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The Origins of Jug Bay Wetlands Sanctuary

By Al Tucker, Long-standing Friends of Jug Bay Board Member

Background:

During the 1960s, increased development affected the quality of life in Maryland. It brought greater population density, pollution, and erosion. Initially, these impacts seemed remote in rural Anne Arundel County. In 1973, however, a single event alerted residents near Jug Bay that their quiet natural area could be threatened. A local absentee landowner intended to place an RV campground on the around 160-acre parcel where the Jug Bay Wetlands Visitor Center now stands. The news galvanized the neighborhood to action. During the next four years, they organized to fight against various laws and regulations biased in favor of development over land preservation. Ultimately, it would take continuing political pressure to change the fate of those 160 acres.

The local neighbors knew they would need to broaden their base of support. As they did, new ideas emerged for land-use surrounding Jug Bay. These included everything from a conventional park to third-party management of a limited-access facility.

In the end, it took almost a decade for the concept of Jug Bay Wetlands Sanctuary to reach fruition. This solution satisfied the diverse interests within the environmental community, the politicians, and, most importantly, the neighbors.

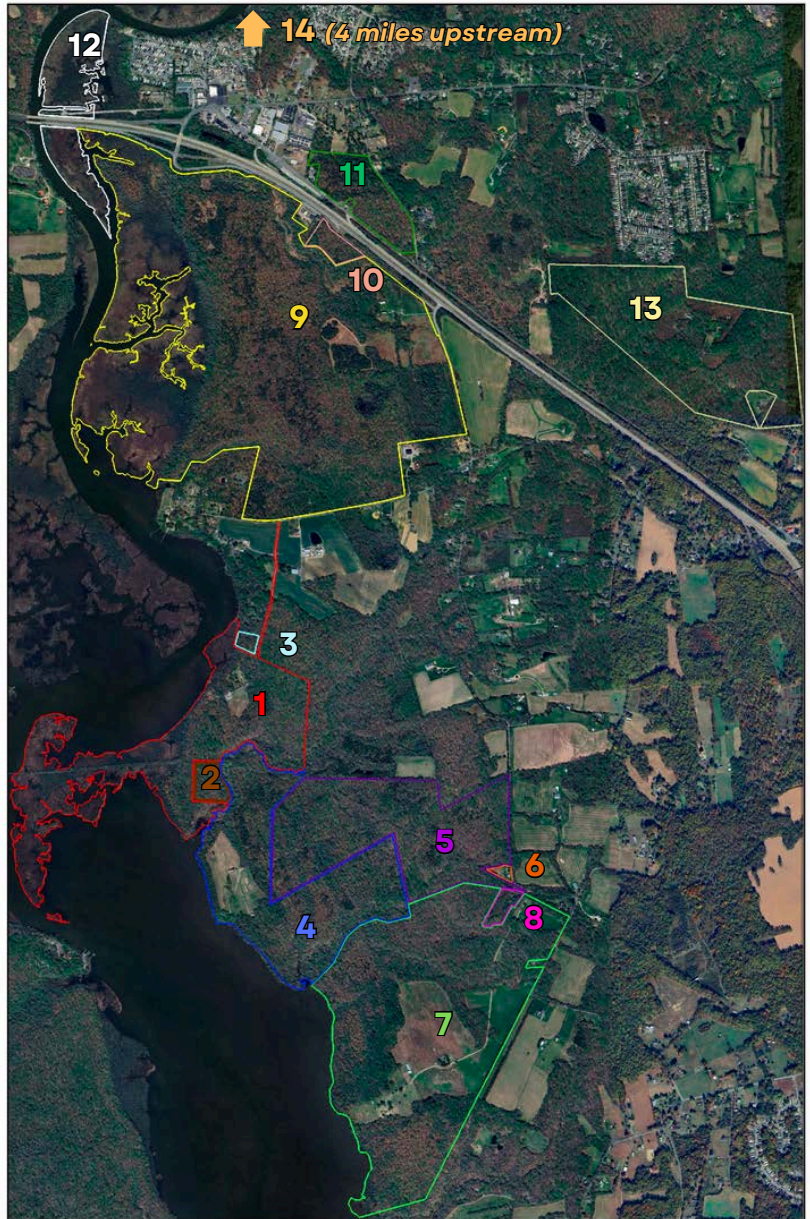


Figure 1. Map showing the parcels of land that compose Jug Bay Wetlands Sanctuary. Cartology and geographic research thanks to Dave Linthicum.

Sanctuary Proper:		Glendening Preserve:	
1	200 acres - Dodson, 1980	9	615 acres - Genstar, 2001
2	10 acres - Barrett, 1985	10	7 acres - Dorr, 2008
3	3 acres - Hofford, 1996	Patuxent Wetlands Park:	
River Farm:		11	43 acres - 2007, MD State Highway Administration
4	140 acres - Spicknall, 1992	12	Nature Preserve at Wayson's Corner:
5	137 acres - Armiger-Hoover, 1997	31 acres - Ashby Sheperd, 2008	
6	2 acres - Wilt, 2022	13	Shepherd Preserve:
Emory Waters Preserve:		140 acres - Lucy Shepherd, 2011	
7	303 acres - Riggelman, 2004	14	Wooton's Landing
8	5 acres - Krause, 2009	138 acres, John E. Owens, 1974	



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Jug Bay Wetlands Sanctuary (JBWS) is owned and operated by Anne Arundel County Department of Recreation and Parks, with support from the Friends of Jug Bay. Established in 1985, 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.

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Marsh Notes is produced quarterly by Jug Bay Wetlands Sanctuary. Comments and suggestions are welcome.

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The Struggle:

In the 1960s, the Patuxent River’s water quality was rapidly degrading, caused by a lack of environmental regulation. Public pressure in the seven counties along the Patuxent forced the State of Maryland to act. As a result, legislation passed in 1961 established policies to mitigate the harmful effects of uncontrolled development along the river. The Patuxent River Watershed Act identified five problems with the river: “water supply, wastewater disposal, soil erosion, park and open space acquisition, and enhancement of the estuary.” The act, however, had no enforcement provision, only aspirations. But it did offer funding for land acquisition.

In 1962, the Maryland-National Capital Park and Planning Commission purchased land on the western shore of Jug Bay that became the Patuxent River Park. Edward Merkle, the owner of Merkle Press Inc., had already created a refuge on his 1,700 acres at the southwestern end of Jug Bay. In 1970, he donated it to the state. It is now known as the Merkle Natural Resources Management Area. As Prince George’s County developed the land for park use, pressure built in Anne Arundel to do the same on the Patuxent’s eastern shore.

In 1965, the government structure in Anne Arundel changed from a board of commissioners to a county executive. This change separated the legislative and executive function, so the first county executive, Joe Alton, became the point person for action. Toward the end of his second term in 1972, he issued a contract to buy the Spicknall property, now the River Farm (#4 on Fig. 1). Following that year’s election, Robert Pascal won the executive office. In one of his first actions, he canceled the contract on the Spicknall property. His public reason was that the cost was too high. As a result, the owner held bitter feelings toward the county, which were never resolved until the property changed hands decades later.

In 1974, the zoning office informed only the neighboring landowners about an absentee landowner’s desire to establish an RV campground on the current site of the Jug Bay Wetlands Visitor Center, then known as the Dodson property (#1 on Fig. 1).

Of course, this news spread throughout the neighborhood. Five neighboring families led the opposition. They were Rigglesman-Finch, Tucker-Hoover, the Browns, the Alford, and the Barretts. Since the RV park required a special exception, the landowner only had to show that he met the conditions stipulated for that specific use. After confirming that the landowner could meet the conditions, the zoning officer issued a permit to build.

In June 1975, the five neighboring landowners appealed this decision to the zoning appeals board. Testimony from Anne Arundel and Prince George’s county governments pointed out that the land use would conflict with goals of land preservation along the Patuxent. However, Anne Arundel County said that they had no plans to acquire land along the Patuxent until 1990.

Ultimately, the zoning appeals board determined that since neither the state nor counties along the river had presented an official objection, its use would not

be more objectionable than those permitted in the application. Also, Anne Arundel County could show no official evidence of a plan for the development of the Patuxent River Park. Therefore, the appeals board approved the use for an RV campground. Of course, this decision incensed the local community because it appeared that the citizens' testimony had had no impact on the outcome.

Inexplicably, no testimony mentioned the Land Use Act of 1974 during the hearings. The act authorized the Department of State Planning to designate areas of Critical State Concern and to focus on preservation, conservation, or proper use. Three sites were designated in the Patuxent Watershed: Battle Creek Cypress Swamp, Jug Bay, and Killpeck/Trent Hall Creek. This legislation was the forerunner of the Chesapeake Bay Critical Area Protection Act, passed in 1984.

Following this defeat, neighbors with legal standing appealed to the circuit court. During this process, the neighbors reached out to a broader community of supporters. These included the county council and our district councilwoman, Virginia Clagett. Through her, the neighbors met with newly formed local environmental groups like the Chesapeake Bay Foundation and the Chesapeake Environmental Protection Association, as well as other like-minded citizen groups.

Among these people was a colorful, British-born zoologist and adventurer, Dr. William Sladen (Many of you will have seen his character in the movie, "Fly Away Home", where abandoned Canada geese are trained to migrate following a light aircraft.) He was searching for a home to establish the Wildfowl Trust of North America, and he declared Jug Bay to be the ideal spot. This concept imprinted the idea of a research and education center in everyone's mind.

More than a year later, in September 1976, the circuit court rendered an opinion — again defeat. The original zoning decision was upheld. The only tool that remained was political pressure. It seemed meetings with political leaders were constant. Boat trips on the river and bay were given to anyone who would listen to the need to preserve the Jug Bay's surroundings.

Among those participants was Nancy Pascal, the wife of the county executive. In June 1977, the five neighbors and representatives of various environmental groups met with the county executive to express support for the land purchase. At that meeting, he seemed non-committal, however, a month later he called the five neighbors to a 7:30 p.m. meeting in his office. As the group settled down, he threw up both arms and said, "I give up. I'll buy the land." With that, he started condemnation proceedings against the landowner.

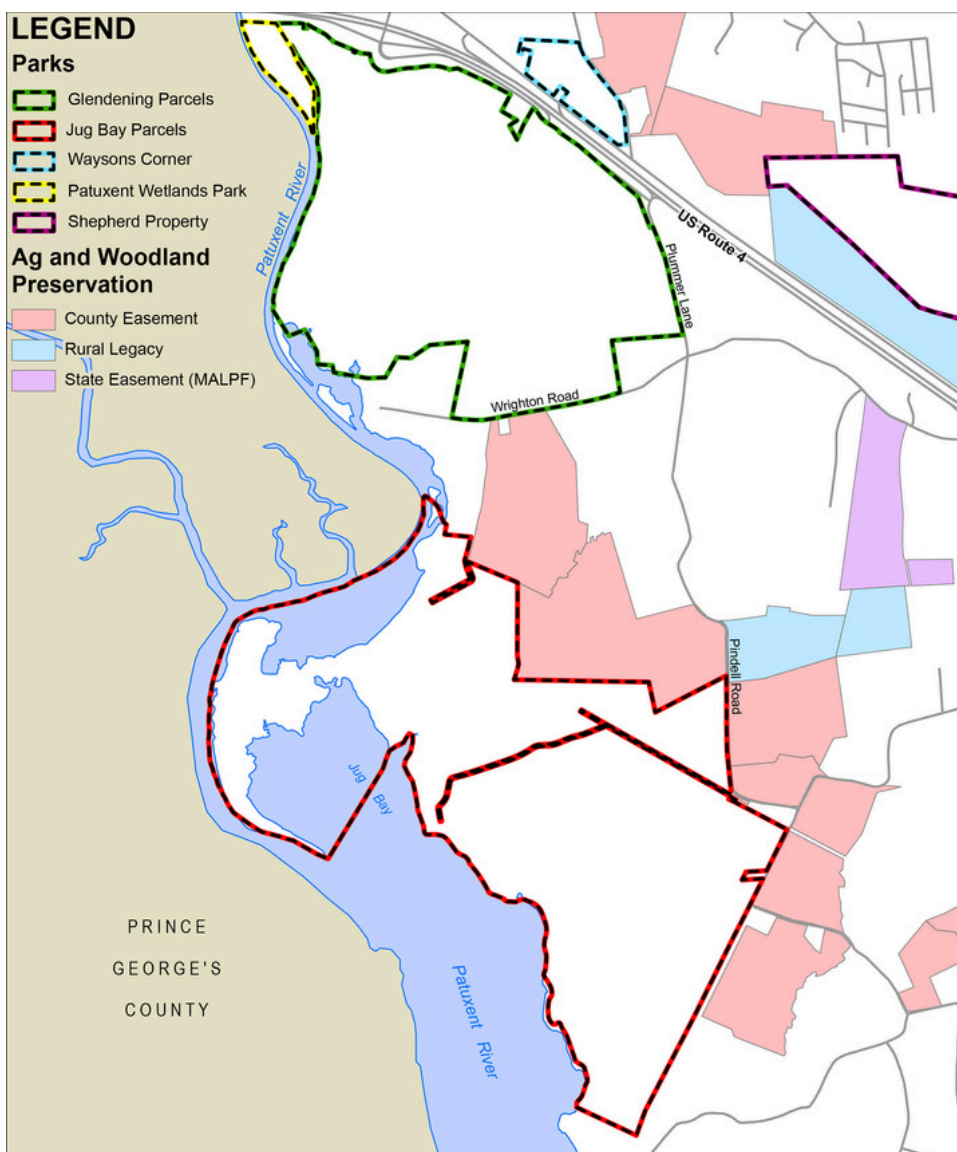


Fig 2. Map showing properties neighboring the Sanctuary that have been put by their owners under county easements ensuring their preservation. Credit: Jesse Stout, Office of Information Technology, Anne Arundel County Department of Recreation and Parks.

Jug Bay Wetlands Sanctuary Open Hours

Sanctuary Wetlands Center:

Wednesdays, Fridays, Saturdays, and (Mar–Nov)
Sundays 9:00 a.m. - 5:00 p.m.

Glendening Nature Preserve: Wrighton Road and Plummer Lane entrances open daily 9:00 a.m. - 5:00 p.m. (trails, Butterfly Garden, dogs on leash)

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

Nature Preserve at Waysons Corner: daily, dawn to dusk (loop trail, nature discovery play area, dogs on leash)

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 Event Calendar, directions, and additional information. Click on an event/program for details and to register.

Registration is required for all programs. Please call 410-222-8006 or e-mail jugbay@aacounty.org with questions.

Visit www.jugbay.org to explore all the public programs offered at JBWS.



Nonetheless, negotiations didn't go smoothly. Questions remained as to whether the marshland was part of the land parcel. Finally, a little over 160 acres were agreed upon so that the final price was satisfactory to the landowner. The county council, however, expressed doubt about the proposed land use. In fact, they cut \$1.5 million from the budget because they were alarmed that the executive was going to turn over the land to a third-party private group. The council wanted the citizens to determine how the land was used.

In a resolution passed in October 1977, the council urged the executive to establish a Patuxent Watershed Advisory Committee to advise the Director of Recreation and Parks. Now bureaucracy controlled the fate of the land. It lay dormant until 1984. Then a new county executive, James Lighthizer, became the champion for Jug Bay. As an avid duck hunter, he expressed the need for a limited-access sanctuary. Christine Gault became the first site naturalist. Her vision captured the goals of research, education, and stewardship that subsequent park directors have carried forth and expanded.

Epilogue:

The threats to the Sanctuary did not end there. Over the next several years, the potential of a gravel mine, a shopping center, and a 58-acre private school required the neighborhood to spring into action with political pressure and financial support for litigation. Again, political pressure carried the day with the acquisition of the Glendening Nature Preserve, the Nature Preserve at Waysons Corner, and the defeat of the school. In 2017, The String of Pearls, an honorific nonprofit, acknowledged the Sanctuary neighbors who committed their land to permanent preservation (Fig. 2). Their commitment ensures that almost all the eastern boundary of the sanctuary will remain protected in perpetuity.

**Explore our volunteer opportunities online at
jugbay.org/volunteer**

**For more information, call 410-222-8006 or
e-mail Volunteer & Program Coordinator
Debra Gage at rpgage00@aacounty.org**

Donations from Fall 2024

Thanks to the following for their generous donations! If you are interested in making a donation, please contact Debra Gage.

Colins Rees: *outdoor table umbrellas, framed photos*
Steve Tillet: *kayaks, PFDs, kayak gear*
Jen Wolfe (DNR): *dip nets*



Fellow Members,

These days, I go for walks more often to help settle my mind. And Jug Bay Wetlands Sanctuary and Glendening Nature Preserve are great places to do this. The quietness, beautiful woods, and waters of the Patuxent River all work together to remind me of why nature and Jug Bay are the big picture.

A big source of unease is what will happen to the farm across from the entrance to Glendening — IT IS UP FOR SALE! The property has 71 acres, four houses, and two barns. In October 2023, Anne Arundel County attempted to purchase the property, but the offer was too low for the owners. So, it's still on the market. This property is important because it lies across from vernal pools that are home to spotted and marbled salamanders. During their mating seasons, salamanders migrate to the vernal pools, usually on rainy nights in spring and fall. Many of them will cross Plummer Lane! Thankfully, volunteers from Jug Bay aid their crossing. Future development at this property would likely change the hydrology of the area and the quality of water entering the pools. The biodiversity of vernal pools relies on very clean water.

The Friends of Jug Bay (FOJB) is looking into how the property can be conserved or otherwise preserved. We want to keep these vernal pool gems safe and healthy and maintain the rural charm of the area around Glendening. If you know of any way this can be done, please let us know. And my fellow Jug Bay and Glendening lovers, contact your political and administrative representatives to let them know that conserving this property is a necessity!

The second half of 2024 was very busy for FOJB. We held our annual FOJB picnic in mid-August, where we saw presentations by the five summer interns doing research at Jug Bay. We contracted with a software company for websites for both the Sanctuary and FOJB. The Friends believe this new website will significantly enhance our mission. In late November, the Sanctuary held its second citizen science summit. This was a very informative presentation of the reptile and amphibian research at Jug Bay conducted by volunteers. The FOJB supports these efforts with additional funding.

I hope you enjoyed Thanksgiving but did not ignore our fundraising on Giving Tuesday. But if you did not donate then, there will be other times when you might consider making contributions of either money or time. Donating your time and skills to Jug Bay's volunteer opportunities and citizen science programs is worth its weight in gold and a great way to meet people! More connections lead to more opportunities for you and others. And you are welcome to assist FOJB either as a volunteer for a specific task or apply to join the FOJB board. Just contact me at the email address below.

So the Christmas and New Year's holidays went by fast. We recently had FOJB's January Soup & Science program about how Jug Bay Wetlands came about in celebration of the Sanctuary's 40th Anniversary. The next Soup & Science series will be held on February 9th and March 9th. In February, FOJB and Jug Bay will be sponsors of the Patuxent River Conference, or PAXCON, held at the Patuxent Research Refuge in Laurel, MD. The conference will have presentations about issues affecting the river and is a great place for networking. Learn more at <http://www.paxcon.org/>.

Currently Anne Arundel County is having FY26 town hall budget meetings to seek residents' priorities. The meeting for District 7 will be January 23rd, with County Executive Pittman and Councilmember Shannon Leadbetter. FOJB will make a statement supporting greater funding of the Sanctuary. If not attending, consider sending in comments. <https://www.aacounty.org/openarundel/yourbudget/budget-townhalls>

It was wonderful to have snow this January! A great time to see nature with a blanket of white on the ground. And please take time to consider how you might help us preserve the property across from Glendening.

Dennis Fravel

President, Friends of Jug Bay
dennisfravel@friendsofjugbay.org

Prescribed Burns: An Important Piece of Meadow Management

By Patricia Delgado, Sanctuary Superintendent



Prescribed burn conducted at Biscoe Gray, Calvert County, by the Maryland Forest Service. A similar burn will be conducted at Jug Bay Emory Waters' meadows in 2025. Credit: Brian Stupak

It is in their nature — meadows want to become forests.

This is part of natural ecological succession. Based on this premise, managing and maintaining meadow habitat requires continuous effort as it is a constant battle to control tree growth and invasive species. Currently the Sanctuary has about 50 acres of meadows that are managed for pollinators. One management technique we have used for years has been annual mowing in late February or the beginning of March before the start of the growing season to minimize impacts to wildlife. Our experience has shown that this practice alone is not enough as most of our old meadows have shown different levels of degradation over time. To bring our meadows back to a healthier state, we are trying to restore them. Once restored, we will introduce a cycle of prescribed burning to their management in addition to mowing.

Why are prescribed burns important? First, we need to understand that fires were a common natural occurrence. By introducing fire into meadow management, we are trying to “replicate” this natural disturbance, which plays an important role in maintaining or enhancing the biodiversity of native herbaceous plant communities. Fire promotes the growth of native wildflowers and grasses, removes encroaching woody plants, and controls undesirable invasive species less adapted to fire. Fire acts as a driver to eliminate the layer of dead plant material or duff that accumulates in the soil surface after the end of each growing season. By removing this layer, the soil surface opens to sunlight and rain, which in turn promotes the regeneration and or establishment of native plants. In addition, the ash remaining after the fire serves as fertilizer for plant growth as it is rich in nutrients. In areas with a large number of invasive species, the application of herbicides may be necessary (as a last resource) to eliminate these before implementing a prescribed burn. Overall, prescribed burns create healthier and more diverse habitats for wildlife including insects and associated birds!

When and how often should we implement prescribed burns? At Jug Bay, prescribed burns happen around January or February, when most everything is dormant or not breeding. This minimizes impacts on wildlife, especially those species more directly associated with the use of meadow habitat. Depending on post-fire plant response, prescribed burns will follow a three- to five-year cycle. A detailed prescribed burn plan including all Sanctuary meadows will be developed in collaboration with Maryland Forest Service experts. The plan will ensure that not all meadow habitats will be burned at once, leaving unburned areas for wildlife use. How much area is burned at a time will take into consideration location, the difficulties of burn scheduling (which is highly dependent on weather conditions), and the cost and effort of equipment and personnel deployment. The Sanctuary staff is eager to start this collaboration with the Maryland Forest Service to enhance the health of our meadow habitat ensuring that the benefits they provide to wildlife will continue for many years to come.

The Sanctuary's Self-guided Tree Hike, Revamped

By Cynthia Bravo, Sanctuary Volunteer

Do you know your trees? As a nature lover, everyone should know at least a few dozen by sight.

Many years ago, Jug Bay set out to make this easy for visitors by creating the Self-Guided Tree Hike. The hike starts with the big black walnut in front of the Visitor Center and continues around that area. Then it heads down Utility Trail, around Forest Trail and the back of the meadow, and returns to the Visitor Center.

Over the years several of the trees died, so it was time to redo the trail. Since Mike Quinlan is the trail monitor for Utility and Forest, he set out to find replacement trees. These were duly identified, the trail was remarked, and Dave Linthicum made a new trail map. I redid the brochure, which includes the map, and the notebook with each tree's details. The notebook can accompany a visitor either in the paper version or an electronic version, thanks to a QR code.

The new trail will be opening again next spring, so plan a visit. Although we couldn't find a persimmon to replace the dead one on the trail, there are several along the Railroad Bed Trail. Just look for the tree with bark like alligator hide.

Jug Bay Bat Week

By Elizabeth Sieglinger, Sanctuary Education Coordinator & Naturalist

A few months back you may have seen Jug Bay’s social posts promoting Bat Week. Each year, for the seven days preceding and including Halloween (Oct. 24-31), organizations come together to educate and spread awareness about everything bats. The goal is to dispel myths, highlight bats’ ecological niche, provide insight into local species, and exclaim loudly the need for bat conservation locally and globally. Jug Bay wanted to be a part of that.

Many people don’t know that bats are incredibly important to ecosystems worldwide. Bats are key players in pollination and seed dispersal for a variety of plants like bananas, mangoes, cacao, and agave. In the U.S., they are fantastic pest control as found in a study by Josiah J. Maine and Justin Boyles at Southern Illinois University in Carbondale. Researchers found that bats save the U.S. corn industry more than \$1 billion each year by preventing crop damage and lowering pesticide costs. Here in Maryland, our 10 bat species are mainly insectivores and eat tons of crepuscular and nocturnal insects that many people find bothersome like mosquitos, moths, and beetles. I’m sure many

Maryland farmers don’t realize the benefit they are getting from our local bats.



Learn more about Bat Week.
Courtesy of Jug Bay Wetlands Sanctuary

Despite their coolness, bats need our help! In North America alone, 53% of all bats are at risk of extinction! Factors driving these alarming figures include wind energy production, climate change, disease, and land use change or loss of habitat. One specific disease, white-nose syndrome, affects hibernating bats and is responsible for decimating over 90% of the northern long-eared, little brown, and tri-colored bat populations in fewer than 10 years. White-nose syndrome, named for the white fungus that appears on a bat’s muzzle and wings, has been recorded in 40 states and nine Canadian provinces. This disease spreads as people visiting caves carry and spread the disease on their shoes and gear as they visit multiple sites without sanitization. Scientists are working on a treatment, but the best way to avoid spreading this disease is to not visit hibernation sites.

Jug Bay Wetlands Sanctuary is home to at least six of Maryland’s 10 species of bats, according to Michelle Campbell and Jennifer Dietzen who held acoustic monitoring sessions over the summer. Using acoustic devices, they methodically recorded distinctive bat calls and then identified them down to species level. Although acoustic monitoring is less precise than mist-netting, it has the advantage of detecting species that fly too high for nets and is less invasive for the bats.

Their work detected big brown, eastern red, silver-haired, hoary, little brown, tri-colored, northern long-eared, and evening bats. All bat species are considered Species of Greatest Conservation Need in Maryland.

Jug Bay is home to six of Maryland’s 10 bat species.
Credit: Jug Bay Wetlands Sanctuary.

Native Bats of Maryland	
Species of Bat	Present at Jug Bay?
Tree Dwellers	
Eastern red bat	✓
Evening bat	✓
Silver-haired bat	✓
Hoary bat	✓
Cave Dwellers	
Big brown bat	✓
Eastern small footed bat	✗
Indiana bat	✗
Little brown bat	✓
Northern long eared bat	✗
Tricolored bat	✓

The northern long-eared bat is federally listed as endangered, while the tri-colored bat has been proposed for federal listing. The little brown bat is not yet federally listed but is likely to be due to severe population declines from white-nose syndrome.

Acoustic monitoring at the Sanctuary helps us understand which bat species are present, helps prioritize areas for conservation, and lead to further studies. Mist-netting — where bat biologists radio-tag individuals to locate important summer breeding trees — could provide further reasons for habitat protection.

How can you help these cuties? Become a bat ambassador and spread awareness about the plight of bats. Turn off unnecessary lights at night. Promote natural habitat around your home by planting bat gardens and avoiding pesticides. Provide shelter by installing a bat box. Avoid disturbing hibernating bats, and if one should enter a space where they don't belong, remove them humanely.

Check out <https://batweek.org> to learn more about bat conservation efforts.



Eastern red bat seen at Jug Bay. All handling performed under a special collection permit. Credit: Michelle Campbell

MD DNR Secretary Josh Kurtz pays the Sanctuary (and the Monarchs) a Visit

By Liana Vitali, Sanctuary Stewardship & Citizen Science Coordinator



Pam Magee right, and Laura Calvert, left, Maryland Master Naturalists, complete a survey of monarch butterfly habitat at River Farm.

Credit: MD DNR.

Every year, thousands of monarch butterflies pass through Maryland on their migration to Mexico. Over the years, however, researchers have discovered that vital food habitats have diminished at an alarming rate, threatening the survival of this iconic orange insect.

The River Farm property at Jug Bay Wetlands Sanctuary has been a research site in recent years to help scientists better understand monarch butterfly health and food availability. In September, Maryland Department of Natural Resources (DNR) secretary Josh Kurtz visited the Sanctuary specifically to learn about this effort as part of the department's 2024 Science Week.

Providing food for migrating monarchs isn't as simple as shopping for snacks. Understanding what monarchs need from a scientific perspective involves detailed surveys to identify blooming flowers and milkweed while tracking their activity. Master Naturalists, led by DNR ecologist Paula Becker, have been performing surveys at River Farm to gather this exact data and upload it to the Integrated Monarch Monitoring Program, a nationwide effort to gather information about the species' habitats and behavior.

Volunteers work in pairs to conduct surveys covering plots of 10,000 square meters. During the surveys, they use a PVC pipe to outline a small rectangular area and count the number of blooming flowers and milkweed plants within it. They also record evidence of monarch activity, such as eggs or caterpillars. Secretary Kurtz observed this process during his visit, asking many relevant and thoughtful questions.

Over time, this research will help scientists understand how monarchs interact with their environment and monitor changes in their habitats. In the meantime, Jug Bay and River Farm will always be a safe space for butterflies to fuel up on their journey south.

New Citizen Science Opportunity: Forest Litterfall Production

By Patricia Delgado, Sanctuary Superintendent

In 2005 a forest survey started at Jug Bay Wetlands Sanctuary when a group of staff and volunteers surveyed trees in the Sanctuary Proper and Glendening Nature Preserve, identifying species and measuring diameter at breast height. Two subsequent surveys were conducted for a subsample of plots in 2018 and this year. Data from this original project generated information on tree species composition, density, size and growth, and overall forest health.

As an extension for learning more about this valuable resource, the Sanctuary has started a new project to measure forest litterfall production. This added piece will quantify the number of leaves, twigs, bark, flowers, and fruits that fall from the forest canopy to the forest floor. Litterfall plays an important role in forest productivity as it transfers nutrients to the soil and is part of the carbon cycle. It also provides habitat for wildlife. As we start this new effort, we welcome interested volunteers to help with data collection and processing!

If you are interested in participating in this citizen science research please reach out to Pati Delgado at rpdelg88@aacounty.org.



A leaf litter trap located in the forest collects leaves, twigs, bark, flowers, fruits, and any other material falling from the forest canopy. Credit: Beth Sieglinger

Marsh Boardwalk Reopened!

By Vicki Petersen, JBWS Office Manager

It has been a long wait, but the revamped Marsh Boardwalk is open and we couldn't be any more excited!

If you visited the Sanctuary this fall, you probably heard hammers, saws, and generators. Thanks to the extra warm and dry weather this, a contractor's team steadily worked to replace every inch of the walk, plank by plank. No weather delays here!

In the end, almost the entire boardwalk was replaced — extended to a consistent 36 inches in width — and a handrail was added to the entire length. The steps at the southwest end of the boardwalk have also been significantly widened and handrails have also been added there.

It has been far too long since we have had the pleasure of welcoming you to explore the marsh at marsh level. We invite you to visit the Sanctuary soon!



Photo Credits: LEFT: Vicki Petersen. BELOW: Vicki Petersen. ABOVE: Eva Blockstein



Jug Bay Wetlands Sanctuary is a component of the Maryland Chesapeake Bay National Estuarine Research Reserve (MD-CBNERR). The mission of the 30 Reserve sites across the country is to improve coastal resource management by increasing scientific understanding of estuarine systems and making estuarine research relevant, meaningful, and accessible to managers and stakeholders.

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Project Tea-Time Update

By Kyle Derby, CBNERR-MD Research Coordinator

In 2021 and 2022, CBNERR-MD and the Delaware NERR (DNERR) co-led an effort to measure below-ground decomposition rates in wetlands across the NERR system. Below-ground decomposition is the time it takes for microorganisms to break down organic matter in the soil. This rate helps researchers determine everything from wetland elevation to carbon storage and overall ecosystem health and function. To measure this, participants used the “Tea Bag Index” (<http://www.teatime4science.org>), which uses commercially available tea bags to determine the rate of decomposition in the soil. During the project, 21 reserves participated and deployed over 1,400 tea bags across all types of environments, from uplands to mangroves.

Initial results have shown that decomposition decreases as salinity (collected from System-Wide Monitoring Program stations) increases. Warmer temperatures increase rates. Interestingly, rates did not seem to vary significantly between all the sampled wetland types.

The project team is continuing to analyze the results alongside the other data collected (such as vegetation) with the hopes of publishing our findings in a scientific journal in 2025.

A note from CBNERR-MD’s third

Margaret A. Davidson fellow:

By Ally Kido, CBNERR-MD Margaret A. Davidson Research Fellow



I’m Ally Kido, the Margaret A. Davidson Fellow working with CBNERR for the next two years. I’m originally from California and did my undergraduate degree at Amherst College in Massachusetts. After graduating, I took a job as a lab manager at the University of Maryland where I managed greenhouse and field experiments.

I decided to pursue my master’s and now my PhD in the Marine Estuarine and Environmental Science Program at the University of Maryland, Baltimore County. My love for aquatic environments began with trips to the aquarium as a kid and dive trips with my dad in the kelp forests of California. I always knew I wanted to conduct research to help protect the environment, and I’m excited to have the opportunity to work with the CBNERR-MD staff on research within the reserve!

My research is focused on submerged aquatic vegetation, or SAV. SAV provides numerous benefits to the environment as well as humans. These benefits

are also called ecosystem services. Some examples of SAV ecosystem services are providing habitat for important Chesapeake Bay species, protecting the shoreline from erosion, and capturing carbon from the environment. Over the past few years, the reserve has noticed declines in SAV populations but has not been able to determine the cause of the decrease.

My research will examine if changes in land use in the surrounding area might be affecting the SAV populations and by extension the ecosystem services they provide. Additionally, I am also interested in figuring out what animals use SAV for habitat. To measure this, I will take video and audio recordings in SAV beds to identify fish and other animals that interact with the SAV. I will also collect environmental DNA, or eDNA, as another measurement of animal presence. I can see what species' DNA is in the water sample using eDNA, even if they aren't in the video or audio recordings. This information will help us figure out what animals are interacting with SAV and how they might be impacted by decreasing SAV populations.

TerraCycle Initiative at Jug Bay

By Beth Sieglinger, Sanctuary Education Coordinator & Naturalist

Our planet is in a waste crisis. Throwaway culture depletes the Earth of raw materials while perfectly usable materials sit in landfills. TerraCycle's mission of "eliminating the idea of waste" aims to change that. TerraCycle works with businesses, government entities, and everyday people to reuse materials already in the consumer stream. Most trash is technically recyclable. TerraCycle can recycle hard-to-recycle items because they work with brands, retailers, and stakeholders who fund the recycling process.

Jug Bay Wetlands Sanctuary has agreed to become a drop off location for Beth Sieglinger's initiative to collect most oral hygiene products. Any brand of empty or used toothpaste tubes, toothbrushes, floss containers, and more can be dropped off at the Visitor Center. When a box is full, it will be shipped to TerraCycle. Points are earned for each pound, and those points can then be turned into cash and donated to Friends of Jug Bay (2,500 points = \$25). To learn more or become a drop-off location for a different waste stream, visit www.terracycle.com.



Colgate® Oral Care Free Recycling Program



All brands accepted

Recycle all brands of oral care products and packaging

Accepted

- manual toothbrushes
- toothpaste tubes and caps
- floss containers
- packaging from above items

NOT Accepted

- electric toothbrushes/heads
- mouthwash (put curbside)
- wisp products (separate program)

Visit TerraCycle.com to learn about other programs

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ANNE ARUNDEL COUNTY
DEPARTMENT OF
RECREATION AND PARKS

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