Winter, 2021

THE NATURALIST

A Newsletter for Barnegat Bay Volunteer Master Naturalists, Barnegat Bay Partner Organizations, and Watershed Enthusiasts

Barnegat Bay Volunteer Master Naturalists, Class of Spring, 2017
Forest Resource Education Center

Happy New Year and Thank You from the Barnegat Bay Partnership!

Volunteering as a Master Naturalist is about giving your time and effort, contributing your

knowledge, sharing your passion, and inspiring others to do the same - with the goal of making the Barnegat Bay watershed and surrounding community a healthier, more biodiverse and sustainable place to live for people and wildlife. We recognize and thank you for your service! We wish all our valued Barnegat Bay Volunteer Master Naturalists a safe, happy and healthy new year!

Becky Laboy, BBVMN Instructor
Karen Walzer, BBVMN Administrator, Barnegat Bay Partnership

We Want to Hear From You!

The Barnegat Bay Partnership is grateful for the volunteer assistance from a team of BBVMNs who have offered their time and expertise gathering information, writing articles and compiling photos for our Winter 2021 edition of *The Naturalist*: Rich Biolsi (2013), Christine Moran (2017), Carolann Murphy (2019) and Sarah Stewart (2014). We are also excited to share with you several articles contributed by BBVMNs who have shared their own experiences volunteering in the watershed.

We welcome and encourage BBVMNs to send us a story and photos describing your volunteer experiences; share discoveries you made on a walk in the woods; send us your curiosity questions about the natural world; and share with us your ideas on how to build and grow this Newsletter. Please email your stories and curiosities to Becky Laboy education@soildistrict.org.

EDUCATION OPPORTUNITIES

2021 "What's Bugging Your Jersey-Friendly Yard?" Webinar Series

Step 5 of our **8 Steps to a Jersey-Friendly Yard** is **Minimize Risks When Managing Pests**. Our 2021 webinar series offers a line-up of bug specialists who will teach you how to recognize beneficials versus pests, show you how to manage pests safely using non-toxic methods, introduce you to the buggy relationship between plants and insects, and

teach you how to build a buggy web of life in your yard using native plants. Webinars are free. **Pre-registration** required. Join us for our new 2021 series of Jersey-Friendly webinars to find out who's bugging your Jersey-Friendly Yard!

January 12, 2021 at 7:00 p.m.

Getting to Know the Good Guys: Beneficial Insects in the Landscape

Not all bugs are bad, so let's meet the beneficial insects in your backyard. Predators, parasites, and pollinators—learn about how to recognize these good guys, their biology, and how to keep them happy in your yard.

Presenter: Sabrina Tirpak, Principal Laboratory Technician, Rutgers University Plant Diagnostic Laboratory.

February 9, 2021 at 7:00 p.m.

Myth Busters: The Truth About What's Bugging You

Insects are the most diverse group of animals on Earth. With over 1 million described species, insects account for about 75% of all animal species. Insect diversity is essential in maintaining functional ecosystems, productive natural areas and working lands, and overall biodiversity. However, human perceptions of insects are often negative resulting in insects being misunderstood, underappreciated, and in some cases, unnecessarily feared. This session will cover a variety of "insect myths vs. truths" with the goal of reversing common misconceptions.

Presenter: Kelly Gill, Senior Pollinator Conservation Specialist, The Xerces Society for Invertebrate Conservation; Partner Biologist, USDA Natural Resources Conservation Service, Mid-Atlantic / Northeast Region.

March 9, 2021 at 7:00 p.m.

Cultivating Respect for Insects: An Overview of the Ecosystem Services That Insects Provide

Simply put: all life on earth depends on insects, for more reasons than most people realize. This talk will explore some of the immeasurably important ways that insects keep ecosystems functioning, including nutrient recycling, pollination services, and trophic interactions. It will also cover ways in which we can conserve much-needed insect diversity in our own yards.

Presenter: Dr. Dan Duran, Assistant Professor, Rowan University Department of Environmental Science.

April 13, 2021 at 7:00 p.m.

What Lurks Above and Below: Spotted Lanternfly and Crazy Worms

The invasion has begun! Two non-native species: spotted lanternfly and Asian crazy-worms have already made it into New Jersey's agriculture, yards, gardens, and forests. Learn the tools to how you can fight back, including their identification, biology, impacts, research, and control measures. The talk will also include how non-native pests have a serious negative impact on ecosystems and their health.

Presenter: Paul Kurtz, Entomologist, NJ Department of Agriculture

May 11, 2021 at 7:00 p.m.

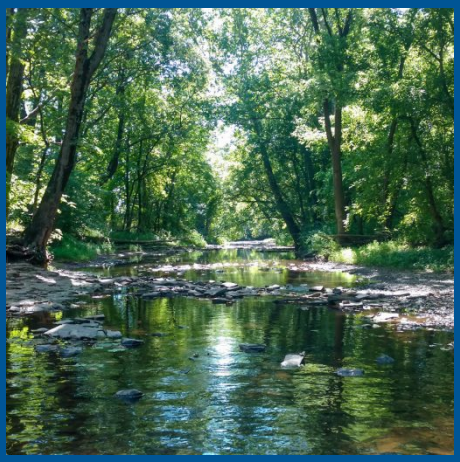
Attracting Bees and Beneficial Insects with Native Plants

Most insects have a positive impact in our landscapes. Native plants can be selected to attract specific bees and beneficial insects including predatory and parasitic wasps, beetles, flies, true

bugs, and lacewings. Learn about the predator-prey relationships of these flower-visiting beneficial insects and how they help keep problem insect populations in balance. The life cycles, diversity, and nesting habitat of native bees will also be along with examples of native plants for different site conditions.
Presenter: Heather Holms, Author of the books Native Plants for Pollinators and Bees: An Identification and Native Plant Forage Guide.

June 8, 2021 at 7:00 p.m.
Ferocious Dragons and Dainty Damsels
This primer to the winged jewels known as dragonflies and damselflies will cover the most common species, their natural history (life cycle, seasonality, what they prey on, and who preys on them), and how to identify one from another. Pat Sutton, a long-time successful wildlife gardener, will share how to lure these ferocious mosquito predators into your own yard by creating a no-fuss wildlife pond.
Presenter: Pat Sutton, Educator, Naturalist, Author

VOLUNTEER OPPORTUNITIES



Road Salt Monitoring Study

The **NJ Watershed Watch Network** is coordinating a winter study of the impacts of road salt on freshwater streams in New Jersey, and we're looking for volunteers to participate in the Barnegat Bay watershed.

Volunteers will collect at least 4-6 measurements (using test strips which will be mailed to you) from each monitoring site, with 2-3 collected during dry conditions and 2-3 collected during or after rain, snow, or snowmelt. Select your own monitoring site, or the Network can assist you with locating an accessible section of your freshwater stream or lake. Visit **https://njwatershedwatch.org/road-salt/** for details about the project, how to request test strips, and how to submit data.

If you request test strips, please be sure to enter **Barnegat Bay Partnership Master Naturalists** as the Organization/Affiliation on the request form. Also, please email **kwalzer@ocean.edu** to let us know if you're participating and the location of your site.

This is a great opportunity to get outdoors this winter and contribute valuable water quality data about our watershed! Contact Karen Walzer **kwalzer@ocean.edu** if you have any questions.

Click to view a list of organizations offering more BBVMN Volunteer Opportunities

BBVMNs in the WATERSHED

Enjoy these articles written by, for and about Barnegat Bay Volunteer Master Naturalists

Full Circle with American Eels

by Rich Tomasik, BBVMN, 2019

As a youngster I would visit my Grandmother's house at the end of Kettle Creek Road in the Silverton section of Toms River. Inevitably, I would go crabbing in Kettle Creek by standing waist deep next to six foot bamboo poles baited with chunks of moss bunker. Sometimes, as I carefully pulled in a taut line hoping I had a keeper Blue Crab, I discovered a three-foot eel gorging on the bunker. As hard as I tried, I could never net one of the eels. I could hardly imagine then that some 50 plus years later I would be collecting glass eels in the Kettle Creek estuary as a Barnegat Bay Volunteer Master Naturalist.

Responding to a request for volunteers, I was introduced to Dr. Jim Vasslides of the Barnegat Bay Partnership, and his staff working at Ocean County College. Jim, along with our volunteer leader Amanda Duerkes and volunteer Dennis "the Eelman" Funaro, were more than happy to provide a crash course in Eel Biology 101. **American Eels** are the only *catadromous* fish in North America. They are born in the ocean, migrate to fresh water to live for 20-30 years until they reach sexual maturity, then migrate back to the ocean to spawn. American Eels from the entire eastern seaboard, along with their cousins from the northeastern coast of South America and the western coast of Europe, spawn in the Sargasso Sea at the northern end of the Bermuda Triangle. The spawning process is still shrouded in some mystery, but the "father" of an American Eel may come from New Jersey waters and the "mother" a native of Georgia. After eels spawn, they die.

The embryonic eel morphs into a tiny leaf-like structure and starts its journey "home." Carried by the Gulf Stream current, it makes its way up the American coast. As it reaches its "home" waters, it again morphs into an eel-like shape similar to a three-inch transparent toothpick. At this stage of development, they are known as glass eels. The glass eels first make their way into the Barnegat Bay through one of the inlets, and then individual eels begin to seek fresh water sources like a river or creek.

This is where Jim and his research come in. Glass eels are considered a delicacy in many Asian and coastal European countries, eaten both raw and cooked. Some years ago, with the European eel population already seriously diminished, the Asian population of eels crashed. Searching for new sources of eels, the markets found America. It takes

2000 glass eels to make a pound, and tons of eels were taken from American waters. American eel populations plummeted, and now all states along the east coast either prohibit eeling for glass eels or have catch limits. New Jersey has banned the commercial taking of glass eels and elvers. Elvers are glass eels who have started to get coloration along their body, which happens as they spend time in estuaries and freshwaters. Jim and his team have been monitoring the eel population in the Barnegat Bay watershed for nine years. As a volunteer, I helped in the collection of the glass eels and elvers as they entered streams, rivers or creeks in Ocean County.

Jim and his team have been monitoring eel populations in the Barnegat Bay watershed for nine years. As a volunteer, I helped in the collection of the glass eels and elvers as they entered streams, rivers or creeks in Ocean County. Twice a week, research assistants would place “collectors” along the shoreline of a creek or stream. They were not traps. They were plastic flower pot saucers, weighted down, to which multiple strands of unbraided nylon rope were attached. The saucers rested on the bottom of the creek and the strands of nylon waved toward the surface. The glass eels and elvers seeking a place to rest or avoid predators would mingle in the nylon strands.

Twice a week, I or another volunteer would quickly pull the collector from the water, eels and all. The collector would be repeatedly rinsed in a container of freshwater, dislodging the eels. The collection takes place February through early April, and the conditions can be cold, wet and sloppy. The eels were counted and taken to the lab for proper staging of development. The coloration on the body progresses along a predictable pattern, so you can get an idea of the relative amount of time the eels have been in freshwater. Occasionally we would collect a fish, crayfish or ten-inch long elver that added to the knowledge of aquatic life to be found in the streams or creeks of the Barnegat Bay Watershed. One of the most productive sites was on Kettle Creek, where I first encountered eels over 50 years ago!

Learn more about **Barnegat Bay Partnership's research projects**, including the American Eel project. If you are interested in volunteering your time on the American Eel project, please contact Karen Walzer at **kwalzer@ocean.edu**.

Winter Hummingbirds? *by Don Crawford, BBVMN, 2015, photos by Don Crawford*

I've been told a few times that hummingbird feeders should go out around Mothers' Day and be brought in after Labor Day. But did you know that leaving them out even longer can attract western species of hummingbirds that

sometimes get lost during migration and show up on the east coast in the fall?

My experience began in October 2018 when I was cleaning up my front yard and a hummingbird flew by. Instead of the green color of the Ruby-throated Hummingbirds that are common here, this one was bright orange. I sent a text to my girlfriend (who's a better birder than me), and she replied "It's a Rufous Hummingbird!"

Sure enough, that's what it was. A bright orange adult male. We got to watch it return to the feeder several times before dark. During the evening, we got in touch with a hummingbird bander from Cape May (David LaPuma) and arranged for him to come and band the bird the following morning. Well, the Rufous showed up once very early for breakfast and was not seen again. Unfortunately, the bird did not get banded and the half dozen birders that lined up on my street missed the opportunity to add it to their "Life List."

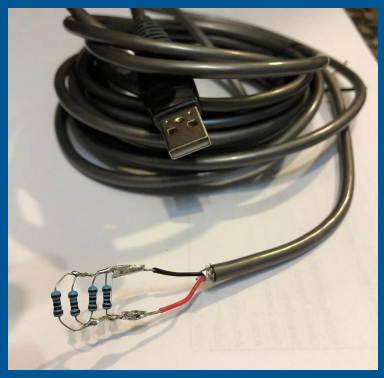
I learned that there are actually several western species of hummingbirds that have been observed in our region during the fall and early winter months. Allen's, Anna's, Rufous, Black-chinned and Calliope, to name some. They are rare to see on the east coast, but some vagrants pass through New Jersey each year. Some have even been observed to stay through the snow and freezing weather.

Allen's Hummingbird, Bayville, NJ

Anna's Hummingbird, West Chester, PA

Black-chinned Hummingbird, Cape May, NJ

Since then, I've been fortunate to see special hummingbirds who have visited feeders of other lucky people. I have even created some heated feeders especially for these over-wintering hummingbirds to lend out to people when the birds show up. They're made with small electric resistors and a USB cable to gently warm the nectar and prevent it from freezing.



So, next year try to leave your hummingbird feeders up a little longer, and you may be surprised with a visit from one of these beautiful and rare birds. And don't forget to let me know!

My Incredible Experiences Monitoring Beach Nesting Birds at Island Beach State Park

by Paul Lang, BBVMN, 2016, in collaboration with Becky Laboy, photos by Paul Lang

I've been monitoring beach nesting birds with NJDEP for the past two years, 2019 and 2020. I recall my first year volunteering, I was at my post in the Northern Natural Area of Island Beach State Park, observing a pair of Piping Plover endearingly named Kermit and Diane by the research staff. Through my binoculars, I could see Diane was sitting on her eggs, while Kermit was standing guard. Into my viewfinder walked a pair of American Oystercatchers, easily recognized by their long, slender carrot-orange bill, long pale legs, and black and white body. I watched them as they walked past the Piping Plover nest, then stopped abruptly about 200 feet away. They looked around, and with no uncertainty they began to make a nest. I zoomed in with my spotting scope to watch in amazement as they scraped the sand into a shallow divot. To my complete surprise, the female sat down on her new nest and laid an egg. When she finished, she stood up, and I watched as both birds peered down at their beautiful, precious egg, exuding a look of joy and pride that exclaimed, "wow, look what we did!" They took turns proudly sitting on their egg. I continued to watch them for a good hour. Watching this incredible spectacle take place has been one of the most memorable nature experiences of my life, one I will never forget. Days later, when I returned to the park, I saw that they added 2 more eggs to their clutch. All three eggs hatched. Unfortunately, 2 of the chicks were lost. One chick was banded: J14. Much to my delight, J14 was recently spotted in southern Virginia where it will stay for a couple of years until it reaches sexual maturity and then return to breed. Someday soon, I look forward to welcoming my special American Oystercatcher, J14, back to IBSP to start a family!

2020 was the third year Kermit and Diane have been nesting at Island Beach State Park. They are one of four pairs of Piping Plovers being monitored by the scientists working for the New Jersey Division of Fish & Wildlife (NJDFW), **Endangered and Non-game Species Program** (ENSP). The other pairs are Briggsby and Butterbean, and Tupoc and Augusta, all second-year birds, as well as Wizzle and Suga, who nested for their first time this year. Identified by the bands on her legs, we know that Suga was born and fledged on the Barnegat Lighthouse State Park breeding grounds last year. All of these birds can be easily identified by the color-coded bands carefully placed on their legs by the ENSP scientists. The bands allow scientists to track where the birds go in

the winter, who is returning to which nesting sites, how old they are, and other important information.

Piping Plovers overwinter in large flocks in warm **Bermuda**. In spring, individual birds typically return to the same breeding grounds, not far from where they were born or where they have successfully nested in previous years. The males return first, around mid-to late May, and each establishes his nesting area. The females return shortly after and typically mate with their same partner from the previous year. The four pairs nesting in the Northern Natural Area of IBSP prefer the stretch of beach between Gillikins Beach Access and Two-Bit Road. No vehicles are allowed to drive on the beach in this area, providing for a safer nesting and fledging experience for the birds, and free of controversy from beach buggy vehicles.

Once the birds have created their nest, which is essentially a scrape in the sand, the state scientists put a cage around it, including sides and a top, as well as electrified wire, a foot or two above the ground, all around the enclosure. This protects the birds from predators when they are nesting, sitting on their eggs, or brooding their chicks. Piping Plovers can be attacked by Great Black-backed Gulls, crows, red foxes, raccoons, and feral cats. The electric wire deters the foxes from digging underneath the fence.

The clutch of eggs usually numbers four. My job as a volunteer includes watching, waiting and recording my observations. When I see cracks in the egg shell, I know the chicks are about to hatch. They usually hatch in the sequence they were laid, one per day for four days until they are all hatched. Piping Plover chicks are precocial – similar to baby chickens or ducklings, on day 1 or 2 they are mobile and able to follow their parents around and learn how to find food. At this time, I monitor more often to keep an eye on the growing youngsters. They have an additional predator to watch out for – the Ghost Crab. These native beach dwelling crabs are abundant in the Northern Natural Area where there are no vehicles riding the beach. They make relatively large holes in the sand, which can entrap a chick. These white-as-a-ghost crabs are well camouflaged, and are strong and swift, able to take down a vulnerable young chick with relative ease. Piping Plover parents are vigilant however, and scientists have observed them defending their chicks from ambush.

Diane and Kermit's clutch were the first to hatch this year during the first week of June, followed by Briggsby and Butterbean's clutch, then Tupoc and Augusta's eggs. Because Wizzle and Suga were first-time nesters, they started their clutch late and their chicks hatched 5-6 weeks after the other three clutches. This is not unusual for first-year nesters. Each pair of Piping Plovers were proud parents of four chicks!

As a volunteer, I enjoy spending my days on the beach, monitoring the birds as they grow. If others are walking on the beach, I engage them by sharing educational information about the conservation efforts to protect the endangered **Piping Plover**, endangered **Black Skimmer** and other beach nesting birds under threat, including **Common Terns** and **American**

Oystercatchers, which are both species of special conservation concern. I remind people not to walk beyond the string line set-up by the ENSP staff to mark the nesting territory. Sometimes I need backup by the Park Police, but most people are curious, interested and appreciate the education and conservation efforts of the staff and volunteers. It's rewarding to share the experience with others, and inspire stewardship of our beautiful beaches and coastal habitat.

As the season progressed, some chicks were lost. Because there are typically only a handful of monitors who spend limited time with the birds, it's not always clear how the chicks succumb. But some chicks fledged successfully. Once the chicks can fly on their own to avoid predators, they are considered fledged. All who fledged this year did so by July 25. Kermit and Diane fledged two chicks, Tupoc and Augusta fledged one chick, and sadly, Briggsby and Butterbean lost all of their chicks this season. Despite extensive searching, none of Briggsby and Butterbean's chicks could be found. Good news though for Wizzle and Suga, our first-time parents fledged two chicks. The goal of the NJDEP ENSP is to have at least two birds fledge from each clutch. On average, each pair needs to fledge at least 1.5 chicks in order for the population to remain stable. We started with 16 chicks and only 5 fledged, an average of 0.3125 fledglings – not a good year for our IBSP Northern Natural Area population. Read more about the **2019 Piping Plover nesting season** in the Northern Natural Area at Island Beach State Park.

This was also a tough year for the Endangered and Non-game Species Program scientists who were short-staffed due to cuts and furloughs as a result of COVID-19. They were unable to band the chicks this year, so next season there will be unbanded birds whose identities will remain unknown – a hindrance to the decades-long pool of data being collected.

I was first introduced to the Piping Plover Volunteer Nest Monitoring Program by Kelly Scott, the Naturalist at Island Beach State Park. She directed me to Christina "Kashi" Davis, Environmental Specialist with the NJDEP ENSP. If other BBVMNs want to offer their time as volunteers to monitor beach nesting birds, you can contact Kashi Davis at **Christina.Davis@dep.nj.gov**. Training begins in late March. I look forward to returning to the Northern Natural Area of Island Beach State Park next spring to see the return of the Piping Plovers, and one of these years to welcome back J14!

Dune Grass Planting at Island Beach State Park

by Casey Wolf, BBVMN, 2019

"Do you write?, "Becky Laboy asked, looking up at me from the bottom of a sand dune. I have not had a writing assignment in a very long time, so I was happy to accept the job to write this article on my experience planting dune grass. Our group was made up of four people:

myself, Becky, and two Jims – Jim Heller and Jim Wack. We were assigned a “hole” that had formed in the sand dune behind the second Ocean Bathing Area, at Island Beach State Park. (I later learned that another BBVMN, Dennis Funaro, helped plant dune grass at another location in the Park that same day.)

By the end of the day, we planted 9 bundles containing individual “culms” of plants which equates to about 900 plants! It was more work than I anticipated. The "hole" had very steep sides, which made it difficult to balance and dig at the same time. Luckily, the weather was calm and warm, and the views of the ocean from the top of hole made the job pleasant. Island Beach State Park is a state park, maintained by the New Jersey Division of Parks and Forestry. I have been coming to IBSP for years. To me, IBSP is what all barrier islands should look like: undeveloped, natural, and full of plants and animals.

The December 12th event ran from 9:00 am to 11:00 am, but noon rolled around and we still had much to go. We took the opportunity to snap a socially distanced and masked selfie before the Jims had to call it quits. Becky and I were determined to finish our planting. I was happy to have the time alone with Becky to chat. I met Becky through taking the Barnegat Bay Master Naturalist course offered by **Barnegat Bay Partnership** through Ocean County College a few years ago. One of my favorite memories of Becky from that course was walking through the woods at the Forest Research Education Center (FREC). At one point she raised her hand for the group to stop and listen. Becky whispered that she heard the call of a Belted Kingfisher, she estimated it to be a quarter mile ahead. She instructed us to stay quiet and hopefully we could catch a glimpse. We walked for some time until we came to a pond where she spotted the bird! I was so impressed with her ability to isolate the sound of a bird so far away. Her knowledge of birds and other local flora and fauna continued to impress me throughout the course. She quickly became one of my local heroes.

Between digging a hole in the sand about seven inches deep and situating our bodies as not to roll down the side of the sand dune, Becky and I got to talking about invasive species, which can get surprisingly philosophical. ***Ammophila breviligulata***, or dune grass, is native to the east coast of North America. It helps to stabilize the dunes through creating a vast intertwining root system. Without these root systems, dunes would erode and shift, compromising their ability to protect animal habitats from flooding and to absorb energy from incoming tides.

We also saw **Japanese sedge** (*Carex*

kobomugi) growing around the hole we were planting in. This plant does a great job of holding the dunes together too, but comes with a cost. In our area, Japanese sedge is invasive, meaning it is not natural to the area and causes harm. Once this plant establishes itself, it creates what Becky referred to as a *monoculture,* meaning it dominates all other plant life in the area. Without the biodiversity of native plants, there is a detrimental chain reaction to the pollinators, **birds** and other wildlife that rely on them. Everything in nature is connected. Taking out one species completely from an established ecosystem can be devastating. It has been suggested that the sedge arrived, like many invasive species, from cargo ships. As humans travel, and people become more and more connected, there are not many corners of the world left untouched by humans. It is our responsibility then to control the effects of that progress. But do we know better than nature? Or are species now so mixed we will constantly be battling against the natural order? Japanese sedge is invasive, yes, but will it always be? Will nature find a balance at some breaking point if we allow it? It's hard to say, and it is a scary gamble to take.

This summer, I thoroughly enjoyed watching the Monarch butterflies catching a meal on the Seaside Goldenrod growing on the sand dunes of Long Beach Island. If Japanese sedge were to take over, these plants would not survive, making the already perilous journey of the Monarchs even harder. I am not at the point of giving in to invasive species. I think if enough people are educated and willing to help, we can control the mess we have made through our progress and protect the beautiful systems nature already has in place. If four people can plant 900 plants in one Saturday, imagine what 100 people could do?

Winter at the Field Station

by Christine Moran, BBVMN, 2017

Just because the temperature drops does not mean that activities stop at the Rutgers University Marine Field Station (RUMFS) in Tuckerton. Winter activities include collecting larval fish, wind speed data and conducting water-quality testing. (Photo of RUMFS courtesy of Christine Moran)

This fall a wind detection system called Lidar (Light Detection and Ranging) was installed along the Field

Station causeway to measure wind speeds at ground level and up to several hundred feet above the marsh. This data is provided to **Atlantic Shores** which holds the development rights for an offshore wind farm. The system provides them with real-time wind speeds.

In typical years (non-COVID), ichthyoplankton netting occurs each week. The netting takes place on a nocturnal high tide when the smaller fish and larvae are more active in the water column. The plankton net captures all creatures caught in the tidal flow. The net contents are taken back to the lab, larger fish are counted and larval fish are preserved for later classification. This study, conducted for over 30+ years, has characterized the abundance of various fish species over time. It has implications for warming bay waters and global climate change. (Photo of bridge-netting icthyoplankton courtesy of JCNERR)

A separate study catalogs a biweekly check of fish caught twice per week in stationary minnow traps in the boat basin behind the Field Station. Killifish and shrimp are typically caught year round. In the winter; southern fish species are less common. This study confirmed the presence of an invasive shrimp species in the bay.

The SWMP (System Wide Monitoring Program) uses remote sensors to collect water quality, weather and nutrient data. Additionally, manual water samples are taken monthly. Some of the data loggers are on land and some are deployed on navigational buoys in the bay. Water quality measurements include temperature, salinity, dissolved oxygen, pH and turbidity. The nutrient sampling includes phosphorous, nitrogen and chlorophyll concentrations. The data is available to the public on the **Jacques Cousteau National Estuarine Research Reserve** (JCNERR) website. It is also available for download on the **Centralized Data Management Office** website. (Photo of buoy containing SWMP data loggers provided by JCNERR)

RUMFS is also conducting a study on the closing of the Oyster Creek Power Generating Station. Ichthyoplankton netting and trawling samples are continuing. With the closure of the plant in

2017, warmer water is no longer discharged into the creek. Post-2017 measurements will be compared to historical data to determine changes in fish populations and life cycles.

When staff members have a spare moment, they record observations of the local bald eagle pair nesting on the marsh. Staff also record observations of the overwintering seals on the offshore islands and in the nearby waters. (Photo of Bald Eagle courtesy of Becky Laboy)

These are many examples of the activities that continue throughout the year at the Field Station. More information can be found at the **Rutgers University Marine Field Station** website and the **RUMFS Projects** page.

Many thanks to Roland Hagan, Laboratory Researcher at RUMFS, for his time and expertise when sharing this information.

SCIENCE & RESEARCH IN THE WATERSHED

A Conversation with Emily Pirl, Wetlands Specialist with the Barnegat Bay Partnership

by Rich Biolsi, BBVMN, 2013

A couple of years ago, my wife and I volunteered to stuff conch shells into bags made of coconut fibers, which would be taken by boat out to the sedge islands on the bay side of Island Beach State Park. The purpose was an attempt to halt erosion that was occurring on the islands at a rapid pace. I wondered at the time who monitors erosion as well as any other dangers to our beloved but at-risk Barnegat Bay.

I found my answer, at least partially, when I had a conversation with **Emily Pirl**, the Wetlands Field Specialist with the Barnegat Bay Partnership. Emily graduated from Rutgers with a dual major in biology and marine science, which has served her well in her role, as does her special interest in salt marshes. In 2008, the Barnegat Bay Partnership joined the **Partnership for the Delaware Estuary** to help form the **Mid Atlantic Coastal Wetlands Assessment (MACWA)** team in order to provide a comprehensive assessment of the environmental health of the entire region. Emily is largely responsible for the assessment in our area.

Emily's work includes monitoring many aspects of wetland health and function in Barnegat Bay, including four intensive monitoring sites that

range from Brick. in the northern bay down to Tuckerton in the southern bay. Using the MACWA framework for monitoring, Emily and her team routinely collect samples on water quality, vegetation robustness (which includes species diversity and coverage), fauna such as fiddler crabs, ribbed mussels and mud snails, and surface elevation as it relates to sea level rise. This information is shared with municipalities so they can limit the impact of development on the environment. The findings, along with other sources of information, are used to develop periodic plans to address the identified environmental problems. Currently BBP is working to develop **Watershed Management Plans** for the Toms River and Cedar Creek/Forked River/Oyster Creek sub watersheds.

Emily is also involved with monitoring several **living shoreline restoration projects** at Sedge Island at Island Beach State Park, Iowa Court in Little Egg Harbor Township and Green Street in Tuckerton. She is also working with several partners, including Long Beach Township and the Edwin B. Forsythe National Wildlife Refuge, on a project to determine how to prioritize island restoration projects in Barnegat Bay. Other work includes the **Paddle for the Edge** citizen science program, in which volunteers use canoes and kayaks to survey the marsh edge and provide data about the condition of the bay shorelines. This program allows the BBP to collect large amounts of data in a small amount of time and promotes stewardship among bay community members. Paddle for the Edge is a great opportunity for BBVMN involvement!

It is quite obvious, when talking with Emily, that she has a great deal of enthusiasm for what she is doing and deep concern for the protection of the environment. Read more about **Emily's work** in the Barnegat Bay watershed.

The Juvenile Eel Winter Sampling Project: An Interview with Jim Vasslides, Senior Scientist

by Carolann Murphy, BBVMN, 2019

Jim Vasslides, Ph.D., CFP, is an estuarine ecologist affiliated with the **Barnegat Bay Partnership**, which is hosted by Ocean County College. The Juvenile Eel Winter Sampling Project described by Rich Tomasik (BBVMN, 2019) in this issue is one of Jim's ongoing research

initiatives.

Each year for the past nine years, Jim's team has monitored the population of American eels ***(Anguilla rostrata)*** at four sites in the creeks and estuaries of the Barnegat Bay Watershed. The labor-intensive sampling is conducted from February through April with the help of volunteers from the community, including master naturalists such as Rich. "We wouldn't be able to do this project without our dedicated and reliable volunteers," Jim says. He estimates that 15 volunteers have been involved over the years, helping in the lab as well as in the field. "Some have returned year after year," he notes, "and that's valuable for maintaining consistency in sampling methods."

Timing of the annual sampling is determined by the arrival of eel larvae in the Barnegat Bay, according to Jim. The larvae transform into small translucent glass eels and migrate into estuaries and up streams. Along the way they gain pigmentation, becoming elvers. "The collectors placed in the waterways pick up a mix of glass eels and elvers," he explains. "A percentage of the samples from each site is taken immediately to our lab at Ocean County College, where the juvenile eels are anesthetized, measured, and examined microscopically for degree of pigment. The pigment determines the stage of development of each elver, on a scale of 1 to 7." Following the lab analyses, the team releases the eels back to their habitat.

What is being learned from this project? Like many other species, the population of the American eel has suffered from environmental threats. As a *diadromous* fish, throughout its lifecycle the eel travels the salt waters of the ocean and the fresh waters of estuaries and upstream habitats. "People are often surprised to learn that some of the major threats to eels are what happens on land, not in the ocean," Jim reports. "In the Barnegat Bay watershed, impediments such as dams, and factors that affect water quality are threats to eels, as well as loss of habitat along streams and creeks due to development." Jim emphasizes that by identifying the challenges, we can focus on reducing the threats. "We hope that as conditions in the watershed improve, the eel population will rise." Read the study **Implementing American Eel Passage on Existing Dams**, by Kenneth W. Able, commissioned by the Barnegat Bay Partnership.

Data from the juvenile eel project are shared with the **New Jersey Department of Environmental Protection**, which contributes New Jersey's findings to data collected along the East Coast from Maine to Florida. The aggregated data informs the **Atlantic States Marine Fisheries Commission**, the interstate agency that issues guidelines for population assessment and sets limits for fishing practices.

The monitoring of eels in Barnegat Bay is an ongoing

project, but the pandemic has presented challenges. In 2020, some sampling was done on an abbreviated schedule. In 2021, the sampling schedule and the involvement of volunteers will depend on the policies of Ocean County College. “Once we have that information, we will notify our partners about the availability of volunteer opportunities,” Jim advises. If you are interested in volunteering your time on the American Eel project, please contact Karen Walzer at **kwalzer@ocean.edu**.

COOL TOOLS & RESOURCES!

by Sarah Stewart, BBVMN, 2014

Xerces Society for Invertebrate Conservation

Learn about invertebrates (butterflies, dragonflies, bees, slugs and other creeping, crawling, flying, flapping "bugs") through the **Xerces Society for Invertebrate Conservation** Fall issue of their informative publication, **Wings**. (Photo of Common Buckeye *Junonia cuenia* by Becky Laboy)

Hand Lens for Field Study

There are several types of magnifying tools that help a naturalist get closer to a specimen (plant structure, animal anatomy, geological rocks and minerals, soil). These resource links below offer some how-to’s on using a hand lens. This is the preferred tool to inspect plant anatomy for necessary identification.

Donna L. Long: The Earth is Good
The Compleat Naturalist

BBVMN Favorite Picks - Websites for Natural Resources

Jersey-Friendly Yards
Go Botany - Native Plant Trust
Center for Biological Diversity
The Biota of North America Program (BONAP)
Conserve Wildlife Foundation of New Jersey

(Photo of Arrowhead *Sagittaria engelmanniana* by Becky Laboy)

ARE YOU A BIRD BRAIN?

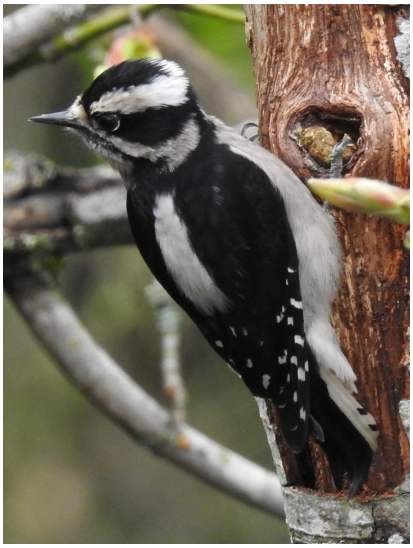
by Sarah Stewart, BBVMN, 2014

How are your bird ID skills? Can you identify the three birds below? How about bird songs? After you determine the birds' identity, match each bird to its song. Click to listen. Then scroll to the end of the Newsletter to check your skills!

Bird Song A *** Bird Song B *** Bird Song C

What influences *how* a bird sounds? Habitat and physics factor large in a bird's song, which reflects attributes of their habitat. Birds who live in dense vegetation generally have a low pitched song with a longer wavelength, which travels farther. Birds who live in the tree tops, have a higher pitched song with a shorter wavelength, which travels farther through the air without being blocked by solid objects such as trees. Learn more about the influence of habitat on the sounds of birds.

Bird ID 1: I'm a coastal species who's been around since the Pleistocene. I spend my winters in the Barnegat Bay estuary. Look for my straight-up, stiff tail as I paddle around lakes and ponds, and dive to the bottom for tasty aquatic insects, plants, roots and seeds to eat. Before I migrate north in the spring I molt into my breeding plumes and colors, including my black cap, white cheeks, and chestnut colored body. I love to show off my 'Blue Man Bill' to all of the ladies in the marsh. Once I reach my breeding grounds in the north-central United States and Canada, my mate has already selected our nesting location. She lays 3-13 eggs in our bowl-shaped nest made of vegetation. Our well-developed chicks leave the nest within a day after hatching. **Who am I?**



Bird ID 2: I am the smallest North American member of my family, Picidae. Me and trees are BFF's! Trees provide me with my favorite meals - insects and larvae that I dig out of tree bark using my chisel-like bill. I protect trees from destructive wood-boring pests such as bark beetles - tasty! I not only forage for food in forests, I also visit backyards for an easy meal at a feeder, such as sunflower seeds, peanuts and suet. My bill is also handy for creating cavities in dead trees which I use for nesting and roosting. I also use my strong bill to drum on trees. The loud drumming is just my way of calling to my mate, and letting others know that I live here. In this photo you can see that I lack a red patch on my nape, worn only by my male counterpart. I have a *hairy* twin who is larger than me, and has a longer bill. **Who am I?**

Bird ID 3: I am at home in woodlands, but I'll also visit your backyard bird feeder - but not for seeds! I provide an ecosystem service by

hunting two invasive species: European Starlings and Pigeons. I also eat other medium-sized birds such as Mourning Doves, American Robins and Blue Jays, as well as larger birds including Quail, Pheasant and Chickens. I'm fast and I have a long tail that I use as a rudder to help me quickly maneuver through trees to catch prey and crush them with my talons. Males and females look the same except for our size. Females are larger! Adults have a small black cap, blue-gray body and reddish bars across the chest. Juveniles like me, as shown in the photo, have a dark brown back and wings with brown vertical streaks on my white breast and belly. I have a twin who is smaller than me! **Who am I?**

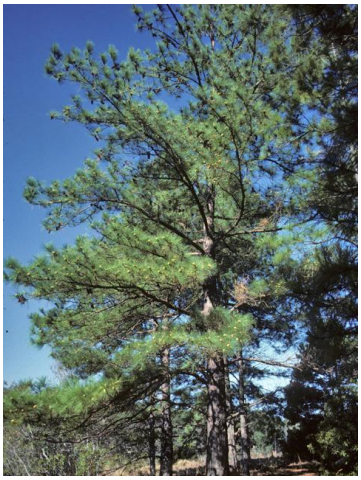
OR A BOTANICAL GENIUS?

by Sarah Stewart, BBVMN, 2014

Perhaps plants are more your speed! Can you identify the three specimens below? *(Scroll to the end of the Newsletter to check your skills.)*

Plant ID 1: Grows in clumps (bunchgrass) to approximately 2 ft - 4 ft in height. Found in low pH and low fertile soils, edges of forests and disturbed areas and can be used for erosion control. Most identifiable in fall and winter by its striking red-orange color. Provides seeds for birds and mammals in winter, nesting material for native bees, host for butterfly and moth larvae and shelter for some animals such as quail. Though sedge is in the name, it is not a sedge, but part of the Poaceae or grass family. It got its name because its structure was well suited to be used as a broom by pioneers. The stems were reportedly used by People of the Cherokee Nation to make yellow dye. **What Plant Is It?** *(Photo Source: www.JerseyYards.org)*

Plant ID 2: Small flowering evergreen shrub growing to 3 ft tall with leathery narrow oval leaves and deep pink flowers. Leaves turn reddish-green to purple in the fall. Prefers acidic soil, and partial sun. Grows in wet or dry pastures, thickets, swamp and bog borders through a dense network of rhizomes. All parts are poisonous; ingestion is highly toxic to humans and livestock, but is important food source for wild grouse and other birds, and butterfly larvae. The roots release chemicals that inhibit the growth of other plants (allelopathic), especially conifers. Similar to the pitch pines, this plant has adapted to fire-prone environments. **What Plant Is It?**



Plant ID 3: Yes, it's a pine! But which one? Large, fast-growing in acidic soil with lots of sun. It's common name harkens back to ye ole British meaning "thick porridge", which early settlers used to describe the mud and swamps where this tree calls home. This tree also adapts to upland fields or hardwood forests. You will find the needles clustered in fascicles of 3, measuring 4 to 8 inches in length. Many songbirds feed on the seeds and help disperse them for new growth. Ospreys and Bald Eagles often make nests in these tall trees, while gray and red squirrels eat the seeds and make their leafy nests among branches and in trunk cavities. **What Plant Is It?** *(Photo Source: www.JerseyYards.org)*

STAY CONNECTED

BBVMN Facebook Group

Stay Connected through Facebook!

Connect with your fellow BBVMNs through the **Barnegat Bay Master Naturalists** Facebook group. All

are welcome - whether you are a current BBVMN, an "inactive" BBVMN, or are thinking about joining our growing ranks, please join our Barnegat Bay Master Naturalists Facebook Group and share your experiences with the natural world. Barnegat Bay watershed organizational partners are also encouraged to join the **Barnegat Bay Master Naturalists** Facebook group and advertise your volunteer opportunities, or share the latest news from your organization.

Answers to Bird Brain: Bird ID 1 & Bird Song B: **Ruddy Duck**; Bird ID 2 & Bird Song C: **Downy Woodpecker**; Bird ID 3 & Bird Song A: **Cooper's Hawk**

Answers to Botanical Genius: Plant ID 1: **Broomsedge Bluestem** *(Andropogon virginicus)*, Plant ID 2: **Sheep's Laurel** *(Kalmia angustifolia)*, Plant ID 3: **Loblolly Pine** *(Pinus taeda)*

Barnegat Bay Partnership
www.barnegatbaypartnership.org
Ocean County College, College Drive,
PO Box 2001,Toms River, NJ 08754
Phone (732) 255-0472 Fax (732) 255-0358
E-mail: **bbp@ocean.edu**

Reach Out!