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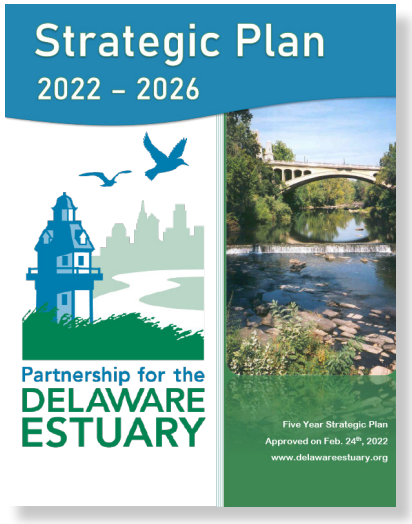
THE PARTNERSHIP FOR THE DELAWARE ESTUARY
CONNECTING PEOPLE, SCIENCE, AND NATURE FOR A HEALTHY DELAWARE RIVER AND BAY

VOLUME 32
NUMBER 2

PDE Adopts a New Five-Year Strategic Plan



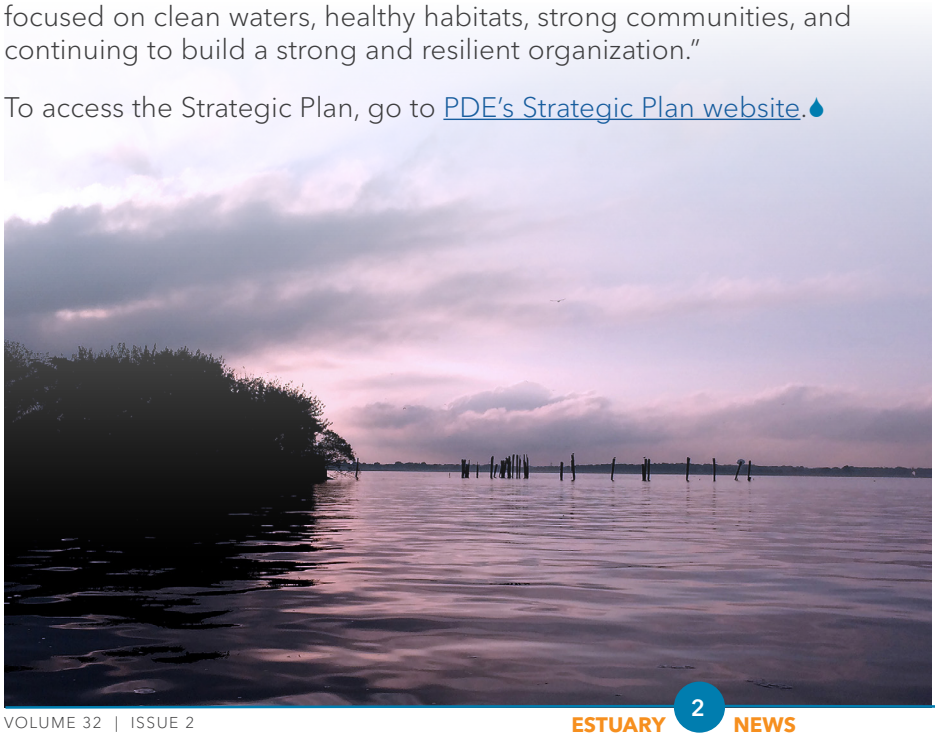
Partnership for the Delaware Estuary (PDE) has its sights set on the future, and it's forging into the next five years with a strategic plan.

This 21-page plan outlines the organization's goals, objectives, structures, and needs from now through 2026 to achieve its vision of working collaboratively with others for clean water, thriving fish and wildlife, and accessible recreational activities in and around the Delaware River and Bay. While the plan serves PDE specifically, it also dovetails with the implementation of the Delaware Estuary Program's Comprehensive Conservation & Management Plan.

Four themes – clean waters, healthy habitats, strong communities, and an effective organization – shape the five priority goals in the plan. These goals are in the areas of Capacity Building, Science, Public and Partner Engagement, Resource Development and Advancement, and Business Administration and Management.

"This plan has been a two-year effort to chart the course for the Partnership for the Delaware Estuary's next five years," said PDE's Executive Director Kathy Klein. We want to grow and expand as an organization and as a force for environmental good in the Delaware River Watershed. The Strategic Plan will get us there by helping us stay focused on clean waters, healthy habitats, strong communities, and continuing to build a strong and resilient organization."

To access the Strategic Plan, go to PDE's Strategic Plan website.



COMMITEES CONTACT LIST

Meetings conducted by the Delaware Estuary Program's implementation and advisory committees occur on a regular basis and are open to the public. For meeting dates and times, please contact the individuals listed below:

Estuary Implementation Committee

Kathy Klein
Partnership for the Delaware Estuary
Executive Director (Chair)
- (302) 655-4990, ext. 102
- kklein@DelawareEstuary.org

Monitoring Advisory & Coordination Committee

Elaine Panuccio
Water Restoration
Scientist, Water Quality Assessment
Delaware River Basin Commission
- (609) 883-9500, ext. 307
- elaine.panuccio@drbc.gov

Toxics Advisory Committee

Ron MacGillivray, Ph.D.
Senior Environmental Toxicologist
Delaware River Basin Commission
- (609) 883-9500, ext. 257
- ron.macgillivray@drbc.gov

Science and Technical Advisory Committee

Danielle Kreeger, Ph.D.
Partnership for the Delaware Estuary
Senior Science Director
- (302) 655-4990, ext. 104
- dkreeger@DelawareEstuary.org

Water Quality Advisory Committee

John Yagecic, P.E.
Manager, Water Quality Assessment
Delaware River Basin Commission
- (609) 883-9500, ext. 271
- john.yagecic@drbc.nj.gov

ON THE COVER

Haley Burns, PDE's Program Specialist, left, and Leah Morgan, PDE's Shellfish Specialist, at the 2022 Wilmington Earth Day Festival.

FOLLOW US ON:

PDE Expands Shell Recycling Program in Philadelphia

This spring, Partnership for the Delaware Estuary (PDE) and the Philadelphia Water Department (PWD) cut the ribbon on Philadelphia's first official shell recycling area. Thanks to agreements between local restaurants, PDE, and PWD, used oyster shells will be recycled back into the environment, helping to improve local water quality and enrich fish and wildlife habitat.

From left: Lance Butler, Philadelphia Water Department's Office of Watersheds Senior Scientist; Kathy Klein, PDE's Executive Director; Danielle Kreeger, Ph.D., PDE's Senior Science Director; and Sarah Bouboulis, PDE's Lead Coordinator of Restoration cut the ribbon at PDE's new shell recycling area in Philadelphia.

A large industrial lot located near the Philadelphia airport will be a depository for used oyster shells that are picked up from local seafood restaurants. The recycled shell will be integral for diverse environmental projects throughout the Philadelphia metropolitan area and the Delaware Estuary. So far, four Philly restaurants have shell recycling agreements with PDE, and the program is looking to add more.

Here's how the program works: PDE provides the restaurants with special recycling bins where their staff can deposit used oyster shells. PDE staff picks up the shells at least once a week and takes them to the shell recycling area. From there, the shells "cure" for about six months before staff and volunteers bag them for use in shoreline restoration and oyster reef rebuilding projects.

PDE already has a shell recycling operation in Wilmington, Delaware, with six restaurants participating. Over the course of six years, PDE has

continued on page 4

IN MEMORIAM

Susan S. Kilham, Ph.D.

Partnership for the Delaware Estuary (PDE) and the greater scientific community mourns the loss of Susan S. Kilham, Ph.D., who died April 12 after a long battle with cancer.

Kilham was a leading scientist in aquatic biology and ecology, and she made many important scientific discoveries especially relating to natural algal communities.

To PDE, Kilham was an unfaltering supporter of the organization's mission. She was one of the first and longest-serving members of PDE's Scientific Technical Advisory Committee which she chaired for over 12 years. She was also a board member, mentor, friend, and academic advisor to many members of staff and science fellows who pursued higher degrees while working at PDE. In 2018, she created the Susan S. Kilham Research Fund to support PDE's projects and work by students and young professionals. In 2015, to recognize her many achievements in advancing science and management of the Delaware River Basin, the organization presented her with the Jonathan Sharp Lifetime Achievement Award.

PDE Expands Shell Recycling Program in Philadelphia from page 3

recycled more than 140 tons of oyster shells in Delaware.

Oysters, along with mussels and other bivalves, help to filter impurities out of our waterways. An adult oyster can filter as much as 20 gallons of water per day, so the more oysters in the water, the more they can filter.

"Oyster shell is an amazing substance that helps stabilize erosion, is vital for reef maintenance, and provides lots of nooks and crannies for other small fish and animals," said PDE's Senior Science Director Danielle Kreeger, Ph.D. "Since shells are in short supply locally and across the United States, expanding this shell recycling program will alleviate one of the biggest bottlenecks of our projects to curb shoreline erosion, rebuild oyster reefs, and promote clean water via enhanced shellfish populations."

The larger Philadelphia recycling area expands PDE's shell recycling program, helping to address a shortage of shell needed by beneficial environmental projects.

PDE would like to thank Barclay Prime, Fishtown Seafood, Kensington Quarters, and Sansom Street Oyster House for being our first Philadelphia restaurant shell partners.

For more information about PDE's shell recycling program, visit PDE's website page here. Restaurants that serve fresh oysters who would like to work with PDE's recycling program should contact Jana Savini at jsavini@delawareestuary.org.

STRONG COMMUNITIES • STRATEGY C2.4 // HEALTHY HABITATS • STRATEGY H3.2

Wilmington Celebrates Earth Day on Market Street

DOWNTOWN WILMINGTON WAS ALIVE AND BUSTLING ON APRIL 23 WHEN THE CITY OF WILMINGTON, PDE, OPEN STREETS WILMINGTON, AND OTHER PARTNERS CELEBRATED WILMINGTON EARTH DAY IN PERSON AFTER A TWO-YEAR HIATUS.

Hundreds of people of all ages gathered on six blocks of Market Street to get a free plant, grab a bite at one of Wilmington's downtown restaurants, listen to live music, make some eco-crafts, such as homemade paper, shop downtown, and chat with the many exhibitors at the event.

Open Streets Wilmington had fitness and yoga demonstrations and a DJ, along with many exhibitors. DART First State had one of its electric-powered buses parked on the street for people to climb aboard and learn more about transit in Delaware.

"We were delighted that the Wilmington Earth Day celebration could be in person this year so that people of all ages could join us in celebrating the importance of clean waters, healthy habitats, and strong communities," said PDE Executive Director Kathy Klein.

For more photos from this year's Earth Day celebration, visit our Flickr page.

STRONG COMMUNITIES • STRATEGY C2.2

Top: Representatives from PDE, Open Streets Wilmington, New Castle County, and DART pose in front of one of DART's electric buses with Tropo, the mascot for the Air Quality Partnership of Delaware (center). Middle Left: People test their strength and fitness by flipping a large tire. Middle Right: Festival attendees went home with free native plants, courtesy of the Mt. Cuba Center in Wilmington. Bottom: Kids try their hand at making paper in different shapes and colors.

Timing is Still Everything

PDE Staff Continue Mussel Breeding Studies

By Leah Morgan, PDE's Science Fellow

Left: Matt Gentry, PDE Shellfish Coordinator, measures freshwater mussels as part of an ongoing mussel breeding study. Right: A tube holds freshwater mussel shell halves open to provide a glimpse at the mussel inside, and whether it is carrying eggs.

Native freshwater mussels have complex reproductive strategies that require particular fish to serve as hosts for their larvae. Most species spawn in the spring, carefully timing the production of their precious larvae with the timing of when suitable fish and food are available. But there is a lot of variability in this timing and things PDE scientists don't yet know, which makes it hard to mimic natural processes in mussel hatcheries designed to help restore depleted mussel populations in areas of the Delaware River Basin. For the past few years, the Partnership for the Delaware Estuary (PDE) has been working to solve some of the reproduction timing riddles.

In 2021, PDE carefully monitored reproductive development in the species of freshwater mussel that dominates most natural populations in the Delaware Estuary watershed – the eastern elliptio (Elliptio complanata). This work aimed to clarify the seasonal timing of mussel gravidity (i.e., when mussel larvae are ready to attach to a fish host), oftentimes cued by water temperature and other environmental factors. Members of PDE's shellfish team observed mussels in the field to determine how many females were successfully brooding larvae (glochidia). To assess gravidity, the team also scored the developmental status by taking samples from the gills of female mussels to determine the relative abundance of unfertilized eggs, undeveloped larvae, and fully developed larvae. They also logged water temperature and flow data to help understand the relationship between mussel reproduction and environmental cues.

From this research, the shellfish team now knows the specific environmental conditions and seasonal timing that glochidia from this important species are more likely to be viable. Knowing more about gravidity will help PDE with planning when to collect vital broodstock needed to propagate mussels in the demonstration freshwater mussel lab at the Fairmount Water Works in Philadelphia, and for PDE's large scale production hatchery that will be built at Bartram's Garden in Philadelphia.

Moving forward, PDE plans to expand this study to look at the reproductive timing of other key species that need to be restored. What we learn from this ongoing research will help PDE and partners time the hatchery matchmaking process between various mussel and fish species so that it is more synchronized with nature, increasing production efficiency and minimizing the time in the hatchery before they are returned to the environment.

CLEAN WATERS • STRATEGY W3.2 // HEALTHY HABITATS • STRATEGY H3.3

SCIENCE

WATERLOGGED WETLANDS

PDE and Barnegat Bay Partnership Monitor Tidal Wetlands in New Jersey

By LeeAnn Haaf, Ph.D., PDE's Estuary Science Manager

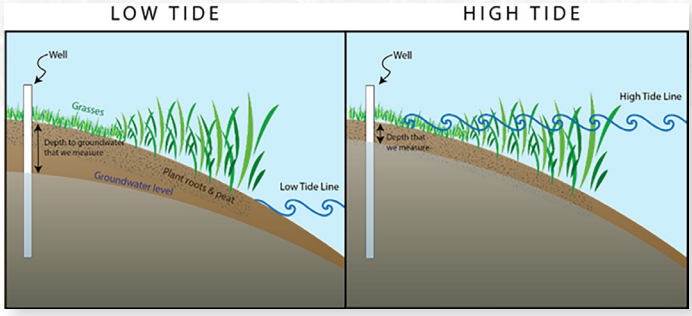
Above, Ceili Pestalozzi of the Barnegat Bay Partnership retrieves wetland data from a marsh well in New Jersey.

Tidal wetlands flood twice a day in the Delaware Bay. As tides rise, water floods the surface, then drains as the tide falls. But as above, so below – the tidal rise and fall above ground also happens underground.

Peat and plant roots serve as the base of tidal wetlands, and they're like sponges that soak in water. These plants are adapted to wet conditions, but their roots still need some oxygen. Therefore, they cannot be too wet. Tidal wetlands that are too wet are vulnerable to drowning as sea levels rise. For the past year, PDE and members of the Barnegat Bay Partnership have been plumbing the depths of tidal marshes to uncover what information they hold about groundwater flooding.

Last year, PDE and the Barnegat team installed wells at three New Jersey tidal marshes within the Delaware Bay to study groundwater patterns and what factors cause groundwater levels to rise higher than usual. So far, the team has found that some sites have more saturation than other sites. The team also found that, similar to surface water, winds can push groundwater into, or out of, tidal wetlands. For some New Jersey tidal wetlands in the Delaware Bay, winds of any strength from the southwest can push groundwater levels higher despite the motion of the tides. At other sites, however, groundwater levels are pushed higher by strong winds with less dependence on wind direction.

This information will help the scientists track how waterlogged ground affects tidal wetlands and perhaps design better restoration plans for tidal wetlands in the future. One restoration tactic that tidal wetland scientists are exploring, called thin layer placement, casts clean dredge material onto the tidal wetland surface to raise elevations. During this process, groundwater level information could be used to study how this tactic affects waterlogging below where dredged materials are placed.



Groundwater levels rise and fall with the tides. At low tide (left) groundwater levels are lower and at high tide, groundwater levels are higher (right). PDE and Barnegat Bay use wells or hollow pipes installed into the marsh to help measure the distance from the marsh.

Barnegat Bay Partnership and PDE will continue to monitor these wetlands sites through summer of 2022, and perhaps beyond. After that time, their findings will be used to help design future wetland restoration projects by various practitioners, including state and federal wetlands scientists.

HEALTHY HABITATS • STRATEGY H1.1 // STRATEGY H1.2

NEW SPOKESDOG
Halo Takes the Cape

By Chesa Blom, PDE's Community Engagement Specialist

THE ANNUAL CLEAN WATER SPOKESDOG COMPETITION HAS CROWNED A NEW WINNER. HALO, AN 8-YEAR-OLD MIXED BREED DOG, FROM MORRIS ANIMAL REFUGE WILL WEAR THE BLUE CAPE FOR A YEAR AS THE SIDEKICK TO PHILADELPHIA WATER DEPARTMENT'S (PWD) WATER WOMAN.

Spokesdog is a joint effort of PWD and PDE. The Spokesdog and the annual social media-based Spokesdog Competition aims to educate Philadelphians about the impacts that dog waste can have on our waterways, while bringing attention to local adoptable shelter dogs in need of a good home.

Four shelters – Morris Animal Refuge, the Philadelphia Animal Welfare Society (PAWS), Pennsylvania SPCA, and Street Tails Animal Rescue – each nominated a dog for the contest. These shelters, along with the Emancipet Clinic and The Humane Society's Pets for Life Program, served as the "PWD Best Friends Partners" for 2022 and helped distribute dog waste bags and educational materials to dog owners throughout the month of May.

Now that Halo is the new Spokesdog, she'll have the task of educating Philadelphians about proper disposal of dog waste. Many people do not realize that dog waste is a water pollutant, with the average dog poop containing roughly 3 billion bacteria. A common misconception is that dog waste will decompose naturally and act as a fertilizer in green areas. However, unlike cow manure, dog waste is not a fertilizer. When dog owners don't pick up after their pups, the waste often washes into nearby storm drains during rain events. These drains lead directly to local waterways such as the Delaware and Schuylkill Rivers, Philadelphia's drinking water sources. Halo has a tall order ahead of her to keep our local waterways clean, but she is up to the task and ready to fulfill her new responsibility as the PWD Spokesdog.

CLEAN WATERS • STRATEGY W2.1 // STRONG COMMUNITIES • STRATEGY C2.2

SAVE THE DATE!

Delaware River Festival

Saturday, September 24, 2022

PENN'S LANDING, PHILADELPHIA, AND WIGGINS PARK, CAMDEN, NEW JERSEY

Since 2002, Partnership for the Delaware Estuary (PDE) has celebrated the mighty Delaware River with a special event. In that time, the event has grown from a few exhibitors at Fairmount Park in Philadelphia to a multi-partner event held on both the Pennsylvania and New Jersey sides of the river. This year PDE and partners are gearing up for an in-person event on Sept. 24. We'll have all the exhibitors, and all the fun at Penn's Landing and Wiggins Park. Check the Delaware River Festival website for updates.

STRONG COMMUNITIES • STRATEGY C2.2

SAVE THE DATE!

Experience the Estuary

Tuesday, October 13, 2022

VIE PHILADELPHIA

Join PDE at the 2022 Experience the Estuary Celebration – our annual gala fundraiser! The evening will feature a cocktail hour, open bar, dinner, auction, and the famous 90-minute raw oyster bar featuring local Delaware Bay oysters.

Registration will open in mid-August, but we are seeking sponsors! If you are interested in sponsoring the event or contributing to the basket or silent auctions, email Elizabeth Horsey at ehorsey@delawareestuary.org. For more information about the event, venue, and sponsorship, visit our website.

SAVE THE DATE!

10th Biennial Delaware Estuary Science & Environmental Summit

January 30 to February 1, 2023

HARRAH'S RESORT ATLANTIC CITY, NEW JERSEY

Save the date and pack your suitcase, because the Delaware Estuary Science & Environmental Summit heads to Atlantic City next year!

The 2023 biennial summit resumes its in-person format at a new venue at Harrah's Resort. We're excited to partner again with the Delaware River Basin Commission's Advisory Committee on Climate Change (ACCC) for a one-day Climate Forum as part of the Summit. For all information on the Summit, including session and abstract submissions, visit PDE's website. Sign up to be the first to know about registration, abstracts, updates, and more by clicking here.

STRONG COMMUNITIES • STRATEGY C2.5

EVENTS

RASCL VIRTUAL COFFEE HOUR

Friday, July 15 via Zoom

10:00–11:00 A.M.

The Delaware Resilient and Sustainable Communities League (RASCL) will hold a virtual coffee hour this summer, which is open to the public.

Coffee Hours connect RASCL members with local communities and stakeholders for an informal and interactive discussion on resilience and sustainability programs and/or funding opportunities. These sessions also provide an opportunity for local officials and community representatives to ask questions, exchange ideas on possible projects, and network with others. Topics for the upcoming session are:

- **Tree for Every Delawarean Initiative (TEDI) –** Cathryn Soriano, Environmental Scientist II, Climate and Sustainability Section, DNREC Division of Climate, Coastal & Energy
- **Urban and Community Forestry Grant Program –** Kesha Braunskill, Urban and Community Forestry Program Director, Delaware Forest Service

Registration is required in order to attend the Coffee Hour. Click here to register. Click the link for the RASCL Coffee Hour Website. To view previous sessions, go to the YouTube playlist.

STRONG COMMUNITIES - STRATEGY C2.2

THE PARTNERSHIP FOR THE DELAWARE ESTUARY

CONNECTING PEOPLE, SCIENCE, AND NATURE FOR A HEALTHY DELAWARE RIVER AND BAY

The Partnership for the Delaware Estuary, Inc. (PDE), is a nonprofit organization established in 1996. PDE is the host of the Delaware Estuary Program and leads science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania. To find out how you can become one of our partners, call PDE at (302) 655-4990 or visit our website at www.DelawareEstuary.org.

Partnership for the Delaware Estuary, Inc.
Kathy Klein
- (302) 655-4990, ext. 102
- kklein@DelawareEstuary.org

Environmental Protection Agency
Irene Purdy, EPA Region II
- (212) 637-3794
- purdy.irene@epa.gov

Megan Mackey, EPA Region III
- (215) 814-5534
- mackey.megan@epa.gov

Pennsylvania
Sue Weaver
Department of Environmental Protection
- (717) 783-8055
- suweaver@pa.gov

Delaware
Kimberly Cole
Department of Natural Resources and Environmental Control
- (302) 739-9283
- kimberly.cole@delaware.gov

New Jersey
Lynette Lurig
Department of Environmental Protection
- (609) 633-1314
- lynette.lurig@dep.nj.gov

Delaware River Basin Commission
Chad Pindar
- (609) 883-9500 ext 268
- chad.pindar@drbc.gov

Philadelphia Water Department
Kelly Anderson
- (215) 685-6245
- kelly.anderson@phila.gov

Editor
Kate Layton
- (302) 655-4990 ext. 113
- klayton@DelawareEstuary.org

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