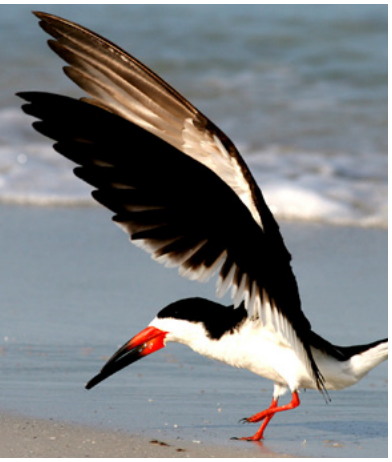




National Estuary Program

2022 ACCOMPLISHMENTS

DECEMBER 2023 **EPA-842-R-23-001**

National Estuary Program Study Areas

1. Casco Bay Estuary Partnership
2. Piscataqua Region Estuaries Partnership
3. Massachusetts Bays National Estuary Partnership
4. Buzzards Bay National Estuary Program
5. Narragansett Bay Estuary Program
6. Long Island Sound Study
7. Peconic Estuary Partnership
8. New York-New Jersey Harbor & Estuary Program
9. Barnegat Bay Partnership
10. Partnership for the Delaware Estuary
11. Delaware Center for the Inland Bays
12. Maryland Coastal Bays Program
13. Albemarle-Pamlico National Estuary Partnership
14. Indian River Lagoon National Estuary Program
15. San Juan Bay Estuary Program
16. Coastal & Heartland National Estuary Partnership
17. Sarasota Bay Estuary Program
18. Tampa Bay Estuary Program
19. Mobile Bay National Estuary Program
20. Barataria-Terrebonne National Estuary Program
21. Galveston Bay Estuary Program
22. Coastal Bend Bays & Estuaries Program
23. Santa Monica Bay National Estuary Program
24. Morro Bay National Estuary Program
25. San Francisco Estuary Partnership
26. Tillamook Estuaries Partnership
27. Lower Columbia Estuary Partnership
28. Puget Sound Partnership

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Above, Left to Right: **Seagrass.** Photo by James R. White; **Tidal marsh** in along Harraseeket River, Freeport, Maine. Photo by the Casco Bay Estuary Partnership; **Spoonbills** in Florida. Photo by Tampa Bay Estuary Program; **Community volunteers** at a Give-A-Day for the Bay event hosted by the Tampa Bay Estuary Program. Photo by Yvonne Gougelet.
Cover: (Upper-left) **A skimmer landing.** Photo by Gerald Morrison; (Upper-right) **Wetland**. Photo by Steven Gersh, Massbays; (Bottom-left) **Eelgrass bed.**; (Middle-left) **Long pier and boat house** in Tillamook Bay, Oregon.; (Middle-right) **Volunteers constructing** a Living Shorelines demonstration site in Brunswick, Maine. Photo by the Greater Portland Council of Governments; (Bottom-right) **Florida Manatee** in shallow waters.

List of **Abbreviations**

APNEP	Albemarle-Pamlico National Estuary Partnership
BBNEP	Buzzards Bay National Estuary Program
BBP	Barnegat Bay Partnership
BTNEP	Barataria-Terrebonne National Estuary Program
CBBEP	Coastal Bend Bays & Estuaries Program
CBEP	Casco Bay Estuary Partnership
CCMP	Comprehensive Conservation and Management Plan
CHNEP	Coastal & Heartland National Estuary Program
CIB	Delaware Center for Inland Bays
FISH	Florida Institute for Salt Heritage
GBEP	Galveston Bay Estuary Program
HAB	Harmful Algal Bloom
HEP	New York-New Jersey Harbor & Estuary Program
I/A OWTS	Innovative, Alternative Onsite Wastewater Treatment Systems
IRLNEP	Indian River Lagoon National Estuary Program
LISS	Long Island Sound Study
LCEP	Lower Columbia Estuary Partnership
MassBays	Massachusetts Bays National Estuary Partnership
MBNEP	Mobile Bay National Estuary Program
MBNEP	Morro Bay National Estuary Program
MCBP	Maryland Coastal Bays Program
NBEP	Narragansett Bay Estuary Program
NEP	National Estuary Program
NOAA	National Oceanic and Atmospheric Administration
PCBs	Polychlorinated biphenyls
PDE	Partnership for the Delaware Estuary
PEP	Peconic Estuary Partnership
PREP	Piscataqua Region Estuaries Partnership
PSP	Puget Sound Partnership
SBEP	Sarasota Bay Estuary Program
SFEP	San Francisco Estuary Partnership
SJBEP	San Juan Bay Estuary Program
SMBNEP	Santa Monica Bay National Estuary Program
TBEP	Tampa Bay Estuary Program
TEP	Tillamook Estuaries Partnership
TMDL	Total Maximum Daily Load

Introduction

Estuaries are where rivers and oceans meet and can provide many different habitat types, such as freshwater and saltwater marshes, swamps, mangrove forests, and tidal pools. Estuaries also support diverse species and ecological services that boost the economy and support human health and well-being. Though estuary regions comprise just 4 percent of the continental U.S. land area, they house 40 percent of the U.S. population and provide 47 percent of the U.S. gross domestic product[1].

Today, estuaries face a multitude of challenges. Climate change, and human activities lead to sedimentation, pollution from runoff, and eutrophication (i.e., increased algae growth and lowered levels of oxygen). Land development along coasts has stripped many estuaries of their natural, protective vegetative buffer causing shorelines and banks to erode at an increasing rate. These stressors contribute to poor water quality, unsafe drinking water, fish kills, loss of habitat, and other human health and natural resource concerns.

Through strong partnerships and collective efforts, the National Estuary Program ("the NEP") and its 28 local National Estuary Programs (NEPs) address habitat loss and the broad range of problems facing coastal communities. Since 2006, NEPs have invested approximately $12 billion in protecting and restoring more than 1.8 million acres of habitat. Through leveraging

[1] Rouleau, T. Colgan, C.S., Adkins, J. Castelletto, A., Dirlam, P. Lyons, S., and Stevens, H. 2021. The Economic Value of America's Estuaries: 2021 Update. Washington: Restore America's Estuaries. http://www.estuaries.org/economics/2021-report.

Gambel Marsh in Brunswick, Maine.
Photo by the Casco Bay Estuary Partnership

Introduction

Youth interacting with aquatic crustaceans at an educational event in Narragansett Bay, Rhode Island.
Photo by Ayla Fox for the Narragansett Bay Estuary Program

activities, NEPs generate an average of $17 for every $1 provided by the EPA, demonstrating the return on taxpayer investment. In 2022 alone, NEPs collectively:

- Invested over $45 million primary leveraged funds in habitat restoration;
- Completed 463 habitat projects that protected or restored more than 117,000 acres of habitat; and
- Reduced an estimated 443 tons of nitrogen and 27 tons of phosphorus through restoration and protection projects.

This report presents the NEP national metrics for federal fiscal year 2022 alongside success stories from local NEPs demonstrating why their work is vital for the health of estuaries and communities that depend on them. Completed projects improved the health and well-being of the local community and environment while increasing regional capacity to take on larger projects through infrastructure development, outreach to local communities, and building relationships with local groups. The report also highlights each of the 28 NEPs individually, showcasing more about their work, accomplishments, and future initiatives.

PROGRAM OVERVIEW

Established in 1987, the NEP is an Environmental Protection Agency place-based program that has made a unique and lasting contribution to protecting and restoring the nation's estuaries. The NEP is composed of 28 local NEPs along the Atlantic, Gulf, and Pacific coasts and in Puerto Rico. In overseeing and managing the national program, the EPA provides annual funding, guidance, and technical assistance to these place-based programs.

NEPs work with partners, local community groups, and the public to develop and implement long-term Comprehensive Conservation and Management Plans (CCMPs) based on local priorities to guide their actions in monitoring, assessing, restoring, and protecting the health of estuaries as directed by Section 320 of the Clean Water Act. NEPs have a Management Conference that consists of diverse stakeholders and uses a collaborative, consensus-building approach to implement the CCMP. Each Management Conference ensures that the CCMP is uniquely tailored to local environmental conditions and is based on local input, thereby supporting local priorities.

In addition to funding provided by the EPA, NEPs leverage public and private funding and support partners in securing funding to carry out CCMP actions. By implementing CCMPs through 28 place-based programs, the NEP is poised to support locally led initiatives while also advancing national priorities. ■

Bipartisan Infrastructure Law

In 2021, President Biden signed the Bipartisan Infrastructure Law which named the NEP as a key partner for implementation. The Bipartisan Infrastructure Law provides $132 million for the 28 NEPs for federal fiscal years 2022-2026. This funding accelerates implementation of CCMPs, prioritizes investments in and benefits to disadvantaged communities, builds the adaptive capacity of ecosystems and communities, as well as leverages and supports additional resources.

During fiscal year 2022, the EPA delivered guidance and collaborated with NEPs to start the process of executing Bipartisan Infrastructure Law projects. NEPs began to develop equity strategies that support opportunities for communities with environmental justice concerns to participate in improving estuary regions as well as benefit from healthier estuaries. NEPs started to ramp up Bipartisan Infrastructure Law activities and project plans. While NEPs have long been performing projects that benefit disadvantaged communities and increase resilience to climate change, the next four years will see an increase and acceleration in that work as Bipartisan Infrastructure Law projects are completed.

Narragansett Bay, Rhode Island has a multitude of publicly accessible docks for the public to engage in recreational activities. Photo by Ayla Fox for the Narragansett Bay Estuary Program

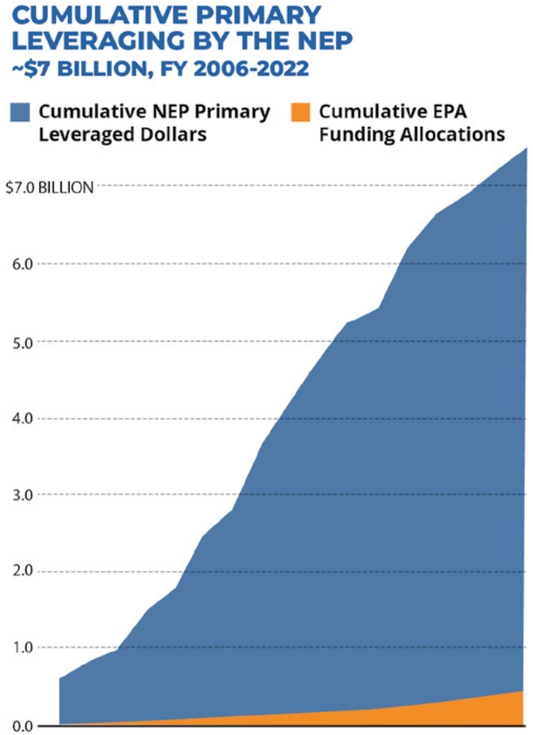
National **Results** & **Success** Stories

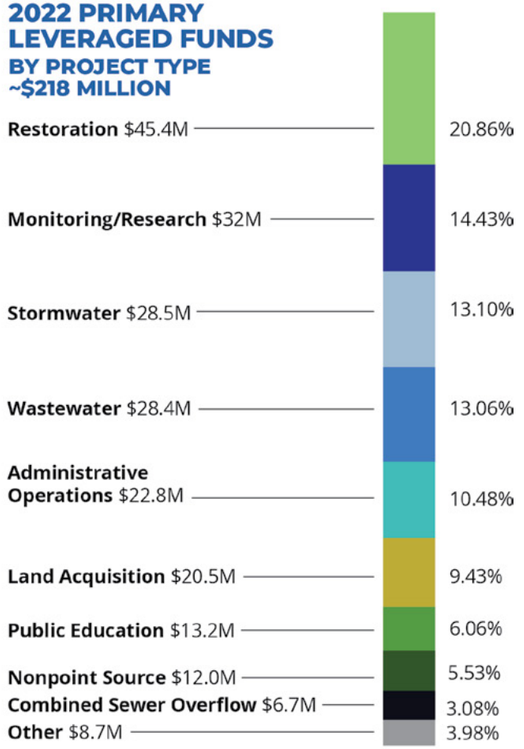
Since 2006, NEPs have leveraged approximately $7 billion to implement priority actions contained in their CCMPs. In 2022, NEPs leveraged a total of approximately $218 million in which they played a primary role in obtaining resources. Most of the primary leveraged investments went toward activities related to restoration, monitoring and research, stormwater management, wastewater management, and administrative operations. This demonstrates how NEPs use their multifaceted networks to act as conveners to creatively fund projects with partners and provide a return on taxpayer investment.

Primary leveraged investments are defined as the dollar value (cash or in-kind equivalent) of resources dedicated to implementing a CCMP above and beyond the funding provided to the NEPs under Clean Water Action Section 320, including congressionally directed spending. The leveraged dollars included in this calculation are those in which the NEPs, rather than their partners, played a primary role in obtaining the additional resources. This convening role is critical to the achievement of CCMP goals

Volunteers work to remove invasive species from and restore a river floodplain at the Myakka River Headwaters Preserve, Florida. Photo by the Coastal & Heartland National Estuary Program

National Success Stories





(Left) Since 2006, NEPs have leveraged over $7 billion with approximately $410 million in allocated funding from the EPA. (Right) In 2022, NEPs leveraged approximately $218 million towards projects related to activities such as restoration, monitoring and research, stormwater, and wastewater.

and the success of both individual NEPs and the national program. Without NEPs acting as the backbone for these local partnerships, ecosystems and communities would likely receive little of this additional investment.

In fiscal year 2022, 28 NEPs implemented projects that improved environmental conditions, bolstered human well-being, and built organizational and financial capacity to carry out projects in the future. This report explores these projects' impact through topical themes of habitat restoration; nutrient reduction; climate resilience; human health; environmental justice; recreation; community engagement and education; and capacity, fundraising, and partnerships.

NEPs report their habitat projects and funds leveraged annually to the EPA. While those numbers are informative, they leave out rich details of the variety and impact of NEP projects. The following sections outline habitat results and dollars leveraged alongside a sample of NEP projects that occurred during fiscal year 2022. These success stories offer a glimpse of projects that NEPs accomplished and help demonstrate why their work is important for the estuaries and communities that depend on them. ■

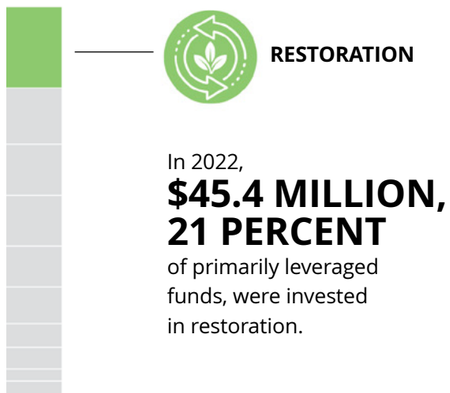
Habitat Restoration

Volunteers removing a small dam in Burgess Brook, Cumberland County, Maine. Photo by the Casco Bay Estuary Partnership

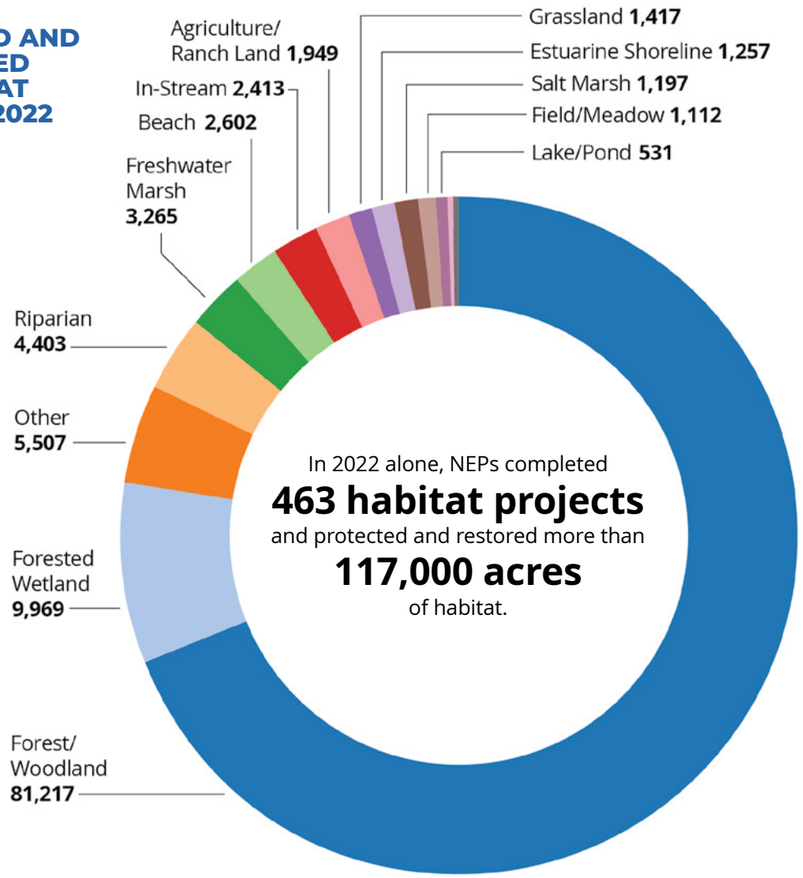
High-quality habitats are critical for the health of marine and estuarine systems and the human economies that depend on them. When these natural resources are imperiled, so are the livelihoods of those who live and work in estuarine watersheds. Together with federal, state, Tribal, local, nonprofit, and community organizations, NEPs restore and protect habitat by revegetating natural areas, developing conservation easements, implementing ecological restoration projects, and acquiring or preserving open space. While these projects support native species and ecosystems, many habitat restoration projects also have co-benefits, such as providing recreation opportunities, improving water quality, protecting human health, supporting the needs of communities with environmental justice concerns, and enhancing climate resilience.

SINCE 2006, NEPS HAVE INVESTED APPROXIMATELY $12 BILLION IN PROTECTING AND RESTORING MORE THAN 1.8 MILLION ACRES OF HABITAT.

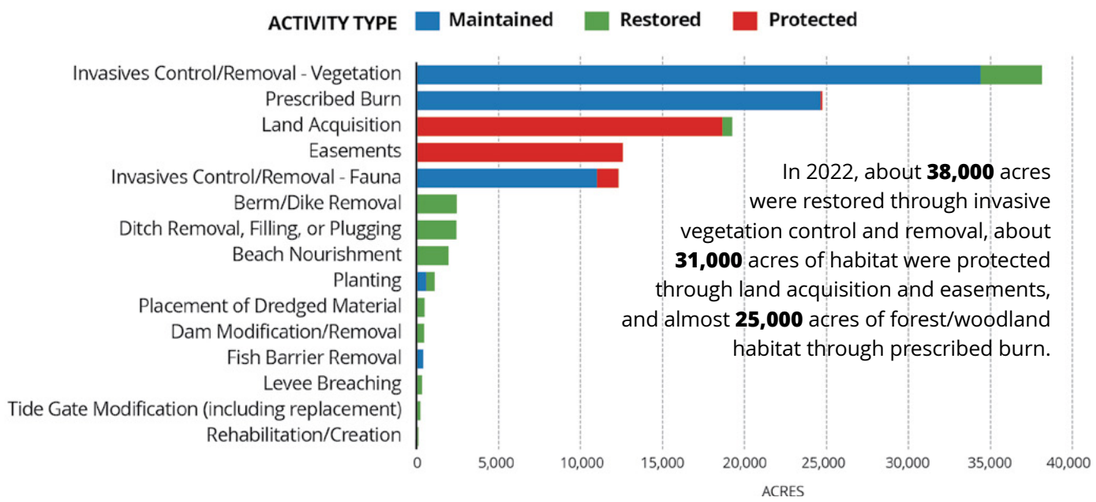
PRIMARY LEVERAGED FUNDS



ACRES RESTORED AND PROTECTED BY HABITAT TYPE, FY 2022



ACRES RESTORED BY RESTORATION TECHNIQUE, FY 2022



Habitat Restoration

MORRO BAY NATIONAL ESTUARY PROGRAM (CALIFORNIA)

Eelgrass Restoration

Eelgrass habitat provides important ecological benefits and helps build the foundation for a resilient estuary. The Morro Bay National Estuary Program has been mapping eelgrass habitat for two decades. From 2007 to 2016, eelgrass in Morro Bay declined by more than 90 percent with only 13 acres mapped in 2017. Morro Bay NEP and its partners have put significant effort into restoring eelgrass. Between 2017-2022, Morro Bay NEP transplanted over 15,000 plants from healthy donor beds to areas with eelgrass loss. Through the project, they tested and documented restoration strategies including optimal time of year, anchoring methods, and locations. Volunteers spent nearly 500 hours getting wet and muddy while harvesting and planting eelgrass. The Morro Bay NEP documented lessons learned, such as timing of planting and methods for transplanting. The restored eelgrass improves water quality and habitat by filtering out excess nutrients, increasing oxygen levels, and stabilizing sediment to allow for more light penetration. Stabilization of sediment helps mitigate coastal flooding/erosion and the accelerating impacts of sea level rise. Additionally, eelgrass sequesters carbon and mitigates the impacts of ocean acidification. These plantings and the lessons learned for future restoration help provide critical habitat and ecosystem services that aid in estuary resilience and climate change mitigation.

LOWER COLUMBIA ESTUARY PARTNERSHIP (OREGON AND WASHINGTON)

Steigerwald Reconnection Project

In the 1960s, a 5.5-mile levee was constructed separating the Columbia River from over 1,200 acres of historic floodplain located within the Steigerwald Lake National Wildlife Refuge in southwest Washington. Initially designed to protect adjacent properties from Columbia River flooding, the levee exacerbated internal flooding from Gibbons Creek, a tributary to the Columbia River flowing through the Refuge. The levee also prevented salmon, steelhead, and lamprey from accessing the floodplain for rearing habitat. The flooding from Gibbons Creek required the Port of Camas-Washougal to maintain a costly pumping system and to dredge the creek annually. The Steigerwald Reconnection Project restored the natural alluvial fan of Gibbons Creek, placed over 2,200 logs for immediate habitat uplift, and reforested 250 acres of riparian habitat. The levee system was also reoriented to restore connections to the Columbia River and to reduce flooding impacts from Gibbons Creek to the port's industrial park, a wastewater treatment facility, and residential areas, resulting in lower pumping costs for local governments. The habitat restoration initiatives helped to improve ecosystem health, limit the impacts of invasive species, and allowed for expanded recreational opportunities at the Refuge. Over the course of three years of construction, the project also generated 550 local jobs and provided opportunities for thousands of local students and community members to volunteer and contribute to the project. ■

Climate Resilience

2022 Coastal & Heartland National Estuary Partnership public conference to discuss impacts of Hurricane Ian on natural resources in Central and Southwest Florida. Photo by the Coastal & Heartland National Estuary Program

Estuaries are, by nature, on the front lines of many climate change impacts: more intense storms, sea level rise, subsidence, and land loss. NEPs work to study, monitor, and restore estuaries so they can continue providing ecosystem services important to coastal communities such as wave attenuation and flood mitigation. In addition, NEPs provide resources and strategies to communities facing the effects of climate change to help them prepare for severe weather events and shifting weather patterns.

IN 2022, OVER 1/4 OF NEP HABITAT PROJECTS ADDRESSED CLIMATE CHANGE IMPACTS AND ASSOCIATED ADAPTATION.

With Bipartisan Infrastructure Law funding, there will be new reporting mechanisms to better capture the number of projects that address climate change impacts.

TAMPA BAY ESTUARY PROGRAM (FLORIDA) *Coastal Acidification and Seagrass Monitoring*

Ocean acidification, propelled by increased dissolved carbon dioxide, threatens marine ecosystems in the Tampa Bay Estuary. Ocean pH has declined by 0.1 since 1998—the fastest decline of any recorded period. Seagrass can naturally reduce acidity in an estuarine habitat. The Tampa Bay Estuary Program has carried out seagrass distribution and abundance monitoring since 1998 and recently deployed the U.S. Geological Survey's ocean carbon systems to monitor acidification rates and better understand these processes. The transect data can be accessed online and includes thousands of records on seagrass condition, representing nearly 30 years of field sampling. When compared to the U.S. Geological Survey high-resolution pH trends, these data help the Tampa Bay Estuary Program, partners, and the public understand the benefits of improving native seagrass habitats to combat ocean acidification.

Over the past 40 years, reductions in nutrient pollution throughout the Tampa Bay Watershed have significantly improved water clarity, leading to increases in seagrass. However, seagrass in the Tampa Bay Estuary started to decline again in 2020, demonstrating the need for continued scientific research and restoration activities. In 2022, water quality levels reached "green" status which indicated healthy seagrass populations in the four major sites of the estuary for the first time since 2014, and seagrass frequency of occurrence increased by 4 percent between 2021 and 2022 after a three-year decline.

SAN JUAN BAY ESTUARY PROGRAM (PUERTO RICO) *Resilience Hubs*

The population surrounding the San Juan Bay Estuary is vulnerable to natural disasters, particularly hurricanes, which are occurring with increasing intensity and frequency due to climate change. Natural disasters like Hurricanes Irma and Maria in 2017 place heavy burdens on local government and jeopardize community members' access to clean water, electricity, and medical supplies. The San Juan Bay Estuary Program has established four Resilience Hubs in existing community centers to serve as a space for empowerment and refuge in times of emergency. The San Juan Bay Estuary Program increased the resilience of communities around these hubs by installing solar panels, improving clean drinking water accessibility, stocking first aid equipment, and facilitating the direction of funding to purchase equipment, as needed. In non-emergency times, the hubs serve as a training and education space for residents. The Resilience Hubs better prepare the broader San Juan Bay Estuary community for natural disasters while fostering community health and resiliency in the face of socio-environmental challenges. ■

San Juan Bay Estuary Program (SJEP) hosts EPA's site visit with Community Resilience Hub leaders, Puerto Rico 2022. Photo by Maria Gabriela

Nutrient Reduction

Volunteers from the Suffolk County Community College install a fish counter to monitor alewife and American eel on the Peconic River at Grangebel Park, Riverhead, New York. Photo by the Peconic Estuary Partnership

Nutrient pollution in U.S. coastal waters can cause or contribute to overgrowths of algae that result in harmful algal blooms (HABs). Climate change has contributed to the increase in the frequency and severity of HABs through a variety of mechanisms, including temporary increases in salinity, fluctuation in rainfall intensity, and intensified coastal upwelling. HABs can negatively impact human and pet health, aquatic ecosystems, and local economies, costing the U.S. economy an estimated $10-100 million annually[2]. Nutrient pollution may also contribute to coastal acidification and hypoxia, negatively affecting coastal ecosystems and marine organisms, such as corals and commercially important shellfish. NEPs carry out various activities that reduce nutrient loads from urban stormwater, wastewater, and agricultural and residential practices.

[2] National Centers for Coastal Ocean Science (NCCOS). *Assessing Environmental and Economic Impacts*. National Oceanic and Atmospheric Administration.

Habitat restoration and protection projects, such as easements, erosion control, land acquisition, planting, rain garden creation, stormwater and runoff controls, and vegetation buffers, provide nutrient prevention and reduction benefits.

In 2022, NEPs collectively reduced an estimated 443 tons of nitrogen and 27 tons of phosphorus through restoration and protection activities.[3] That is equivalent to:

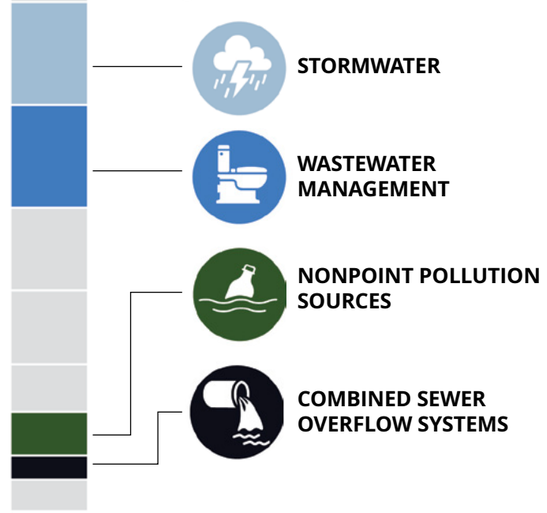
111,000 - 332,000
40-LB BAGS OF 10-5-10 FERTILIZER (NITROGEN)

19,000 - 35,000
40-LB BAGS OF 10-5-10 FERTILIZER (PHOSPHORUS) ■

[3] Total nitrogen and phosphorus reductions were calculated by classifying NEPs into ecoregions, identifying activities that contributed to nutrient reduction, and calculating nutrient removal rates based on scientific literature. A full explanation of the nutrient methodology and findings can be found in the EPA report, *The National Estuary Program Is Playing a Major Role in Tackling Nutrient Pollution*.

PRIMARY LEVERAGED FUNDS

In 2022, about
$75.7 MILLION, 35 PERCENT
of leveraged funds, were invested in nutrient management activities or projects that address nonpoint pollution sources, combined sewer overflow systems, stormwater, and wastewater management.



Left: **Ducks swim** through algal-bloom infested waters, DC**.** Right: **Algal-bloom** infested waters. Photos by Eric Vance, U.S. EPA

Nutrient Reduction

PECONIC ESTUARY PARTNERSHIP (NEW YORK) *Septic Improvement Program*

The Peconic Estuary Partnership works closely with Suffolk County to support the Reclaim Our Water Initiative, which offers a grant and loan program to incentivize the replacement of inadequate nitrogen reducing waste treatment systems, such as cesspools and septic systems, with Innovative, Alternative Onsite Wastewater Treatment Systems (I/A OWTS). In 2022, 134 residential and two commercial I/A OWTS were installed in the Peconic Estuary Watershed and are credited with the removal of approximately 2,900 pounds of nitrogen. This successful partnership will continue with direct Peconic Estuary Partnership funding allocated in future years to further support low- and median-income families in the maintenance of I/A OWTS systems. Funding will also be allocated to further incentivize this important nitrogen reducing tool in the Peconic watershed which has over 200,000 aging cesspools and septic systems.

INVESTING IN WASTEWATER INFRASTRUCTURE

NEPs are implementing wastewater system upgrades across the country to reduce nutrient inputs into waterways. In Indian River County, Florida, the Kashi Church Foundation had 16 buildings that relied on septic tanks installed in the 1970s, resulting in nitrogen and other nutrients flowing into the Indian River Lagoon. The **Indian River Lagoon NEP** supported the installation of a connected gravity sewer system between the buildings, resulting in an immediate reduction of water pollution from the Kashi Church Foundation. The new community sewer system reduces nitrogen outflows into the Indian River Lagoon by approximately 139 pounds per year. The **Buzzards Bay NEP** helped establish the Massachusetts Alternative Septic Test Center to evaluate the performance and operation costs of innovative wastewater disposal technologies. Under this effort, alternatives to conventional septic systems that are more effective in reducing nitrogen concentrations in wastewater discharges were introduced and implemented. Nearly 2,000 systems have been installed in the region with the support of state and local governments. **The Sarasota Bay Estuary Program** is working with local stakeholders and Florida environmental agencies to develop a Pollutant Load Reduction Goal, which includes wastewater system upgrades, to combat the effects of eutrophication. The **Sarasota Bay Estuary Program** received support for formalizing a 20 percent nitrogen load reduction goal; this goal equals a reduction of 92 tons per year in total nitrogen and 12 tons per year in inorganic nitrogen. These examples of wastewater system upgrades and associated reduction in nutrients showcase the breadth of impact from such projects administered by NEPs across the country.

Grassy vegetation along the bank of a freshwater bay in the Peconic estuary system in Long Island, New York.
Photo by the Peconic Estuary Partnership

PARTNERSHIP FOR THE DELAWARE ESTUARY (DELAWARE) *Freshwater Mussels for Water Quality Improvement*

Where abundant, freshwater mussels can influence nutrient dynamics, maintain and improve water quality, and enhance habitat for other aquatic life. Unfortunately, freshwater mussel populations have greatly declined in the Delaware Estuary Region's waterways (and many other regions across the continent) due to stressors, such as streambed erosion, severe flooding, chemical spills, impacts of historic dams, land use changes, and other human impacts. Small ponds and basins that are used to manage stormwater runoff provide a unique opportunity to couple research activities and nutrient removal practices in the form of large-scale mussel growing operations. The Partnership for the Delaware Estuary conducted a study that deployed two native mussel species in stormwater ponds to determine their ability to flourish in such a novel aquatic habitat and the potential impacts they may have on water quality. This study monitored mussel mortality, mussel growth, and water quality. The study findings build on previous research in the region about the feasibility of freshwater mussel restoration, particularly how to incorporate new technologies such as propagating mussels for water quality benefits. This study provided restoration benefits at the experimental sites while also improving broader understanding of freshwater restoration and helping advance efforts to recover mussels in the region. ■

A bed of freshwater mussels filters water in Rhode Island's Flat River, a tributary of Narragansett Bay.
Photo by Ayla Fox for the Narragansett Bay Estuary Program

Human Health

Children play on swing set overlooking Narragansett Bay, Rhode Island. Photo by Ayla Fox for the Narragansett Bay Estuary Program

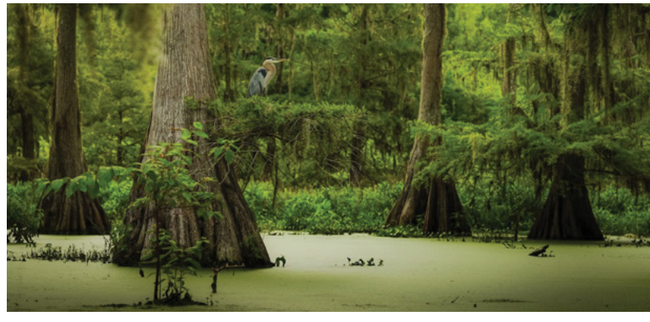
Estuary regions are home to 130 million Americans. Humans interact with estuaries in numerous ways including seafood consumption and recreational activities. Individuals who engage with their outdoor surroundings have an increased life expectancy, improved sleep quality, reduced cancer risk, and improved mental health[4]. Climate change, pollution, and habitat loss challenge the health and function of estuaries, impacting human health both directly and indirectly. NEPs play an important role in protecting human health from these impacts through monitoring and research, restoration, nutrient management, and public education projects.

GALVESTON BAY ESTUARY PROGRAM (TEXAS)
Evaluation of Seafood Consumption Advisories

Seafood is a staple food source for many in Galveston Bay, a region known for its seafood delicacies. However, chemical contamination in the Galveston Bay watershed from industrial and consumer goods production, such as polychlorinated biphenyls (PCBs) and dioxins, can accumulate in many aquatic species posing a risk to human health. PCBs and dioxins have both been linked to adverse health effects[5]. If high concentrations of chemicals are found in local fish, states may issue consumption advisories to inform the public of potential health hazards associated with consuming contaminated fish or shellfish. These advisories are crucial since fishing regularly occurs in many portions of Upper Galveston Bay, including the Houston Ship Channel. Through a partnership with Texas A&M University and the Texas Department of State Health and Services, the Galveston Bay Estuary Program funded a project to determine the adequacy of the current fish consumption advisories by evaluating the risk associated with the consumption of fish and crabs from a portion of Galveston Bay. Targeted species included catfish, blue crab, spotted seatrout, red drum, black drum, sheepshead, flounder, and croaker. The analytic data from tissue samples found that gaff-topsail catfish and spotted seatrout collected from the Upper Galveston Bay posed an apparent risk to public health, while blue crab no longer exceeded the Texas Department of State Health and Services established thresholds for PCBs and other toxins. As such, it was recommended that blue crabs be removed from the Upper Galveston Bay advisory. The current advisories are available on the Seafood Consumption Advisories web map. Active monitoring projects can protect human health by improving the accuracy of consumption advisories.

BARATARIA-TERREBONNE NATIONAL ESTUARY PROGRAM (LOUISIANA)
Harmful Algal Bloom Threat Index

There is a critical need for near real-time and high-resolution water quality and HAB data to support growing shellfish and fish industries in Louisiana's waters and prevent human exposure to HABs. Barataria-Terrebonne National Estuary Program partnered with The Water Institute to deploy optical remote sensing techniques to monitor HAB spatial distributions and generate the satellite-based HAB Threat Index. The HAB Threat Index is a simple tool used to assess the potential threat to marine organisms, human health, and economic well-being of shellfish and fish industries in the Barataria-Terrebonne National Estuary. The index helps policymakers, resource managers, and local stakeholders make informed decisions on public access and commercial fishing operations. The HAB Threat Index is based on algorithms of optically complex waters and has the potential to provide a framework for monitoring HABs in other bodies of water in Louisiana. ■



A blue heron sits on a tree in a swamp.
Photo by the Barataria-Terrebonne National Estuary Program

[4]Twohig-Bennett, C., & Jones, A. (2018). The health benefits of the great outdoors: A systematic review and meta-analysis of greenspace exposure and health outcomes. *Environmental research*, 166, 628–637. *https://doi.org/10.1016/j.envres.2018.06.030*

[5]White, S. S., & Birnbaum, L. S. (2009). An overview of the effects of dioxins and dioxin-like compounds on vertebrates, as documented in human and ecological epidemiology. Journal of environmental science and health, 27(4), 197–211. *https://doi.org/10.1080/10590500903310047*

Recreation

Paddling Dirickson Creek, a creek that drains to the Little Assawoman Bay. Photo by the Delaware Center for the Inland Bays

Estuaries provide a range of recreational opportunities in nature that support both physical and mental well-being. Recreation in estuaries can increase a person's connection to nature and may further reinforce interest in conservation and pro-environmental attitudes and behaviors[6]. Many of the NEPs' activities increase recreational use of the estuary or make it easier for people to access, enjoy, and benefit from these outdoor assets.

MARYLAND COASTAL BAYS PROGRAM (MARYLAND) *Kayak Launches*

Between 1954 to 1980, the location where the Ayers Creek kayak and canoe launch now stands was a municipal landfill with no public access points. The 37-acre launch site and the connected 4,000 acres of continuous forest in the Holly Grove Swamp area were inaccessible for public recreation. In 2012, Maryland Coastal Bays Program, with help from the Town of Ocean City Department of Public Works, State Highway Administration, Maryland Department of Natural Resources, dozens of volunteers, and the Maryland Conservation Corps restored the 37-acre site for recreational use and created a safe access point from Lewis Road to Ayer Creek. The site welcomes visitors for recreation throughout the year, allowing the public to explore and appreciate one of the last strongholds for forested wilderness in northern Worcester County. Additionally, Maryland Coastal Bays hosts annual events that further promote recreational and education opportunities, engendering greater community connection to the estuary. In 2022, Maryland Coastal Bays hosted an invasive species removal volunteer event at the Lewis Road Kayak Launch, an educational guided kayak on Ayers Creek, and a litter cleanup volunteer event. The Maryland Coastal Bays Program, along with its volunteers, continues to manage the site for invasive species removal and trail maintenance throughout the year.

IN 2022, 88 NEP HABITAT PROJECTS IMPROVED/ INCREASED EDUCATIONAL OR RECREATIONAL OPPORTUNITIES.

COASTAL BEND BAYS & ESTUARIES PROGRAM (TEXAS) Packery Flats Public Access Enhancements

Nestled on the backside of Mustang Island, adjacent to Packery Channel, the Packery Flats Coastal Habitat is a little-known gem with lots to offer in public access to coastal areas in the Texas Coastal Bend region. The 1,000-acre protected area boasts extensive intertidal habitats and bird watching, kayaking, fishing, and other recreational opportunities. Previous efforts by the Coastal Bend Bays & Estuaries Program and its partners include constructing parking lots for public access, conducting debris and trash cleanups, and installing interpretive signage at the site. Storm surge from recent hurricanes and increased popularity and usage of the area over time has led to a deterioration of the previously installed vehicular barrier (bollards) and cable system along with the nature trails, parking areas, and access roads, prompting the Coastal Bend Bays & Estuaries Program to prioritize additional improvements. In 2022, the program added over 120 tons of road base material to restore an access road and parking lot area; these improvements have allowed recreational users, such as birders and fishers, to continue accessing this popular site in a safe and responsible way. The program also replaced several missing or damaged portions of the bollards to keep vehicles out of sensitive habitats and installed signage to encourage visitors to be good stewards. The Coastal Bend Bays & Estuaries Program continues to prioritize this site with even more access improvements and cleanup events planned for 2023. ■

Children swim in Narragansett Bay, Rhode Island. Many estuaries are located near urban centers.

Photo by Ayla Fox for the Narragansett Bay Estuary Program

[6]DeVille, N. V., Tomasso, L. P., Stoddard, O. P., Wilt, G. E., Horton, T. H., Wolf, K. L., Brymer, E., Kahn, P. H., Jr, & James, P. (2021). Time Spent in Nature Is Associated with Increased Pro-Environmental Attitudes and Behaviors. International journal of environmental research and public health, 18(14), 7498. *https://doi.org/10.3390/ijerph18147498*

Environmental Justice

Eden Landing Ecological Reserve in San Francisco, California provides educational opportunities to the public, works with the local community to preserve the land, and hosts events to engage with locals. Photo by Natasha Daniels

Negative impacts from climate change, pollution, and other environmental health hazards disproportionately affect communities with environmental justice concerns. Further, these impacts are cumulative, and the benefits from the natural environment and processes are often unevenly distributed. NEPs provide benefits to communities with environmental justice concerns to address historical disparities. Examples of benefits include restoration and cleanup that mitigate health hazards, outdoor recreation opportunities that promote mental and physical health, and green infrastructure and other stormwater measures that bolster climate resilience.

The organizational structure of the NEPs involves working with partners in the Management Conference and seeking public feedback on CCMP priorities, making NEPs uniquely well-positioned to work with communities to address environmental justice and equity issues in a holistic, meaningful way.

THE BIPARTISAN INFRASTRUCTURE LAW PROVIDES $132 MILLION FOR THE NEPS FOR FISCAL YEARS 2022 THROUGH 2026.

This funding will enhance the capacity of the NEPs to implement projects that benefit historically disadvantaged communities. In 2022, NEPs engaged communities in planning for equitable benefits from their projects.

SARASOTA BAY ESTUARY PROGRAM (FLORIDA) *Wetland Restoration at FISH Preserve*

The Florida Institute for Salt Heritage (FISH) Preserve, 100-acres of wetland ecosystems in the Sarasota Bay Estuary, helps to support fisheries for Cortez, one of the few commercial fishing centers left in southwest Florida. The FISH Preserve experienced significant environmental degradation and habitat loss over time, largely due to illegal trash dumping and infestation by exotic vegetation. Sarasota Bay Estuary Program has helped restore small sections of the property by removing exotic vegetation, such as Brazilian pepper and Australian pine, and planting native species, which will contribute to the recovery of natural habitats. In addition to removing piles of refuse at the site, the Sarasota Bay Estuary Program and its stakeholders created saltwater wetlands in a 2-acre area by clearing Australian pines and other exotic trees. With funding made available through the Bipartisan Infrastructure Law, the Sarasota Bay Estuary Program and its consultants and contractors are working on the next stage of the project to build trails and bridges for connectivity and create or restore 15 acres of tidal creeks and saltwater wetlands. The establishment and maintenance of the FISH preserve has helped support one of the last true working waterfronts in the state of Florida. Ongoing restoration efforts will promote native species, provide a critical barrier from encroaching development, and accommodate expected rates of sea level rise over the next 30 years. These initiatives will help keep commercial fishing a vital activity in the Sarasota Bay region.

SAN FRANCISCO ESTUARY PARTNERSHIP (CALIFORNIA) *Water Needs Assessment*

The San Francisco Estuary Partnership, alongside 15 community outreach partners with environmental justice concerns and seven Tribes and Tribal organizations, developed the Regional Water Needs Assessment report. This five-year effort included hundreds of listening sessions, community meetings, workshops, and surveys with community and Tribal members to address historic and continuing racial, social, and Tribal injustices in water management. The effort also included a peer-to-peer needs assessment to highlight how people experiencing homelessness access water for drinking and hygiene. The completed Regional Water Needs Assessment provides findings related to water supply, water quality, flood protection, stormwater management, and habitat protection. The Needs Assessment report is intended to guide funding of future water and resiliency projects in communities with environmental justice concerns, with the expectation that community voices be elevated into the decision-making process of those projects. The report also includes insights into future engagement by public agencies from the community and Tribal partners. ■

Community Engagement and Education

The San Juan Bay Estuary Program shows EPA a biohut project, which uses artificial habitat structures to protect larvae and young fish from predators and encourages the colonization of native oysters and other benthic organisms. The project also provides an opportunity for aquatic habitat education, outreach, and environmental stewardship. Photo by César G.

Forty percent of the U.S. population live in estuary regions. The ways these communities interact with their surroundings has a significant, direct impact on the health of the nation's estuaries. Public and community engagement, outreach, and education are critical components of NEP programs to restore and protect these valuable resources. NEPs engage people in decision-making, education, and monitoring and restoration activities, furthering the positive feedback loop between people and estuaries.

BARNEGAT BAY PARTNERSHIP (NEW JERSEY) *Paddle for the Edge Shoreline Survey*

Barnegat Bay's shorelines are dynamic habitats with cycles of growth and erosion. Each shoreline is different, and erosion and accumulation are affected by physical forces, such as storm waves and boat wakes, as well as by the presence of mussel and plant species. Monitoring is needed to understand flooding and storm impacts, predict how shorelines may react to sea-level rise, identify potential restoration areas, and evaluate the recreational, habitat, and commercial value of the estuary. Paddle for the Edge is an annual data collection event driven by volunteer kayakers, canoeists, and stand-up paddleboarders. In 2022, the Barnegat Bay Partnership trained 95 volunteers to use a smartphone app to record information about shoreline conditions while kayaking, canoeing, and paddleboarding. The survey includes shoreline features and key biotic indicators, which help to assess conditions and identify what processes are impacting the bay's shorelines. Volunteers collected data at 1,009 locations and assessed 27 miles of shoreline. Since the annual event initiated in 2015, volunteers have paddled a total of 182 miles of shoreline and collected more than 9,144 data points. The survey supplies key data for understanding shoreline health and dynamics while also providing a recreational and community engagement opportunity. Paddle for the Edge data has been used to support grant applications to fund shoreline restoration projects. In 2023, Paddle for the Edge expanded into neighboring watersheds supported by other public and private environmental organizations in Atlantic and Cape May counties.

NEW YORK-NEW JERSEY HARBOR & ESTUARY PROGRAM (NEW YORK AND NEW JERSEY) *Marine Debris Cleanup*

After Superstorm Sandy, many derelict vessels remained abandoned in and around the New York-New Jersey Harbor. In 2022, with support from the National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program, the New York-New Jersey Harbor & Estuary Program partnered with Hudson Riverkeeper and the City of Hoboken, New Jersey, to remove 17 abandoned and derelict vessels from the Hudson River in Weehawken Cove and in the mid-Hudson. Removal eliminates the risk of potential release of harmful metals, chemicals, and plastics from abandoned vessels, improving habitat and recreation. The 24-month project also aimed to engage boaters and the public through an education campaign that discourages vessel abandonment and supports plans to establish a living shoreline in the Cove. Additionally, education efforts are expected to further prevent future marine debris, making the Hudson River a place where communities and wildlife can enjoy the waterways for years to come. ■

PRIMARY LEVERAGED FUNDS

In 2022, approximately

$12 MILLION, 6 PERCENT

of primarily leveraged funds, were invested in public education.

PUBLIC EDUCATION

Capacity, Funding, and Partnerships

High school students pull a seine net during an educational program at the James Farm Ecological Preserve, Ocean View, Delaware. Photo by the Delaware Center for Inland Bays

NEPs partner with public and private organizations to complete projects and leverage resources to help implement CCMPs. Effective partnerships are built by engaging, convening, supporting, and educating the public and private sectors. These partnerships are vital to protecting and restoring the water quality and ecological integrity of estuaries of national significance.

IN 2022, NEPS SUPPORTED EFFORTS TO SECURE ALMOST $3B IN ADDITIONAL RESOURCES FOR PROJECTS TO MONITOR, ASSESS, RESTORE, AND PROTECT THE HEALTH OF ESTUARIES.

NEPs work with partners to leverage additional resources beyond primary leveraged investments.

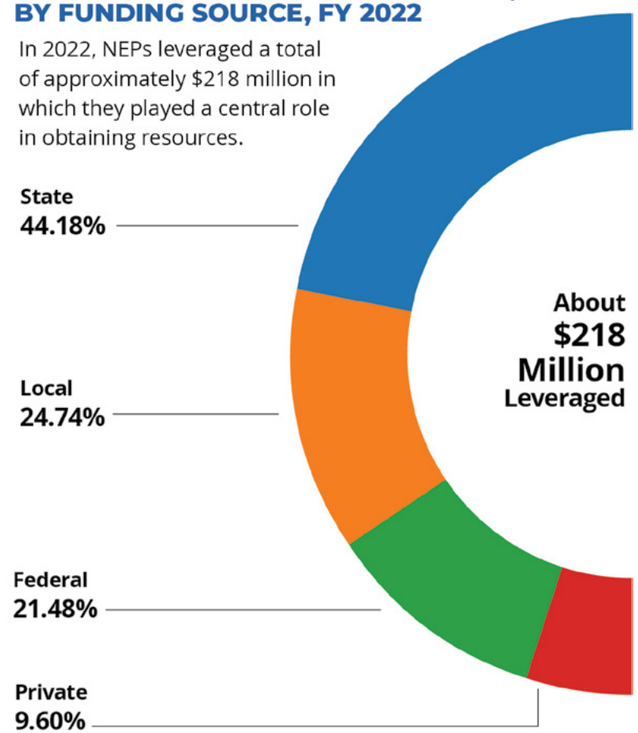
PRIMARY LEVERAGED FUNDS

In 2022, approximately
$22.8 MILLION, 10.5 PERCENT
of primary leveraged funds, were invested in administrative activities that build capacity, funding, and partnerships.

ADMINISTRATIVE ACTIVITIES

PRIMARY LEVERAGED INVESTMENTS, BY FUNDING SOURCE, FY 2022

In 2022, NEPs leveraged a total of approximately $218 million in which they played a central role in obtaining resources.



NEPs incorporate innovative strategies to leverage funds. These may include fundraising appeals, applying for public and private grants, and various tax revenues, as appropriate.

BUZZARDS BAY NATIONAL ESTUARY PROGRAM (MASSACHUSETTS)

Technical Assistance

The Buzzards Bay NEP provides technical assistance to municipalities and other partners to help meet the goals and objectives of the Buzzards Bay CCMP. This assistance includes performing watershed nitrogen loading analyses, mapping salt marsh loss, producing GIS data and maps, supporting grant proposal development, and reviewing local projects. During the past several years, a special focus of the Buzzards Bay NEP has been assisting municipalities to comply with their EPA stormwater permits. To address the most costly and daunting elements of stormwater permits, the Buzzards Bay NEP created the Buzzards Bay Stormwater Collaborative to assist with illicit discharge detection and elimination tasks, particularly field investigations, stormwater network mapping, and discharge monitoring. The Stormwater Collaborative consists of a partnership between the Buzzards Bay NEP, eight municipalities, and a state college, Massachusetts Maritime Academy. Under the

Capacity, Funding, and Partnerships

Aquaculture, like the oyster farms in Rehoboth Bay, Delaware, are a key player in creating healthier bays.
Photo by the Delaware Center for Inland Bays

Stormwater Collaborative, the Buzzards Bay NEP guides participants in stormwater infrastructure mapping, provides data management support, manages an online interactive map, and funds laboratory testing. In addition, the Buzzards Bay NEP provides funding to Massachusetts Maritime Academy to administer a program for students participating in the Buzzards Bay Stormwater Collaborative. The Massachusetts Maritime Academy's co-op and work-study students work directly with municipalities to conduct field investigations and collect stormwater samples. Municipalities fund students participating in the program. Municipalities also provide in-kind services through public works staff who participate in the investigations and provide access to infrastructure and traffic control where needed. By providing municipal staff support, many of the students participating in the Stormwater Collaborative meet the college's environmental degree requirements for co-op experience and develop practical skills for future career opportunities. The Stormwater Collaborative provides a cost-effective solution for municipalities managing their stormwater networks while creating educational and real-life experiences for college students. The Collaborative assists the Buzzard Bay NEP's efforts to meet communities' needs for localized stormwater infrastructure data and resources and supports efforts to protect and restore water quality and improve public health in the region.

SANTA MONICA BAY NATIONAL ESTUARY PROGRAM (CALIFORNIA) – Safe Clean Water Program

In November 2018, Los Angeles County voters approved the Safe Clean Water Program which provides up to $285 million a year in parcel tax revenue for green stormwater infrastructure projects and programs for all of Los Angeles County. The special parcel tax is 2.5 cents per square foot of impermeable surface area on private property in the Los Angeles County Flood Control District. The passage of this measure was an action in the Santa Monica Bay NEP CCMP, and several NEP partners are part of the committees that manage the Safe Clean Water Program. In 2022, the Santa Monica Bay NEP Governing Board recommended that the Los Angeles County Board of Supervisors approve seven green stormwater infrastructure projects and one microplastics scientific study totaling more than $18.9 million. The projects will enhance park space and habitat, increase shade and trees, reduce heat island effect, and reduce toxin loading to surface waters. Projects funded under the Safe Clean Water Program support the Santa Monica NEP's overarching goals to enhance socioeconomic benefits to the public, improve water availability and water quality, and to protect, enhance, and improve ecosystems in the Santa Monica Bay and its watershed. ■

Lighthouse in the Narragansett Bay.
Photo by Ayla Fox for the Narragansett Bay Estuary Program

Looking **Ahead**

Since its inception, the NEP has strived to improve the environmental and public health of estuaries and surrounding communities through collaboration with agencies, community organizations and nonprofits. This report highlights the growth, successes, and future opportunities of the 28 NEPs, such as:

- Reducing nutrient pollution, microplastics, and other emerging contaminants;
- Implementing strategies and mitigating climate risk for coastal communities and ecosystems;
- Increasing equity and accessibility across the program; and
- Fostering cross-organization collaboration and innovative funding.

Future opportunities are enhanced by the Bipartisan Infrastructure Law, which will distribute $900,000 in annual funding to each of the 28 locations during fiscal years 2022-2026. NEPs are working to advance equitable access to benefits of the new funding by developing and implementing equity strategies. The equity strategies describe each individual NEP's contribution to the program-wide goal of ensuring that at least 40 percent of benefits and investments from the Bipartisan Infrastructure Law funding flow to communities with environmental justice concerns. Cross-agency collaboration under Bipartisan Infrastructure Law funding provides opportunity for NEPs to work with other agencies and implement restorative infrastructure such as restoring fish passage for migratory species. NEPs will continue to use this funding to address critical water issues and land conservation needs of communities and ecosystems in these estuaries. This will include implementation of climate-risk prioritized projects focused on habitat restoration, nutrients and microplastics pollution reduction, and blue and green infrastructure.

In the ongoing effort to build the adaptive capacity of communities and ecosystems, the EPA is developing two versions of an educational module highlighting water equity challenges and opportunities in watershed management: *The Clean Water Act through an Environmental Justice Lens*. The practitioners' module outlines existing approaches and additional ideas for implementing equity into programs under the Clean Water Act at state, local, Tribal, and territory levels, as well as examples of existing approaches and methods for integrating environmental justice into water programs. The public audience module provides information about resources and opportunities for community members to advance environmental justice in water management. The modules will be part of the **EPA's Watershed Academy** which hosts materials promoting education and awareness of watershed management.

Looking toward the future, the NEPs will advance CCMP projects to restore and protect estuary resources, foster relationships with local communities and partners, listen to the needs of communities with environmental justice concerns, and strategize about how to assist coastal communities facing climate risk and sea-level rise impacts via innovative sustainable technologies and *partnerships*. Coordinating across government organizations at all levels and collaborating on priority challenges will remain a focus for NEPs and the EPA. The long history of the NEP demonstrates that collaboration and partnership are the cornerstones for achieving a sustainable future. ■

Volunteers constructing a Living Shorelines demonstration site in Brunswick, Maine.
Photo by the Greater Portland Council of Governments

Individual NEP 2022 **Accomplishments**

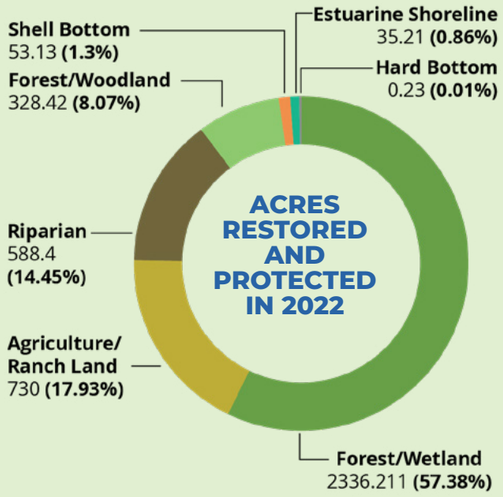
An osprey nest overlooking Rehoboth Bay in Dewey Beach, Delaware.

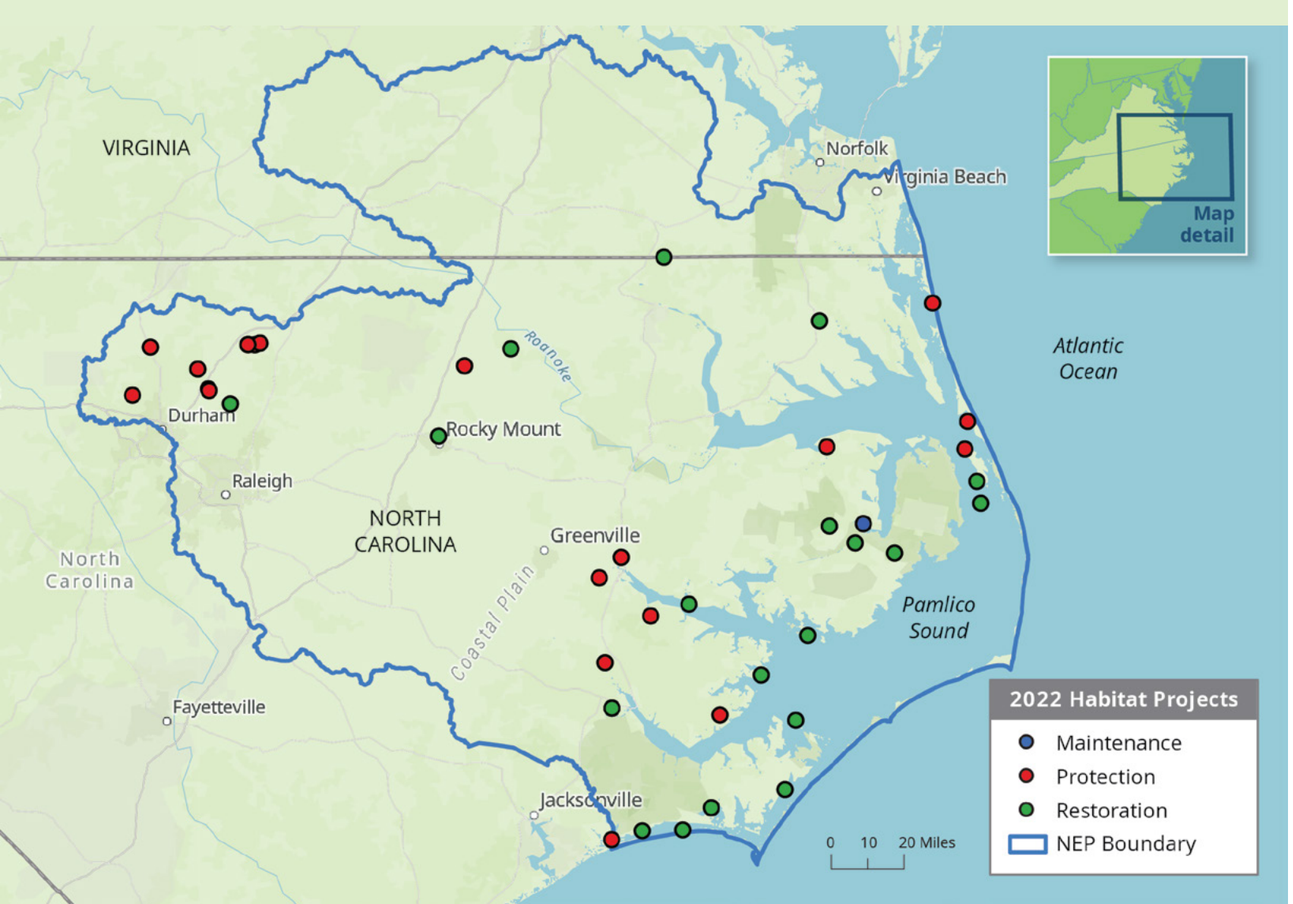
Photo by the Delaware Center for Inland Bays

Albemarle-Pamlico National Estuary Partnership

ABOUT THE AREA

The Albemarle-Pamlico Estuarine System includes approximately 28,000 square miles in six major river basins in northeastern North Carolina and southeastern Virginia that flow into a network of eight interconnected sounds flanked by the Outer Banks. Nearly 10,000 miles of streams and rivers carve the landscape and pour into an incredibly productive 2-million-acre estuary that is the second largest estuary system in the country. The region supports abundant plant and animal life and is home to nearly four million people. The coastal communities in the region are largely rural, with major population centers located in the upper reaches of each basin.





PROGRAM SUMMARY

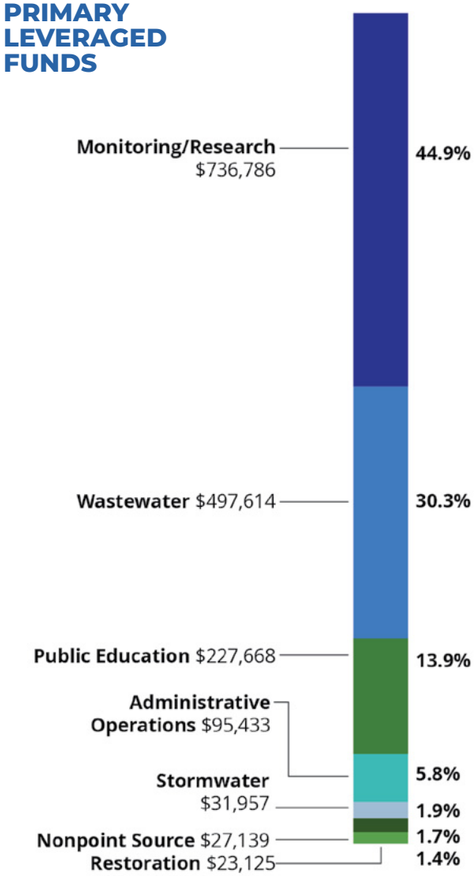
Over three decades, the Albemarle-Pamlico National Estuary Partnership (APNEP) has served as a neutral science-based regional convenor, bringing together agencies, organizations, universities, and citizens to protect and restore the estuary system for people and wildlife in North Carolina and Virginia. Through research, collaboration, and an ecosystem-based management approach, the APNEP CCMP identifies actions to identify, protect, and restore the significant resources of the region. Initiatives that APNEP leads or supports include:

- Research and economic studies;
- Measures to protect or restore ecosystems;
- Environmental monitoring programs;
- Projects that build community and ecosystem resilience; and
- Education and outreach efforts.

APNEP's comprehensive approach is designed to preserve the integrity of the entire estuarine ecosystem, with a special emphasis on improving water quality in the region's rivers and sounds. In 2022, APNEP:

- Conducted bi-seasonal aerial and boat-based seagrass surveys with partners to support implementation of the Integrated Monitoring Strategy.
- Developed a strategy with Tribal liaisons to include coastal plain Tribal communities in climate resilience and adaptation planning and identify best practices for agencies and resilience practitioners to engage with Tribal nations.
- Supported University of North Carolina research study to develop scientifically defensible water quality standards to protect seagrass and inform policy development through the NC Nutrient Criteria Development Plan and the NC Coastal Habitat Protection Plan. ■

PRIMARY LEVERAGED FUNDS



2022 HIGHLIGHTS

Implemented **41** habitat projects

Funded watershed education initiatives that engaged **20** teachers and over **350** students in outdoor learning

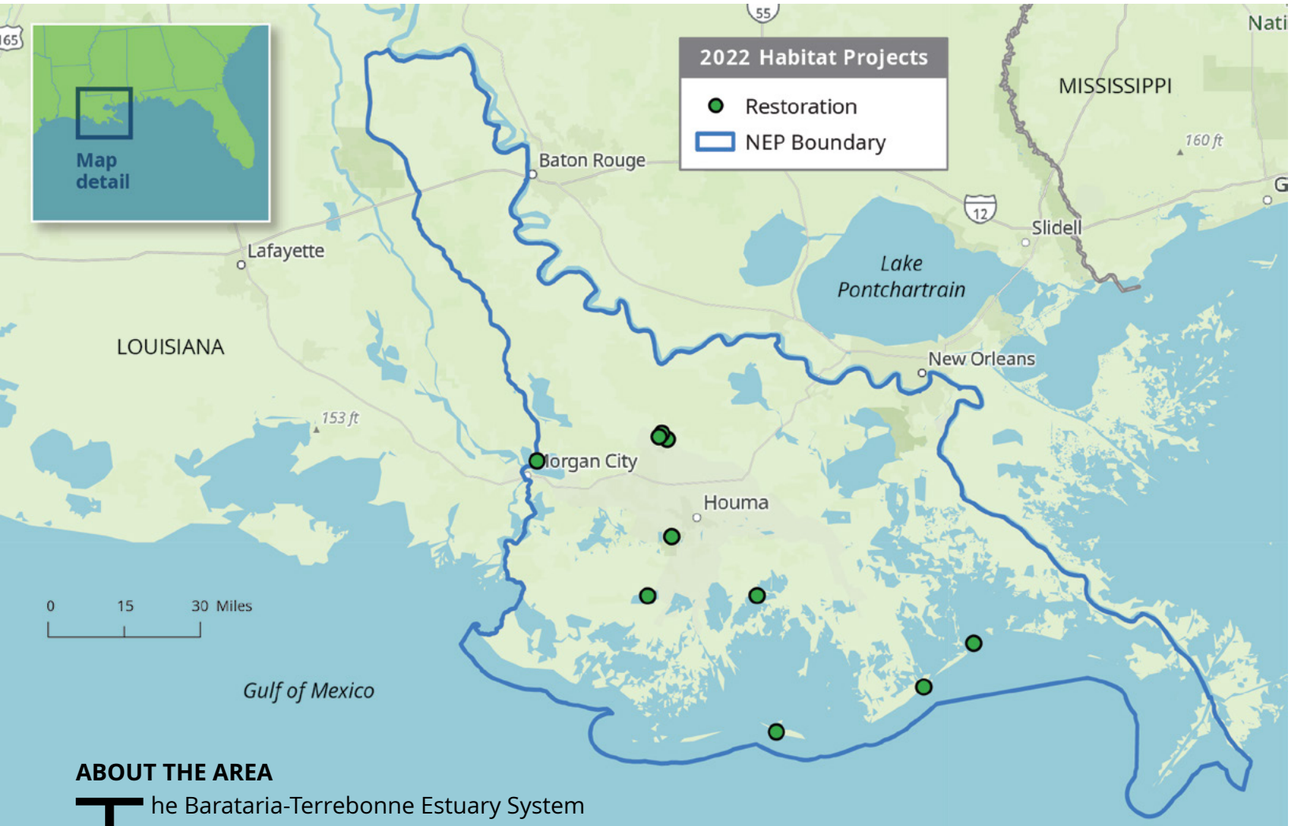
TOP 3 HABITAT PROJECT BENEFITS IN 2022

1. Improve or protect water quality
2. Protect or preserve open space
3. Protect, improve, and provide habitat for wildlife

TOP 3 PROJECT AREAS

1. Monitoring and research
2. Habitat protection
3. Community engagement

Barataria-Terrebonne National Estuary Program



ABOUT THE AREA

The Barataria-Terrebonne Estuary System encompasses 4.1 million acres of upland forests, swamps, marshes, bayous, bays, and barrier islands. It is located between the Atchafalaya River and the Mississippi River in southern Louisiana.

White crane catching food in Louisiana.

Photo by the Barataria-Terrebonne National Estuary Program

2022 HIGHLIGHTS

- Restored **1,498** acres of beaches, dunes and marshes
- Created **473** acres of intermediate marsh using sediment dredged from nearby lake
- Enhanced **68.36** acres of bird habitats via installation and maintenance of nest boxes
- Planted **two** acres of pollinator habitat

PROGRAM SUMMARY

The Barataria-Terrebonne National Estuary Program (BTNEP) is a partnership of government, business, scientists, conservation organizations, agricultural interests, and individuals for the preservation, protection, and restoration of the Barataria-Terrebonne National Estuary. BTNEP's Action Plans cover four main categories:

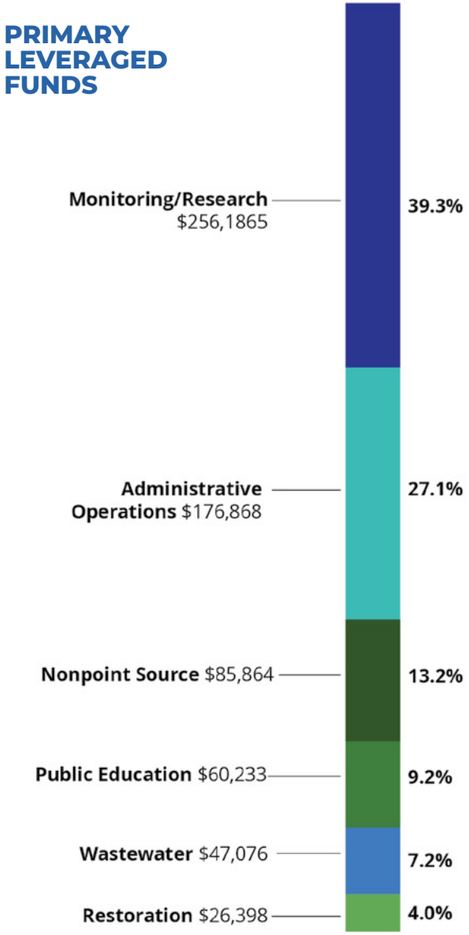
- Coordinated Planning and Implementation;
- Ecological Management;
- Sustained Recognition; and
- Citizen Involvement.

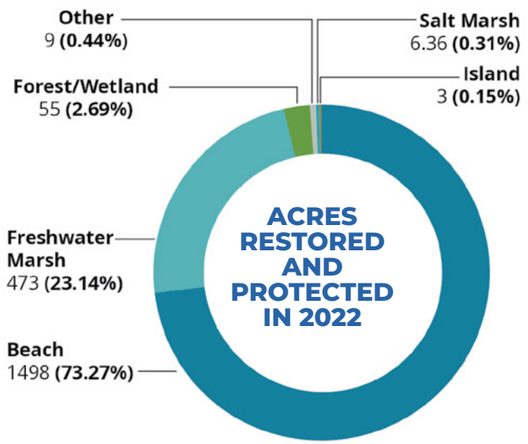
BTNEP identified seven priority issues, including hydrologic modification and species decline, that fall under the Ecological Management Action Plan. Addressing these issues is essential to preventing further degradation of the habitats, ecosystem, and cultural heritage unique to the estuary system. Hydrologic modifications, such as channelization and the building of levees and roadways in service of human uses and activities, have significantly reduced and damaged Louisiana's historically vast wetlands. This damage increased the threat of community flooding and loss of habitat in the estuary. In 2022, BTNEP completed the West Grand Terre Beach Nourishment and Stabilization Project, which addressed reductions in storm surge protection and increases in shoreline erosion. The project also increased island longevity by constructing rock barriers to protect the newly restored marsh and native biological resources from wave impacts and storm surge. This effort restored approximately 251 acres of beach and dune and 147 acres of back-barrier marsh on the island. BTNEP will continue to restore and protect the ecological integrity of the estuary and preserve its natural resources for the benefit of future generations. ■

TOP 3 HABITAT PROJECT BENEFITS IN 2022

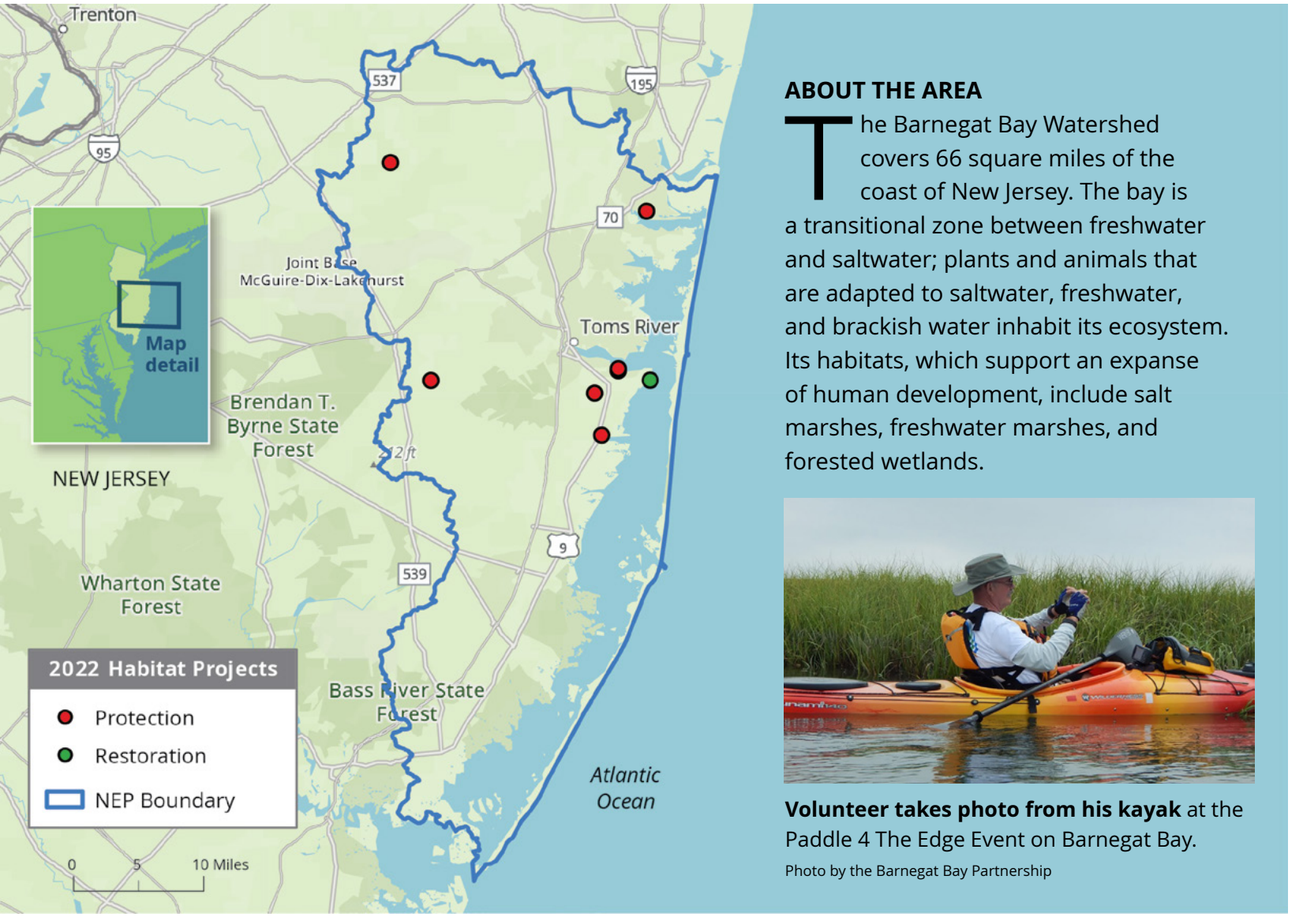
1. Protect, improve, and provide habitat for birds
2. Protect, improve, and provide habitat for other wildlife
3. Climate change adaptation and resilience

PRIMARY LEVERAGED FUNDS





Barnegat Bay Partnership

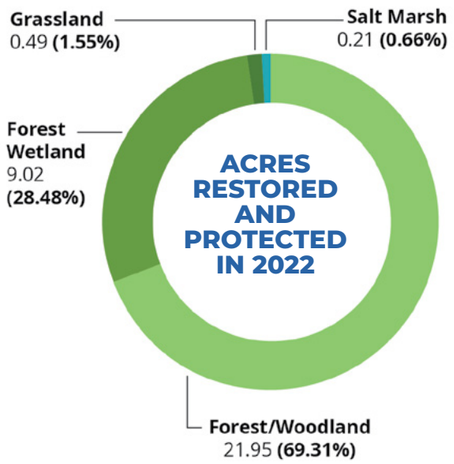


ABOUT THE AREA

The Barnegat Bay Watershed covers 66 square miles of the coast of New Jersey. The bay is a transitional zone between freshwater and saltwater; plants and animals that are adapted to saltwater, freshwater, and brackish water inhabit its ecosystem. Its habitats, which support an expanse of human development, include salt marshes, freshwater marshes, and forested wetlands.

Volunteer takes photo from his kayak at the Paddle 4 The Edge Event on Barnegat Bay.

Photo by the Barnegat Bay Partnership



2022 HIGHLIGHTS

- Convened over **60** people at the annual community science project "Paddle for the Edge"
- Assessed **five** islands and created preliminary restoration/enhancement designs, which helped to acquire external restoration funds

TOP 3 HABITAT PROJECT BENEFITS IN 2022

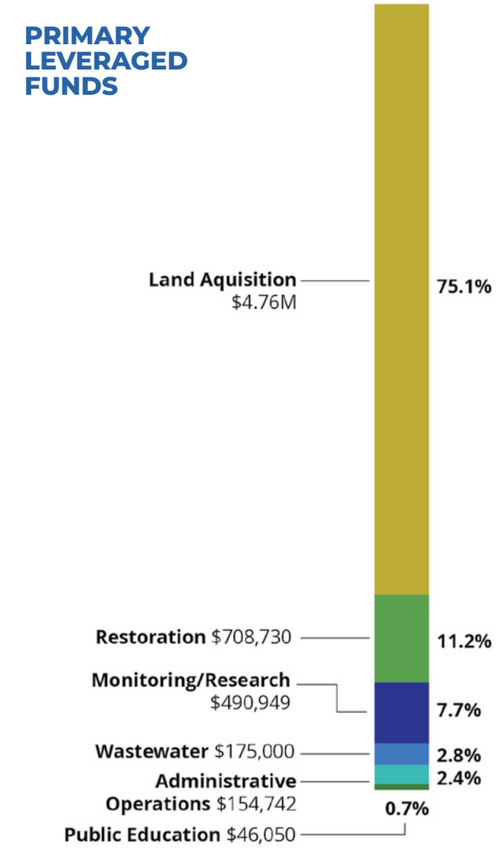
1. Protect or preserve open space
2. Protect, improve, and provide habitat for birds
3. Improve or protect water quality

PROGRAM SUMMARY

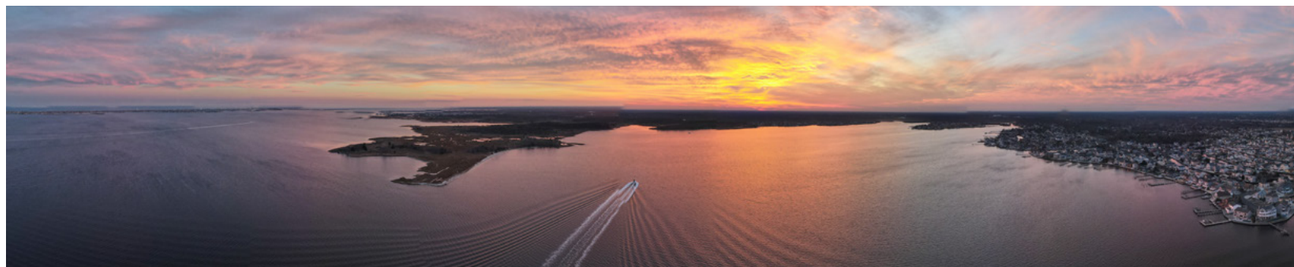
The Barnegat Bay Partnership (BBP) is a partnership of federal, state, municipal, academic, business, and private organizations working together to restore, protect, and enhance the natural resources of New Jersey's Barnegat Bay ecosystem for future generations. The BBP's community-developed plan identified four main areas for action:

- Water Quality;
- Water Supply;
- Living Resources; and
- Land Use.

The BBP directly supported many actions in the New Jersey Department of Environmental Protection's (NJDEP) Ten-Point Plan (e.g., comprehensive water quality monitoring network) and the subsequent Barnegat Bay Restoration, Enhancement, and Protection Strategy. The BBP coordinated a Model Evaluation Group to review the NJDEP's integrated hydrodynamic water quality model for the bay, which provided the foundation for the nutrient total maximum daily load (TMDL), soon to be released to the public. The bay's wetlands, submerged aquatic vegetation beds, riparian buffers, and fisheries remain especially vulnerable. The BBP worked with many partners to monitor and assess the bay's critical habitats and acquire significant public and private funding to restore wetlands. The BBP is focused on land use due to the impact rapid land development and population increase have on the bay's landscape, ecological services, and living resources. The BBP aims to identify and promote holistic and collaborative approaches to land-use planning, especially practices that will improve soil function and enhance water quality and quantity. The BBP worked with community and industry partners to promote best management practices and improve various fisheries, including for finfish and shellfish. The BBP will continue to collaborate with its partners to reach their vision of a clean and healthy ecosystem, which supports thriving populations of native vegetation and wildlife and is accessible for educational and recreational activities. ■



Barnegat Bay, New Jersey at sunset.

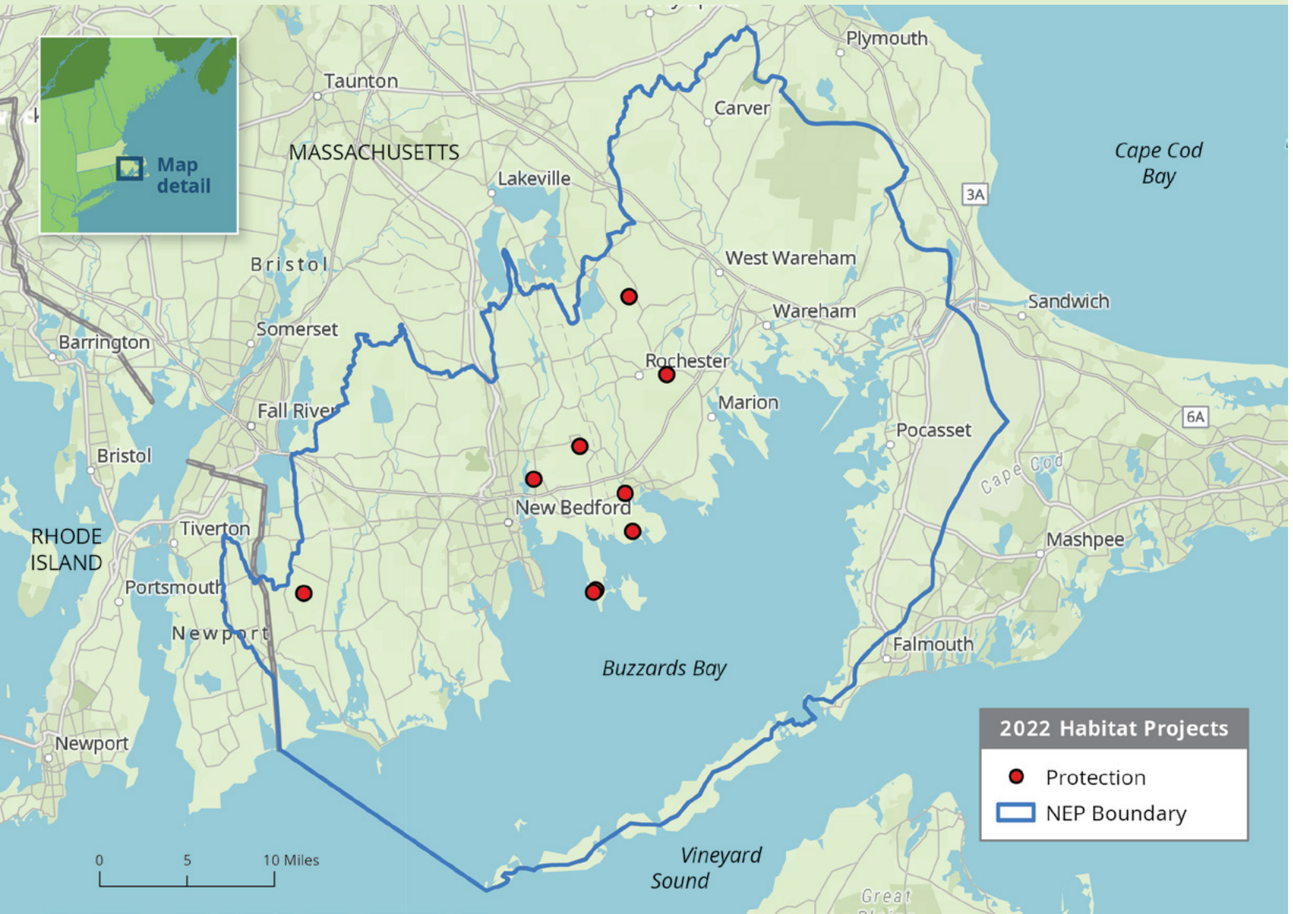


Buzzards Bay National Estuary Program

ABOUT THE AREA

The 280 square-mile Buzzards Bay is located between the western most part of Cape Cod, Southeastern Massachusetts, and the Elizabeth Islands. The surrounding watershed covers 434 square miles and includes all or portions of 17 municipalities. The 280-mile coastline includes 11 miles of public beaches that lure thousands of residents and tourists. The watershed and bay are characterized by a variety of habitats including forests, wetlands, salt marshes, tidal streams, eelgrass beds, tidal flats, barrier beaches, rocky shores and varied subtidal habitats. Buzzards Bay's watershed has a diverse landscape, providing a source of recreational enjoyment through boating, swimming, fishing, waterfowl hunting, hiking, and nature appreciation in all seasons. Coastal tourism and recreation activities bring millions of dollars into local economies.

Industrial coastline along Buzzards Bay in New Bedford, Massachusetts.



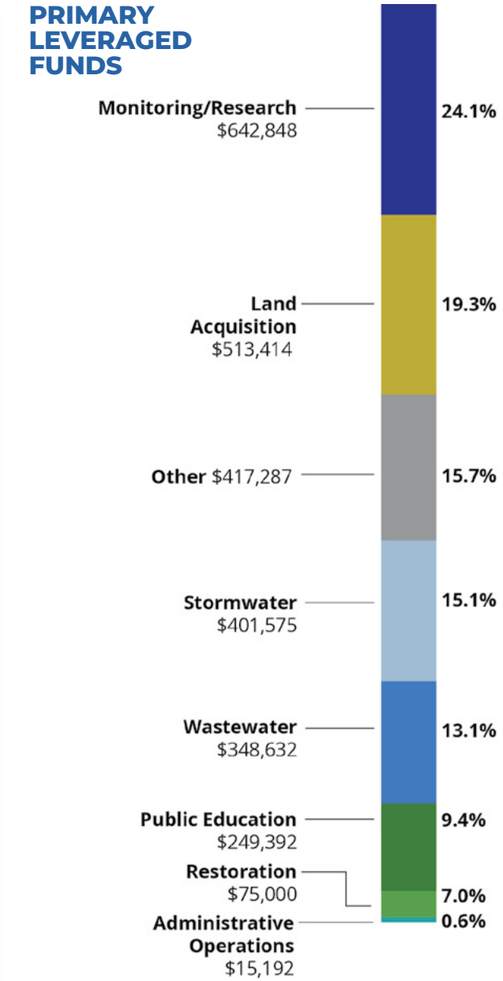
PROGRAM SUMMARY

The Buzzards Bay National Estuary Program is hosted by the Massachusetts Office of Coastal Zone Management. Buzzards Bay NEP's CCMP was one of the country's first coastal watershed plans, and one of the first to have a strong focus on nonpoint source pollution and the cumulative impacts of development on water quality and living resources. Last updated in 2013, the CCMP is a comprehensive action plan that follows the core values of the previous version with the addition of new areas of concern, such as freshwater pollution and the impact of nitrogen in the bay. Impairments to water quality and living resources from excessive nitrogen in Buzzards Bay, such as the loss of eelgrass and shellfish beds caused by low oxygen concentrations, are among the bay's most pressing issues. The Buzzards Bay NEP collaborates with and supports the Buzzards Bay Coalition and scientists from Woods Hole Oceanographic Institution to monitor the health of Buzzards Bay and develop needed total maximum daily loads (TMDLs). On a weekly basis, Coalition volunteers take samples around the bay to monitor dissolved oxygen, temperature, salinity, and water clarity. Nutrient sampling is conducted four times a year. The Buzzards Bay NEP provides Section 320 funds to support this monitoring program. The monitoring program helps protect the health of the bay by providing a baseline to assess management needs, identify impaired waters requiring TMDLs, measure the effectiveness of actions taken, and determine next steps. Other long term monitoring programs supported by the NEP include river monitoring to track nitrogen loading and tracking the loss of Buzzards Bay salt marshes. ■

TOP 3 PROJECT BENEFITS

1. Improve or protect water quantity
2. Protect or preserve open space
3. Protect, improve, and provide habitat for wildlife

PRIMARY LEVERAGED FUNDS



2022 HIGHLIGHTS

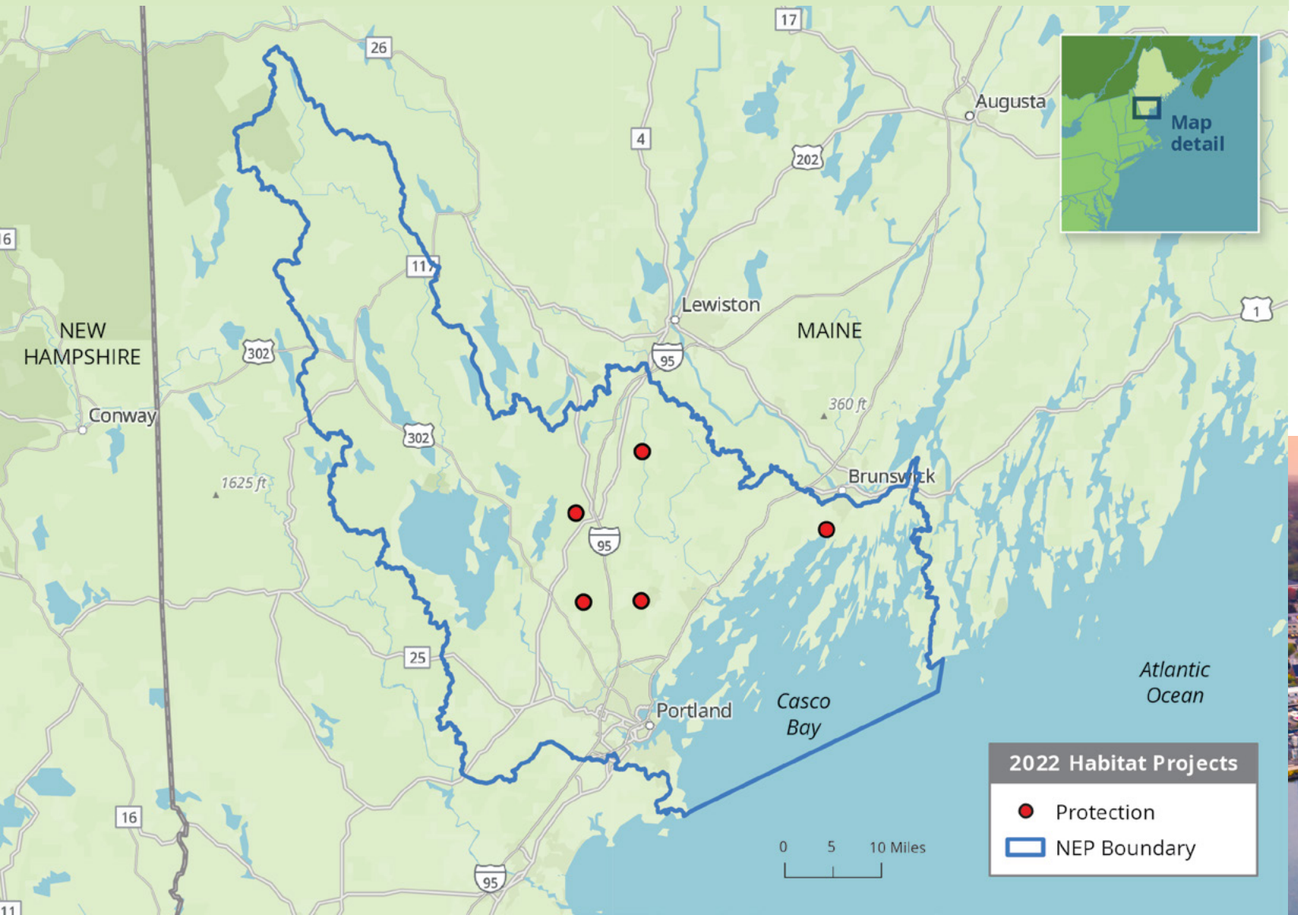
- Leveraged **$2,663,343** in primary funds
- Restored or protected **160.7** acres of habitat
- Provided scholarships to a marine science program for **40** minority or economically-disadvantaged students
- Hosted **five** climate change risk and adaptation meetings with key stakeholders
- Protected, with partners, over **160** acres of undeveloped land including a retired cranberry bog that will be restored to a wetland

Casco Bay Estuary Partnership

ABOUT THE AREA

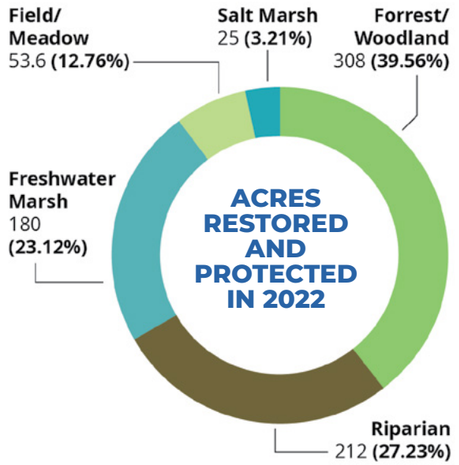
Located in southern Maine, the Casco Bay watershed encompasses 985 square miles. The bay boasts an estimated 785 islands, islets, and exposed ledges and more than 600 miles of shoreline. The bay has historically been a source for human industrialism and supported industries such as shipyards, tanneries, and textile factories.

A mother harbor seal and its pup sunbathe in Casco Bay, Maine.



2022 HIGHLIGHTS

- Protected **778** acres of habitat, including more than **300** acres of forest and **200** acres of wetland
- Engaged six towns in climate resilience planning leading to **$161,400** in grant funding from Maine
- Leveraged **$5,809,750** in primary funds
- Supported monitoring of:
  - Water quality at **40** freshwater and **26** marine sites
  - Marine invasive species at **11** locations
  - Changes at **four** tidal marshes



PROGRAM SUMMARY

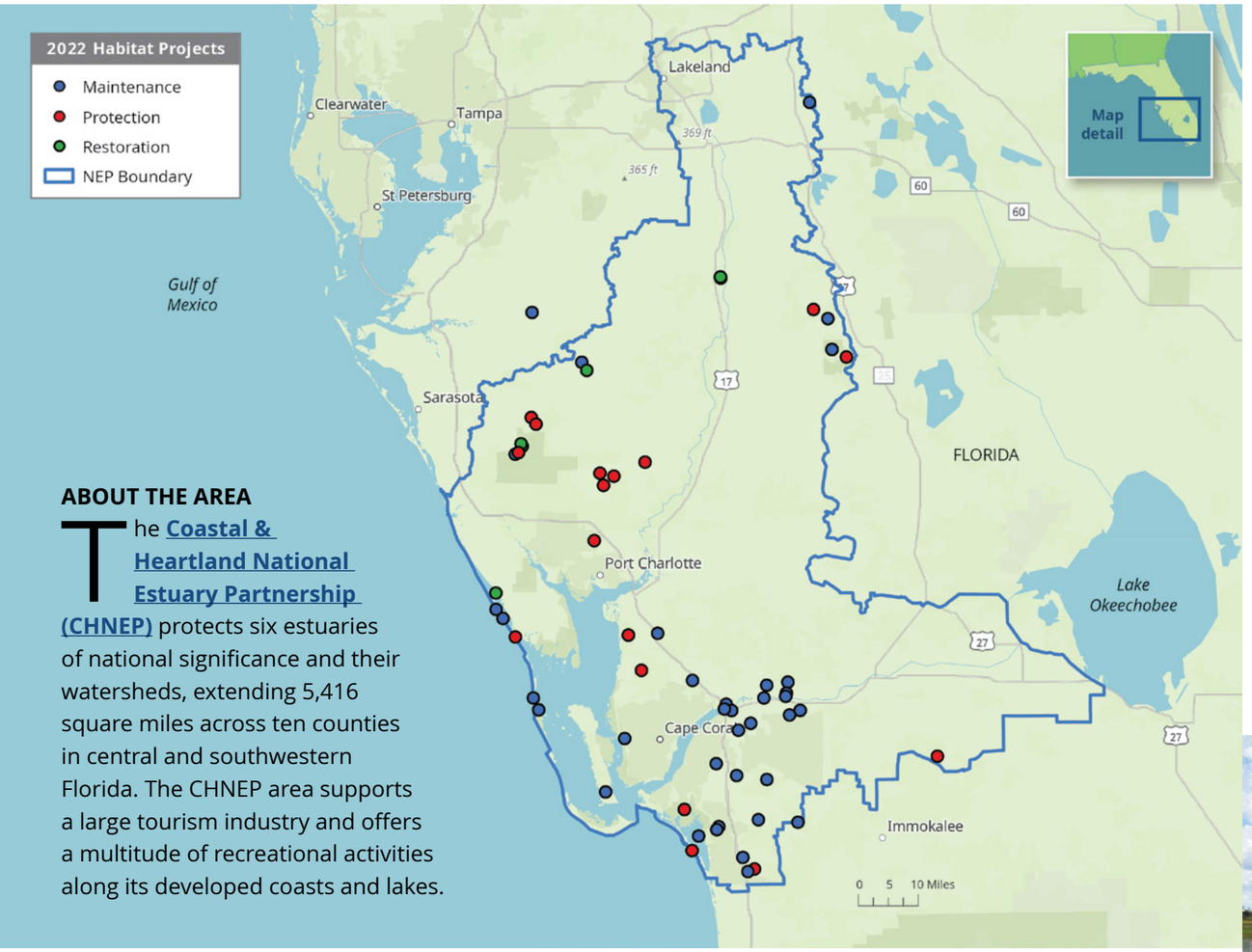
Casco Bay Estuary Partnership (CBEP) is a collaborative effort of people and organizations working to protect and restore the bay. CBEP's partners include local, state, and federal government organizations; nonprofits; local businesses; citizens; universities; and others. Their shared mission is to help conserve the ecological integrity of Casco Bay and its watershed through science, public stewardship, and effective management. The Casco Bay region comprises 4.4 percent of the land area of the state of Maine but hosts 25 percent of the state's population, 33 percent of all jobs, and almost 40 percent of economic activity. Growing human activity threatens aquatic habitats and puts water quality at risk. A changing climate poses economic, social, and infrastructure challenges for coastal and inland communities dependent on tourism and fisheries for local livelihoods. CBEP's CCMP focuses on four priority goals:

- Protecting and restoring habitat;
- Improving water quality;
- Fostering resilient communities; and
- Mobilizing collective knowledge and resources to support the bay and its communities.

CBEP's priority projects work to counter cumulative impacts of human activity as well as buffer the effects of climate change on people and the bay. ■

South Portland's urban shoreline and the Casco Bay Bridge, Maine.

Coastal & Heartland National Estuary Partnership



ABOUT THE AREA

The Coastal & Heartland National Estuary Partnership (CHNEP) protects six estuaries of national significance and their watersheds, extending 5,416 square miles across ten counties in central and southwestern Florida. The CHNEP area supports a large tourism industry and offers a multitude of recreational activities along its developed coasts and lakes.

2022 HIGHLIGHTS

- Protected and restored **53,535.71** acres of habitat
- Developed an **80,000**-acre hydrological restoration model and plan in Lower Charlotte Harbor Flatwoods
- Collected water quality samples from **720** monitoring locations
- Reported **6,041** individual subscribers for CHNEP educational publications
- Treated **24** acres of invasive plants and planted **14,821** native plants at Myakka Headwaters Preserve

TOP 3 HABITAT PROJECT BENEFITS IN 2022

1. Protect water supply recharge and flood storage areas
2. Protect and improve water quality
3. Protect natural resource-based economies including tourism, outdoor recreation, etc.

PROGRAM SUMMARY

The CHNEP is a partnership comprised of members, supporters, and volunteers who work to improve water quality, hydrology, and fish and wildlife habitat in central and southwestern Florida. Additionally, the Partnership works to educate and engage the public to assist in the protection of these natural resources. Habitats in the CHNEP area include dry scrubs, pine flatwoods, wetlands, mangroves, and salt marshes.

The CHNEP created the Habitat Restoration Needs Plan which identifies preservation and conservation opportunities for further habitat protection. One such opportunity is a 538-acre property located in Sarasota County that was publicly purchased by the county for conserving pine flatwoods, wet prairie, and marsh habitats. CHNEP's mission is to unite Central and Southwest Florida to protect water and wildlife. ■

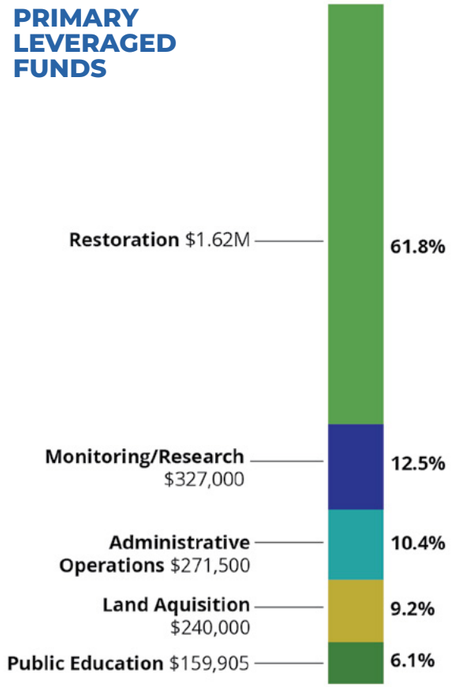
The Charlotte Harbor Flatwoods Initiative works to restore wetlands and tidal creeks within the Charlotte Harbor Watershed in Florida.

Photo provided by the Coastal & Heartland National Estuary Program

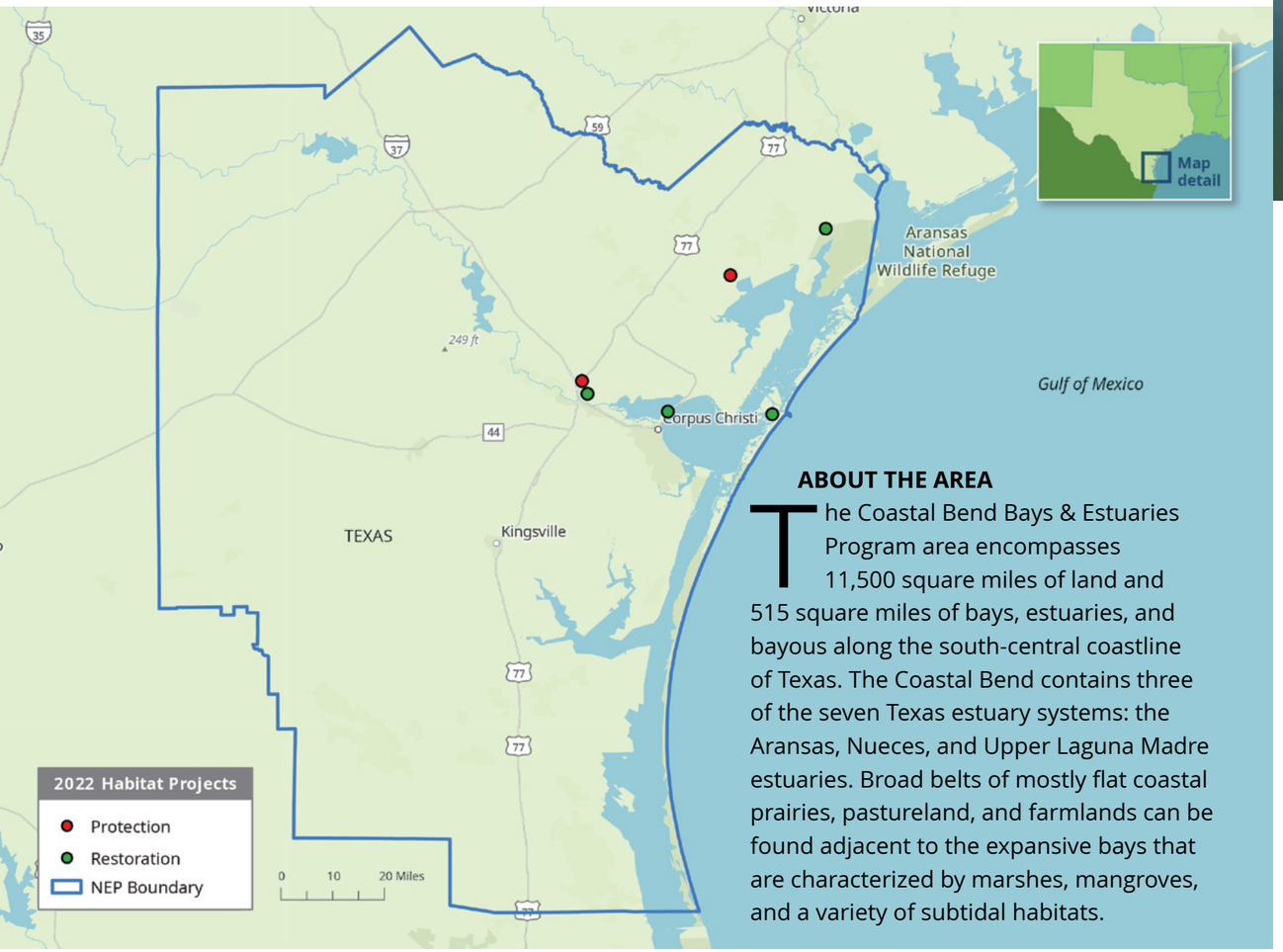
CHNEP staff member takes a water quality sample off the side of a boat in the Charlotte Harbor in Florida.

Photo by the Coastal & Heartland National Estuary Program

PRIMARY LEVERAGED FUNDS



The Coastal Bend Bays & Estuaries Program



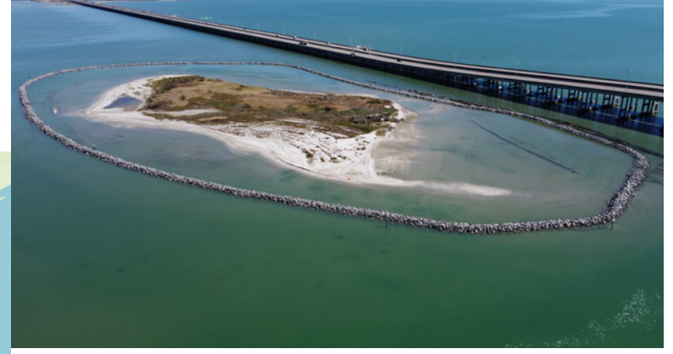
ABOUT THE AREA

The Coastal Bend Bays & Estuaries Program area encompasses 11,500 square miles of land and 515 square miles of bays, estuaries, and bayous along the south-central coastline of Texas. The Coastal Bend contains three of the seven Texas estuary systems: the Aransas, Nueces, and Upper Laguna Madre estuaries. Broad belts of mostly flat coastal prairies, pastureland, and farmlands can be found adjacent to the expansive bays that are characterized by marshes, mangroves, and a variety of subtidal habitats.

A black skimmer colony on a bird nesting island.
Photo by the Coastal Bend Bays & Estuaries Program

2022 HIGHLIGHTS

- Restored **7** acres of bird nesting habitat
- Protected **377** acres of coastal marsh, tidal flat and thorn scrub habitat
- Leveraged **$5,194,970** in primary funds
- Restored or protected ***1,722*** acres of habitat
- Removed **1,337** acres of invasive vegetation in coastal grasses and grasslands

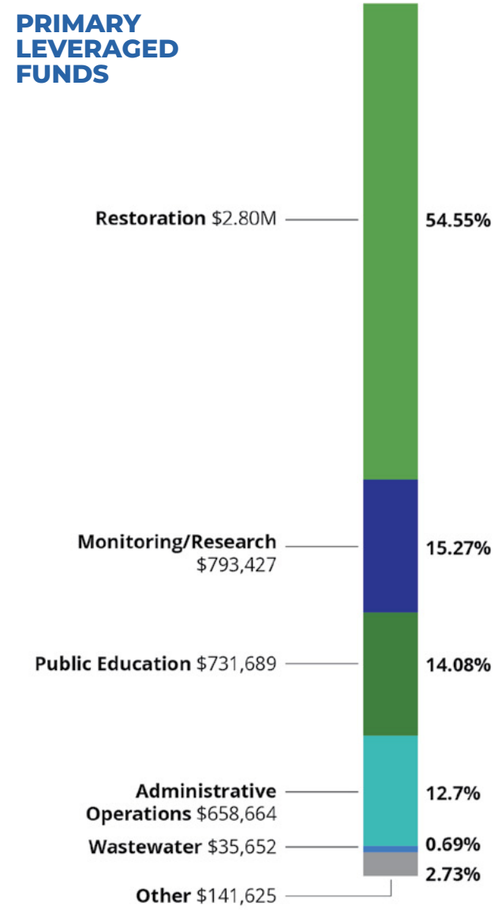


An island in Nueces Bay in Texas. A rock breakwater protects the island from erosion and provides nesting habitat for coastal waterbirds
Photo by the Coastal Bend and Bays & Estuaries Program

PROGRAM SUMMARY

The **Coastal Bend Bays & Estuaries Program** (CBBEP) mission is to protect and restore the health and productivity of the bays and estuaries while supporting continued economic growth and public use of the bays in South Texas. The Coastal Bend Bays Plan has served as a regional framework for the management, protection, and conservation of Coastal Bend bays and estuaries for over 20 years. Updated in 2020, the Plan includes a detailed, yet flexible, regional framework for action that partners in industry, local government, academia, and resource management can use to align their resources and programs to voluntarily participate in Bays Plan implementation. With the help of numerous partners, the CBBEP restored thousands of acres of marsh habitat, funded dozens of projects designed to improve water quality, and installed infrastructure to enhance public access opportunities. In addition to implementing projects that address priority issues like water quality, habitat restoration, and nature tourism, CBBEP created programs to conserve and restore coastal birds and their habitats, conduct environmental education programs, and acquire coastal habitats for the purposes of conservation. In 2022, CBBEP completed the protection and restoration of Causeway Bird Island, an important rookery island located in Nueces Bay. Causeway Bird Island supports thousands of nesting waterbirds but has suffered from erosion for many years due to exposure to wind and waves. CBBEP installed a segmented rock breakwater around the entire island that will provide protection for the existing 7-acre island, while also allowing for future expansion to approximately 17 acres over time, formed naturally and through beneficial use of dredge material. Once material is placed inside the breakwater structures, the available nesting area will more than double, giving the birds additional safe area to raise their young. ■

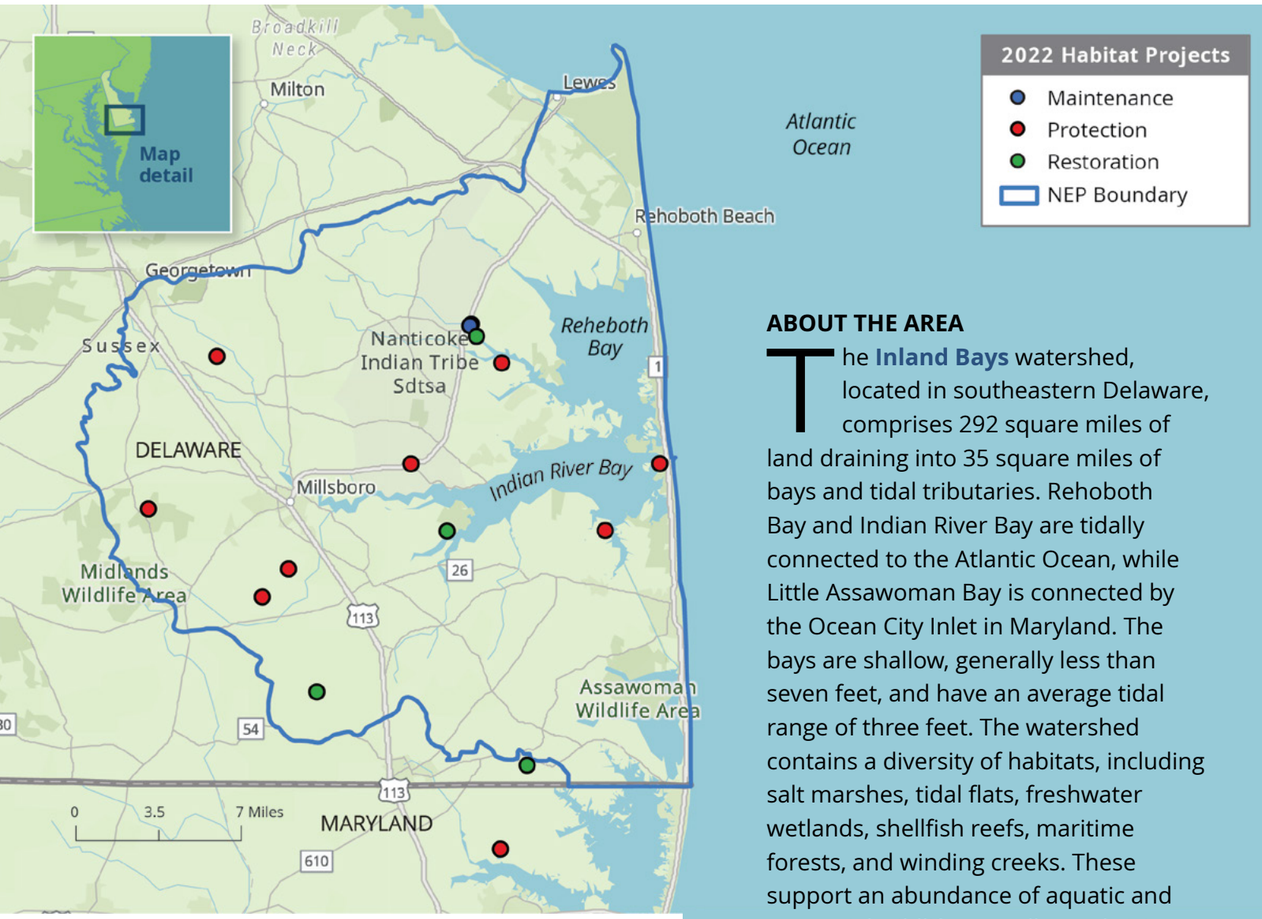
PRIMARY LEVERAGED FUNDS



TOP 3 HABITAT PROJECT BENEFITS IN 2022

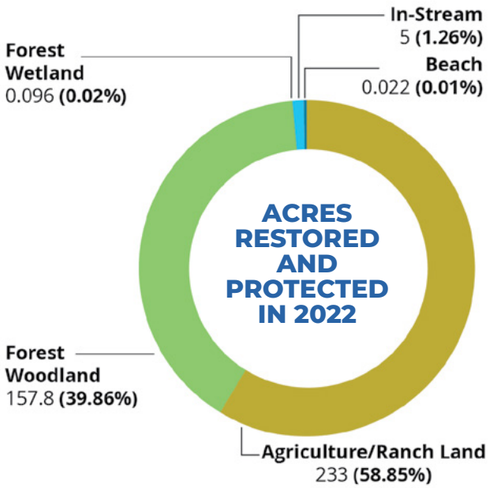
1. Protect, improve, and provide habitat for birds
2. Protect, improve, and provide habitat for wildlife
3. Climate change adaptation and resilience

Delaware Center for the Inland Bays



ABOUT THE AREA

The **Inland Bays** watershed, located in southeastern Delaware, comprises 292 square miles of land draining into 35 square miles of bays and tidal tributaries. Rehoboth Bay and Indian River Bay are tidally connected to the Atlantic Ocean, while Little Assawoman Bay is connected by the Ocean City Inlet in Maryland. The bays are shallow, generally less than seven feet, and have an average tidal range of three feet. The watershed contains a diversity of habitats, including salt marshes, tidal flats, freshwater wetlands, shellfish reefs, maritime forests, and winding creeks. These support an abundance of aquatic and terrestrial wildlife, as well as a thriving community and economy.



Students search intertidal flats of the Indian River Bay for bay creatures at the James Farm Ecological Reserve, Delaware.

Photo by the Delaware Center for Inland Bays

The CIB staff and volunteers pull in a seine net during one of the Center's annual Shorezone Fish and Blue Crab surveys that takes place at 16 sites across the region's three bays, Delaware. Photo by the Delaware Center for Inland Bays

PROGRAM SUMMARY

The Delaware Center for the Inland Bays (CIB) brings together partners from federal, state, and local agencies; nonprofits; higher education; and the community to preserve, protect, and restore Delaware's Inland Bays and their watershed. The CIB's CCMP guides this collaborative partnership and is organized into focus areas that cover:

- Living with a Changing Climate;
- Coordinated Land and Water Use Management;
- Managing Living Resources and their Habitat; and
- Clean Waters.

The CIB identified eutrophication and habitat loss as critical issues due to urbanization and agricultural activities, which have caused the bays to become highly enriched with nutrients, resulting in algae blooms. To address these issues, the CIB's CCMP has enacted action plans with objectives to reduce the amounts of nutrients, sediments, and other contaminants entering waterways from runoff. Currently, the CIB is collaborating with partner organizations to reforest land throughout the watershed, which reduces nutrient pollution runoff and improves wildlife habitat. Since 2015, the CIB and its partners have reforested almost 240 acres. ■

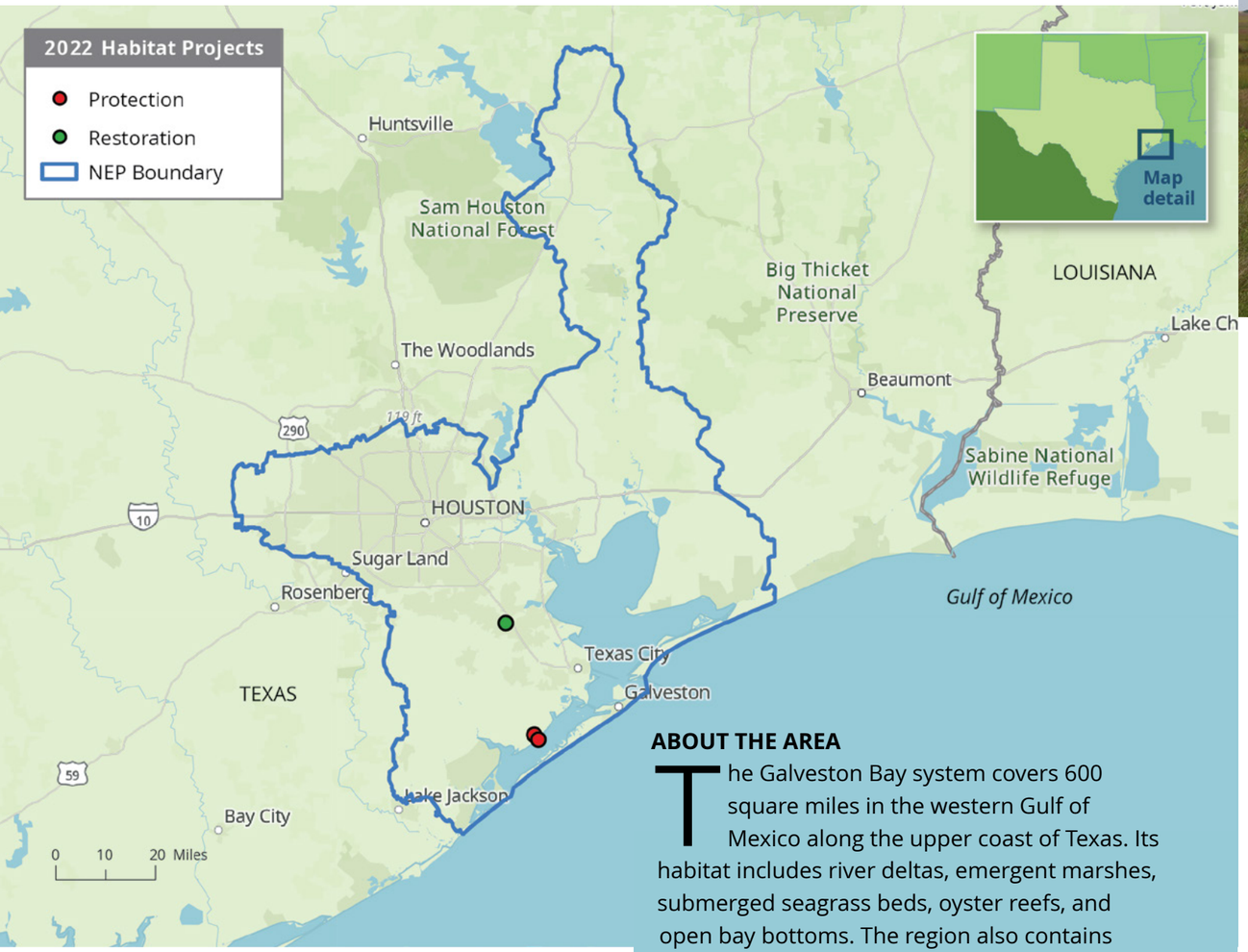
2022 HIGHLIGHTS

- Implemented **15** habitat projects totaling **395.9** acres restored or protected
- Diverted **3,000 - 4,000** bushels of oyster shells from landfills for an enhancement project
- Enhanced **4,200** square feet of tidal wetlands
- Educated over **600** students at the James Farm Ecological Preserve
- Planted over **35,000** trees
- Leveraged **$127,660** in primary funds

TOP HABITAT PROJECT BENEFITS IN 2022

1. Protect or preserve open space
2. Protect, improve, and provide habitat for birds and other wildlife

Galveston Bay Estuary Program

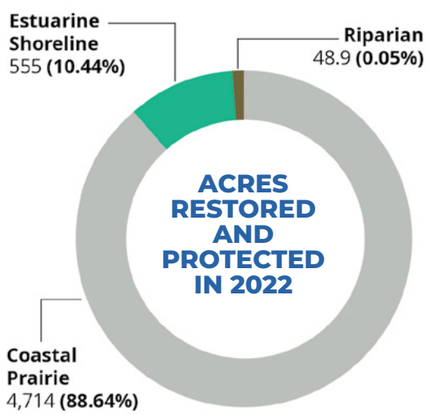


ABOUT THE AREA

The Galveston Bay system covers 600 square miles in the western Gulf of Mexico along the upper coast of Texas. Its habitat includes river deltas, emergent marshes, submerged seagrass beds, oyster reefs, and open bay bottoms. The region also contains large urban centers such as Houston, located within 50 miles of the bay.

An alligator rests in a freshwater marsh in Galveston Bay, Texas.

Photo by the Galveston Bay Estuary Program



The Chocolate Bay Preserve covers 4,714 acres of protected coastal habitat along Galveston Bay. GBEP provided financial support for land acquisition. Photo by the Galveston Bay Estuary Program

PROGRAM SUMMARY

Galveston Bay Estuary Program (GBEP), one of two estuary programs in Texas, works to provide comprehensive ecosystem management through collaborative partnerships with state, federal, and local agencies to ensure the preservation of the bay's multiple uses through outreach and project implementation. GBEP works to support an ecosystem-based approach by establishing four research focus areas:

- Ensure Safe Human and Aquatic Life Use;
- Protect and Sustain Living Resources;
- Engage Communities; and
- Inform Science-Based Decision-Making.

The GBEP's top priorities are protecting and sustaining habitat and living resources. Bays depend on high-functioning habitats to support abundant and diverse wildlife and plant communities. In 2017, GBEP's **indicators** identified critical habitats of Galveston Bay as threatened, including freshwater wetlands, submerged aquatic vegetation, oyster beds, and salt flats. GBEP, in collaboration with partners, is enhancing existing habitats to increase overall function and productivity. They are submitting grant proposals for multiple funding opportunities for adaptive enhancement projects in identified areas of degraded coastal habitat. Within 10 years of project implementation, 5,000 acres of lost or degraded coastal habitats will be healthy and functioning. ■

TOP 3 HABITAT PROJECT BENEFITS IN 2022

1. Protect, improve, and provide habitat for birds, fish, shellfish, and other wildlife
2. Protect or preserve open space
3. Improve or protect water quality

2022 HIGHLIGHTS

Restored or protected **5,317.9** acres of habitat

Engaged **2,589 v**olunteers to collect **74.98** tons of trash at the 28th annual Trash Bash

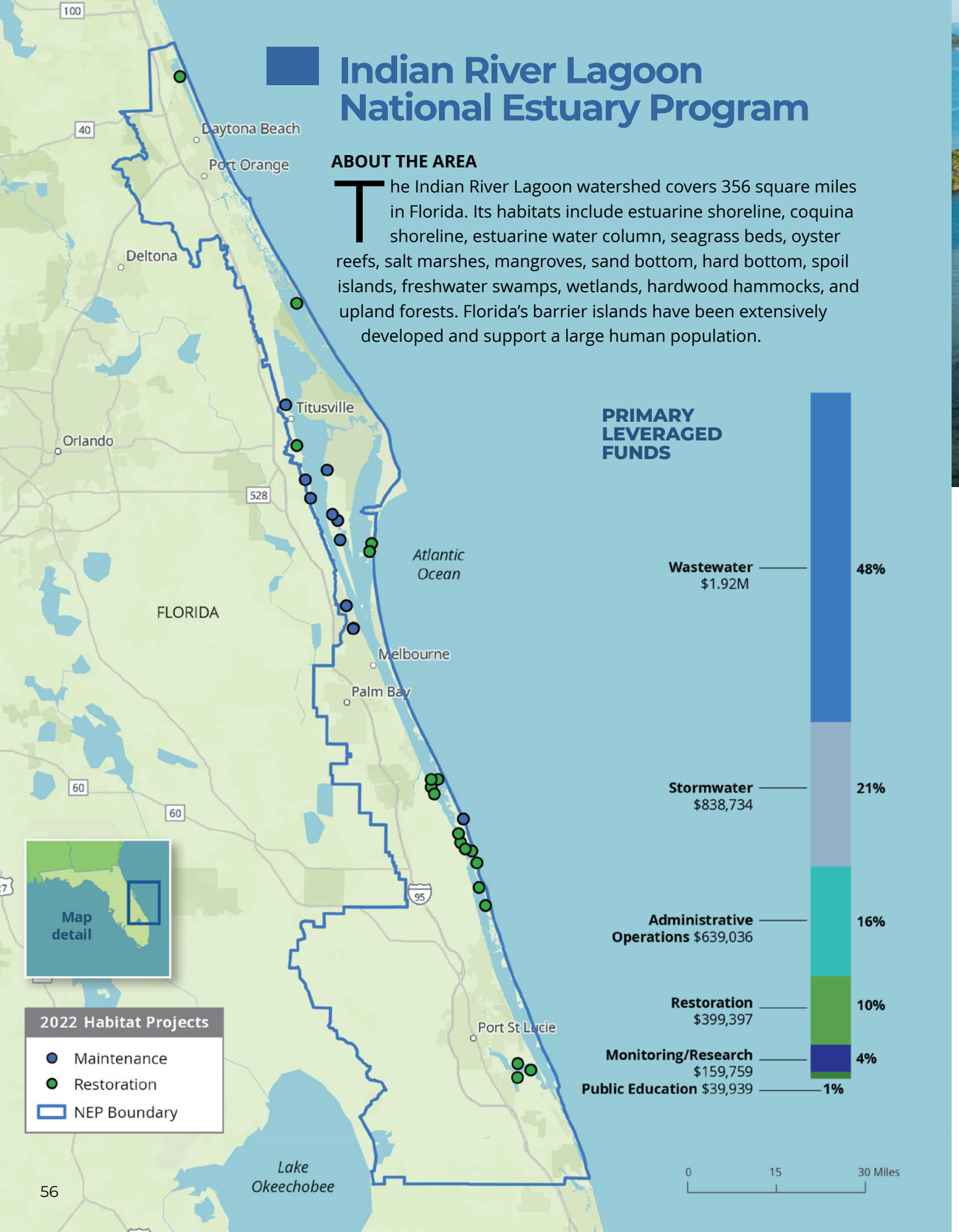
Conserved **5,269** acres of coastal habitat along Halls Bayou and West Galveston Bay to be named The Chocolate Bay Preserve

Removed **49** acres of invasive woody overstory and vining species from forested riparian habitat and planted 35 native wetland plants

Indian River Lagoon National Estuary Program

ABOUT THE AREA

The Indian River Lagoon watershed covers 356 square miles in Florida. Its habitats include estuarine shoreline, coquina shoreline, estuarine water column, seagrass beds, oyster reefs, salt marshes, mangroves, sand bottom, hard bottom, spoil islands, freshwater swamps, wetlands, hardwood hammocks, and upland forests. Florida's barrier islands have been extensively developed and support a large human population.



The Indian River Lagoon and the Sebastian Inlet, a popular area for recreational activities like fishing and surfing.

PROGRAM SUMMARY

Indian River Lagoon National Estuary Program (IRLNEP) works to attain and maintain sufficient water and sediment quality to support a healthy lagoon ecosystem. The IRLNEP achieves this goal through science-based decision-making, community engagement, and regional collaboration among stakeholders. The IRLNEP:

- Works closely with its local, state, and federal partners to coordinate interagency activities and priorities;
- Seeks to identify and secure long-term funding for prioritized projects and programs; and
- Aligns its decision-making processes and recommended actions with the CCMP and full engagement of the IRLNEP Management Conference.

Expanded community engagement is a high priority for the IRLNEP, with special emphasis on the needs of underserved communities. Activities of the IRLNEP integrate actions across four focus areas:

- Environmental Quality;
- Economic Value;
- Climate Preparedness; and
- Green Infrastructure.

The IRLNEP is currently promoting behavior changes among residents and tourists that foster a Lagoon-Friendly™ culture and brand for the watershed. All activities and actions of the program align with the One Lagoon, One Community, One Voice™ mission. ■

2022 HIGHLIGHTS

Implemented **33** habitat projects

Restored or protected **121.4** acres of habitat

TOP 3 HABITAT PROJECT BENEFITS IN 2022

1. Improve or protect water quality
2. Protect, improve, and provide habitat for other wildlife
3. Climate change adaptation and resilience

Long Island Sound Study

ABOUT THE AREA

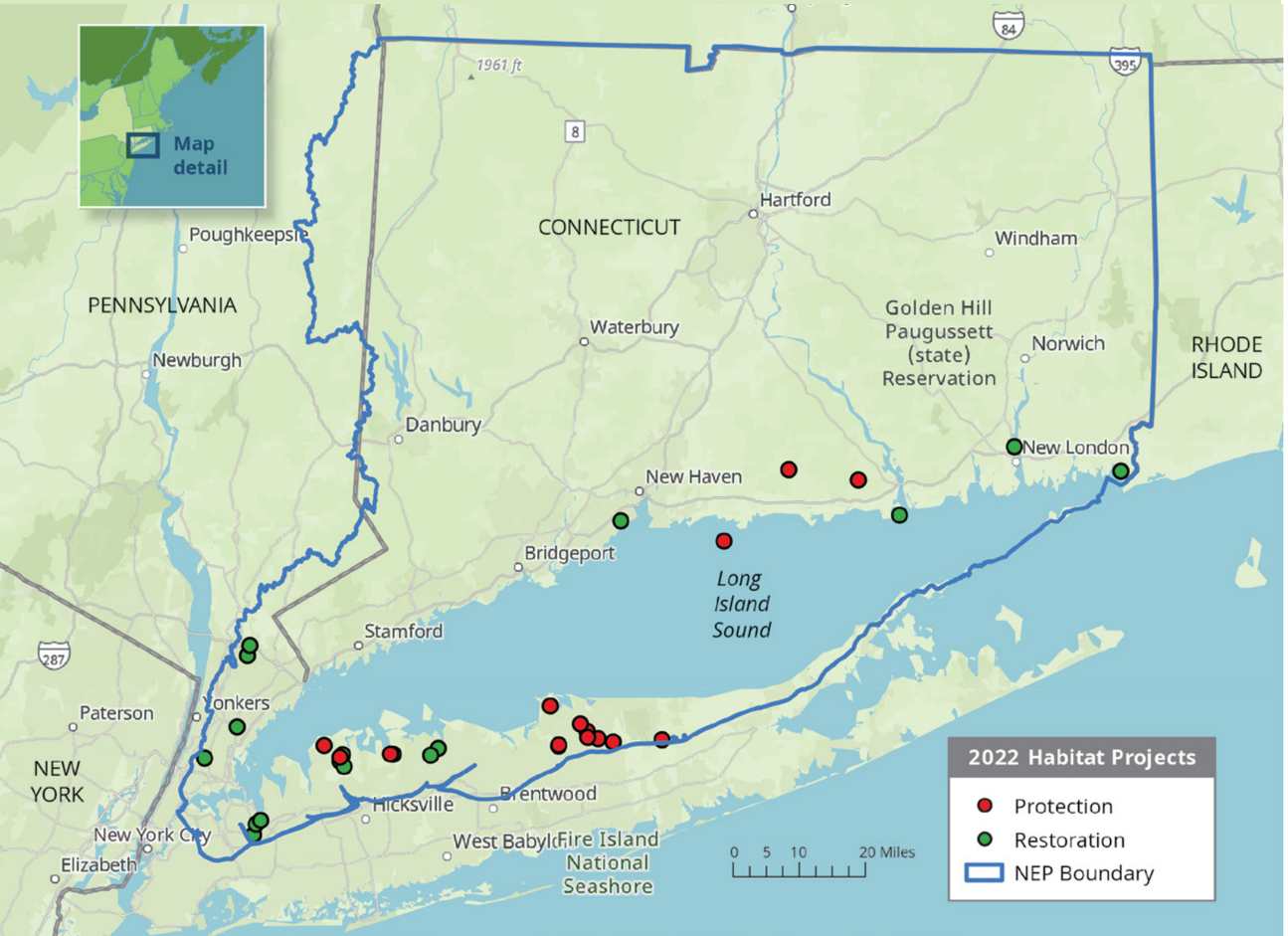
The Long Island Sound watershed covers more than 16,000 square miles in six states and encompasses hundreds of local watersheds. In addition to wildlife, the region contains coastal communities that are home to about four million people.

PROGRAM SUMMARY

Long Island Sound Study (LISS) is a cooperative effort involving researchers, regulators, and other concerned organizations and individuals to protect and improve the health of the sound. LISS carries out all work with four primary goals, specifically to: improve water quality; restore and protect the sound's ecological balance as a healthy and productive state; support informed and engaged communities; and manage LISS using adaptive and inclusive cross-jurisdictional governance. The four focus areas of the CCMP are:

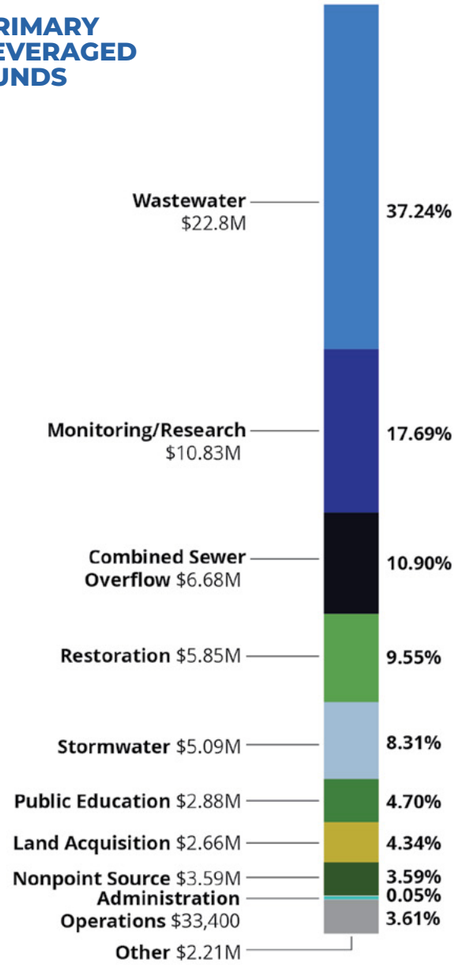
- Clean Waters and Healthy Watersheds;
- Thriving Habitats and Abundant Wildlife;
- Sustainable and Resilient Communities; and
- Sound Science and Inclusive Management.

Scientific understanding through research, assessment, and monitoring is inherent to effective management. LISS also adopted three integrative principles—resiliency to climate change, long-term sustainability, and environmental justice —which are used throughout LISS's organization and during implementation of LISS programs. ■



Coastal wetlands are one of the 12 distinct coastal habitats found in the Long Island Sound.

PRIMARY LEVERAGED FUNDS



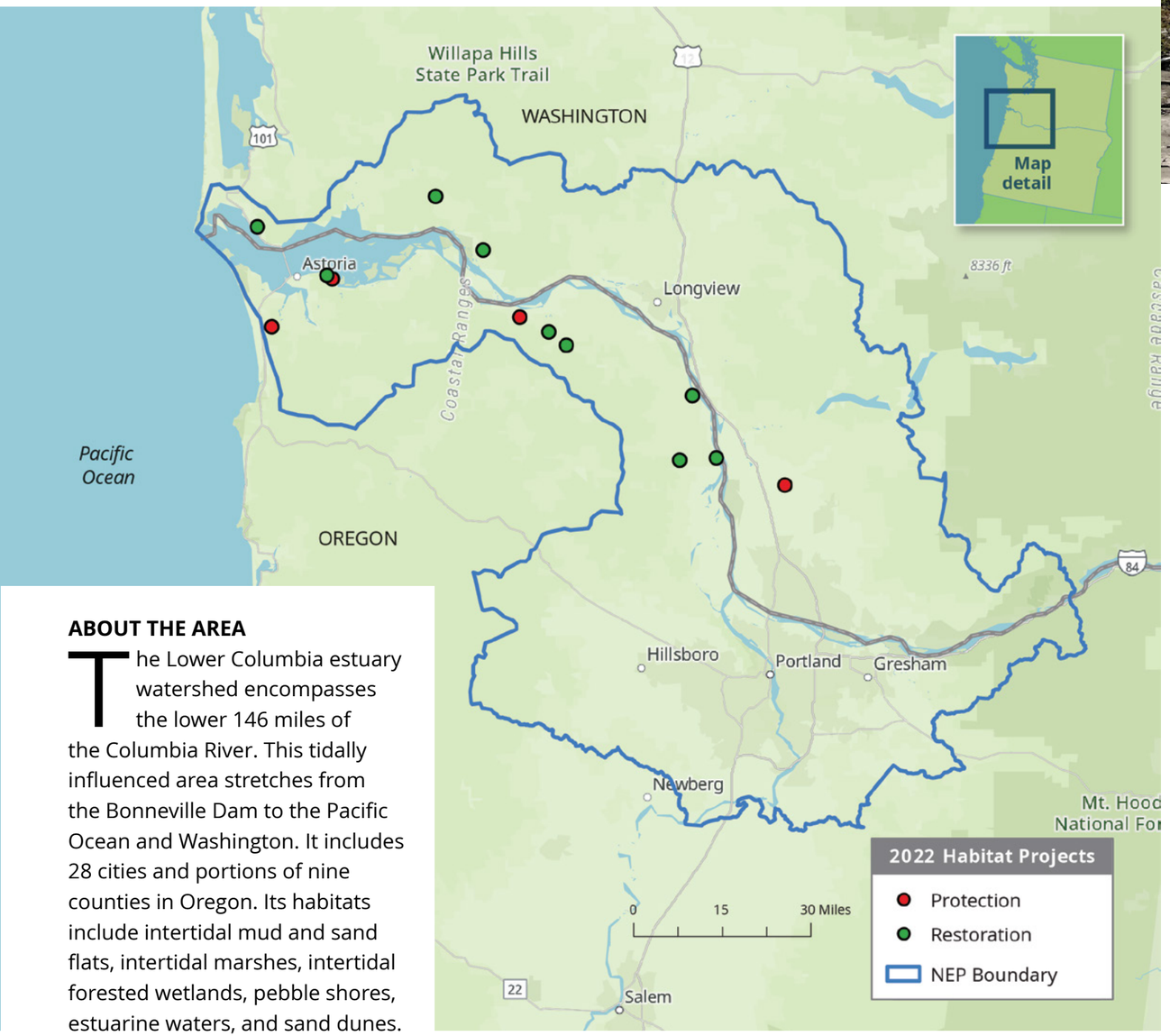
2022 HIGHLIGHTS

- Leveraged **$61,222,517** in primary funds
- Restored or protected **524.2** acres of habitat
- Protected **433** acres of forests and woodlands
- Restored **50** acres of tidal flow structure
- Removed **37** acres of invasive vegetation

TOP 3 PROJECT BENEFITS

1. Protect, improve, and provide habitat for wildlife
2. Improve or protect water quality
3. Support sustainable and resilient communities

Lower Columbia Estuary Partnership



ABOUT THE AREA

The Lower Columbia estuary watershed encompasses the lower 146 miles of the Columbia River. This tidally influenced area stretches from the Bonneville Dam to the Pacific Ocean and Washington. It includes 28 cities and portions of nine counties in Oregon. Its habitats include intertidal mud and sand flats, intertidal marshes, intertidal forested wetlands, pebble shores, estuarine waters, and sand dunes.

2022 HIGHLIGHTS

- Implemented **13** habitat projects
- Restored or protected **3,488.5** acres of habitat
- Leveraged **$8,515,775** in primary funds
- Restored **25** acres of salt marsh
- Protected **2,551** acres of forest and woodland
- Rehabilitated **1.5** acres of stream channels

A restoration project removed over two miles of a levee and an elevated canal to reconnect Gibbons Creek to its floodplain and the Columbia River in WA.

Photo by the Lower Columbia Estuary Partnership

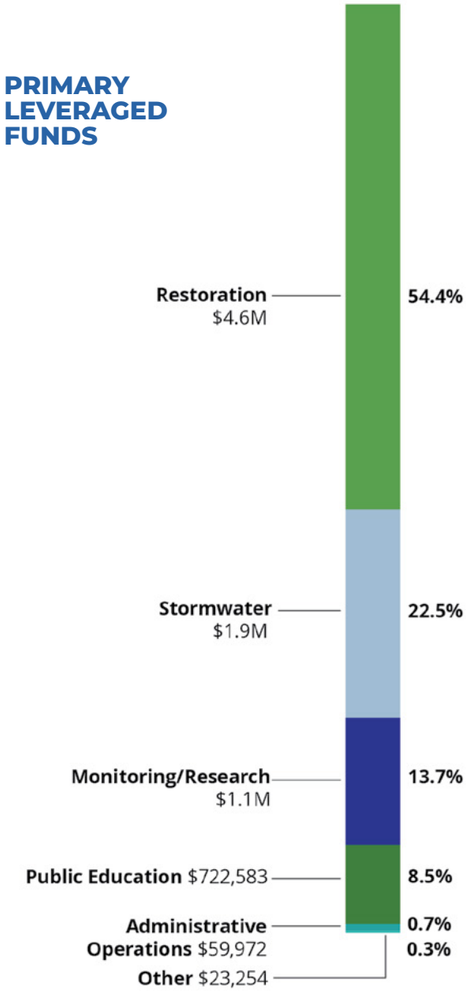
PROGRAM SUMMARY

Lower Columbia Estuary Partnership has worked to restore and protect the Lower Columbia River since 1995. The goals of the Partnership include restoring habitat, advancing science, educating students, and building regional achievements. The five action areas of the CCMP are:

- Habitat Restoration;
- Land Use Practices;
- Water Quality and Contaminant Reduction;
- Education and Stewardship; and
- Regional Coordination and Synchronicity.

Human population growth in the Portland-Vancouver metropolitan area has increased demands on the lower Columbia River and estuary. The activities of urban life cause runoff, erosion, sedimentation, and pollution that impair water quality and habitat; the situation will only get more dire in the next century. The results of habitat loss and degradation in the lower Columbia estuary are evident through Endangered Species Act listings, the decline of the local salmon fishing industry, and the economic challenges of addressing contaminated materials in the environment. The Partnership's mission is to restore ecological functions and to increase survival for multiple species, while improving the overall health of the ecosystem. By achieving its recovery goals – no net loss of native habitat and recovery of historic extent for priority habitats by 30 percent by 2040 and by 40 percent by 2050 – the Partnership will reach 60 percent of historic native habitat coverage for the lower Columbia study area. ■

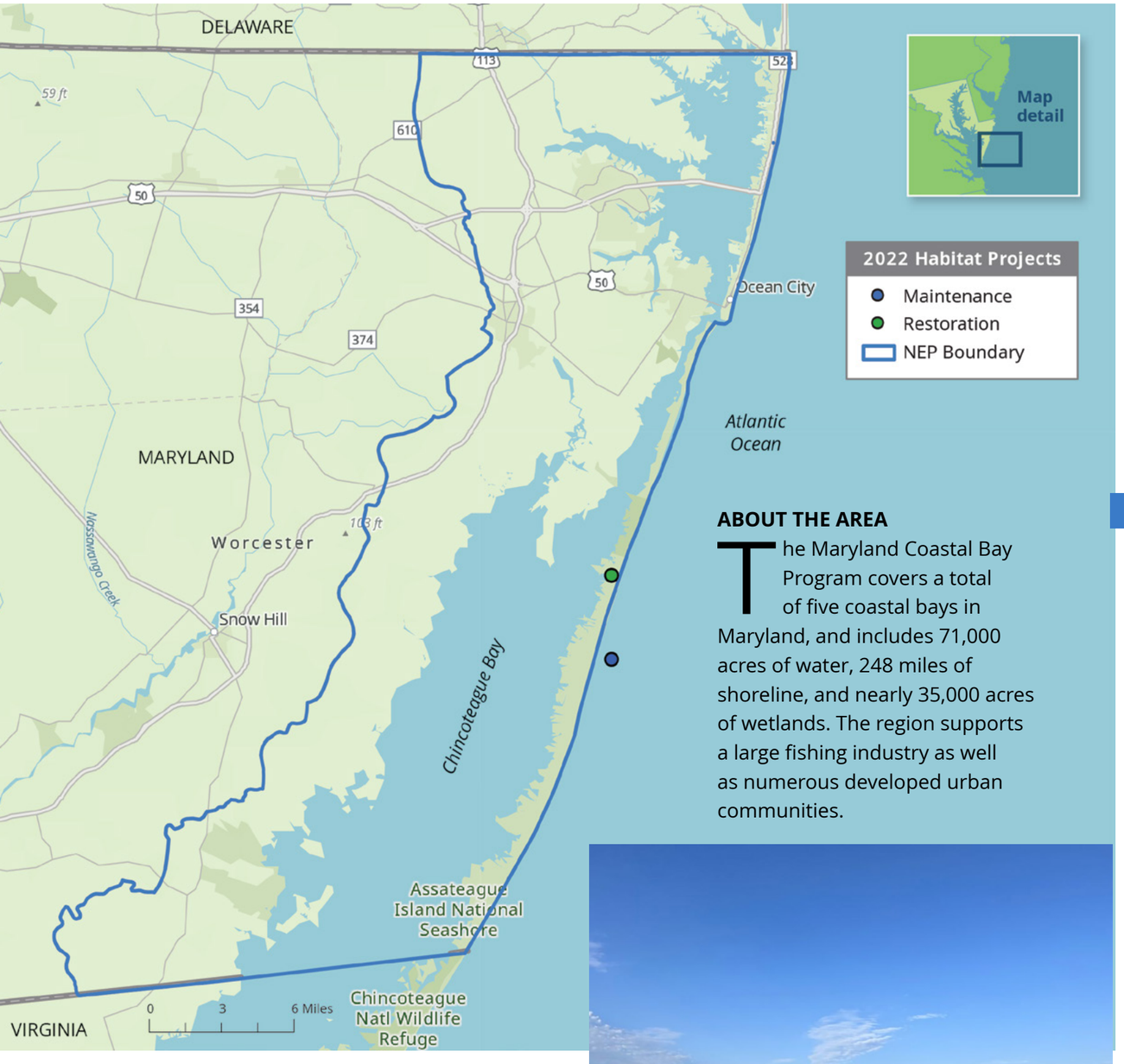
PRIMARY LEVERAGED FUNDS



TOP HABITAT PROJECT BENEFITS IN 2022

1. Protect, improve, and provide habitat for fish, shellfish, and other wildlife
2. Restore natural hydrology

Maryland Coastal Bays Program



ABOUT THE AREA

The Maryland Coastal Bay Program covers a total of five coastal bays in Maryland, and includes 71,000 acres of water, 248 miles of shoreline, and nearly 35,000 acres of wetlands. The region supports a large fishing industry as well as numerous developed urban communities.

Kayakers in Newport Bay, Maryland during a community event celebrating the launch of a 37-acre site that was restored for public recreation.

Photo by the Maryland Coastal Bays Program

PROGRAM SUMMARY

The **Maryland Coastal Bays Program** works to protect and conserve the waters and surrounding watershed of Maryland's coastal bays to enhance their ecological values and sustainable use for both present and future generations. Four focus areas of the CCMP are:

- Recreation and Navigation;
- Fish and Wildlife;
- Water Quality; and
- Coastal Resiliency.

Extreme weather and changing landscapes in recent years have made coastal resiliency a high priority. Coasts are a hot bed of ecological diversity and a natural flooding buffer that are slowly disappearing due to increased coastal development. ■

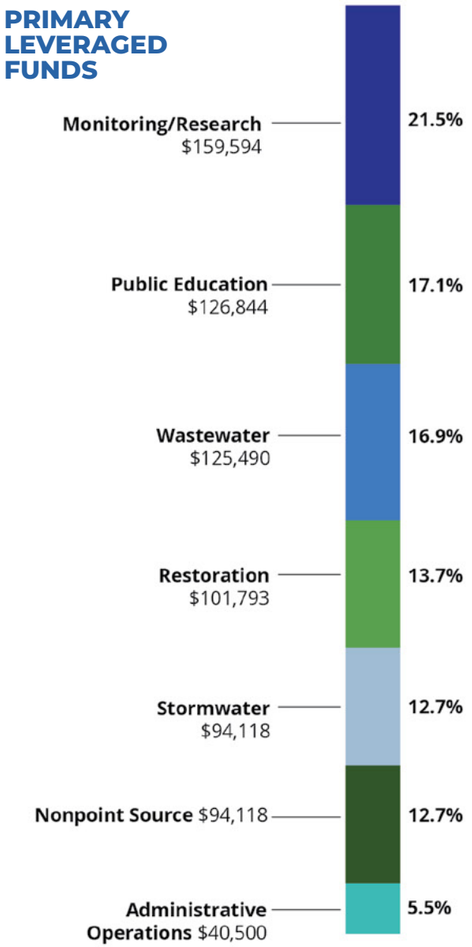
2022 HIGHLIGHTS

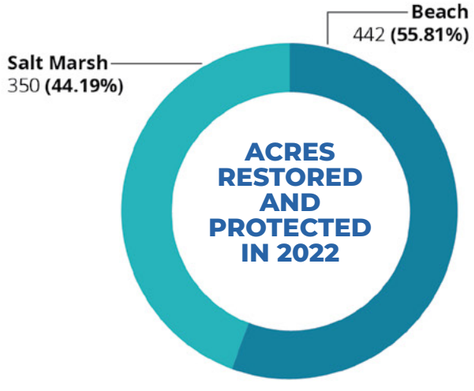
- Leveraged **$742,459** in primary funds
- Restored or protected **792** acres of habitat
- Removed **50** acres of invasive vegetation
- Filled **350** acres of ditch in salt marshes
- Restored **442** acres of beach via sediment restoration

TOP 3 PROJECT BENEFITS

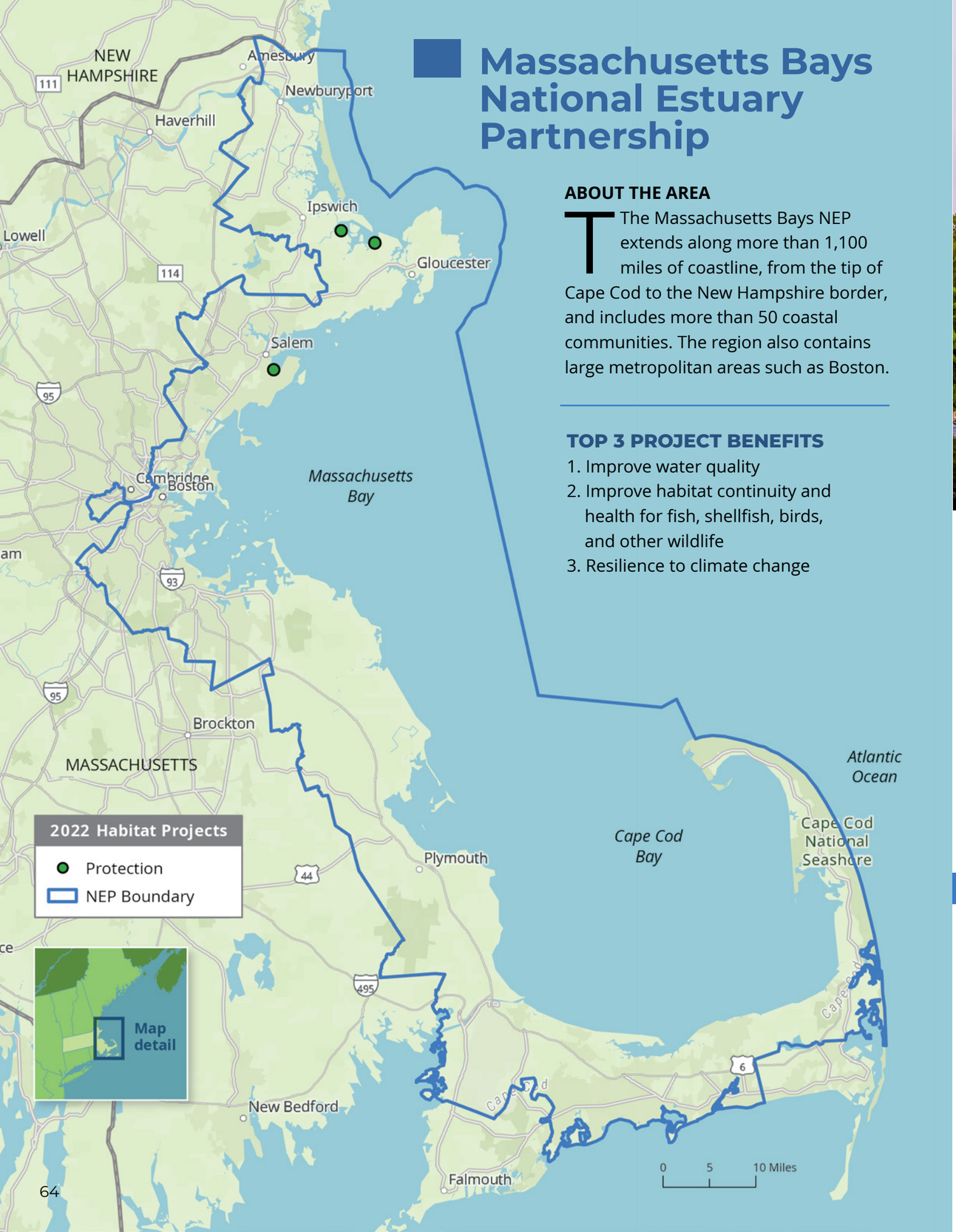
1. Protect, improve, and provide habitat for birds and other wildlife
2. Erosion control
3. Improve and increase educational or recreational opportunities

PRIMARY LEVERAGED FUNDS





Massachusetts Bays National Estuary Partnership



ABOUT THE AREA

The Massachusetts Bays NEP extends along more than 1,100 miles of coastline, from the tip of Cape Cod to the New Hampshire border, and includes more than 50 coastal communities. The region also contains large metropolitan areas such as Boston.

TOP 3 PROJECT BENEFITS

1. Improve water quality
2. Improve habitat continuity and health for fish, shellfish, birds, and other wildlife
3. Resilience to climate change

Boston Skyline and dock along the developed coastline of the Massachusetts Bay.

PROGRAM SUMMARY

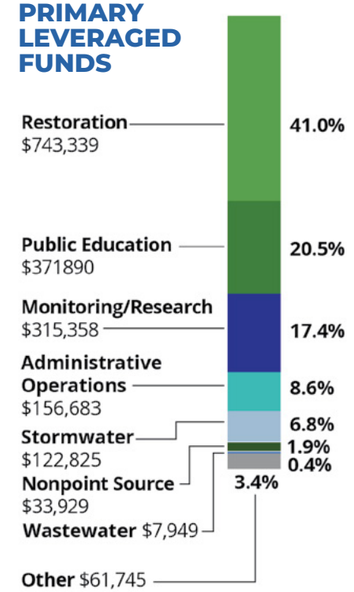
Massachusetts Bays National Estuary Partnership's (MassBays') mission is to empower 50 coastal communities to protect, restore, and enhance their coastal habitats. MassBays' CCMP focuses on achieving specific management and environmental outcomes determined at the local level and informed by MassBays' work. MassBays' monitoring, research, technical expertise, and convening skills are put toward:

- Supporting robust interagency and interdisciplinary collaboration and partnerships;
- Increasing well-informed, multisector input to decision-making, including from communities with environmental justice concerns; and
- Improved habitat and water quality across the bays. ■

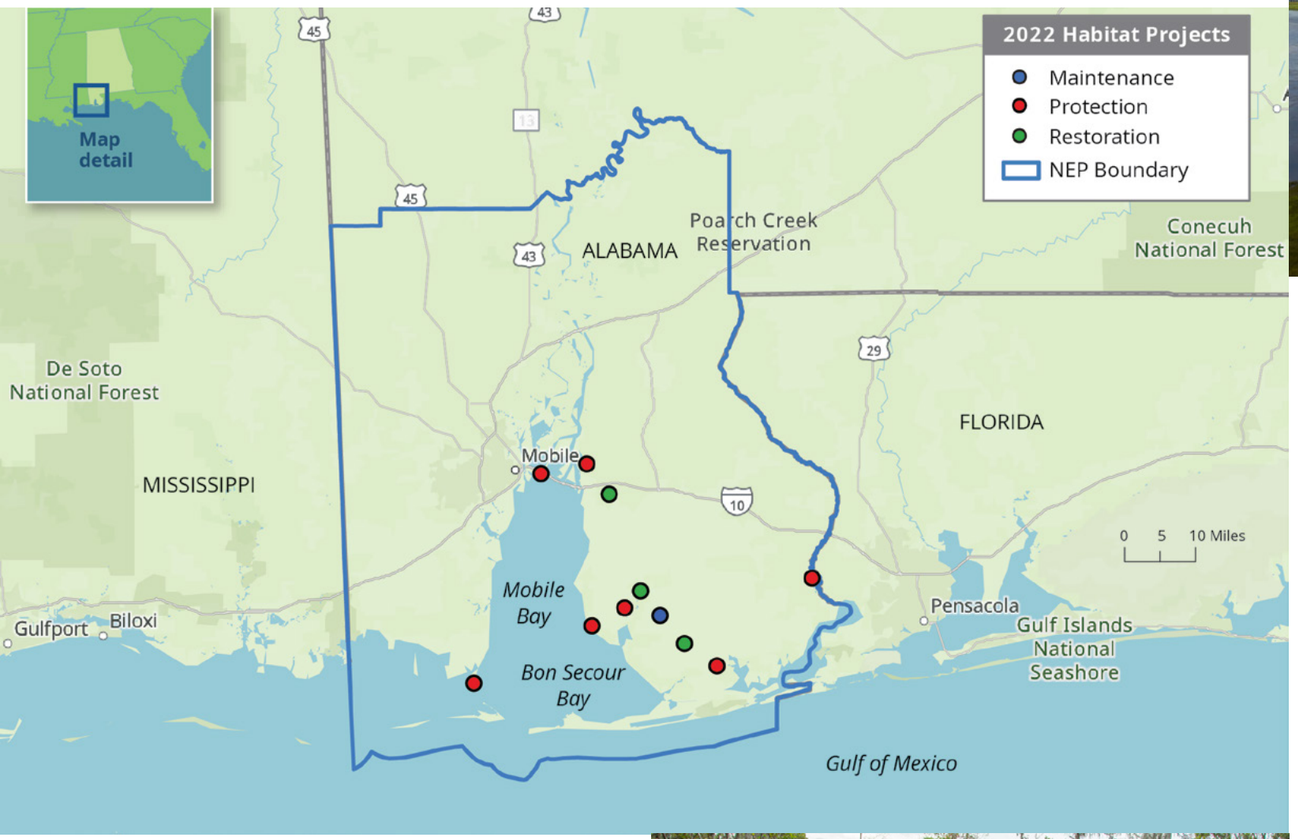
2022 HIGHLIGHTS

- Leveraged **$1,813,721** in primary funds
- **Launched** a new Ecohealth Tracking Tool to illustrate need for and track progress toward habitat improvements
- Assisted municipalities to submit **28** funding applications for projects aligned with priority areas
- Provided data management tools (MassWateR) and direct training to more than **75** individuals who lead monitoring efforts in the bays
- **Initiated** a pilot program to investigate seeding as a restoration method for eelgrass

PRIMARY LEVERAGED FUNDS



Mobile Bay National Estuary Program



ABOUT THE AREA

Alabama's estuaries and coast include waters and shorelines within Baldwin and Mobile counties and Mobile Bay, where the freshwater from several Alabama rivers mixes with the saltwater of the Gulf of Mexico to produce rich brackish waters. The landscape of habitats includes 607 miles of tidally influenced shoreline; 572,000 acres of fresh- and saltwater wetlands; over 5,000 miles of waterways; and over 386,000 acres of pine forest. In addition, the region also supports the port city of Mobile.

An alligator in a freshwater marsh. Burrows created by alligators' store water and provide refuge for fish and wading birds during droughts.

Mobile Bay and the Bay Bridge highway in Alabama.

PROGRAM SUMMARY

Since the inception of the **Mobile Bay National Estuary Program** Management Conference over quarter century ago, one thing has stayed the same for coastal Alabama residents: nothing is more important than water. Whether it is to drink, catch food, earn a living, play, swim or simply view, coastal residents value water. It is imperative to maintain this connection to successfully restore, protect, and conserve the coastal way of life. Through an extensive citizen-input process conducted for the 2013 CCMP update, Mobile Bay NEP identified six common values most important to those living in coastal Alabama: Access, Beaches and Shorelines, Fish and Wildlife, Heritage, Culture and Resilience.

Mobile Bay NEP is guided by four action areas in the CCMP:

- Ecosystem Status and Trends;
- Ecosystem Restoration and Protection;
- Technical Assistance and Capacity Development; and
- Education and Public Involvement. ■

TOP 3 PROJECT BENEFITS

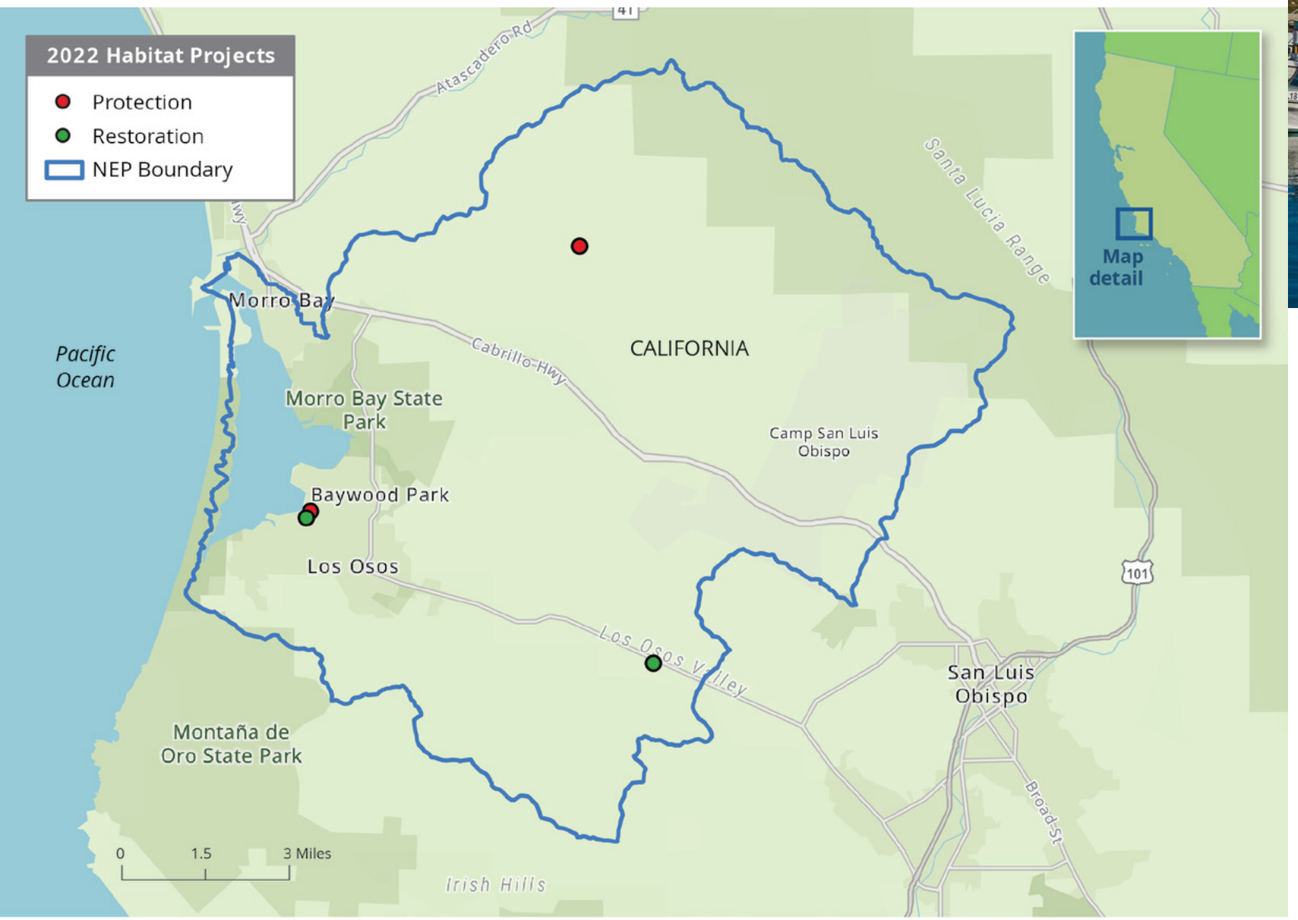
1. Improve or protect water quality
2. Protect, improve, and provide habitat for other wildlife
3. Improve or increase educational or recreational opportunities

2022 HIGHLIGHTS

The Mobile Bay National Program and it's Management Conference:

- Collected **1,032** samples from **148** monitoring sites with **97** active volunteer water quality monitors
- Issued **five** small, low-interest loans from Coastal Alabama Fisheries Fund to support local fisheries and fishing communities in the oyster aquaculture industry
- Reached over **3,000** anglers and **75,000** spectators during the Alabama Deep Sea Fishing Rodeo tournament through the "Trash Blows" campaign
- Acquired **1,501** acres; rehabilitated **72** acres; and protected **1,374** acres of forested wetlands
- Stabilized **1,709** vertical feet along stream channels and protected **125** acres of salt marsh

Morro Bay National Estuary Program



ABOUT THE AREA

Located on California's coast, the Morro Bay estuary is a 2,300-acre bay within a 75 square mile watershed. Chorro and Los Osos Creeks support riparian habitat, and the bay itself hosts a range of subtidal habitats, including important eelgrass beds.

TOP 3 PROJECT BENEFITS

1. Climate change adaptation and resilience
2. Protect, improve, and provide habitat for fish and birds
3. Protect or preserve open space

2022 HIGHLIGHTS

- Restored or protected **391** acres of habitat
- Leveraged **$864,486** in primary funds
- Protected **389** acres of grassland
- Harvested nearly **15,000** plants from healthy eelgrass beds and transplanted at **39** sites over the past five years

Commercial fishing boats docked at Morro Bay, California.

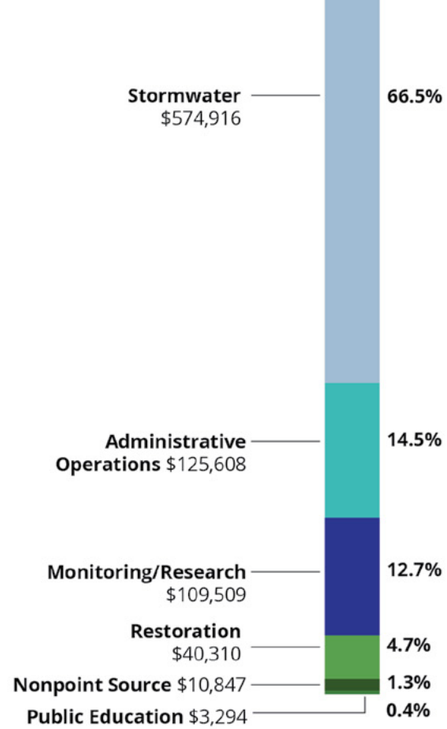
PROGRAM SUMMARY

The **Morro Bay National Estuary Program** is a non-regulatory nonprofit that brings together citizens, organizations, agencies, and landowners to protect and restore the Morro Bay estuary and its watershed. Through research and community input, the Morro Bay NEP identified several priority focus areas for the next ten years, including:

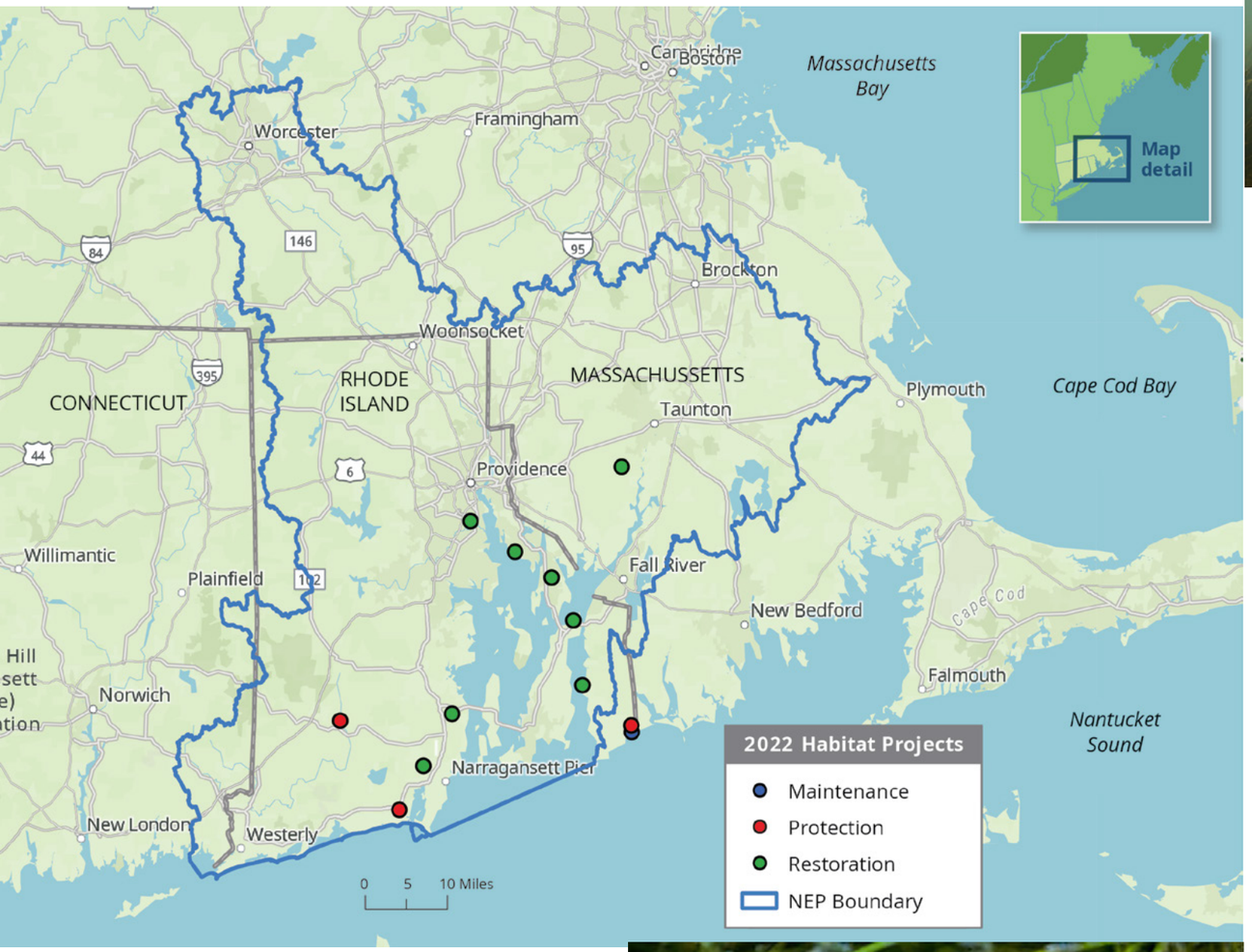
- Control of upland erosion sources to reduce sedimentation;
- Stormwater management and waste disposal to reduce nutrients and bacteria;
- Implementation of water budgets and education and outreach to conserve freshwater resources; and
- Support biodiversity through informed restoration.

The Morro Bay NEP is improving the understanding of climate change impacts and enhancing resources for education on climate change. Bolstering ecosystem health is a focus in the Morro Bay watershed. The Program is working to control sedimentation rates in the bay by installing erosion-controlling and sediment-capturing best management practices (e.g., vegetation buffer strips). The Morro Bay NEP connects with residents and businesses through outreach campaigns to teach conservation practices to reduce stormwater pollution and manage invasive species in developed areas. ■

PRIMARY LEVERAGED FUNDS



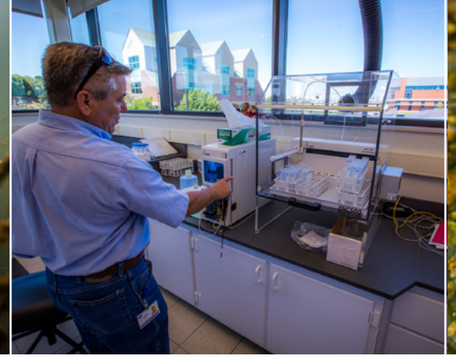
Narragansett Bay Estuary Program



ABOUT THE AREA

The greater Narragansett Bay Watershed covers 2,000 square miles of land in Rhode Island, Massachusetts, and Connecticut that drains into Narragansett Bay, Little Narragansett Bay, and the Coastal Salt Ponds through a network of rivers and streams.

A green frog floats in a freshwater pond in Rhode Island. Photo by Ayla Fox for the Narragansett Bay Estuary Program



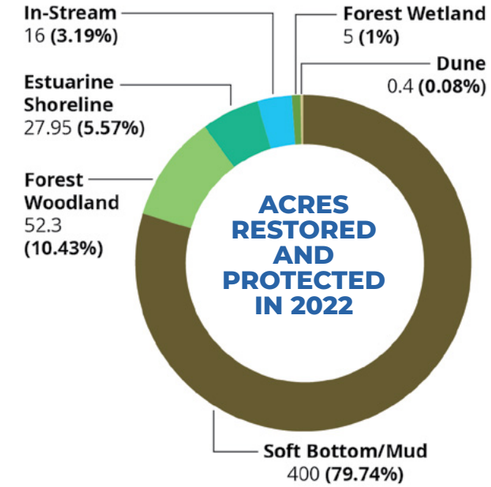
(Left) **Eelgrass** in Ninigret Pond, Rhode Island. (Middle) **Analysis** of trace elements in wastewater effluent at the Narragansett Bay Commission, Providence, Rhode Island**.** (Right) **Freshwater mussel.**
Photos by Ayla Fox for the Narragansett Bay Estuary Program

PROGRAM SUMMARY

The **Narragansett Bay Estuary Program** (NBEP)) is the only stakeholder-led nonprofit conservation organization in the Narragansett Bay region working to catalyze scientific inquiry and collective action to restore and protect water quality, wildlife, and quality of life. NBEP convenes interests, analyzes and visualizes data, creates cross-boundary plans, and funds people and projects to advance restoration and research. NBEP pursues consensus-driven efforts guided by the best available science to address complex issues and secure the future of clean water, sustainable habitat, and prosperity for all in the region. NBEP identified four focus areas to guide their work to improve human health:

- Protect and restore clean water;
- Manage land for conservation and community;
- Protect and restore fish and wildlife habitats; and
- Manage the impact of climate change on human and natural systems.

The bay's ability to sustain functionality, as well as support the local region, has been impacted by increased human development over the last 40 years and the increasing pressure on freshwater resources to meet increasing demand. Over the last five years, NBEP's work resulted in convening over 500 stakeholders; publishing 33 scientific articles and four watershed plans; advancing development of projects that can impact roughly 5,600 acres of natural resources; providing $1.6 million to external partners; and bringing in an estimated $12 million of non-federal leverage to the region. ■



2022 HIGHLIGHTS

- Implemented **12** habitat projects
- Restored **two** miles of fish ladder to improve fish passages instream
- Launched "Macro to Microplastics in Narragansett Bay", a learning forum on science about plastics from source to the bay, with **15** speakers and **70** attendees
- Obligated direct subawards to **5** partners to develop environmental justice projects

New York-New Jersey Harbor & Estuary Program

ABOUT THE AREA

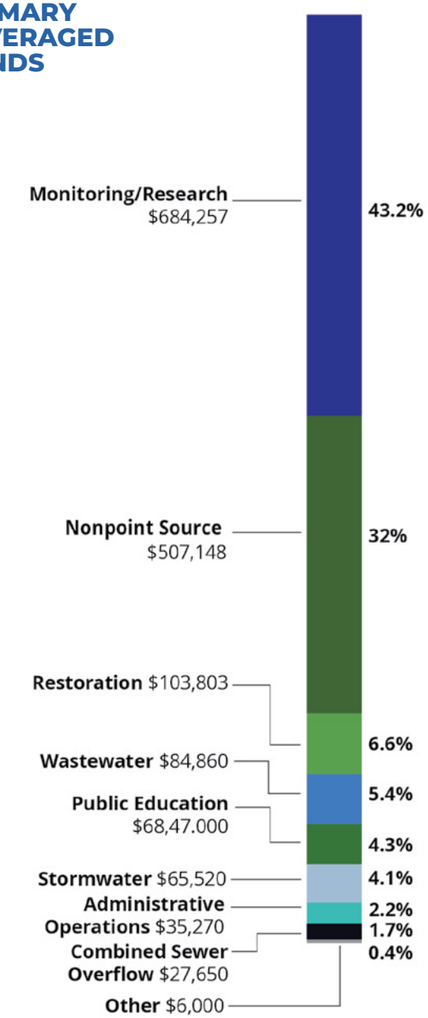
The New York-New Jersey Harbor Estuary spans 250 square miles of open water and 1,600 miles of shoreline across New York and New Jersey and is the urban heart of a broader 16,000 square mile watershed. Habitats in the region include tidal marshes and forests.

Debris is removed by crane in the New York-New Jersey Harbor.
Photo by the New York-New Jersey Harbor & Estuary Program

PROGRAM SUMMARY

In addition to meeting the fishable and swimmable goals of the Clean Water Act in the harbor, the **New York–New Jersey Harbor & Estuary Program** (HEP) and its partners collaborate to reduce sources of pollution, protect and restore vital habitat and ecological function, improve public access, support port and maritime operations, and foster community understanding and involvement. The Port and Maritime focus area supports port and associated maritime operations through improved design and management so operations are economically and ecologically viable. The Port of New York and New Jersey is the largest port on the Atlantic seaboard, with about 3.7 million containers; 500,000 automobiles; and other goods coming in and out each year. Required navigational dredging and any beneficial reuse of sediment, as well as safe consumption of fish, is limited by historic contamination. To address this, HEP supported a second iteration of the Contaminant Assessment and Reduction Project (CARP II). The project, led by the New Jersey Department of Transportation and the Hudson River Foundation, created a current conditions map of levels of PCBs and dioxins in navigation channels and off-channel areas in the estuary. The mapping and data analysis will be used to model future contaminant levels in harbor sediments, helping inform dredging plans and reuse options going forward. ■

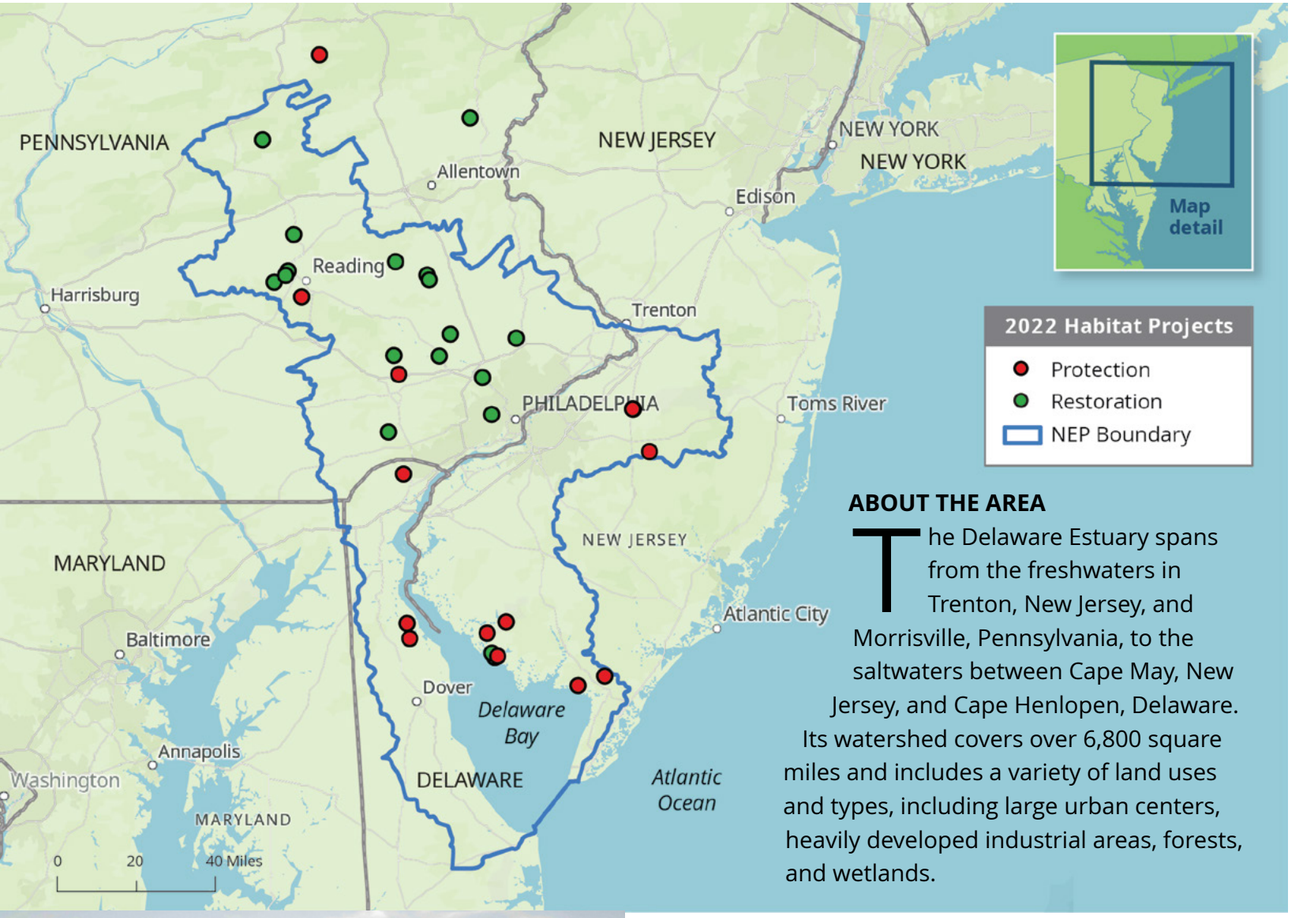
PRIMARY LEVERAGED FUNDS



2022 HIGHLIGHTS

- Leveraged **$1,582,979** in primary funds
- Implemented **14** habitat projects
- Planted **550** feet of coastal shrub
- Supported Hudson River Park Trust to redevelop **three** acres of the Gansevoort Peninsula to provide river access for recreation and valuable habitat
- Placed **5,000** recycled shell bags filled with oyster shells, coir logs, and tree vanes along the shoreline to control erosion

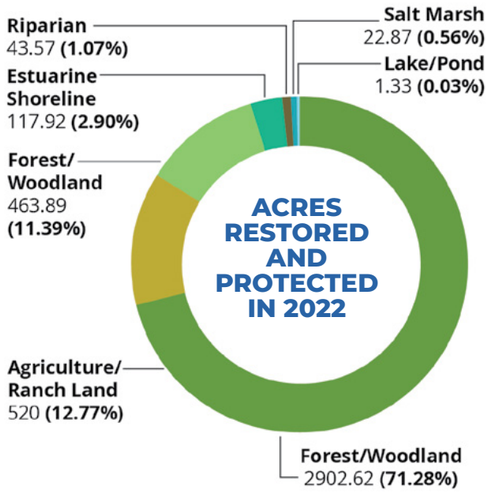
Partnership for the Delaware Estuary



ABOUT THE AREA

The Delaware Estuary spans from the freshwaters in Trenton, New Jersey, and Morrisville, Pennsylvania, to the saltwaters between Cape May, New Jersey, and Cape Henlopen, Delaware. Its watershed covers over 6,800 square miles and includes a variety of land uses and types, including large urban centers, heavily developed industrial areas, forests, and wetlands.

Philadelphia skyline on the Schuylkill River, Delaware.
Photo by Lane Fike



PROGRAM SUMMARY

Partnership for the Delaware Estuary (PDE), host of the Delaware Estuary Program (DELEP), leads collaborative, science-based efforts to improve the Delaware River and Bay. PDE works to restore the health of the Delaware Estuary through collaboration with partners to implement projects that promote science-based approaches, encourage innovative thinking, increase public engagement, and address social justice issues. DELEP's revised CCMP identifies three focus areas, which include:

- Clean Waters;
- Strong Communities; and
- Healthy Habitats.

Waterfront locations in the estuary are increasingly becoming hotspots for tourism and recreation, while climate change and associated flooding threatens these same communities, and many more in the region, on a regular basis. Sea levels in the Delaware Estuary have risen by over a foot in the last century. PDE and its partners are working to develop innovative and sustainable strategies to increase resiliency and improve environmental and economic conditions. ■

TOP 3 PROJECT BENEFITS

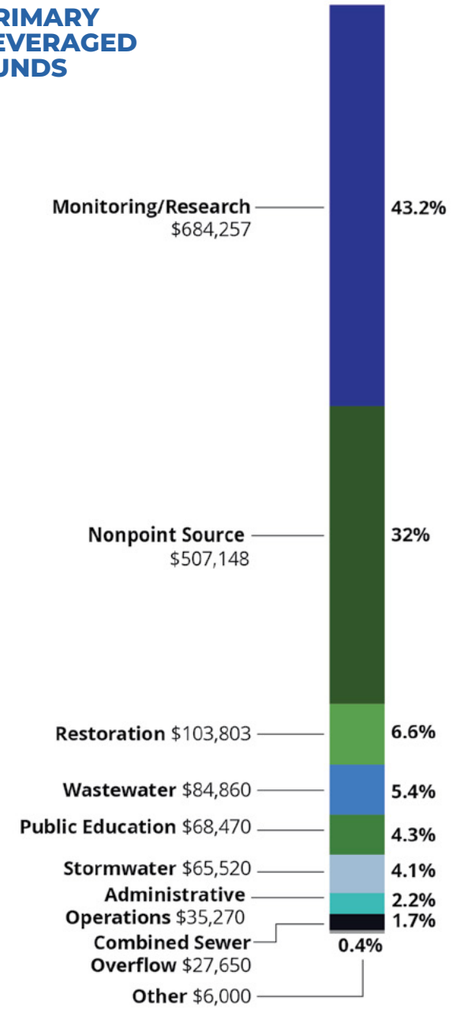
1. Improve or protect water quality
2. Protect, improve, and provide habitat for fish and shellfish
3. Protect or preserve open space

2022 HIGHLIGHTS

- Implemented **36** habitat projects
- Restored or protected **4,072.2** acres of habitat
- Leveraged **$1,614,059** in primary funds
- Removed **six** dams from creeks and streams
- Restored and protected **4,028** acres via land acquisition

Great blue heron perched on a tree in Prime Hook National Wildlife Refuge, Milton, Delaware.
Photo by Nick Rafferty

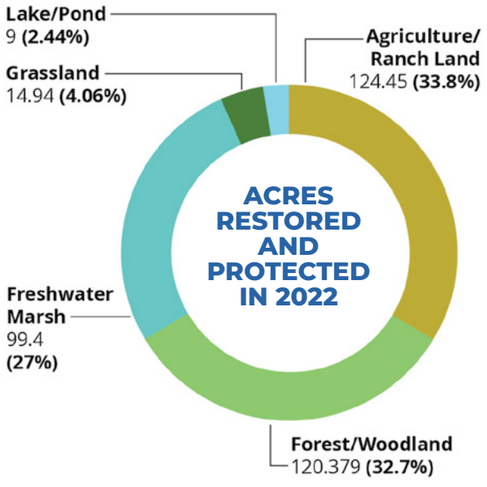
PRIMARY LEVERAGED FUNDS



Peconic Estuary Partnership

ABOUT THE AREA

Located 80 miles east of New York City, this 250-square-mile estuary comprises Great Peconic Bay, Little Peconic Bay and 100 other distinct bays, harbors, and tributaries which receive water from the 180 square mile Peconic watershed.



TOP 3 PROJECT AREAS

1. Monitoring and Research
2. Nonpoint Source Pollution
3. Habitat Preservation and Restoration

TOP 3 PROJECT BENEFITS

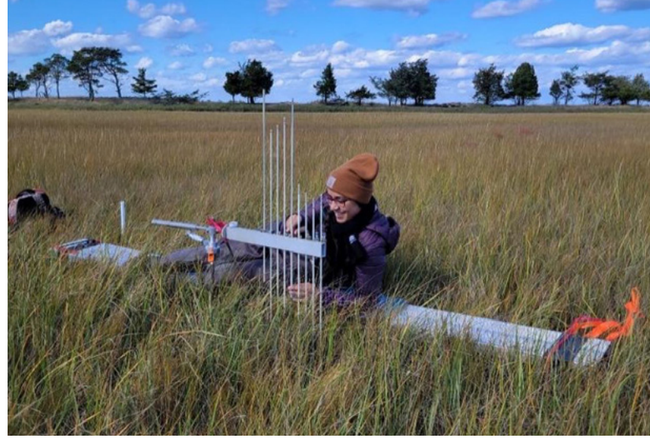
1. Protect, improve, and provide habitat for wildlife
2. Environmental quality monitoring
3. Stormwater abatement

PROGRAM SUMMARY

The **Peconic Estuary Partnership** (PEP) collaborates with its partners to support monitoring, research, collaboration, and education to address priority issues within the Peconic Estuary Watershed. Government and non-government partners of PEP developed the partnership's CCMP to identify and implement solutions to key environmental challenges under the following four focus areas:

- Strong Partnerships and Engagement;
- Resilient Communities Prepared for Climate Change;
- Clean Waters for Ecosystem Health and Safe Recreation; and
- Healthy Ecosystem with Abundant, Diverse Wildlife.

PEP has always worked to keep local communities involved in decision-making but are now helping local communities in the Peconic Estuary take action to prepare for and adapt to climate change impacts, which are likely to intensify in the coming years. Increased storm frequency and intensity, as well as rising ground water, were a few of the risks PEP identified in their Climate Vulnerability Assessment. Using tools and resources based on current research, PEP is helping local communities protect habitat, promote climate resiliency, and understand the wide impacts of climate change. PEP is facilitating the development of comprehensive strategies to mitigate impacts from extreme weather.
In 2022, PEP was instrumental in driving the latest research, strategies, and outreach needed for the successful implementation of policies affecting the Peconic Estuary. Two examples are the passing of a bill permitting seaweed cultivation in the Peconic and providing guidance for local government land acquisitions for habitat conservation and restoration. In addition, PEP conducted research on and updated stakeholders about the Peconic Bay Scallop Fisheries collapse, including updates about the annual monitoring of eelgrass and investigation of potential causes and efforts to revert collapse. In addition, PEP directed funding for research and coordinated the scientific community and shellfish experts to respond to the Peconic Bay Scallop fishery collapse. PEP continues to lead bi-annual technical and stakeholder meetings regarding the ongoing investigation of potential causes and efforts to reverse the collapse. ■

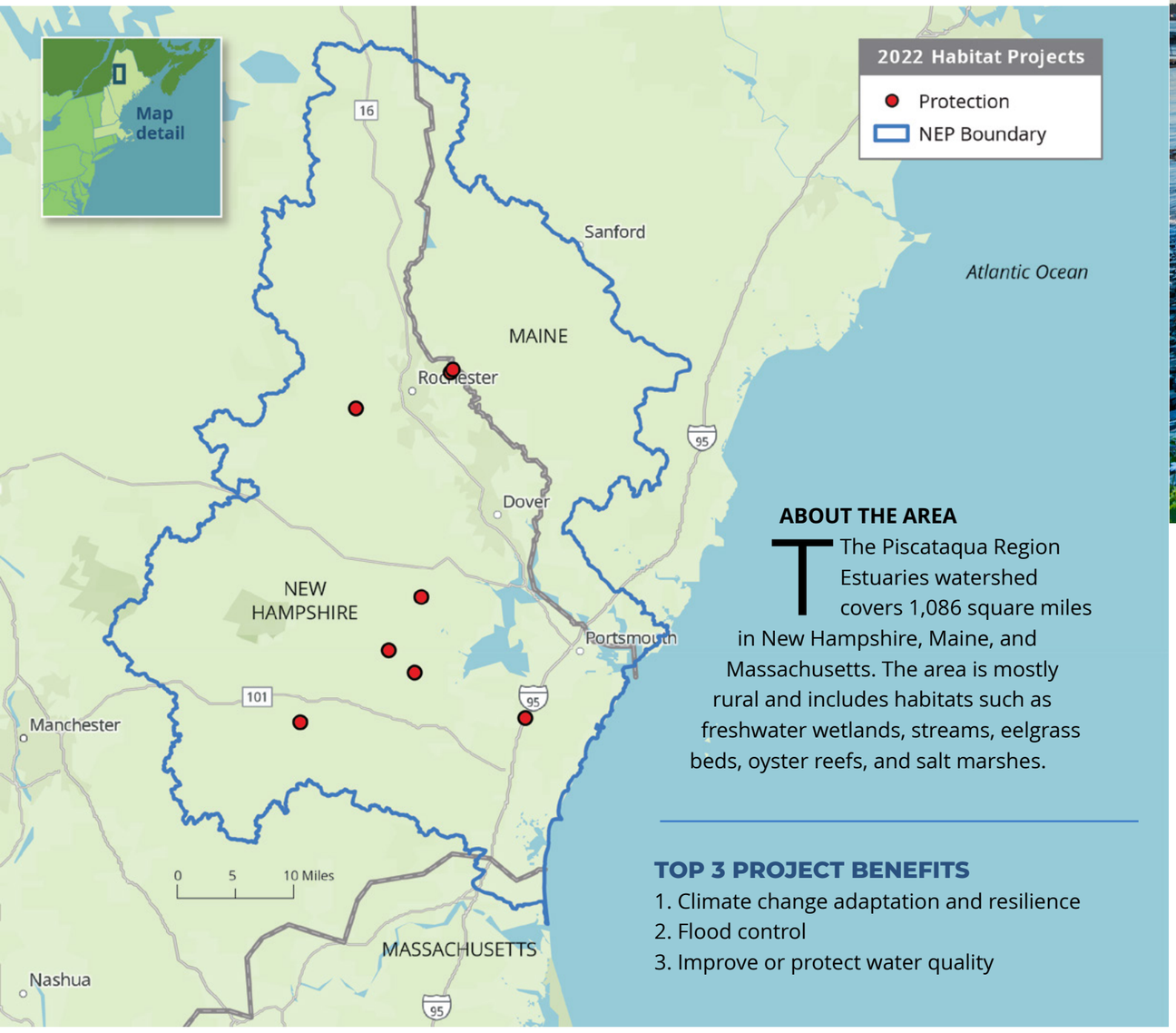


PEP staff set up a Surface Elevation Table to measure relative sediment accretion compared to current sea level rise. Photo by the Peconic Estuary Partnership

2022 HIGHLIGHTS

- Implemented **16** habitat projects
- Leveraged **$1,158,637** in primary funds
- Restored or protected **368.169** acres of habitat
- Restored historic access to **264** acres of critical spawning and maturation freshwater habitat by installing fish passages
- Monitored **12** sites for eelgrass survival and bed expansion

Piscataqua Region Estuaries Partnership



ABOUT THE AREA

The Piscataqua Region Estuaries watershed covers 1,086 square miles in New Hampshire, Maine, and Massachusetts. The area is mostly rural and includes habitats such as freshwater wetlands, streams, eelgrass beds, oyster reefs, and salt marshes.

TOP 3 PROJECT BENEFITS

1. Climate change adaptation and resilience
2. Flood control
3. Improve or protect water quality

2022 HIGHLIGHTS

- Protected **67** acres of forest and woodland habitats to safeguard drinking water sources and nearby aquifers
- Harvested **8,000** eelgrass shoots to be transplanted to restored sites
- Preserved **1.7** acres of wildlife connectivity providing one of the few wildlife crossings along Interstate 95
- Protected or restored **213** acres of habitat via easements

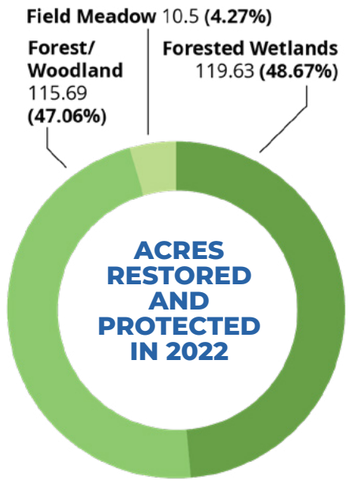
Sailing is a popular recreational activity in the Piscataqua River, New Hampshire region.

PROGRAM SUMMARY

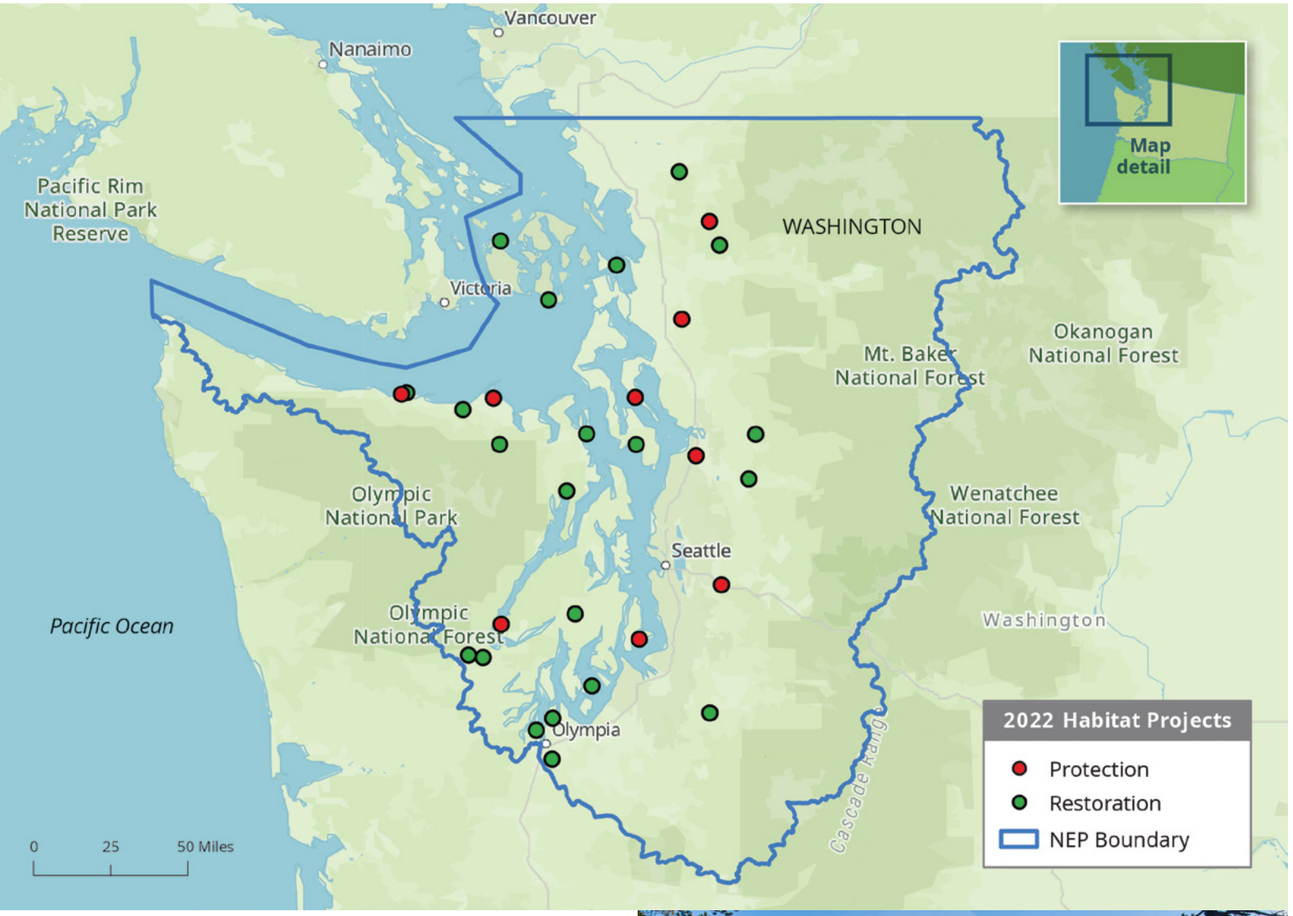
Piscataqua Region Estuaries Partnership (PREP) strives to improve the water quality and overall health of the region's estuaries, promote public engagement, and support conservation and restoration initiatives across the region. PREP and its partners identified the following four focus areas to guide the CCMP:

- Water Resources;
- Living Resources and Habitat Restoration;
- Land Use and Habitat Protection; and
- Water Stewardship.

The Living Resources and Habitat Restoration focus area prioritizes the assessment and restoration of habitats supporting freshwater and estuarine species important to the watershed's ecosystem and the region's economy. Since 2015, PREP has supported its partners in the development and implementation of fish restoration plans for priority rivers in the Piscataqua region. For this project, PREP will report on the ecological benefits of barrier removal or fish passage restoration to support diadromous fish, which are fish that migrate between fresh and salt water. At the conclusion of the project, PREP expects to see the restored river habitats and connectivity yield increased populations of diadromous fish and dependent species, benefiting the overall ecosystem of the watershed. ■



Puget Sound Partnership



ABOUT THE AREA

Situated in northwestern Washington, the Puget Sound is 1,016-square-miles of bays, basins, islands, inlets, and large urban centers such as Seattle. Part of the Salish Sea, its northern boundary begins at Admiralty inlet and ends in the south at the City of Olympia. Puget Sound is the largest estuary by volume of water in the United States. Puget Sound is an economic and cultural engine for the region's more than 4.7 million people, including 19 federally recognized Tribes. Nearly 71 percent of all jobs and 77 percent of total income in Washington State are found in the Puget Sound Basin.

Hiking is a popular recreational activity, providing scenic views of Puget Sound from Mount Erie, Washington.

PROGRAM SUMMARY

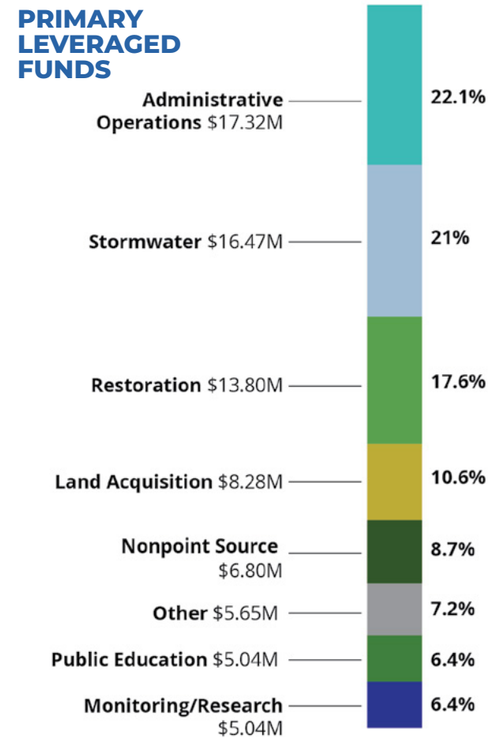
The **Puget Sound Partnership** (PSP) is a state agency charged with accelerating the collective effort to recover and sustain Puget Sound. As a backbone organization, PSP works with hundreds of state, local, and Tribal partners to set plans for recovery, track measures of recovery, and support actions to protect and recover Puget Sound. PSP aligns the work of partners with a shared vision and strategy. This ensures decision makers have information needed to advance the shared priorities. Investments for projects are made using a science-based system of measurement and monitoring to promote accountability and effectiveness. PSP supports priority actions by removing financial, regulatory and resource barriers for partners. The 2022-2026 Action Agenda is the Puget Sound community's plan for advancing Puget Sound recovery. The goals are to:

- Protect and restore habitat and habitat-forming processes;
- Protect and improve water quality;
- Protect the food web and imperiled species;
- Prevent the worst effects of climate change; and
- Ensure human well-being.

The plan contains 31 collaboratively developed, science-informed, multi-benefit strategies with actions and key opportunities for a shared focus for the next four years. The plan addresses the magnitude of the challenges present in Puget Sound from the pressures of human activities including climate change and population growth. With the 2022 update, the Action Agenda incorporates Tribal nations' treaties and sovereign rights, environmental justice, and climate justice.

Information about Puget Sound recovery priorities, investments, progress, and accomplishments is available at **Puget Sound Info**. ■

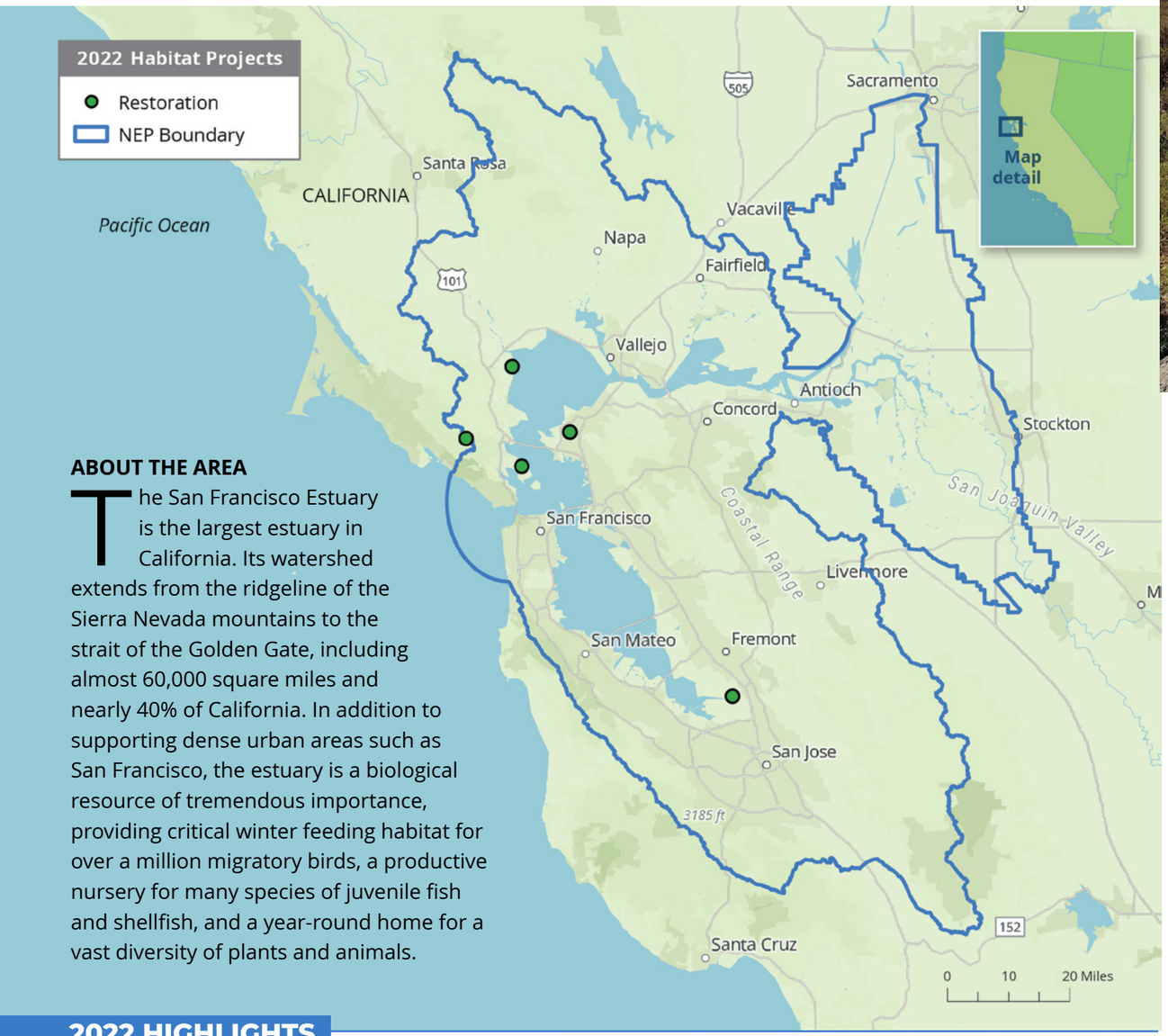
PRIMARY LEVERAGED FUNDS



2022 HIGHLIGHTS

- Implemented **31** habitat projects
- Restored or protected **5,296.1** acres
- Leveraged **$74,436,722** in primary funds
- Restored **62.6** stream miles by fish barrier removal
- Preserved **1,401** acres of riparian habitat by land acquisition
- Restored **80** acres of critical habitat functionality by stream flow modification

San Francisco Estuary Partnership

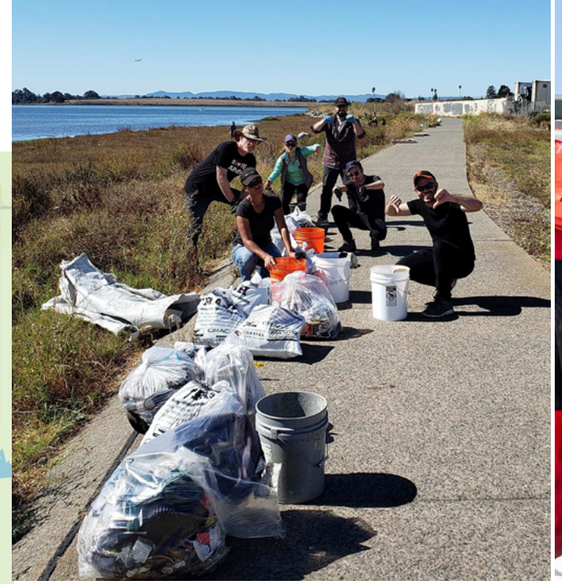


ABOUT THE AREA

The San Francisco Estuary is the largest estuary in California. Its watershed extends from the ridgeline of the Sierra Nevada mountains to the strait of the Golden Gate, including almost 60,000 square miles and nearly 40% of California. In addition to supporting dense urban areas such as San Francisco, the estuary is a biological resource of tremendous importance, providing critical winter feeding habitat for over a million migratory birds, a productive nursery for many species of juvenile fish and shellfish, and a year-round home for a vast diversity of plants and animals.

2022 HIGHLIGHTS

- Restored or protected **2,940.75** acres
- Leveraged **$51,842,803** in primary funds
- Acquired over **1,000** acres of undeveloped open space to fill a gap between two large complexes of protected land
- Installed breaches to accelerate the restoration of **two** former salt-production ponds
- Restored or protected **1,161** acres of riparian habitat via invasive vegetation control or removal



(Left) **SFEP Staff** at a Coastal Clean Up event. Photo by James Mueller for SFEP (Right) **Regional Monitoring Program** for water quality in San Francisco Bay. Photo by James Mueller for the San Francisco Estuary Partnership

PROGRAM SUMMARY

The **San Francisco Estuary Partnership** (SFEP) is a collaborative regional program of federal, state, and local agencies; nonprofits; stakeholders; and scientists working to restore water quality and fish and wildlife habitat in the estuary. SFEP's Estuary Blueprint (CCMP) is organized by four main goals: habitats and living resources, resilience, water, and stewardship. SFEP's Blueprint identifies top actions needed for:

- Increasing climate resilience;
- Improving water quality for animals and people;
- Restoring habitats; and
- Addressing environmental justice in underserved communities.

SFEP is working to increase climate resilience throughout the region with several funded projects that support a discussion forum for advancing nature-based solutions. For one such project, SFEP is studying the use of horizontal levees which use vegetation on a gentle slope to break waves while also further processing wastewater from treatment plants. SFEP previously supported the pilot Oro Loma horizontal levee project which laid the groundwork for SFEP to continue investigation into the benefits of these structures. SFEP partnered with a wastewater treatment plant to assess building more horizontal levees in the future. The assessment was based on the benefits of creating habitat; providing flood protection and recreation benefits; and reducing nutrient inputs into San Francisco Bay.
Other program priorities include the development of a regional wetland monitoring program; restoring watershed connectivity where creeks meet the shoreline; advancing carbon sequestration and beneficial reuse of sediment; and supporting the decision-making role of underserved communities and Tribes in regional climate resilience efforts. ■

TOP 3 PROJECT BENEFITS

1. Protect, improve, and provide habitat for fish, shellfish, birds, and other wildlife
2. Climate change adaptation and resilience
3. Protect or preserve open space

San Juan Bay Estuary Program

ABOUT THE AREA

The San Juan Bay covers 83 square miles of land and 14 square miles of water in Puerto Rico. In addition to dense areas of urban development, the region supports a range of habitats including dunes, mangrove forests, and coastal forests.

2022 HIGHLIGHTS

- Restored or protected **15.9** acres of habitat
- Engaged with **482** participants in the Citizen Scientist Certification in Coastal Resilience workshops
- Certified **139** citizens for the assessment of coastal ecosystems
- Involved over **1,800** participants in monitoring and reporting water at more than **200** sites during Puerto Rico Water Quality Monitoring Day 2022
- Analyzed **612** samples to measure water quality in the **12** stations distributed in the northern shore of the estuarine basin

SJEP staff member educates a visiting group on the local environment. Photo by Cèsar G. for the San Juan Bay Estuary Program

PROGRAM SUMMARY

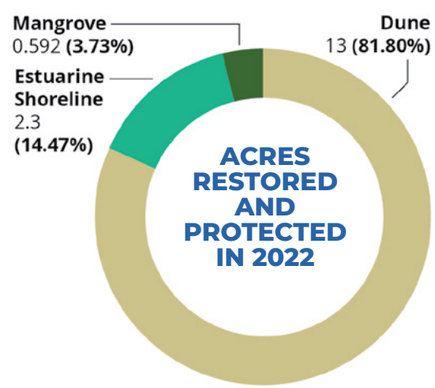
San Juan Bay Estuary Program (SJBEP) is a nonprofit organization that works to protect the ecosystem within its eight municipalities: Bayamón, Carolina, Cataño, Guaynabo, Loíza, San Juan, Toa Baja, and Trujillo Alto. SJBEP's goals are to prevent further degradation and improve the system's water quality, minimize health risks, and develop an effective administrative and regulatory framework that can serve as a model for other estuary systems. SJBEP's CCMP Action Plans are categorized by four focus areas:

- Water and Sediment Quality;
- Fish and Wildlife Habitat;
- Aquatic Debris; and
- Public Education and Involvement.

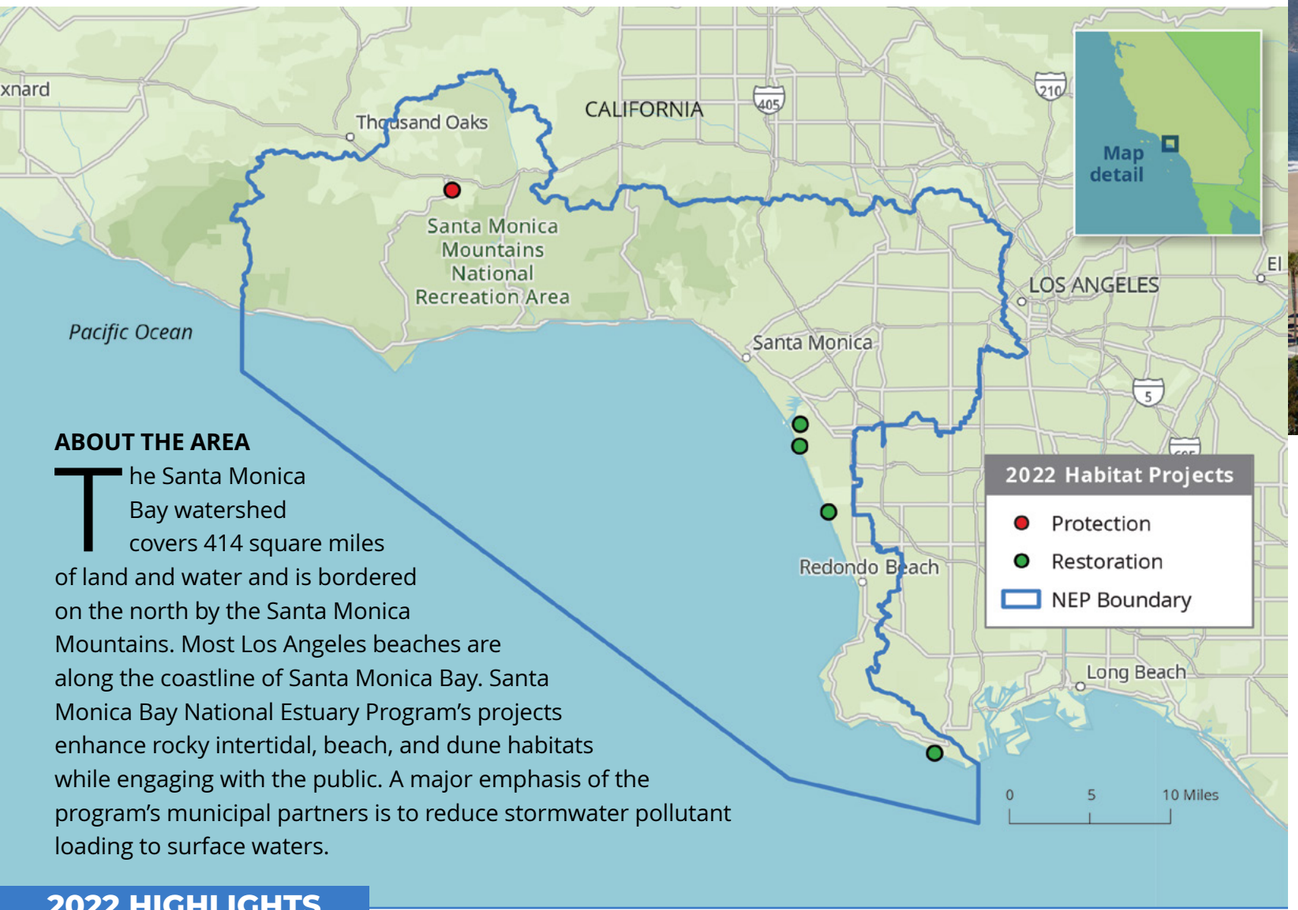
SJBEP's goal for the Aquatic Debris Action Plan is to improve habitat quality and enhance the recreational and economic values of the bay. Solid Waste Pollution Prevention (P2) Pilot Programs can be used to target pollution at the source and effectively reduce the number of solid pollutants that reach the estuary. SJBEP identified several sectors, such as communities and marinas, in which pollution prevention initiatives can be established. Solid Waste P2 sites will gather data about solid waste minimization and disposal practices and evaluate the impact on the SJBEP system. By increasing knowledge about innovative waste minimization techniques in the private sector, successful P2 pilot programs will reduce solid waste and aquatic debris in the estuary system, improving environmental conditions. ■

TOP 3 PROJECT BENEFITS

1. Improve and increase educational or recreational opportunities
2. Climate change adaptation and resilience
3. Improve or protect water quality



Santa Monica Bay National Estuary Program

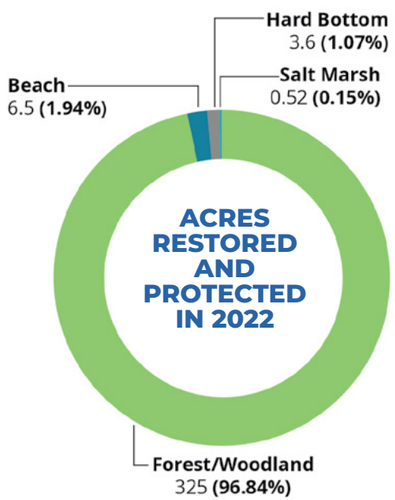


ABOUT THE AREA

The Santa Monica Bay watershed covers 414 square miles of land and water and is bordered on the north by the Santa Monica Mountains. Most Los Angeles beaches are along the coastline of Santa Monica Bay. Santa Monica Bay National Estuary Program's projects enhance rocky intertidal, beach, and dune habitats while engaging with the public. A major emphasis of the program's municipal partners is to reduce stormwater pollutant loading to surface waters.

2022 HIGHLIGHTS

- Implemented **five** habitat projects.
- Restored, protected, or maintained **335.62** acres of habitat.
- Leveraged **$5,221,788** in primary funds.
- Engaged **102** volunteers at six community restoration events to remove approximately **7,460** pounds of nonnative vegetation.
- Provided public beach water quality grades for over **500** beaches.
- Protected **325** acres of forest and woodland identified as a crucial linkage for habitat preservation, watershed protection, and wildlife movement, including safe passage for mountain lions.



Santa Monica Bay with the Santa Monica Mountains in the background.

PROGRAM SUMMARY

The **Santa Monica Bay National Estuary Program** (SMBNEP) is a collaborative, locally driven program that promotes watershed-based partnerships and works across a diverse landscape to inform and implement its CCMP. Priorities included in the CCMP are:

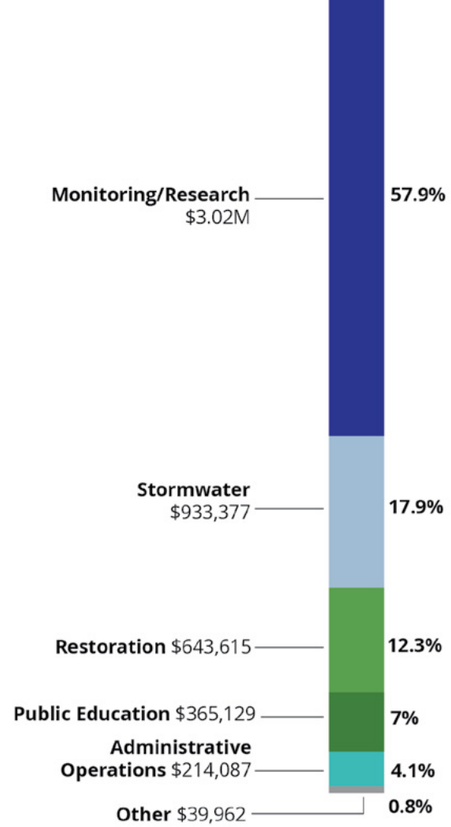
- Improving water quality and availability;
- Mitigating impacts to communities; and
- Increasing resiliency to climate change.

The governance and policy focus area involves action plans centered on implementing systematic change in municipalities, including advancement of the Safe Clean Water Program. These projects reduce storm water pollutant loading to the surface waters of the SMBNEP study area, enhance park space, and plant trees to decrease urban heat island impacts. ■

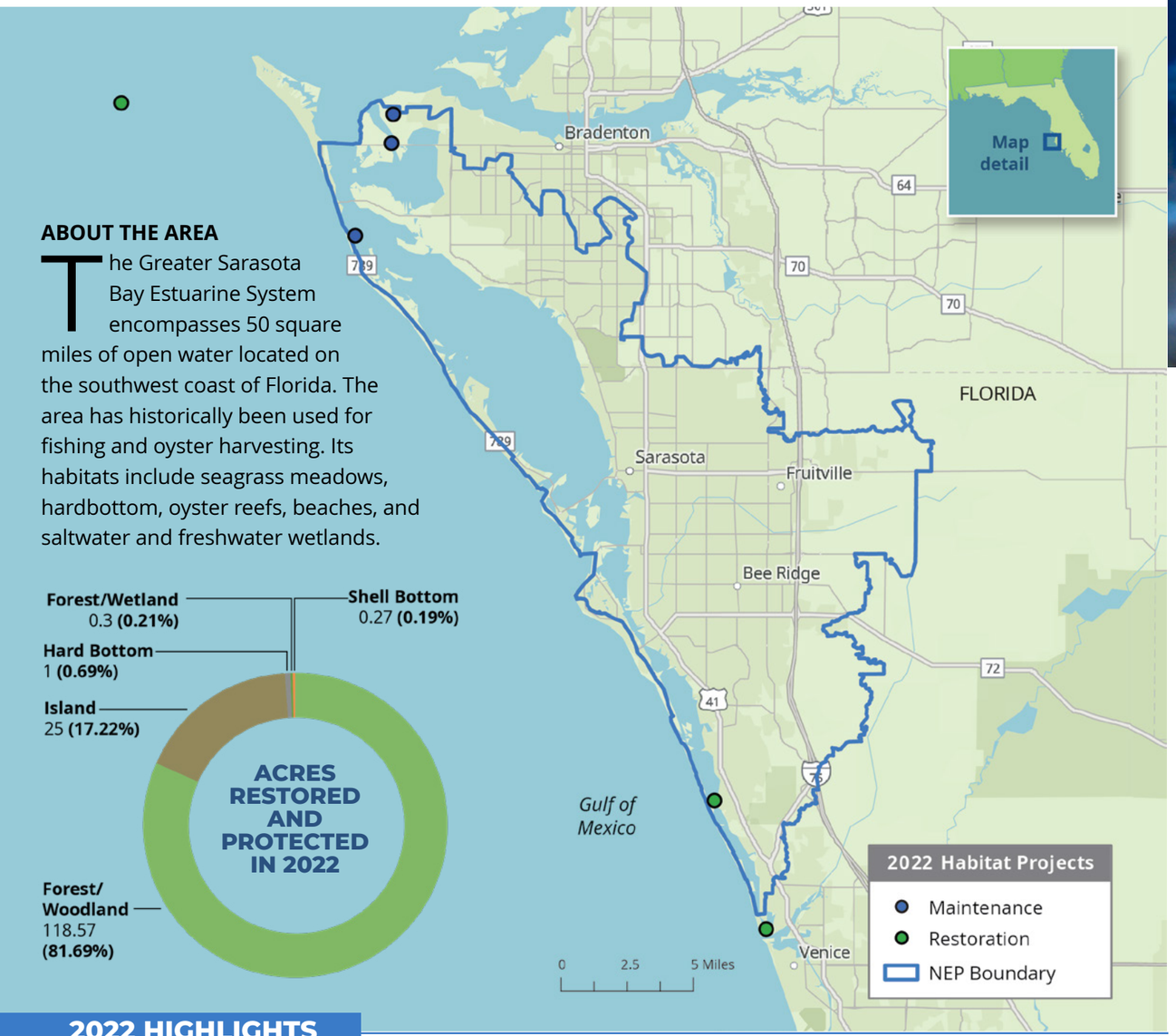
TOP 3 PROJECT BENEFITS

1. Climate change adaptation and resilience
2. Improve and increase educational or recreational opportunities
3. Protect, improve, and provide habitat for birds and other wildlife

PRIMARY LEVERAGED FUNDS



Sarasota Bay Estuary Program



ABOUT THE AREA

The Greater Sarasota Bay Estuarine System encompasses 50 square miles of open water located on the southwest coast of Florida. The area has historically been used for fishing and oyster harvesting. Its habitats include seagrass meadows, hardbottom, oyster reefs, beaches, and saltwater and freshwater wetlands.

2022 HIGHLIGHTS

- Restored or protected **145.14** acres
- Leveraged **$700,000** in primary funds
- Engaged **176** volunteers across **10** events
- Monitored **45** sites for seagrass and microalgae
- Installed **2,120** native plants by volunteers

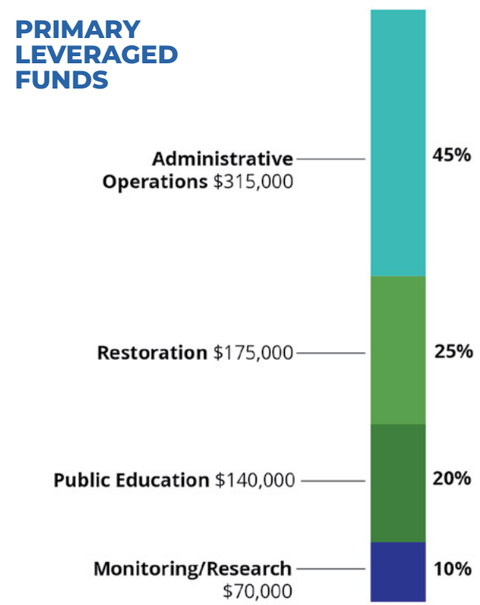
The Florida manatee is one of Florida's keystone species. Researchers observe their behavior to monitor environmental and habitat changes.

PROGRAM SUMMARY

Sarasota Bay Estuary Program (SBEP) is a cooperative partnership among communities, researchers, and governments working to improve the science of bay management, restore wildlife habitats, and increase community engagement in bay restoration efforts. The CCMP serves as a blueprint to guide future decisions and actions and addresses a wide range of environmental protection issues and opportunities including water quality, habitat, wildlife, and public access to bay resources. The CCMP features four focus areas that make up the action plans:

- Water Quality and Quantity;
- Watersheds;
- Wildlife; and
- Community Engagement.

Much of the Sarasota Bay watershed has been altered by urban agricultural development, lowering overall ecosystem function and services below what is necessary for a healthy estuary and sustainable habitats. The goal of the watershed focus areas is to restore habitats in the bay and eliminate future losses. To address this, SBEP is working to protect and restore seagrass and other benthic, or bottom, habitats that support hundreds of invertebrate species. To restore the bay bottom, SBEP and partners will monitor artificial and oyster reef quality while exploring optimal placement of new reefs. Seagrass indicators will be reevaluated before water quality improvement strategies are implemented to increase productive and resilient seagrass habitat. ■

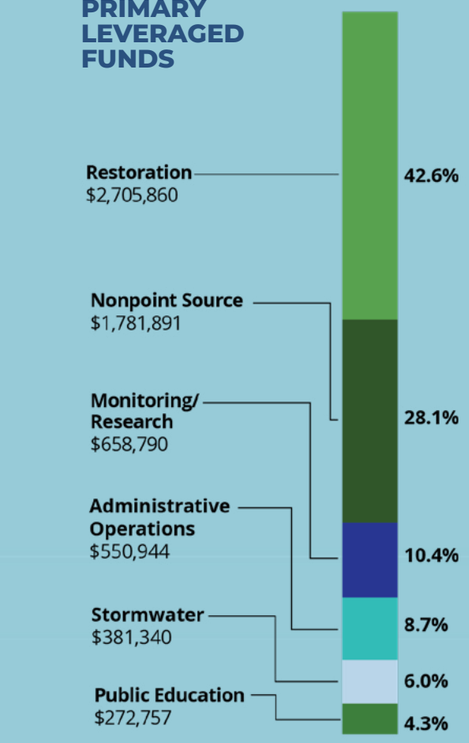


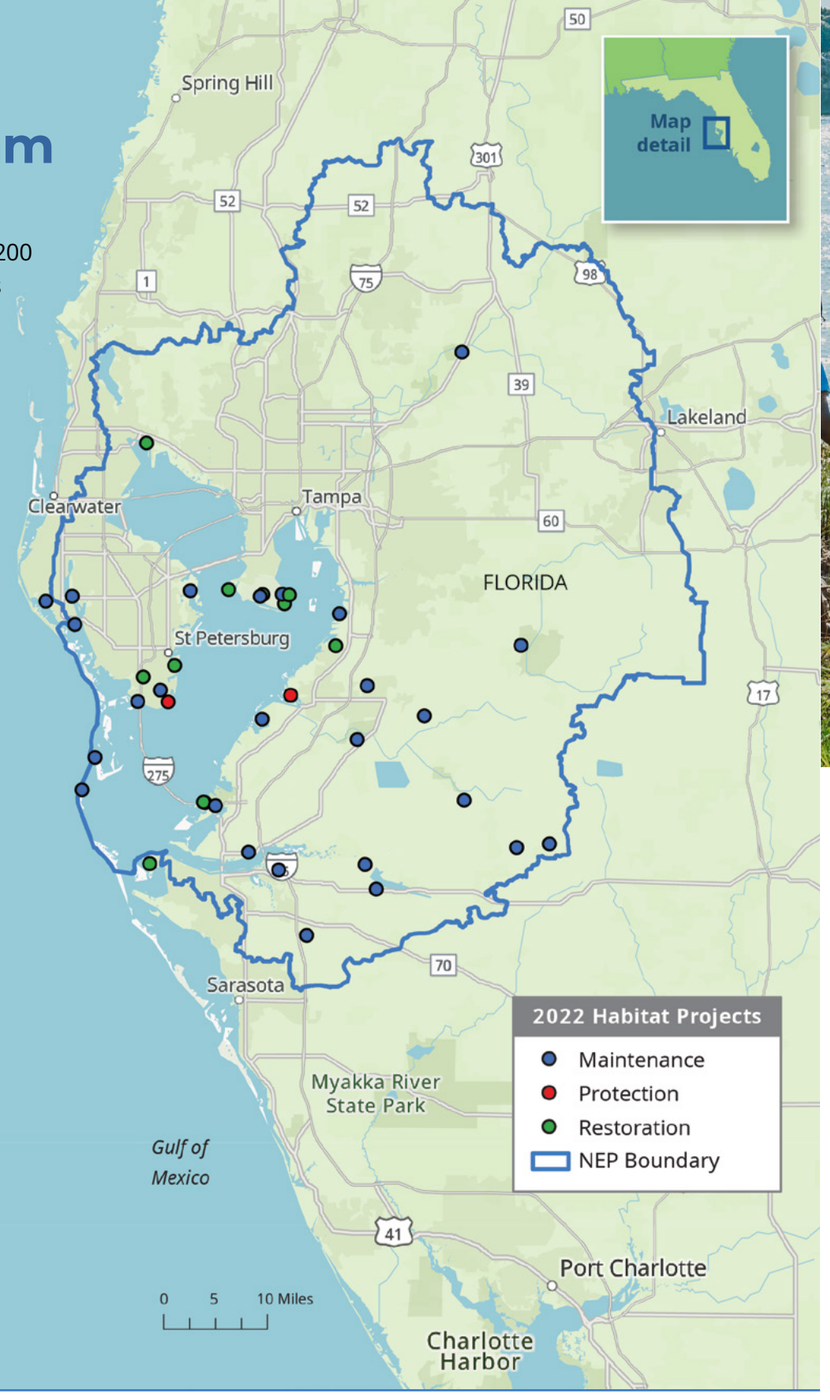
Tampa Bay Estuary Program

ABOUT THE AREA

The Tampa Bay watershed is 2,200 square miles in Florida, and its habitats include seagrasses, mangroves, salt marshes, and wet prairies. In addition to its diverse habitats, the region also supports large urban centers such as the City of Tampa which has an estimated population of 395,200.

PRIMARY LEVERAGED FUNDS





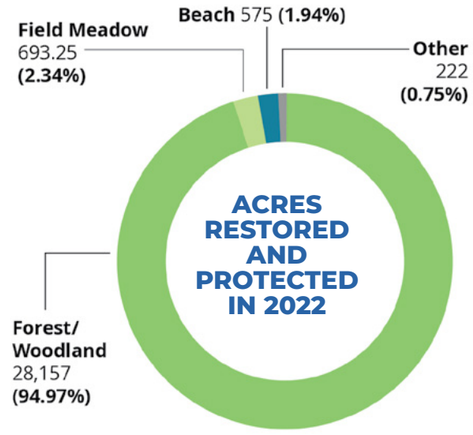
2022 HIGHLIGHTS

- Implemented **39** habitat projects
- Restored or protected **29,647.4** acres of habitat
- Leveraged **$6,351,584** in primary funds
- Engaged volunteers who removed **9,390** pounds of trash and marine debris; installed **3,000** plants; and improved **14,800** linear feet of habitat

Community volunteers at a Give-A-Day for the Bay event hosted by the Tampa Bay Estuary Program.
Photo by Yvonne Gougelet

PROGRAM SUMMARY

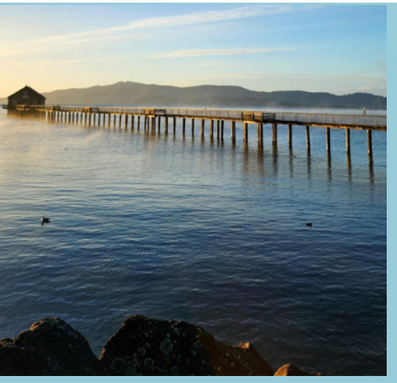
Tampa Bay Estuary Program's (TBEP) mission is to build partnerships to restore and protect Tampa Bay through implementation of a scientifically sound, community-based management plan. TBEP is committed to being a national leader in applying robust, reproducible science and compelling storytelling to drive community decisions and individual behaviors for the benefit of cleaner waters, thriving habitats, and abundant wildlife—all of which sustain Tampa Bay's economy and way of life. Seagrass coverage is a key indicator of overall ecosystem health in Tampa Bay, and recent declines in water quality have led to significant seagrass losses. TBEP is working with both public and private partners to implement additional management interventions to recover seagrass habitats. ■



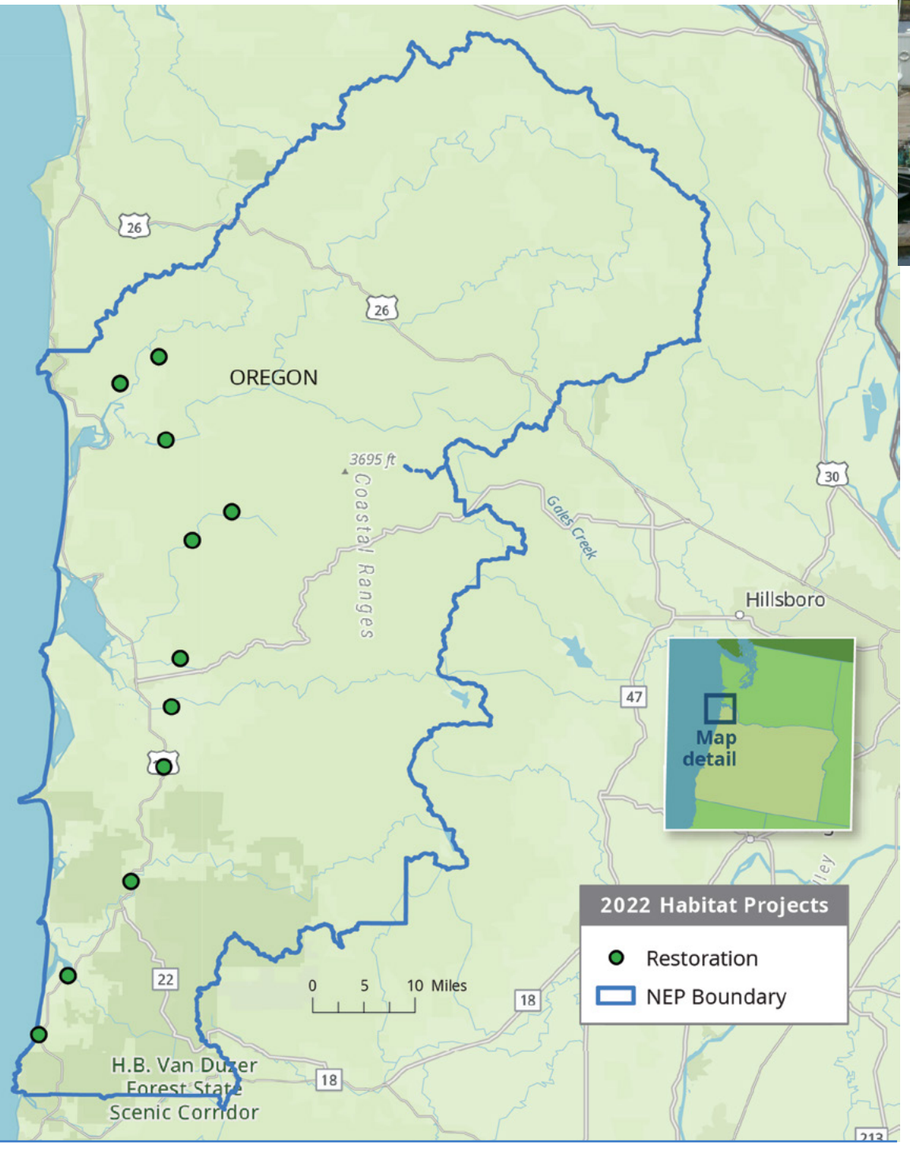
TOP 3 PROJECT BENEFITS

1. Enhance habitat for fish, wildlife, and the community
2. Improve and monitor water quality
3. Support environmental education in the local community

Tillamook Estuaries Partnership



A historic U.S. Coast Guard boathouse in Tillamook Bay, Oregon.



ABOUT THE AREA

Located on the north coast of Oregon, Tillamook Estuaries Partnership's study area includes the five estuaries within Tillamook County and their watersheds (from north to south: Nehalem, Tillamook, Netarts, Sand Lake, and Nestucca). Together, these areas cover 1,765 square miles of forest, riparian, estuary, and bay habitats.

2022 HIGHLIGHTS

- Collected and organized **2,548** water quality samples
- Collected **15 million** local seeds for the Native Plant Nursery
- Provided **32,000** hours of science, technology, engineering, and math education
- Restored **9,650** linear feet of riparian area
- Leveraged **$838,389** in funds
- Implemented **13** habitat projects

Fishing boats docked at Tillamook Bay. The rivers that feed into the bay are well known for their steelhead and salmon runs.

Photo by Nancy Laurson

PROGRAM SUMMARY

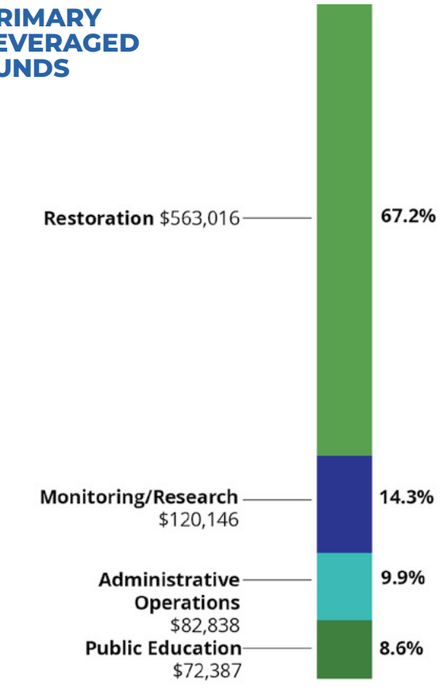
Tillamook Estuaries Partnership (TEP) is dedicated to conserving and restoring Tillamook County's estuaries and watersheds in their entirety. TEP creates productive dialogues around the natural resources at the social, cultural, and economic core of community. TEP also provides active and adaptable environmental leadership that honors the community's principles and values and sustains its partners. TEP's mission is to conserve and restore Tillamook County's watersheds through active stewardship, scientific inquiry, community engagement, and education. TEP hopes to provide wide-spread, equal access to their vision, mission, and accomplishments, as well as invitations for people to have meaningful involvement in their efforts toward clean water, healthy wildlife, and an enjoyable way of life. Informed by community priorities, TEP's CCMP is guided by three focus areas:

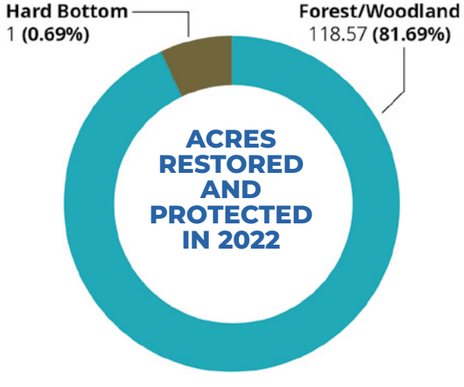
- Water quality improvements;
- Habitat restoration; and
- Education and engagement. ■

TOP 3 PROJECT BENEFITS

1. Enhance habitat for fish, wildlife, and the community
2. Improve and monitor water quality
3. Support environmental education in the local community

PRIMARY LEVERAGED FUNDS





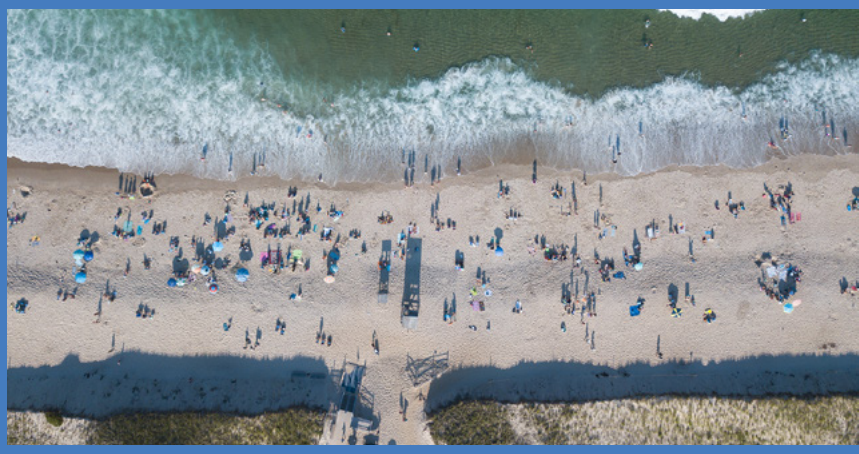
About the Information in this Report

This document reports on NEP projects, activities, and accomplishments in fiscal year 2022. The NEPs report the number of habitat acres they have protected and/or restored and funds leveraged with their partners annually to EPA. Current habitat estimates, as well as the methodologies employed for using the data, are available at **epa.gov/nep/national-results-national-estuary-program**.

For purposes of this report, the NEPs voluntarily contributed information beyond the data reported annually to the EPA. This includes success stories and accomplishments sourced directly from NEPs and their publicly available materials. Success stories and accomplishments highlighted in this report are not exhaustive of the NEPs' projects but provide examples that demonstrate a variety of projects implemented by the NEPs. Success stories and accomplishments may highlight the activities of the NEPs or partners in their Management Conference. ■

An American white water-lily on the surface of a pond. Photo by Ayla Fox for The Narragansett Bay Estuary

Back Cover: (Top-left) **A pelican** perched in a tree above a swamp in Louisiana. Photo provided by the Barataria-Terrebonne National Estuary Program; (Top-right) **A public beach** in Cape Cod, Massachusetts.; (Bottom-left) **Coastal wetlands**. Photo by Steven Gersh; (Bottom-middle) **Wetlands** in Assateague State Park, Maryland.; (Bottom-right) **A white crane** catching food. Photo by the Barataria-Terrebonne National Estuary Program



NATIONAL ESTUARY PROGRAM

EPA

Learn more about the National Estuary Program:
https://www.epa.gov/nep