks like berries, but are drupes which ripen in the fall and persist into winter, providing food for birds and other wildlife. Indigenous people and early pioneers would often make use of my dried leaves by putting them (alone or with tobacco or inner bark of a redosier dogwood) into a pipe for an aromatic smoke blend.

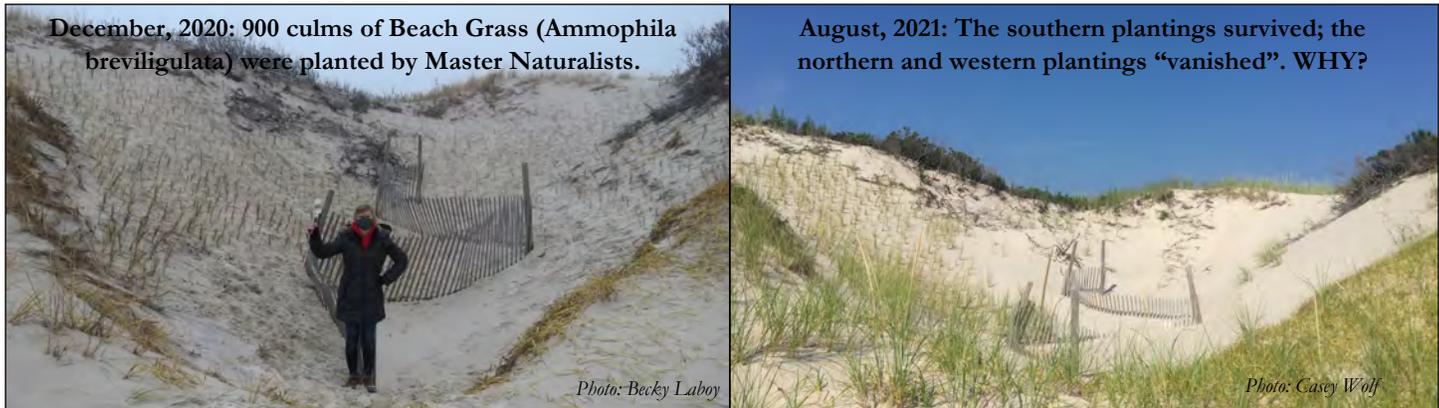


Photo credit: [Sten Porse](#)

Blow-Out at Island Beach State Park - Part 2

By Casey Wolf, Master Naturalist, Class of Spring 2019

Read Part 1 of this story in the [Fall 2021 issue](#) of *The Naturalist* where I left you with a cliff hanger, or rather, a dune hanger! Recall in December 2020, I was among a small but hardy group of Master Naturalists who planted 900 culms of Beach Grass (*Ammophila breviligulata*) inside a big hole (“the bowl”) behind Ocean Bathing Area #2 at Island Beach State Park. When I visited the plants during the summer to see how they were growing, I found that half of the plants had remained, but half were missing. The plants on the southern side of the bowl held strong while the plants on the northern side had mysteriously vanished! My best guess at this phenomenon was wind. Strong southerly winds must have pounded the north side during a storm and blown the new plants away. I decided to ask some experts.



This past fall, I took a stroll down to the beach with Kelly Scott, Island Beach State Park’s Resource Interpretive Specialist, to learn more. On our walk up to the site, Kelly explained to me exactly what a Resource Interpretive Specialist does. A more relatable title Kelly uses with the public is “Park Naturalist”. Kelly is in charge of all the nature programs at Island Beach State Park, which involves running and maintaining both the Nature Center and the Interpretive Center. Island Beach State Park’s [website](#) provides information about all the programs Kelly manages.

As the Park Naturalist, Kelly also manages the important work of planting dune grass. Every year, park employees and volunteers will plant anywhere between 10,000 and 30,000 culms. When Kelly finds a dune in need of structural support, Beach Grass is planted on the face of the dune. I learned from Kelly that although these plants are resilient in the most unwelcoming of environments they are not completely immune. If disrupted, their roots are prone to breakage and the microbes in the sandy soil with which the plants’ roots have an important relationship, can also be damaged. This is why it is important to never walk on the dunes!

The bowl was naturally created by high winds and wave action, which happens in many locations at IBSP. This area of the dune however, is directly in front of the southern Bathing Pavilion, and protects this important infrastructure. The idea to plant here in the bowl was experimental, Kelly said, and she was unsure if any plants would survive.

I reached out to Dr. Bianca Charbonneau, a local scientist who specializes in dune morphology, for more information. Dr. Charbonneau said, “Blowouts have a depositional lobe and an erosional or deflation basin. Based on Island Beach State Park’s predominant wind direction (NE), I would expect erosion to be upwind or at the north eastern quadrant, and the depositional lobe receiving that sand, to be on the south west quadrant. Burial increases the vigor of *Ammophila* so the plants planted north were likely uprooted by wind erosion while the downwind or southern plants were likely buried and are doing better as a result.” Dr. Charbonneau provided a link to a related [research article](#), for curious minds.

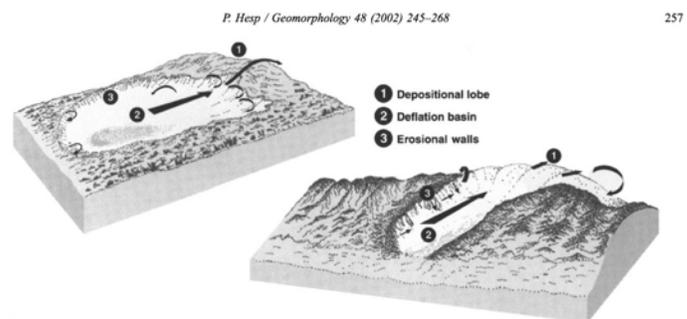


Fig. 5. Schematic diagrams of a saucer and a trough blowout with typical wind flow patterns indicated.

I encourage community members to volunteer to help plant dune grass. Spend a day at the beach and help maintain a piece of the Jersey Shore. The beach in the winter is a wonderful place to be, and you will feel fulfilled working with your hands to help preserve such a beautiful place that benefits so many people. You can visit the [Friends of Island Beach State Park’s website](#) for more information about beach grass planting events.



Ring-necked Ducks on Prospertown Lake in Jackson. Photo by Becky Laboy

Winter Waterfowl and Where to Look

By Becky Laboy, M.Ed., Instructor for Barnegat Bay Master Naturalists, and Education Outreach Specialist for Ocean County Soil Conservation District

The Barnegat Bay watershed is a birding hot spot! Anytime of year there are numerous species of birds to observe. Spring migration brings a colorful array of warblers, vireos, orioles and others, all showcasing brand new, brightly colored feathers and announcing their arrival with cheery songs. Summer is the time for breeders. Many birds raise their family here in coastal New Jersey. From raptors such as the iconic [Osprey](#), to large waders including [herons](#) and [egrets](#), to small songbirds such as bluebirds, [swallows](#) and wrens - they all utilize the resources in our watershed to support the next generation. Late summer ushers in migrating shorebirds, who raise their families at lightening speed in the far north, and then retreat to our productive shores in an effort to fuel-up for their continued long journey south for the winter. Fall migration provides another look at the diversity of species who annually fly the hemispheres, twice, to secure their species' place on the tree of life. Finally, there's winter. One might think winter would be a dull time of year for bird watching. Not so. Winter is for waterfowl. Ducks, geese, mergansers, grebes and other water-dependent birds arrive in large numbers, with great diversity. Flocks fill creeks, ponds, bay and ocean with dabblers and divers. Birds dressed in every conceivable color come calling. Winter is an excellent time of year for new birders to "catch the fever", as the large-bodied birds stay relatively still for long periods, allowing for excellent views and ample opportunities to admire their myriad colors, and learn to discern one from the other.

Winter is when many species of waterbirds pair-up and mate before their long journey north to the tundra in spring, where the sexes will part ways and the females will raise their brood. So while many songbirds lose their colorful attire in the winter, 'tis the season when waterfowl look their best.

Like all species, waterfowl have niches - nature's way of reducing competition. Each species spends time in a particular type of habitat, and each species is equipped with tools and behaviors that are used to precisely extract the food they seek, protect themselves from predators, and withstand the harsh weather they inevitably face. The Barnegat Bay watershed has a diversity of habitats, and therefore, a diversity of species spend the winter months here.

Winter Birds of Protected Inland Lakes and Ponds

[Wood Duck](#) is a shy and elusive species who depend on the quiet protection of a forested inland lake or pond. Males are ornately decorated; females are demure but nonetheless beautiful. Male [Hooded Mergansers](#) strut around the lake, showing off their large crests. Females carefully select their mate and use muted camouflage to outsmart predators. You'll need an eagle-eye to spot the one or two [Pied-billed Grebes](#) in protected ponds. This diminutive bird spends much of its time diving for small fish and invertebrates. [Ring-necked Ducks](#) are named for their chestnut colored collar which is difficult to see. Instead, their peeked forehead, white shoulder "spur" and patterned blue bill with white ring and black tip are key field marks. [Green-winged Teal](#) congregate in good-sized flocks in shallow ponds and marshes. They filter small invertebrates from the mud using teeth-like projections that grow around the inner rim of their bill. To observe these species, visit: [Lake of the Lilies](#), [Enos Pond County Park](#), [Double Trouble State Park](#), [Wells Mills County Park](#), [Jumping Brook Preserve](#), [Prospertown Lake](#), and [Bunker Hill Bogs](#). (Photos by Becky Laboy)



Wood Ducks, drake & hen

Hooded Mergansers, 1 hen, 2 drakes

Pied-billed Grebe

Ring-necked Duck, drake

Green-winged Teal, hen & drake

Winter Birds of Back Bays & Estuaries

[Northern Shovelers](#) resemble Mallards, but can be identified by their wide, shovel-like spoon-shaped bill. Like Green-winged Teal, Shovelers filter aquatic macroinvertebrates using the lamellae on the edges of their bill. [Northern Pintail](#) are one of the most stunning waterfowl species! Males have a chocolate-colored head with a vanilla swirl curling around their neck. They also sport a long, thin, pointy tail. Seemingly, a thousand different shades of brown blend together, making the females nothing less than gorgeous. [American Black Duck](#) is a large-bodied bird with both sexes resembling female Mallards. Their numbers were once decimated by over-hunting. Edwin B. Forsythe National Wildlife Refuge was created to provide habitat for American Black Ducks, a respite for waterfowl and a haven for many bird species. [Red-breasted Mergansers](#) have shaggy feathered heads and long thin, serrated bills. They keep close to shorelines when feeding and are more often seen in salty waters than their look-alike cousin, [Common Mergansers](#), who prefer freshwater lakes and rivers. To observe these species, visit: [Lake Carasaljo](#), [Marshall's Pond](#), [Island Beach State Park](#), [John C. Bartlett Jr. County Park at Berkeley Island](#), [Edwin B. Forsythe NWR - Cedar Run Dock Road](#), and [Great Bay Boulevard](#). (Photos by Becky Laboy)



Common Mergansers, hens

Northern Pintails, hens

American Black Ducks

Northern Shoveler, drake

Winter Birds of Rocky Shorelines and Open Waters

The rocky shorelines near inlets and open coastal waters in the Barnegat Bay watershed are prime winter destinations for several species of unique ducks. [Harlequin Ducks](#) are one of the most sought-after species for birders' checklists. Males are aptly named - their colorful facial and body markings reflect an artist's creative brush. Listen for the yodeling of [Long-tailed Ducks](#). Males flaunt long tail feathers to attract demure females. Seaducks, including [Common Eider](#) and Scoters are plentiful off the Atlantic coast in winter. Common Eiders are the largest ducks in the northern hemisphere. Males are white and black, while females are a collage of rich warm browns. One or two vagrant King Eiders show up on our shores each year - another specialty for a birder's checklist. Eiders form large flocks and feed on mussels and other shellfish near rocky inlets. Three different species of scoters can be observed along the Barnegat Bay watershed's coastline in winter: Surf Scoter, Black Scoter and White-winged Scoter. Scoters tend to flock quite a distance from the shore, however, some do feed closer to the beach where you can view them with binoculars or scope, and pick out key field marks to discern between the 3 species. Male [Black Scoters](#) are all black with a very visible bright orange knob at the base of the bill. They are the most abundant of the trio here in the Barnegat Bay watershed. Male [Surf Scoters](#) are black with a white patch on the back of their neck and forehead. They have a bright white eye and colorful bill. [White-winged Scoters](#) are all black with distinct white markings on their wings. Their bright white eye is underlined by a white swoosh-mark. Although scoters spend the winter in turbulent, salty coastal waters, they breed on freshwater lakes in northern boreal forests near the tundra. The flamboyant colors and display antics make these waterfowl species of rocky shorelines and open waters some of the most enjoyable to watch during winter excursions. To observe these species, visit: [Barnegat Lighthouse State Park](#), [Island Beach State Park](#), [Manasquan Inlet](#).



Harlequin Ducks, drakes

Long-tailed Duck, drake

Common Eiders, drake & hen

White-winged Scoter, drake

Enhance your enjoyment of birds by sharing your sightings through [eBird](#), through website or app. eBird is one of the worlds largest avian databases in the world. Set-up an account then record your observations. eBird compiles more than 100 million sightings per year by citizen scientists like you! Go out and enjoy the beautiful diversity of birds in the Barnegat Bay watershed and at the same time, your data contributes to student projects, peer-reviewed papers, and helps inform conservation decisions world-wide.

Composting in Winter: Prepare for Spring by Returning Nature's Gifts to the Soil

By Lisa Mazzuca

Barnegat Bay Master Naturalist, Class of Spring 2018

When it comes to gardening for wildlife and being good stewards of the land, we generally advise those who will listen, to “leave the leaves”. Leaves are a wonderful natural mulch, decompose into a rich food source for the soil food web and help well draining soils to retain water and nutrients. While performing these herculean tasks, leaves also provide shelter and habitat for over-wintering moths and other insects.

In the suburban landscapes of Ocean County, even the most Jersey-Friendly and native plant filled properties often retain some areas of lawn. Depending on the number of large shade trees you harbor, homeowners who would like to have some grass in the yard will find themselves clearing at least a portion of their fallen leaves.

Rather than bagging them up and turning them over to the municipality, I would encourage you to make homemade compost to fertilize your gardens and infuse your soil with healthy biology in the coming year.



A collection of leaves to use for compost.
(Photo: Lisa Mazzuca)

What's Compost?



Finished compost is “brown gold” for your garden!
(Photo: Lisa Mazzuca)

Compost is a soil amendment made from an aerobic combination of about 60% brown (carbon rich) and 40% green (nitrogen rich) materials. In our area, fallen leaves are generally an abundantly available ingredient to use as bulky brown material to add to your compost operation. Grass clippings, kitchen veggie peels and fruit scraps are your greens.

Try to assemble your pile all at once in alternating layers. This is not always possible, as a kitchen will produce small amounts of scraps and compostable waste over time, so inevitably, these scraps will be added throughout the process.

A static pile is left alone to decompose like the leaves and other organic materials that collect on a forest floor. This will happen over time without much intervention on the part of the homeowner - as they say, “Compost Happens”.

Thermal compost is better than static because the biomass will heat up more quickly thanks to rapidly reproducing bacteria and fungi feeding on the decomposing organic matter. To encourage a cool, static pile to heat up and become thermal compost, you may add a small amount of high nitrogen material like animal manure or spent brewery grain. The mix should be consistently damp, but not soaking wet, and should be turned about every 3 days.

A hot pile must be turned because microbes use up oxygen rapidly as they grow and the hot pile can shift to anaerobic conditions. Anaerobic compost invites pathogens that can harm plants and does not have the beneficial attributes of aerobic compost. You'll know your pile is shifting to anaerobic when it starts to smell like ammonia or have a rotten odor. Turning your compost every 3-5 days also helps to distribute the biology evenly throughout the pile.

The temperature of the pile, assessed with a long stemmed compost thermometer, should be 131° F (minimum) for no fewer than 15 days.



A compost thermometer. (Photo: Lisa Mazzuca)

What Kind of Enclosure Should I Use?

There are many different kinds of compost bins and methods. Here are some of the most popular ways to compost.

The Open Pile

An enclosure isn't mandatory to make compost. If you have the space, a pile of compost ingredients in the right proportion and mass will suffice. This is obviously the least costly but there are some drawbacks to an open pile.

Consistent mass - you want to try to keep your ingredients in at least a 3'x3'x3' bundle.... In an open pile with no walls, this becomes a challenge as the compost on the edges can spread out. The materials can get blown around by wind or spread around by critters. A flat pile is not likely to be a hot pile.

Consistent moisture - many composters will choose to cover their pile so they control the moisture content. On rainy days, an open pile can get soaked which increases the likelihood of the pile going anaerobic. A stretch of hot, dry days can dry the open pile out and stall decomposition. When the pile is covered, it's protected from excessive rain and drying wind.

Space - a successful open pile will need to be large enough to maintain that steady mass in the center and will likely take up more space than other compost methods.

The Bay System

The bay system can be constructed of whatever material you have available - some are built out of wood, wire, pallets or cinderblocks. Individual bays are at least 4'x4' squares with one side open which allows for easy loading and turning of your compost. The front may have a removable door or wall to keep the compost contained when it's not being actively managed.

In a 2 bay system, the compost is basically moved from one bay to the other with each turn using a pitchfork. In a 3 bay system, one bay can be used for a newer compost mix while another can be used for a compost mix that is further along.

When assembling your compost pile you need to make the decision at some point to stop adding fresh material and allow your mixture to decompose and mature into a finished product. The three bay system allows you to continue to generate compost in a new batch while allowing an older mix to finish and cure.

Bays can also be adapted to be a more portable wire or plastic cylinder. Rather than accessing the compost from an open side, the cylinder can be lifted off the compost pile, moved adjacent to it, and refilled in the turning process. This is an inexpensive and efficient way to keep the ingredients bunched together while also allowing you to move the compost generating station anywhere you want on your property.

The Tumbler

The tumbler is an attractive option for many suburban homeowners. Personally, I have the least success using this method. The compost ingredients are placed in a commercially made plastic drum or container that can be spun around to mix the pile. The container has an opening to add ingredients and to empty the finished compost into a wheel barrow or bucket when it's done.

In my experience, it's difficult to maintain and develop finished compost using a tumbler. My mix always ends up dry and yet smelly. Though turning is set up to be easy, I don't bother to tumble it as often as I should. I suppose out of sight is out of mind in my case.



2-Bay Open Pile compost system. (Photo: Becky Laboy)



A backyard Tumbler compost bin. (Photo: Lisa Mazzuca)

If you choose the Tumbler method, here are some ideas that may improve your outcome. When it comes to worms in a compost pile, “if you build it, they will come.” In this case, however, you’ll have to add worms to the tumbler yourself if you want their help to break down the organic materials. It’s also important to inoculate this mix with high quality finished compost or a small amount of soil from your local native forest in order to introduce living soil organisms into the batch. Watch the tumbler closely to maintain adequate moisture levels and experiment with placement in the sun and shade. The tumbler looks alright in the yard, but if you can’t get finished compost out of it, what’s the point?

In Situ

Composting in situ, means composting in the place where the finished compost will be used. This is usually a passive and not a thermal compost. The ingredients are added to a hole or container and left to decompose. An example of this would be the center basket of a keyhole garden.



A keyhole garden is a circular raised garden bed about 6 feet in diameter. It’s built with a compost basket in the center (shown left), and a pie slice, or “key hole”, cut out of the garden (shown right) to give the gardener access to tend the entire circle without having to step into the garden bed. The soil is mounded up toward the center of the circle to increase the



planting surface area. Compost materials are added to the center basket and as the garden is watered, the compost is watered and the nutrients leach out to feed the garden. The basket can be covered with a lid to better control moisture and keep out pests.

Similarly, composting in situ can be done in honey holes, trenches or with sheet mulching. A honey hole is created by burying kitchen scraps and other compostable materials directly into the garden. This will create pockets of fertility and nutrition in the garden while keeping the remaining soil structure intact. Trench composting works the same way but covers larger areas and requires more materials. These methods are best done in the fall where you intend to plant things the following spring. By incorporating compost into honey holes and trenches in the fall, you create the conditions and allow the time for the ingredients to decompose before planting.

Sheet mulching is a method of no-dig gardening where organic, compostable material is spread out over a planting area in layers. In the fall, the gardener must decide where the garden will be situated. The sheet mulch garden is built by layering a combination of brown and green materials like cardboard, leaves, manure, hay or straw, kitchen scraps, garden waste, etc. until the bed is around 10-16” inches deep. The layers compress and decompose over the winter to be almost flush with the original soil level in the spring. The ground will be softened and ready to plant while the rich mulch will help suppress unwanted weed growth and reduce the need for irrigation throughout the growing season

It’s also worth mentioning that this method is closest to my original recommendation to “leave the leaves”, since this is closer to passive, cold composting.

Compost Can Be Made in Almost Every Yard!

It’s easy to see that by using the methods described, almost anyone can make and use compost. There are many benefits to using a high quality, homemade compost in your garden to amend your soil. When deciding what to do with an abundance of fallen leaves on your property, look no further than to put them back into the soil and close the loop of nutrient cycling in your backyard’s ecosystem by turning them into compost!



Author, Lisa Mazzuca, and former Watershed Ambassador Ray LeChien, use the sheet mulching method to create a Butterfly Garden at Jakes Branch County Park. (Photo: Becky Laboy)

Microplastic Pollution - Not a Small Problem

By Carol Ann Murphy
Barnegat Bay Master Naturalist, Class of Fall 2019

Plastics pollution is a global problem that attracts worldwide attention. There's less awareness, however, of the growing problems posed by microplastics, defined by the [National Oceanic and Atmospheric Administration](#) (NOAA) as pieces less than 5 mm. Microplastics come from various sources, including microbeads, tiny pieces of manufactured polyethylene plastic added as exfoliants to health and beauty product; [nurdles](#), small plastic pellets used in the manufacture of larger plastic products, and pieces generated by the breakdown of larger plastics in the environment. Microplastics pose dangers to the health of our oceans and their wildlife, and unknown risks to humans via the food chain.



Microplastics on the beach.
(Photo: Dave Hall)

Extreme Measures Required



Dave Hall, BBMN, takes extreme measures to raise awareness about microplastic pollution on our beaches. (Photo: Carol Ann Murphy)

In 2019, Dave Hall, Barnegat Bay Master Naturalist, began researching microplastic pollution in Barnegat Bay. Hall, a municipal engineer for Old Bridge Township, was familiar with the problem from his job as coordinator for stormwater pollution prevention and educator for recycling initiatives. To explore the scope of the problem, Hall teamed up with then Watershed Ambassador Haley Kardek on a pilot project. With the help of students and volunteers, they sampled bay and ocean sites from Point Pleasant down to Little Egg Harbor, including Point Pleasant Beach, Pine Beach, Brick Beach, Island Beach State Park, Seaside Park, Barnegat, Long Beach Island, and Little Egg Harbor Inlet. "We found microplastics of all kinds," says Hall, "and plenty of macroplastics, too."

This effort received a boost when the [Plastic Wave Project](#), a New Jersey grassroots nonprofit, initiated their pilot Microplastics Citizen Science Program, as part of their mission to educate the public about the dangers of microplastic pollution. Collaborating with [Save Coastal Wildlife](#) and [Save Barnegat Bay](#), the program began recruiting volunteers in December 2019. The third year of the Microplastic Sampling Project kicked off in December 2021.

[Virtual training resources](#) are available online, according to the Plastic Wave team. Volunteers sign up on the website, take the virtual training, and choose a beach to sample on one day during each sampling season (winter, spring, summer, fall). For example, for spring 2022, volunteers will choose a date from March 18 to April 3. Using a meter square or meter stick, volunteers mark three sites for each of these locations on a beach: Dune Line, High Tide Line, and Low Tide Line. Using a trowel and a sieve, they sift each site for microplastics, and collect them in labeled envelopes or jars. They also note the date, moon phase, weather, time, and GPS coordinates. Data are submitted via the project's Google Classroom site.



Haley Kardek, Watershed Ambassador, and Graceanne Taylor, Education Coordinator at Save Barnegat Bay, lead a workshop on microplastic sampling. (Photo: Carol Ann Murphy)

strongly influence what is deposited on beaches," she noted. "Winter storms are linked to increased pollution onshore; there's less accumulation during summer months. Cleaning and raking of beaches also removes debris during the summer season."

According to Hjelm, in the coastal environment, microplastics behave move like a fluid than as solids. "While a storm may clear them from the ocean beaches, there may be more opportunity for plastics to become trapped in the bay, a phenomenon we've seen at Plum Island," she reported. "This is why it's so important to sample a variety of sites."

The Plastic Wave Project encourages volunteers to participate in their citizen science project. "We believe strongly that individual actions create ripple effects, and it's these ripples that make waves," concludes Nadia Serghis, President of The Plastic Wave Project. "By gathering sufficient data about the scope of microplastics pollution and its origins, we can reach our goal to focus attention on this problem and influence policies and programs that address it."

For more information, visit <https://plasticwaveproject.org> or email plasticwaveproject@gmail.com

Volunteers of all ages may participate in the Microplastics Sampling Project as individuals or a team. Among the participates are scout troops, community groups, and the staff of Jenkinson's Aquarium. Hall and I participated as a Barnegat Bay Master Naturalist team despite the challenges of the pandemic. Dave collected samples, and I submitted the data for four bay beaches. "I'm thrilled that Save Barnegat Bay and Save Coastal Wildlife are on board with this important project," says Hall, and "I'm excited to represent Barnegat Bay Partnership's Barnegat Bay Master Naturalists".

"During this pilot phase, volunteers are free to select their sampling site", says Rita Hjelm at the Plastic Wave Project. "Seasonal sampling gives us a better understanding of what contributes to accumulation. Along the coast, wind and wave and currents



Nadia Serghis, President of The Plastic Wave Project sieves for microplastics. (Photo: Joe Reynolds)



Resources

[What are microplastics? \(noaa.gov\)](https://www.noaa.gov)

[What's a Nurdle? - Carnegie Museum of Natural History \(carnegiemnh.org\)](https://www.carnegiemnh.org)

Upcoming Microplastics Sampling Dates

Spring: March 18, 2022 - April 3, 2022

Summer: June 17, 2022 - July 3, 2022

Fall: September 23, 2022 - October 9, 2022

Pictured left: Nurdles collected on the beach. (Photo: Dave Hall)

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.

We're on the web! www.BarnegatBayPartnership.org

LEARN, PROTECT, EXPLORE



Answers to Species ID Quizzes

What's Bugging You?: (Page 2) Species 1: **Winter Stonefly** (Family: *Taeniopterygidae*)

To watch a male Winter Stonefly drumming:

<https://youtu.be/EYh2Z0bcunE>

Winter Stoneflies Sure Are Supercool! <https://blogs.scientificamerican.com/guest-blog/winter-stoneflies-sure-are-supercool/>

References

www.bugguide.net

www.insectidentification.org

Are you a Bird Brain?: Species 1: **Snow Bunting**, Song Source: Steve Hampton. Accessible at www.xeno-canto.org/416067 2: **Great Horned Owl**, Song Source: John Zarcone. Accessible at www.xeno-canto.org/679120 3: **American Crow**, Song Source: William Whitehead. Accessible at www.xeno-canto.org/516376 4: **Common Raven**, Song Source: Scott Olmstead, XC578084. Accessible at www.xeno-canto.org/578084.

Are you a Botanical Genius?: Species 1: **American Holly** (*Ilex opaca*), Species 2: **Pin Oak** (*Quercus palustris*), Species 3: **Bearberry** (*Arctostaphylos uva-ursi*)