



# *The Naturalist*

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







CEC Retreat, Clam Cove Reserve

## FROM PUMPKIN SPICE TO SNOWY ICE: THE FALL & WINTER NEWSLETTER IS HERE!

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As the air grows crisper, and the leaves begin their transformation from vibrant greens to fiery reds and burnt oranges, we find ourselves transitioning into the Fall here in the Barnegat Bay Watershed. Some might say cherish your time outside while you have it, but the winter still holds beauty and exciting opportunities for a Volunteer Master Naturalist. In the pages of this newsletter, you'll find articles recapping our wonderful spring and summer, as well as some helpful tips and information as we move into some colder weather. We hope this newsletter serves as an inspiration for you to savor the beauty of the changing seasons in the Barnegat Bay. Thank you for sharing in our passion for the natural world. Stay warm!

### The CEC Retreat: Climate in the Classroom

By Bailey Sanders, Stewardship Specialist, Barnegat Bay Partnership

The scenic Long Beach Township Marine Education Field Station recently played host to the much-anticipated 2023 Barnegat Bay Partnership Education and Outreach Retreat. With a shared goal of discussing the threats of climate change to the ecological health of the Barnegat Bay, this event brought together a diverse group of professionals, educators, researchers, and community leaders for a fruitful exchange of ideas and strategies. The retreat embraced a unifying theme of being catalysts for change, the participants recognizing the need for the local effects of climate change to be brought up in the classroom. Over the course of the day, attendees engaged in a series of workshops and discussions, all aimed at enhancing their ability to communicate and educate effectively about climate-related issues.

The heart of the retreat lay in its workshops. One of the highlights was the Key Note Speaker, Janice McDonnell, an Associate Professor and Science Engineering Technology Agent from Rutgers University. She spoke about the new NJ climate change standards being implemented and different ways they can be incorporated into the curriculum. The retreat wasn't confined to indoor discussions alone, however, as experts in the fields of environmental science, communication, and education shared their insights on innovative communication strategies and their respective projects. Students from the Marine Academy of Technology and Environmental Science (MATES), along with Dr. John Wnek discussed their activities in the Project Terrapin lab, as well as the Terrapin Hatchery on-site. Dr. Christine Thompson and students from the Stockton University Marine Field Station dove into talks about Oyster Reef Restoration, while Kim McKenna from Stockton's Coastal Research Center introduced the NJ Bay Islands Initiative (previously discussed in the last newsletter).



The CEC Retreat...(continued)



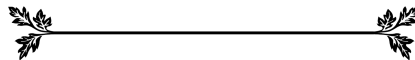
CEC Retreat, Clam Cove Reserve Terrapin, photo by Bailey Sanders

While the first group stayed at the Field Station, the other visited the Clam Cove Reserve, led by the Field Station’s own Angela Anderson, who enlightened us on the visible impacts of climate change in the immediate area. Tom Herrington and students from Monmouth University’s Urban Coast Institute covered Shoreline Restoration planning, amazing the group with before and after images of Clam Cove and how it has changed over the years. The most exciting moment for my group was watching a terrapin actively lay her eggs in a hole we witnessed her dig!

The conclusion of the retreat featured a brainstorming session led by Kaitlin Gannon of JC NERR and Jennifer Lengares of Jenkinson’s Aquarium. This interactive discussion had the attendees divide and conquer different concepts related to climate change and come up with creative ways to implement them with the public, in the classroom, and everyone in-between. Participants left with a renewed sense of purpose and a shared commitment to teaching about changes in the bay and life within it. Armed with new communication tools, educational strategies, and an expanded network of like-minded individuals, they are poised to create a collective impact that will reverberate through generations. As we bid farewell to the 2023 retreat, let us carry forth its spirit of collaboration and commitment, recognizing that the journey towards a healthier Barnegat Bay is a shared responsibility—one that requires us all to work together for the sake of both the environment and future generations.



Clam Cove Reserve with MU’s Urban Coast Institute, photo by Bailey Sanders



Shout out to Class of 2023 Master Naturalist Donna Johnson for making this beautiful display for the Long Beach Township Marine Education Field Station, depicting the life cycle of ribbed muscles. As stated by the Field Station’s Facebook, “it is the perfect way to highlight the symbiotic relationships between plants and creatures that keep the soils of our bay islands secure, as well as the current restoration efforts our researchers are working on to mimic those stabilizing relationships.” Great job, Donna!



## A Trip to Sedge Island

By Fred Moy, Barnegat Bay Master Naturalist, Class of 2023

The final field session for the Barnegat Bay Partnership's 2023 Class of Master Naturalists was held at Sedge Island in July. Following a very patient drive through Seaside Heights and Island Beach State Park carefully following the speed limit (!!!), we met in a parking lot near our launch site to prepare for our adventure for the day. The weather was very cooperative and all showed up with sunscreen, comfortable field gear, and lunch!

Our merry little group took a short ferry ride from the dock near our parking area at Island Beach State Park. Our boat captain safely and enjoyably took us aboard the Sedge Shuttle to travel 1.2 miles safely through the Marine Conservation Zone to the Sedge Island Natural Resource Education Center where we docked for the day. Two resident biologists worked with us for the day in a variety of activities.

The Sedge Island facility has been a focal point for several ecological restoration projects, particularly focusing on osprey and clams. A long history as a duck hunting and fishing camp transitioned to a field station with the main building being over 100 years old. The facility is currently run by the NJ Department of Environmental Protection's Division of Fish & Wildlife. The Marine Conservation Zone houses one of the largest osprey nesting colonies on the east coast. Sedge Island is the only marine conversation zone in New Jersey.

After a brief orientation and history of the Sedge house, we learned the challenges of living on a daily basis with limited water and shower facilities! The composting toilets underscored the importance of sustainability in this sensitive environment. The house is completely off-grid. Solar panels provide electricity, while propane fuels the stove, water heater and outside grill. Two Clivus Multrum composting toilets handle human waste, and a shallow well provides water to wash dishes and hands. Potable water is brought out to the island for groups.

Our group kayaked the salt marsh in double kayaks. Following a safety session and instruction with the kayaks, we set out to tour the salt marsh area and enjoyed the marine life, particularly focusing on the osprey nests, the peregrine falcon, great blue heron, and egrets (both white and Great).

Numerous shore birds made their presence known, and ongoing feeding was observed. We beached the kayaks and proceeded on shore for part of the time observing marine life as it presented—fiddler crabs and horseshoe crabs among other specimens. The channels we paddled through were narrow with high grassy edges so wind did not present a problem, and no disgruntled paddling teams were noted. No unexpected swims either. However, the depth of water was always very shallow so kayakers could always stand up and walk the kayaks if necessary.

Before lunch we collected our appetizers (see photo) from the designated area for clam restoration and grilled some of the clams-- a few of us tried them raw. All members seemed content with our harvest and no clams were left on the grill, so we moved on to the lunches we brought and enjoyed the good weather which allowed us to remain outside.

Following lunch, we had a chance to do some seining. Pairwise we seined the area where we had collected clams for lunch and it turned into an interesting event as we tried to identify the marine aquatic species caught in the nets and then released.

Our return trip to the dock near our parked vehicles was still filled with more marine observations and particularly shore birds busy feeding in the rich waters of the Marine Conservation Zone. Following a short walk back to our vehicles, the group disbanded after our 'good byes' and moved forward with our anticipated volunteer projects.



Sedge Island Facility from our boat ride.



Clams caught for our lunch!



## Bird ID Quiz

By Sarah Stewart, Master Naturalist, Class of 2014



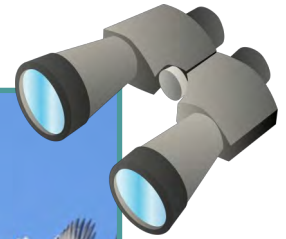
Image Credit: airboy123 [CC BY 2.0](#).

**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: John Harrison, [CC BY-SA 3.0](#)



**Species #1:** I am a small, but mighty raptor! My field marks are long, pointed wings, heavily streaked below and with a banded tail. My nickname is “Pigeon Hawk” because I resemble a pigeon in flight. I forage from a high perch or on the wing for small birds, such as sparrows and waxwings, accelerating to 30 miles per hour and faster during a chase. We often work in pairs flushing a flock from the top and bottom to confuse and catch prey. We ‘appropriate’ nests instead of building them, often taking over nests from other raptors, crows and magpies. Autumn is the best time to see me in this region since I winter in the southeast US and migrate to the northern US and Canada for breeding often with the same partner. Though we winter separately, we return to the same breeding area to look for a new nest. We males use all of our athleticism to impress females by power flying with steep dives, twisting flights, glides, rolling from side to side and more! We then bring our intended mate tempting food to seal the deal!

**Historical trivia:** Medieval aristocratic women used me for sport to hunt skylarks.



Male Color Variation



Female Color Variation

**Species #2:** I am a ‘piney’ to my core as my preferred hang-out is high in the branches of pine trees, and as a result, I can be difficult to see. Birders often use my steady, clear, trilling song (similar to some other small birds) to ID me.

Insects are my primary diet, but unlike my cousins, I also eat seeds, lots of them - pine tree seeds, sunflower seeds, millet, cracked corn, peanuts and suet. If you have a feeder at the right height, you may just see me on it especially in winter. Fruits also are in my diet – grape, sumac, persimmon, bayberry, flowering dogwood and Virginia creeper. As common as we are in this region and most of the US, little is understood of our nesting habits likely due to the high elevation of our nests. We winter in the southeast, start fall migration later than most in our family, and make the return trip as early as February.



**Species #3:** I am “shore” to please if you catch sight and sound of me! My “Keer-reet” call distinguishes me along with my rough black crest from other beach-loving birds. Ocean beaches and bays are my favorite hang-outs. Small fish and shrimp are our primary food which we catch by flying over water, diving, and then using our bright orange bill to make a quick strike to catch a meal, often eating it in flight. We are a social bunch, often congregating in dense and loud colonies. Our courtship is fun to watch both in the air and on the ground. In the air, males and females fly in spirals, where a male gives the female a fish high above the ground. On the ground, our male presents fish, crab or shrimp, calls and then bows with a raised crest. Once paired, we walk in a tight circle and then strut side by side through the colony. Our nests are shallow scrapes in the sand where we defecate around the edge; once hardened, it helps protect the nest from washing away. Our hatchlings are grouped and cared for in large communal nurseries or creches. We are the ‘noblest’ of our kind!

Image credit: (female color variation) Dominic Sherony [CC BY-SA 2.0](#)

Image credit: (left) Nicholas Atamas [CC-SA-BY-2.5](#); (right) Judy Gallagher, [CC BY 2.0](#).

## 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?** (Answers found on the last page of the newsletter.)



Image Credit: James St. John, [CC BY-SA 2.0](https://creativecommons.org/licenses/by-sa/2.0/)



Image Credit: Famartin, [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



Image credit: Wikimedia Commons

**Species #1:** A tree named for its striking leaf color in Autumn which develops in mid-November. At maturity, it can reach a height of 70 ft - 80 ft, and a width of 40 ft – 50 ft with a rounded open form. Irregular ridges on the bark are characteristic as the tree matures. Leaves are 3 inches to 6 inches long, with deep bristle-tipped lobes and show glossy green in spring. It thrives in well-drained acidic soil and full sun. As with most trees, it provides shelter, nesting space and food (acorns) for wildlife, including deer, wild turkeys, mice, chipmunks, blue jays, woodpeckers, and squirrels. Small mammals and birds use the canopy and cavities for their nests. As with similar species, threats include various fungi and insects including gypsy moths and chestnut borers. The wood is red with limited commercial use due to coarse texture and inferior grade. It is a popular choice for landscaping due to its brilliant fall color and its tolerance and adaptability to poor soil.

**Species #2:** A familiar and common sight along NJ beaches. A densely branched native shrub growing on sandy dunes, and in marshes and pine barrens along the coast. It tolerates a wide range of soils and growing conditions: wet soils, poor soils, drought, high winds, and salt spray. It can be deciduous or evergreen, depending on its genetics and impact of winter weather. Growing via rhizomes and suckering, this plant ranges from 5ft to 10ft in both height and spread. It is dioecious, meaning individual plants have either male and female parts, but not both on the same plant. Female plants need a male plant nearby for successful pollination and fruit formation. Leaves are oblong up to 4 inches, leathery with resin dots on underside which are aromatic when crushed. The berry fruit ripens in the fall and persists through winter providing shelter and food for many birds and mammals. Several bee species use the nectar and pollen, and it is a host plant for several insect species. This plant also helps improve the overall health of the local ecosystem with nearby plants such as seaside goldenrod and American beachgrass showing increased vigor and health in its presence. Indigenous people employed extensive uses, including boiling the fruit to distill the waxy coating for candle-making and using the leftover blue-green water to dye cloth and make soap. Take note: the berry wax is considered toxic. Tea made from the leaves was used as a stimulant and to treat various maladies; the root bark was used as a paste to treat inflammation. Some of these practices were adopted by early colonists and continue to this day.



Image Credit: Missouri Botanical Garden Plant Finder



## Fish ID Quiz

By Sarah Stewart

Master Naturalist Class of 2014



Image Credit:  
Judy Gallagher [CC BY-SA 2.0](#)

## What's bugging you? Can you name this species?

(Answer found on the last page of the newsletter.)

**Species 1:** During summer, you are very likely see us in your backyard. Our webs are large and distinct having a cave-like shape and a funnel or tunnel to one side that we build in low shrubs, ground covers, grass, weeds, and along fences. Appropriately, we belong to the “Funnel Weavers.” Our favorite food is not surprisingly ... insects. We are fast-moving, chasing and catching our prey and dragging them into the funnel. We are often confused with another species since we both sport dorsal black bands on our carapace and abdomen. A distinctive trait for us are chevrons on the abdomen which the other species does not have. Late summer to fall, females deposit a white egg sac at the edge of the web where the spiderlings will hatch in spring. We are shy and our bite is non-venomous. In autumn, we may take shelter in your home to avoid the falling temperatures, but in general, we do not survive winter.



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

## Upcoming Volunteer Opportunities

Having trouble finding volunteer opportunities? Have no fear! Here is a brief list of upcoming events or volunteer trainings that you might find interesting:

- **[Save Coastal Wildlife](#)** is looking for volunteers to help monitor seal populations in Sandy Hook, NJ. Your data will “contribute to the long-term monitoring of harbor seals and other pinnipeds...[and] it will aid in...assessing the health of the coastal-marine ecosystem.” Fill out the [Volunteer Waiver & Release Form](#) and join the [email list](#). Wait for an email with information about a training session.
- **[Barnegat Bay Partnership](#)** will be starting up glass-eel collection in January. This would involve going to freshwater sampling spots with our Field Specialist, JJ Egan, and collecting glass-eels using eel mops. The eels are brought back to the BBP Lab, sedated, measured, and then re-released back to their home! If you are interested in volunteering with us, please email JJ Egan at [jegan@ocean.edu](mailto:jegan@ocean.edu).
- Are you a birder? **[The National Audubon Society](#)** has their 124th Annual Christmas Bird Count running from Dec 14, 2023 to Jan 5, 2024! It’s an early-winter bird census, where thousands of volunteers across the U.S. and many countries in the Western Hemisphere go out over a 24-hour period on one calendar day to count birds. For more information on how to get involved, [click here!](#)
- More of a backyard birder? Participate in the **[Great Backyard Bird Count](#)** on February 16–19, 2024. Each February, for four days, the world comes together to spend time in their favorite places watching and counting as many birds as they can find and reporting them. These observations help scientists better understand global bird populations before one of their annual migrations.
- Volunteer with the **[New Jersey Watershed Watch Network's](#)** Salt Watch Program. Road salt is everywhere during winter months. It keeps us safe on roads and sidewalks, but it can also pose a threat to fish and wildlife. The Salt Watch Program sends you a kit that will help you test salinity levels before and after a snowfall event. More information is available [here!](#)



## 2023 Master Naturalist Program Testimonials

By Claire Brower & Dawn Tapp, Barnegat Bay Master Naturalists, Class of 2023

### Claire Brower:

“Growing up in Ocean County I’ve always felt a strong connection to its varied waterways and ecosystems. For years I’ve wanted to learn more in depth about the flora and fauna of the area in a structured but non-traditional setting. The Barnegat Bay Partnership Volunteer Master Naturalist program is exactly the opportunity I was looking for. Getting to meet and learn from experts in local botany, ecology, forestry management and more alongside a wonderful cohort of peers was an absolute dream. I loved the hands on nature of the program- holding dragonfly and caddisfly larvae, topographically mapping a beach, seining in the bay, and kayaking through the mosquito ditches near Sedge Island were some of the particular highlights for me. I greatly look forward to continuing the connections I made while in the program and have recommended the program to numerous people already.”

### Dawn Tapp:

I was fortunate enough to be able to participate in the 2023 Master Naturalist program. It was a great experience that provided me with the opportunity to learn about so many topics and places in my local area that I did not know about or had never visited. Trying to pick a favorite thing to write about is very difficult because I have so many. I guess my favorite thing is the excitement and passion of the people I met during the program, both the presenters and my fellow naturalists. The love for their area of expertise came through in the presentations and field trips.

To share a few:

- George shared his life-long love and experience of fishing the Barnegat Bay.
- Murray’s passion came through in his presentation and beach activity on tides and sea level rise.
- Joel’s love and enjoyment of his work in the Pinelands was apparent in his presentation and our tour of Bass River State park and the Warren Grove fire.
- Karen’s presentation on Jersey Friendly Yards showed her passion for how important these things are to the watershed and motivated me to do more in my own yard.
- Angela’s excitement for the many programs being offered at LBT Marine Field Station had me sharing Terra-pin Tuesdays with everyone I know who loves turtles.
- Josh’s knowledge and love of what he does came through in his presentation on Birds of Barnegat Bay and his tour of Wells Mills Park.
- The Reclam the Bay volunteers were inspiring with their enjoyment in sharing their work.



I loved all of the presentations but the one I would say is my favorite was Bailey’s on macro invertebrates. Why? Because her love for them was infectious. When I first saw the topic I thought it would be my least favorite. She gave us all the knowledge we needed in her presentation to identify them in our field trip as well as the explanation of why studying them is so important to knowing how healthy our waters are. During our field trip at the Forestry Resource Education Center, the fun Bailey had collecting samples for us to study made you look forward to seeing what she had gathered. She had just as much fun helping us identify caddisfly larvae and dragonfly nymphs and so many other things living in the stream.

I am so happy that I was able to participate in this amazing program and meet so many people that have a passion for so many things within the Barnegat Bay Watershed. Thank you Karen and Bailey for putting together such a great program.



# Plants of the Salt Marsh & Its Environs

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



The edges of Barnegat Bay may look uniformly green, but they are diverse environments. The marshes border our estuaries where the ocean and river waters meet. Plants found in the marsh follow a salt-tolerant gradient. They range from very salt-tolerant, closest to the bay, to less tolerant in the maritime forest. Our tidal wetlands have salinities from 28 to 30 ppt (parts per thousand). This approaches the salinity of the ocean which is 35 ppt.

## Low Marsh

In the lowest part of the marsh, the dominant species is *Spartina alterniflora* (smooth cordgrass). *Spartina patens* (salt hay) and *Salicornia virginica* (glasswort or pickleweed) can also be found. These plants withstand daily inundation of salt water from the tidal flow. The soil that supports them is mostly mud and decomposing material from the plants and other organisms in the bay. This soil provides nutrients for the plants. The roots of the plants trap additional sediment and absorb water.

*Spartina alterniflora* excretes excess salt from its leaves. Native Americans had many uses for this plant from food to material to make baskets. Later, salt hay was used for fertilizer, cushions and packing material. Legend has it that the seats of early cars and in Radio City Music Hall contained salt hay stuffing.

The *Salicornia* plant contains bladders that turn red in the fall and give a multicolor hue to the marshes. The bladders transfer oxygen to the plant roots.

The roots of all marsh plants provide habitat for snails, ribbed mussels, fiddler crabs and blue crabs.



**Smooth Cordgrass (*Spartina alterniflora*)**

Image Credit:

Northeast Coastal & Barrier Network



**Salt Hay (*Spartina patens*)**

Wind and water action can cause the stems to bend, creating the appearance of cowlicks.

Image Credit:

Northeast Coastal & Barrier Network



**Pickleweed (*Salicornia virginica*)**

Image Credit:

Jkirkhart35, [CC BY 2.0](https://creativecommons.org/licenses/by/2.0/).



## Plants of the Salt Marsh...(continued)

**High Marsh**

The soil of the high marsh contains mud mixed with sand and clay. This supports *Spartina alterniflora*, *Spartina patens* and *Phragmites australis*. The high marshes are often dominated by an invasive *Phragmites* species, *Phragmites australis ssp. australis*. This species was probably introduced in the early 19<sup>th</sup> century and outcompetes the native species. Invasive plants are non-native plants that were brought into an environment from another geographical area. If conditions are favorable for the invading plant, it can outcompete native plants.

The native species is *Phragmites australis ssp. americanus*. The differences between the two species are subtle. The native species has a sparser looking feathery seed head, a slightly different colored stalk and a less dense growing habit. The native species tends to be shorter. Both species grow side by side, but the invasive species is usually dominant.



**American Common Reed Grass or "Phrag"**  
(*Phragmites australis ssp. americanus*)

Image Credit: Matt Lavin, [CC BY-SA 2.0](#)



**Common Reed Grass or "Phrag"**  
(*Phragmites australis ssp. australis*)

Image Credit: Matt Lavin, [CC BY-SA 4.0](#)

**Editor's Note:** There is an ongoing debate on whether *Phragmites australis ssp. americanus* is truly native. Most of the *Phragmites* that you see will typically be of the invasive subspecies *australis*.

**Marsh Edge**

Common salt tolerant plants found on the edges of the marsh are goldenrod, Virginia creeper, bayberry, poison ivy, and marsh elder. These plants can grow in very sandy soil and can tolerate salt spray and wind. Their growth may be stunted compared to growth of the same species not subject to salt spray and wind.

A salt tolerant invasive species is Japanese honeysuckle, *Lonicera japonica*, which was introduced in the early 19<sup>th</sup> century as an ornamental plant. As a vine, it hinders the growth of larger plants and overtakes native plants.

Some of the colorful blooms seen in the marsh are seaside goldenrod, sea lavender, marsh pink, salt marsh aster, evening primrose and mallow. These flowers range from white to yellow to shades of pink and lavender.

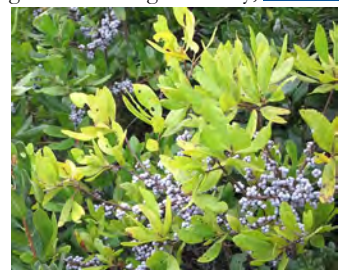
Shrubs and trees found in this area include marsh elder, bayberry, Eastern red cedar (actually a juniper), sumac, groundsel and wax myrtle. These plants are taller than the plants found in low and high marsh areas.

Some of the plants in the marsh are sensitive to disturbances to their environment and are categorized by a Coefficient of Conservation (CoC). A higher value means that a plant does not grow well in an altered or disturbed habitat. Some of the plants in this category are dwarf glasswort, sea lavender, Virginia saltmarsh mallow and tall sea blite. When we preserve the bay, we help preserve these sensitive and critical plants.



**Seaside Goldenrod (*Solidago sempervirens*)**

Image Credit: Doug McGrady, [CC BY-SA 2.0](#)



**Northern Bayberry (*Myrica pensylvanica*)**

Image Credit: cultivar413, [CC BY-SA 2.0](#)



**Japanese Honeysuckle (*Lonicera japonica*)**

Image Credit: 清水五月, [CC BY-SA 3.0](#)



## Tree Corner: Identifying Trees in Winter

by Sarah Stewart, Barnegat Bay Master Naturalist, Class of 2014



New Jersey Pine Barrens Fall Colors, James Loesch, [CC BY-SA 2.0](https://creativecommons.org/licenses/by-sa/2.0/)

### Why do leaves change color?

Autumn in the northeast is a spectacle of color come October! Before they drop their leaves, most **deciduous** tree leaves change color. Why? It's all about temperature and chemistry.

During the growing season, trees like herbaceous plants are in a continuous cycle of photosynthesis, which provides food to the tree/plant (and oxygen for us). Photosynthesis occurs in the chloroplast in the cell containing (green) chlorophyll which converts energy from the sun, water, carbon dioxide to sugars and starches (food) and the byproduct - oxygen. Though on the surface, leaf color appears green to us, there are other colors hidden within the leaves. These colors are **carotenoids** which are the same pigments that make carrots orange, and corn and daffodils yellow.

With the change in seasons, less daylight, cooler temperatures, there is less energy to make food. Chlorophyll starts to break down and along with it, the green color, allowing the orange and yellow pigments to manifest. The reveal of these carotenoid pigments is characteristic of maple, birch, ash, hickory, sycamore, cottonwood and sassafras trees.

Note: Conifers or evergreens also drop their leaves, less noticeably. The more mature leaves of these trees turn yellow or brown before dropping while the trees retain the more recent leaf growth.

### What explains the red/purple leaf colors?

Red and purple pigments are not hidden in the leaves. They are created during autumn when sugars are still being made during warm days, then trapped in the leaves during cool nights. These sugars chemically change into anthocyanins which appear red and purple. The more sunshine during the day, the more red pigment is made. This is why trees in the shade will be less red than those in direct sunlight. Another factor for red/purple color is weather. If the weather is cloudy, and the nights remain warm, the red and purple will be less vibrant. Some trees that display these colors are maple, oak, dogwood and sweetgum.

Other factors that affect leaf color are water accessibility and onset of cold temperatures. Trees that don't get enough water during the growing season may drop their leaves before turning color, and if the temperature drops drastically, this may also cause leaves to drop quickly and pre-empt the change in leaf color.

Trees in geographies that do not experience a marked contrast in seasons, where there is consistent sunlight and moderate temperatures (e.g., California) do not undergo these color change phases.

So, enjoy this season of color in New Jersey with perhaps a little more insight into all that activity going on inside those leaves!



### Tree Corner: Identifying Trees in Winter (cont.)

#### **Tips for Tree ID in Winter:**

Identifying deciduous trees in winter adds a level of difficulty due to the usual absence of a primary trait used in identification – **leaves!** This leaves us (pun intended) to leverage other information we can utilize to ID trees that have shed their leaves. With the exception of a few iconic bark traits, it's best to incorporate multiple traits (form, habitat, locality, fruit or cone) before finalizing an ID. As true through-out natural systems, tree bark changes with age, warranting looking at multiple traits or character before reaching an ID assessment.

#### **Features**

##### **Bark:**

Some trees have very distinctive bark for easy ID – Shagbark (it's in the name) with its 'shaggy' bark plates unique to mature shagbark hickory trees (young bark is smooth). River Birch and Yellow Birch both display peeling bark. The bark of an older Northern Red Oak is marked by ridges and furrows the entire length of the trunk, resembling "ski tracks." Bark on different species can and do look very similar which requires evaluating more traits when analyzing a tree's identity.



**Shagbark Hickory (*Carya ovata*)**

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



**American Beech (*Fagus grandifolia*)**

Image Credit: Derek Ramsay, [CC BY-SA 4.0](#)



**Northern Red Oak (*Quercus rubra*)**

Image Credit: Derek Ramsay, [CC BY-SA 4.0](#)



**River Birch (*Betula nigra*)**

Image Credit: Googoo85, [CC BY-SA 3.0](#)



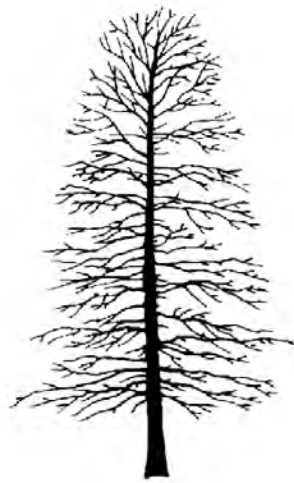
## Tree Corner: Identifying Trees in Winter (cont.)

### Features

#### Form:

A tree's shape or form is also called its 'habit'. Winter allows you to see a tree's form and branching configuration which is less visible during the growing season for the leaf-dropping trees. Notice the trunk, is it single or multiple? The branching configuration and direction, do the branches curve upwards, downwards or no curve but straight at 90 degrees to trunk? The canopy, is it rounded, pyramidal, columnar, spreading, etc.?

The Black Gum branches are uncommonly at right angles to its trunk. Another tree with unique branching is the Pin Oak with lower branches drooping, and upper branches pointing upwards. Many trees share similar form, so this is just one data point of in the identification process. To add some complexity, a tree's habit is affected by its age and surroundings contributing to variations across specimens and standard reference information.



**Black Gum (*Nyssa sylvatica*)**



**Shagbark Hickory (*Carya ovata*)**

Image Credits: Natural Resources Canada, Canadian Forest Service

### **Basic Tree Canopy Form Examples:**

**Rounded:** Red & Sugar Maples (*Acer rubra*, *Acer saccharum*) oaks, American Beech (*Fagus grandifolia*)

**Pyramidal:** American Holly (*Ilex opaca*) Blue Spruce (*Picea pungens*)\*

**Columnar:** Arborvitae (*Thuja occidentalis*)\*, Lombardy Poplar (*Populus nigra*)\*

**Oval:** Bradford Pear (*Pyrus calleryana*)\*,

**Spreading:** Apple (*Malus, spp.*), Dogwood (*Cornus spp.*)

\*NJ non-native species





## Tree Corner: Identifying Trees in Winter (cont.)

**Features**Fruit/Cone:

Tree fruits (seed surrounded by fleshy body) can offer clues to a tree's identity if found near the tree or still on the branch. Fruits such as acorns from oak trees, winged samaras from maples and pods from catalpa trees are just a few. Cones are the equivalent of fruits on conifers (pines, cedars, spruces). Since conifers shed only some of their needles at any given point, you also have additional info when evaluating a tree's cone. Fir cones grow upward on the branch, unlike pine and spruce cones which grow downward.

Northern Red Oak (*Quercus rubra*)

Image Credit: augustaga.gov

Pitch Pine (*Pinus rigida*)Image Credit: John B., [CC BY-SA 2.0](#)Leaf Shape:

(1) Take advantage of nearby fallen leaves in your tree identification. Even in winter, you may still be able to find a tree's dropped leaves to aid in your evaluation. Broad-leaf shapes are a key indicator for tree ID. Oak leaves display a variety of lobe shapes and sinuses which are easily referenced in a guide.

(2) Trees that do not shed all their leaves yearly are mostly conifers. Pine trees (Genus: *Pinus*) have very narrow leaves or needles usually in bundles of 2-5. Counting how many needles in a bundle or fascicle is a good clue for pines. Two examples: the Eastern White Pine (*Pinus strobus*) has 5 needles/fascicle, and the Pitch Pine (*Pinus rigida*) has 3 needles per fascicle. Firs have flat, flexible needles as do yews and eastern hemlock. Spruces have square needles on small, woody stalks.

(3) Some conifers have flat, scale-like, awl-shaped leaves instead of needles, such as the Atlantic White Cedar (*Chamaecyparis thyoides*). This leaf shape is also characteristic of cypress trees (genus: *Cupressus*).

Pin Oak (*Quercus palustris*)Image Credit: Siebrand, [CC BY-SA 3.0](#)Eastern White Pine (*Pinus strobus*)

Image Credit: Sarah Stewart



Atlantic White Cedar

(*Chamaecyparis thyoides*)Image Credit: John B., [CC BY-SA 2.0](#)



## Tree Corner: Identifying Trees in Winter (cont.)

### Features

#### Soil:

Location, location! Finally, another clue for tree ID is where it is found and the soil it's planted in. Knowing the exact soil type is not required, but a basic assessment of sandy vs loamy, dry vs wet or saturated can help corroborate a tree's identity. Atlantic White Cedars prefer sandy, acidic, peaty soil and are often found with water pooling around it.

Whether you are out hiking a trail, in your backyard, or anywhere there are trees, take a few minutes more to try and identify the tree(s) around you. Find a field guide that you are comfortable with. There are different ID methods. Some use a dichotomous key which employs a sequence of questions to lead you to an ID or at minimum, eliminate some species. I keep a pocket trifold guide in my car just in case I have a few extra minutes to evaluate an unfamiliar tree. Keep in mind that variation is part of nature. By evaluating multiple traits of a tree with as many available in this dormant season, you should be able to determine a tree's identity with confidence.



Atlantic White Cedar Swamp (*Quercus rubra*) Image Credit: Famartin, [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/)

### Suggested Tree ID Resources:

Pocket Guide: **Sibley's Common Trees of Trails & Forests of the Mid-Atlantic & Midwest**

**The Sibley Guide to Trees** (David Allen Sibley)

**The Audubon Society Field Guide to North American Trees *Eastern Region***

**The Tree Identification Book** (George W.D. Symonds)

**Virginia Tech Fact Sheets** <https://dendro.cnre.vt.edu/dendrology/factsheets.cfm>

App: **iNaturalist** <https://www.inaturalist.org/>

### References:

Augustaga.gov

Jerseyyards.org

Pinelandsalliance.org

Purdue University Extension

Virginia Tech Dendrology

Wikipedia.com

The Sibley Guide to Trees (David Allen Sibley)

Bark: A Field Guide to Trees of the Northeast (Michael Wojtech)

<https://sebsnjaesnews.rutgers.edu/2022/10/urban-forestry-professor-jason-grabosky-on-why-leaves-change-color/>

<https://www.extension.iastate.edu/news/2005/nov/061401.htm>



A Newsletter for and by  
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- **Connect with other Barnegat Bay Master Naturalists through our [Barnegat Bay Master Naturalists Facebook Group](#).**
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LEARN, PROTECT, EXPLORE



### Answers to Species ID Quizzes

**Are you a Bird Brain?:** Species 1: **Merlin (*Falco columbarius*)**, Song Source: Jasper Barnes, XC637782. Accessible at <https://xeno-canto.org/637782>. 2: **Pine Warbler (*Setophaga pinus*)**, Song Source: John A. Middleton Jr., XC570603. Accessible at <https://xeno-canto.org/570603>. 3: **Royal Tern (*Thalasseus maximus*)**, Song Source: William Whitehead, XC684817. Accessible at <https://xeno-canto.org/684817>

**Are you a Botanical Genius?:** Species 1: **Scarlet Oak (*Quercus coccinea*)**, Species 2: **Northern Bayberry (*Morella pensylvanica*)**

**What's bugging you?:** Species 1: **Grass Spider (*Agelenopsis* spp.)**



Photo by Bailey Sanders