

ESTUARY NEWS

NEWSLETTER OF THE DELAWARE
ESTUARY PROGRAM



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HOW IMPORTANT ARE URBAN FORESTS?

BY JOSEPH FERRY, COMMUNITY RELATIONS
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ENVIRONMENTAL PROTECTION, SOUTHEAST REGION

If trees didn't exist in the Delaware Valley, local governments would have to spend \$105 million just to build stormwater storage units to do the job that trees do in controlling almost 53 million cubic feet of runoff. In Atlanta, existing tree cover saves the metro area \$133 million annually in pollution and stormwater services. In New York, trees save the city \$10 million a year in air pollution services; in Chicago, the figure is about \$9 million a year. Those are just the financial benefits of urban forests.

Trees in urban areas also offer a barrier against the wind and provide shade from the pounding summer sun. They filter out big city noises and provide a feeling of privacy. They offer a sense of seclusion, calming greenery, and an alternative to macadam roads and concrete buildings. They provide a home for wildlife and a natural place for children to play. In short, trees can make us all feel better for a variety of reasons.

According to an Urban Ecosystem Analysis by American Forests and the USDA Forest Service Northeastern Area, the

urban forest in the Delaware Valley is declining at an alarming rate. This means that the region's capacity to manage storm water, maintain air quality, and enhance natural aesthetics is also declining. The study covered a 2.4-million acre area, including five counties in southeastern Pennsylvania and four counties in southern New Jersey.

The study, conducted in collaboration with the Pennsylvania Department of Conservation and Natural Resources (DCNR), Delaware Valley Regional Planning Commission, and Philadelphia Water Department, estimated the Philadelphia region has lost 5 million trees over the past 15 years. This loss impacts municipalities, neighborhoods, and homeowners through increased stormwater runoff, lower air quality, and increased energy costs.

A closer look at the numbers reveals that the four counties in New Jersey experienced a five percent gain (21,133 acres) of heavy tree cover, while the five Pennsylvania counties lost 7.8 percent (33,995 acres) of heavy tree cover.



*"...the five-county
Philadelphia region has
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(continued on page 2)

Cover story continued

The report includes a host of recommendations, including the establishment of tree cover goals. American Forests suggests the average tree cover for a metropolitan area in the Delaware Valley should be 40 percent.

Specific management strategies to achieve tree cover goals include:

- Planting trees in suitable spaces such as vacant lots, parks, and riparian areas;
- Planting trees to meet stormwater management goals;
- Using trees to reduce peak storm flow;
- Requiring trees as part of redevelopment and new development projects;
- Reforesting parklands; and
- Maintaining trees to prolong life and environmental benefits.

Many communities in the region desperately need more tree cover. Recent land cover analysis by the USDA Forest Service estimates that distribution of tree cover in the region varies significantly. In Philadelphia, trees cover only about 10.5 percent of the land area; in Chester, a little over 4 percent; in Coatesville, just under 24 percent. Bridgeton Township, in Upper Bucks County, has the highest concentration of trees with a shade over 73 percent of its land area.

There is hope for reversing this trend of declining urban tree cover. On Arbor Day, April 30, 2004, Pennsylvania Gov. Edward Rendell launched "TreeVitalize," an aggressive four-year, \$8 million partnership to plant more than 20,000 shade trees and 2,000 acres of forested riparian buffers to restore lost tree cover in southeastern Pennsylvania.

According to the Governor, the program is designed to halt the loss of trees and revitalize older communities, improve air and water quality, and enhance the quality of life for all citizens.

DCNR is leading the regional partnership in cooperation with the Pennsylvania Department of Environmental Protection (PA DEP) to restore tree cover in cities and towns in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties.

In addition to coordinating resources to support tree plantings, TreeVitalize aims to train 2,000 volunteers in proper tree care techniques. These "citizen foresters" will provide urban forestry assistance to communities and educate homeowners on proper tree care and planting.

The collaboration fostered by the partnership will help address zoning strategies and best land use practices that can greatly affect overall tree cover. "We can put thousands of trees in the ground, but if we continue to lose open space at the current rate, TreeVitalize fails in its overall purpose of restoring tree cover," the Governor said.

The Governor's proposed 2004-05 budget calls for a major new investment in land conservation and community revitalization to help protect open space, improve community parks, protect forested riparian buffers, and improve downtown areas. The investments are part of the Growing Greener expansion, an environmental initiative that builds on the work of previous administrations, and requires a voter-approved \$800 million bond.

TreeVitalize has reached more than half of its \$8 million funding goal. The Commonwealth's contribution of \$3 million is funded through DCNR and PA DEP. Additional financial contributors include Aqua Pennsylvania Inc.; the Philadelphia Eagles' Youth Partnership; USDA Forest Service Northeastern Area; PECO, an Exelon Company; and Exelon Corporation.

The Governor noted that the nursery industry is a key partner in the effort. "As we build demand for trees, we will work with the Pennsylvania Landscape and Nursery Association (PLNA) to ensure a good supply of the right trees of the highest quality is available for these projects," he said.

According to PLNA, Pennsylvania's landscape, nursery and garden center sector is a \$3.1 billion industry, employing 100,000 Pennsylvanians. Pennsylvania is one of the top horticultural producers in the U.S. and the leading producer of nursery and floriculture crops in the Northeast.

More info

The Delaware Valley Urban Ecosystems Analysis Report can be downloaded for free online at <http://www.americanforests.org/resources/rea>. A limited number of hardcopies are available. Contact the USDA Forest Service Northeastern Area at (610) 557-4133. For more information on TreeVitalize, log on to www.treevitalize.net.

WHERE IN THE ESTUARY ARE YOU?



For the answer, see Page 14

UPDATES FROM DELEP

POLYCHLORINATED BIPHENYLS IMPLEMENTATION ADVISORY COMMITTEE (PCB IAC)

Fish populations in the Delaware River are making an impressive comeback, but many of the fish are still unsafe to eat. Fish consumption advisories are in place in all three states bordering the Estuary, due to contaminants that accumulate in fish tissue. The Comprehensive Conservation and Management Plan of the Delaware Estuary (CCMP) has placed a priority on reducing polychlorinated biphenyls (PCBs) found at unacceptable levels in such species as bluefish, striped bass, eel, and catfish in the Delaware Estuary.

PCBs are a class of 109 synthetic compounds classified as a probable human carcinogen by the U.S. Environmental Protection Agency (U.S. EPA), and have been shown to affect human reproductive, immune and endocrine systems. Due to their unusual stability, PCBs were highly prized between 1947 to 1974 for hundreds of industrial and commercial applications, including electrical, heat transfer, and hydraulic equipment; as plasticizers in paints, plastics, and rubber products; in pigments, dyes, and carbonless copy paper; and many other applications. PCB laden oil is often associated with electrical transformers. More than 1.5 billion pounds of PCBs were manufactured in the United States, before their manufacture (with a few small exceptions) was banned by the U.S. EPA in the late 1970s. Existing uses in some electrical equipment continues to be allowed, and PCBs continue to be generated as a byproduct of some industrial processes.

PCBs have been disseminated widely in the environment by human activity. They enter the atmosphere as a gas, spill into soils and waterways, and lodge in sediments. Thus, the sources of PCBs to the Delaware Estuary are multiple. They include loadings from the air; the main stem Delaware River above Trenton; tributaries to the Delaware both above and below Trenton; industrial and municipal point source

discharges; combined sewer overflows; and stormwater runoff, including runoff from contaminated sites. Their chemical stability allows them to persist in the environment for years. When absorbed or consumed, PCBs accumulate in the tissue of fish and other wildlife. As a result, they may be present in fish and marine mammals at levels many times higher than in water.

In response to a court ordered settlement between the U.S. EPA and the State of Delaware and an agreement between the EPA and the State of New Jersey, a total maximum daily load (TMDL) for PCBs for each water quality management zone of the Estuary was established in December 2003. At the request of the states and U.S. EPA, the Delaware River Basin Commission (DRBC) has taken the lead in developing the TMDLs, and recommended individual wasteload allocations, for about 100 dischargers, and has a load allocation for multiple nonpoint sources of PCBs, including air deposition, sediment transport, and overland stormwater flows. Due to the complexity of the issue and potentially high costs of correcting the problem, the TMDL process attracted a high level of interest and concern on the part of the municipal and industrial point source dischargers when it was initiated four years ago.

In the summer of 2000, a coalition of large municipal and industrial dischargers, the TMDL Coalition for the Delaware Estuary (Coalition) formed to actively engage with state, interstate, and federal regulators in the development and implementation of the TMDLs. Increasingly, the Coalition viewed the regulatory process as insufficiently responsive to their concerns, and the effort seemed headed for litigation.

DRBC began working with the Coalition and other interested parties to develop a process that would have the potential for achieving real water quality improvements, in the near and long term, without costly and time consuming litigation. With

The meetings of the DELEP Implementation Teams and Advisory Committees occur on a regular basis and are open to the public. For meeting dates and times, please call the individuals listed below:

Public Participation Implementation Team

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Polychlorinated Biphenyls Implementation Advisory Committee

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UPDATES FROM THE DELEP CONTINUED

funding from the William Penn Foundation, DRBC hired a professional environmental consensus-building and facilitation firm in 2001 to conduct stakeholder interviews, identify key issues, and make recommendations concerning the formation of a PCB TMDL Implementation Advisory Committee (IAC). This step helped to improve cooperation between regulators, dischargers, and environmental organizations. The Coalition has since contributed scientific expertise to the TMDL development process, and its member dischargers and others are voluntarily undertaking PCB track-down studies and minimization plans.

In October 2003, DRBC formed the IAC and initiated a collaborative, problem-solving process aimed at developing effective strategies for reducing PCB contamination in the Delaware Estuary. The IAC's recommendations will be produced in the form of two reports: one containing immediate-action strategies for achieving reductions in PCB loadings, and the other containing long-term strategies for reducing PCB contamination in the Estuary from current levels that are several orders of magnitude above those considered protective of human health. The IAC's reports will be presented to regulators, dischargers, and other implementers as the proposed basis for their programs to implement the TMDLs for PCBs, and to achieve the Estuary water quality standards.

The IAC includes about 20 members and alternates representing regulatory agencies, large and small municipalities, industrial dischargers, and environmental interests. The IAC has now met seven times, including a two-day workshop to forge a common understanding of source categories and loadings. The workshop provided an opportunity for IAC members to engage in a dialogue with scientific experts and to begin to explore implementation strategies. It is hoped the IAC process will help to improve relationships among regulators and stakeholders and increase coordination and cooperation among existing programs within state and federal environmental agencies. The process already is achieving two other important goals by increasing the technical understanding required of all participants to manage bio-accumulative toxic chemicals in our environment, and building capacity for solving complex environmental problems in our region into the future. Improving our region's capacity to address environmental problems, improving water quality, and eliminating fish consumption advisories in the Delaware Estuary will benefit the region's ecology, economy and community.

The IAC's recommendations will be submitted next year to the various agency and non-agency participants for their consideration in planning next steps in the effort to implement the TMDLs and reduce Estuary PCB contamination. Recommendations that have the strong support of diverse IAC members will certainly carry extra weight. However, all regulatory actions to implement IAC recommendations will be subject to the customary public notice, comment and approval processes.

More info

For more information about the PCB IAC please contact Pamela Bush, Commission Secretary and Assistant General Counsel of the Delaware River Basin Commission at (609) 883-9500 ext. 203 or pamela.bush@drbc.state.nj.us.

IT'S TIME TO LEARN WHAT IS REALLY GOING ON OUT THERE

BY ROBERTA RICCIO AND GAYL SOLOMON, DELAWARE ESTUARY PROGRAM, U.S. ENVIRONMENTAL PROTECTION AGENCY



The odds are daunting. A single horseshoe crab may lay as many as 90,000 eggs during one breeding episode. Of the over 1 million eggs that get fertilized, only 30 horseshoe crabs, on average, survive their first year of life.

This was just one of the many interesting facts we learned, this past May, while on a field trip to Slaughter Beach, Delaware, an area which was recently recognized as a horseshoe crab sanctuary. A few Delaware Estuary Program (DELEP) Public Participation Implementation Team (PPIT) members, and a group of students and their chaperones from the Wilmington Montessori School, met with Glenn Gauvry, a horseshoe crab expert from the Ecological Research and Development Group. We were there to witness the once-a-year spawning activity of these amazing creatures. Horseshoe crabs have been around on our planet for thousands of years, despite the incredible odds against their survival.

“More than one million eggs get fertilized and only 30 horseshoe crabs may survive.”

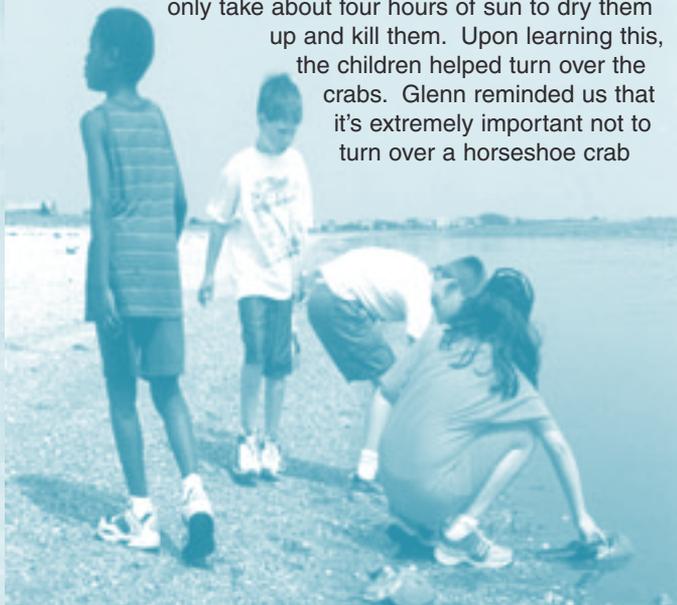
Glenn provided us all with great insight on the life of horseshoe crabs as we walked along the beach. For example, one of the first things we learned from Glenn about the myths associated with this great creature is that the term horseshoe “crab” is a misnomer and that the horseshoe crab is really not a crab at all! They belong to the phylum of Arthropods, which consists of animals having an articulated body and limbs. The three major classes of Arthropods are Insects, Arachnids and Crustaceans. The horseshoe belongs to its own class called Merostomata, which means “legs attached to the mouth.”

As we first approached Slaughter Beach, thousands of shorebirds were feasting on the horseshoe crabs eggs. The shorebirds, which travel through the Delaware Estuary, depend on the horseshoe crab eggs to survive. The eggs provide them with the energy needed to sustain their journey from South America to the Arctic.

The female horseshoe crab uses the assistance of the high tide to help her move up onto the beach in order to dig a hole so that she can lay her eggs. Once fertilized by the males, the eggs will be buried in the sand, hopefully protected from predators, until they mature, hatch, and then make their way to the ocean's waters.

Female horseshoe crabs are typically much larger than males, and the male crabs have a more curved shell than the females. If you flip a horseshoe crab over you can tell the males from the females by looking at the first pair of appendages, which on the male are larger and much more pronounced. The male uses this appendage to hold onto and attach himself to the female during spawning, so that he can fertilize the eggs once the eggs are laid by the female. Although one male may attach to a female during this time, there is no guarantee that this male will be the male that fertilizes all of the eggs. In fact the eggs usually disperse into the tidewater surrounding the female, where many other males have congregated in the hopes of being the lucky male to fertilize these eggs. Any one or all of these males may be responsible for fertilizing the eggs.

During our visit, many horseshoe crabs had washed onto the shore with the help of the high tide. Now that the tide was low, some had been stranded on the shoreline, either because they had flipped upside down, or could not make it back to the water on their own accord. In this position, it would only take about four hours of sun to dry them up and kill them. Upon learning this, the children helped turn over the crabs. Glenn reminded us that it's extremely important not to turn over a horseshoe crab



Learning a thing or two about horseshoe crabs on Slaughter Beach

by it's tail, or telson, because the telson is extremely delicate and necessary for the crabs survival. Once it is broken off, the crab is almost completely helpless to flip itself over and navigate through the water.

By flipping the crabs, the children discovered that these creatures are not dangerous and will not sting you or pinch your fingers. In fact they are quite lazy and need the help of the tide to keep their eggs safe and themselves safe from predators.

Glenn picked up a few horseshoe crabs to demonstrate to us that even though these great creatures have a fierce-looking "coat of armor," similar to one of King Arthur's Knights; this armor or shell is necessary to protect the docile creature that lies underneath. A horseshoe crab will shed it's shell each year until it reaches maturity, at about 11 years of age for males and 12 years for females. After that time, the horseshoe crab will keep its shell until it dies. Horseshoe crabs live an average life span of about 20 years.

During our time on the beach, we realized that we were not the only people who are interested in the lives of horseshoe crabs. One of the students discovered a horseshoe crab that was tagged by the U.S. Fish & Wildlife Service (along with a host of collaborators at the state and local levels). Glenn explained to the children and teachers that they should write down the identification number and telephone number on the tag and call the Service to report the whereabouts and the physical condition of this particular crab.

Glenn did a great job at explaining this once a year phenomena, and his enthusiasm for these marvelous creatures spread amongst all who participated.

NEWS IN A FLASH

TO BE PERIODICALLY UPDATED ABOUT VOLUNTEER ACTIVITIES, EVENTS, AND PROGRAMS TAKING PLACE IN THE DELAWARE ESTUARY, SEND YOUR EMAIL ADDRESS WITH YOUR NAME AND PHONE NUMBER TO DROSS@DELAWAREESTUARY.ORG



ARMY'S CHEMICAL AGENT WASTEWATER PROPOSAL SUBJECT TO MULTI-STATE REVIEW AND APPROVAL

The U.S. Army convened public information sessions in both New Jersey and Delaware in March of this year concerning what it calls the "Newport Chemical Agent Destruction Project." The project involves the shipment of wastewater resulting from the destruction of VX nerve agent from the Army's Newport, Indiana Chemical Depot for further treatment at the DuPont Secure Environmental Treatment Facility at its Chambers Works site in Deepwater, New Jersey (river mile 69).

VX ranks among the nation's most deadly chemical weapons, with a single droplet potentially lethal, but it isn't VX that the Army proposes to bring into our region. The byproduct of the VX neutralization process will be a large volume of caustic wastewater that must be treated with great care at an appropriate wastewater treatment facility before it can be disposed. While the DuPont facility may be one of the most appropriate, from the perspective of its technical capabilities, the Delaware River and Estuary already face difficult pollution challenges. As a result, the Army's proposal has triggered strong public and legislative interest and a high level of scrutiny by state and regional regulators.

Under a 1985 Congressional mandate and based on the international Chemical Weapons Convention Treaty ratified by Congress in 1997, the U.S. Army is required to destroy all chemical weapons stockpiles in the United States. This includes the approximately 1,200 tons of VX nerve agent currently stockpiled at the Newport Chemical Depot. In the wake of the September 11, 2001 terrorist attacks, the priority for this process was accelerated to ensure that these stockpiles are eliminated as potential terrorist targets. The current plan calls for the Army to complete its chemical weapons destruction by 2007.

The Newport Chemical Depot uses a chemical neutralization process to destroy the VX agent on its site. The byproduct of

the neutralization process is a wastewater called hydrolysate, a mixture that contains caustic (lye) and organic salts from the agent destruction process. The destruction of the Army's VX stockpiles will produce a large volume of caustic wastewater that requires sophisticated treatment and disposal at an appropriate treatment facility. The Army asked DuPont to transport this wastewater to its Secure Environmental Treatment facility at Chambers Works, the largest commercial

wastewater treatment facility in North America, and to treat it appropriately before discharging it into the Delaware Estuary.

The major focus of the public information sessions so far has been on information developed through an Environmental Assessment conducted by the Army, and four technical

assessments conducted by DuPont. These assessments focused on transportation safety and risk, treatment effectiveness (referred to as "treatability"), screening level environmental risk, and health hazards.

In an unusual bi-state letter to the Acting Secretary of the Army, Governors Ruth Ann Minner and Jim McGreevey, said "The assessment of potential impacts of a discharge to the Delaware Estuary is, in our opinion, neither complete in its execution nor conservative in its assumptions. We are concerned that if this project goes forward it would result in additional toxicity, nutrients, salt and metals being added to the Estuary." Reviews by environmental agencies in New Jersey, Delaware and the Delaware River Basin Commission elaborated on these concerns as part of the formal Environmental Assessment comment process. Most of the public comments received by the Army on its plan were negative, according, according to Army officials.

Additional evaluations led by the Centers for Disease Control and Prevention (CDC) and the Environmental Protection Agency are pending. DuPont will await results of the CDC-led study before taking any contract. DuPont issued a press release in May quoting Chairman and CEO, Charles O. Holliday, Jr., as saying "Our culture is safety. We will not pursue this project unless we can do it in a safe and environmentally sound manner."

"Our culture is safety. We will not pursue this project unless we can do it in a safe and environmentally sound manner." Charles O. Holliday, Jr., Chairman and CEO, DuPont.



WATER RESOURCES OF THE DELAWARE RIVER BASIN PLAN

BY KENNETH F. NAJJAR, PH.D., P.E., HEAD, PLANNING & IMPLEMENTATION BRANCH, DELAWARE RIVER BASIN COMMISSION

Water flows through every aspect of our lives. We depend on it for transportation, for power, for commerce, for inspiration – indeed, for life itself. Yet too often we take this precious resource for granted, or guard it so jealously for one purpose, that we forget its fluid nature. Can we meet the challenge of safeguarding our water resources now and for generations to come?

In 1999, the Governors of the four Basin states and federal agency directors signed a resolution challenging the Delaware River Basin community to develop a unified vision for the management of the water resources of the Basin. The resolution specifically directed the Delaware River Basin Commission (DRBC) to create a council to provide guidance and support to prepare a new water resources plan for the Delaware River Basin.

Over the past three years, the Watershed Advisory Council (Council), comprised of members representing a cross-section of Basin interests, has worked diligently with the staff of the DRBC and other Basin community members, in preparing the “Basin Plan.”

The Council has met the Governors’ and federal agency directors’ challenge by preparing a Basin Plan that envisions desired results in five major areas of importance:

- Sustainable Use and Supply;
- Waterway Corridor Management;
- Linking Land and Water Resource Management;
- Institutional Coordination and Cooperation; and
- Education and Involvement for Stewardship.

The purpose of the Basin Plan is to provide a unified framework for addressing and redressing new and historic water resource issues and problems in the Delaware River Basin. Toward this end, the Plan emphasizes an *integrated* approach: recognizing, for example, that water supply and

water quality cannot be managed separately, and that ground water and surface water are two aspects of the same resource, separated in time and space, but fundamentally interrelated. Integrated management means considering all aspects of the water resource in decision-making. Conversely, it means recognizing that a wide range of decisions – not just those traditionally associated with water management – can affect our water resources. The Plan will show how the River that divides us also brings us together.

This Plan sets a direction for policy and management decisions over the next thirty years and should be used as a guide for policy setting; decision-making; and actions originating from governmental units, private entities, and individuals. It forms a framework within which existing and new programs can be incorporated and coordinated for effective results. It is also meant to lead to new areas of research and study to support the achievement of the desired results.

To a large extent this Plan builds up on the successes of a variety of existing and ongoing efforts, including the Comprehensive Conservation and Management Plan for the Delaware Estuary, and the management plans for the 152-mile reach of the Delaware River that have been included in the National Wild and Scenic Rivers System.

The Basin Plan has been reviewed and revised based on comments received at public meetings held throughout the Basin from January through March of this year. The Plan is currently being forwarded to the Commissioners for review and approval in anticipation of a signing ceremony for the Governors of the four Basin states and federal agency directors at the Watershed Summit on September 13 through 15, 2004, being held in Wilmington, Delaware.

More info

Read more about the Basin Plan development process and view the latest draft at www.drbc.net.

ESTUARY NEWS IS AVAILABLE ONLINE

AT WWW.DELEP.ORG.

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MAKING WAVES

PARTNERSHIP FOR THE DELAWARE ESTUARY SPRING 2003 PHOTO ALBUM

As part of the Christina Clean-up, on April 17, volunteers arrived early and stayed late to assist the residents of Glenville, in Delaware, remove



debris that was left behind during a devastating flood this past winter. The neighborhood of Glenville is located along the banks of the Red Clay Creek.

Carinthia Bank, a third grader at the Germantown Friends School, in Philadelphia, and her family admire Philadelphia's 2004 "Clean Water Begins and Ends with You" calendar during an awards ceremony held on April 20 at the Fairmount Water Works.



Nancy Parker, Conservation and Environmental Initiatives Coordinator for Artesian Water Company, congratulates Hal Sellers of POLYTECH High School, in Woodside, Delaware, during Delaware's first annual "Clean Water Begins and Ends with You" drawing contest awards ceremony held in Dover, on May 25.



The Partnership, the City of Wilmington, and Delaware DNREC teamed up to host an Earth Day celebration in downtown Wilmington on April 22. With the help of WSTW radio station and Rita's Water Ice, more than 800 cups of water ice were distributed to Delaware residents. Pictured from left to right are Joe Matassino, Deputy Director, and Kathy Klein, Executive Director, for the Partnership for the Delaware Estuary; Mayor James Baker of the City of Wilmington; and Matt Miller, Environmental Program Specialist for the City's Department of Public Works.

This is an aerial view of a native dune habitat and boardwalk recently installed at the University of Delaware's College of Marine Studies. Final plantings, as well as interpretive signage, will be completed in the fall in time for Delaware Coast Day.



!! Attention !!

*Borough and Township Officials and
Watershed Organization Members*

The Partnership for the Delaware Estuary has low and no-cost programs to help you educate the public about stormwater runoff pollution.

- **Are you thinking about marking the storm drains in your community with an educational pollution prevention message?** The Partnership can provide you with all of the supplies needed to mark your town's storm drains at 1/4 of the retail cost.
- **Dog waste control and cleanup is a huge problem in our public parks and open spaces.** Our bag dispensing units, signage and educational tipcards are available to you at 1/3 of the retail cost.
- **What about getting the businesses in your retail corridor involved in the effort?** Our **Clean Water Partners** program is available to you. Handbooks, decals, certificates and technical support are provided to enable you to teach business owners good housekeeping practices outside their front and back doors to prevent stormwater runoff pollution.

*For more information on implementing any of these programs
please contact Lisa Wool at 1-800-445-4935 ext. 19.*

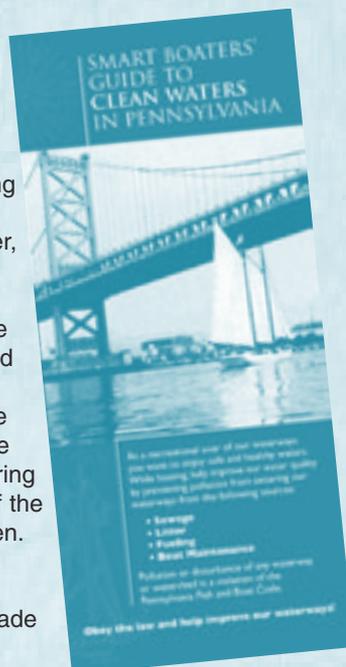
ESTUARY BASICS

CLEAN BOATING IS SMART BOATING

BY TOM DAVIDOCK, COASTAL NONPOINT
POLLUTION SPECIALIST,
SCHUYLKILL
CONSERVATION
DISTRICT

With these long summer days and warm temperatures, all of the boaters out there are enjoying another season on the water. Planning for your outing, however, can often be hectic. Can you try to find the sunscreen, fill up the gas cans, locate your favorite lure, get your lunch together, load up the kids, and do it all before the traffic gets too heavy? There are countless things that must be remembered when you're preparing to go boating, but often, some of the most important ones are forgotten.

Boaters who don't take certain preventative measures can degrade



the quality of water for recreational uses and adversely affect aquatic wildlife. In addition, boating-related pollution or disturbance of any waterway is a serious violation of a number of environmental laws and regulations. For instance, discharged or mishandled wastes such as untreated sewage, used oil and spilled fuel, paint chips, cleansers, detergents, and litter can all pollute the water and pose a threat to wildlife.

- Untreated sewage entering our waterways creates serious health and environmental problems. Human waste contains nutrients and disease-carrying bacteria that can be transmitted to swimmers and can contribute to algal blooms, oxygen depletion, and shellfish bed closures. Boaters should never dump untreated sewage into the water. The Water Quality Act of 1987 requires the installation of a marine sanitation device (MSD) on all vessels with installed toilet systems operating in the navigational waters of the United States. Boaters should always use approved pump-out stations when emptying their MSD's. Boaters with portable toilets should empty them in a restroom or dumping station.
- A single quart of oil or fuel has the potential to cover over two acres of water surface. When fueling your boat, be sure that you avoid spilling or overflowing gasoline in the water. When fueling, only fill the tank 90 percent to allow room for thermal expansion. Know how much your tank holds and don't top off.

ESTUARY BASICS CONTINUED

- Many cleaning products are toxic, non-biodegradable, and contain chemicals that can harm aquatic organisms. These cleaners are phosphate-based, and may therefore contribute to algal blooms, low dissolved oxygen levels, foul odors, and even fish kills. Wipe up any spills immediately and be careful to catch all materials in a container for onshore recycling.
- When pumping your bilge water, it is unlawful to pump any water that appears oily or has a sheen. Having an oil absorbent bilge “pillow” or pad (available at marine stores) will prevent oil from being pumped overboard by your bilge pump.
- Prevent litter from entering the water. Be sure you have a covered garbage can on board and be sure to dispose of all trash, including fishing line and cigarette butts, inside of the can. If trash does fall out of the boat, turn around and pick it up.

Recreational boating is a fun and exciting way to spend your free time. Whether you are fishing, water-skiing or just cruising around, being on and around the water is both memorable and enjoyable. As boaters we need to practice good stewardship and ensure that our activities have the least amount of impact on the environment as possible. Practicing good stewardship is simple and may have lasting effects on the aquatic ecosystems we enjoy. With your help, our water resources can be preserved one boater at a time.

More info

There is a lot of useful information available for boaters and many organizations willing to help boaters keep the water clean. One movement that aims to help boaters better understand the methods of clean boating is the

Pennsylvania Smart Boating, Clean Waters Campaign. The campaign, comprised of the Pennsylvania Department of Environmental Protection, Pennsylvania Sea Grant, Pennsylvania Coastal Zone Management, Philadelphia Water Department, County Conservation Districts of Bucks, Delaware, and Schuylkill, Delaware Estuary Program, and the Partnership for the Delaware Estuary, has created a Smart Boater's Guide to Clean Waters in Pennsylvania. The guide provides information on clean boating and methods of reducing and eliminating pollution from boating activities. It is a useful reference tool to keep on your boat. To get a copy, contact the Partnership for the Delaware Estuary at (302) 655-4990 ext 18.

Check Out the 2004 Northeast Boaters Almanac

Publishers Carla and Bill Miners have included a new section in this edition entitled “Gateway to the Northeast,” which covers the Chesapeake Bay (the headwaters, the Eastern Shore to Cambridge, the Western Shore to Solomons), the C&D Canal, and the Delaware River to Trenton.

The purpose of a boaters cruising guide is primarily to point out destinations worth visiting in your boat and to give boaters information about the area. The Almanac can be found in your local bookstore. To get more information visit www.BoatersAlmanac.com.

ESTUARY SPOTLIGHT

SCHUYLKILL ACTION NETWORK: IMPROVING DRINKING WATER AT ITS SOURCE

BY PAULA CONNELLY, PROGRAM SCIENTIST,
PHILADELPHIA WATER DEPARTMENT

Do you know where your drinking water comes from? If you live in Southeastern Pennsylvania, it may come from the Schuylkill River, which serves as a source of drinking water for over 1.5 million people.

Once called the River of “uncommon purity”, the Schuylkill River became a source of drinking water for residents of Philadelphia in 1801. By 1900, due to industrialization and population growth, the once “pure” Schuylkill River ran

black with coal mining byproducts, smelling of raw sewage, covered in oil sheens, and foaming with detergent bubbles. Since then, with the decline of the coal and manufacturing industries, construction of sewage treatment plants, and implementation of the Clean Water Act, the Schuylkill River has made a comeback. Yet threats to the River remain. In a series of source water assessments performed throughout the Schuylkill Watershed in 2002, the Philadelphia Water Department identified four major sources of pollution threatening the River: urban and agricultural runoff, acid mine drainage, and permitted dischargers of treated wastes. It is within these four categories that the Schuylkill Action Network (SAN) is making strides to restore and protect the Schuylkill River.

The Schuylkill Action Network, formed in 2003, is a group of watershed organizations, water suppliers, industry

representatives, and government agencies that work collectively to improve Schuylkill water quality at the source, reducing sole reliance on water treatment technology to ensure high quality drinking water. Convened by the U.S. Environmental Protection Agency (EPA) Region III, the SAN's executive steering commission includes EPA, the Philadelphia Water Department, the Pennsylvania Department of Environmental Protection, and the Delaware River Basin Commission. The SAN has established four workgroups to address each of the threats identified during the source water assessments, and an additional workgroup to handle education and outreach. Each workgroup is charged with working collaboratively to prioritize, coordinate, and implement restoration projects that address its area of responsibility.

The Agriculture Workgroup, led by the Berks County Conservation District, will work with farmers in the Schuylkill Watershed to implement "best management practices", or activities that reduce releases of bacteria into the River from animal feces, herbicides, pesticides, and sediment from fields. These practices may include cattle crossings and streambank fencing to prevent animals from wading directly in streams, or planting of trees and shrubbery that prevent contaminated runoff from entering waterways leading to the Schuylkill. One of the Agriculture Workgroup's first priorities is to identify farms with an impaired stream on their property, and to encourage conservation plan development and implementation of best management practices. Prioritization efforts help ensure that funding is spent in the areas of greatest concern, and that efforts result in a favorable return on investment.

The Acid Mine Drainage (AMD) Workgroup seeks to reduce large sources of drainage from abandoned mines at the River's headwaters in Schuylkill County. AMD can lead to increased acidity, elevated presence of metals, discoloration of water, and loss of aquatic life in recipient streams. Methods of AMD control include implementation of treatment wetlands and other natural systems to reduce acidity and technologies that block mine leakage. The Acid Mine Drainage group is working within the Pine Knot Drainage Area to identify the largest sources of drainage from that area to the Upper Schuylkill. This area drains over 20 square miles of mine tunnels, contributing approximately 14 million gallons of discharge per day. Restorative efforts at this location are aimed at redirecting, treating, and reusing discharge from the drainage area, and thus reducing metal concentrations in recipient waters.

Urban development in the Schuylkill River Watershed has resulted in increased impermeable surfaces, including blacktop and concrete, which do not allow for infiltration of water during and after rain events. The vast presence of impermeable surfaces has led to increased stormwater runoff, high stream flows, and velocities that cause erosion of stream banks, increased sediment, and destruction of aquatic habitat in recipient streams. Often, streams become contaminated with pollutants, such as lawn fertilizer, oils, and litter, which are transported with the runoff. The Stormwater Workgroup is charged with alleviating some of the effects of stormwater runoff. For example, the Workgroup is planning to create treatment wetlands, retrofit detention basins, and redesign

stormwater outfalls, so as to allow for reduction of flow and increase infiltration.

The Pathogen/Compliance Workgroup seeks to eliminate illegal discharges into the River from septic systems, sewerage systems, and wastewater treatment plants. The Workgroup is taking steps to address sewage overflows through improved reporting; assessment of the capacity, maintenance, operation, and management of municipal collection systems; ensuring compliance with combined sewer system requirements; targeted inspections; and appropriate enforcement. To address pathogen contributions from malfunctioning septic systems, the Workgroup is planning a compliance assistance workshop in September 2004.

As a sign of dedication to its responsibilities, members of the SAN signed the "Constitution of the Schuylkill Action Network" on May 3, 2004 at the Fairmount Water Works in Philadelphia. The event publicly marked the commitment by the SAN's active members to work together to improve the water resources of the Schuylkill. The event also included an awards ceremony for schools in the Watershed that have implemented land management techniques on their campuses to reduce or treat stormwater runoff. Members of the public also signed the Constitution to show their support of and commitment to the SAN's efforts, and to convey the importance of each person's role in protecting and restoring the Schuylkill as a drinking water source.

More info

For more information about the SAN and its activities, or to become a member, please visit our website at

www.schuylkillactionnetwork.org



Cows standing in a stream leading to the Schuylkill River. The SAN Agriculture Workgroup plans to prevent this phenomenon through installation of streambank fencing and cattle crossings.

ESTUARY EXCURSIONS

BIVALVE TO PHILADELPHIA ABOARD THE A.J. MEERWALD

BY KAREN KNEE, SHIP'S HEAD COOK, SCHOONER A.J. MEERWALD

Friday, April 9, 2004, 7:30 p.m. -

The sun was just setting over the Delaware River as we docked the schooner *A.J. Meerwald* at Penn's Landing in Philadelphia, completing a 10-hour transit from our homeport of Bivalve, in Cumberland County, New Jersey. It would be nice to say we sailed in, but the fact is we motored. Crew orientation, training, major repairs in the galley hatch combing and the transom, and routine maintenance took up most of the crew's first week, and we weren't able to finish rigging the boat until the day after our arrival in Philadelphia.

The lack of a functional foresail, however, didn't get in the way of a great trip up the Delaware River. With all eleven crew members, Bayshore Discovery Project staff, volunteers, and a couple of paying passengers, the deck was bustling. "I got to do a lot of helm and lookout," said Ed Rush, a new volunteer from Pennsville, New Jersey. After deciding he wanted to sail on a tall ship, he looked up the *Meerwald's* website and participated in four training sessions in March and April. "This [sailing schooners] is what I like to do, and I plan to do more of it," he concluded.

Friday's voyage was also a first for volunteer Louise Beirig, an editor from Media, Pennsylvania. "I've only been up the River once, and there are people who have lived here their whole lives and never been on the River. It gives you a whole different perspective on your city," she commented.

For those who want a taste of tall ship sailing without the work and commitment of volunteering, the *Meerwald* takes paying passengers on transits like this one. Tim McGrath, who is currently researching a book on naval legend Commodore John Barry, said that the trip gave him a new appreciation of

the Delaware River and of Philadelphia, Barry's adopted home. "I had an absolute ball," he remarked. "The crew was fantastic, as was the food." Anyone who sails with the *Meerwald* on a transit is offered home-cooked vegetarian meals; this time the selections included French toast, fried matzo, sweet and sour stir-fry, Jamaican-spiced sweet potatoes, and spinach lasagna.



The transit also provided a valuable opportunity for crew and volunteers alike to acquaint themselves with the *Meerwald's* lines, sails, and education program. The six deckhands, all of whom are new to the ship, prepared for the environmental education stations they used with school groups this spring. They also practiced setting and striking the mainsail.

While in Philadelphia, the crew spent two weeks taking students out on education sails as part of "Riverfront Adventure on the Delaware". After a short transit, the *Meerwald* arrived in Burlington, New Jersey to present education programs and offer public sails before returning to Bivalve in May for the majority of the spring sails.

More info

If you are interested in transiting on the A.J. Meerwald, the cost, in 2004, to transit was \$400, which included home-cooked meals, onboard accommodations and learning maritime and navigational skills (optional). Passengers are required to arrange for land transportation to and from the Meerwald. To reserve a space or to get more information, please call (856) 785-2060 ext. 100 or go to www.ajmeerwald.org.

TEACHERS' PAGE

HEY TEACHERS!

Remember those books you recommended to your students for summer reading...well how about keeping your brain sharp this summer by reading a couple of these books about the Delaware River and Bay.

Voices of the River: Adventures of the Delaware,
by Jan Cheripko, 1996.

The author and his 14 year-old sidekick relay a personal account, with all of the trials and tribulations, of a canoe trip

from the headwaters of the Delaware River to Philadelphia. A review on Amazon.com states, "While his prose is somewhat pedestrian, Cheripko does capture the emotional and physical impact of such an arduous undertaking. He explains the formation and risks of Class I, II and III rapids, and conveys the feeling of being in a small craft on a big, powerful river."

Tales from Delaware Bay,
by James Milton Hanna, 2000

This non-fiction book is comprised of short stories about crabbers, trappers, fishermen and other individuals who earn

their living from the bay. In 2002, Mr. Hanna compiled *More Tales from Delaware Bay*, a historical account of those who work on the water, and recreational boating and fishing on Delaware Bay.

Terrifying Tales of the Beaches and Bays,
by Ed Okonowicz, 2001

Mr. Okonowicz is famous for his original eerie stories of spirits that roam the shore. He shares more ghost stories in *Terrifying Tales Part 2*, published in 2002.

Disappearing Delmarva: Portraits of the Peninsula People,
by Ed and Kathleen Okonowicz, 1998.

"This book is about people who have hung on over a lifetime to a cherished way of life while change boiled around them.

It tells us to take stock today of what we cherish and not let change destroy it--like our beaches and open spaces, our farmlands and wetlands, our air and water." - Russell W. Peterson, former Delaware Governor President Emeritus of the National Audubon Society.

More info

At press time, all of these publications were available on Amazon.com. Alternatively, you could probably find them in the "Local Interest" section of a bookstore in your neck-of-the-woods.

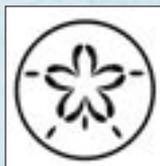
ESTUARY EVENTS

**Who Let the Dolphins Out?
End of Summer Celebration
Friday, August 13, 2004, 7 - 8:30 p.m.
Welkinweir Barn
Pottstown, Pennsylvania**

Green Valleys Association is having a party! Join their staff and special guest, children's author and naturalist, Jane Kirkland. This is a free program, but donations are always appreciated. For more information or to pre-register, please call (610) 469-8646.

**Ocean Awareness Day Symposium
Thursday, August 19, 2004, 10 a.m. - 3 p.m.
Cape Henlopen State Park
Lewes, Delaware**

Join the Marine Mammal Rescue Team from the National Aquarium in Baltimore for fun-filled activities, educational programming, and demonstrations focusing on the importance of marine life in our oceans. Take part in marine mammal rescue demonstrations, dolphin watches and a host of natural resource exhibitors. For more information, please call (302) 645-6852.



**Family Fun Campfire and Summer Sing-along
Friday, August 20, 2004, 7 p.m.
White Clay Creek State Park
Newark, Delaware**

Once again, Jackie LaGuardia McCabe will be at the White Clay for an evening of interactive children's songs! Enjoy the end of our leisurely summer days with the sounds of a crackling campfire and stories of the season. Marshmallows will be provided. Tickets are \$3 per person. For more information, please call (302) 368-6900

**Candlelight Ghost Tour
Friday, August 27, 2004, 6:30 p.m.
Fort Delaware State Park
Delaware City, Delaware**

Join popular "ghost host" and author Ed Okonowicz, and

state park staff, for a lantern lit tour of the old fort. Visit the most haunted areas of the fort, and maybe meet a ghost or two. These tours sell out quickly, so be sure to make your reservations early! For information or to reserve a space, please call (302) 834-7941.

**Beginning Birding
Saturday, September 11, 2004, 8 - 10 a.m.
Welkinweir Barn
Pottstown, Pennsylvania**

Come out and join Green Valley Association and learn about the different parts of a bird, about birds that migrate and those that don't, what a "life list" is all about, tricks to remembering different bird calls, how to work a pair of binoculars, and more. This program is free, but donations are always appreciated. For more information, please call (610) 469-8646.

**Brandywine Arts Festival
September 11 & 12, 2004
Brandywine Park
Wilmington, Delaware**

Two hundred artists and crafters exhibit along the banks of the Brandywine Creek. This is always a fun and relaxing day along a very scenic part of the creek. For more information, please call (302) 656-0135.

**Watershed Summit on the Delaware:
Making the Connection
September 13 - 15, 2004
Wyndham Hotel
Wilmington, Delaware**

The Summit is sponsored by U.S. EPA and the Delaware River Basin Commission. Topics to be discussed include linking land and water, waterway management, state of the environment indicators, urban influences on the watershed, and education and involvement for stewardship. For more information or to register, please call (800) 445-4935.

ESTUARY EVENTS CONTINUED

Experience the Estuary Celebration
Tuesday, September 14, 2004, 5 – 9 p.m.
Figure 8 Barn, Bellevue State Park
Wilmington, Delaware

Take out your survival gear! The Partnership for the Delaware Estuary is celebrating the Estuary's natural, historical, and cultural survivors at our 6th Annual Experience the Estuary Celebration. The evening will include a reception, silent auction (featuring celebrity created horseshoe crabs), and dinner. For more information, please call (215) 814-2718.

22nd Annual Wings 'n Water Festival
September 18 & 19, 2004
The Wetlands Institute
Stone Harbor, New Jersey

Amidst folk music, down Jersey food, pumpkins and corn stalks, meet nationally acclaimed artists, carvers, model builders, quilters, crafters, and photographers. Talk with them, buy from them, and learn from a multitude of demonstrations, guided walks, and hands-on encounters. For more information, please call (609) 368-1211.

Upstream Festival
Saturday, September 18, 2004, 9 a.m. – 1 p.m.
Stroud Water Research Center
Avondale, Pennsylvania

This is a family educational day with programs for children and adults. Enjoy hands-on programs in the White Clay Creek with Stroud scientists and educators. This event benefits the educational programs of Stroud. For more information, please call (610) 268-2153.



The Lewis and Clark National Bicentennial
November 6, 2004 - March 20, 2005
The Academy of Natural Sciences
Philadelphia, Pennsylvania

Visit this exhibit at The Academy of Natural Sciences that commemorates the transcontinental journey of Merriweather Lewis and William Clark two hundred years after they set out on their adventure. See original Lewis and Clark national treasures-including original plant specimens collected by the explorers now housed at the Academy, handwritten journals, maps, equipment, scientific specimens, Native American artifacts - reunited for the first time since the epic 1804-1806 journey. For more information, please call (215) 299-1000 or visit www.acnatsci.org/museum/lewisclark <<http://www.acnatsci.org/museum/lewisclark>>.

COAST TO COAST...

Which Coast are you celebrating?

Southeastern Pennsylvania Coast Day
Sunday, September 12, 2004
Fairmount Water Works
Philadelphia, Pennsylvania

Come discover the treasures of Pennsylvania's coast. The 3rd Annual Southeastern Pennsylvania Coast Day celebration will feature a treasure hunt area, a youth fishing tournament, hands-on creative activities, food, and fun. For more information about PA Coast Day, please call (800) 445-4935 or visit www.DelawareEstuary.org. To learn more about the Fishing Tournament, please call (215) 266-8626.



Coast Day Delaware
Sunday, October 3, 2004, 11 a.m. – 5 p.m.
University of Delaware
College of Marine Studies
Lewes, Delaware

Discover the fascinating world of marine science. This award-winning event includes lectures, ship tours, marine critter touch tanks, children's activities, a nautical craft show, crab cake cook-off, delicious seafood, and much more. For more information, please call (302) 831-8083 or dive into www.ocean.udel.edu.



WHERE IN THE ESTUARY ARE YOU?

Answer from page 2

You're standing on the docks in Bowers Beach, Delaware, where the Murderkill River spills into the Delaware Bay. Take a trip to visit their maritime museum and maybe charter a boat for a day of fishing on the Bay. For more information, go to www.visitdover.com.



Photo by Joe Matassino.

Coast Day NJ

Saturday, October 9, 2004, 11 a.m. – 4 p.m.

Long Beach Island, New Jersey

Sunday, October 10, 2004, 11 a.m. – 4 p.m.

Cape May, New Jersey

Coast Day NJ celebrates New Jersey's marine and coastal environment and all that it provides. Enjoy free live music, guided eco-tours, artist demonstrations, deck and dock tours, touch tanks, exhibits, children's activities, free giveaways, and more. This free event is rain or shine. For more information, please call (732) 872-1300 x 22 or visit www.njmsc.org.



MAP KEY

1. Slaughter Beach
2. Secure Environmental Treatment Facility at Chambers Works
3. Wilmington
4. University of Delaware College of Marine Studies
5. Schuylkill Watershed
6. Bivalve
7. Bowers Beach
8. Delaware Bay

Please use this map to locate the places, towns, or waterways mentioned in the articles in this edition of *Estuary News*. We hope this feature will help to enhance your knowledge of the Estuary region and to encourage you to explore its fascinating resources.

Pennsylvania Watershed Conference

Pennsylvania's Fifth Annual Watershed Conference and Youth Tract will be held from September 30 through October 2, 2004.

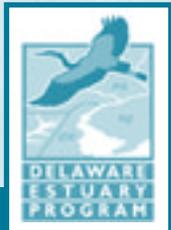
The theme this year is "Air, Land and Water Connection." Topics to be covered include air deposition and how land use and non-point pollution impact the Delaware Estuary; the measures being taken to improve the Estuary, including acid mine drainage treatment, the use of agricultural and stormwater best management practices, brownfields and riverfront redevelopment, Clean Air Act implementation, and urban stream corridor management.

Students will be encouraged to participate in sessions on land development, air quality, stream corridor restoration, biodiversity, and riverfronts. In addition they will network with the adults attending the conference.

Kathleen McGinty, Secretary of Pennsylvania's Department of Environmental Protection will be among the featured speakers at the conference, which will also include remarks by the Pennsylvania Department of Conservation and Natural Resources Secretary, Michael DiBerardinis, and Delaware River Basin Commission Executive Director, Carol Collier.

For more information, or to purchase vendor booth space, please contact the Wildlands Conservancy at (610) 965-4397 ext. 23.





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WHAT IS THE DELAWARE ESTUARY PROGRAM?

The Delaware Estuary Program (DELEP) is a partnership of governmental agencies, nonprofits, the private sector, and citizens working together to restore and protect the Delaware Estuary. It was established in 1988 and is one of 28 national estuary programs around the nation. To learn more about DELEP activities, visit www.delep.org.

WHO IS THE PARTNERSHIP?

The Partnership for the Delaware Estuary, Inc. is a private, nonprofit organization established in 1996. The Partnership promotes the estuary as a regional resource through public outreach and education. It also serves as the education, outreach, and fundraising arm for the Delaware Estuary Program. To find out how you can become one of our partners, call the Partnership at 1-800-445-4935 or visit our website at www.DelawareEstuary.org.

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bhaas@delawareestuary.org