

35 Years at Jug Bay Wetlands Sanctuary: The Land, The Work & The People

by Allison Burnett, *JBWS Office Manager & Naturalist*



Volunteers and students and various times during Jug Bay's 35 years.

In this internet age, it's difficult to imagine anything maintaining the longevity of a full 35 years, but nature has always been something that operates within its own bounded limits. Nature forces us to slow down and step back. If we wish to observe the rise and fall of tides or the evolution of a species we must be willing to patiently wait as natural processes amble through their cycles. Jug Bay Wetlands Sanctuary has been a space that provides those opportunities of reflection and observation for 35 years! We would like to highlight some of the lands we protect, the people we love, and the work we've done over these 35 years, with an emphasis on the past 5 especially.

Jug Bay is home to several habitats that are critical to maintaining a healthy, balanced ecosystem. JBWS sits on the Patuxent River, which flows to the Chesapeake Bay. The marsh experiences the rise and fall of the tides but is

far enough inland that it remains freshwater, not salty or brackish. This unique tidal freshwater marsh habitat is home to incredible plant diversity. In fact, you are able to find about 22 different species of marsh plants in one square meter of wetland, particularly at Western Branch.

JBWS protects 199 acres of tidal freshwater marsh out of 2,049 acres found along the Patuxent River.

We protect and manage 30.1 acres of wild meadows at the Sanctuary and Glendening Nature Preserve (GNP) to provide habitat for pollinators. Our Butterfly Garden at GNP is a great place to volunteer and to catch a glimpse of native pollinators, especially butterflies and moths. We have also begun tagging monarch butterflies! Currently we are looking at converting even more acreage from agricultural to wild meadow and pollinator gardens.

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Jug Bay Wetlands Sanctuary
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Lothian, MD 20711
410-222-8006
e-mail: info@jugbay.org

www.jugbay.org

Jug Bay Wetlands Sanctuary is operated by the Anne Arundel County Department of Recreation and Parks. It was established in 1985 with the goals of wetlands research, environmental education, and protection. The Sanctuary is a limited-use park. Groups are requested to make a reservation by calling the office before planning a visit.

Jug Bay Wetlands Sanctuary is a component of the Maryland Chesapeake Bay National Estuarine Research Reserve, which along with 27 other Reserves around the country promotes scientific research, public education, resource management and stewardship in estuaries across the nation.

SANCTUARY STAFF

Patricia Delgado, *Superintendent*
Liana Vitali, *Citizen Science & Stewardship Coordinator*
Debra Gage, *Volunteer & Program Coordinator*
Sarah Kempfer, *Education Coordinator*
Allison Burnett, *Office Manager*
Richard Chaney, *Maintenance*
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FRIENDS OF JUG BAY OFFICERS:

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Vice President, *Vacant*
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BOARD OF DIRECTORS:

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Darcy Herman
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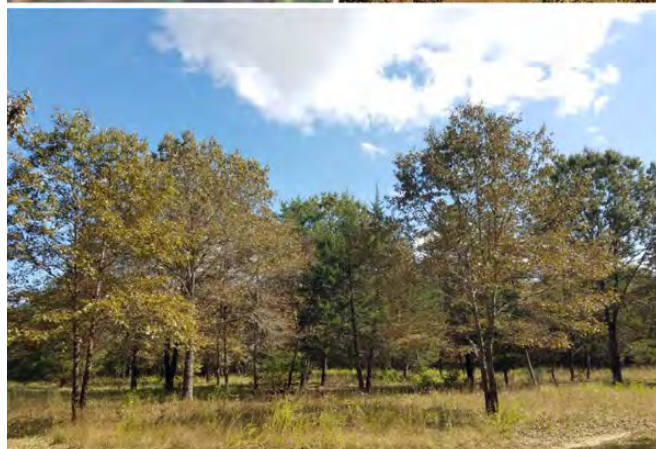
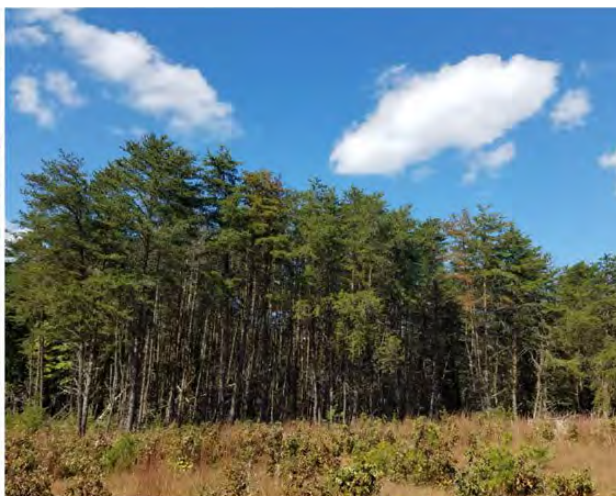
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Comments and suggestions are welcome.

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Clockwise from top left: Lemon Beebalm (*Monarda citriodora*) growing at the sand barrens. The pine barrens at GNP. The sand barrens at GNP. Prickly Pear Cactus (*Opuntia* sp.) growing at the sand barrens. Photos by Allison Burnett.

JBWS upland forests provide ample habitat and food sources for nesting and migrating birds, mammals, reptiles, amphibians, and insects. Riparian forest buffers are simply trees that grow near headwater streams, providing shade. The shade of trees on small headwater streams helps keep the water cool and clean, maintaining consistent temperatures that are required for more sensitive fish, insects, and other animals. Riparian vegetation also helps prevent erosion and can trap or uptake pollutants and excess nutrients before they run downstream.

Vernal pools are seasonal depressional wetlands. They are covered by shallow water for variable periods from winter to spring but may be completely dry for most of the summer and fall. These wetlands range in size from small puddles to shallow lakes. Climatic changes associated with each season cause dramatic changes in the

appearance of vernal pools. The pools collect water during winter and spring rains, changing in volume in response to varying weather patterns. During a single season, pools may fill and dry several times. In years of drought, some pools may not fill at all. The unique environment of vernal pools provides habitat for numerous rare plants and animals that are able to survive and thrive in these harsh conditions. Many of these plants and animals spend the dry season as seeds, eggs, or cysts and then grow and reproduce when the ponds are again filled with water. The vernal pools at JBWS have been studied for their important role in the lifecycle of our reptiles and amphibians.

The Sanctuary includes two barren or micro-desert areas that have sandy, loamy soils. Native American archaeological sites indicate that this habitat type was created 4000–6000 years ago. Much of this

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Dear Friends,

Welcome to the winter 2020 issue of *Marsh Notes*.

As I said in the fall issue, I hope all are doing well and adjusting to our new normal. Fortunately, Jug Bay Wetlands Sanctuary continues to be open. There are so many great things to do at Jug Bay in the fall and winter. Enjoy the foliage, soak up the scenic beauty of the river, and get back to nature. You can do all these wonderful things by just taking a walk.

The mission of Jug Bay Wetlands Sanctuary is to increase awareness, understanding, and appreciation of the estuarine and other natural ecosystems and their conservation through outdoor education, research, stewardship, and volunteering. The mission of the Friends of Jug Bay (FOJB) is to support the sanctuary. You, the members of FOJB, are doing a great job supporting the Sanctuary. I thank you all for volunteering to make our wetlands a better place.

The Friends of Jug Bay Board is strong and committed to the success of the FOJB organization. The board is still shorthanded and has been performing all its duties in a professional manner. I want to acknowledge the members of our board who volunteer their time to make this all work: Al Tucker, Blythe Alexander, Darcy Herman, Elaine Friebele and Gwen Brewer. These five people have been doing an amazing job. But they need your help. We are in need of two officers, Treasurer and Vice President, as well as members to lead our Fundraising, Advocacy, and Outreach committees. However, you do not need to become a board member to help out! Volunteering some time to FOJB can significantly increase our capacity to serve the Sanctuary we all love. If you are interested in volunteering, please contact me at tbjerkne@friendsofjugbay.org.

Remember, the Friends of Jug Bay is your organization. Any ideas, thoughts, or interest in joining the Board are welcome.

Tor Bjerknes, *FOJB President*

Friends of Jug Bay Membership Changes on the Horizon

By Blythe Alexander, *FOJB Membership & Communications Committee*

This year has been a time of challenge and change not only for the Sanctuary, but also for the Friends of Jug Bay (FOJB). To help improve our record-keeping as well as reduce the amount of paper we consume, the Friends have transitioned to an online member portal that many of you have already used to join or renew your membership. The portal allows you to create an account and manage your own memberships and donations as well as integrate with event and volunteer sign-ups. By managing the majority of our memberships through this online system, we can significantly conserve time and resources. While we encourage you to visit jugbay.org/support for donations and membership transactions, you may still join or donate to FOJB in person at the Sanctuary. Please email membership_fojb@friendsofjugbay.org with any membership questions.

In addition to implementing the membership portal, we are transitioning our membership period from the fiscal year (April 1–March 31) to the calendar year (January 1–December 31), beginning in 2021. We recognize that this change will be a bit messy as we transition, but as a reward to those who join or renew their FOJB membership between September 1 and December 31, 2020, we are including a complimentary 2021 membership. We hope you all will join or renew your membership with FOJB even if your current membership does not expire until March 31, 2021.

Regardless of the timeframe, your membership is valuable to

We welcome new and returning FOJB members:

Debra Amos	Clea Hancock	Blair Pasalic
Tammy Beardmore	Dora Hanninen	Benjamin Proshek
Jeffrey Bedford	Vicki Hurt	Christie Roberts
Wayne Bierbaum	Lauren and Donald Jarboe	Susan Schatz
Leda Bloomfield	Ann Johnson	Linda Sefick
Matt and Heather Boley	Elaine and David Lahn	Jeff and Alison Shenot
Elizabeth Brown	Stacy and Dan Langsdale	William Stamper
Jill Calabro	Raquel Lazarin	Jonathan and Becca Stotler
Barbara and Hugh Cassidy	Kenneth Lim	Robert Stout
Greg Crosby	Bradley Mann	Dean Jeffery Telego
Jeff Day	Cindy Maxted	Rosalyn Tillery
Madeline Dunsmore	Sean McGuinn	Carol Tomerlin
Robbie Emmert	Leah Melton	Michael Tornabene
Sloane Franklin and Lauren Taylor	Tom and Andrea Mitchell	Faye Walton
Elaine Friebele	Richard Montgomery	Kathleen White-Wenger and Gary Wenger
Mike and Anne Gillis	Jonathan and Valerie Morgan	Victoria and David Will
Mary Gordon	Elena Moschell	Joanne Wood
Kathy Gramp and Scott Smith	John Nugent	

our beloved Sanctuary. Jug Bay has received unprecedented visitation in 2020, as people have sought the relative freedom of outdoor space while trying to social distance indoors. Your membership supports FOJB's mission to preserve the Sanctuary and its programs, including providing scholarships to the new Nature Escape program offered at Jug Bay and at parks throughout the county, so that all kids can have the chance to participate.

As Tor mentioned in his President's letter in this issue, we have openings on the FOJB Board in a number of positions—and we could also use help with a number of activities that do not require you to join the board. Please email info@friendsofjugbay.org to learn more.

New County-wide Program Offers Computer-bound Children A Chance To Escape To Nature

By Liana Vitali, *JBWS Citizen Science & Stewardship Coordinator*

The COVID-19 pandemic demanded substantial lifestyle changes in nearly every corner of the average American's daily lives, children and adults alike. In particular, the children of Anne Arundel County experienced extraordinary adaptations to their curriculum platforms for the fall 2020 school year. Instead of donning the annual first day of school outfit and climbing on the bus to begin a year of learning in the classroom, thousands of students instead logged onto computers from home each day of the week during specific times to attend their virtual learning and arguably safer classrooms.

During a meeting in August between Mayo Peninsula Parks Superintendent Karen Jarboe and myself to discuss what autumn in-person programing could look like this year, we both stumbled upon the same idea of finding a way to create opportunities for desk-bound students to get some much-needed outdoor time during the school week. The idea was raised to county Recreation & Parks Department leadership who were eager to provide support to make a program like this a reality. After learning that all county students would be released from in-person virtual learning at 11:15 am every Wednesday, we realized the ideal moment to offer a screen-free guided outdoor learning and free play experiences for local children as a creative, immersive, and energetic outlet during these unprecedented times.

Launched with the very fitting name of Nature Escape, the program was adopted by five county regional parks and natural areas including Beverly Triton Nature Park, Fort Smallwood Park, Jug Bay Wetlands Sanctuary, Kinder Farm Park, and Quiet Waters Park. Eight weeks of two-hour per week programming targeting children age 6–10 years old was designed by Department Rangers & Naturalists and included themes like Exploring Water Worlds, Nature Investigators, and Mindfulness. Two rangers



Nature Escape participants play in a large pile of leaves. Photo by Liana Vitali.

from each park stepped up to be part of the Nature Escape program along with ten volunteers, many of whom were certified Maryland Master Naturalists, Master Gardeners, and Watershed Stewards.

The program kicked off on Wednesday, September 23rd, welcoming 22 children to the parks to discover animal homes. While Rangers and volunteers were offered a theme and agenda for each week of the program, the spirit of Nature Escape sought to blend both guided and unstructured outdoor experiences with a heavy emphasis on child-directed nature play.

It became clear within the first few weeks of launching that Nature Escape would be a successful endeavor. Rosters began to fill for each week with waitlists developing. Several parents and caretakers provided heartfelt and positive feedback within the programs' weekly evaluation. A parent of a child who joined the Quiet Waters Parks program shared the following feedback, "I'm really grateful for this program as a parent struggling to enjoy nature myself and not always knowing where and how to encourage my kids to interact with nature. We hope for some winter and spring programming and wished this would be available all over Maryland. We signed up for all eight sessions from the



Children explore macroinvertebrates during a Nature Escape program at Jug Bay. Photo by Karen Longo.

get-go. We regret nothing and would do it over even if the cost rises. This was truly amazing."

Recreation & Parks staff will be debriefing at the conclusion of Nature Escape this fall to discuss the potential for expanding the program in the spring or even making it a permanent offering within our parks. Regardless of its future, Nature Escape provided an escape not just for participating children but also for the Rangers and volunteers who finally had the opportunity to do more of what they love; creating long-lasting connections between children and the natural world.

Northern Saw-Whet Owl Banding at the Sanctuary: Project OwlNet

By Mike Quinlan, JBWS Volunteer

Project OwlNet, begun in 1994, facilitates communication and cooperation among a growing network of owl migration researchers, primarily in Canada and the United States. The project facilitates use of standardized methodologies, techniques, and analytical tools to study owl movement and biology. The Sanctuary's participation began in 1995. Since then we have operated at both the River Farm and Glendening Nature Preserve (GNP) with differing levels of activity.

The annual migration of Northern Saw-Whet Owls (*Aegolius acadicus*, NSWO) has been shown to be highly variable, with boom and bust years. This is based on factors such as the number of young produced and weather and prey availability in their breeding range. In 2019, little southward movement occurred, and many stations across the U.S. experienced their worst banding season ever. We banded three owls: two females and a male, two adults and one hatching-year bird.

Bird banding is a classic mark/recapture technique used by researchers to study the natural history of many different species. The recapture of banded birds at a significant

distance from the site where they were banded, termed a "foreign retrap," is a rare event. For songbirds the recapture rate is less than 1%. However, for NSWO it is much higher, probably 2–5%. This is primarily due to the number and wide geographic distribution of stations that are targeting them and the large numbers that are being banded. We have banded 191 NSWO in 15 years of operation, so the recapture rate of owls banded by us is 2%. See Tables 1 and 2 for NSWO recapture data related to JBWS.

The pandemic caused us to attempt a restricted effort in 2020, our 17th year of active participation. We operated five nights during the historic peak period and banded no owls. That was a disappointment; however, there was one bright spot. An owl we banded at the Preserve on November 6, 2016, was recaptured near Montpelier, VT, on October 14th this year, a distance of 433 miles. It was in its Second Year when banded, so 5 years and 10 months old at recapture, older than most we encounter,



Northern Saw-Whet Owl (*Aegolius acadicus*).
Photo by Mike Quinlan.

but far short of the longevity record of 9 years and 5 months.

We thank the staff for their interest and support and for letting us use the Plummer House as a base of operation. We look forward to a healthier and more productive 2021.

Table 1. NSWO banded at Jug Bay and recaptured elsewhere.

Banding Location	Banding Date	Recapture Location	Recapture Date	Distance
River Farm	Nov. 7, 1999	Ridgely, MD	Nov. 6, 2000	59 mi
River Farm	Nov. 8, 1999	Hidden Valley, PA	Mar. 9, 2000	145 mi
GNP	Nov. 7, 2016	Williamstown, MA	Oct. 18, 2017	326 mi
GNP	Nov. 7, 2016	Carsonville, PA	Nov. 5, 2017	289 mi

Table 2. NSWO banded elsewhere and recaptured at Jug Bay.

Banding Location	Banding Date	Recapture Location	Recapture Date	Distance
Lamb's Knoll, MD	Oct. 28, 2007	GNP	Nov. 23, 2007	67 mi
Media, PA	Oct. 28, 2016	GNP	Nov. 6, 2016	104 mi

Jug Bay Wetlands Sanctuary Open Hours

Sanctuary Wetlands Center: Wednesdays, Fridays, Saturdays, and (Mar–Nov) Sundays 9:00 am - 5:00 pm

Glendening Nature Preserve: Wrighton Road entrance daily, gate open 9:00 am - 5:00 pm; Plummer House entrance Monday to Saturday, gate open 9:00 am - 5:00 pm (trails, Butterfly Garden, dogs on leash)

Patuxent Wetland Park: daily, dawn to dusk (fishing, hand-carried boat launch)

Wootons Landing Wetland Park: daily, dawn to dusk (fishing, loop trail, hand-carried boat launch)

Sanctuary Wetlands Center admission fee: \$6/vehicle

Free for current Friends of Jug Bay members, active volunteers, and active military and their immediate families.

There are no fees to visit our other sites.

Visit www.jugbay.org for directions, information and updates to our schedule.

Registration is required for all programs. Please call 410-222-8006 or e-mail programs@jugbay.org to register, or, in the case of ActiveNet programs, register online at <https://apm.activecommunities.com/aarecparks>. All programs meet at the Wetlands Center at 1361 Wrighton Road unless otherwise noted. An adult must accompany children under 13.

Visit www.jugbay.org and follow links to public programs offered at JBWS.

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uncommon habitat has been lost to development and natural succession. Today it persists in largely neglected lands associated with power lines, roadsides, old sand and gravel mines, and a few protected conservation lands. These sandy areas occur in the Parris N. Glendening Nature Preserve. The “sand barrens” cover one-hectare; the “pine barrens” cover an 8-hectare area. As part of the Sanctuary’s stewardship mission to conserve the habitats of the Jug Bay area, we are taking a hands-on management approach to maintain the open, sandy characteristics of these micro-deserts. Experts from USGS



Eastern Box Turtle (*Terrapene carolina carolina*). Photo by Allison Burnett.

Patuxent Wildlife Research Center and Smithsonian National Museum of Natural History have studied the ground-dwelling bees, tiger beetles, and plants in micro-deserts along the Patuxent River. Fourteen species of solitary, ground-nesting bees have been found in our micro-deserts, including four species previously unknown in Maryland. Because these bees are solitary, they do not swarm, and they pose no threat to humans. In fact, they are considered beneficial insects because of their important role as pollinators and as part of the food web. Eight species of tiger beetle—two of which are in decline—live in our micro-deserts. The Six-spotted Tiger Beetle (*Cicindela sexguttata*) is still common and can be seen running along sandy trails in the summer. Sixteen species of Maryland rare plants have been documented in Patuxent micro-deserts. We also hope to provide appropriate habitat for the

threatened Wild Lupine (*Lupinus perennis*).

Jug Bay has had the privilege of being a research site for some long-lived data collection projects that have reached across time to provide insights into natural cycles of change. One of our most long-lived and successful projects is our Monitoring Avian



Prothonotary Warbler (*Protonotaria citrea*) captured in Jug Bay MAPS project.

Productivity and Survivorship (MAPS) program. We became a MAPS station in 1990, one year after the program began, and are still participating as a site 30 years later. This makes JBWS one of the 13 longest running MAPS sites of the more than 1,200 sites scattered throughout the United States and Canada. MAPS data have been used to publish over 100 scientific papers on bird migration, reproduction, and survivorship. In more recent years MAPS data have been used to measure the varying effects of climate change on bird populations. **As of 2020, the Jug Bay Wetlands Sanctuary MAPS program has banded 3,196 birds representing 66 different species.** Given the uniqueness of JBWS tidal freshwater marsh habitat there is no doubt these data have provided novel insights to be used by scientists around the globe. This year COVID-19 put a damper on many of our projects and we had to adjust our expectations, so unfortunately our MAPS participation streak was broken. Mist nets are generally set up in late May through July, which happened to be at the height of our increased visitation to the Sanctuary and COVID-19 restrictions. Those two factors presented numerous challenges we were

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Kids Still Get Outside with Classrooms in the Field

By Sarah Kempfer, *JBWS Education Coordinator*

What a strange season it has been! No school buses coming to the Sanctuary. No large crowds of kids headed out on their field trip. Last spring, as the pandemic hit, we closed down our in-person field trips and began to plan for a new way to do things—at least for now! Two virtual field trip videos were created: a trip to Mark's Pond to learn about amphibians and a hike down the marsh boardwalk. These are now available for students to view!

Because getting outside is so important during this stressful time, several alternative approaches were developed to be sure that students can still experience Jug Bay. In-person field trips are still being offered but with small groups sizes and for shorter lengths of time. For the most part, those signing up for in-person field experiences are family groups or “learning pods” with children of all ages and several parents included. These programs have been a joy in this stressful time. Everyone is relieved and happy to be outside together. We still wear our masks! Many of our Volunteer Naturalists have jumped right in to teach these students and to expand their own learning and experience. We are so grateful for their continued support.

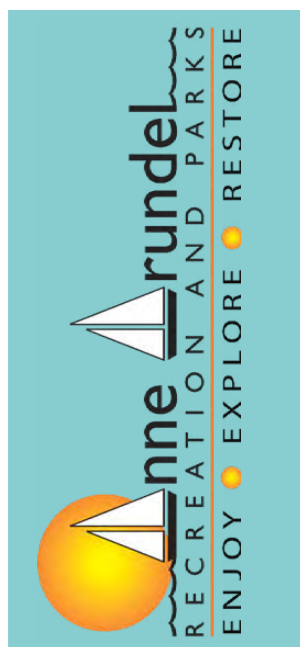
JBWS is also offering live-virtual field trips. We have taken over 100 students along the marsh boardwalk to virtually experience the beauty of the marsh and make discoveries along the way. This has worked better than expected with students asking questions and participating along the way. On one beautiful day, our trip ended with students deciding that they were going to go outside after class and all wished they could visit the Sanctuary. Although these programs are not ideal, the live virtual field experiences help to teach and connect students to nature. Students were also encouraged to explore nature in their own backyard.

Some groups or families prefer to keep isolated from others. To meet their needs, a bag of learning materials for self-directed

field trips is prepared and available to borrow from the Sanctuary.

These creative approaches to helping people experience Jug Bay have been successful. We will continue to promote these alternative field trips and look

creatively for other ways to partner with schools and teachers so that more students and families can have their own outdoor experience at JBWS during this unusual time.



Recorded virtual field trip and scheduled Q&A with a naturalist.
\$3pp. \$30 minimum
VIRTUAL

LIVE VIRTUAL
Live virtual hike with a naturalist to explore the marsh. Discussion and Q&A
\$3 pp. \$30 minimum

Naturalist led trip through the marsh and forest. Individuals or groups invited! Small groups sizes maintained. Masks required.
\$3 pp. \$30 minimum
IN PERSON

SELF-GUIDED
Borrow an explorer bag with materials and activities. Free with \$6 entrance. \$10 deposit for bag.

For more information and to register visit jugbay.org/education or email: rpkemp00@aacounty.org

unable to overcome. Fortunately we were still able to conduct some of our other long-term population studies this year.

In 1995 we began tracking our Eastern Box Turtles (*Terrapene carolina carolina*). **We have since marked 605 Eastern Box Turtles and collected records on over 7,300 sightings in the past 25 years.** Some noteworthy turtle tidbits: our oldest male on record is more than 50 years of age! One of our first turtles was recorded near the visitor center and then was not seen again for 20 years, which makes him the most enigmatic and crafty box turtle on our records thus far. We also began banding Northern Saw-Whet Owl (*Aegolius acadicus*) populations at JBWS in 1995, joining a little over 100 other Project OwlNet sites who hope to gather data on these elusive birds. As a site outside of their yearly range, the data we collect provides scientists with information on migration patterns for these tiny and elusive creatures.



Volunteers have helped on many stewardship projects over the years, including hand-digging and pulling 45 invasive Pampas Grass plants (*Cortaderia* sp.) from Sanctuary meadows!

One of the most tracked *animals* at Jug Bay has been its people! Over the years, Jug Bay Wetlands Sanctuary has provided quality, hands-on environmental education to numerous students through our Classrooms in the Field (CITF) program, field trips, summer camps, and other public programs. Students have an immersive experience learning about wetlands, forests, creeks, and ponds. They may get muddy in the creek or learn to do water quality testing and consider how our actions impact the watershed system and water quality. **From 2016 to 2020 we had 7,540 students participate in one of our CITF programs!**

The demand for our programs has increased exponentially, so much so that it often exceeds our availability. In 2019 alone we had to turn away nearly as many students as we accepted for CITF programs, which is why we love our amazing Volunteer Naturalists! Jug Bay is able to offer more field trips and public programs through the assistance of a growing number of dedicated volunteers.

The immediate results of volunteer work is impressive, but the value in educating future generations is priceless. We look forward to offering more programs as our visitorship increases, allowing us the opportunity to connect our growing community with the natural environment. Our mission is to increase awareness, understanding, and appreciation of estuarine and other natural ecosystems and their conservation through outdoor education,

research, stewardship, and volunteering. **From 2016 to 2019, our volunteers have helped us provide public education programming to 5,102 people!** Jug Bay also represents the only regional county park in Maryland that is staffed by highly trained scientists and offers opportunities to join multi-decade citizen science programs.

Volunteers call on all their skills and abilities to provide us with a wide range of choices for our calendar of events. Some of our

EDUCATION BY THE NUMBERS

FROM 2016–2020

7,540 STUDENTS

Individual students have attended one of our Classroom in the Field (CITF) field trips at JBWS.



HELP NEEDED! 3,998



Individual students were declined a CITF experience due to lack of staff. If you would like to help, please become a [Volunteer Naturalist!](#)

9 YEARS GREEN CENTER

Since 2012, JBWS has been a proud Green Center, providing leadership in environmental education for southern Anne Arundel county.



PUBLIC PROGRAMS 5,102



Individuals participated in a public education program from 2016-2019! To participate, check our [calendar](#) or sign up to receive our monthly [e-newsletter](#).

research programs have been co-developed and conducted by volunteers who have been kind enough to share their experience and skills from their professional lives. Other volunteers spend hours creating masterpieces featuring JBWS that our Friends group uses to help raise money to provide you with more public events and programs. Jug Bay and the Friends of Jug Bay (FOJB) are very fortunate to have the help and support of so many dedicated volunteers. Volunteer time and commitment to educating the public for a healthier natural environment is invaluable. **Every year, volunteers donate more than 5,700 hours to Jug Bay and FOJB programs, which is valued at nearly \$145,000!!** Volunteer hours allow us to show our impact to grantors and prove we have a dedicated team to get things done. Volunteer hours can drastically improve our chance of being awarded grants and also assists Jug Bay in attracting and retaining new volunteers and FOJB donors. When we can share the number of volunteers who believe in our organization and the collective service hours they have contributed, we are confirming that people believe in our mission!

Last but not least we have our awesome visitors. **Thus far in 2020 we have welcomed almost 65,000 visitors to all our properties!** Compared to this time last year, that's double our visitation. I have spoken with most visitors who come to the Sanctuary on Saturdays since I began working in June, and I am consistently surprised by the number of new people we have coming to the Sanctuary. Weekend after weekend more people are finding Jug Bay for the first time. They tell me how much they appreciate its existence as a place to seek refuge from worry, feel inspired by the beauty of nature, and to reliably enjoy a positive experience...bugs and all. I have also heard numerous times that it has been decades since people have paid Jug Bay a visit. It's nice to know that after all this time we are still here and largely the same. People come back and bring their own children; we become part of a family tradition of learning, exploring, and enjoyment of nature. We will continue to improve our spaces year in and year out so future generations of all animals (humans definitely included) may enjoy the experience of Jug Bay Wetlands Sanctuary.

Explore our volunteer opportunities online at www.jugbay.org/volunteer. For more information, call 410-222-8006 or e-mail Volunteer & Program Coordinator Debra Gage at rpgage00@aacounty.org.

Fall Donations:

Jim O'Reilly: native plants for Jug Bay's pollinator garden, earned from volunteering at Chesapeake Natives; **Barbara Saffir:** framed tree frog picture; **Mark and Bonnie Spicknall of Brickhouse Farm:** pumpkins for Haunted Hike event.



2020 ACCOMPLISHMENTS

Science & Protected Habitats

- 300** Hours volunteered on NEW Field Work Fridays!
- 9** Volunteers leading NEW Eastern Bluebird Nestbox Monitoring
- 4** Research summer intern projects completed
- ALL** Pampas Grass eliminated from all Glendening meadows
- FIRST** Emerald Ash Borer canopy study - no EAB found
- NEW** Managed burn/deer browsing monitoring program
- 5th** Patuxent River Conference - Virtual



Outdoor Education

- 1,618** Students scheduled for spring Classrooms in the Field
- 263** Students participated in re-designed fall field trips per COVID-19
- 280** County children engaged in the NEW Nature Escape Program
- 4** Summer camps offered
- 4** Re-designed field trips created and offered: small group in-person, live virtual, virtual, self-guided
- 2** NEW virtual field trips: Amphibian Adventures and Marsh Boardwalk Hike
- NEW** Ask the Ranger series



Our Volunteers

- 3,510** Volunteer hours donated!
- \$103,580** Value of volunteer hours served
- 12** NEW Volunteer Naturalists
- 11** New trail monitor volunteers
- 2** Kiosks built at Waysons Corner Preserve by an Eagle Scout
- 1** Master Watershed Steward Candidate revitalized the pavilion rain garden
- ADOPTED** Patuxent Wetland Park adopted by the Honor Society of Chesapeake Science Point High School



PROUD OF:

Winning the Anne Arundel County Public Schools Partner of the Year Award!



Receiving about 1 million dollar grant to build Phase I of the Jug Bay Field Station!



Celebrating **35** years of serving the public!



Being re-certified as a Green Center!

*All of Our 149
Volunteers*

New Website: www.jugbay.org



Chesapeake Bay National Estuarine Research Reserve Maryland

Jug Bay is one of the three components in the Chesapeake Bay National Estuarine Research Reserve, Maryland. The purpose of CBNERR is to manage protected estuarine areas as natural field laboratories and to develop a coordinated program of research and education as part of a national program administered by National Oceanic and Atmospheric Administration (NOAA).

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Vegetation monitoring at Deal Island site, CBNERR-MD.

Resiliency through Restoration and the Research Reserves

By Becky Swerida, *Reserve Biologist, CBNERR-MD*

For the past three years resiliency has been on the rise at Maryland's Chesapeake Bay National Estuarine Research Reserve (CBNERR-MD) and beyond. In 2017 the Department of Natural Resources' Chesapeake and Coastal Service launched the Resiliency through Restoration Initiative. This new grant program focuses on climate resiliency for

both the natural ecosystem and vulnerable human communities that rely on it. Increased nuisance flooding on sunny days as well as during even more frequent and severe storms is more than just an annoyance for many Marylanders. Important roads are being flooded, houses and businesses are being damaged, and, very significantly, delicious blue crab habitat and peeler tanks are being

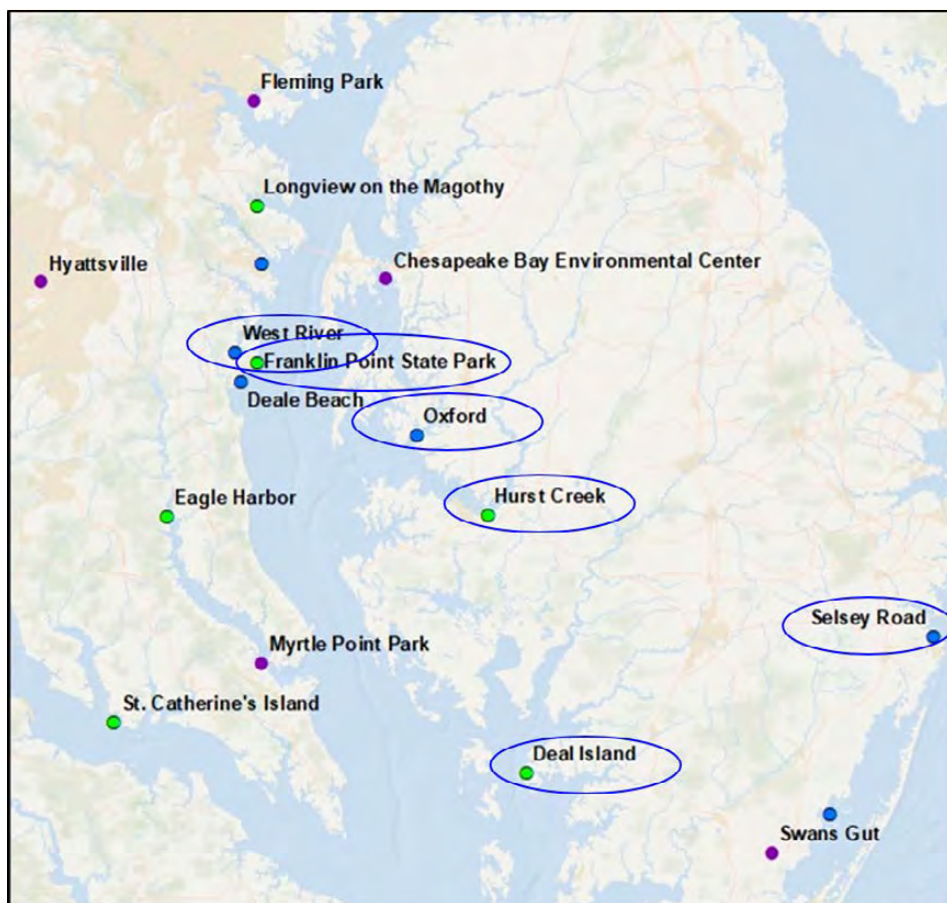
damaged! Luckily, scientists are finding that the same features that keep natural ecosystems resilient can increase our vulnerable communities' resiliency as well. It's been estimated that during Hurricane Sandy coastal wetlands prevented more than \$625 million in direct property damage. Natural and nature-based features mimicking natural habitats are being used in shoreline restoration projects more and more to bring the resilient benefits of healthy salt marshes, dunes, and more to our communities.

The Resiliency through Restoration Initiative identifies the most vulnerable communities that can benefit most from the protection of natural and nature-based

"There are some great opportunities for volunteers to collect valuable data at our projects."

features and offers technical and financial assistance to construct the best project possible. Most of the projects are innovative, climate-resilient living shoreline designs that incorporate sea level rise projects, marsh migration potential, storm surge predictions, and more. This program also offers an amazing opportunity to learn from our experiences and share that knowledge with others: before and after construction monitoring. Most restoration monitoring projects are limited to observing shorelines that have already been restored, without getting a snapshot of the "before" shoreline conditions. Here at CBNERR we are so ready to take advantage of this exciting and uncommon opportunity to get monitoring!

Of the total of 17 restoration projects that have been funded by the Resiliency through Restoration Initiative so far, 6 projects have been selected for physical and biological monitoring, 2 on the western shore in Anne Arundel County and 4 on the eastern shore. Each project will be monitored mainly by observing the vegetation growing at the site and the elevation of the marsh and beach. Additional aspects, such as the sediment characteristics, accretion rates, or wildlife usage, can be observed depending on the needs and goals of each project site.



Map of the 17 restoration projects that have been funded by the MD Department of Natural Resources' Chesapeake and Coastal Service Resiliency through Restoration Initiative. The six projects selected for physical and biological monitoring are circled.

CBNERR began monitoring the Deal Island shoreline first in 2018, then Franklin Point second in 2019, and then the remaining four sites just this summer in 2020. Already, continued erosion has been clearly documented at Deal Island and Franklin Point project sites. Both projects are now estimated to be constructed in the spring or summer of 2021. The remaining projects should be constructed later in 2021 or early 2022.

In addition to the technical monitoring that has been conducted by CBNERR scientists so far, there are some great opportunities for volunteers to collect valuable data at our projects. Each project's sampling design includes photo monitoring points where stands will be installed. These stands will allow researchers, volunteers and really anyone who happens to hike by to snap a picture at the same vantage point that will form a sort of time lapse flip book over time. Soon, the Maryland MyCoast App will

be launching a Restoration Tracker tool to make this photo monitoring effort even simpler. The app will automatically time stamp the photo and upload it to an interactive map. If they are interested, the volunteers can log in more detailed data by making some simple observations about the habitat. CBNERR is also working with partners such as Maryland's Center for Coastal Bays and the National Wildlife Federation to organize community scientist monitoring events to count Horseshoe Crabs, Diamondback Terrapins, and more. These plans have been delayed, like everything else, by the COVID-19 pandemic, but stay tuned for updates and fun volunteer opportunities! These datasets will help researchers and restoration practitioners understand how to make shoreline habitats more and more resilient over time, benefiting the beautiful ecosystem and the human communities that rely on it.

W I N T E R 2021



DEPARTMENT OF RECREATION AND PARKS

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