



BARNEGAT BAY PARTNERSHIP

RESEARCH · EDUCATE · RESTORE

Annual Report | 2017-2018





The Barnegat Bay: Closed Sea No More – A Vision for a Rising Sea

In his 2002 book, *Closed Sea: From the Manasquan to the Mullica, A History of Barnegat Bay*, Kent Mountford noted the “Old Barnegat” he had known for over 50 years is gone. An avid sailor and observant scientist at an early age, Kent grew up on the bay and over time (some spent at Rutgers earning his Ph.D. on Barnegat Bay’s plankton and some spent working as a scientist for EPA’s Chesapeake Bay Program until he retired) has witnessed many changes in his natal estuary.

The “Old Barnegat” Kent grew up with actually had started changing long before he first sailed the bay solo in the 1940s. Marilyn Kralik, in her 1992 University of Pennsylvania dissertation, *Buying Barnegat Bay: A look at Ocean County shore resorts from the eyes of three women, August 1879*, shared how Barnegat Bay in the 1870s and 80s “... was a turning point in how Americans perceived their landscape, took their leisure, and worked for a new and different future.” The new and different future of the 1880s was initiated by expanding train lines, which made Barnegat Bay increasingly attractive as a summer playground for Philadelphians. Development—centered around various resorts that had sprung up in Barnegat and elsewhere on the Jersey Shore—was already profoundly affecting the futures of shore residents, from the baymen and others toiling on land and water to the entrepreneurs catering to an emerging summer tourist clientele. The landscape was changing too.

In 1926, the bay changed in new ways when the Point Pleasant Canal opened the upper bay and the Metedeconk River to tidal exchange. Fishing and duck hunting declined dramatically; many cranberry bogs were destroyed. The canal caused erosion and shoaling problems that led to bridge, jetty, and other infrastructure changes for several decades. Nonetheless, the number of people living, working, and playing in the Barnegat Bay and its surrounding

watershed (primarily located in Ocean County) continued to grow. It had grown to about 60,000 in the mid-1950s, when the completion of the Garden State Parkway laid the foundation for an even bigger wave of inundation by people and more changes.

Today, more than 650,000 people call Ocean County their home, and roughly twice that number enjoy the bay, its islands, beaches, rivers, and woods in summer. This tremendous increase in the number of people living, working, and playing on the bay has had a dramatic impact on the landscape, now more than 35% developed, and the bay’s ecology and living resources, especially its heretofore vibrant fisheries. As the Barnegat Bay Partnership and our many organizational partners have documented over the past 15 years, the present day Barnegat Bay-Little Egg Harbor estuary continues to face a decades-old problem, eutrophication.

Eutrophication, an increase in the rate of supply of organic matter to the bay, is manifested as blooms of drift algae, attached microalgae, or phytoplankton (including harmful algal species), and low or no dissolved oxygen—conditions which ultimately lead to other changes in the bay (e.g., increased turbidity) and changes in key biotic components (e.g., loss of shellfishes and submerged aquatic vegetation, blooms of jellyfishes). We have long known that eutrophication is overwhelmingly driven by increases in nitrogen from nonpoint source pollution; however, eutrophication is also affected by other nutrients (e.g., phosphorus) and other processes and conditions (e.g., temperature changes, coastal currents, seasonal climate patterns).

A Rising Sea

Despite the past changes in the bay, development in its coastal communities, and number of people living throughout the watershed,



the Barnegat Bay remains vital to our economy and our quality of life. However, future changes, some already evident to us, will put new pressures on the bay and all of us living along the water's edge. Sea-level rise may be unstoppable over the next century, but the slow rate of change sometimes doesn't catch our attention. Sandy and other coastal storms should make clear the potential for change—clearly, we are no longer living along a Closed Sea but a “Rising Sea,” both literally and *littorally*.

With the increased risks and costs of clean-up and recovery, we can't ignore sea-level rise, coastal storms, and other coastal changes. We should recognize that no matter where the storms hit, all of us are increasingly invested in disaster response and recovery nationwide. There has to be a better way to ensure a better future on the bay and the rest of the Jersey Shore than simple rebuilding in place after every storm. In New Jersey, we need to rethink the vision for our coastal communities, especially those with extensive shorelines.

A New Shared Vision for the Bay

At the Barnegat Bay Partnership (BBP), we want to develop a new vision for the bay, but we need your input to make sure we craft a **shared** vision for the bay's future. The Comprehensive Conservation and Management Plan for Barnegat Bay is currently being revised (see page 4), and as part of the process the BBP is developing a draft vision statement. Our vision for the Barnegat Bay ecosystem is of lands and waters that are clean and healthy, defined by the capacity for self-renewal in the soils, waters, plants, and animals that collectively comprise the ecosystem.

It is a vision of diverse and beautiful natural landscapes that make the watershed unique. It is a vision of publicly accessible and trash-free lands and waterways that are safe for educational and social activities, or recreational pursuits, such as sailing, fishing, canoeing, hunting, kayaking, swimming, or just enjoying a sunny day on the water's edge.

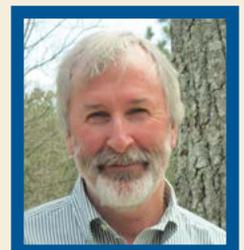
It is a vision developed by knowledgeable and engaged citizens and communities, and sustained by public and private stewardship. It is a vision that recognizes the dependence of the Shore's economy and quality of life on healthy lands and waters, and celebrates communities and citizens working together to develop **a shared vision for a changing bay**.

We Need Your Help!

In surveying public opinion regarding the Barnegat Bay, nearly everyone (!) has agreed that a healthy bay is vital to all of us, that a healthy bay is important to our economy and our quality of life. For all of us to continue to enjoy the benefits of coastal living and to ensure sharing these benefits with our children and grandchildren, we need to *re-think the relationships between people and the landscape, our responsibilities to each other, and our responsibilities to the environment*. In essence, we must take better care of the lands and waters that sustain us all!

What's your vision for a changing bay? Help us develop a shared vision, and work with us to make that vision a reality for future generations!

Stan Hales
Director





Revision of the Comprehensive Conservation and Management Plan for Barnegat Bay

Over the past year, the BBP and its partners have been working to revise the *Comprehensive Conservation and Management Plan for Barnegat Bay (CCMP)*, a community-developed “road map” for improving the bay’s water quality and enhancing its natural resources. The revised plan will focus on four priority areas—water quality, water supply, living resources, and land use. These priorities were identified in our public outreach and by our many organizational partners over the course of the past year. For each priority, the plan will specify one or more goals, several objectives, and multiple actions to achieve those objectives.

Since the original CCMP was approved by the U.S. Environmental Protection Agency (EPA) in 2002, the BBP and its partners have made progress on several issues (e.g., land protection, reducing some types of nutrient loading, fisheries) and learned a lot about how to better address the challenges we continue to face, most notably the bay’s continuing eutrophication. However, the original CCMP did not address the impacts of climate change and sea-level rise on the bay and its watershed; it did not include other concerns, such as stinging jellyfishes. During the revision process, a climate change vulnerability assessment will determine the risks from

climate stressors on the BBP’s goals. Additionally, the BBP will be developing outreach strategies (including brochures, fact sheets, Public Service Announcements, and short YouTube and other video pieces) to inform the public about the impacts of climate change on coastal community residents.

During the revision process, BBP staff has been reaching out to watershed residents and visitors for feedback. Your thoughts and concerns about the Barnegat Bay and your ideas for the future management, protection, and enhancement of its valuable resources will help us develop a plan that works for the entire watershed community. The draft plan will be available for review and comment on our website (www.barnegatbaypartnership.org) some time in 2018. There will be multiple opportunities to comment in person at public sessions during the year. Your input is important to us as we continue to work on revising the plan, with an expected completion date later this year.

Protecting the bay is everyone’s responsibility. So, please join us at one of our events, drop by our office and chat with us, or submit your concerns via our website. After all, you are important to our plan and our bay.





Climate Change Initiatives

Working with local partners on diverse climate change efforts, the Barnegat Bay Partnership continued to lead efforts to 1) identify vulnerable communities and groups, 2) promote sound strategies to become more resilient, and 3) expand our local understanding of impacts of climate change, especially sea-level rise.

Preparing for the Future

The BBP continues its leadership role in two significant statewide initiatives, the *New Jersey Climate Adaptation Alliance (NJCAA)* and the *New Jersey Coastal Resilience Collaborative*, which are both working towards helping communities respond to the challenges of climate change. Established in 2011 by a diverse group of stakeholders, the NJCAA is focusing on climate change preparedness in key impacted sectors—public health; watersheds, rivers, and coastal communities; built infrastructure; agriculture; and natural resources. In 2017, the NJCAA worked on developing climate change policy recommendations for New Jersey to advance opportunities to make our state safer, greener, healthier, and more prosperous. Led by the New Jersey Department of Environmental Protection’s Coastal Management Office, the *New Jersey Coastal Resilience Collaborative* guides climate resilience efforts throughout coastal New Jersey. The BBP provides technical input and participates in several sub-committees of the collaborative.

EPA’S Climate Ready Estuaries (CRE) Program

With CRE funding, the BBP is conducting a pilot study of two communities to identify bay shorelines and adjacent upland sites that are most vulnerable to the effects of erosion, sea level rise, and storm surge within the next three decades (up to 2050). The project will also engage our partners in developing a framework to prioritize critical areas and project alternatives within the identified study area. The results of this work will be released in 2018.

Mid-Atlantic Coastal Wetlands Assessment (MACWA)



MACWA was established as a partnership between the BBP and its sister National Estuary Program, the Part-

nership for the Delaware Estuary, along with other academic and government partners. MACWA partners monitor and assess the condition and trends in coastal marshes in New Jersey, Delaware, and Pennsylvania. The research team has collected data over the past eight years to establish baseline wetland conditions within our respective estuarine study areas, and also in other coastal watersheds where the partners are working to develop wetland projects on vulnerable shorelines in communities impacted by Superstorm Sandy. With ongoing monitoring, we are able to detect changes and identify trends in wetland conditions (e.g., eroding shorelines) over time. Because coastal wetlands provide critical services, including flood protection, maintenance of water quality, carbon and nutrient sequestration, and fish and wildlife habitat, it is imperative that we monitor, manage, and enhance vulnerable wetlands as sea level continues to rise.

Analyses of MACWA data at three long-term monitoring locations (Reedy Creek, Island Beach State Park, and West Creek) and other observations indicate that these coastal marshes are showing obvious responses to a rising sea level—rapid exterior and interior shoreline erosion, an increase in ponding on the marsh surface, and conversion of vegetated zones to mud flats. This information is being used by federal and state resource agencies and others to consider how to better manage, protect, and restore wetland resources. In 2018, we will continue to seek additional funding as we continue our MACWA program, which is increasingly vital to guide decision-making about the bay’s highly vulnerable wetlands.



Science and Research

As a National Estuary Program, the Barnegat Bay Partnership is committed to improving the understanding of the Barnegat Bay. Individually or with partners, we support regular and periodic monitoring to better understand the bay's condition and environmental trends. We also support research to increase our knowledge of the Barnegat Bay ecosystem and provide a scientific basis for its management, restoration, and related decision-making. In 2017, the BBP continued its research programs on many priorities, including water quality, coastal acidification, American eels, river herring, seagrass, and shellfishes. The BBP's research projects, whether conducted by our staff or supported by our Science and Technical Advisory Committee (STAC) grants, address one or more of our current [Strategic Plan](#) priorities (water quality, water supply, habitat, fisheries and wildlife, and land use).

Water Quality Research

Ambient Water-Quality Monitoring

In 2017, BBP staff continued supporting the New Jersey Department of Environmental Protection's (NJDEP's) Barnegat Bay water-quality monitoring effort by collecting water-quality data and samples at sites on Mill Creek and Westecunk Creek. Information about the monitoring program, including the data, can be found on the [NJDEP's website](#).

In 2017, the BBP re-established two long-term continuous water-quality monitoring sites at the Seaside Park and Mantoloking Yacht Clubs. Data from these sites (temperature, salinity, dissolved oxygen, turbidity, and pH) are transmitted in near real-time to the [NJDEP's continuous water quality monitoring website](#), where all data are archived and available for public downloading and use.

Ocean and Coastal Acidification Monitoring

An increase in the amount of carbon dioxide (CO₂) in marine waters is a growing concern worldwide. Carbon dioxide dissolves readily in seawater, where it increases the ocean's acidity and lowers its pH. An increase in acidity of the earth's oceans and coastal waters can adversely affect the ability of shellfishes, larval fishes, and other aquatic creatures to utilize calcium carbonate (CaCO₃) to

build shells, bones, and other important body structures, which can negatively impact their populations. The BBP received a grant from EPA to install and maintain high-precision monitoring sensors to monitor acidity and CO₂ levels in the Barnegat Bay. The monitoring station, which is located in Beach Haven, was operational throughout 2017, with temperature, salinity, dissolved oxygen, turbidity and pH data transmitted in near real-time to the [NJDEP's continuous water-quality monitoring website](#). The carbon dioxide data are archived at the BBP and are available upon request.

Fisheries and Wildlife Research

Long-Term Juvenile Fish and Nekton Seining

BBP staff initiated a long-term monitoring project in 2011 to assess variations in the abundance and distribution of juvenile fishes and jellyfishes in the central and northern portions of the bay. In 2017, we seined bi-weekly from May through October at our twelve long-term locations throughout Barnegat Bay. Warmer-than-average water temperatures through early fall delayed the emigration of many species, and kept our nets full through our sampling period! Future analyses of these data will help identify trends in the populations of many recreationally and commercially important species, and allow us to ask questions about the effects of changes in water quality, habitat, and climate on the bay's fauna.



Juvenile Eel Monitoring

As we have been doing since 2012, BBP researchers once again braved winter temperatures to monitor for the ingress of juvenile American eels into the Barnegat Bay watershed. All data collected as part of this project are shared with our state and federal partners for use in state- and coast-wide assessments of the American eel population. The low population numbers of this important species remain of concern coast-wide; thus, we will continue with our monitoring program to provide much-needed data on trends in their abundance.

River Herring Spawning Runs

During the early mornings this past spring, BBP scientists set nets in the Toms River, Cedar Creek, and Mill Creek (Manahawkin) to continue our surveys of blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*) returning to these waterways to spawn. We saw an increase in the number of herring returning to Mill Creek compared to the previous two years, but a decrease in the number returning to Toms River compared to 2015. No herring were captured in Cedar Creek in any of the years surveyed. Scales collected during the three years of the survey were utilized to determine the age of the returning fish. All of this information will be provided to state and interstate fishery management agencies to aid in the recovery of these depleted resources.

Westecunk Creek Community Study

As part of a larger study on the Westecunk Creek with the U.S. Fish and Wildlife Service, BBP ecologists deployed a pair of fyke nets during spring 2015 to identify the fish communities located above and below a barrier to fish passage on the creek. After the barrier was removed during the winter of 2015-2016, we repeated the sampling in spring 2016 and 2017. The removal of the barrier on Westecunk

Creek altered the fish community through a change in streamflow and habitat characteristics, allowing fish to freely move along the stream corridor. We made an encouraging observation—the number of river herring returning to the Westecunk Creek in 2017 substantially increased compared to the previous years.

Habitat Research

Stream Connectivity

Without a dedicated funding source, the BBP scientists were limited in their capacity to continue assessing road-stream crossings throughout the watershed in 2017. Where our roads cross over streams, the types of structures used (pipe culverts, box culverts, bridges) and their installation and maintenance can impact natural stream-flow characteristics and/or the ability of aquatic species to move above and through the crossings. Identification of problematic crossings will allow the BBP and its partners to target the crossings most in need of rehabilitation. With over 2,000 suspected crossings within the Barnegat Bay watershed, this is anticipated to be a long-term effort. During 2017, the BBP was only able to invest a limited amount of effort into this project; thus only 10 crossings were assessed. All data are available on the [North Atlantic Aquatic Connectivity Collaborative's website](#).

Seagrass Monitoring

In conjunction with Dr. Elizabeth Lacey of Stockton University, the BBP and Stockton surveyed eight seagrass beds during June and October of 2017 to assess the condition of eelgrass (*Zostera marina*) and widgeon grass (*Ruppia maritima*) communities within the Barnegat Bay. Data collected during the 2015 survey by BBP and Stockton, as well as data previously collected by others, were

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used to define the status and trend of seagrass in the [State of the Bay Report – 2016](#). The data collected this year will be added to that dataset and used in future State of the Bay reports.

Seagrass Modeling

The BBP successfully obtained a grant from the EPA to work with the U.S. Geological Survey (USGS) and University of North Carolina at Wilmington to develop a modeling tool to help us understand how potential changes in the bay's water level and temperature over the next 50 years will impact the distribution and abundance of the two abundant seagrass species, eelgrass and widgeon grass (see photos). These species provide important habitat for many of the bay's fishes and crabs and other valuable ecosystem services. However, these grasses are sensitive to changes in water temperature and light availability, and may be dramatically impacted under future climate scenarios. The information generated by the model will then be translated into a public-friendly interactive webpage and outreach materials by "Squidtoons," an innovative graphic-design company partnering with the BBP. This project began in the fall of 2017 and will continue into 2018.

Oyster Reef Restoration

In 2016, Stockton University, the American Littoral Society, and Parsons Mariculture LLC partnered to establish an oyster restoration program in the Barnegat Bay funded through BBP's STAC grant program. The goals of this project were to establish oyster populations in the bay and increase public awareness of the ecological and economic benefits of healthy oyster beds. Restoration methods using disease-resistant, remote-set oysters were compared to transplanting native Mullica River seed (also known as "natural-set") oysters. The young oysters were planted at two sites in the Barnegat Bay system, one each in the northern and southern portions of the bay, and were periodically monitored over the past 15 months.

Oysters at the southern site grew to an average of 80 mm (3.5 inches) in their first year, with about a 60% survival over the first winter. The remote-set oysters grew larger than the transplanted native oysters, despite starting off much smaller. Natural-set oysters were observed at this site in both late 2016 and 2017. Oysters at the northern site grew slightly smaller due to lower salinity, but showed about 50-68% survival. No natural-set oysters were observed at this site. The overall planting success rate at both sites (2016-2017) was about 17%. Both sites have built rich oyster reef communities, complete with resident fish and crab species (including blennies, oyster toadfish, tautog, black sea bass, mud crabs and blue crabs). These two reefs were seeded with community-funded spat-on-whelk shell again in 2017, and have shown promise as a tool to rebuild a viable commercial harvest and to help re-establish sustainable oyster populations within the Barnegat Bay system.

Hard Clam Modeling

Rutgers University, USGS, and the BBP are collaborating on a STAC-funded research project to modify the USGS-developed hydrodynamic model to understand how hard clam larvae are dispersed throughout the bay. Starting with a model of how water circulates throughout the Barnegat Bay, the project team added shellfish larval behavior (sinking, swimming, etc.) to estimate larval dispersal pathways and inter-population connectivity. In addition, the team performed a series of cruises throughout the bay to help "ground-truth" the model (compare the model results to direct observations). Model estimates of connectivity demonstrate that specific regions in the southern bay may serve as effective sources, which supply larvae to nearly all of the rest of the system. These results provide important guidance for developing shellfish restoration strategies. Additionally, the Rutgers Film Center is creating a documentary film that will be used to enhance public awareness about the importance of shellfish restoration and the efforts underway to rebuild clam populations in the bay. Film production is wrapping up, with completion slated for the summer of 2018.



content to a new management system. Our new website is www.barnegatbaypartnership.org. The site has several new features, including a News/Blog with up-to-date *Barnegat Bay Beat* articles and a searchable Barnegat Bay species database.

Barnegat Bay Partnership Workshops and Conferences

Jersey-Friendly Yards Conference



We hosted a “Bringing Nature Home to Your Jersey-Friendly Yard” conference at Ocean County College on October 14, 2017. The conference, which featured the resources and tools of the *Jersey-Friendly Yards* website, was attended by more than 150 individuals from around the state. Developed by the BBP with a grant from NJDEP, the website is a comprehensive “how-to” guide for New Jersey property owners, offering a wealth of practical information about eco-friendly, low-maintenance landscaping.

The keynote speaker was Dr. Doug Tallamy, University of Delaware Professor of Entomology and Wildlife Ecology and author of “Bringing Nature Home” and “The Living Landscape,” books that have sparked a national conversation about sustaining wildlife by planting native species at home. Dr. Tallamy talked about how insects, which are critical food sources for birds and other wildlife, need native plants for their survival. Saying that “in too many areas of our country there is no place left for wildlife but in the landscapes and gardens we ourselves create,” he issued a “call to action” to gardeners to plant native species at home to help save the plants and animals “that sustain the ecosystems on which we ourselves depend.”

The conference was organized and sponsored by several BBP partners—the Ocean County Soil Conservation District (OCSCD),

Rutgers Cooperative Extension of Ocean County (RCE), and Conserve Wildlife Foundation of New Jersey (CWF)—as well as The Native Plant Society of New Jersey (NPS) and Pinelands Direct. In addition to Dr. Tallamy, conference presenters included Dr. Steven Yergeau (RCE), Ben Wurst (CWF), Becky Laboy (OCSCD), Eileen Miller (Healthy Landscapes), and John Black (NPS). Pinelands Direct and Clemson Farms provided a native plant sale for attendees.

Education and Outreach Retreat

The annual retreat fosters the exchange of information and ideas for collaborative Barnegat Bay education and outreach efforts. “Telling the Story of Barnegat Bay” was the theme of this year’s retreat, which was held at the Long Beach Island Foundation of the Arts and Sciences. John Black (NPS) and Kevin Sparkman (Fusion-spark Media) shared their expertise about how to use verbal and visual storytelling to communicate messages about bay stewardship. Dr. John Wnek and students from MATES presented on the BBP-funded “Turtle Garden” project, which enhanced habitat for diamondback terrapins. Rachel Graham (EPA) spoke about citizen science opportunities, and Danielle Fadeski (2016-2017 Barnegat Bay Watershed Ambassador) talked about her coordination of volunteers at Island Beach State Park dune plantings. As usual, the day included an activities update by the BBP Communication and Education Committee and time for networking and information sharing among the 45 attendees.

Educational Videos

In 2017, a new *Barnegat Bay Festival promotional video* was added to the BBP’s [YouTube channel](#). We also captured video of research projects throughout the year, including river herring research and the Paddle for the Edge citizen science training sessions, and provided video to the American Fisheries Society for its 2018 Atlantic City convention. Additionally, the presentations at the “Bringing Nature Home to Your Jersey-Friendly Yard” conference in October were recorded for use on the *Jersey-Friendly Yards* website.



Citizen Rep to the Policy Committee

The BBP's Citizen Representative to the Policy Committee represents public interests in efforts to protect and restore the Barnegat Bay. George Murnyak continues to be an active Citizen Representative, reaching out to community members for their thoughts and ideas about the bay and providing insightful input during the CCMP revision.

BBP Communication and Education Grant Program

The goal of the BBP's [Communication and Education Grant Program](#) is to increase public understanding of the bay's ecology and the impact of human activities, promote stewardship of the bay and its watershed, and encourage public participation in actions to protect and restore the estuary. In 2017, we awarded grants for three new projects.

"Conserve Water and Reduce Pollution at the Native Garden"

The goal of the project by the Borough of Beach Haven is to educate barrier island residents and visitors about conserving water and reducing water pollution. The project consists of installation of educational signage about the benefits of native plant landscaping at an existing garden in a municipal park on the bay; educational tours of the native plant garden in the summer; and installation of a water bottle refilling station in the park with signage about reducing plastic pollution. The Borough plans to start the project in 2018.

"Experience Jersey-Friendly Yards"

The goal of this Ocean County Soil Conservation District (OCSCD) project is to educate watershed citizens about managing stormwater and reducing sources of pollution on their properties by using the Jersey-Friendly Yards website as a primary resource. The project consists of installing three Jersey-Friendly demonstration gardens and ten Jersey-Friendly home gardens, and educating watershed

citizens through Jersey-Friendly Yards workshops. By the end of 2017, the OCSCD had completed the installation of the three gardens at Cattus Island County Park, the Island Heights branch of the Ocean County Library, and Admiral Point Park (a Pine Beach Borough park on the Toms River). The remainder of the project is scheduled to be completed in 2018.

"Greening Your Landscape While Protecting the Watershed"

The goal of this Brick Township Municipal Utilities Authority project is to educate watershed residents about simple green infrastructure techniques that can help improve water quality in the Metedeconk River and Barnegat Bay, and to provide them with the tools to get started at home. The project consists of three rain barrel workshops and a rain garden construction workshop, and targets environmental justice communities in Lakewood and residential and business communities in Brick. A total of 66 families attended the three rain barrel workshops held in 2017, with 75 rain barrels distributed. Plans are underway for the rain garden workshop to be held in the fall of 2018.

Watershed Outreach Events

In addition to BBP's outreach events and programs, our staff shared information about the Barnegat Bay estuary at events and programs offered by our partners and other stakeholder groups in 2017. In all, we participated in 60 events and programs attended by more than 27,000 individuals, and distributed BBP and partner publications that encourage watershed stewardship, such as *Going Native* and *Low Maintenance Landscaping for the Barnegat Bay Watershed*.

At over 35 of these events, we also discussed the ongoing revision of the *Comprehensive Conservation and Management Plan for Barnegat Bay* and asked attendees for their input, which is critical to developing a plan that addresses the concerns of everyone in the watershed. (See page 4 for additional information about our revision of the CCMP.)



Citizen Science and Stewardship Activities

Much of the work done by the organizations which make up the Barnegat Bay Partnership would not get done without the participation of hundreds of volunteers willing to “get into the weeds” (sometimes literally!). Volunteers devote many hours of their spare time to learning about the bay and various issues, cleaning up their neighborhoods and open space, spreading news about the bay, and even restoring, maintaining, and improving the resources of the watershed. All-in-all, BBP volunteers contributed over 1,600 hours of their time this year to a variety of interesting projects.

The demands of school, work, and the details of daily life can sometimes get in the way of our taking care of the natural world. We want to use this opportunity to thank everyone who is able to carve out some time for nature and for learning. We couldn't do it without you—and we wouldn't have as much fun!

Barnegat Bay Volunteer Master Naturalist Program (BBVMN)

The BBVMN class (held every spring through Ocean County College's Continuing Education Department) continues to grow. The 2017 class was the largest ever, and we now have over 76 trained naturalists getting out in the field and helping with a variety of activities. Some alumni have researched and written a guide to proper trail maintenance and have adopted two trails to maintain at Island Beach State Park. Many of them have also volunteered to be team leaders for dune grass plantings at the park, to ensure that the many enthusiastic folks who come to help plant also learn about the importance of dunes and how the grasses help maintain the integrity of our barrier islands. Check out their activities on the [BBP Master Naturalist Course](#) Facebook page.

Watershed Cleanups and Community Engagement

The Ocean County College Environmental Club participated in the spring Clean Ocean Action “Beach Sweep.” Club members also conducted their own periodic litter sweeps of the OCC campus and local parks (included helping with the removal of invasive species at Ocean County Park). In addition, they partnered with the group “Toms River Moving Forward” to help with its community vegetable gardens around town. The students helped promote use of five new “hydration stations” (which the BBP provided to OCC) for refilling re-useable water bottles and, with other BBP volunteers and Master Naturalists, assisted at a variety of outreach events, including the Barnegat Bay Festival.

Jersey Shore Chapter of the Native Plant Society of New Jersey

The BBP is now in its fifth year of providing leadership to the local chapter of New Jersey's [Native Plant Society](#). The Jersey Shore Chapter has 628 native plant enthusiasts on its mailing list (more than any other chapter!). Joining the mailing list gives them access

to emails announcing the topic of our monthly meetings, which this year included lectures on “Bogs and Barrens,” the consequences of habitat disturbance on the natural world, and local species of spiders, butterflies, and moths. We also took field trips to a bog and an insect museum, and offered two all-day conferences with topical speakers, exhibitors, and vendors. We hope more of you will join us in 2018!

Watershed Ambassador

The BBP once again served as the host agency for the [NJDEP's Watershed Ambassador](#) for the Barnegat Bay watershed. Danielle Fadeski, the 2016-2017 ambassador, organized another great dune-grass planting event at Island Beach State Park together with Friends of Island Beach State Park. More than 200 volunteers (a new record!) showed up to plant American beach grass at multiple sites at the park. She also gave over 50 presentations to a variety of schools and other organizations and trained citizen volunteers for a new citizen science water-monitoring program for the Long Swamp Creek.

Her successor, Justin Linton, started his 2017-2018 term by assisting with a December, 2017 dune-grass planting and monitoring previous dune-grass plantings, and has already been out and about giving presentations on water quality issues.

Great Backyard Bird Count

In February 2017, the BBP partnered with Save Barnegat Bay and Ocean County Parks and Recreation to host a [Great Backyard Bird Count](#) event at Brown's Woods Preserve in Toms River Township. The Great Backyard Bird Count is an annual citizen science event sponsored by Cornell University and the National Audubon Society. Scientists use the information from this international count to get the “big picture” about what is happening to bird populations around the world. Volunteers led by experienced naturalist Becky Laboy recorded the Brown's Woods count and submitted the data to Cornell and Audubon.

As a National Estuary Program established pursuant to the Clean Water Act (33 U.S.C. 1330; PL 100-4, *et seq.*), the Barnegat Bay Partnership receives section 320 grant funding from USEPA. The County of Ocean, through the Ocean County Natural Lands Trust and Ocean County College, provides the annual matching funds required for the grant. Through the BBP work plan and related activities, the BBP and its partners are able to leverage other investments to protect and restore the watershed. During the federal fiscal year 2017, the total amount leveraged was \$4 million, which resulted in a 6-to-1 total return on investment. We thank Ocean County College and all of our partners for their continuing support of our efforts to protect the bay.

FUNDING FOR FISCAL YEAR 2017

(July 1, 2016 – June 30, 2017)

US Environmental Protection Agency (USEPA): Section 320 Grant

Section 320 Base Grant	\$600,000
Supplemental Funding (CCMP and Climate Change Vulnerability Assessment)	\$25,000
Ocean County Natural Lands Trust: 320 Grant Program Match	\$580,000
Ocean County College: 320 Grant Program Match	\$45,000

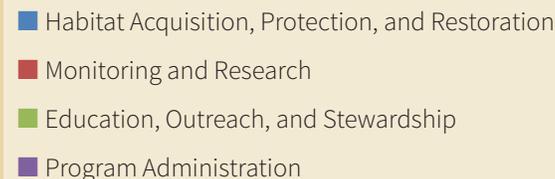
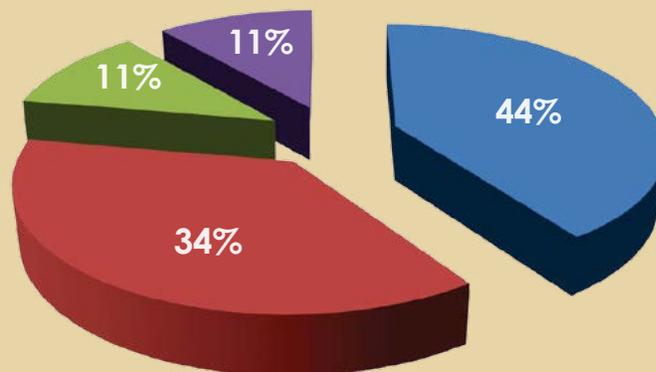
Federal Highway Authority/Stockton University Subaward:

<i>Quantification of flood event forcing and the impact of natural wetland systems; Great Bay Boulevard, Ocean County, New Jersey.</i>	\$14,571
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Barnegat Bay Festival: Barnegat Bay Foundation Sponsorship and Other Donations	\$10,600
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Total \$1,275,171

FISCAL YEAR 2017



FUNDING FOR FISCAL YEAR 2018

(July 1, 2018 – June 30, 2018)

US Environmental Protection Agency (USEPA): Section 320 Grant

Section 320 Base Funding	\$600,000
Supplemental Funding (CCMP)	\$42,500
Ocean County Natural Lands Trust: 320 Grant Program Match	\$600,000
Ocean County College: 320 Grant Program Match	\$42,500

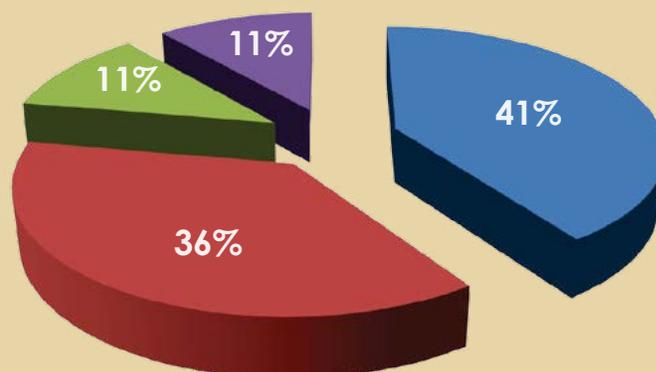
EPA Wetland Program Development Grant	\$320,474
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Wetland Program Development Grant Match	\$106,967
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Barnegat Bay Festival: Barnegat Bay Foundation Sponsorship and Other Donations	\$ 15,348
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Total \$1,727,789

FISCAL YEAR 2018



Our Staff

Director

L. Stanton Hales, Jr., Ph.D.

Project Coordinator

Martha Maxwell-Doyle

Program Assistant



Mary Judge

*Mary retired in January 2018
and will be greatly missed.*

Program Scientist

James Vasslides, Ph.D.

Public Outreach Coordinator

Karen Walzer

Special Events Coordinator

Betsy Hyle

Field and Lab Coordinator

Jessie Buckner

Field and Lab Technicians

Tina Barreiro

Sam Seland

Stephanie Beck

Ashley Sousa

Nicole Petersen

Gerald Wilders

Emily Pirl

USEPA Region 2 Coordinator

Barbara Spinweber

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OCEAN
COUNTY COLLEGE

Jon H. Larson, Ph.D.
President



**The Ocean County Board of
Chosen Freeholders**

Freeholder Liaison, Joseph H. Vicari



This document has been funded by the USEPA under a Clean Water Act grant agreement to Ocean County College; information herein has not undergone USEPA review and may not necessarily reflect the agency's official views.

Our Partners

American Littoral Society

Barnegat Bay Foundation

Brick Township Municipal Utilities Authority

Clean Ocean Action

Conserve Wildlife Foundation of New Jersey

Georgian Court University

Jersey Coast Anglers Association

Long Beach Island Foundation of the Arts and Sciences

Marine Trades Association of New Jersey

Monmouth County Division of Planning

Monmouth University

National Oceanic and Atmospheric Administration, National Marine Fisheries Service

NJ Department of Environmental Protection

NJ Department of Transportation

NJ Pinelands Commission

NJ Sea Grant Consortium

Ocean County Board of Chosen Freeholders

Ocean County College

Ocean County Department of Parks and Recreation

Ocean County Health Department

Ocean County Mayors Association

Ocean County Planning Department

Ocean County Soil Conservation District

Ocean County Utilities Authority

Ocean County Vocational Technical School

Pinelands Preservation Alliance

ReClam the Bay

Rutgers Cooperative Extension of Ocean County

Rutgers University: Jacques Cousteau National Estuarine Research Reserve

Save Barnegat Bay

Stockton University

Trust for Public Land

US Army Corp of Engineers

US Department of Agriculture, Natural Resources Conservation Service

US Environmental Protection Agency

US Fish and Wildlife Service

US Geological Survey

Photo credits

All photos by BBP Staff, with the exception of the following:

Front cover: "Barnegat's Beauties" watercolor
by Jade McKenzie Hughes.

Page 2: Photo by Angela Andersen.

Page 4: Bottom photo by Bob Birdsall.

Page 8: Photos courtesy of Stockton University.

Page 10: Main photo courtesy of Becky Laboy.

Page 11: Main photo courtesy of Becky Laboy. Inset photo
courtesy of BTMUA.

Page 12: Main photo courtesy of Dr. John Wnek.

Page 15: Conserve Wildlife Foundation photo by Northside Jim.

All others courtesy of partner organizations as labeled.

Back cover: Photo by Judy Smestad-Nunn, *The Brick Times*.

Partners In Action



Brick Township Municipal Utilities Authority
(Rain barrel workshop)



Conserve Wildlife Foundation of NJ
(Survey of osprey nest)



NJ Department of Environmental Protection (Enjoying clams at Sedge Islands Marine Conservation Celebration)



NJ Sea Grant Consortium
(Seining activity with scouts)



Ocean County Soil Conservation District
(Soil health exhibit)



Marine Academy of Technology and Environmental Science
(Oceanography students)



Save Barnegat Bay (Outreach event)



Rutgers Cooperative Extension of Ocean County
(Students learning about native plants)



National Oceanic and Atmospheric Administration
(Ocean Fun Days)



NJ Pinelands Commission
(World Water Monitoring Challenge)

BARNEGAT BAY PARTNERSHIP

Ocean County College
College Drive | PO Box 2001
Toms River, NJ 08754-2001

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Annual Report | 2017-2018

One of 28 National Estuary Programs, the Barnegat Bay Partnership comprises federal, state, county, municipal, academic, business, and private stakeholders working together to help restore, maintain, protect, and enhance the water quality and natural resources of the Barnegat Bay estuary and its contributing watershed.