DELAWARE CENTER FOR THE INLAND BAYS

Inland Bays Journal

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The CIB is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inspire people about this estuary of national significance and its restoration.

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Small Town Makes a Big Commitment to its Future

By Dr. Marianne Walch, Science & Restoration Coordinator

Dewey Beach is a tiny, yet vibrant coastal town with a long history of bringing people to the water's edge. But these days, the water's edge is sometimes too close for comfort.

Flooding on Read Ave. prior to project construction.

Located on a narrow strip of land between the ocean and Rehoboth Bay, the town's low elevation and high percentage of land covered by pavement, buildings, and other impervious surfaces make it particularly vulnerable to impacts from coastal storms and sea level rise. Shorelines are eroding, and many areas experience frequent flooding due to stormwater runoff, high tides, and storm surges. Residents often find access to their homes cut off by floodwaters.

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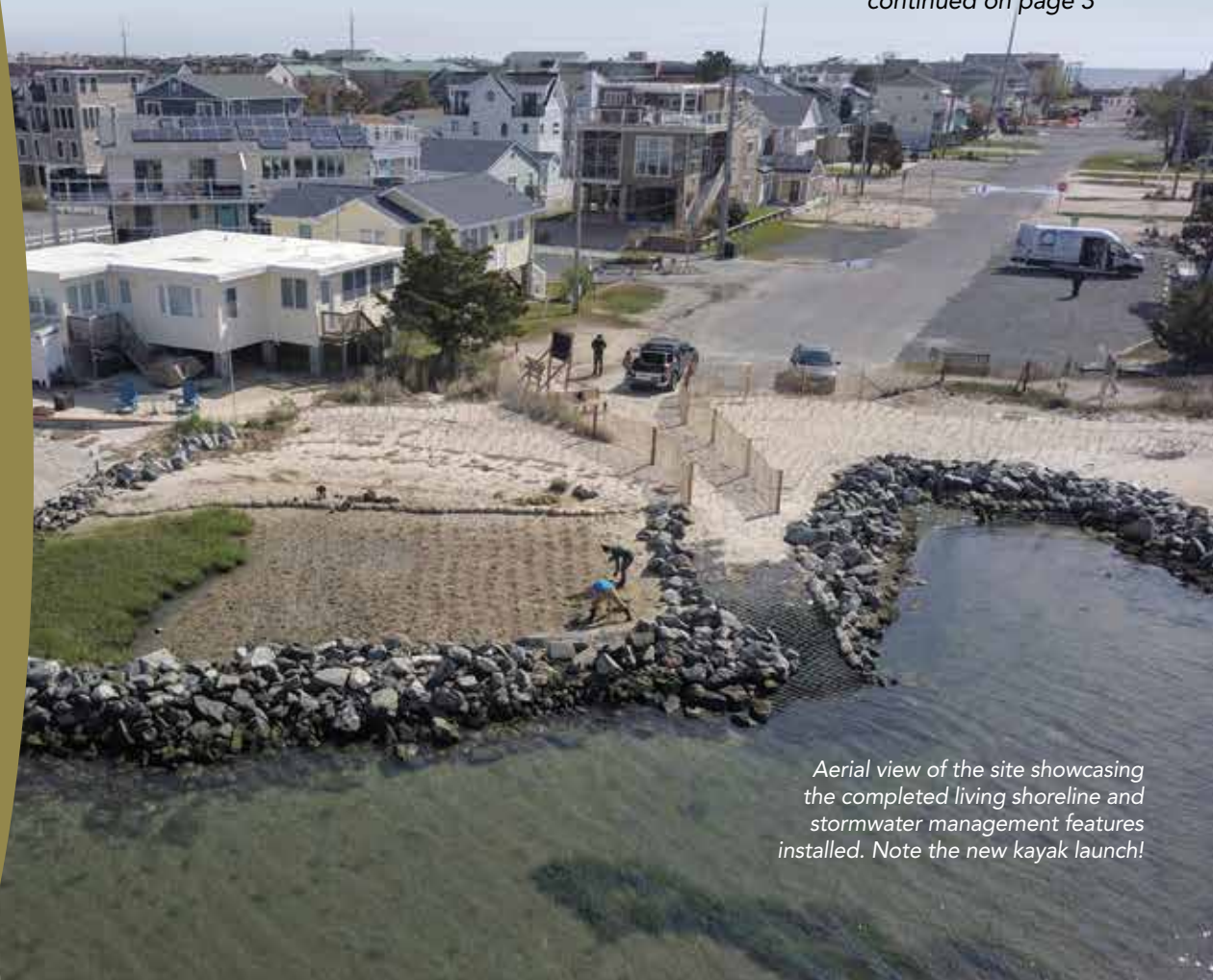

Aerial view of the site showcasing the completed living shoreline and stormwater management features installed. Note the new kayak launch!

From the Director

Nature provides respite during times of crisis. The dawn chorus of birds, the wind in the trees, and the water lapping on the shore offer relief from stress and loss through both solitude and recreation. Sometimes the inward and outward connection experienced in nature can be so rapid that it feels like an immersion in peace, a wave of calm.

I will forever remember the smiling faces visiting the James Farm Ecological Preserve this spring as they connected safely with themselves and others in the woods by the bay. The value of the Preserve never wanes; it only grows during times of hardship.

Not long before the pandemic, the connection between time in nature and improved human health was crystallized by a shower of research receiving wide attention. When people spend time in safe natural environments, it can lower blood pressure and stress hormone levels, enhance immune system function, and reduce anxiety. Nature preserves are places of significant mental and physical rejuvenation, and they deserve to be managed as part of our health infrastructure. The need for easily-accessible opportunities to benefit from the healing aspects of nature will only continue to grow in the wake of the pandemic.

The population of eastern Sussex County has expanded rapidly such that parks fill up during the summer or can be practically inaccessible due to traffic. New public natural areas are not being added at a rate to keep up with growth nor the eventual inaccessibility of existing areas due to sea level rise. The total dedicated statewide investment in open space protection by the state of Delaware for all three of our counties has been $10 million per year, at best. This doesn't go very far in eastern Sussex County where land values are sky high.

As new understanding of the health benefits of natural areas combines with their long-known benefits to clean water, property values, and wildlife, we need to re-envision open space protection. A renewed approach where both the state and the county are investing more and more-strategically to protect new lands is needed. Keys to this new approach are 1) protecting areas close to growing populations to maximize accessibility, 2) focus on protecting lands vulnerable to sea level rise that would otherwise develop, and 3) providing free access so those with the least means are not discouraged from benefiting from nature.

Have you had the opportunity to visit the James Farm Ecological Preserve? Engaging with the diverse ecosystems and people that you will find there is an experience you will not soon forget. I couldn't be more proud of the partnership we have with Sussex County to manage it for the benefit of all, free of charge. I believe it is the perfect model for many more preserves around Sussex and I hope you will too.

Sincerely,

Chris Bason
Executive Director

(CIB): DE Inland Bays

(James Farm): James Farm Ecological Preserve

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(Dewey Beach continued from page 1)

Completed planting of both marsh and dune grass species.

Installation of flood barrier boxes help to stabilize the dune.

New outfall pipes fitted with tide gates.

To protect the future of its economy and quality of life, the Town of Dewey is partnering with the Center to plan and implement a series of green infrastructure projects that will reduce flooding and also improve water quality in Rehoboth Bay.

The first of these projects, a living shoreline on the bayside end of Read Avenue, was completed this spring. With a large 30-acre drainage area, combined with undersized and aging stormwater infrastructure, Read Ave. experiences some of the worst flooding in the town. The new project is an integrated living shoreline and stormwater management design that includes a 3.5-foot high dune, nature-based retrofit of a riprap revetment (i.e., layered rocks of varying sizes placed on a sloped bank), and an offshore oyster shell reef. Also included are three new outfall pipes fitted with "tide gates" - one-way valves that prevent bay water from flowing up into the drainage system during high tides. A new kayak launch, stabilized with a "geocell" paver material, allows park visitors to access the bay without disturbing the dune and restored wetlands.

An innovative aspect of this living shoreline project is the use of HESCO flood barrier boxes to serve as a stable spine for the low dune. These are collapsible wire mesh containers lined with heavy duty fabric, filled with sand and planted with beach grasses. If dune sand is washed away during a large storm, the HESCO barriers will maintain the integrity of the dune and its flood control function.

Read Ave. after 1.32" rainfall with no surcharge flooding - evidence that the tide gates are working!

This work was achieved through a collaborative partnership. A Community Water Quality Improvement Grant to the Center funded the living shoreline, with additional funding match from the Town and DelDOT. RK&K Engineering, Sovereign Consulting Inc., and Brightfields Inc. were responsible for design and construction.

The Read Ave. project will reduce chronic flooding, create natural shoreline habitat for fish and wildlife, restore 1,750 square feet of tidal wetlands, and reduce nutrient pollution to the Inland Bays by 15 lbs of nitrogen and 9 lbs of phosphorus each year - achieved through the trapping of sediment and pollutants. This means cleaner bays, and a greener Dewey Beach for everyone to enjoy!

Clean Water for All

By Chris Bason, Executive Director; Lisa Swanger, Outreach & Education Coordinator; and Nivette Pérez-Pérez, Communications Specialist

Governor Carney unveiling HS1 to HB200 at a press conference on January 21, 2020 with primary sponsor House Majority Leader Valerie Longhurst and sponsors Senate President Pro Tempore David McBride and Senator Stephanie Hansen. Photo courtesy of Delaware Nature Society.

Can you imagine a world without clean water? Neither can we! It is essential for healthy ecosystems and wildlife, healthy economies, and of course, human health. In Delaware, over 90% of our waterways are currently polluted. Even closer to home, the Delaware Inland Bays face persistent threats of excess nutrients from urbanization, agricultural activities, and wastewater discharges. Paired with the loss of wetlands and natural shoreline habitats, this can lead to dramatic impacts on water quality, wildlife populations, and the overall health of the bays that we all depend on.

In 2014, former Governor Markell proposed the "Clean Water for Delaware's Future," a comprehensive financial plan intended to protect public health and clean up the state's waterways while strengthening the economy. Though unsuccessful, the plan set the stage for the establishment of the Delaware Clean Water Alliance (Alliance) spearheaded by the Delaware Nature Society in collaboration with the Center and the University of Delaware Water Resources Center. In 2015, the Clean Water and Flood Abatement Task Force was formed by the Delaware Senate to examine and produce findings and recommendations that address the state's clean water and flooding issues. Their findings reported a shortage of $100 million annually to fund projects that improve and protect water quality, including the planting of forested buffers, cover crops for farmlands, and conversion of septic systems to central sewer. After two bills focused on addressing Delaware's clean water needs did not advance through the legislature, a simplified substitute bill (HS1 to HB 200) developed in coordination with Governor Carney's office was revealed this January. The bill would create a Clean Water Trust with an initial capital budget investment of $50 million to be leveraged with federal funding. Although not a dedicated and sustainable source of funding, it is a huge step forward to solving one of the state's most pressing problems. All signs indicate that the economic recession caused by the coronavirus will postpone this legislation. However, the Center's work to educate diverse stakeholders about the importance of clean water for our coastal community continues.

The Center is actively working to help meet goals of the Alliances' Clean Water Campaign, an education and outreach initiative committed to informing residents, visitors, businesses, and elected officials about the need for dedicated clean water funding. This is done in a variety of ways throughout Sussex County, including presentations with non-profit organizations and the public, meetings with local municipalities, and developing media pieces.

> **"Clean water is important for so many reasons, says Mark Carter, Beer & Benevolence Director at Dogfish Head Craft Brewery. "For me personally as a surfer and paddler, I'm on, in, and under the water a lot and no one wants to swim in polluted or littered waterways. As a brewery, water is the main ingredient in beer, and clean water is critical to creating a high quality beverage."**

Mark presented at the Center's spring Citizen Advisory Committee meeting and shared valuable insight on the importance of clean water from both a business and a personal perspective. He was also a recipient of the Center's 2019 Friend of the Bays award on behalf of Dogfish Head.

In addition to providing community education, the Center serves as a technical advisor to provide sound scientific information for decisions involving water quality and environmental health. The Center is also working to assist the passage of local ordinances that would benefit clean water, such as the proposed Sussex County buffer ordinance requiring more natural habitat between wetlands and waterways and new construction. Providing educational opportunities and working collaboratively with local and state governments is the Center's way of proudly supporting our community and helping to secure clean water funding that will benefit the Inland Bays and its watershed.

New Real Estate for an Osprey Pair

By Lisa Swanger, Outreach & Education Coordinator and Jodi McLaughlin, Center Volunteer

Ospreys are a beloved seasonal resident of the Inland Bays. Their awe-inspiring aerial display of hovering high above the water before diving feet-first to catch their prey is a frequent sight during the spring and summer. Dwindling populations rebounded in the region following the ban of the insecticide DDT. Since then, these "fish hawks" continue to return from their overwintering areas in South America to breed.

Volunteers from left to right - Mike Chiappardi, Nick DeCarlo, Jerry Daugherty, Mike Siegert, Dave Ritondo, Jodi McLaughlin, Richard Franco, Steve Carson, Dieter Blume, and Bill Hitz.

Starting in 2016, a pair of ospreys began to nest on a homeowner's roof near Salt Pond in Bethany Beach. Jodi McLaughlin, Center and Tri-State Bird Rescue & Research volunteer, was asked to assist with identifying an alternative spot suitable for a nesting structure by the homeowner. Jodi monitored the pair's nesting activities for three seasons. A physical device that moves in the wind to deter birds was installed on the homeowner's roof in spring 2019. However, the returning pair simply "moved-in" with the neighbors and fledged two more young on the rooftop next door.

With more osprey experience under her belt, Jodi decided to undertake the effort to provide a better place for the birds to nest later that year and enlisted the help of the Center. A strip of land on the Bethany Beach National Guard's property along the shores of Salt Pond was identified as a prime location, and on December 14, 2019, a team of volunteers took to the pond to install the structure. Standing at 16 feet, the new platform was fitted with a starter nest to entice the osprey pair to move-in to their new waterfront property. On March 20, the pair successfully claimed the nest and began incubation on April 19. The "Osprey Team," as Jodi fondly refers to the volunteers, now anxiously await to observe hatchling feeding behavior to begin in late-May.

This initiative was made possible by generous donations from local homeowners to purchase the platform materials and the manpower of numerous volunteers.

Student Scientists "Get their Feet Wet" at the James Farm Ecological Preserve

Fourth grade students immerse themselves in the salt marsh in search of wildlife.

By Hayley Hartman, Environmental Educator

The statements **"I notice...," "I wonder...,"** and **"It reminds me of..."** are at the very core of the Center's Environmental Education Program lessons geared for 3rd and 4th grade students. Participants use these as a guide to practice their field observation skills in search of wildlife at the James Farm Ecological Preserve and even design their personal bay-friendly property. This is often the first time experiencing the Inland Bays for many students. Following that very first step off of the school bus at the Preserve, the goal of the program is to spark scientific curiosity amongst students and build meaningful connections with the Inland Bays ecosystem.

Through a partnership fostered with the Indian River School District, the Center launched its Environmental Education Program at the Preserve in 1999. Since then, it has successfully reached 19,000 (and counting!) students through the delivery of interactive and science-based education lessons during the spring and fall. This program has historically engaged with middle school students and has undergone multiple enhancements over the years. Most recently, the Center developed new lessons tailored to Next Generation Science Standards for 3th and 4th grade. Students are encouraged to explore the diverse habitats of the Inland Bays while recording their observations, identifying organisms, and generating solutions to reduce negative human impacts on our local ecosystems. A fundamental component of the lessons is the incorporation of outdoor science activities offered by the Better Environmental Education, Teaching, Learning & Expertise Sharing (BEETLES) program. BEETLES is grounded in the value of nature-centered learning and is supported by current research and understanding about how people learn. The Center is currently working to integrate these cutting edge resources into lessons for additional grades as well.

This coming year, the Center is striving to reach new heights with the Environmental Education Program by bringing the outdoors into the classroom! The delivery of in-school lessons will provide increased support to educators throughout the watershed and open-up the door to new school partnership opportunities. The program is essential for helping to achieve the goals of the Inland Bays Comprehensive Conservation and Management Plan to educate individuals living in the watershed about their impacts on the bays and how they can help. It further inspires the next generation of environmental stewards to continue the Center's efforts to protect and restore the Inland Bays and its watershed.

On the Hunt for Baygrasses in the Inland Bays

By Andrew McGowan, Environmental Scientist

Baygrasses are a critical ecosystem for fish and crabs, and help to provide clean, clear water that we all depend on. In order to grow, baygrasses require low levels of nutrients and good water clarity. Historically, vast meadows of baygrass once covered the Inland Bays, but increases in nutrient pollution combined with disease almost completely eliminated this habitat. Baygrasses may be making a comeback as water quality improves, but no formal mapping for these habitats has happened in more than a decade. Therefore, over the next two years, the Center will utilize both drone photography and manual surveys to locate and map baygrass meadows. But we cannot cover all areas of the bays alone - this is where you can come in! The Center is seeking help from citizens of the Inland Bays watershed to spot and document the locations of these fragile ecosystems. Enlisting the help of the public will expand our mapping coverage to areas that we may have otherwise missed and support our efforts to capture the extent of baygrass in the bays. This information is critical for protecting existing beds under a Delaware shellfish regulation which prohibits clamming in known beds. This spring, summer, and fall, please keep an eye out as you boat and paddle around the bays! If you see any baygrasses, please let us know through the following link: **inlandbays.org/projects-and-issues/all/baygrass-mapping**. All that we need is a date, location, and picture. That's it! Your information will be used to help protect these areas from unintended damage.

A blue crab in eel grass. Photograph by Jay Fleming.

Patrons of the Bays: Jay and Mary Headman

By Anna Short, Fundraiser

Early on in their lives, Jay and Mary developed a deep-rooted connection with the water. Mary and her family spent time at their family home in Avalon, New Jersey while Jay camped along Rancocas Creek and enjoyed the beaches in North Wildwood. These special memories forged their appreciation for clean water and a healthy environment, and would later inspire them to take action to help protect what they love.

In 2000, Jay and Mary purchased a vacation home in South Bethany and became full-time residents in 2002. They were immediately drawn to the beauty of the Inland Bays. After reading more about the health and importance of the bays in state and local newspapers, they jumped in to assist restoration efforts by planting grasses in the South Bethany dunes and participating in the annual Inland Bays Clean Up.

Jay first became acquainted with the Center during his time as a councilperson and mayor of South Bethany. The town was having issues with its canals and they enlisted the Center's Science and Restoration Coordinator to present information on water quality. That coordinator, now Executive Director, was Chris Bason. The valuable information shared during that presentation led to the establishment of the town's Water Quality Committee in 2007. It's mission is "To improve water quality within the South Bethany canal network with the goal of making the South Bethany Canals 'fishable and swimmable.'" The council then appointed Jay to serve as the committee chair.

"From the beginning, we had a group of people who were very committed to improving the water quality in our canals, which would improve the quality of water in the Little Assawoman Bay," says Jay. "This gave me many opportunities to work with the Center and learn more about the Inland Bays and the importance of putting in place programs that would enhance their water quality, not only in our town but also the surrounding towns."

Jay's journey as an environmental steward did not stop there. He later "jumped on board with the bays" and became a member of the Center's Citizens Advisory Committee. He also started volunteering for the annual Inland Bays Shorezone Fish and Blue Crab Survey and as a member of the maintenance crew at James Farm Ecological Preserve - both of which he still participates in today! Additionally, he and his brother, Michael Headman, launched the SAVE THE TERP: Terrapin Education and Restoration Program in partnership with the Center and Delaware State Parks. This prompted important actions to be taken to reduce terrapin deaths along Coastal Highway, including signage to warn motorists and fencing to deter terrapins from crossing the busy roadway during nesting season.

As a graduate of the University of Maryland, the terrapin is particularly important to Jay (go TERPS!). That is why he's designated his recent gifts to support the Terrapin Education and Restoration Program, which now utilizes citizen science to gain insight into the health of local terrapin populations and creates additional nesting habitat in the Inland Bays.

"Mary and I have always believed it is important to provide time and financial support to things that are meaningful to us," says Jay. "We believe the health of the Inland Bays is critical to this area and its future, and we are proud of the opportunities that the Center provides to aid in their protection and restoration."

To Jay and Mary, thank you for your passion and dedication to protecting our local waterways, and for your generous support of the Delaware Center for the Inland Bays!

Summer on the Bays

FREE public education programs at the James Farm Ecological Preserve

Kids Day at the Preserve
New topic and hands-on activity each week...hiking, bay exploration, and more!

Osprey Bird Walk
Learn about these iconic birds of prey that migrate to the Inland Bays each year to breed!

Discover the Bays
Enjoy a hike down to the beach followed by a guided exploration of the Inland Bays tidal flats!

Visit www.inlandbays.org for program calendar updates!

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To preserve, protect and restore Delaware's Inland Bays and their watershed.