



# ESTUARY NEWS



NEWSLETTER OF THE PARTNERSHIP FOR THE DELAWARE ESTUARY: A NATIONAL ESTUARY PROGRAM

## Estuary Earning International Acclaim

By Jennifer Adkins, Executive Director, Partnership for the Delaware Estuary

**W**hether you're a fisherman, sailing enthusiast, or tourist, the

Delaware Estuary is the place to be. *The New York Times* recently identified Philadelphia as one of "52 Places to Go

in 2015", ranking it third, just after Milan (Italy) and Cuba, and just before Yellowstone National Park. It cites the

Delaware River Waterfront and many of its features as key elements that transformed the city into an "urban outdoor oasis." In 2014, the Delaware River and Bay hosted fishing and sailing tournaments that drew internationally acclaimed experts, press, and thousands of fans to our region, and the American Birding Association brought its national headquarters here to Delaware City.

This issue of *Estuary News* highlights the growing popularity of our region among outdoor enthusiasts of many types, and the importance of having waterways that are accessible to people as well as fish and wildlife. High-profile outdoor events like the ones mentioned here (and many others) help support our economy

**continued page 2**

The City of Philadelphia is attracting travelers from across the globe thanks to the innovative use of its estuaries. Examples include Spruce Street Harbor Park (pictured) and Race Street Pier on the Delaware River and the Schuylkill Banks Boardwalk on the Schuylkill River.



Credit: Kevin Jarrett, or Flickr user "kjarrett"

### In this issue...

#### Perspectives

- 3 Profile: Eric Lienhard, Volunteer Extraordinaire
- 3 How the Partnership for the Delaware Estuary is Funded

#### Estuary Basics

- 4 Water Trail Offers Access to River's Wonders
- 5 3 Reasons to Care About Access to the Bay

#### Making Waves

- 6 2014 Bassmaster Elite Series Tournament on the Delaware River

- 8 Bay Hosts International Sailing Contest
- 9 Philadelphia Sailing

#### Species Specific

- 10 A Diamond in our Estuaries

#### Partner Spotlight

- 12 Communities and Corporations Involve Employees in Habitat Restoration

#### Estuary Heritage

- 14 Pirate Lore in the "Delawarrrrr" Estuary

#### Estuary Events

- 15 Activities and Events Around the Estuary

# Estuary Earning International Acclaim

continued from page 1

and build awareness and affinity for the estuary's natural resources. They are only possible thanks to the investments in clean water and improved access made over the last few decades.

The success of these events is an important indicator at a key time. In December, the Partnership for the Delaware Estuary joined with top environmental officials from Pennsylvania, New Jersey, Delaware, Philadelphia, the Delaware River Basin Commission, and the U.S. Environmental Protection Agency to renew their commitment to the National Estuary Program. Working together to advance goals for healthy waters, healthy communities, and healthy habitats includes maintaining and improving access and engaging people.

With all the challenges we face – from shrinking budgets to increasing sea level rise – seeing evidence of how investments



Credit: Walker Photography

**Sailors from 14 states and four countries compete in the Hobie 16 North American Championships in the Delaware Bay off Lewes, Delaware on September 26.**

in the health of the Delaware Estuary can pay off is critical. We hope this issue of *Estuary News* provides a window into a shared vision of a Delaware Estuary widely recognized and celebrated as one of the most extraordinary places in the world for people, plants, and animals. ■

## MEETINGS CONTACT LIST

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

### Estuary Implementation Committee

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## FOLLOW US ON



## Profile: Eric Lienhard, Volunteer Extraordinaire

**E**ric Lienhard served on the Partnership for the Delaware Estuary's (PDE) Board of Directors from 2007 to 2012 and continues his support through volunteering on the Development and Events committees. When he is not serving as live auctioneer at the PDE's annual dinner, he works with Hazen and Sawyer as a senior associate and can be found outside kayaking, hiking or training for a marathon. He lives in Aston, Pennsylvania with his wife, Heidi Splane.

### Why do you support the PDE?

"I truly believe in what the organization is doing and their approach to protecting the Delaware Estuary. Water is our most important resource. We need organizations like the PDE to make sure we protect it and replenish it. The PDE's use of science, outreach and partnerships is key to ensuring the future of this estuary, and this is the reason for my support."

### Why is a clean and healthy Delaware Estuary important to you?

"A healthy Delaware Estuary sustains life on so many different levels. Our region depends on the food, goods and tourism tied directly to the health of the environment around us. That's why my wife and I try to eat local foods, like Delaware Bay oysters. This is our home now."

### When did you make the Delaware Estuary your home?

"I moved to Philadelphia from North Jersey in 1990 to go to Drexel University for the Environmental Engineering Program and instantly fell in love with the region. The people here are so passionate about the environment. There is a strong movement here



Credit: Matt Urban of Mobius New Media

**Volunteer Eric Lienhard auctions donated merchandise at the 2013 Experience the Estuary Celebration in Philadelphia. Watch for this event in New Jersey next October.**

to make the region as sustainable as possible. We are leading the country in providing healthy environments for all generations to come. My wife and I can't see ourselves living anywhere else. Plus, the food here is incredible."

### What is your favorite Delaware Estuary outdoor activity?

"Launching my kayak anywhere in the estuary. I like being close to the water and the serenity it brings. It is amazing the number of shorebirds, great blue herons, red-tailed hawks and bald eagles I come across on each trip. My favorite animal sighting is coming across a river otter or two in the Christina River in Delaware." ■

## How the Partnership for the Delaware Estuary is Funded

**W**here does the money come from to do all of the work the Partnership for the Delaware Estuary accomplishes each year?

In November and December of each year, Executive Director, Jen Adkins works with the Board of Directors to establish a budget for the coming year based on several sources of funding. The largest percentage (78% in 2013) comes from government grants. Largest among these is the National Estuary Program funding the PDE receives from Congress, through

the U. S. Environmental Protection Agency, which varies from year to year, but is typically one-quarter to one-third of the organization's budget. The PDE also has other agreements with the U.S. Environmental Protection Agency, as well as with the Philadelphia Water Department; the states of Delaware, New Jersey, and Pennsylvania; the Delaware River Basin Commission; and sometimes others, for grants and activities that support the work planned for the coming year. The total amount and mix of this funding varies from year to year.

To provide a more diverse and stable

source of funding in tough financial times, the PDE has been working to grow its support from the private sector. In 2013, support from individuals, corporations, and foundations made up 19% of the PDE's income. The remaining 4% came from other sources, like interest (less than 1%), online sales of promotional items (like plush horseshoe crabs), and proceeds from Delaware's estuary license plates.

To learn more, check out our "2013 Activity Report" at DelawareEstuary.org. And keep an eye out for our "2014 Activity Report" coming soon. ■



## Water Trail Offers Access to River's Wonders

By Lizzie Hessmiller, Program Manager, Pennsylvania Environmental Council

### What Are You Waiting For?

Give the Tidal Delaware Water Trail a try by registering for the final day of the Delaware River Sojourn (see page 15). Better yet, treat yourself to the whole eight-day adventure.

Credit: Pennsylvania Environmental Council

**T**he mission of the Tidal Delaware Water Trail, managed by the Pennsylvania Environmental Council, is to get people on the Delaware River and to build stewardship through recreation. The 25 water trails across the state each have specific assets and challenges caused by their location, their geology, and their history. The job of a water trail manager is to leverage the assets and overcome the challenges.

The Tidal Delaware Water Trail has plenty of assets. Most importantly, it boasts 56 miles of accessible and navigable river from Trenton, New Jersey to Marcus Hook, Pennsylvania. The river below Trenton experiences high and low tides – just like the Shore – before emptying into the Atlantic Ocean, which creates exciting habitats for anglers and birders to explore. The water trail offers recreational opportunities for beginner and experienced boaters and paddlers. One asset that differentiates the Tidal Delaware from many of the state's water trails is that it passes through a highly populated – and highly visited – region. Millions of tourists and residents have the opportunity to experience this amazing natural asset.

Despite this wealth of assets, in 2012 the Pennsylvania Environmental Council found that usage of the Tidal Trail was very low. After brainstorming that the low user rate resulted from a lack of river access or perception of danger, the organization conducted research using focus groups and

surveys that revealed the greatest challenge facing the Tidal Delaware Water Trail was a lack of awareness. Many ardent paddlers and anglers simply did not know that the trail and its tidal tributaries offered great recreational opportunities. Many area residents did not know that they live near public river-access points. The Tidal Delaware Water Trail is a very hidden gem surrounded by millions of potential users.

To address this challenge, the Pennsylvania Environmental Council invested in a brand new website for the Tidal Trail: TidalTrail.org. The website is the first of its kind in the water trail community. The homepage features an interactive trail map that shows users how to access the numerous recreational amenities along the trail. The calendar of events and Tidal Trail blog is regularly updated by the water trail manager and trail ambassadors. Safety and stewardship information is prominently displayed throughout the site. Information about tides, currents, and

weather is automatically updated every day. The site highlights the diverse bird populations, wildlife habitats, and native plants found along the Tidal Trail. The new website is an important tool to encourage new users to plan trips on the Tidal Delaware Water Trail.

As organizations up and down the Tidal Delaware Water Trail continue their efforts to get people on the Delaware, the Tidal Trail website will serve as a planning and promotional tool to share their events with a broader audience. The website allows visitors and residents looking for the best recreational opportunities in the Philadelphia area to easily find out about the gem right in front of them. ■



Credit: Pennsylvania Environmental Council

# 3 REASONS TO CARE ABOUT ACCESS TO THE BAY

By Sari Rothrock, Watershed Planning Specialist II, Partnership for the Delaware Estuary

**W**hat does it mean to preserve access to the Delaware Bay? When we talk about access, what are we really talking about? Access is about much more than your right to march down to the bay beaches and wiggle your toes in the water, but we're talking about that, too. When the Partnership for the Delaware Estuary (PDE) talks about preserving access, we're talking about three things: building affinity for the Delaware River and Bay, safeguarding a unique sense of place, and sustaining a way of life.

## Preserving access is about... building affinity for the Delaware Bay

Ensuring that people have access to the water – allowing people to see, touch, and experience the bay – is critical for building the passion and understanding that drives people to be good stewards of the bay's resources. Building affinity for the bay can help people to understand the importance of efforts by the PDE and others to make water and habitats cleaner for fish, wildlife, and people. PDE-supported events like Coast Day festivals in Pennsylvania and Delaware and Bay Day in New Jersey foster this connection.

## Preserving access is about... safeguarding a unique sense of place

The bayshore is a quiet, unadorned, and naturally beautiful region where the people live alongside acres of preserved tidal wetlands and the flow of the Delaware Bay and its tributaries. Around the Delaware Bay, there remain a handful of small communities that are truly bayfront, like Money Island and Bivalve in New Jersey, and Bayview and Slaughter Beach in Delaware (just to name a few!). Even the names themselves evoke a strong tie to the bay and the livelihoods that depend on it. The marshes and waterways that surround them provide not only peace and quiet, but also some

protection from flooding and storms. The PDE is working with communities to protect the wetlands, shellfish and other natural resources that protect and sustain them. On March 3, the PDE and local partners on the New Jersey bayshore will be re-releasing the "Cumberland County Bayshore Recovery Plan," which will include new strategies for investing in clean water and pollution controls that increase the resilience of communities there.

communities means not only losing homes, but also resources like docks and marinas that fishermen, crabbers, and oystermen depend on to make their living. A principle called the Public Trust Doctrine ensures that the American public has access to, and use of, coastal lands, water, and resources. It is an old doctrine, adopted by the 13 original colonies (including New Jersey, Delaware, and Pennsylvania) and passed on to the states

The village of Sea Breeze, New Jersey once offered a boardwalk, Ferris wheel, hotels, restaurants, and a train station receiving tourists twice a day.



Credit: Shaun Bailey of the PDE

## Preserving access is about... sustaining a way of life

There used to be other bayfront communities; sadly, they have been overcome by storms and flooding, sea level rise and erosion. One such community was Sea Breeze, which, after being badly battered by storms, was bought out by the New Jersey Department of Environmental Protection (NJDEP) in 2010 and 2011. Similarly, Bay Point in Lawrence Township, after an assault from Superstorm Sandy, has been offered a buyout from the NJDEP. Sandy badly damaged other bayshore towns as well – but these communities are rallying to preserve their way of life. Losing these

after the American Revolution. However, unless we make concerted efforts to protect points of public access from disuse, sea level rise, and an increasing number and intensity of storms, we'll lose opportunities to access the Delaware Bay. Sustaining and enhancing access in bayfront communities and increasing access in underserved urban areas are two goals recently developed and articulated by the PDE and its agency partners in the National Estuary Program. To learn more about these and other goals for healthy waters, healthy communities, and healthy habitats, visit [DelawareEstuary.org/Goals](http://DelawareEstuary.org/Goals). ■

# MAKING WAVES

## 2014 Bassmaster Elite Series Tour

By Andrew L. Shiels, Deputy Director for Field Operations, Pennsylvania Fish & Boat Commission

**T**he eyes of the bass fishing world were focused on the tidal Delaware River during August 7 through August 10. The B.A.S.S. (Bass Anglers Sportsman Society) Bassmaster Elite Series rolled into Philadelphia for a four-day stop on the tour, which brought 107 of the best professional bass anglers in the world to the Delaware River. They were competing for a first-place prize of \$100,000 and points toward various standings within their ranks.

Professional angler Mike Iaconelli, who was born in Philadelphia and grew up in and resides in southern New Jersey, was the expected favorite going into the tournament. He did not disappoint, and he won it all, but we'll get to that shortly. Mike learned to fish on Philadelphia waters such as Pennypack Creek, Montgomery County, and the Schuylkill River.

During the weigh-ins, many Elite Series pros commented that they enjoyed fishing the Delaware River because of its nice

bass, the challenges of understanding and adapting to the tides and the availability of cover and habitat that looked "fishy." They also stated that they had newfound respect for our local anglers and said, "If you can catch fish here, you can catch fish anywhere." Those comments acknowledge how challenging and rewarding fishing a tidal river can be.

The weigh-in is a combination of sport and entertainment with accompanying high-energy music to keep the crowd's pulse up. That, combined with hearing the weights read aloud for five-fish limits, seeing the best of each angler's fish displayed and the crowd's cheering and reactions was almost as exciting as catching the fish yourself. According to organizers, there was a very good first day turnout. The crowds continued to grow, and by Sunday afternoon at the final weigh-in crowds were at capacity. This sends a strong message to B.A.S.S. that there is a substantial following of their programs in and around major metropolitan areas.

The Pennsylvania Fish & Boat Commission (PFBC) received an invitation to participate about a year before the event and welcomed the opportunity. Commission staff was involved in the planning and implementation of the event. Executive Director, John A. Arway helped kick off the festivities by providing opening remarks at the Day 1 weigh-in, was onstage with Governor Tom Corbett on Saturday and was present throughout the event. Staff led by Walt Dietz, Northeast regional outreach and education coordinator, provided planning assistance, logistics support and ensured our booth was staffed at the two-day event. Staff led by Captain Raymond Bednarchik deployed four patrol boats to ensure on-the-water safety and security for the event and the anglers. In addition, the New Jersey Marine Police and Philadelphia Police were on the water and on hand, further emphasizing the importance of ensuring a safe experience for all. Staff from the Bureau of Engineering made sure the Frankford Arsenal Access and



Mike Iaconelli won the 2014 Bassmaster Elite Series tournament held August 7-10 on the Delaware River. Iaconelli has won over \$2.2 million since 2003 by fishing in almost 200 professional tournaments. Of these, he has placed in the top 10 59 times and won 8, including the pinnacle of B.A.S.S. events, the Bassmaster Classic.



Fans enjoy a NASCAR-like atmosphere at Penn's Landing in Philadelphia as professional bass anglers weigh in their catches for the Bassmaster tournament.

# Tournament on the Delaware River

Tacony Boat Launch facilities were ready for the event. Joe Tusing, Huntsdale State Fish Hatchery fish culturist, was available throughout the event to receive and haul the bass to upstream areas following the daily weigh-ins. The B.A.S.S. staff and tournament organizers provided well-oxygenated holding tanks during the event, and our staff provided the expertise and transportation units to ensure that the bass made it back to the river in good condition.

This tournament was an excellent opportunity to tell the story of the Delaware River's continued rebirth as a fishery due to water quality improvements that began with the implementation of the Clean Water Act in 1972. Federal, state and local efforts to improve water quality have created conditions suitable for largemouth bass, smallmouth bass, American shad, hickory shad, striped bass and other fishes to regain a foothold and prosper in the river.

The tournament rules call for each angler to weigh in a maximum, five-fish limit per

day. On Thursday and Friday, 107 anglers competed, and the field was narrowed to the top 50 anglers for Saturday. Then, it was narrowed to the top 12 anglers for Sunday. On Day 1, 101 out of 107 anglers weighed in at least one fish. Boyd Duckett of Demopolis, Alabama, who had five fish weighing 16.14 pounds, brought in the top weight for the first day. That's an average bass weight of more than 3 pounds. Mike Iaconelli was in 21st place at the end of Day 1 with 9.2 pounds. However, after that, it was all Iaconelli. He weighed in 15.1 pounds on Day 2, 12.13 pounds on Day 3 and 10.14 pounds on Day 4 for a total of 47.14 pounds for 20 fish weighed over four days and the win. Including a bonus, Mike Iaconelli earned \$101,500 and 49 other Elite Series anglers earned at least \$10,000 each. He was the favorite, because he was local, knew how to fish the tides and was driven to succeed in his home waters. However, the other 11 anglers that made the final cut hail from nine other states, which shows that fish can

be caught in the Delaware River by anglers from many places with various fishing backgrounds.

So, there can only be one winner, right? As far as the tournament goes itself, there was one winner, and it was Mike Iaconelli. However, there were many more winners as a result of this event including the Delaware River and its fisheries, the City of Philadelphia and southern New Jersey. In addition, the region's bass fishing fans, proponents of water quality, local and state governments and the various sponsors and organizers of the event can share in the increased awareness, publicity and excitement that such an event brings to the area. One of the event partners in particular, the Mid-Atlantic Youth Anglers and Outdoors Program, which works with youth to teach and promote fishing in Pennsylvania, Maryland, New Jersey, New York and Delaware, hopes this will help youth in metropolitan and suburban areas realize the opportunities that exist for them in their local waters for fishing at all levels.

For the Commission, it helps us further recognize and understand an important segment of our angling community, the industry that supports it and the fans that participate in it. B.A.S.S. holds events like this to promote its business, showcase its programs and grow the sport of fishing. Perhaps most importantly, the ability to hold a successful national fishing tournament in America's fifth-largest city based around one of the nation's busiest commercial ports shows that water quality protection, hard work, money and efforts put toward improving our waterways does work and can result in better waters, better living and better fishing. ■

EDITOR'S NOTE: A longer version of this article first appeared in *Pennsylvania Angler & Boater* magazine. It is reprinted here with permission.



Philadelphia while watching Master Elite at the Delaware River



Joe Tusing, a fish culturist at the Huntsdale State Fish Hatchery, displays a healthy largemouth bass before hauling it upstream for release following a weigh-in.

Photo Credits: Pennsylvania Fish & Boat Commission

## Bay Hosts International Sailing Contest

By Rich McVeigh, President, International Hobie Class Association

The Hobie Class Association, the racing organization for the Hobie 16 catamaran, organizes an annual week-long championship, which moves around prominent sailing venues in North America. This past September 100 sailors from 4 countries traveled to Lewes, Delaware for the championship. The event was held in partnership with Lewes Yacht Club and sailed on the Delaware Bay. While the yacht club provided wonderful facilities and support staff, it was the wide beaches and open waters of Delaware Bay that provided the ideal sailing venue for the event.

Hobie Cats are launched from beaches rather than docks. The sailors enjoyed the soft, sandy entry provided by Lewes Beach and sailing on the bay did not disappoint. Sunday was a practice day and many sailors reported seeing curious porpoises near their hulls. They sailed a variety of conditions, from northern chop to calm winds. Current was present and accounted for on some days, so tide charts were reviewed each evening.

The Delaware Bay, while popular with local sailors, is not



Credit: Walker Photography



Credit: Walker Photography

well known as a sailing venue compared to the Chesapeake Bay, yet Delaware Bay provides a variety of conditions to challenge sailors. Unfortunately this included an early-season nor'easter that put the event on hold for two days. Even with the weather delay, sailors enjoyed fierce competition on the water and a lively social atmosphere on shore.

On the water, nine races were completed, with each race taking approximately one hour to sail. Jason Hess and Irene Abascal (Guatemala) won the championship followed by father-daughter team Mark Modderman and Grace Modderman (USA) in second, and Pedro Colon and Monica Cabrera (Puerto Rico) in third. This event served as a qualifying event, so Mark and Grace Modderman earned the right to represent the United States at the 2015 Pan American Games to be held in Toronto, Canada.

Hobie sailing is a very family friendly sport and entire families travel to attend the events. The parking lot at the Lewes Yacht Club held 12 motor homes from as far away as California, and many sailors rented homes on nearby streets within walking distance. The group enjoyed the fare at local restaurants and came together three times during the week at the club, including one event featuring Gary Jobson as the speaker. For many the annual events are like a reunion of the extended family. Next year's event will be held in Pensacola, Florida.

Results, photos and event coverage can be found at <http://goo.gl/IDQ1GF>. ■



Credit: Walker Photography

# ESTUARY EXCURSIONS

## Philadelphia Sailing

By John Brady, Chief Executive Officer, Independence Seaport Museum

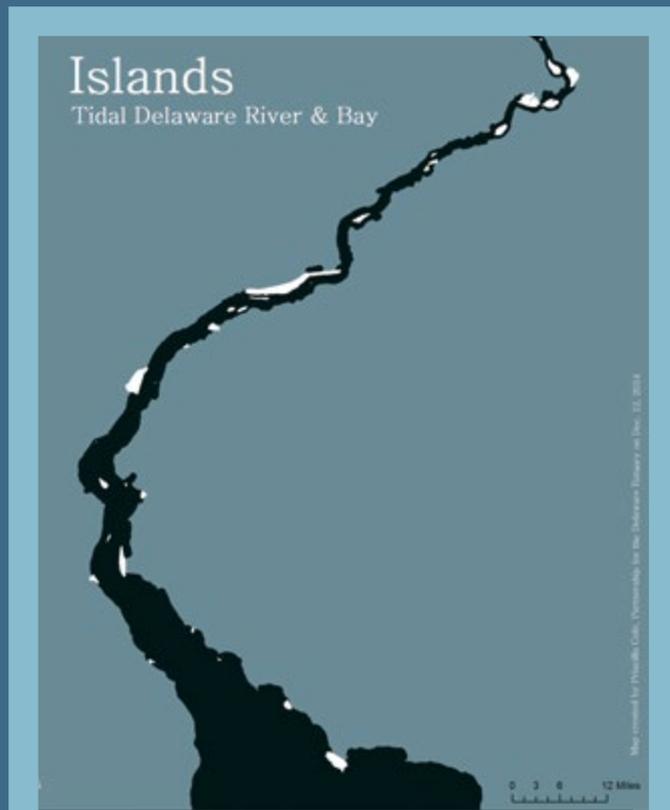
Assuming a favorable tide, the best destination for a short sail from the waterfront of Center City Philadelphia is the back channel between Petty's Island and the New Jersey shore. This patch of water has as much industrial history as any other on our stretch of the Delaware but preserves at least the illusion of a natural landscape. The island still has a tank farm and a container terminal on the western, main channel side, but none of this is visible from the back channel. Along the eastern side of the channel there are working yards of tug and dredge companies as well as a couple yards for pleasure boats, but overall the sailor is impressed by the greenery. No doubt the impression is reinforced by the cityscapes one passes through before arriving. The back channel has the feel of a Center City courtyard; sheltered, shaded and peaceful, but with herons working the shallows.

It is a southerly breeze and an ebb tide (seaward flow) for the duration of the sail that dictate the back channel as a destination for a vessel propelled by sail, oar or paddle. The sea breeze that kicks up in the Philadelphia range of the Delaware in the afternoon of a hot summer day is sufficient to push the boat through an adverse current. If the cruise is taking place after work and the breeze fades with the sun, the now favoring current will do the work of bringing the boat home when the time comes.

Whenever a small boat ventures onto a large body of water there is a sense of adventure, a sense of being an explorer and pioneer, even on a heavily trafficked, urban, post-industrial waterway. Part of this sense comes from the scale; the physical power of the river is heightened by sitting very close to the water's surface in a mere chip of a boat. Part comes from the river's ability to renew itself; after all, there may be a great deal of history here, but the actual water is flowing by this place for the first time. Those who visit a body of water daily know it is never the same two days in a row. The landmarks may appear to be the same, but that's it. The times and strength of the current, the weather, the ships and boats one may encounter are different every time. The observant sailor is always a pioneer, an adventurer and a naturalist.

For much of my career, it has been my good fortune to build many of the boats that are native to this stretch of the river and try them out here. Over the years I have sailed to the back channel in Delaware duckers, tuck ups, shad skiffs, and many others not indigenous to these waters. This has given me the sailing experiences of a 19th century fisherman, hunter, and racing sailor. As we see these resources and activities return to the river, we all have the opportunity to pick up some version of them. Unfortunately we cannot pick them up where they left off, but we can get a sense of their tremendous value and use that to strengthen the effort to restore the watershed. ■

**Editor's Note:** Public access to Petty's Island is limited to programs hosted by the New Jersey Audubon Society. Please visit <http://goo.gl/PEOL1A> for opportunities.



**The observant sailor is always a pioneer, an adventurer and a naturalist.**



Credit: Priscilla Cole of the PDE

Credit: Independence Seaport Museum

# A Diamond in our Estuaries

By Bob Bachand, Author of *Coastal Atlantic Sea Creatures: A Natural History*

**F**rom below the warming spring waters of a Delaware estuary, a diamondback terrapin raises its head from the confines of its shell. It stretches its legs to free itself from its mud shelter, where it spent the winter in hibernation. With a few strokes of its fully extended legs and web feet, the creature's snout breaks the surface for a long-awaited breath of fresh air. Then, as it swims away, a small wake in the marsh creek is often the only thing that reveals its presence.

The terrapin begins its winter hibernation when the marsh's waters dip down to about 45 to 50°F. Some of the turtles choose to hibernate alone, while others do so in small groups. They can take refuge under a thin layer of mud, beneath undercut banks or bury themselves at the top of a creek bank. During a winter thaw, some re-emerge for a short time only to return to hibernation as the temperature dips once again.

Along the Atlantic and Gulf coasts, the diamondback is the only species of turtle that is entirely

restricted to brackish water (more salty than fresh but less salty than sea water) environments. Its habitats include coastal marshes, tidal creeks, mudflats and back bays, or bodies of water that lie behind barrier beaches.

Adult male terrapins average no more than 5 inches in length while females can attain a length of almost 10 inches. Males reach sexual maturity between 4 to 7 years; females do so at about 8 to 13 years. The species life span may exceed 40 years.

As the waters warm under the early summer sun, mating takes place at or



near the surface, ordinarily during daylight hours. A short time later (mid-June through July, New Jersey to Maryland), a female, laden with eggs, swims parallel to the shoreline. When the tide nears its peak, she clambers up a sand beach and moves away from the water's edge. In selecting a site for her nest, she probes the sand with her snout. When satisfied, she begins to dig with her front feet. At some point, she moves slightly forward and continues digging with her hind legs. In the process, she creates a triangular-shaped nest to a depth of 4 to 8 inches. She then stands over her nest and deposits 4 to 18 pinkish-white, thin,

Credit: Bob Bachand



Credit: Bob Bachand

leathery eggs. As each egg is laid, she covers it with a little sand. When completed, she covers the remaining portion of the nest entirely with sand, pats it down until it is nearly flat, and then abandons her developing embryos to the mercy of nature. The eggs incubate over the next 60 to 104 days. Investigators have found that in nests whose temperatures are maintained at about 78°F, all of the young hatched as males; with nest temperatures maintained at about 90 °F, all of the hatchlings are females.

Nest predation can be devastating. Crows and gulls dig up nests to get after the eggs; raccoons, muskrats, skunks and others attack the hatchlings. Together, predators have been known to destroy 50 to 70% or more of the brood.

Hatchlings generally emerge from their nests during daylight hours, one or more at a time, over a period of 1 to 9 days. The 1- to 3-inch-long turtles avoid open water. Instead they head for clumps of marine vegetation lying on the beach. Taking refuge there, they feed on insects, amphipods, tiny fiddler crabs and other

“invertebrates,” or spineless critters within their reach. Some investigators, however, feel that the creatures don’t even feed in the autumn of their first year. As our area waters cool, they bury themselves in the mud bottoms of tidal creeks where they hibernate over the winter. Adult terrapins feed on juvenile crabs, snails, clams, fish, insects and plant material.

Historically, diamondback terrapins were highly sought for their meat. Between the 1880s and 1930, the species was nearly wiped out. Though their numbers have recovered, those caught in crab traps drown if the trap is not checked daily. Automobiles account for the loss of many females as they attempt to cross roads to reach nearby nesting grounds. In New Jersey, as many as 267 female terrapins, in a single season, ended up as “road kills.” If you should see one crossing the road, and can safely come to a stop, pick up the turtle and carry it over to the other side. Alterations in habitat can also have a major impact on them. Bulkheads and riprap can prevent access to their remaining nesting sites. In some cases, the introduction of beach grasses can also be detrimental. As the grasses quickly invade enough of the open, sandy beaches, they can affect the sand temperature and moisture, thereby altering the sex of the hatchlings. ■

# Thank You!

The Partnership for the Delaware Estuary would like to thank the attendees, presenters, and sponsors of the 2015 Delaware Estuary Science & Environmental Summit. Congratulations to our student award winners, Kurt Cheng of Drexel University and Thomas Santangelo of the University of Delaware. Watch for articles detailing their research in future issues of *Estuary News*.

## Did You Know?

A bill (S2615) introduced in the New Jersey Senate last year proposed to make it illegal to catch or take diamondback terrapins, among other protections. This is already illegal in Delaware, where they are listed as a species of concern.

## Communities and Corporations Involve

By Laura Whalen, Habitat Consultant, and Debbie Heaton, Director of Development, Partnership for the Delaware Estuary

The Delaware Estuary provides many of the resources necessary to fuel the economies of three states. This makes a healthy Delaware River and Bay essential to the people who live here and the businesses that have chosen to locate here. The Partnership for the Delaware Estuary (PDE) brings the needs of these two communities together each year through the Corporate & Community Environmental Stewardship Program. The program supports local businesses and governments in their planning of projects to reduce their environmental impact and to

conserve and provide habitat on their properties or in their communities. The projects allow employees to get involved and, in some cases, volunteers from the community are recruited to participate and get their hands dirty.

The projects accomplished in 2014 cover a wide range of efforts, and all serve to benefit the health of the estuary. The PDE staff provided technical, planning and organizational help to the projects' leaders and worked alongside volunteers during the course of each effort.



**BEFORE:** A stormwater pond sits neglected in Delaware's Dartmouth Woods neighborhood, an area that drains to Naaman's Creek and, later, the Delaware River estuary.



**AFTER:** Native plants line a stormwater pond in Dartmouth Woods, a neighborhood near the Delaware-Pennsylvania state line. These will benefit nearby homes by absorbing more runoff, filtering more pollutants, and attracting more wildlife.

In 2014, Delaware's **New Castle County** (NCC) worked with the PDE to improve a stormwater pond at Rockwood Park. County employees prepared the soil for planting, and volunteers from Rockwood and Bank of America came out to plant and create habitat around the pond for native birds, turtles, and other wildlife.

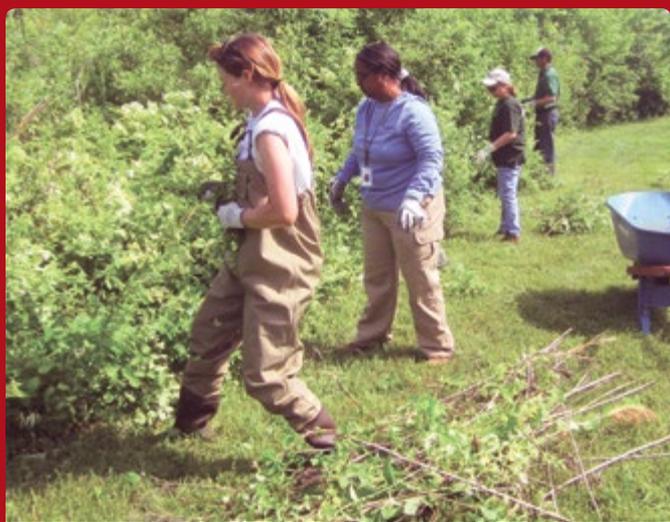
NCC Special Services is responsible for regularly maintaining 94 stormwater ponds. Bernadette Igo of NCC said, "Our goal is to incorporate one to two ponds every year and plant native vegetation in order to reduce mowing and maintenance and, consequently, our carbon footprint, and remove pollutants from our waterways. The naturalized ponds are also more beautiful as you can see from the before-and-after photos of the Dartmouth Woods project in New Castle County."

Volunteers from **Pepco Holdings, Inc.** worked at the Atlantic City Electric office in Carneys Point, New Jersey to remove invasive plants from a stormwater pond they maintain on its property. The invasive plants were choking out some of the native shrubs they planted in previous years and were growing too large. The employees hope to work on this buffer every year to keep it healthy.

**Wheelabrator Gloucester** is holding their annual Symposium for Environment and Education, and the PDE is working with it to provide technical guidance. This year, students from West Deptford Middle School are learning how protecting and restoring freshwater mussels and oysters will make water cleaner. They are also learning about living shorelines and working to implement a project that will improve mussel habitat.

**Logan Generating Company** continued to maintain and expand its meadow planting project in Logan Township, New Jersey. Located along the Delaware River, it consists of 31 acres of fields that were once farmland but now serve as wildlife habitat. The meadow consists of native plants, such as purple cone-flower, common yarrow, switch grass, big bluestem and more. These will absorb and filter rain and snowmelt before they can flow into the Delaware River.

# Employees in Habitat Restoration



Weeds don't stand a chance as Jocelyn Robinson (foreground) leads Atlantic City Electric employees in the enhancement of their stormwater pond in Carneys Point, New Jersey on October 6.



Noramco employees pose together after battling invasive weeds at Bellevue State Park outside Wilmington, Delaware on November 11.

**Noramco** worked at Bellevue State Park in New Castle County. Its employees planted shrubs and removed weeds and invasive vines that were choking out trees and prepared it with new compost for planting native perennials in the spring. They are also working on a design for a rain garden at a new building that is on Wilmington's Christina Riverfront near the entrance to the Delaware River.

The **City of Millville**, New Jersey installed a rain garden with educational signage in 2012. Students from a local high school filled it with native plants at that time. Recently the city added to those plants, replacing some, and improved the garden's drainage.

**Mannington** teamed up again with the PDE and New Jersey Audubon to participate in the Phillies' Red Goes Green recycling program. This volunteer effort educated fans about recycling when 65 volunteers jumped at the chance to collect bottles and cans at the stadium throughout a game in July.

Please contact Debbie Heaton at (302) 655-4990, extension 120, or [DHeaton@DelawareEstuary.org](mailto:DHeaton@DelawareEstuary.org) to learn more. The PDE's Corporate & Community Environmental Stewardship Program is available to help you engage your employees on projects that reduce your environmental impact and improve your property. In fact, planning is already under way for next summer. ■

## PREMIUM MEMBERS



## BASIC MEMBERS





# ESTUARY EVENTS

## Gardening Seminar

March 21, from 9 a.m. to noon

### Hockessin, DE

Meet authors Kenn Kaufman and Rick Darke by attending Flying Gardens and Living Landscapes, a three-hour seminar at Ashland Nature Center. Both will explain how to transform your yard into a hot spot for butterflies, insects and more. The cost to attend is \$25 for Delaware Nature Society members, and \$35 for non-members. Please visit [DelNature.org](http://DelNature.org) for details, or call (302) 239-2334.

## Spring on the Delaware

March 29, from 7:45 to 11 a.m.

### Petty's Island, NJ

Discover Philadelphia's forbidden Petty's Island, where access is only granted a few times per year. Those who register are likely to see a variety of birds, all while walking in the footsteps of Benjamin Franklin, Blackbeard the pirate and others, or so legend has it. Please visit <http://goo.gl/PEOL1A> for info on this free excursion, or call (908) 766-5787. Participants must be 12 or older.

## SAVE THE DATE...

Credit: Delaware River Basin Commission



## Delaware River Sojourn

June 20-27 | Bordentown, NJ and Philadelphia, PA

Explore the waters that spawned a nation by paddling the Delaware River Sojourn, the theme of which is Birthplace of America. This weeklong voyage will end with two days in the estuary. This includes Friday's daytrip on Crosswicks Creek near Bordentown, New Jersey. It also includes Saturday's daytrip on the Delaware, from Philadelphia's Independence Seaport Museum to South Jersey's Fort Mifflin. Start your journey today at [DelawareRiverSojourn.org](http://DelawareRiverSojourn.org).



Credit: Chris Devers, or Flickr user "cdevers"

## Tall Ships Philadelphia-Camden

June 25-28

### Philadelphia, PA and Camden, NJ

The Delaware River estuary is hosting the largest sailing event in America. It's all happening this June, and you can have a front-row seat. Mark your calendar now to make sure you catch over a dozen tall ships, including some local favorites. Please log on to [TallShipsPhiladelphia.com](http://TallShipsPhiladelphia.com) for information, including cruise and tour opportunities, or call (877) 4FLY-TIX.



Credit: Horizon Services

## Battling Cleanup

### Petty's Island Clean Up

March 21, from 9 a.m. to noon

### Pennsauken, NJ

<http://goo.gl/PEOL1A>

## Schuylkill Scrub

March 1 to May 31

### Southeast PA

[SchuylkillScrub.org](http://SchuylkillScrub.org)

## Red Clay Valley Cleanup

March 28

### Chester & New Castle Counties

<http://goo.gl/1Qro06>

## Christina River Watershed Cleanup

April 18, from 8 a.m. to noon

### New Castle County, DE

[ChristinaRiverCleanup.org](http://ChristinaRiverCleanup.org)

## THE LECTURE CIRCUIT

Dr. Danielle Kreeger on  
"Aquatic Underdogs: How Freshwater Mussels Can Help Save Our Great Waters"

February 26, from 6 to 7:30 p.m.

Wagner Free Institute of Science in Philadelphia  
[WagnerFreeInstitute.org](http://WagnerFreeInstitute.org)

Dr. Danielle Kreeger on **Climate Change**

March 3, from 8:30 a.m. to noon

PECO's Energy Hall in Philadelphia  
[SWEPWeb.com](http://SWEPWeb.com)



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## Partnership for the Delaware Estuary: a National Estuary Program

The Partnership for the Delaware Estuary, Inc. (PDE), is a private, nonprofit organization established in 1996. The PDE, a National Estuary Program, leads science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania. To find out how you can become one of our partners, call the PDE at (800) 445-4935 or visit our website at [www.DelawareEstuary.org](http://www.DelawareEstuary.org).

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