

## MESSAGE FROM THE BOARD CHAIR

Thank you for your interest in the Partnership for the Delaware Estuary (PDE). I am proud to serve as the chair of its Board of Directors.

This annual report showcases some of the dynamic work and innovative projects that PDE and our partners are working on for the Delaware River and Bay. I hope you are as impressed as the Board and I are by the scientifically grounded approach PDE takes when it comes to our work in the estuary.

Beyond the project descriptions and accomplishments from the past year, I hope that you also take a moment to review the impressive list of project partners and supporters in this report. Partnership is the first word in our name, and that is deliberate. Project partners, friends, and donors are all working cooperatively with PDE to create a bright future for the Delaware River and Bay. Please be sure to celebrate this community wide commitment every chance you get.

As we wrap up 2013 and head into a new year, I want to thank you for your interest and involvement with PDE. We think of you as a part of our extended family and hope that you can continue to support our work and honor the place that we call home – the Delaware Estuary.

Kevin C. Dunnelly
Board Chair



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Ship's wheel artwork

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Scott J. Schwarz – General Counsel, Philadelphia Water Department
David Jay Velinsky – Academy of Natural Sciences of
Drexel University



## MESSAGE FROM THE DIRECTOR

Clean water, healthy habitat, and strong, resilient communities all around the Delaware River and Bay. These are the ideals behind the Partnership for the Delaware Estuary's new strategic plan for 2013 - 2018. And we're off to a great start realizing them with so much exciting work accomplished over the last year.

The plan is relatively simple, but packs a lot of punch. It calls for aggressive action to invest in the shellfish and wetlands that clean our waters, fuel our fisheries, and protect our communities. In 2013 we continued to champion the need for greater investment in Delaware Bay Oyster restoration, and also worked to restore ribbed mussels to Delaware Bay marshes and bring back freshwater mussels to the many streams where they've been lost.

Our new plan articulates an equally pressing need to engage more people as partners and stewards of our rivers, streams, and coasts. The same changes in our watershed that impact water quality, fish, and wildlife also impact people, businesses, and communities. By working together, we're finding innovative new ways to help people manage water **and** improve the Estuary – from storm water that threatens to overwhelm sewers and pollute streams, to sea level rise and storm surges that threaten to drown coastal communities and wetlands.

Our scientists and outreach professionals are working hard for the river and bay, for our communities, and for our future. Much of this work is possible only because of partners, funders, and supporters like you. Thank you for your part in our work, and for sharing our vision of a Delaware River and Bay with clean waters and abundant fish and wildlife, surrounded by healthy, prosperous people and communities.

Jennifer A. Adkins Executive Director



#### **EXECUTIVE TEAM**

Led by Jennifer Adkins, Executive Director Beth Haas, Office Manager Gus Wolfe, Director of Finance & Operations

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Jessie Buckner, Science Fellow
Mary Casella, Science Intern
Kurt Cheng, Drexel University Fellow
Priscilla Cole, Data & Information Specialist
LeeAnn Haaf, Science Intern
Josh Moody, Drexel University Fellow
Angela Padeletti, Science Coordinator
Laura Whalen, Restoration Coordinator/Consultant



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Tom Davidock, Schuylkill Action Network Coordinator
Cheryl Jackson, Program Specialist II
Dee Ross, Watershed Program Coordinator
Sari Rothrock, Watershed Program Specialist
Matt Speiser, Summer Communications Intern



Danielle Kreeger searches for mussels in Skippack Creek (PA) using a passive integrated transponder (PIT) tag reader.

## STUPENDOUS SHELLFISH

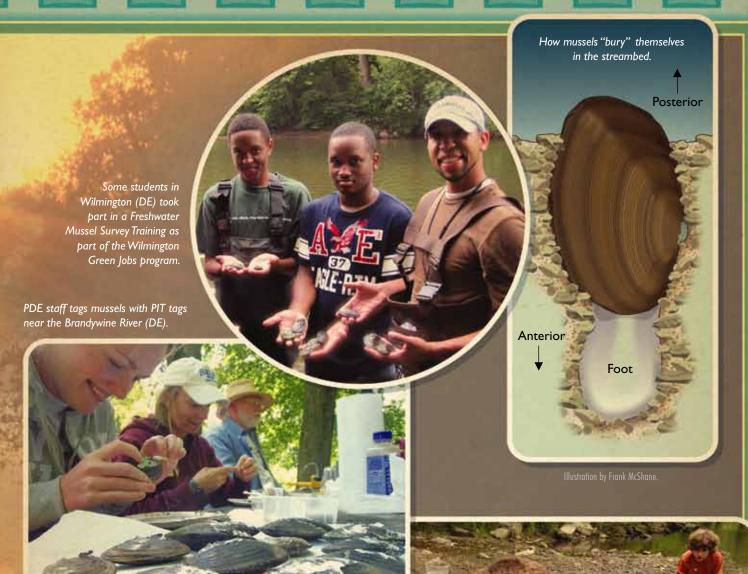
Here at the Partnership for the Delaware Estuary (PDE), we hold shell-fish in high regard and have identified their restoration as a top priority. From inedible freshwater mussels and marsh mussels to tasty oysters, our estuary is full of bivalves (i.e., two shells). We're fortunate to have filtering shellfish in our estuary and are working hard to increase their numbers, with a big focus of our work in 2013 on freshwater mussels.

Freshwater mussels are valuable to waterways in many ways. Each one filters up to 20 gallons of water per day in warm weather and can live up to 50 years or more. We think of them as miniature waste-water treatment plants! They remove pollutants from the water and can even help protect creeks and riverbeds from the destructive power of floods. They also provide food and reef-like habitat for many species of fish and wildlife.

The Delaware River Basin was once home to over a dozen species of freshwater mussels. Only one of these species is still common today. Some of the most common reasons for the declines include water pollution, dams, and degraded habitats. PDE is working to restore this important species through our **Freshwater Mussel Recovery Program**. This multi-tiered program brings scientists and volunteers together to survey streams and reintroduce mussels where they've been lost.

In recent years, PDE began the **Volunteer Freshwater Mussel Surveys**. This program trains teams of volunteers to survey their local streams for freshwater mussels and then record their findings in an online portal. In 2013, PDE teamed up with local watershed organizations to train 60 volunteers at three workshops held in Delaware, New Jersey, and Pennsylvania. Together, volunteers from the 2012 and 2013 workshops have surveyed 14 stream sections. With thousands of miles of streams in our estuary yet to be surveyed for mussels, these volunteers are providing us with critical information and data.

Once streams have been identified as good candidates for restoration, scientists place **Reintroduced Mussels** into these waterways. Electronic tags are affixed to these mussels first, which help scientists locate them in the streams and monitor their health over time. In August, PDE fitted 200 mussels with electronic tags and placed them in the Red Clay and White Clay Creeks in Delaware. Our scientists will monitor the health of the reintroduced mussels over a two year period to determine if the stream is ready for more aggressive mussel reintroduction.



PDE is also working with partners like the Philadelphia Water Department and the Academy of Natural Sciences of Drexel University on plans for a Mussel Hatchery. Propagation (i.e., growing baby mussels in a lab) is the most practical way to produce the large numbers of mussels needed for wide-scale reintroductions. The effort to develop a hatchery is still in the beginning planning phase, but is an essential next step for freshwater mussel recovery across the watershed.

Through the collective efforts of PDE, our project partners, local watershed organizations, volunteers, and concerned citizens, this hard-shelled species has brought an incredible amount of energy and enthusiasm to our work. Together with ribbed mussels in our marshes and oysters in Delaware Bay, freshwater mussels are an important element of a healthy Delaware Estuary.



Two boys find freshwater mussels in the Brandywine River (DE).

# SHORING UP OUR COASTS AND COMMUNITIES



Angela Padeletti and Danielle Kreeger conduct a rapid assessment of marshes near Dennis Creek in NI.

In an estuary, things are constantly changing. Tides come in and out, rivers move mud and sand from one area to another, and storms roll across the skies. While these are all natural processes, events like last year's Superstorm Sandy felt anything but natural. The mark it left on our communities and coastlines is still evident today, reinforcing the important work that the Partnership for the Delaware Estuary (PDE) is doing in the marshes along our coastlines.

Although erosion is a natural process, when accelerated by storms and other factors, it can present problems for communities near waterways. Traditional 'hardened' shorelines, like bulkheads, are often used to combat erosion but are not good for fish and wildlife. For an alternative, natural way to combat erosion, PDE is introducing people and communities to **Living Shorelines**. Using natural-fiber coconut logs and mats, shell bags, ribbed

mussels, and marsh plants, PDE and partners from the Rutgers Haskin Shellfish Research Laboratory created our first living shorelines along New Jersey's Maurice River in 2008. In the years since then, PDE has monitored their effectiveness over time. In 2014, we have plans to expand this work into Delaware and add new living shorelines in New Jersey as well.

Living shorelines are one way that PDE is working to save the Delaware Estuary's renowned tidal wetlands. Sadly, it is estimated that the estuary has lost over half its coastal wetlands since the earliest settlers arrived. From buffering communities from storm impacts to capturing carbon and providing a safe haven for young fish and birds, our wetlands provide many benefits. To help diagnose the causes and find solutions to wetland loss in our region, PDE developed the **Mid-Atlantic Coastal Wetlands Assessment** program. Through "rapid" and "long-term" assessments, our scientists are measuring the health of our wetlands. In 2013, PDE scientists surveyed over 50 wetland sites. The resulting information is helping us better understand the impacts that a changing climate, pollution, and sediment (mud) shortages are having on our wetlands.



LeeAnn Haaf conducts a long-term assessment of the health of wetlands near the Maurice River in NJ.

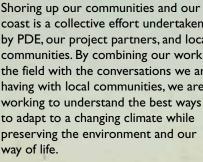
A team of PDE and Rutgers staff work to build a Living Shoreline along New Jersey's Maurice River.



With so much work underway along the Delaware Bay in New Jersey, engaging local communities is critical. With partners like the Natural Lands Trust and the Bayshore Center at Bivalve, PDE is working with bayshore communities to find ways to prevent storm damage, erosion, and flooding. The importance of this work came in sharper focus in 2013 after Superstorm Sandy. Many communities

on both sides of Delaware Bay are still struggling to recover from this storm and to be better prepared for future storms. In 2013, PDE partnered with the Pennsylvania and Delaware Sea Grant Programs to work with Chester, PA and Delaware City, DE on ways for these river-side towns to be better prepared for climate change and storms. Working with communities like these to identify how they are vulnerable and what tools and practices can help reduce that risk, is the focus of PDE's Weathering Change program.

> Shoring up our communities and our coast is a collective effort undertaken by PDE, our project partners, and local communities. By combining our work in the field with the conversations we are having with local communities, we are working to understand the best ways to adapt to a changing climate while preserving the environment and our





**April 2010** – Rip rap had been used in an unsuccessful attempt to control erosion in Heislerville Fish and Wildlife Management Area in New Jersey along Anchor Marina.

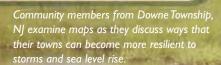




June 2010 – A few native marsh grasses were planted behind the coir logs where sediment (mud) had started to collect.



**June 2011** – Just one year later, native marsh grass flourishes in the mud that had collected behind the new Living Shoreline.



## WATER, WATER, EVERYWHERE

Estuaries are all about water. In fact, the delicate balance between freshwater and saltwater makes them among the most productive ecosystems in the world. Too much water, however, can be a bad thing for our streams, the bay, and our communities. In response, the Partnership for the Delaware Estuary (PDE) has identified projects and partnerships for controlling stormwater as key objectives in our strategic plan.



Imagine the path taken by a drop of rain from the time it hits the ground to when it reaches a river or the ocean. Any pollutant it picks up (like motor fluids, trash, lawn chemicals, and dog waste) along its journey can become part of the problem. In the **Green Guide for Property Management**, PDE has developed a manual to help businesses, communities, and property owners learn about ways they can "green" their properties. Planting trees, harvesting rain water, and installing porous pavement are just a few of the many options identified in this guide to help reduce stormwater pollution. Visit our website at www.DelawareEstuary.org for a copy.

Many of the innovative projects from the Green Guide are being implemented on school campuses in Pennsylvania's Schuylkill River watershed through **Schuylkill Action Students** projects. These projects are a joint effort of PDE and members of the Schuylkill Action Network (SAN) – people and organizations dedicated to protecting the Schuylkill River watershed. Since 2011, PDE has worked with 15 schools and over 1,500 volunteers on projects such as stream-side plantings, rain gardens, and meadow plantings. These restoration projects are not only helping reduce stormwater pollution, but are also teaching the next generation about protecting our waterways.

Photo by Tim Haas.



Volunteers gather in a boat to pick up trash for the "Christina River Cleanup".



A group of volunteers who cleaned up along the river as part of the "Schuylkill Scrub".



A large group of enthusiastic volunteers who took part in the "Budweiser America Made Better" Delaware River cleanup.

Groups of students from Robeson Elementary School (left) and Lankenau High School (right) plant rain gardens in their school yards as part of the Schuylkill Action Students program.

In 2013, PDE celebrated the Schuylkill Action Network's 10th anniversary and its receipt of the Pennsylvania Governor's Award for Environmental Excellence. Members of the SAN celebrated at

the John James Audubon Center at Mill Grove in Audubon, PA in March and hit the road to tour a series of SAN restoration projects in June. The tours included both agriculture and abandoned mine drainage reclamation sites that were major concerns for water pollution in Pennsylvania.

One element of storm water pollution is trash that accumulates in our waterways. To clean-up our streams, PDE hosted and participated in several river cleanups in 2013 starting with the 23rd annual Christina River Cleanup. With sites in Wilmington, DE and across the watershed, this cleanup removed approximately 20 tons of trash from wetlands and stream banks. PDE and the SAN also coordinated the volunteer-driven Schuylkill Scrub. Over 1,300 volunteers cleaned up nearly 100 sites during the two month-long scrub in the spring. In August, PDE served as the local partner for a Delaware River cleanup, which was part of a series of Budweiser America Made Better river

cleanups across the country. Approximately 100 volunteers gathered at Penn's Landing in Philadelphia for the cleanup and for storm drain marking.

Thank you to everyone who volunteered!

Many are surprised to learn that "man's best friend" can also cause storm water pollution.

Each year more than 3.6 billion pounds of dog waste is produced in the U.S. alone. This "poo-lution" contains high levels of bacteria and parasites. To prevent it from washing into our waterways when it rains, PDE encourages dog owners to scoop the poop. Together, PDE and the Philadelphia Water Department host the **Philly Water's Best Friend Spokesdog Competition** to spread this message.

Celebration in Audubon, PA.

votes were cast online. The top 20 dogs competed in a pageant-like contest at Schuylkill River Park.
Our two winners, Sophie and Josie, will attend events in 2014 to teach others about "scooping the poop" and clean water!





Members of the Schuylkill Action Network at the 10th Anniversary

In 2013, 52 dogs entered the competition and over 14,000



Some of the dogs and owners who participated in this year's "Philly Water's Best Friend Spokesdog Competition".



## 2013 STATEMENT OF ACTIVITIES\*

#### FOR THE YEAR ENDED DECEMBER 31, 2013



## **Expenses:** Program.....\$1,504,408 Management and General.....\$ 344,110 18% Fundraising......\$ 109,295 TOTAL EXPENSES.....\$1,957,813

Change in Net Assets.....\$ 116,592 Net Assets at Beginning of Year.....\$1,415,672 Net Assets at End of Year.....\$1,532,264

\* Audit not complete at time of printing.



## DARTHERSHIP FOR THE DELAWARE ESTUARY

## OUR MISSION

The Partnership for the Delaware Estuary, a National Estuary Program, leads science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania.

### OUR VISION

We envision everyone working together for clean water, thriving fish and wildlife, and abundant recreational activities in and around the tidal Delaware River and Bay to support communities and a robust economy. To make this vision a reality, the Partnership for the Delaware Estuary will become:

- A model implementer of practical solutions that fill critical gaps and engage people as stewards of the Estuary;
- The driver of attention and joint problem solving to overcome the challenges facing the Estuary; and
- The driver of attracting financial support and sustainable investment in the Estuary.

### OUR VALUES

- SCIENCE using science as an objective basis for decision-making and holistic action.
- COLLABORATION working together across sectors and jurisdictions to set common goals, share responsibility for actions, and achieve powerful results.
- INNOVATION combining science and forward-looking creativity to develop and implement new and better tools, projects, and programs.
- BALANCE taking into account the many different values of the living and working river to maximize engagement and stewardship of a diversity of stakeholders with integrity and objectivity.
- STRATEGIC INVESTMENT identifying and pursuing opportunities with the greatest potential net impact.

# 2013 FUNDERS, SPONSORS & DONOR LIST

Thank you for your support of the Partnership for the Delaware Estuary in 2013. PLEASE REMEMBER PDE IN YOUR GIVING!

We hope you'll consider making a special gift to PDE again in 2014. The many programs and initiatives listed in this report would not be possible without your thoughtful contributions!

### GRANTS, CONTRACTS, AND DROJECT FUNDING SUDDORT

The Academy of Natural Sciences of **Drexel University** 

Artesian Water

Barnegat Bay Partnership

City of Wilmington

Community Foundation of New Jersey

Delaware Clean Water Advisory Council

Delaware Department of Natural Resources and Environmental Control (DNREC)

DNREC - Delaware Coastal Program

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A group of kids get a hands on lesson at Wilminton's Earth Day Celebration.

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This year's drawing contest winners display the at the Fairmount Wate

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Lisa Wool

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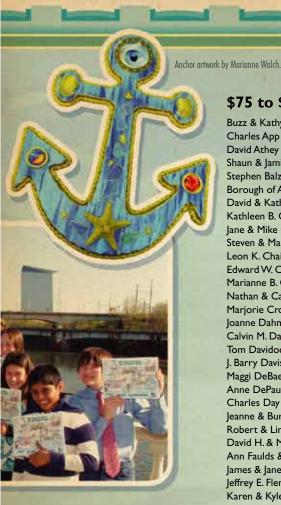
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(continued)

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#### In Honor of Marc Gold

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In Memory of John T. Grey and Martha Ann Mattern Grey David B. Mattern & Charlotte H. Crystal

> the guests at this year's
>
> Experience the Estuary ner and Auction.



Kraeuter receives a Lifetime Achievement Award at the 2013 Delaware Estuary Science & Environmental Summit.



Anchor artwork by Ann Hou

### 2013 DELAWARE ESTUARY SCIENCE & ENVIRONMENTAL SUMMIT SPONSORS AND VENDORS

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Funding support also provided by the U.S. Environmental Protection Agency.

## 2013 EXPERIENCE THE ESTUARY CELEBRATION

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Photo by Matt Urban, Möbius New Media.

Guests enjoy the roof deck at the Estuary Celebration.

> Photo by Matt Urban, Möbius New Media.



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Ship's wheel artwork by Jessie Buckner.

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Jennifer Adkins addresses the guests at the Experience the Estuary Celebration

Photo by Matt Urban, Möbius New Media



Kevin Donnelly Eastern State Penitentiary Eco-Artware.com Tom Ei **Exelon Power** Wendy Forrest Karen & Kyle Forst Fringe Salon & Boutique Rob Goldman Miss Gracki Grand Opera House Warren & Beth Haas Ann Baker Horsey Elizabeth Horsey Independence Seaport Museum Judi Jeffers June and Charles Johnson Susan Johnston Kalmar Nyckel Kathy Klein Danielle & Karen Kreeger Ginny Kreitler

Rainbow Dinner Theater Robbins Diamonds Dee Ross Joanne Rufft Saucony Creek Brewing Company Jim Schurr Renee Searfoss ScdB Seditio Leo Sewell Terri Slack **Dutch Taylor** Kirsten Teel Joe Tropea University of Delaware, Virden Center Victory Brewing Company Marianne Walch Jon and Laura Whalen Whitewater Farm Bed & Breakfast Wilmington & Western Railroad Wilmington Blue Rocks Lisa Wool World Cafe Live, Wilmington

## DARTHERSHIP FOR THE DELAWARE ESTUARY

#### **STEERING COMMITTEE**

Chair: Kelly Jean Heffner, Deputy Secretary for Water Management – Pennsylvania Department of Environmental Protection

Carol R. Collier, Executive Director – Delaware River Basin Commission Kevin Donnelly, Chairman – Partnership for the Delaware Estuary Board of Directors

Judith A. Enck, Regional Administrator – U.S. Environmental Protection Agency, Region 2

Shawn M. Garvin, Regional Administrator – U.S. Environmental Protection Agency, Region 3

Howard Neukrug, Water Commissioner – Philadelphia Water Department Collin O'Mara, Secretary – Delaware Department of Natural Resources and Environmental Control

Michele Siekerka, Assistant Commissioner for Water Resource

Management – New Jersey Department of Environmental Protection

## ESTUARY IMPLEMENTATION COMMITTEE (EIC)

Chair: Jennifer Adkins - Partnership for the Delaware Estuary

U.S. Environmental Protection Agency, Region 3 –
Dominique Lueckenhoff, Ed Ambrogio, Megan Mackey

U.S. Environmental Protection Agency, Region 2 – Janice Rollwagen, Irene Y. Purdy

Delaware Department of Natural Resources and Environmental Control – Sarah Cooksey, John Kennel

Delaware River Basin Commission – Robert Tudor, Thomas Fikslin Drexel University – Susan S. Kilham, Ph.D., STAC Chair

National Park Service - Joe Dibello

New Jersey Department of Environmental Protection – Jay Springer, Dorina Frizzera

Pennsylvania Department of Environmental Protection – Lori Mohr, Andy Zemba

Philadelphia Water Department – Stephanie Chiorean U.S. Fish and Wildlife Service – Gregory Breese

## SCIENCE AND TECHNICAL ADVISORY COMMITTEE (STAC)

#### Standing Representatives

Chairperson: Susan Kilham, Ph.D. – Drexel University; Department of Bioscience and Biotechnology

Science Advisor: Danielle Kreeger, Ph.D. – Partnership for the Delaware Estuary

Ex Officio Representative: Jennifer Adkins – Partnership for the Delaware Estuary, EIC Chair

David Burke – Pennsylvania Department of Environmental Protection (A. Everett, alternate)

Lance Butler - Philadelphia Water Department

Thomas Fikslin, Ph.D – Delaware River Basin Commission (J.Yagecic, alternate)

Dorina Frizzera – New Jersey Department of Environmental Protection Jerre W. Mohler – U.S. Fish and Wildlife Service; NE Fishery Center

Renee Searfoss – U.S. Environmental Protection Agency, Region III David Wolanski – Delaware Department of Natural Resources and

## Environmental Control Elected Representatives

Gregory Breese - U.S. Fish & Wildlife Service

David Bushek, Ph.D. – Rutgers University, Haskin Shellfish Laboratory

William Eldridge, Ph.D. - Stroud Water Research Center

Jeffrey A. Gebert – U.S. Army Corps of Engineers

Desmond Kahn, Ph.D. – Delaware Department of Natural Resources and Environmental Control

Moses Katkowski - The Nature Conservancy

Gerald J. Kauffman, Ph.D. – University of Delaware, Water Resources Agency Susan Kilham, Ph.D. – Drexel University; Dept. of Bioscience & Biotechnology John Kraeuter, Ph.D. – Rutgers University; Haskin Shellfish Laboratory

Adrian Leary – U.S.Army Corps of Engineers

Doug Miller, Ph.D. – University of Delaware; College of Earth, Ocean, and Environment

Tracy Quirk, Ph.D. – Academy of Natural Sciences of Drexel University Kenneth A. Strait – PSEG

Eric Vowinkel, Ph.D. – U.S. Geological Survey; New Jersey Water Science Center



PARTNERSHIP

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The Partnership for the Delaware Estuary, a National Estuary Program, leads science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania.