



# estuary news

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Spring 2000

Newsletter of the Delaware Estuary Program

## The Tale of the Shorebird and Horseshoe Crab

### The Big Trip Northward

Did you know that every May the Delaware Estuary plays host to approximately one million visitors? These visitors travel thousands of miles to enjoy the bayshore and to sample local cuisine. They arrive on their own without any luggage or a camera, and stay just a short time before continuing northward – they are shorebirds and their migration is one of the most fascinating natural occurrences the world has to offer.

The Delaware Bay is also home to the world's largest population of horseshoe crabs. Each spring, the horseshoe crabs are stirred from the depths of the Delaware Bay in accordance with the lunar cycle. During high tides, preferably at the full and new moons, the female crabs come ashore to lay their eggs. Each female, once she reaches the age of 11-12, will dig shallow nests in the sand and lay up to 5,000 eggs per nest. She then drags the male over the eggs for fertilization. The eggs are then covered with sand and the crabs return to the water. Each female horseshoe crab lays approximately 90,000 eggs per season.

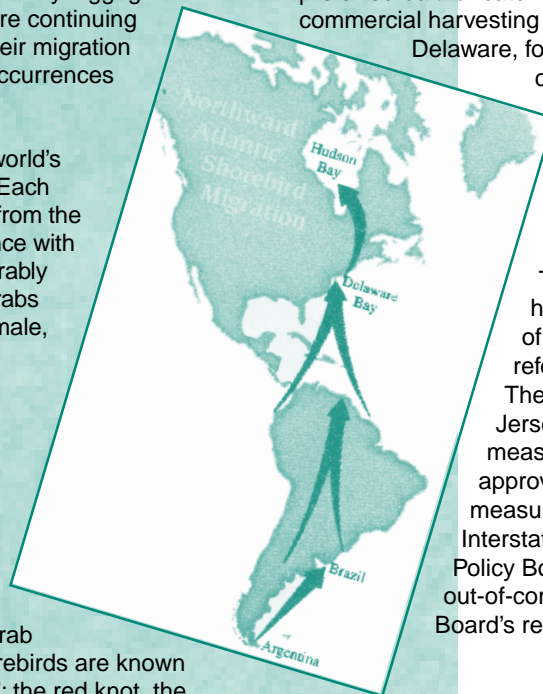
The shorebirds that stop over in the Delaware Bay feed on the horseshoe crab eggs. Ninety-seven percent of the shorebirds are known collectively as the "big-four sandpipers": the red knot, the sanderling, the ruddy turnstone, and the semipalmated sandpiper. By late May, some 30 or more species of shorebirds will join them to double their body weight, in 10-15 days. A sanderling weighing 50 grams, for example, will eat one horseshoe crab egg every five seconds for 14 hours a day. The shorebirds do this by probing the sand with their bills reaching only non-viable eggs — those eggs that will not develop. Eggs buried deeper than one-half inch are viable, and not accessible by the shorebirds, except for the ruddy turnstone. Once eaten, the eggs provide enough sustenance for the birds to continue their journey northward.

### Protecting Mother Nature's Delicate Balance

It is the responsibility of all of us to protect the nesting and feeding areas for the shorebirds and horseshoe crabs. Being one of the most heavily populated regions in the country,

the interrelationship of the shorebird and horseshoe crab is greatly impacted every year through the increased use of pesticides on residential property and farmland, a loss of coastal wetlands due to development, and intense commercial harvesting. In the 1990's, the horseshoe crab became the preferred bait for catching eel and conch, and as a result, the commercial harvesting of horseshoe crabs increased. In

Delaware, for example, the number of horseshoe crabs harvested rose from 17,500 in 1991 to 526,000 in 1999. This situation has led the Atlantic States Marine Fisheries Commission (ASMFC) to enact horseshoe crab harvesting control measures.



The Management Board of the ASMFC has established a state-by-state reduction of crab bait landings at 25 percent of the referenced period landings for that state. The states of Delaware, Maryland and New Jersey have established acceptable control measures, however, the ASMFC has not approved of Virginia's proposed management measures. On April 5, 2000, the ASMFC's Interstate Fisheries Management Program Policy Board recommended that Virginia be found out-of-compliance. Action will be taken on the Board's recommendation in June 2000.

### Horseshoe Crab 101

One of the challenges in educating the public about the horseshoe crab is first changing the negative perceptions that people have about the crab. What may be a visually unappealing and foul smelling pest alongside their beach towel, has actually saved the lives of many human beings.

Much of what we know about the human eye began with research on horseshoe crabs. Horseshoe crabs have ten eyes. They have the ability to make their eyes one million times more sensitive at night and can see up to three feet away. In addition, the chitin, or cellulose-like compound, in their shell is used in sutures and burn dressings to increase healing time. Lastly, the horseshoe crab's copper-blue blood contains a special clotting agent called lysate that reacts to bacterial toxins, allowing pharmaceutical companies to use it to test the purity of new drugs.

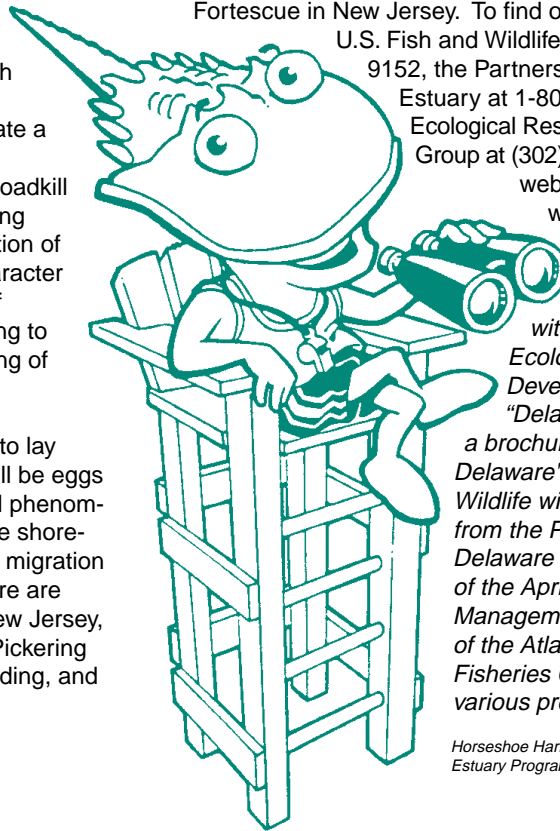
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In an effort to establish a homebase for horseshoe crab education, the founder of the Ecological Research and Development Group (ERDG), Glenn Gauvry, is collaborating with the Town of Milton, Delaware to create a horseshoe crab museum and educational center. The ERDG has selected an historical building along the Broadkill River in downtown Milton and is in the process of raising funds to expand and renovate the facility. The restoration of the building's facade will compliment the historical character of the downtown. The museum will draw thousands of visitors and their dollars into Milton, thereby contributing to the town's revitalization efforts. The anticipated opening of the museum is scheduled for fall 2002.

So, how do the horseshoe crabs know when it is time to lay their eggs? How do the shorebirds know that there will be eggs to feed upon? Scientists continue to study this natural phenomenon to better understand the relationship between the shorebird and the horseshoe crab. We suggest you join the migration of feathered tourists, and take a look for yourself. There are recommended viewing areas in both Delaware and New Jersey, including Port Mahon, Little Creek Wildlife Area, and Pickering Beach in Delaware, and Reed's Beach, Norbury's Landing, and

Fortescue in New Jersey. To find out more, call the the U.S. Fish and Wildlife Service at (302) 653-9152, the Partnership for the Delaware Estuary at 1-800- 445-4935, or the Ecological Research and Development Group at (302) 684-3373, or visit their website at [www.horseshoecrab.org](http://www.horseshoecrab.org).



*Information for this article was collected with assistance from the Ecological Research and Development Group, "Delaware Bay Shorebirds," a brochure published by Delaware's Division of Fish and Wildlife with financial assistance from the Partnership for the Delaware Estuary, Addendum I of the April 2000 Fishery Management Report No. 32a of the Atlantic States Marine Fisheries Commission, and from various press releases.*

*Horseshoe Harry — the Delaware Estuary Program's mascot.*

## updates from del ep

### Monitoring Advisory Committee (MAC)

The Monitoring Implementation Team has been replaced by the Monitoring Advisory Committee (MAC), which was recently formed by the Delaware River Basin Commission (DRBC). The MAC is a policy level committee comprised of fourteen organizations involved in monitoring activities in the Delaware Estuary and the entire Delaware River Basin. The DRBC Commissioners and the Delaware Estuary Program's Steering Committee have been contacted to provide Committee member recommendations. Once the recommendations have been reviewed, the Executive Director of DRBC will appoint each member. Representatives on the committee will include: USEPA, USGS, USACOE, NOAA NMFS, NPS, State of Delaware, State of New

Jersey, State of New York, Commonwealth of Pennsylvania, Delaware Riverkeeper Network, Delaware River Basin Water Resources Association, Delaware River Basin Fish and Wildlife Cooperative, a representative from agriculture, and a representative from academia.

The Committee will review basin-monitoring activities related to water-resource management, develop recommendations for improved monitoring, enhance coordination between monitoring parties, and assist in the implementation of a comprehensive monitoring plan for the basin. The Committee will use a consensus-based approach among the parties. The Committee will forward its recommendations to the Commission, the Delaware Estuary Program's Steering Committee, and basin monitoring agencies/ organizations.

*To get information about the other Delaware Estuary Implementation Team's activities, please call the following people:*

#### Public Participation Implementation Team

Kathy Klein, Partnership for the Delaware Estuary, Inc.  
(800) 445-4935, [partners@udel.edu](mailto:partners@udel.edu)

#### Habitat and Living Resources Implementation Team

Edward Christoffers  
(302) 653-9152 x19  
[ed\\_christoffers@mail.fws.gov](mailto:ed_christoffers@mail.fws.gov)

#### Regional Information Management Service (RIMS) Implementation Team

Bruce Hargreaves, Lehigh University  
(610) 758-3683, [brh@lehigh.edu](mailto:brh@lehigh.edu)  
or Karl Heinicke, RIMS Coordinator  
(609) 883-9500 x 241,  
[heinicke@drbc.state.nj.us](mailto:heinicke@drbc.state.nj.us)

#### Watershed Implementation Team

Nancy Crickman  
(610) 832-6100, [crickman.nancy@dep.state.us](mailto:crickman.nancy@dep.state.us)

*The Delaware River Basin Commission also has three Committees that serve in the same capacity as the implementation teams:*

#### Water Quality Advisory Committee

John Davis, Widener University  
(610) 499-4063,  
[John.F.Davis@widener.edu](mailto:John.F.Davis@widener.edu)

#### Toxics Advisory Committee

Tom Fikslin, DRBC  
(609) 883-9500 x 253,  
[tfikslin@drbc.state.nj.us](mailto:tfikslin@drbc.state.nj.us)

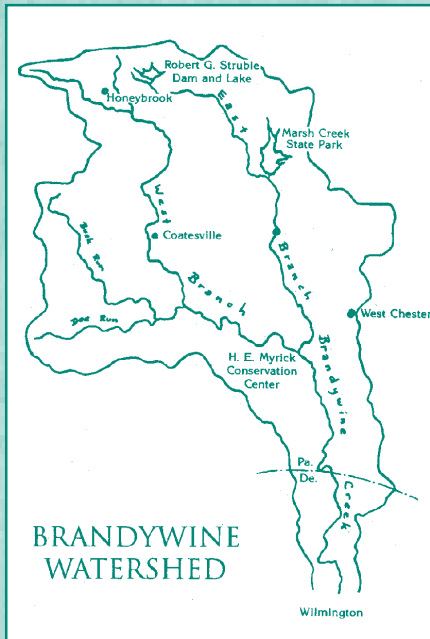
#### Monitoring Advisory Committee

Edward Santoro, Monitoring Coordinator  
(609) 883-9500 x 268,  
[esantoro@drbc.state.nj.us](mailto:esantoro@drbc.state.nj.us)

## Public Participation Implementation Team (PPIT)

Since 1991, the Partnership for the Delaware Estuary's Minigrant Program has awarded approximately 70 grants, totaling more than \$220,000 and averaging \$3,300 per grant. The projects funded through the minigrant program are designed to multiply the number of people that are aware of the importance of the Delaware Estuary.

Every year members of the Public Participation Implementation Team review and select projects for funding. This year, 29 impressive proposals requesting more than \$112,000 were submitted by organizations from throughout the estuary. This year's awards went to the following organizations:



**The Brandywine Valley Association (BVA)** was awarded \$2,500 to organize and oversee the development of a stream monitoring program in the Borough of Downingtown, Pennsylvania. The project will teach residents how to conduct chemical testing, identify larvae that indicate stream health, evaluate stream habitat, and improve water quality by raising awareness of nonpoint source pollution caused by urban runoff.

The **Challenge Program** at the Kalmar Nyckel Shipyard in Wilmington, Delaware was awarded \$3,500 to further expand their organization's watershed education project. Through a partnership with the Stroud Water Research Center in Avondale, Pennsylvania, the watershed education component to the Challenge Program introduces inner-city youth to the industrial influences on water quality, the importance of preserving wetland environments, stream ecology, and sewage treatment.

The **Ancient Worlds & Waterways (AW&W)** team located in Montgomery County, Pennsylvania, was awarded \$900 for their "Rid Invasives, Replant Natives" project. In 1999, the AW&W team of sixth graders received permission and support from Lower Merion Township to remove Japanese Knotweed from a portion of the streambank along Mill Creek. This year's AW&W students replanted the riparian buffer with native species.

The **John Bartram Association** in Philadelphia, Pennsylvania was awarded \$2,910 for two projects at Historic Bartram's Garden designed to improve the public's access to and understanding of the Schuylkill River and its many resources. "Fishing on the Schuylkill" invited people of all ages to visit Bartram's Garden on April 29 to learn about fishing through workshops, lectures, and exhibits and to participate in one of America's favorite pastimes. "Fishing the Schuylkill: Ichthyology at Historic Bartram's Garden," an educational lesson for grades



*The Schuylkill Riverkeeper leads a canoe outing on the river as part of Bartram Garden's Fishing on the Schuylkill event.*

4-8 is also being developed, piloted, and introduced this summer as part of the Association's environmental educational curriculum for Philadelphia school children.

The **Girl Scouts of the Chesapeake Bay Council** was awarded \$2,400 to restore Birch Run Meadow, which is bordered by Birch Run, in Hockessin, Delaware. The restoration site is located within the Girl Scout's Camp Country Center, a weekend and day camp facility. The Scouts will, with the assistance of the U.S. Fish and Wildlife Service's Delaware Bay Estuary Project Office, restore the meadow to its natural vegetation, and install trail markers identifying native plant and animal life. It will take approximately three years for the meadow to mature once the new plants have been introduced.

The **Fairmount Park Commission's Natural Lands Restoration & Environmental Education Program (NLREEP)** was awarded \$3,300 to restore habitats in several areas of the Wissahickon watershed, in Philadelphia, Pennsylvania. The restoration work will culminate on June 2nd and 3rd during NLREEP's BioBlitz 2000 event. BioBlitz 2000 will provide volunteers with opportunities to become involved in a variety of hands-on activities including the stabilization of park sites and trails, the reduction of invasive plant density, and the provision of habitat for native fauna.

The **Cape May County Technical School** in Dennis Township, Cape May County, New Jersey, was awarded \$2,700 for their "Give Eels a Boost" project. The students in Hans Toft's marine environmental occupational class installed two eel ladders in Dennis Creek in Dennisville, New Jersey, in early March. The ladders will assist returning elvers, young eels, in reaching



their natural habitat and completing their life cycle. For more information about "Give Eels a Boost," visit [www.ecoscope.com/eel](http://www.ecoscope.com/eel).

*Three students from Bala Cynwyd Middle School replanting a portion of streambank along Mill Creek in Bala Cynwyd, PA.*

# TIDINGS: News from around the region

## Sojourns - More than Just a Canoe Trip

Have you ever wanted to spend a week in June paddling on one of the Delaware Estuary's scenic rivers? If so, you may want to think about participating in a sojourn. A sojourn is more than just a canoe trip, it's a celebration — a celebration of our nation's great waterways. Every spring, hundreds of people experience the history, ecology, and culture along the waterways in the Delaware Estuary. Just ask any of the organizations working together to make these trips safe, exciting, and educational for both the paddlers and the public.



### Delaware River Sojourn

For the first time in its history, the organizers of the Delaware River Sojourn are planning to take its participants into all four states of the

Delaware River Basin – New York, Pennsylvania, New Jersey, and Delaware. The main stem of the Delaware extends 330 miles from Hancock, New York to the mouth of the Delaware Bay. The Sojourn will begin on June 16 in Hancock, New York. Paddlers will visit the scenic town of Equinunk, Pennsylvania, travel through the Delaware Water Gap National Recreational Area, stop at the National Canal Museum in Easton, and finish on June 24 in Wilmington, Delaware. The Sojourn this year will also be integrated into "OpSail," Philadelphia's tall ship event, being held on June 23. For more information about the Delaware River Sojourn, please call the Heritage Conservancy at (215) 345-7020 x 135.



### Schuylkill River Sojourn

The Schuylkill River Greenway Association (SRGA) is organizing the second annual Schuylkill River Sojourn, which will take place from June 2 - 9, 2000. Beginning in Schuylkill Haven, Pennsylvania, the river will guide its participants from rural, coal mining country to the bright lights of Philadelphia.

Highlights of the sojourn include a tour of historic Port Clinton, an exploration of the Schuylkill Canal, and a visit to Manayunk in Philadelphia. Although the registration deadline for this year has passed, call SRGA at (610) 372-3916 to reserve a spot for 2001.

### Lehigh River Sojourn

Just north of the Delaware Estuary region, the Wildlands Conservancy is organizing the Lehigh River Sojourn, which will be held from June 9 through 16, 2000. This trip begins in White Haven and takes its participants through historic Jim Thorpe and Walnutport, industrial Bethlehem, and ends in Easton with a three-mile stretch on the Lehigh Canal. The Sojourn combines a number of activities including whitewater rafting, canoeing, and mountain biking. The registration deadline is May 22, 2000. Please contact Shirley Kline at (610) 965-4397 x 14 for more information or visit their website at [www.wildlandspa.org](http://www.wildlandspa.org).



## Working Toward a Cleaner and Greener Pennsylvania

When Pennsylvania's Governor Tom Ridge signed the new "Growing Greener" program into law on December 15, 1999, he committed to investing \$650 million over the next five years in Pennsylvania's environment through the Environmental Stewardship and Watershed Protection Act. This is the largest single investment of state funds in Pennsylvania's history. Under the program, four state agencies (Department of Environmental Protection, Department of Conservation and Natural Resources, Department of Agriculture, and PennVest) are authorized to provide grant money to support projects that protect wild resources, preserve farmland, benefit local parks and playgrounds, protect and restore watersheds, and promote environmental education and stewardship. The first round of funding for the Department of Environmental Protection and the Department of Conservation and Natural Resources has been completed.

The Partnership for the Delaware Estuary was awarded \$95,431 to expand the Corporate Environmental Stewardship Program in Pennsylvania, \$21,534 for the Delaware Estuary Teacher Education Institute, \$33,035 to continue the storm

drain stenciling in Philadelphia in 2001, and \$34,560 to produce an educational video about the Delaware Estuary. Below is a small sampling of some other recent "Growing Greener" grant recipients located within the Delaware Estuary:

- The Red Clay Valley Association, in East Marlborough Township, Chester County received \$13,600 for the Red Clay Creek corridor restoration project.
- The Schuylkill County Conservation District was awarded \$54,460 for the Schuylkill River Watershed biosolids mine reclamation project.
- The New Kensington Community Development Corporation in Philadelphia received \$19,970 for an urban watershed education project.

Beginning in June, PADEP will begin applications for the second round of "Growing Greener" grants, which will total more than \$50 million. For more information on Growing Greener, visit PADEP's website at [www.dep.state.pa.us](http://www.dep.state.pa.us).

*Information for this article obtained from PADEP press releases.*

## "Pink" Cattle Egret Study

During the month of May, a research team comprised of representatives from the Manomet Center for Conservation Sciences and Delaware's Coastal Management Program will be conducting a study involving cattle egrets, one of nine species of wading bird that nests and rears their young on Pea Patch Island. The Island is off the coast of Delaware and New Jersey just south of Wilmington, Delaware.

The cattle egrets will be color-marked, with a non-toxic reddish-pink dye on both their wings and breasts, as part of an effort to track the birds' utilization of local areas to find food. The public is encouraged to assist the research team by recording and reporting sightings of color-marked egrets. If you see a "pink" cattle egret, please note the time, date, location (state, road name, house number and/or field location), description of the site (lawn, forest, or cornfield), and behavior of the bird (flying,



foraging, resting). If you see a color-marked cattle egret in flight, please note the general direction in which it is flying. This information should be submitted to the research team via email to Stephanie Schmidt at [schmidts@manomet.org](mailto:schmidts@manomet.org) or by phone to Susan Love at (302) 739-3451.

*Information for this article was obtained from a Delaware Coastal Program press release.*

## Estuary Excursions

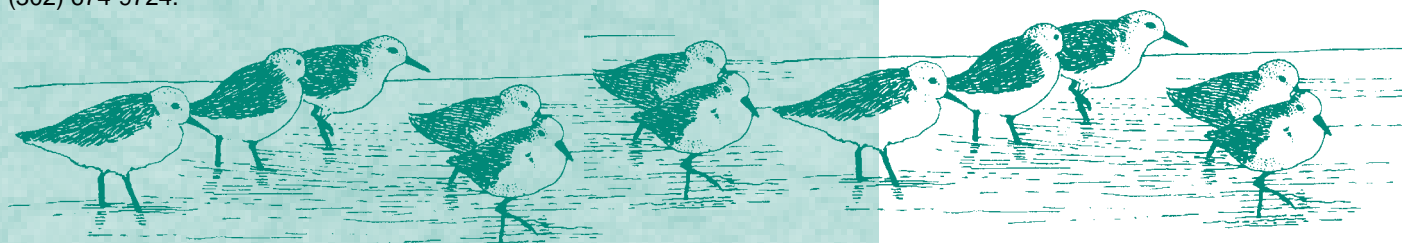
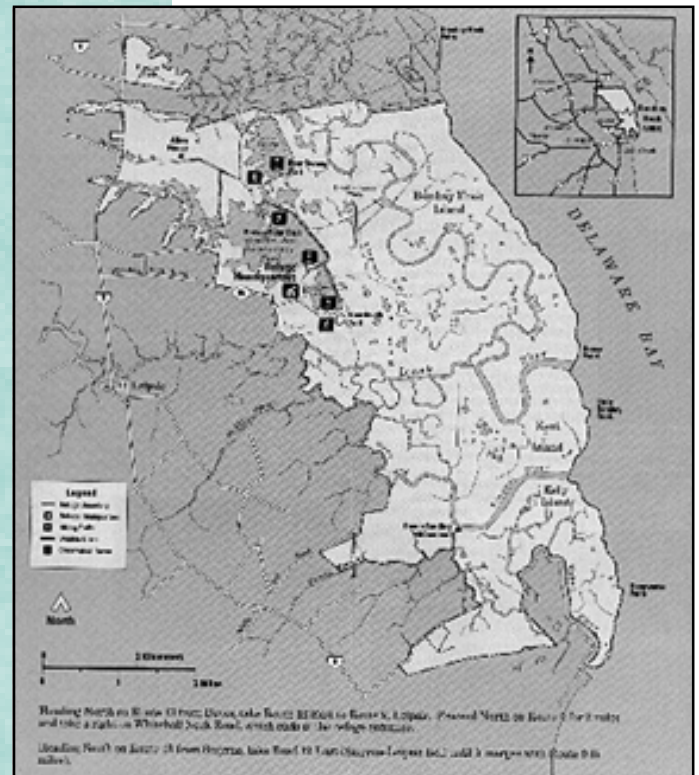
### Bombay Hook National Wildlife Refuge, Kent County, Delaware

Bombay Hook National Wildlife Refuge, located east of the town of Leipsic in Kent County, Delaware, was established in 1937. The refuge is comprised of 15,978 acres, approximately three-quarters of which are tidal salt marsh. It also includes 1,100 acres of impounded fresh water pools and swamps, and another 1,100 acres of agricultural lands and timber and grassy upland. The name Bombay Hook evolved from the Dutch name "Bompies Hoek" or "little-tree point".

The management programs of the refuge are primarily focused on developing and protecting desirable habitat for waterfowl and other migratory birds. Bombay Hook is located at a focal point for waterfowl migrating between their northern breeding grounds and various wintering areas. Shorebirds at Bombay Hook are at their highest concentration during May, primarily due to the arrival of horseshoe crabs, which lay their eggs along the bayshore and mudflats.

The visitor's center is normally open Monday through Friday, 8:00 am to 4:00 pm and on spring and fall weekends from 9:00 am to 5:00 pm. It is closed on summer and winter weekends. Please call the visitor's center for more information at (302) 653-6872 or log onto their website at [www.fws.gov/r4eao](http://www.fws.gov/r4eao).

After a day of wildlife exploration at Bombay Hook, take Route 9 south to the town of Leipsic and relax at Sambo's Tavern, which is famous for a local delicacy - hard shell crabs. Sorry kids, but because Sambo's is a tavern, you must be 21 or older to enter. To reserve a window table overlooking the Leipsic River call (302) 674-9724.



# Making Waves

## Road Trip to Cumberland and County

The Partnership for the Delaware Estuary has received funding from the United States Environmental Protection Agency Regions II and III and the Delaware Estuary Program to distribute and administer grants to organizations within the estuary. Past recipients of these minigrants have included the Delaware Greenways for the creation of an access trail to the Delaware River, the New Jersey Academy of Aquatic Sciences to develop a one-act play for elementary school students about indigenous estuarine animals, and the Clean Water Fund to promote reduced pesticide use by integrated pest management.

This past March, the staff of the Partnership traveled to South Jersey to meet with three of our grant recipients who are doing incredible work to protect and enhance the Delaware Estuary.

We started our tour of South Jersey by first meeting with Glenn Gauvry, the Executive Director of the Ecological Research and Development Group (ERDG). The ERDG works to inspire and assist individuals and organizations to solve problems, change behaviors, and promote sound decisions to achieve sustainable ecosystems. In 1999, the ERDG launched the *Just flip 'em!* campaign to draw attention to the high mortality of stranded horseshoe crabs. The campaign encourages individuals to



Glenn Gauvry at Delaware Coast Day 1999.

support the preservation of the crab, by gently flipping over stranded crabs that are encountered on the beach. With funding from the DELEP's minigrant program, Mr. Gauvry is now developing a horseshoe crab educational pilot program for middle schools in the Maurice-Cohansey Watershed in South Jersey. The program will include material on the crab's history, biomedical connection, and current

conservation initiatives. Mr. Gauvry often brings live horseshoe crabs for school presentations. This program is funding the creation of life-size models of female horseshoe crabs that can be taken apart and assembled again, enabling the students to better understand the anatomy of the crab.

With the recent controversy surrounding horseshoe crab harvesting in the Mid-Atlantic States, it is extremely important that people understand the significance of this species, especially young people. As Mr. Gauvry conveyed to us, some of his most rewarding experiences have been when he reaches an individual, who would otherwise not care, and who suddenly shows an interest or becomes involved with what he does.

The Partnership traveled further south to Bridgeton, New Jersey for a visit with Stephen Carnahan, Executive Director of the Aquaculture Development Corporation (ADC). The ADC is using their minigrant funding to demonstrate the feasibility of transferring abundant Cape Shore seed oysters up bay to



Students adding their shell bags to the oyster reefs at the mouth of the Cohansey River.

enhance oyster populations on the seedbeds at the mouth of the Cohansey River.

From 1880 to 1930, New Jersey's oyster harvest ranged between 1 and 2 million bushels annually. The combined harvests from Delaware and New Jersey fell to 49,000 bushels in 1960, and have been recovering slowly since that time. According to Mr. Carnahan, the basic reasons for the decline in the oyster population over the past century has been overharvesting, an increase in the amount of sedimentation in the Delaware Bay, and parasitic diseases, in particular Dermo and MSX. When asked about most pressing issue facing the Delaware Estuary today, Mr. Carnahan responded that nonpoint source pollution has become a serious problem. The type of nonpoint source pollution he is referring to is sedimentation or silt that has covered formally productive oyster harvesting areas.

Our final visit of the day was with Alesa Contino, a teacher at the Myron L. Powell Elementary School in Cedarville. Ms. Contino is working with Steve Eisenhower, the South Jersey Regional Manager for the Natural Lands Trust. With a DELEP minigrant, Mr. Eisenhower is training and assisting students and teachers at four elementary schools in Cumberland County. His work will result in the development of a wildlife habitat site at each school. At Myron L. Powell, we toured the grounds, saw the beginnings of some native plantings, and were shown where birdhouses and a small pond will soon be installed. Ms. Contino mentioned the satisfaction and sense of accomplishment that of her students feel when working outside to create habitat, especially those students who do not excel in a more traditional classroom setting.

The staff of the Partnership for the Delaware Estuary was impressed with the commitment of these individuals to protect the resources of the Delaware Estuary. The Partnership and the Delaware Estuary Program are pleased to contribute to their work to implement many of the action items in the Comprehensive Conservation and Management Plan, and proud to consider them partners in the effort to protect the most valuable resource in our region. Keep up the good work!

*For more information about the Delaware Estuary Program's minigrant program, call the Partnership at 1-800-445-4935. See the Public Participation Implementation Team Report on page 3 for more minigrant information.*

# Making Waves

## Earth Day 2000 - Philadelphia Storm Drain Stenciling Project

In April, the Partnership for the Delaware Estuary took its message to the streets – literally – with the largest Earth Day 2000 service project in the City of Philadelphia.

We introduced our readers to this project in the cover story of the winter 2000 issue of *Estuary News*. With the assistance of more than 2,000 volunteers, the message “Yo! No Dumping. Drains to River” was stenciled in front of approximately 10,000 storm drains in nearly every section of Philadelphia between April 15 and April 29, 2000. DURON Paints and Wallcoverings supported the project by providing the paint and painting supplies to our volunteers. The project resulted in print and media coverage for both the Partnership and our volunteering organizations, and proved to be an excellent way of educating the public about non point source pollution. In addition, the volunteers distributed approximately 80,000 pollution prevention tip cards to the homes and businesses in the neighborhoods where stenciling took place.

The Partnership thanks our program partners who provided funding and in-kind support to make this initiative possible: Philadelphia Water Department, Pennsylvania Coastal Zone Management Program, DURON Paints and Wallcoverings, as well as the individual volunteers, and volunteer organizations including:

Alliance for a Sustainable Future  
Archbishop Ryan High School  
Bache Martin Elementary School  
Baxter Water Treatment Plant  
Brother Rousseau Academy  
Carmella Playground  
Center for Celebration of Creation  
Central East Middle School  
Cobbs Creek Community Environmental Education Center  
Community Association of Strawberry Mansion  
Creighton Elementary School  
Cub Scouts  
Delaware Valley Regional Planning Commission  
Dobson Elementary School  
East Falls Tree Tenders  
Edison High School  
Environmental Fund for Pennsylvania

Fairmount Park Commission  
Frankford Plan  
Friends of Bardascino Park  
Friends of Cobbs Creek-Southside  
Friends of Cloverly Park  
Friends of Pennypack Park  
Furness High School  
Gillespie Middle School  
Heritage Community Economic Development Corporation  
Holsey Temple  
Holy Cross - After Care Program  
Houston Elementary School  
Isles, Inc.  
J.W. Howe School  
Jefferson Square  
Loeche Elementary School  
Martin Luther King High School  
Mastbaum A.V.T.S.  
Mayfair School



Volunteer stenciling in the Queen Village neighborhood of Philadelphia.

Melrose Park Neighbors Association  
New Kensington Community Development Corporation  
Norris Square Neighborhood Project  
Norris Square Park Patrol  
North Light Community Center  
Office of Representative Louise Bishop  
Pennsylvania School for the Deaf  
Patterson Elementary School  
Penn Treaty Middle School  
Pennsylvania Environmental Council  
Pennsylvania Horticultural Society  
Philadelphia Canoe Club  
Philadelphia Scuba & Aquatic Club  
Philadelphia Water Department  
Robert Vaux Middle School  
Roy F. Weston, Inc.  
Saint Francis De Sales Church  
Samuel S. Fels High School  
Schuylkill Center for Environmental Education  
Sharswood Elementary School  
Sierra Club Inner City Outings  
SLCC/ Longstreth School  
Stroud Water Research Center  
Turner Middle School  
U.S. Environmental Protection Agency  
U.S. Fish and Wildlife Service  
Vare Middle School  
Village of Arts and Humanities  
Vineland High School North  
Wilson Middle School



## “Clean Water Begins and Ends with you” Drawing Contest

Working in partnership with Philadelphia Water Department, Pennsylvania Coastal Zone Management Program, Eller Media, and SEPTA, the Partnership coordinated a drawing contest involving more than 450 students from 30 Philadelphia public, private and parochial schools. A team of judges representing the board of the Partnership, the United States Environmental Protection Agency, the Delaware River Basin Commission, and the Philadelphia Water Department, selected sixteen winning drawings from grades K-12. The first place drawings were incorporated into a pollution prevention advertising campaign and featured on all SEPTA buses and the Broad Street subway cars during April and May. All of the winning drawings were assembled into a 15-month calendar. The winning artists were recognized at an awards ceremony that was held in early April.

# Teachers and students Page

## Coastal Workshop for Teachers

The New Jersey Division of Fish & Wildlife is holding their 21st Annual Coastal Workshop for Teachers from May 19-21, 2000 at the Wetlands Institute in Stone Harbor, New Jersey. The workshop is designed to increase the participants' knowledge of marine and estuarine ecosystems and their value, and to assist in incorporating the information into classroom curriculum. The workshop topics include the Principles of Wildlife Management, Marine Resources and their Importance, Conservation Technology, Beasts and Beaches of the Barrier Islands, Wetlands Wildlife, and Delaware Bay Migration. The last day provides participants with the opportunity to sail on the *A.J. Meerwald*, a restored oyster schooner, to join a working fishing boat, or to kayak along the backbay and tidal creeks. For more information, please call Laurie Pettigrew at (856) 629-7214.

## Stream Ecology for the Delaware River

The Stroud Water Research Center is recruiting middle and high school science teachers throughout the region to participate in the Leaf Pack Network. The participating teachers will receive a



free Leaf Pack Experiment Kit for use with their students. The Leaf Pack provides interesting ways to

learn about stream biodiversity and provides insight into land use along the streamside corridor. Participants must attend one of two workshops being offered August 7-10, 2000 or August 14-18, 2000, agree to use their kit during the following school year, and submit data to the Stroud Center database by December 2000. For more information, please call Jim McGonigle at the Stroud Water Research Center at (610) 268-2153, x255.

## Pennsylvania Announces Environmental Education Grants

On April 27, 2000, Governor Tom Ridge announced 51 environmental education grants, eleven of which have been awarded to educational institutions in the Delaware Estuary. Lucky recipients include:

- Bristol Township School District, Bucks County, to provide teacher workshops to explain how to integrate the Environment and Ecology Standards into their curricula;
- West Chester University, Chester County, to develop and offer a teacher workshop to promote regional land-use planning and watershed management; and
- Pennypack Ecological Trust, Montgomery County, to provide Adopt-A-Forest Stewardship and Restoration Educator Training to middle and high school teachers.

Environmental education grants of up to \$10,000 are available to school districts, private schools, intermediate units, colleges, county conservation districts, and nonprofit groups with education and conservation missions. Applications for the 2001 grants will be available in June. To receive an application, please call the Environmental Education and Information Center at (717) 772-1828 or visit DEP through the Pennsylvania website at [www.state.pa.us](http://www.state.pa.us).

## New Girl Scout "Water Drop" Patch

The Water Drop Patch Program was created through a joint effort of the Girl Scout Council of the Nation's Capital and EPA's Office of Wetlands,

Oceans, and Watersheds. Girl Scouts who want to earn the patch can choose from 20 projects and activities, which can include stream walks, water quality monitoring, or storm drain stenciling. The activities are detailed in a booklet published by EPA entitled "Water Drop Patch Program." The booklet also contains information on watershed issues and provides a list of useful resources. To receive the booklet at no charge, call 1-800-490-9198 and ask for EPA-840-B-99-004, or download the booklet at [www.epa.gov/adopt/patch](http://www.epa.gov/adopt/patch).

## NetworkArts: Combining Art and Science

NetworkArts is dedicated to expanding children's opportunities to express themselves; to explore science, art, and the humanities; and to create art that permanently transforms their communities. In order to achieve this mission, NetworkArts teaches a 30-week ecology course for middle school students, which introduces them to global biomes, ocean zones, forest structure, wetlands, water testing, and ecology. The course culminates with the installation of a mosaic.

NetworkArts' most recent creation was completed with 25 students from Bridesburg Middle School in Philadelphia. The mosaic is a tribute to Rachel Carson for her leadership in the environmental movement. It illustrates her story entitled "Under the Sea Wind." The story, written from an ecological point of view, traces the first year in the life of a mackerel. The mosaic includes images of the various animals the mackerel yearling encounters, as well as more than 60 "message tiles" that contain the text of the story. The mosaic has been permanently installed at the Academy of Natural Sciences, and is the first in a series of five that will pay tribute to the work of Rachel Carson.

For more information about NetworkArts and their ecology course, please call Josey Stamm at (215) 592-1990.

## Recommended Web-sites

### The Delaware Estuary

[www.fi.edu/fellows/fellow7/dec/98/delaware.html](http://www.fi.edu/fellows/fellow7/dec/98/delaware.html)

Fourth grade teacher, Robert Owens of the Marie D. Durand School in Vineland, New Jersey has developed this website with his students. Through fun, educational activities, this excellent site explains the life cycle of an oyster and the types of circumstances that can lead to endangering their health. It also addresses the history of the Delaware Estuary including the role of Native Americans.

### Explorer's Club

[www.epa.gov/kids/](http://www.epa.gov/kids/)

United States Environmental Protection Agency's site educates kids about environmental issues relating to air, water, plants and animals, garbage and recycling, and what they can do to protect the earth's natural resources. This interactive site allows kids to view artwork submitted by young people from across the country and encourages students and their teachers to submit their own work on relevant topics to EPA for display on the site.

### New Jersey Hang Out

[www.state.nj.us/hangout/index/html](http://www.state.nj.us/hangout/index/html)

This site links teachers to lesson plans, Internet and library resources. It also provides a link to "Help Out New Jersey", a site which identifies community projects that teachers and students can volunteer for – maybe even an Earth Day project for 2001.





# Species specific

## Delaware estuary Native Plants

"Habitat Can Be Anywhere..." was a phrase created by the Partnership for the Delaware Estuary, the Philadelphia Water Department and the U.S. Fish and Wildlife Service's Delaware Bay Estuary Project Office, for our exhibit at the Philadelphia Flower Show this past March. We are hoping that this phrase will motivate all of us to rethink the way we landscape our properties. Whether it is in our backyard at home, our company's corporate campus, or our local park, the landscaping decisions we make not only effect wildlife habitat on land, but also the fish and water quality in our regions waterways.

What can you as a property owner do to create habitat that will benefit land and water? Use native plants in your landscaping.

Plants native to the Delaware Estuary are those plants that migrated to the area without the assistance of humans, or those plants that were present prior to European settlement. The use of native plants in your yard will have a number of benefits:

1. Native plants have thrived in the region without the use of fertilizers or pesticides for thousands of years. Thus by using native plants you will be reducing the amount of lawn chemicals, a significant source of nonpoint source pollution, that could potentially wash into our local creeks and streams.
2. Because native plants are accustomed to the climate in this region, they require less water and attention than exotic or invasive species.
3. Native plants improve biodiversity. Biodiversity refers to the total diversity of ecosystems, habitats, plants, and animals. One exotic species can displace dozens of native plants producing a monoculture instead of biodiversity. Biodiversity is important because the fewer species of plants and animals in a habitat, the less likely that habitat is to recover from flooding, drought, or disease.

The Partnership and U.S. Fish and Wildlife Service's Delaware Bay Estuary Project Office have compiled information about the use of native species and the types of species that are best suited for a particular backyard environment. For example, we can recommend native plants for wet or dry soil conditions, the best native plants for sun or shade, and which native plants should be used to attract butterflies.

In addition, there are a series of brochures promoting a landscaping approach called *BasinScapes*. The brochures were originally created by the Alliance for the Chesapeake Bay and  
spring 2000

the U.S. Fish and Wildlife Service's Chesapeake Field Office, for the Christina River Basin, and have been modified to be applicable to the Delaware Estuary Region. BasinScapes include environmentally sound landscape practices that benefit people, wildlife, and the Delaware Estuary. BasinScaping advocates a holistic approach through principles inspired by the relationships found in the natural world.

The brochures, targeted for property owners, explain conservation landscaping, provide tips for reducing outdoor water use, promote long-term landscape planning, and provide suggestions for controlling pests through integrated pest management. The Partnership can provide this information to you. To request

a copy of BasinScapes, please call the Partnership at 1-800-445-4935. For more information about BasinScapes you can also call the Chester County Conservation District at (610) 436-9182, the Water Resources Agency for New Castle County at (302) 831-4925, and the Brandywine Valley Association at (610) 793-1090.

To support BasinScapes and the "Habitat Can Be Anywhere..." concept, the Partnership and the U.S. Fish and Wildlife Service have also created a "Delaware Estuary Wildflower Seed Mix." The mix includes the following native species: Common Milkweed, New England Aster, Boneset, Spotted Joe-pye Weed, Blazing Star, Wild Bergamot, Beard-tongue, Black-eyed Susan, Wrinkle-leaf Goldenrod. These species will thrive in full sun to partial shade and in dry to moist soil conditions. To receive

your complimentary seed packet, please call the Partnership at 1-800-445-4935.

### Foamflower - *Tiareella cordifolia*

Foamflower is native to the Delaware Estuary Region. Its flower stalks are composed of dozens of tiny white blossoms. One rarely sees a single foamflower because this plant rambles along stolons (stems that run along the ground and form new plants) creating large freeform drifts.

The leaves radiate out from a central rosette that stands about 6" to 10" tall during April and May when the plant flowers. Foamflowers are best suited for shady areas and in moist and moderately acidic to neutral soil conditions.

Source: *Wildflowers Gardens – 60 Spectacular Plants and How to Grow Them in Your Garden*. C. Colston Burrell (ed), Brooklyn Botanic Garden Handbook #159, 1999.



*Tiarella cordifolia*. Photo obtained from [www.home.hiwaay.net/~oliver/foamflower.htm](http://www.home.hiwaay.net/~oliver/foamflower.htm).

# estuary events

## Important Upcoming Delaware Estuary Events and happenings

**Bird Banding Demonstration**  
**Saturday, May 27, 2000, 7 am**  
**John Heinz Nation Wildlife Refuge at Tinicum**  
**Philadelphia, Pennsylvania**

See songbirds up-close as birding experts review techniques used to band birds. The harmless leg bands help ornithologists track migratory patterns and provide vital avian demographic information. Call the Refuge at (215) 365-3118 for more details.

**Delaware Bay Day**  
**Saturday, June 3, 2000**  
**Delaware Bay Schooner Project (sponsor)**  
**(Bivalve) Port Norris, New Jersey**

Join in the celebration of the unique maritime heritage and natural resources of the Delaware Bayshore region. This festival features a street and boat parade, environmental educational activities, river tours, blue crab races, oyster shucking contests, and evening fireworks. For more information, please call the Delaware Bay Schooner Project at (856) 785-2060.

**Tree Champions of Delaware**  
**Saturday, June 3, 2000, 10:30 am**  
**Bellevue State Park Art Center**  
**Wilmington, Delaware**

Join Tim Kaden, of the Delaware Department of Natural Resources and Environmental Control, as he introduces you to some of the largest trees of several species in Delaware. Please call Mary Alice McDermott at (302) 577-6540 to register.

**Burlington County Earth Fair 2000**  
**Sunday, June 3, 2000, 10 am - 4 pm**  
**Smithville Park**  
**East Hampton, New Jersey**

The theme of this year's event, sponsored by the Burlington County Freeholders, is *Preserving Our Past to Ensure Our Future*. Attendees will see new and expanded exhibits on soil and water conservation, environmental resources, open space, landscape design, transportation, solid waste management, and recycling. It will also provide an opportunity to learn more about Burlington County's plans to develop and expand their park system. Please call (609) 265-5838 for more information.

**Joan M. Stroud Lecture Series**  
**Tuesday, June 8, 2000, 6:30 pm**  
**Stroud Water Research Center**  
**Avondale, Pennsylvania**

Critically acclaimed author, Robert M. Pyle, will lecture about his recently published book entitled, "Chasing Monarchs." For more information, please call the Stroud Water Research Center at (610) 269-2153.

**Night Owl Walk**  
**Friday, June 9, 2000, 8 pm**  
**Brandywine Creek State Park**  
**Greenville, Delaware**

Learn about Delaware's owls through a slide presentation and meet our live great horned owl. Afterwards, prowl into the night in search of the wild owls of the Brandywine. Please call (302) 577-3534.

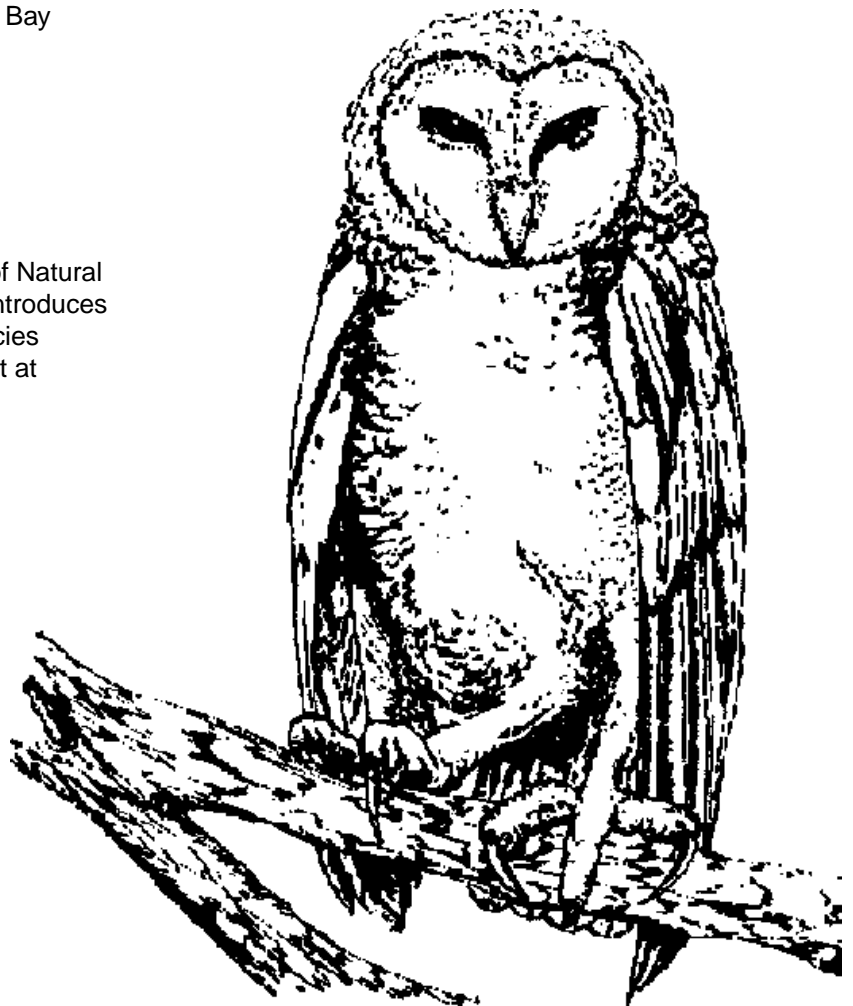


Illustration by Liz Minor.

**Gloucester County Water Fest**  
**Sunday, June 11, 2000, 11am – 4 pm**  
**Scotland Run Park**  
**Clayton, New Jersey**

This event, sponsored by the Gloucester County Parks and Recreation Department and the Upper Maurice River Watershed Association, will feature crafts, displays, kayaking and canoeing, music, food and fun. For more information, please call (856) 881-0845.

**Trip to Stone Harbor and the Wetlands Institute**  
**June 16 - 28, 2000**  
**Schuylkill Center for Environmental Education**  
**(trip sponsor)**  
**Philadelphia, Pennsylvania**

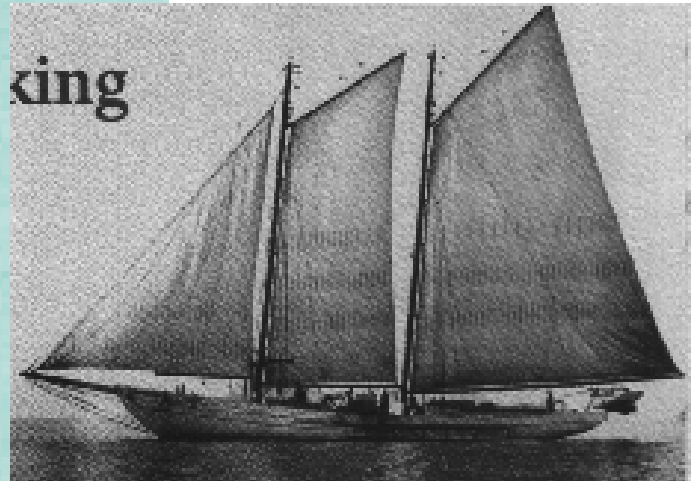
A weekend of wildlife exploration awaits you. Birdwatching aboard the Skimmer, participating in the horseshoe crab census, and releasing head-started diamondback terrapins into the marshes will be highlights of this trip. Please call the Schuylkill Center at (215) 482-7300 x126 for trip rates, which include transportation, lodging, and admission fees, and to reserve a space.

**Full Moon Summer Insect Hunt**  
**Friday, June 16, 2000, 7:00 pm**  
**White Clay Creek Preserve**  
**Landenberg, Pennsylvania**

Sean Gorby, entomologist and wetlands consultant, will coordinate an evening hunt for insects along the trails of the White Clay Creek Preserve. Part of the creekside trail was once an old railroad bed and the tour will include an opportunity to view beaver damns. For more information, call the White Clay Creek Preserve at (610) 274-2471.

**Lewes 10th Annual Garden Tour**  
**Saturday, June 17, 2000, 10:00 am – 5:00 pm**  
**Lewes Chamber of Commerce and Visitors Bureau**  
**Lewes, Delaware**

Spend the day on your own touring public and private gardens. Activities include a garden market with more than 30 vendors, free lectures, and entertainment in Zwaanendael Park. For more information, please call (302) 645-8073.



*Restored oyster schooner— the A.J. Meerwald*

**Tall Ships Delaware 2000**  
**June 22-25, 2000**  
**Wilmington, Delaware**

Wilmington will host 25 of the world's most beautiful Tall Ships from Russia, Poland, the United Kingdom, the Ukraine, Canada, the Netherlands, and the United States, including the second, third, and fourth largest tall ships in the world. The last evening of the event will feature Dionne Warwick, live in concert, and a gala fireworks display. Tickets to the event will be available in early June. Please call (302) 656-8400, for more information.

**OpSail Philadelphia 2000**  
**June 23-29, 2000**  
**Philadelphia, Pennsylvania and Camden, New Jersey**

This festival will begin on Friday, June 23 with a "Parade of Sail" for more than 50 sailing vessels from around the world. The tallest of the ships will berth at the International Cruise Terminal at the Philadelphia Naval Business Center. Tall ships will also be located adjacent to the New Jersey State Aquarium and at Penn's Landing. Ship visitation is free to the public. For more information, please contact OpSail Philadelphia 2000 at (215) 463-2070.

## SAVE THE DATE

**Wetlands Regulatory Workshop**  
**October 29 - November 2, 2000**  
**U.S. Environmental Protection Agency Region III (sponsor)**  
**Atlantic City, New Jersey**

The purpose of this workshop is to increase dialogue and foster partnerships between federal, state, and local regulatory agencies and the regulatory communities. For more information, please call (215) 814-2718.



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## WHO IS THE PARTNERSHIP?

The Partnership for the Delaware Estuary, Inc., is a private, non-profit organization established in 1996. The Partnership promotes the estuary as a regional resource through public outreach and education.

To find out how you can become a member, call the Partnership at 1-800-445-4935, or visit our website at [www.udel.edu/PDE/](http://www.udel.edu/PDE/). Also be sure to visit DELEP's website at [www.delep.org](http://www.delep.org).

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