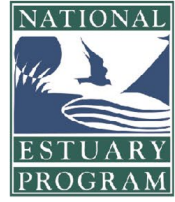


National Estuary Program

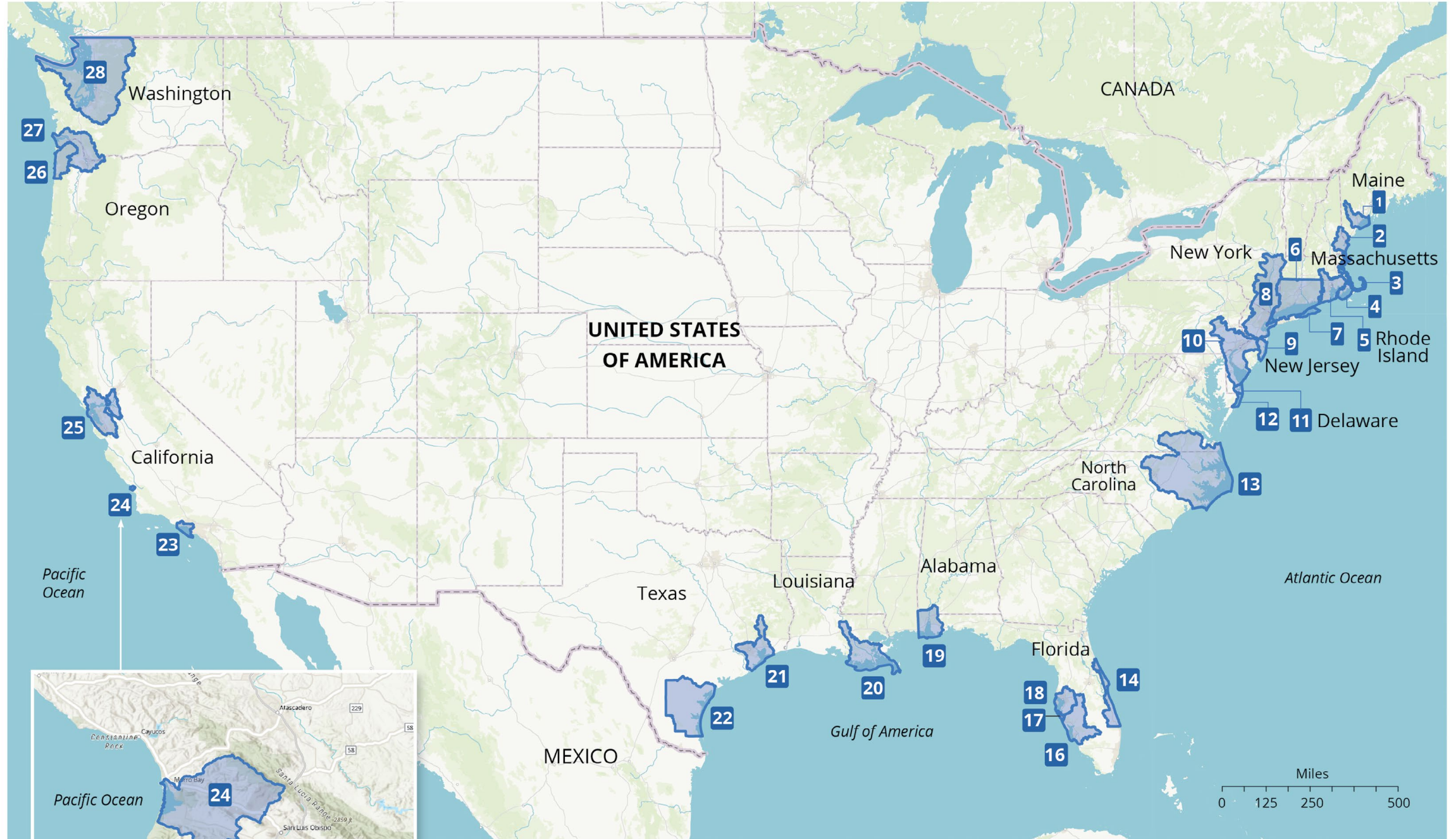
2023 ACCOMPLISHMENTS

MAY 2025



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 Partnership
- 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



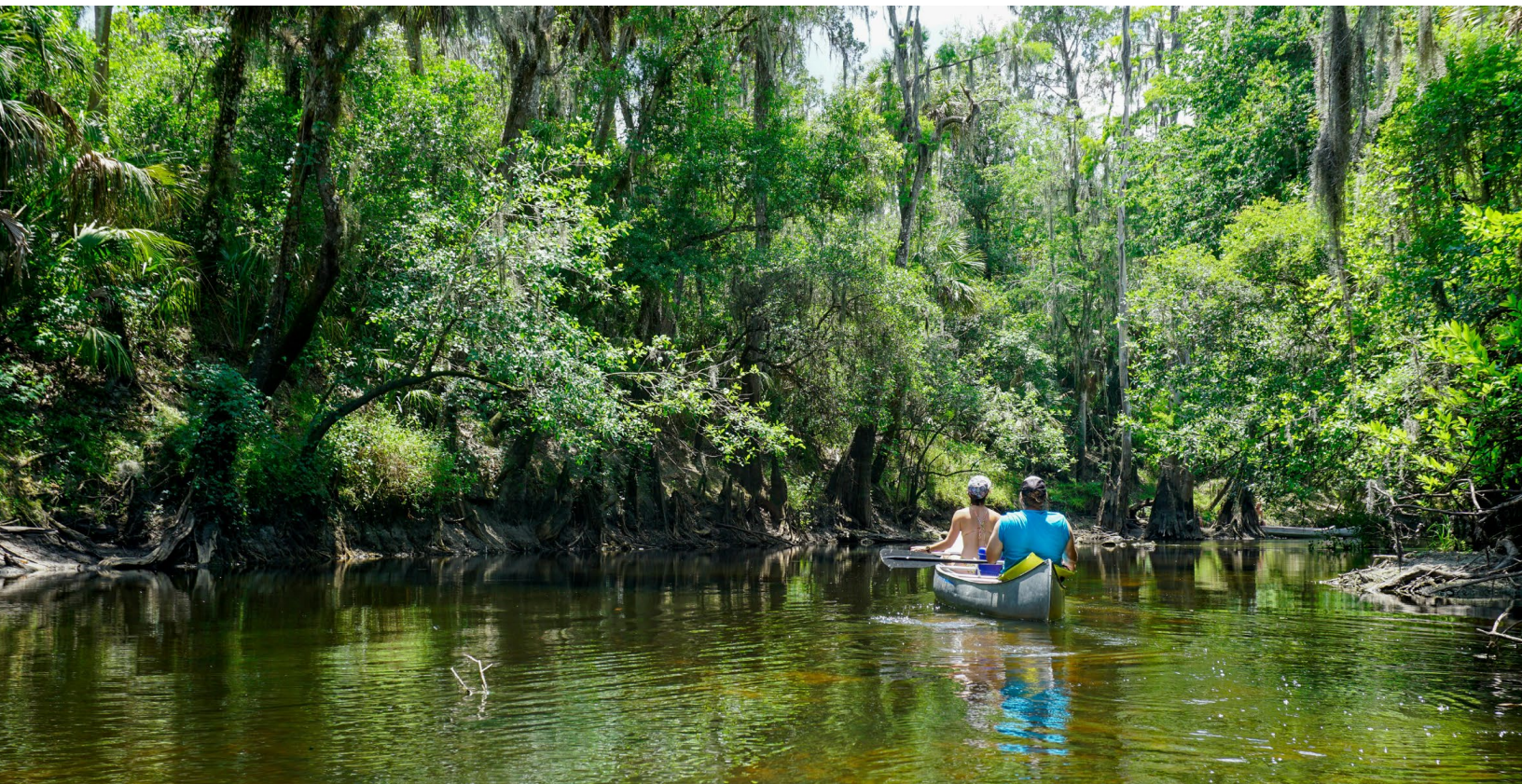
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Above, Left to Right: **Oyster** shells being transferred to the newly constructed oyster reef at Pasture Point in the Indian River Bay. Photo by Caitlin Chaney for the Delaware Center for the Inland Bays; **Debris** along Ainger Creek in Florida was collected by partner organizations and volunteers after Hurricane Ian. Photo by the Sarasota Bay Watch; **A student** works on his nature journal on Black Hill, overlooking the Morro Bay estuary and Morro Rock. Photo by the Morro Bay National Estuary Program Opposite page: **A snowy egret** hunting in the Indian River Bay. Photo by Caitlin Chaney for the Delaware Center for the Inland Bays. Cover: (Upper-left) **Brown Pelican**, Tampa Bay, FL. Photo by Joe Whalen for the Tampa Bay Estuary Program.; (Upper-right) A raft of **sea otters** floating in the Morro Bay estuary. Photo by the Morro Bay Estuary Estuary Program ; (Bottom-left) **Cypress tree**, Tampa Bay, FL. Photo by Joe Whalen.; (Bottom-right) **Students** explore the tidepools at North Point Natural Area in Morro Bay. Photo by the Morro Bay Estuary Estuary Program

Introduction



Canoe down the Alafia River, Tampa Bay, Florida. Photo by Joe Whalen for the Tampa Bay Estuary Program

Estuaries play a significant role in the health and wellbeing of U.S. coastal communities. While the estuarine regions of the U.S. comprise just 12.6% of U.S. land area,¹ they house 40% of the U.S. population and are responsible for 47% of all U.S. economic output.² Estuaries are vital nursery habitats for a variety of aquatic species and provide pollution filtration services that improve water quality. Growing populations and economic potential continue to make estuarine regions a focal area for development.

Estuaries face a variety of challenges today. Land development along U.S. coasts has removed

ESTUARIES ARE WHERE RIVERS AND OCEANS MEET

They provide many different habitat types, such as freshwater and saltwater marshes, mangrove forests and tidal pools. Estuaries also support diverse species and ecological services that boost the economy and support human health and well-being. Learn more about estuaries in the [2022 NEP Accomplishments Report](#).

many natural, protective vegetative buffers causing shorelines and banks to erode at an increasing rate. Estuaries are, by nature, on the front lines of many extreme weather events and other impacts: intense storms, flooding related to sea level rise, accelerated land loss and wetland degradation or loss. 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 and its 28 local NEPs address habitat loss and the broad range of challenges facing coastal communities. Together, local NEPs and partners have protected and restored more than 2.8 million acres of habitat since 2000³ using approximately \$44 million in Clean Water Act Section 320 funding from the EPA and nearly \$12.7 billion in partner funding. Through leveraging activities local NEPs generate an average of \$16 for every \$1 provided by the EPA, demonstrating the return on taxpayer investment. Funding allocated through the 2021 Infrastructure Investment and Jobs Act accelerates this important work to protect and restore estuaries of national significance and prioritize building community resilience. In 2023 alone, local NEPs collectively:

- Invested over \$118 million primary leveraged funds⁴ in habitat restoration; and
- Completed 615 habitat projects that protected or restored more than 224,000 acres of

habitat (the most acreage reported since tracking habitat data first started in 2006).

This report presents the NEP national metrics for federal Fiscal Year 2023 alongside success stories from local NEPs demonstrating why their work is vital for healthy ecosystems, clean waters and strong communities. Completed projects improved the health and well-being of the estuaries' local communities and environment, while making progress engaging watershed communities. Local NEPs also supported watersheds through infrastructure development, outreach and education, and building relationships with local communities.

The habitat and leveraging data included in this report are collected on an annual basis from the 28 local NEPs to track the impacts of base funding provided by the EPA through Clean Water Act Section 320. Data from projects funded by the Infrastructure Investment and Jobs Act will be available in future reports. ■



The Barataria-Terrebonne National Estuary Program planted over 18,700 plants in a 36-acre marsh mitigation area in Port Fourchon, Louisiana, to turn the area into a healthy marsh habitat that will serve numerous species and protect the coastline.

Photo by the Barataria-Terrebonne National Estuary Program

¹ Pendleton, Linwood H., 1964- (2011). The economic and market value of coasts and estuaries what's at stake

² 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>.

³ This figure includes 1,921,169 acres of NEPORT habitat data from 2006-2023 and 927,242 acres of habitat protected and restored prior to the NEPORT data collection system's creation in 2006.

⁴ Primary leveraged investments are defined as the dollar value (cash or in-kind equivalent) of resources dedicated to implementing a Comprehensive Conservation and Management Plan above and beyond the funding provided by the EPA, including congressionally directed spending.

Program Overview



The Marina Peninsula trail overlooking the Morro Bay estuary and the town of Los Osos. Photo by Morro Bay National Estuary Program.

Established by Congress in 1987, the NEP is an EPA 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 through activities such as workshops, program evaluations and communities of practice to unite

place-based programs in advancing common goals and priorities.

Local NEPs work with federal, Tribal, state, and local governments, as well as non-government organizations, academia, private sector, local community groups and the public to develop and implement long-term Comprehensive Conservation and Management Plans based on local priorities to guide their actions in monitoring, assessing, restoring and protecting

2023 NEP PROGRAM EVALUATION

Each year the EPA assesses and tracks a select number of local NEPs' progress in achieving their long-term CCMP goals through a process known as Program Evaluation. Local NEPs are evaluated by Workplan Accomplishments, Program Implementation, and Ecosystem and Community Status with subcategories that identify strengths and recommendations for success. This process ensures accountability and demonstrates the value of federal investment in estuary restoration and protection at the regional and local levels. Learn more about the process and results in the [NEP 2023 Program Evaluation Results Summary](#).

the health of estuaries, as directed by Clean Water Act Section 320. Each local NEP has 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, local 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.

INFRASTRUCTURE INVESTMENT AND JOBS ACT

In 2021, the Infrastructure Investment and Jobs Act was enacted and named the NEP as a key partner for implementation. The Infrastructure Investment and Jobs Act provides \$132 million for the 28 local NEPs for FY 2022-2026. This funding accelerates implementation of CCMPs, builds the adaptive capacity of ecosystems and communities, and leverages and supports additional resources. During FY 2022, the EPA delivered [NEP Infrastructure Investment and Jobs Act implementation guidance](#) and collaborated with local NEPs to start the process of executing Infrastructure Investment and Jobs Act funded projects. In FY 2023, the EPA awarded nearly \$22 million in Infrastructure Investment and Jobs Act funding to the 28 local NEPs to begin project implementation. ■



A large patch of **eelgrass** in the Morro Bay estuary during a monitoring survey.

Photo by the Morro Bay National Estuary Program

National Results and Local Success Stories



Science technician Morgan Krell removes a sonde from the Rehoboth Bay during water quality monitoring.
Photo by Caitlin Chaney for the Delaware Center for the Inland Bays

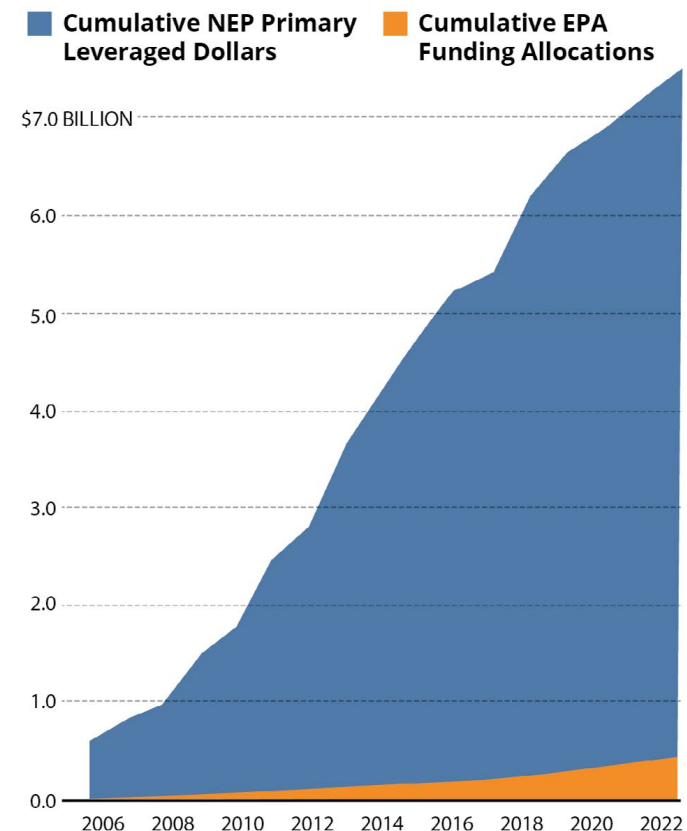
Local NEPs have leveraged approximately \$7.4 billion to implement priority actions contained in their CCMPs since 2006. These investments are primary leveraged investments, defined as the dollar value (cash or in-kind equivalent) of resources dedicated to implementing a CCMP beyond the funding provided to individual NEPs under Clean Water Act Section 320.

The local NEPs use their multifaceted networks to act as conveners to creatively fund projects with partners and provide a return on taxpayer investment. In 2023, local NEPs leveraged a

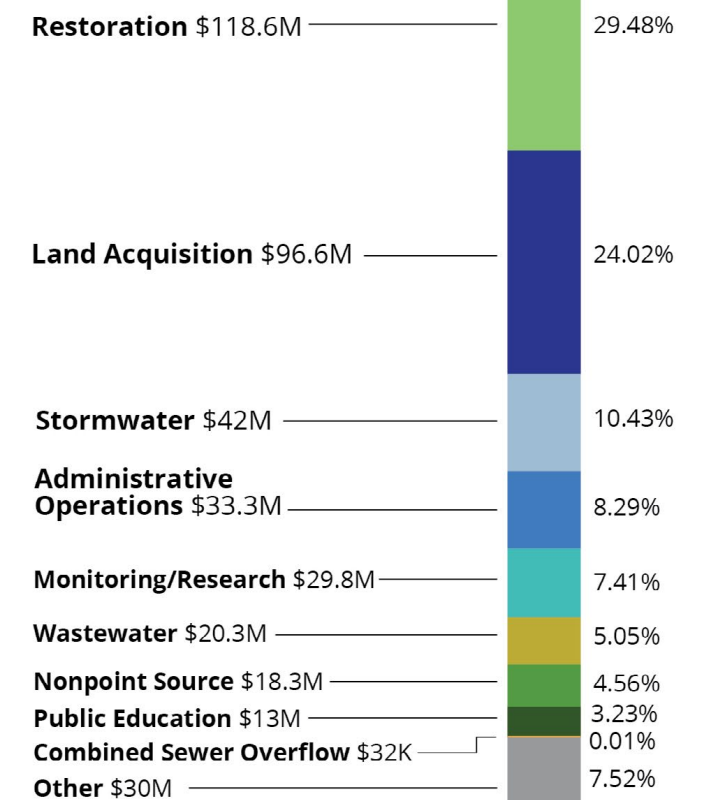
total of approximately \$403 million in which they played a primary role in obtaining resources. Most investments were allocated toward the restoration of degraded ecosystems, land acquisition, stormwater management and administrative operations. Without individual NEPs acting as the backbone for these local partnerships, ecosystems and communities would likely receive little of this additional investment.

The 28 local NEPs implemented projects in collaboration with their many partners that improved environmental conditions, bolstered human health, built organizational networks and

CUMULATIVE PRIMARY LEVERAGING BY THE NEP ~\$7.4 BILLION, FY 2006-2023



2023 PRIMARY LEVERAGED FUNDS BY PROJECT TYPE ~\$403 MILLION



(Left) Since 2006, local NEPs have leveraged \$7.4 billion with approximately \$463 million in allocated funding from the EPA.⁵ (Right) In 2023, local NEPs leveraged approximately \$403 million toward projects related to activities such as restoration, land acquisition, stormwater management, administrative operations and more.⁵

increased capacity to carry out future activities. This report explores these projects through the themes of habitat restoration; aquatic connectivity; extreme weather events and resiliency; nutrient reduction; human health; recreation; community engagement and education; and capacity, fundraising and partnerships.

The following sections offer a snapshot of projects that local NEPs accomplished in 2023 and help demonstrate why this work is important for the estuaries and the communities that rely on them. ■

⁵The leveraged funds and allocated EPA funds depicted in the chart do not include the Infrastructure Investment and Jobs Act funds distributed to the local NEPs.

Habitat Restoration

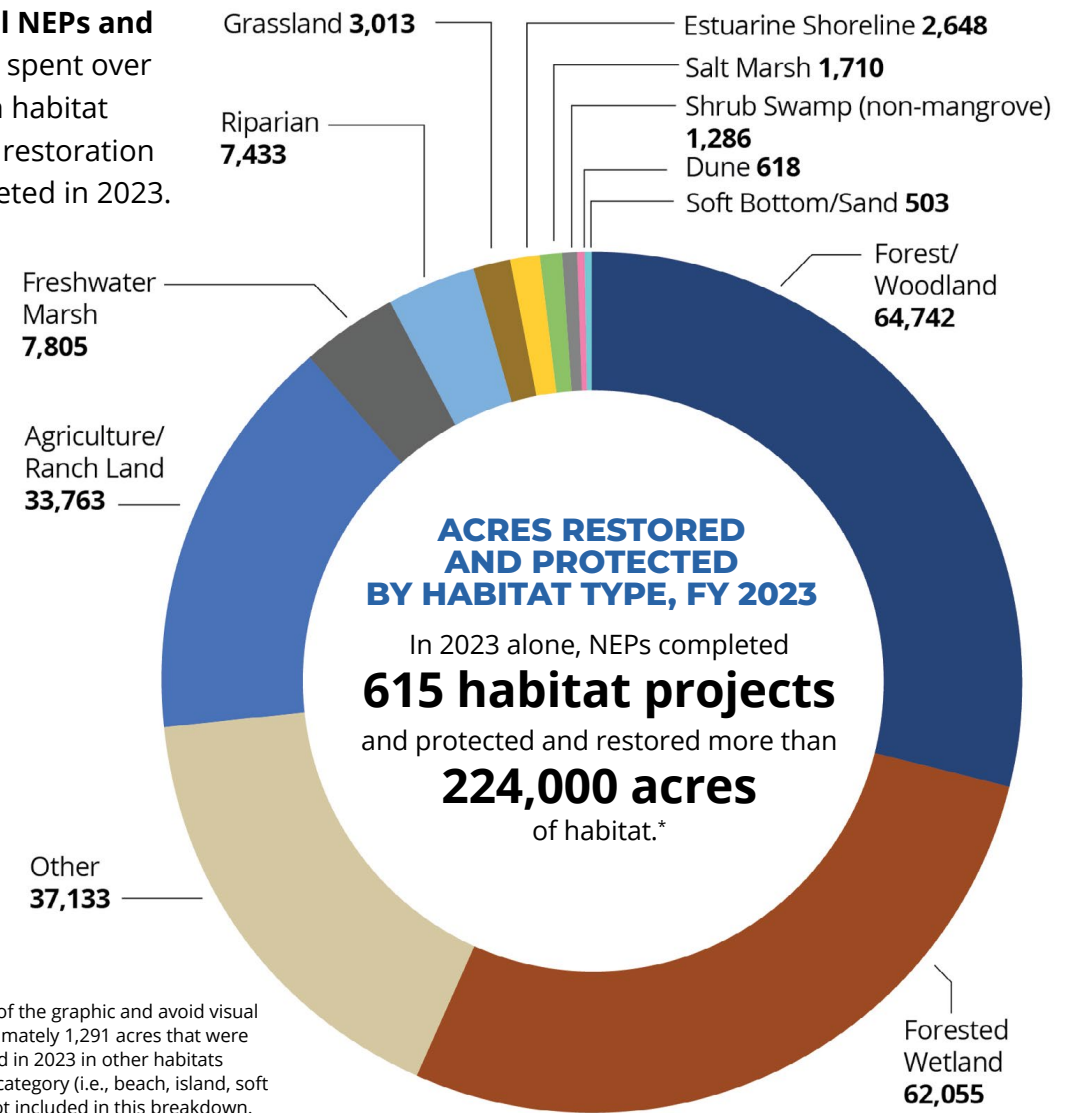


Charlotte Harbor Flatwoods, in Charlotte and Lee Counties, Florida, is the site of a large scale, multi-partner hydrologic restoration initiative. Photo by the Coastal & Heartland National Estuary Partnership

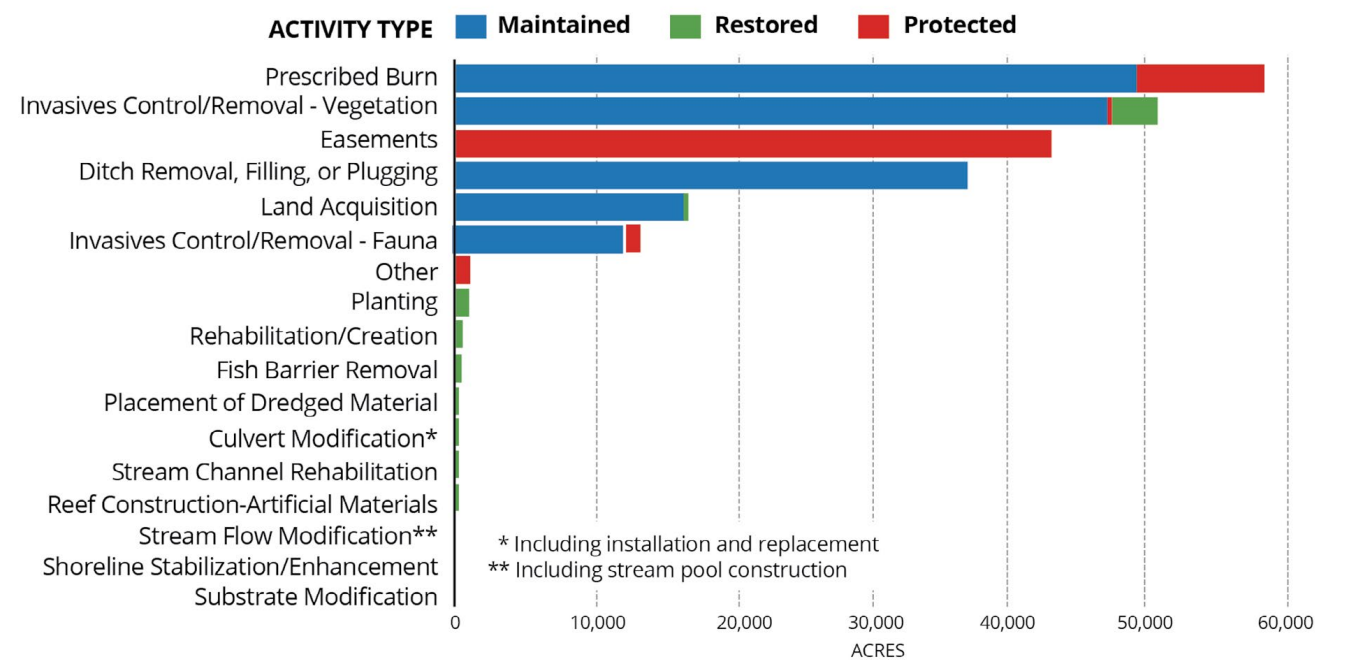
Healthy habitats provide a home for native species to flourish, which subsequently improves the overall health of the estuarine system and bolsters economies that depend on the estuarine system. Many estuaries experience risks for habitat degradation from habitat conversion and fragmentation, nutrient pollution, changes to hydrology and increases in invasive species, ocean acidification, rising water temperatures and other factors.

In collaboration with partners, local NEPs protect, maintain and restore habitats by revegetating natural areas, implementing ecological restoration projects and acquiring or preserving open space. These projects bolster native species and ecosystems, while also creating new jobs, improving water quality, protecting human health, decreasing the prevalence of harmful algal blooms in waterbodies, protecting shorelines from erosion and enhancing resilience.

Together, local NEPs and their partners spent over \$550 million on habitat protection and restoration projects completed in 2023.



ACRES RESTORED BY RESTORATION TECHNIQUE, FY 2023⁶



⁶The acres depicted in the chart do not include Infrastructure Investment and Jobs Act funded restoration by the local NEPs.

Habitat Restoration

DELAWARE CENTER FOR THE INLAND BAYS (DELAWARE)

Don't Chuck Your Shucks

The Delaware Center for the Inland Bays' "Don't Chuck Your Shucks" events engage the public and local businesses in conservation efforts to clean up the bays and repurpose spent oyster shells. In 2023, volunteers from the Village Improvement Association of Rehoboth Beach joined Center staff and volunteers at the Delaware Center for the Inland Bays' "Don't Chuck Your Shucks" shell yard to help bag oyster shucks to be used in future restoration projects. The spent shells can provide habitat for communities of grass shrimp and worms, which then support populations of commercially valuable crabs and fish in the bays. Volunteers collected shells from more than 25 area restaurants; the shells were cured in the sun for at least six months before being used in various habitat restoration projects around the Inland Bays, including living shorelines and oyster reefs. Shell bags will be used in upcoming living shoreline projects at Thompson Island in Rehoboth Beach and Sunset Park in Dewey Beach.



Volunteers finish creating a burrito of oyster shells to be used in oyster reef construction.

Photo by Caitlin Chaney for the Delaware Center for the Inland Bays



Santa Monica Bay National Estuary Program (California)

Kelp Forest Reforestation

Giant kelp forests in southern California grow from rocky reefs providing a three-dimensional structure that supports over 700 species of algae, invertebrates, fish, mammals and birds. Numerous stressors have reduced the extent and quality of the giant kelp forests in Santa Monica Bay, leading to loss of fishing, recreation and ecological integrity. The cumulative impact of these stressors often results in the establishment of urchin barrens — an urchin-dominated area with little or no kelp. Urchin barrens have greatly reduced productivity and diversity when compared to resilient giant kelp forests. The project causes an ecological phase shift converting persistent urchin barrens to resilient giant kelp forest. The Palos Verdes Kelp Restoration Project is one of the largest and most successful projects of its kind and has gained international interest in Japan, Norway and Canada. In 2023, the Santa Monica Bay National Estuary Program restored 3.78 acres of kelp forest in the Santa Monica Bay off the Palos Verdes Peninsula through regular monitoring and restoration efforts. Since 2013, the Santa Monica Bay National Estuary Program and a consortium of biologists, fishermen and academic researchers have spent over 12,000 hours scuba diving to restore over 62 acres and study the giant kelp forest off the Los Angeles coastline. In addition, these restored giant kelp forests deliver benefits to the entirety of ocean waters and the adjacent coast and reduce the local risks of habitat degradation from ocean acidification and accelerated land loss from sea level rise and increased storminess. For more than 10,000 years humans have relied on this often-forgotten forest for sustenance and inspiration; this project helps maintain this legacy.



Seagrass Nursery at Brevard Zoo, Florida.

Photo by the Indian River Lagoon National Estuary Program

INDIAN RIVER LAGOON NATIONAL ESTUARY PROGRAM (FLORIDA)

Building Infrastructure and Human Capacity for Seagrass Restoration and Recovery

Between 2010 and 2021, the Indian River Lagoon lost approximately 89% of its seagrass coverage due to intense, large and long-lasting harmful algal blooms. This loss of essential

seagrass habitat negatively impacted the estuary throughout its food web. Historic levels of local, state and federal investments to improve aging and inadequate wastewater and stormwater systems — the primary sources for nutrient pollution that fuel these harmful algal blooms — are beginning to improve water quality.

The availability and timing of Infrastructure Investment and Jobs Act funds was transformative for the Lagoon. The Indian River Lagoon National Estuary Program recognized that a seagrass nursery network dedicated to seagrass restoration and research could help provide cultivated seagrasses for out-planting and support a seagrass restoration community of practice. Five organizations with sites distributed throughout the Indian River Lagoon were identified through a competitive Request for Qualifications to build and maintain the seagrass nurseries: Marine Discovery Center in Volusia County; Brevard Zoo in Brevard County; Florida Atlantic University-Harbor Branch Oceanographic Institute in St. Lucie County; Florida Oceanographic Society in Martin County; and Sea and Shoreline LLC facilities in Brevard and St. Lucie Counties. The network is in varying stages of completion and operation, with three nurseries in full seagrass production and the others in varying phases of construction.

Residents of the Indian River Lagoon region will benefit from the restoration success provided by the Indian River Lagoon NEP seagrass nursery network. These investments in infrastructure and workforce capacity will improve water and habitat quality as well as provide recreation and fishing benefits that will continue beyond the five-year term of Infrastructure Investment and Jobs Act funding. ■



The **Casco Bay Estuary Partnership** and partners collaborated to remove the Edes Falls Dam in Naples, Maine, restoring the natural flow of the Crooked River and reopening more than 25 miles of critical spawning and nursery habitats for aquatic species. Photo by Trout Unlimited

Aquatic connectivity refers to the flow of movement that takes place between energy, materials and organisms in different types of waterbodies. Connectivity in ecosystems is important because it contributes to biodiversity, resilience and general ecosystem and species health and survival.⁷ Many human activities can contribute to the fragmentation

In 2023, local NEPs completed 53 habitat projects nationwide that improved aquatic connectivity and improved or restored 242 miles of flow pathways for aquatic species through barrier removal and fish passage installation projects.⁸

⁷ Franklin, P. A., Bašić, T., Davison, P. I., Dunkley, K., Ellis, J., Gangal, M., González-Ferreras, A. M., Gutmann Roberts, C., Hunt, G., & others. (2024). Aquatic connectivity: Challenges and solutions in a changing climate. *Journal of Fish Biology*. <https://doi.org/10.1111/jfb.15727>

⁸ These data do not include additional aquatic connectivity projects and miles of flow pathways restored using Infrastructure Investment and Jobs Act funding in 2023.

and degradation of estuaries thus affecting aquatic connectivity. Infrastructure development and extreme weather impacts can reduce vital movement and exchanges between marine and freshwater ecosystems, affect tidal patterns and negatively modify the dynamic characteristics of estuarine habitats shifting them toward freshwater systems. There are many opportunities to improve connectivity through the removal or modification of aged and obsolete infrastructure such as old dams, road crossing or abandoned tidal gates.

CASCO BAY ESTUARY PARTNERSHIP (MAINE) ***Frost Gully Brook Restoration***

Fish passage and freshwater flow have been impeded in the Casco Bay area for decades by aging dams that block fish migration and impact the overall health of the bay and connecting rivers. Over the years, wild Eastern brook trout populations have declined elsewhere due to loss of riparian buffers associated with transformation and intensification of land use, altered stream channels and reduced stream flow. Maine has become an important refuge for the species. Dams place many aquatic organisms at risk by blocking movement along rivers and streams, including “salter” brook trout, which spend part of their life in marine waters and part in coastal streams.

The Casco Bay Estuary Partnership collaborated with Freeport Conservation Trust, Merrymeeting Bay Chapter of Trout Unlimited, Maine Water Company, the U.S. Fish and Wildlife Service and stream restoration specialist Alex Abbot on a project to improve the health of Frost Gully Brook, a small tributary of the Harraseeket River

and Casco Bay. A primary purpose of the project was to support local population of salter brook trout. Partners met with stream ecologists, landowners and anglers over a seven-year planning period and studied the brook. Together, the group determined that the brook and its resident trout were being impacted by three dams built between the 1800s to 1950s that no longer served any useful purpose. The group developed a plan to remove those dams with as little disruption to the ecosystem as possible.

Over a five-day period, partners deconstructed the dams on Frost Gully Brook. Removing the dams lowered stream temperatures and reconnected the freshwater habitat in the stream to the Harraseeket estuary, benefiting brook trout populations and allowing for free flow of other aquatic organisms, nutrients, sediment and wood.



Frost Gully Dam on Frost Gully Brook in Freeport, Maine, following breaching and partial removal.

Photo by Alex Abbott, Trout Unlimited

Aquatic Connectivity



Myakka Headwaters restoration site in Manatee County, Florida – an area of collaboration between the Coastal & Heartland National Estuary Partnership and Big Waters Land Trust (formerly, Conservation Foundation of the Gulf Coast) to restore habitat and sheet flow. Photo by the Coastal & Heartland National Estuary Partnership

LONG ISLAND SOUND STUDY (NEW YORK, NEW JERSEY AND CONNECTICUT) **Strong Pond Dam Removal and Riverbank Restoration**

Outdated fish barriers and infrastructure have caused habitat loss for migratory fish, negatively impacting the Long Island Sound area for decades. Extreme weather has resulted in flooding and land loss in the area.

The Strong Pond Dam is the first barrier that migratory fish encounter after swimming up the Norwalk River from the Long Island Sound. Planning for the Strong Pond Dam removal began in the 2000s. To support the final demolition phase, the Long Island Sound Study contributed \$250,000 to the project using Infrastructure Investment and Jobs Act

funding. The Long Island Sound Study awarded the Connecticut Department of Energy and Environmental Protection \$2.2 million for dam removal. Demolition of the dam began in 2021, starting with a repair of the lower-level outlet, which was needed to drain water from the area before the next phase of the removal could begin. The final phase of removing the dam and restoring the section of the river was completed in September 2023, and 1.5 acres of vegetation were planted along the restored riverbank in the spring of 2024.

The dam removal opened an additional 10 miles of river habitat for migratory fish, like herring and sea lamprey, which have not had access to the historical spawning grounds since construction of the Strong Pond Dam and others built on the river. Expected long-term results of the project

include greater speciation, improved water quality and healthier ecological functions of the river overall. Restored riverbanks will benefit wildlife by providing habitat, food and shelter. The planted vegetation will also help prevent erosion, anchor soil and decrease flooding into urban areas.

TILLAMOOK ESTUARIES PARTNERSHIP (OREGON) Local Grants Program: Sand Lake Large Wood Aquatic Habitat Enforcement

The Tillamook Estuaries Partnership's new local grants program is helping organizations in local watersheds reach their habitat restoration goals by providing stopgap *Infrastructure Investment and Jobs Act* funding for existing projects. The local grants program gives the Tillamook Estuaries Partnership's partners the ability to apply for funds to fill the gap between their current grants.

Efforts in the North Coast region of Oregon are focused on restoring habitat for the endangered Coho Salmon, which is a vital species to the local ecology and economy through fisheries and the tourism industry. Habitat restoration for salmon often focuses on removing barriers to stream passage like undersized culverts and adding large logs across streams. With large logs in place, natural processes will shape the streams into ideal habitat for salmon to rest while migrating and shelter as juveniles, allowing the survival of multiple generations of salmon. Large wood projects like this require little to no maintenance afterward and frequently perpetuate themselves by trapping other logs and fallen trees as years go on.

The Nestucca, Neskowin and Sand Lake Watersheds Council partnered with Stimson

Lumber, the Oregon Department of Fish and Wildlife, the U.S. Forest Service and the Siletz Tribe to install 74 large wood placements along 2.7 miles of stream habitat. The Oregon Watershed Enhancement Board provided \$84,573 and the Tillamook Estuaries Partnership Local Grant provided \$50,000 in Infrastructure Investment and Jobs Act funding, while other partners donated technical assistance and timber. The project took place in the Sand Lake Basin along sections which were identified as high priority salmon habitats in the 2019 Sand Lake Basin Limiting Factors Analysis. ■



Monitoring staff collect data on **green crabs** in Tillamook Bay, Oregon. Photo by Diana DiMarco for the Tillamook Estuaries Partnership

Extreme Weather Events and Resiliency



Aerial view of the Selsey Road Living Shoreline project on the Isle of Wight Bay in West Ocean City, Maryland.

Photo by Christine Campos for the Maryland Coastal Bays Program

The **Protect and Restore America's Estuaries Act**, an amendment to Clean Water Act Section 320 signed into law in January 2021, requires all the local NEPs to have a management plan that "addresses the effects of recurring extreme weather events on the estuary, including the identification and assessment of vulnerabilities in the estuary and the development and implementation of adaptation strategies."

Given their coastal locations and the environmental goals the NEP pursues, local NEPs were among the first programs to recognize and

address the vulnerability of their study areas to natural disasters and the short- and long-term impacts from recurring extreme weather events and other risks by incorporating response actions in their CCMPs. Hurricanes, increased flooding, sea level rise, warmer water, drought, increased wildfires, acidification and other impacts can damage key ecological systems and reduce water quality. With nearly 40% of Americans living near or on an estuary, proactive efforts to make these areas resilient is important to safeguarding coastal residents, economies and natural resources.

In 2023, local NEPs completed **118 habitat projects that addressed extreme weather impacts and improved adaptation and resiliency in communities.**⁹

ALBEMARLE-PAMLICO NATIONAL ESTUARY PARTNERSHIP (NORTH CAROLINA AND VIRGINIA) *Building Resilience Capacity in Tribal Communities (Phase I)*

Until recently, Tribal communities in the Albemarle-Pamlico region had not engaged in formal resilience planning processes or the development of adaptation strategies. Some Tribal community representatives and leaders expressed a need for resilience or adaptation plans but lacked the resources, capacity or in-house expertise to begin the process.

The Albemarle-Pamlico National Estuary Partnership's Resilience team used geospatial mapping platforms to collect water stories and present threats and vulnerabilities identified by Tribal communities in the Albemarle-Pamlico region in North Carolina and Virginia. The team will build a Tribal Coastal Resilience Toolbox, create interactive skill building workshops and develop interactive maps to assist with future resilience planning, consistent with Clean Water Act Section 320, as amended. This information will also provide a platform that can be utilized to educate North Carolina Department of Environmental Quality staff on considerations, perspectives and traditional ecological knowledge unique to native communities.

⁹These data do not include additional adaptation and resilience projects conducted using Infrastructure Investment and Jobs Act funding in 2023.

This project will support comparative analysis of engagement approaches, asset mapping, risk and vulnerability assessments, social media engagement and recommendations for inclusion of Tribal considerations in state and local risk and resilience plans. The goal is to increase the number of Tribal communities in the region that incorporate resilience into local planning processes and strengthen connections with partners such as government agencies, academia and nonprofit organizations.



Houston Parks and Recreation Department staff and volunteers planting native plants in a newly created bioswale at Townwood Park in southwest Houston, Texas. This bioswale collects and cleans water from the parking lot before it flows into Sims Bayou. Photo by the Galveston Bay Estuary Program

Extreme Weather Events and Resiliency



Volunteers at a **Bay Mini-Grant** funded cleanup event in St. Petersburg, Florida. Photo by Carly Jones for the Tampa Bay Estuary Program

COASTAL & HEARTLAND NATIONAL ESTUARY PARTNERSHIP (FLORIDA) *Post-Hurricane Ian Remediation Effort*

The Coastal & Heartland National Estuary Partnership responded to Hurricane Ian, a major Category 5 hurricane which brought extreme winds, heavy rainfall and record storm surges to Southwest Florida on September 28, 2022. Unprecedented amounts of runoff pollution were discharged down the rivers in Central and Southwest Florida into the bays and the Gulf of America, including solid waste and physical debris from vehicles, as well as chemical, nutrient and bacteria pollution. Many areas were without functioning sewer systems, and failed septic

tanks overflowed into the streets, resulting in hypoxic (low oxygen) conditions and fecal coliform and other bacteria levels that exceeded the impairment threshold in waterbodies. These factors contributed to harmful algal blooms and subsequent mass fish die-offs throughout the watershed's estuaries and inland lakes and placed heavy burdens on water infrastructure.

Following Hurricane Ian, the Coastal & Heartland National Estuary Partnership worked with affected counties and government agencies to remove debris and coordinated pollution monitoring efforts to reduce and track the hurricane's impacts. The Partnership collaborated with partners and volunteers to

collect water samples and funded an online database to compile sampling results and analyze pollution data. The Coastal & Heartland National Estuary Partnership coordinated recovery and funding efforts by bringing the federal Interagency Recovery Coordination team together with local and regional stakeholders to identify needs and provide resources to further recovery and resiliency efforts. They also worked with the Central Florida Regional Planning Council to develop guides and informative documents to help prepare the community for future natural disasters. The Partnership funded community groups to engage in surface and underwater clean-ups in addition to organizing and leading clean-ups directly, collectively resulting in over 15 million cubic yards of debris removed. The Coastal & Heartland National Estuary Partnership remains engaged in long-term recovery efforts and is now funding Comprehensive Vulnerability Assessments in each of its 10 counties to aid community resiliency in the face of extreme weather events.

NEW YORK-NEW JERSEY HARBOR & ESTUARY PROGRAM (NEW YORK AND NEW JERSEY) Aquatic Connectivity

Much of the New York-New Jersey Harbor & Estuary Program geographical area is densely populated, and streams and rivers have been culverted under roads. While studies have been conducted on the aquatic connectivity of dams in the estuary, the effectiveness of fish passage and structural resilience of structures such as culverts and bridges to recurring extreme weather events needed further study. The New York-New Jersey Harbor & Estuary Program's aquatic connectivity project completed an assessment of road-stream crossings for aquatic passage vulnerable to

impacts from extreme weather events in the five sub watersheds (over 150 road-stream crossings) of the Lower Raritan and South Rivers in New Jersey. Additionally, the New York-New Jersey Harbor & Estuary Program produced a conceptual design for a problematic culvert replacement project in Old Bridge, New Jersey, and partnered with Princeton Hydro to develop a Restoration Strategy Toolkit for prioritization and assessment of stream crossing infrastructure replacement projects. The toolkit compiles available metrics and data which link site characteristics and potential restoration solutions for the implementation of specific, problematic crossings. The toolkit also identifies recommended restoration approaches that range in complexity from simpler strategies implementable by volunteers such as debris clearing, to complex strategies that would require qualified contractors for implementation at severe blockings.

The mapping system of road-stream crossings and the restoration toolkit will aid municipalities in identifying priority culverts for replacement that do not allow fish passage or may impede water passage in flood prone areas.



The **Harlem River** flows through Mill Pond Park and under the Harlem Amtrak line in Bronx, New York. Photo by Vince Bacalan for the U.S. EPA

Extreme Weather Events and Resiliency



Empty horizon in lower Pointe-au-Chien. Photo by Louisiana Public Broadcasting

BARATARIA-TERREBONNE NATIONAL ESTUARY PROGRAM (LOUISIANA) *[“The Precipice” Documentary Highlighting Vulnerabilities Facing a Native American Bayou Community](#)*

The Barataria-Terrebonne National Estuary Program was the majority funder of a documentary titled “The Precipice,” produced by Louisiana Public Broadcasting and the Public Broadcasting System. This documentary details a Native-American bayou community’s struggle to preserve a shoreline from accelerated land loss, consistent with Clean Water Act Section 320, that threatens to wash away their community and culture.

The film focuses on the Pointe-au-Chien Indian Tribe, a community literally on the precipice, as they fight to save their home and maintain

their culture and language. Two immense forces remain obstacles to a sustainable future: federal recognition and extreme weather. “The Precipice” identifies the challenges the Tribe is facing and the battles they are beginning to win. The film garnered significant accolades in 2023. The documentary was screened at the 2023 New Orleans Film Festival, the Louisiana 2023 State of the Coast and the United Nations Permanent Forum on Indigenous Issues. Additionally, the film was used in a digital story produced by the National Oceanic and Atmospheric Association. Most notably, the film won an Emmy for Best Topical Documentary. ■

The documentary has gained attention across the nation and is bringing attention to the severity of coastal land loss in Louisiana and the people, culture and heritage that will be lost along with it.

Nutrient Reduction

Harmful algal blooms can lead to unfavorable or even toxic outcomes in sea life, birds, pets and humans. Extreme weather events contribute to excess nutrient levels in coastal waterbodies, which can often lead to harmful algal blooms.¹⁰ Harmful algal blooms can also develop because of urban development and nonpoint source pollution, such as agricultural and residential runoff. By negatively impacting water quality, habitats and wildlife, harmful algal blooms can have long-term effects on human and animal health, ecosystems and economies. Local NEPs address these issues by carrying out activities to reduce nutrient loads from urban stormwater, wastewater, and agricultural and residential practices. For example, the Long Island Sound Study is currently testing and evaluating seaweed aquaculture as a sustainable solution to remove nitrogen, improve water quality and address other risks to estuarine health such as ocean acidification in New York and Connecticut waters.

In 2023, local NEPs invested about \$81.6 million — 49% of leveraged funds — in nutrient management activities that address nonpoint pollution sources, stormwater, combined sewer overflow systems and wastewater management.

PISCATAQUA REGION ESTUARIES PARTNERSHIP (NEW HAMPSHIRE, MAINE AND MASSACHUSETTS) *[Expert Panel Process for Advanced Septic System Technologies](#)*

Nutrient pollution from septic systems is a major concern in the Piscataqua Region



Massachusetts Maritime Academy coop student conducting a smoke test to help map a stormwater network and detect potential illicit connections. Photo by Kathleen Kutschenreuter for the U.S. EPA

Watershed in New Hampshire and throughout New England. Conventional septic systems are designed for sanitation by removing or inactivating pathogens, and nutrients have not been considered as pollutants until recently. Therefore, changes to septic system design and installation are needed to reduce nutrient loading from septic systems.

¹⁰ National Oceanic and Atmospheric Administration. (2016). What is a harmful algal bloom? NOAA. Retrieved November 20, 2024, from <https://www.noaa.gov/what-is-harmful-algal-bloom>



The Palo Alto Horizontal Levee Pilot project is a novel and innovative initiative that links nature-based solutions to achieve habitat improvement, public access, flood protection and water quality improvement. Photo by Heidi Nutters for the San Francisco Estuary Partnership

Partnership collaborated with consultant FB Environmental Associates to host an expert panel on the best approach to monitoring septic system performance. The Partnership recruited panelists from throughout the New England/ New York region with experience in soil science, wastewater policy and management, and septic system technologies.

The panel overwhelmingly preferred calculating nutrient loads from in-field monitoring of real-world septic system installations over other approaches such as monitoring test systems, modeling of performance, or measurements of nutrient concentrations or percentage reduction. The in-field monitoring approach was preferred over others because calculations from samples show the performance of systems in regions with different environmental conditions.

This expert panel finalized a report that describes policy recommendations for the

New Hampshire Department of Environmental Services related to using advanced septic system technologies to remove or retain nitrogen and phosphorus from wastewater, thereby protecting water quality in lakes, streams, beaches and estuaries.

 **SAN FRANCISCO ESTUARY PARTNERSHIP (CALIFORNIA)**
Palo Alto Horizontal Levee

The San Francisco Estuary Partnership, the City of Palo Alto and partners have been working to implement solutions to combat environmental degradation caused by extreme weather events and increased nutrient stressors on the estuary.

Located on the shore of Harbor Marsh in the Palo Alto Baylands, the Palo Alto Horizontal Levee Pilot Project will be the first horizontal levee built in the San Francisco Bay that beneficially reuses treated wastewater for irrigation. This horizontal levee will consist of a sloped wetland built between an inland flood protection levee and tidal marsh. Horizontal levees are nature-based features with multiple benefits over traditional flood risk reduction levees, including habitat enhancement, sea level rise adaptation and additional wastewater treatment.

The Palo Alto project's design and construction is being managed by the San Francisco Estuary Partnership and has been funded via the EPA's San Francisco Water Quality Improvement Fund, the California State Coastal Conservancy and the Infrastructure Investment and Jobs Act. The San Francisco Estuary Partnership has recently hired a Construction Management Firm, and the project will go out to bid in late 2024. ■

Human Health



Volunteers planting flowers at a Give-A-Day for the Day rain garden planting event, Gulfport, Florida. Photo by All Photos Considered Photography

Humans interact with and depend on estuaries for work, leisure and food consumption. Marine animals and habitats from coastal ecosystems also provide us with supplements and other compounds that can be used to develop pharmaceuticals and new medicines.¹¹ Living near estuaries and other coastal ecosystems is also linked to better physical and mental health outcomes. Increasing

danger of exposure to contaminants such as metals, pesticides, polychlorinated biphenyls and extreme weather events challenge the health and function of estuaries and nearby communities. Through monitoring, research, management, restoration and educational efforts, local NEPs play an important role in protecting human health in the present and for future generations.

¹¹ Lakshmi, A. (2021). Coastal ecosystem services & human wellbeing. *International Journal of Marine Research*, 30(3). https://journals.lww.com/ijmr/fulltext/2021/03000/Coastal_ecosystem_services_human_wellbeing.20.aspx

Human Health

TAMPA BAY ESTUARY PROGRAM (FLORIDA) Assessing per- and polyfluoroalkyl substances in sediments and fishes and the potential human health implications

With support from the Tampa Bay Estuary Program, the Tampa Bay Environmental Restoration Fund and the Tampa Bay Benthic Monitoring Program, the University of South Florida assessed the concentration and distribution of per- and polyfluoroalkyl substances within Tampa Bay. Known as PFAS, these chemical compounds are found in fire-fighting foams, food packaging, stain-resistant products and non-stick coatings that can be

toxic to both people and wildlife. Sampling from sediment and fish showed that PFAS pollution was highest in Old Tampa Bay and lowest in Terra Ceia Bay. Results suggest these substances biomagnify in the food chain and that some recreational fish species caught in portions of the bay have relatively high PFAS concentrations which may pose an elevated health risk for people who consume three or more meals per week of locally harvested fish. Expanding this pilot study to concentrate on the recreational fish species that are commonly consumed by people who rely on subsistence fishing for food, especially from Old Tampa Bay, is recommended.



Vertical Oyster Gardens, Robinson Preserve, Tampa Bay, FL. Photo by Joe Whalen for the Tampa Bay Estuary Program

COASTAL BEND BAYS & ESTUARIES PROGRAM (TEXAS) On-Site Sewage Facility Assistance Program

The Coastal Bend Bays & Estuaries Program, together with the Nueces River Authority, is working to implement an On-Site Sewage Facility Assistance Program to address nutrient and bacteria problems in targeted watersheds by inspecting, repairing and replacing on-site sewage facilities that are failing.

The Coastal Bend Bays & Estuaries Program executed a contract with the Nueces River Authority for implementation of this project in February 2023 and worked with community leaders to identify areas in most need of assistance. Outreach nights were held in selected communities to provide program information and on-site sewage facility education. To date, the program has been advertised in Spanish and English in Nueces, San Patricio, and Jim Wells County and received 114 applications for assistance. The applications were ranked based on their location and proximity to streams. In May 2024, an on-site sewage facility contractor was selected and conducted 40 inspections which revealed that all systems needed replacement. The Nueces River Authority is now going through the procurement process for a master agreement with contractor(s) to perform the on-site sewage facility replacements.

Currently, the Coastal Bend Bays & Estuaries Program expects to fund the On-Site Sewage Facility Assistance Program with upwards of \$750,000 of Infrastructure Investment and Jobs Act funding from the EPA, which will be enough to replace 37 systems benefiting 40

homes in the watershed. A contractor was selected and replacements began in fall 2024 with one replacement occurring per week for the following ten months. These repairs will help prevent stream pollution and groundwater contamination that can result in gastrointestinal and respiratory illness. ■



A contractor **installing on-site sewage facilities** replacements implemented by the Coastal Bend Bays & Estuaries Program's OSSF Assistance Program.

Photo by the Nueces River Authority



Aerial view of a kayak tour of Sarasota Bay during the 2023 Bay Fest. Photo by The Sarasota Bay Estuary Partnership

Estuaries provide a range of ecosystem and cultural services, including opportunities for recreation, tourism, education and spiritual inspiration that support human health and well-being. Estuaries are known to shape a sense of belonging, cultivate cultural identity and allow people to feel bonded to their environment.¹² Local NEP activities help increase recreational use of estuaries and make it easier for people to enjoy and benefit from these unique habitats.

The economic value of coastal recreation in the U.S. for beachgoing, fishing, bird watching and snorkeling/diving has been conservatively estimated by the National Oceanic and Atmospheric Administration to be in the order of \$20 billion to \$60 billion annually.

¹²Booi, S., Mishi, S., & Andersen, O. (2022). Ecosystem services: A systematic review of provisioning and cultural ecosystem services in estuaries. Sustainability, 14(12), 7252. <https://doi.org/10.3390/su14127252>

BUZZARDS BAY NATIONAL ESTUARY PROGRAM (MASSACHUSETTS) **New Bedford Public Schools Sea Lab Marine Science Education Program**

The Kalisz Sea Lab Marine Science Education Center is funded through the New Bedford Public Schools District. Since 1968, Sea Lab operates a six-week summer program servicing academically serious students interested in studying principles of oceanography, limnology, meteorology, physics, chemistry, geology and biology as related to the marine and aquatic environments. The Sea Lab designed its curriculum to be progressive and cumulative from the fourth grade to the ninth grade. In addition to classroom and outdoor exercises, students participate in field studies conducted along the Massachusetts and Rhode Island coastlines to learn about the scientific method and data collection. In collaboration with area universities, Sea Lab students have had the opportunity to take part in on-going scientific research. The Sea Lab also includes other outdoor activities such as swimming, sailing and snorkeling in the program. One of the Sea Lab program's fundamental elements is its focus on providing education for all public-school students.

For a second year, the Buzzards Bay National Estuary Program supported the Sea Lab program with a \$22,604 award. The funding provides scholarships for up to 40 students from low-income households and funds a field trip to Cuttyhunk Island in Buzzards Bay, a whale watch off Cape Cod, and various supplies and instructional aids for the program.



Students look under a microscope during the Tillamook Estuaries Partnership's Children's Clean Water Festival. Photo by Venturing Vows

SARASOTA BAY ESTUARY PROGRAM (FLORIDA) FISH Preserve Fully Restored

The Florida Institute for Saltwater Heritage, or FISH, championed and fundraised for the protection of a preserve neighboring the historically significant Cortez Fishing Village, a prominent link to the waters of Sarasota Bay, in 2000. After 23 years of grassroots efforts and environmental restoration, the partnership completed the final phase of restoration at the 100-acre FISH Preserve.

Following its acquisition, the preserve underwent years of restoration, removing invasive vegetation and adding waterways to connect flow to the Bay and restore aquatic habitats. Restoration of the FISH Preserve was a collaborative effort among FISH, the Sarasota Bay Estuary Program, the Florida Fish and Wildlife Conservation Commission,

Recreation



Tom Bennett Park Volunteer Planting in Bradenton, Florida. Hosted by the Sarasota Bay Estuary Partnership and partners, the event saw 58 volunteers who planted over 5,000 native plants. Photo by Manatee County



Full Moon Paddle at Robinson Preserve in Bradenton, FL (January 6, 2023): Educational night tour of the estuary hosted by the Sarasota Bay Estuary Partnership and Tampa Bay Estuary Program, Manatee County, and the Conservation Foundation of the Gulf Coast. Photo by Carly Jones, the Tampa Bay Estuary Program

the Southwest Florida Water Management District, the EPA and the National Oceanic and Atmospheric Administration. The partnership held an official ribbon-cutting ceremony in November 2023 with speakers from the EPA, Manatee County Commissioner Kevin Van Ostenbridge, Sarasota Bay Estuary Program staff, FISH treasurer Jane Von Hahmann and the EPA Region 4 Acting Administrator Jeaneanne Gettle.

FISH and its partners are actively pursuing ways to incorporate boardwalks, trails and signage into the preserve. Until then, preserve-goers can meander around the site and observe wildlife including osprey, mullet and small mammals.

In addition, permits were secured in 2023 for two other habitat restoration projects for Sarasota Bay Estuary Program funded by the Infrastructure Investment and Jobs Act. These include restoration of a former wastewater effluent storage pond and a stream restoration project in Bradenton's G.T. Bray Park and the installation of 24 artificial reef modules in the open waters of Sarasota Bay. ■

"The water quality in Sarasota Bay is improving, resulting in the bay being 'de-listed' for nutrient impairments for the open waters of the bay. Large-scale restoration projects like FISH Preserve build on that progress to help restore our fish and wildlife populations."

— Dave Tomasko, Executive Director of the Sarasota Bay Estuary Program.

Community Engagement and Education



Local families attend a beaver-themed story time event in the Morro Bay NEP Nature Center, in partnership with the SLO Beaver Brigade. Photo by the Morro Bay National Estuary Program

Community engagement and education is a vital component for protecting the health of the nation's estuaries. Effective environmental education and community engagement strategies have been shown to promote positive attitudes and greater commitment to protecting the environment.¹³ Local NEPs prioritize strengthening public education and awareness regarding

estuarine water quality and health conditions. Collaborations with local organizations, government and schools are important avenues for increasing societal awareness and participation. Extending the conversation to communities also allows the NEP to gain feedback and greater understanding of the diverse priorities and needs related to protecting estuaries.

¹³Zelenika, I., Moreau, T., Lane, O., & Zhao, J. (2018). Sustainability education in a botanical garden promotes environmental knowledge, attitudes and willingness to act. *Environmental Education Research*, 24(11), 1581–1596. <https://doi.org/10.1080/13504622.2018.1492705>

Community Engagement and Education



Attendees of a Explore Nature Tillamook Coast Event learn about sustainable foraging on Whalen Island, Oregon.

Photo by Danielle Maillard for the Tillamook Estuaries Partnership

In 2023, nearly \$13 Million — 31% of Leveraged Funds — were invested by local NEPs in public education and outreach efforts to connect communities with local natural resources and raise awareness on how to protect and preserve them.¹⁴

The [Protect and Restore America's Estuaries Act](#) amendments to Clean Water Act Section 320 reinforce the ongoing communication, engagement, public education and awareness that has been a key element of success for the local NEPs by requiring the CCMPs to "increase public education and awareness of the ecological health and water quality conditions of the estuary." Participation in the Management Conference involves public feedback processes

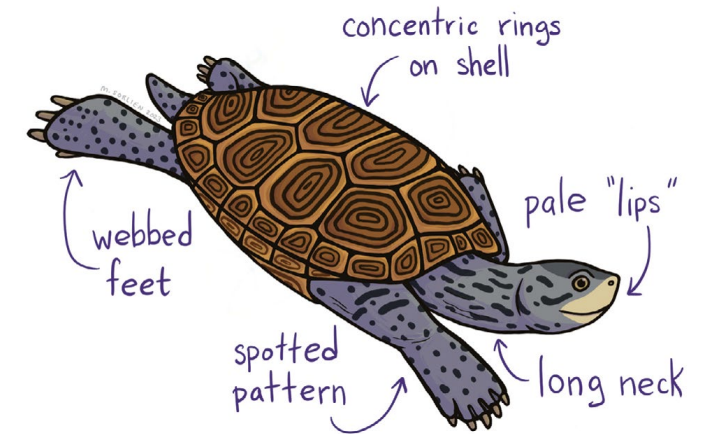
on CCMP priorities, ensuring broad voices are incorporated in the NEP decision-making process. Meaningful participation empowers communities to protect and restore key habitats, improve water quality and help increase resilience to the effects of extreme weather events and hazardous conditions at their local estuary.

MASSACHUSETTS BAYS NATIONAL ESTUARY PARTNERSHIP (MASSACHUSETTS) – *Connecting Coastal Communities Forum*

As a principal partner on a National Science Foundation-funded project, the Massachusetts Bay National Estuary Partnership facilitated four forums with two distinct coastal communities with the goal of identifying and discussing local environmental concerns and proposed responses. Those discussions were examined to determine whether quantitative (e.g., data) or qualitative (e.g., stories and images) information was more useful in conveying the environmental concerns. This information will inform best practices for engaging in future conversations with communities in the watershed area. The next series of workshops will result in a co-created list of data needs, communications strategies and overarching research questions that can be pursued in tandem with community members.

NARRAGANSETT BAY ESTUARY PROGRAM (RHODE ISLAND, MASSACHUSETTS AND CONNECTICUT) – *Terrapins: A Conservation Story*

The Narragansett Bay Estuary Program published a StoryMap focused on the history



Terrapin turtle illustration identifying key physical attributes. Illustration by Mariel Sorlien for the Narragansett Bay Estuary Program

of terrapin declines and local efforts from the program and their partners to protect the reptile, which is an endangered species in Rhode Island. A "StoryMap" is a web-based tool that combines interactive maps with various multimedia such as photos, videos and audio to tell a story about a place, event, or issue, often using geography to create an immersive and engaging experience for the viewer. Narragansett Bay Estuary Program's StoryMap on terrapins provides educational information about ongoing threats to the species such as habitat loss, poaching and road mortality. It includes conservation tips for individuals, like planting native plants as a food source and safely moving a terrapin to the other side of a road, as well as volunteer opportunities at restoration and monitoring events. The StoryMap highlights local accomplishments in 2023 made possible by the help of volunteers on projects such as the Barrington Terrapin Conservation Project, which protected 163 nests from predators.

¹⁴ These data do not include additional education and outreach efforts conducted using Infrastructure Investment and Jobs Act funding in 2023.

Community Engagement and Education



Students visiting the “Bosque y Huerto Urbano de Capetillo.” Photo by Estuario



SAN JUAN BAY ESTUARY PARTNERSHIP (PUERTO RICO) – Graduate Level Course in Collaboration with University of Puerto Rico: “Innovative Approaches for a Sustainable Water Infrastructure”

The San Juan Bay Estuary Partnership, or Estuario, is using the Infrastructure Investment and Jobs Act funding to jumpstart the restoration of the Juan Méndez Creek and to create a pilot project for reversing channelization of tributaries in the San Juan Bay Estuary. Due to its complex conditions, Estuario identified the Juan Méndez Creek, an urban channelized stream with poor water quality due to the continuous input of sewage and lack of structural stability, as the system model to establish reverse channelization. To contribute to the development of graduate professionals, the University of Puerto Rico’s Faculty of the Department of Environmental Sciences, in collaboration with Estuario, designed the course “Innovative Approaches for a Sustainable Water Infrastructure.”

During the fall semester of 2023, students from different academic backgrounds had the opportunity to directly interact with local experts from diverse professional backgrounds, using Juan Méndez Creek as the study site for the course. Throughout the semester, the students documented the creek’s status and delivered a synthesis of the information they gathered as a final product. This synthesis will be crucial in supporting the pre-planning phase of the Juan Méndez Creek restoration plan. All the classes were recorded in Spanish and will be available on the Estuario website. The course was offered for a second semester through the University of Puerto Rico’s Department of Environmental Sciences in the fall of 2024 to continue efforts of developing a cohort of experts that can think outside the box with the necessary tools to face complex problems. ■



Estuario Staff and USACE Staff visit a **sewage input to Juan Méndez Creek.** Photo by Estuario

Capacity, Funding, and Partnerships



Public program participants at the James Farm Ecological Preserve overlook the marsh.

Photo by Caitlin Chaney for the Delaware Center for the Inland Bays

Local NEPs collaborate with public and private partners to make projects come to fruition. These partnerships allow them to leverage resources to develop and implement CCMPs. Public and private sector engagement and contributions are crucial to achieving the goals of each program, including long-term ecological maintenance, restoration and protection.

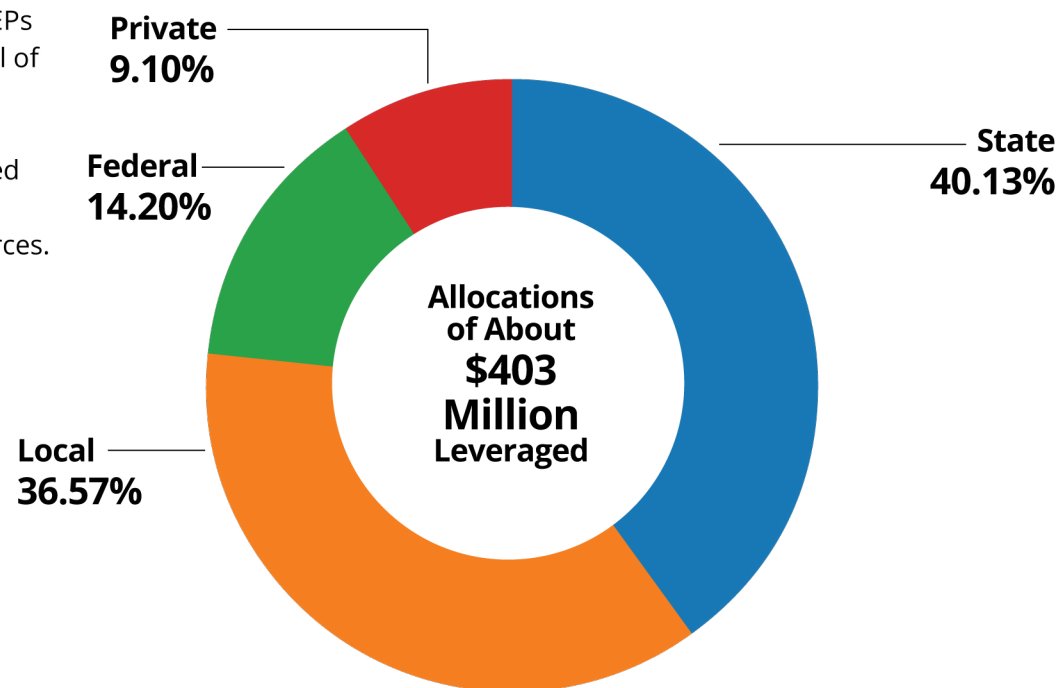
In 2023, approximately \$33 Million — 12.1% of Primary Leveraged Funds — were invested in administrative activities that build capacity, funding and partnerships of local NEPs to implement and expand new and continuing projects.¹⁵

¹⁵ The leveraged funds and allocated EPA funds depicted in the chart do not include the Infrastructure Investment and Jobs Act funds distributed to the local NEPs.

Capacity, Funding, and Partnerships

PRIMARY LEVERAGED INVESTMENTS, BY FUNDING SOURCE, FY 2023

In 2023, local NEPs leveraged a total of approximately \$403 million in which they played a central role in obtaining resources.



MOBILE BAY NATIONAL ESTUARY PROGRAM (ALABAMA) *Bays & Bayous Symposium*

Alabama and the Gulf Coast of Mississippi host a diverse range of ecosystems and species. A network of dedicated professionals works across the states to restore estuaries and find solutions for rising issues related to extreme weather events.

The Mobile Bay National Estuary Program held the Bays and Bayous Symposium on January 24-25, 2023, in Mobile, Alabama. Around 500 scientists, local resource managers, government officials, industry professionals and nonprofit leaders joined together to share the latest information about the estuary's changing watersheds; impacts from major stressors; recovery programs for species and habitats; and emerging challenges along the Northern

Gulf Coast. The Partnership holds a symposium biennially and alternates between the Alabama and Mississippi Gulf Coast.

Attendees were challenged with the theme of "Finding Balance: Economy, Ecology and Community" as they explored five tracks: Understanding Coastal Ecosystems, Improving Coastal Management, Strengthening Coastal Landscapes, Sharing Coastal Knowledge and Emerging Coastal Issues. Each track promoted scientific exploration and community understanding. The Symposium fosters partnership and collaboration between local and inter-state organizations, providing opportunities for partners across the region to identify shared goals and priorities to focus funds and efforts towards achieving actionable impact in restoring estuaries.

PUGET SOUND PARTNERSHIP (WASHINGTON)

Recovery Acceleration Funding Tool

The Puget Sound Partnership's [Strategic Funding Team](#) was established in 2023 with funding from the Infrastructure Investment and Jobs Act. The team's mission is to accelerate Puget Sound's ecosystem and salmon recovery by organizing and mobilizing funds, particularly through new federal funding opportunities available as a result of the Infrastructure Investment and Jobs Act and the Inflation Reduction Act. The Strategic Funding Team assists Tribes and local partners in responding to rapid funding availabilities that support the implementation of the [CCMP Action Agenda](#) and [Salmon Recovery Plan](#), the community's shared recovery plans for Puget Sound. The Strategic Funding Team supports the efforts of the recovery community to plan and act across sectors and geographies to align transportation, land use, habitat restoration and protection, agriculture, adaptation to extreme weather events, flood hazard reduction and stormwater infrastructure to achieve a multi-benefit approach.

In support of these goals, the Strategic Funding Team created the [Puget Sound Recovery Acceleration Funding Tool](#) to provide any grant-seeking partner with a public, centralized location for information about national, state and regional funding opportunities for Puget Sound ecosystem and salmon recovery projects. The Puget Sound Recovery Acceleration Funding Tool will help federal and state agencies provide timely funding information to partners and increase the

effectiveness of funding from the Infrastructure Investment and Jobs Act and other resources. In addition to active funding opportunities, the Puget Sound Recovery Acceleration Funding Tool allows users to search through closed funding opportunities for historical reference, future planning and grant strategy development. The tool also provides partners with a mechanism to connect and collaborate so grant applications integrate multiple priorities and have a greater chance for success. The Strategic Funding Team also supports Tribal and local partners' efforts to access and apply for funding by creating solutions to address funding barriers like application requirements, re-application demands, timeline incongruities, and consistency of funding sources.



The Puget Sound Partnership and representatives from partner organizations walk along a decommissioned road that was converted to a gravel trail with riparian zones replanted with native plants.

Photo by Cass Nieman for the U.S. EPA

Capacity, Funding, and Partnerships

PARTNERSHIP FOR THE DELAWARE ESTUARY (DELAWARE, PENNSYLVANIA AND NEW YORK) – Delaware Estuary 2023 Science and Environmental Summit Urban Waters Community Leaders Cohort

Many community organizations lack the capacity or resources required to identify and acquire funding for projects that address issues such as water quality, habitat protection, resiliency, stormwater management and community engagement.

Through the Urban Waters Federal Partnership, the Partnership for the Delaware Estuary established a cohort of community leaders from the UWFP Greater Philadelphia Area/ Delaware River Watershed and sponsored their attendance at the biennial Delaware Estuary Science and Environmental Summit. The cohort included 16 leaders from Camden, New Jersey; Philadelphia and Chester, Pennsylvania; and Wilmington, Delaware. Attending the Summit provided opportunities to engage with and meet each other as well as nearly 300 other students, scientists, government employees, nonprofit employees and other environmental professionals working in the estuary. It was an opportunity for these leaders to share their experiences, success stories and challenges, and to identify projects in their own communities that will improve environmental health and help implement priorities in the CCMP.

The Partnership for the Delaware Estuary is working with cohort members to find opportunities to connect with other community organizations, non-governmental organizations, private sector partners and government agencies; help them identify projects; provide



Partnership for the Delaware Estuary representatives Roshida Austin (left), Melody Mason (middle-right) and Barron Lacy (right) with Dr. Philippe Hensel (middle-left), the keynote speaker on extreme weather events at the 2023 Science & Environmental Summit in Atlantic City, New Jersey. Photo by Melody Mason

technical assistance; and leverage resources for on-the-ground implementation. Through a grant from the Partnership for the Delaware Estuary, funded by the National Fish and Wildlife Fund's Delaware Watershed Conservation Fund, more than \$400,000 was raised to support small community projects that will be implemented in 2024-2025. The Partnership for the Delaware Estuary is continuing to build and strengthen these relationships by coordinating events and workshops addressing capacity building needs identified by community leaders. ■

Looking Ahead

For nearly four decades, the National Estuary Program has restored and protected the nation's estuarine and coastal habitats, fostered resilient communities and advanced economic activity and innovative funding management. In the next report, the National Estuary Program plans to showcase accomplishments in the following areas:

- Addressing pollution in our nation's waters and restoring coastal habitat;
- Integrating community and natural hazard resilience considerations into the National Estuary Program;
- Efficiently utilizing available funding — including from the Infrastructure Investment and Jobs Act — in a timely manner to advance CCMP goals and communicating accomplishments; and
- Building Tribal, state and local capacity and fostering partnerships with a variety of stakeholders to protect and restore estuaries of national significance and their watersheds.

The local NEPs are trusted convenors working with federal, Tribal, state and local governments, non-governmental organizations, academia, private sector and communities to protect and restore estuaries of national significance. The local NEPs are dedicated to working with



Oyster shell restoration, MacDill Air Force Base, Florida. Photo by Joe Whalen for the Tampa Bay Estuary Program

communities to identify and implement local priorities while building capacity in the process. In partnership with local NEPs, the EPA will remain focused on advancing clean water priorities through cooperative federalism and cross-agency partnerships.

Continuing to focus on providing clean air, land and water for every American, the NEP will keep utilizing their funds to accelerate implementation of CCMPs, build community capacity, enhance resilience and implement hazard mitigation, and continue to commit significant time and resources to support habitat and water quality actions. ■

About the Information in this Report

This document reports on NEP projects, activities and accomplishments in FY 2023. The local NEPs provide the number of habitat acres protected or restored and funds leveraged with partners annually to the EPA as a result of annual base funding. Current habitat estimates, as well as the methodologies employed for using the data, are available on the [National Results page](#) of the [NEP web area](#). Data from projects funded by the Infrastructure Investment and Jobs Act will be available in future reports.

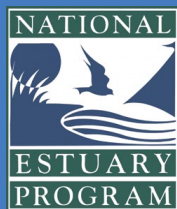
For purposes of this report, local NEPs voluntarily contributed information beyond the data reported annually to the EPA. This includes success stories sourced directly from local NEPs and their publicly available materials. Success stories highlighted in this report are not exhaustive of the local NEP projects but provide examples that demonstrate a variety of projects implemented by the NEPs. All projects included in this report implement Clean Water Act Section 320 and local NEP CCMPs, whether they are funded by the EPA, other federal agencies or through non-federal funds leveraged from partners. Projects may highlight the activities of the local NEPs or partners in their Management Conference. ■



Boats in the **Morro Bay estuary harbor** at sunset.

Photo by the Morro Bay National Estuary Program

Back Cover: (Top-left) **Tidal flats** and tidal inlets leading to West Galveston Bay within Galveston Island State Park. Photo by the Galveston Bay Estuary Program; (Top-right) **Roseate spoonbills** and laughing gulls in a small freshwater pond within Galveston Bay Foundation's Sweetwater Preserve on Galveston Island. Photo by Andrew Hancock for the Galveston Bay Estuary Program; (Bottom-left) **Possum the dog** running on a dog-friendly beach in Cayucos, with Morro Rock in the background. Photo by the Morro Bay National Estuary Program; (Bottom-middle) **Bay scallop**, Tampa Bay, Florida. Photo by Joe Whalen for the Tampa Bay Estuary Program; (Bottom-right) **Great egret** in the marsh at the James Farm Ecological Preserve. Photo by Caitlin Chaney for the Delaware Center for the Inland Bays



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