



Photo by Sandi Bisgood

PDE's Work in the Region

Chesapeake Bay Commission

Friday, November 15, 2024

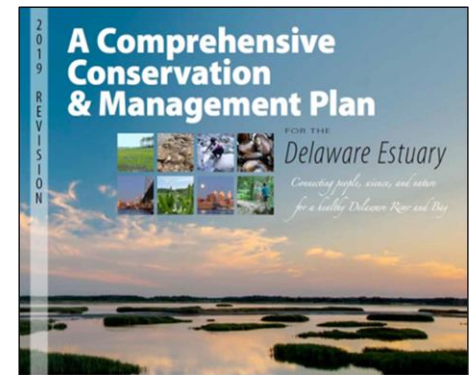
Delaware Estuary Program Background

- Because of the importance of its natural resources, habitat, wildlife, and intensity of human use, the Delaware Estuary was nominated for inclusion in the NEP May 1988 by the governors of NJ, PA, and DE. EPA added DELEP to the NEP on July 18, 1988
- The original structure of DELEP's Management Conference included a Policy Committee (EPA Regions 2 and 3, and the 3 states); Management Committee (comprised of one representative from each agency on the Policy Committee); Science and Technical Advisory Committee; Citizens Advisory Committee; Financial Planning Committee, and a Local Government Committee
- Each committee had to develop procedures to ensure balanced participation from varying disciplines and areas of expertise
- Developed the first Comprehensive Conservation & Management Plan that was unveiled in 1996



Partnership for the Delaware Estuary (PDE)

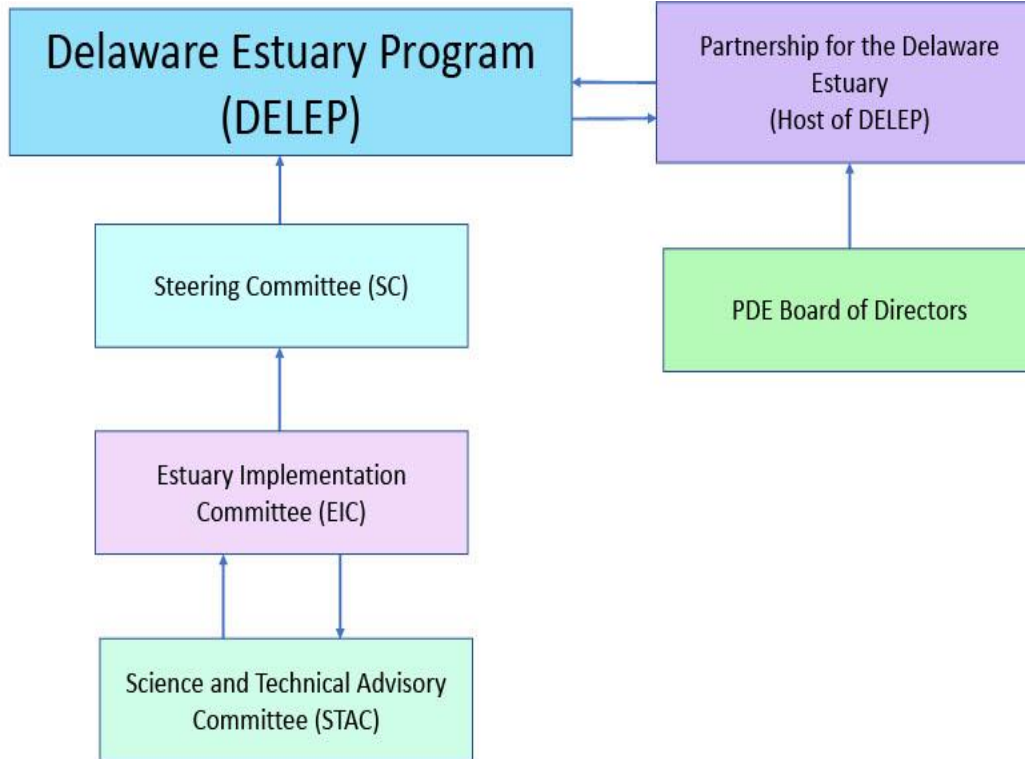
- Creation of a nonprofit to help implement the goals of DELEP was an action item in the 1996 CCMP
- Based out of Wilmington DE and works in DE, PA, NJ (25 counties, 2 regions of EPA) covering over 6,000 square miles
- 28 staff members currently
- Host of DELEP and coordinates implementation of DELEP's Comprehensive Conservation Management Plan (CCMP).
- Revised 2019 CCMP focused on three themes: Clean Waters, Healthy Habitats, and Strong Communities.



<https://delawareestuary.org/our-plan-2/>



Governing Structure



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



PHILADELPHIA WATER
— DEPARTMENT —

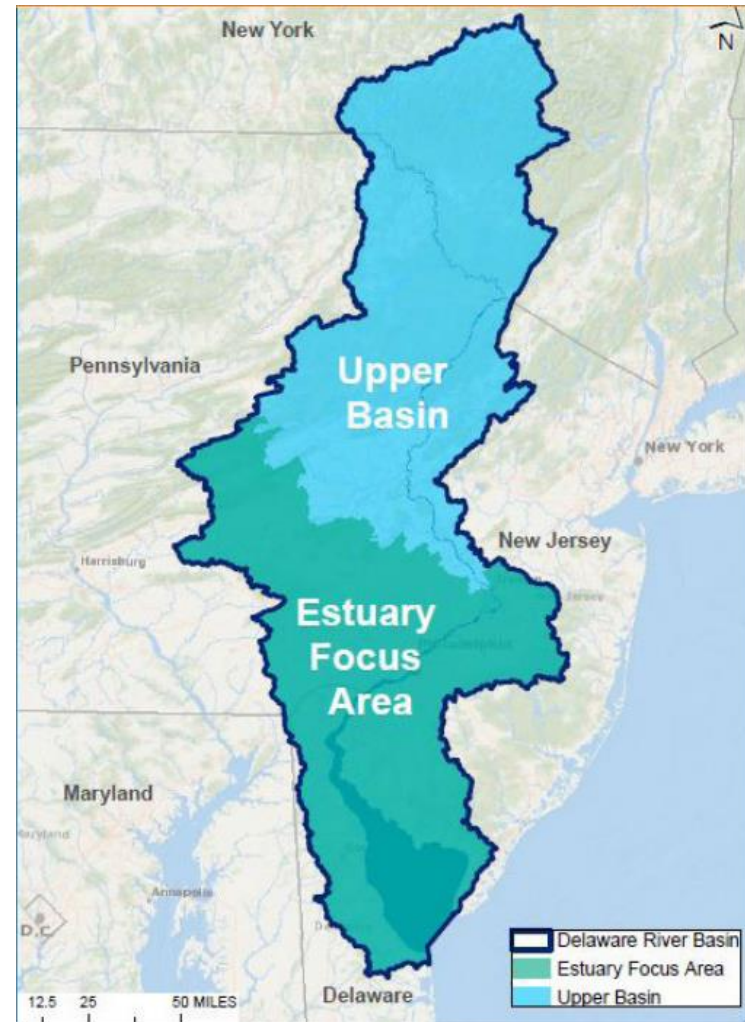


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Our Geography

The revised CCMP considers the full extent of the Delaware River Basin. In the original CCMP, the study area was limited to the lower part of the Basin. The lower part of the Basin, is now called the Estuary Focus Area.

While most of PDE's and DELEP's work is in the Estuary Focus Area, there is a recognition that we need to consider upstream areas and that we can do work in the Upper Basin if it addresses CCMP priorities and there are resources and partners to support the activities.



Funding Sources

- **Grants, Contracts, Foundations – Majority of Our Funding**
 - USEPA Section 320 Annual Funding
 - A vast majority are Federal and State in Origin
- **Individual Donors – Smaller Segment of Funding**
 - This has been a perennial struggle for PDE and other environmental nonprofits. More on this in next slide...
- **Corporate Support – PDE has had strong support.**
 - Majority of this is sponsorship of our annual gala event and biennial science and environmental summit
 - Many of our corporate supporters are from current and past Board Member organizations
 - Always seeking more corporate support for other events
- **Capital Campaign – Focused fundraising for the Mussels Hatchery**
- **Friend Raising Events**



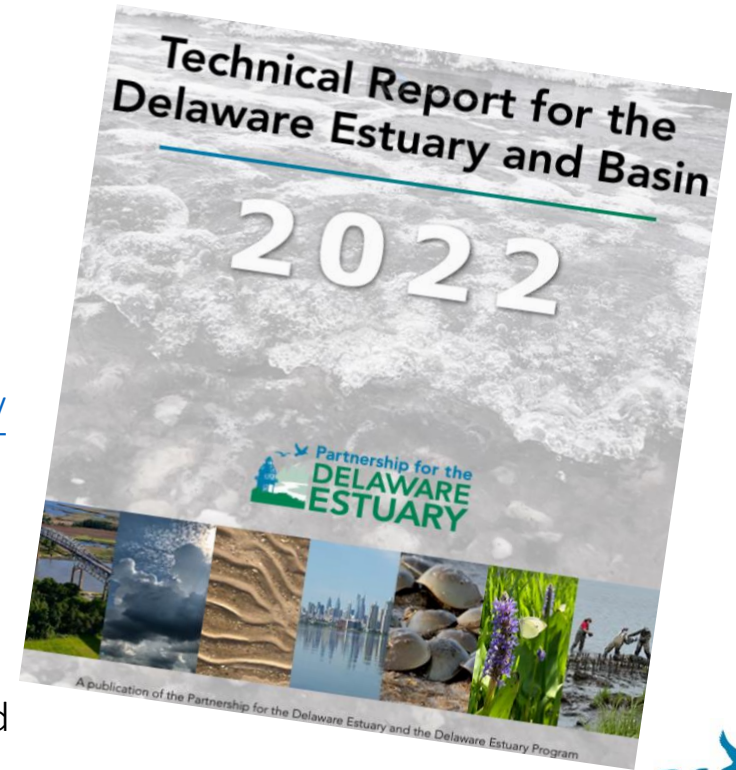


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Science

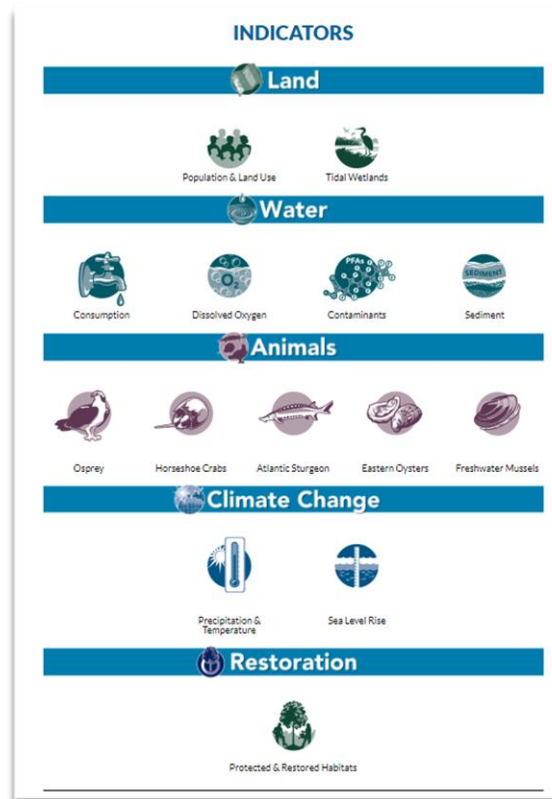
Science and Technical Advisory Committee

- The DELEP STAC plays a big role in the development of our Technical Report for the Estuary & Basin, which we use as the basis for the State of the Estuary
 - 60+ indicators, 500+ pages
 - Most recent 2022, next in 2027
 - <https://delawareestuary.org/data-and-reports/treb/>
- Current subcommittees of the STAC
 - Summit subcommittee – assisting with program development for the 2025 Summit
 - Shad subcommittee – writing a white paper on shad populations to inform future TREB



State of the Estuary

- Distilled elements from 425-page *Technical Report for the Estuary and Basin*
- Selected indicators that people could easily connect with
- Dedicated State of the Estuary [webpage](#) increasing its lifespan and accessibility



ATLANTIC STURGEON

At a Glance

Atlantic Sturgeon Status Rating: Very Poor, but Improving

Here's Why:

The Atlantic Sturgeon is struggling for survival in the Delaware Estuary due to human-induced threats like overharvesting, ship strikes, and poor water quality. But there is hope for its recovery through strengthened conservation efforts.

What prehistoric fish has heavy armor and can grow to 800 pounds? The Delaware Estuary is home to an ancient giant, the Atlantic sturgeon. With a lineage dating back more than 250 million years, this prehistoric giant is a living testament to a time when dinosaurs roamed the earth. These majestic and enormous fish that meander riverbeds can grow as long as 15 feet. Fortunately, their long survival story is coming to a turning point, as sturgeon are recovering from harsh threats brought upon by human activity. This section discusses the journey of the sturgeon and the challenges they've faced in recent centuries in their quest to endure.

Mature Atlantic sturgeon migrate from the sea to freshwater to spawn. Spawning occurs in the fresh waters of the Delaware River where the bottom is hard and rocky. Female sturgeon take 15 years to reach reproductive maturity and spawn every one to five years, making population growth slow.

Sturgeon's ability to survive for 250 million years is no small feat. These amazing fish have withstood major climatic changes before, but with humans in the picture, they have faced various dangers. Sturgeons mature into highly valued commercial fish, prized for their meat and eggs. The eggs, more famously known as caviar, are highly valued around the globe. Industrial development, ship strikes, overharvesting, and poor water quality threaten these fish further to extinction. The Atlantic Sturgeon and its cousin, the Shortnose Sturgeon, are federally endangered under the Endangered Species Act.

In the late 1800s, the Atlantic sturgeon population was abundant, with the Delaware River sturgeon outnumbering those from all other estuaries and rivers combined. This past abundance tells us that the Delaware River has the potential to support a large population of sturgeon.

Sturgeons require clean, well-oxygenated waters to thrive. Oxygen levels in the river can drop to critically low levels, especially in warmer months, creating what is known as hypoxia, which could affect the survival and growth of young sturgeon. Recent data shows a positive number of young sturgeon in the

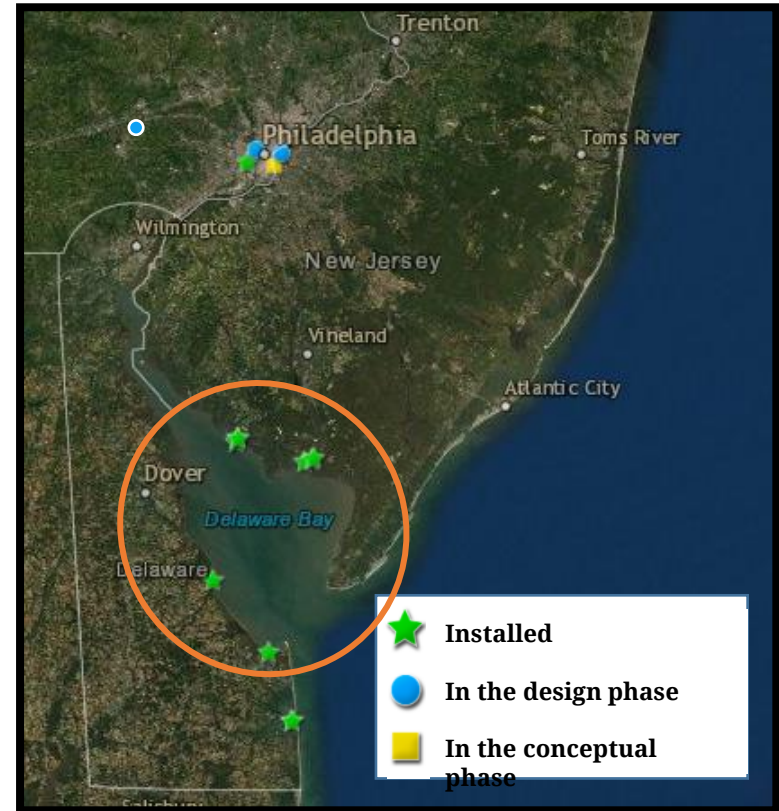
Living Shorelines and Resilience in the Delaware Bay

Continued living shoreline monitoring and research being conducted in the Delaware Bay

- Primarily oyster/ribbed mussel based & focused on smooth cordgrass growth
- Connections to oyster shell recycling and DEEDS efforts



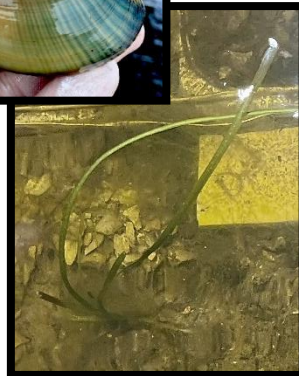
PDE's Living Shoreline Projects



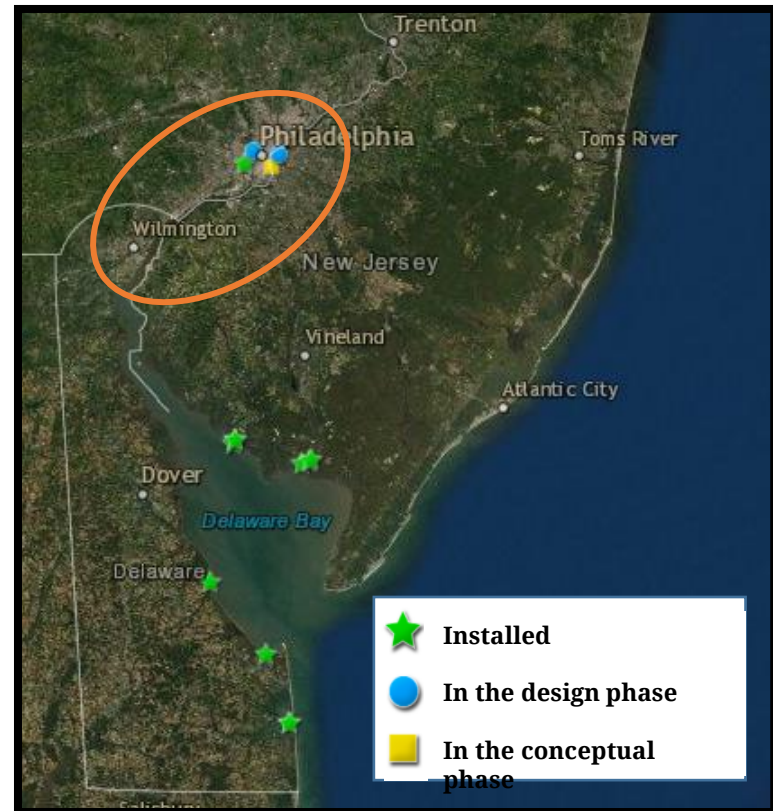
Web Map "Living Shorelines Installations": [ArcGIS Story Map](#)

Living Shorelines and Resilience in the Urban Corridor

- Expansion into the urban corridor
 - Locations in Wilmington, DE; Camden, NJ; Croydon, PA; and Philadelphia, PA
 - Greater emphasis on freshwater mussel recovery
 - Integration of SAV



PDE's Living Shoreline Projects



Web Map "Living Shorelines Installations":
[ArcGIS Story Map](#)

Long-Term Tidal Wetland Monitoring

- 12+ years of surface elevation table monitoring (SET – see top photo) at 5 sites, and 5+ at 1 site; also incorporated 4 older sites into monitoring rotation this year
- Main goal is to track and understand tidal wetland elevation changes relative to sea level rise—millimeter scale
- Sites span urban-rural *and* salinity gradient (photos: salt marsh top, freshwater tidal marsh bottom)
- Data contributed to larger NJ Tidal Wetland Monitoring Network database



Acoustic Monitoring of Salt Marsh Restoration Sites

- Multi-year study in collaboration with PDE, NJ USFWS, Ducks Unlimited, and Conserve Wildlife Foundation of NJ, to understand how soundscapes in salt marsh restoration areas differ pre- and post-restoration
- Results will inform future restoration work in the estuary and will hopefully serve as valuable information about how long marsh soundscapes take to respond to restoration



Deployment of a acoustic recording unit (ARU) in Downe Twp., NJ.

Freshwater Mussel Hatchery

- Planning underway to build a Freshwater Mussel Hatchery at Bartram's Garden in Philadelphia to raise thousands of mussels a year
- Received new renderings in April from Design Team. This 8,000 square foot facility is set to break ground in Spring 2025
- Total cost of the construction project is around \$10M. Current funding gap is \$1.2M
- Half of the mussels will go to the Susquehanna Watershed

CORNER OF 56TH AND BARTRAM DR



HATCHERY LABS



New Science Projects

- **Marsh Futures Mapper**
 - Interactive map tool to gauge effects of restoration tactics
 - Working with Rutgers CRRSA Lab and LSU
 - Part of NJ ResTOrS: <https://njrestors.rutgers.edu/>
- **Low-Cost Low Tech – salt marsh restoration**
 - Working with Ducks Unlimited & USFWS Delaware Bay Program
- **NJDEP Natural Climate Solutions (RGGI) – shell-based living shoreline**
 - 1,300' shoreline restoration using nature-based features (i.e., shell bags) to promote ribbed mussel and cordgrass colonization to stabilize erosion and protect/accrete carbon-rich sediments
 - Climate change mitigation, goal to sequester, store, and protect carbon





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Regional, Watershed, Local
Based Initiatives

Delaware Resilient and Sustainable Communities League (RASCL)

Network of 28 state, non-profit, and academic partners providing technical expertise and support to Delaware municipalities to increase their capacity to adapt, mitigate, and respond to environmental changes.

Committees:

Community Planning Assistance, Outreach & Events, Project Guidance Group, and Science Research Liaison

Activities:

2025-2030 Strategic Plan, Sustainability planning assistance, Coffee hours, and Annual RASCL Summit



Schuylkill Action Network (SAN)



Collaborative, cross-sector source water protection network

- Goal: Restore and protect the Schuylkill River and its tributaries
- The Schuylkill is the largest tributary to the Delaware River, covering 2,000 square miles over 11 counties in Pennsylvania
- Drinking water source for about 2 million people
- SAN formed in 2003 following 2002 Philadelphia Water Department source water assessment for the Schuylkill River Watershed which identified potential sources of contamination



Schuylkill Action Network (SAN)

- Two (2) guiding committees and six (6) workgroups
- Over 900 members representing
 - Local, state, and federal government
 - Non-profits
 - Water utilities
 - Businesses
 - Academia
 - Students/teachers
 - Public
- SAN work includes publications, outreach, programs, resource-sharing, leveraging funding, and on-the ground restoration
 - Over \$16M invested in abandoned mine drainage treatment
 - Over \$30M invested and leveraged in agricultural improvements
 - Over \$10M funded and leveraged through Schuylkill River Restoration Fund
 - Stormwater management projects on over 30 school properties



Urban Waters Federal Partnership

Program restoring and reconnecting urban communities, particularly those overburdened or economically distressed, to waterways by improving coordination among federal agencies and partners in Camden, Philadelphia, Chester, and Wilmington.

- Project Assistance Program
- Environmental Justice Gathering
- Expanding Federal partner participation
- Camden and Chester pollinator & rain gardens
- Chester Tree planting
- Camden Pyne Point community greening
- Lenape food forest land restoration
- Wilmington parks habitat enhancements & GSI
- NE Wilmington Greening Plan implementation





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Engagement & Outreach

Community Education in Philadelphia and Wilmington

Engage residents on water quality topics that support the cities' NPDES and MS4 permit education requirements.

Philadelphia

- Dog Waste Education - through dog-focused events and partnerships with dog shelters/clinics
- Storm Drain Marking - with schools, neighborhood groups and watershed organizations to help reduce pollution into storm drains
- Delaware River Festival - annual celebration to increase education and stewardship around the River



Wilmington

- Outdoor Classroom Installation
- Stormwater Gardening Workshops
- Southbridge Wilmington Wetlands Park Engagement

Getting Artistic

Elevating consciousness of clean water action through art and design.

- **Trash to Treasure Art Contest**
 - Use the art to promote the Christina River Watershed Clean-up
 - Determining what to do next with the art
- **Trash Free Waters Art Contest**
 - Winning artwork voted on at the 2023 Delaware River Festival
 - Bus stop and train station advertising campaign with Septa during April 2024
 - Ad was turned into stickers to distribute to the public at events
- **NEA Artist in Residence Program**



Collaborating with Educators

- Schuylkill Action Students
 - Planning and building Green Stormwater Infrastructure on School Properties
 - Visits with schools to build connection to drinking water
 - Working with students to plant native pollinators
 - Seasonal changes provide year-round living laboratories on school properties
- Activity Kits: Educator resources w/ lesson plan and activity materials for loaning out
 - Planting kit for grades 2-4
 - Freshwater mussel kit for grades 4-6
- Facilitators of classroom 'Watershed Game,' and PDE's unique shoreline model for middle and high school students



Engaging the Public Around the Estuary

Attendance at Public Events

- 16 events thus far in 2024
 - 2,000+ Interactions
 - 160 Newsletter sign ups
 - 1600+ giveaways, including 500 native seed packets
 - 740+ Publications Distributed
- 6 more scheduled for 2024



Challenges

- Huge geography with priorities that vary greatly
- Complex political landscape with different priorities and that are a moving target with each new administration
- 170 NGOs in the Delaware River Basin - turf issues
- Many different management plans that are not linked with the CCMP
- Lack of branding for the Delaware River and Bay – Identity Crisis
 - *The Chesapeake Bay Program*
- Insufficient funding especially for Engagement related activities
- Ever increasing federal reporting requirements



Partnership for the
**DELAWARE
ESTUARY**

Thank you

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*Connecting people, science, and nature
for a healthy Delaware River and Bay*