

SPRING 2017



Volunteer Opportunities

The Peconic Estuary Program has tons of volunteer opportunities planned for the spring of 2017. This spring will be jam packed with fun, exciting opportunities to enjoy all the Peconic Bays have to offer while learning about the importance of protecting our local waterways. From nature hikes to marine species monitoring, there is something for everyone to enjoy!

Flip to the back page to find some of our upcoming events and be sure to follow us on Facebook and check our website to get the latest news. Please remember to register for all PEP events at peptalk@peconicestuary.org.

What's Inside?

SUMMER INTERNSHIP PROGRAM RETURNS

PEP is excited to announce the Summer Internship Program will be running for 2017! See more on page 2.

NEW FISH PASSAGE ON THE PECONIC RIVER

Numerous dams block diadromous fish from being able to move upstream to spawn. A new fish passage is planned to be installed to allow fish to migrate to their ideal habitat. More on page 2.

CREATURE SPOTLIGHT: BRITTLE STARS

Did you know Brittle Stars are native to the Peconic Estuary? Turn to page 4 to learn more.

Progress on the Peconic River

By Sarah Schaefer

Another fish passage is now planned to be built at the Woodhull Dam, on the Little River, which is a major tributary to the Peconic River. In December Suffolk County Department of Parks and Recreation, in partnership with the Peconic Estuary Program, was awarded \$279,000 from the New York State Department of Environmental Conservation (NYSDEC) Water Quality Improvement Project Program to fund the construction of a diadromous fish passage at Woodhull Dam. The Woodhull Dam, owned by Suffolk County Department of Parks and Recreation, currently prevents the largest population of river herring on Long Island from reaching 95 acres of prime spawning and maturation habitat in the high quality and protected habitat within the preserved lands of Wildwood Lake and Cranberry Bog Preserve. Fish passage at Woodhull Dam is the next step in an overall goal to restore over 300 acres of spawning and maturation habitat for diadromous fish, specifically river herring (Alewife and Blueback herring) and American eel, along the Peconic River.

The Peconic River begins at Brookhaven National Lab, flowing through Riverhead to its mouth in Flanders Bay. It is the largest river on Long Island and, until recently, had six dams along its length that prevented diadromous fish species from migrating up and downstream. Alewife populations have declined in the region due in part to reduced access to freshwater habitat.

In June 2016, a fish passage and eel passage at Edwards Avenue Dam was completed by the NYSDEC. In 2011, a permanent “nature-like” fishway was built at the first barrier on the Peconic River, Grangebel Dam. Together these two projects open 60 acres of spawning and maturation habitat on the main stem of the Peconic River.



Internships for Spring/Summer

The Peconic Estuary Program is pleased to announce the return of our Summer Internship Program. This year we will be offering two internship positions beginning in the late spring.

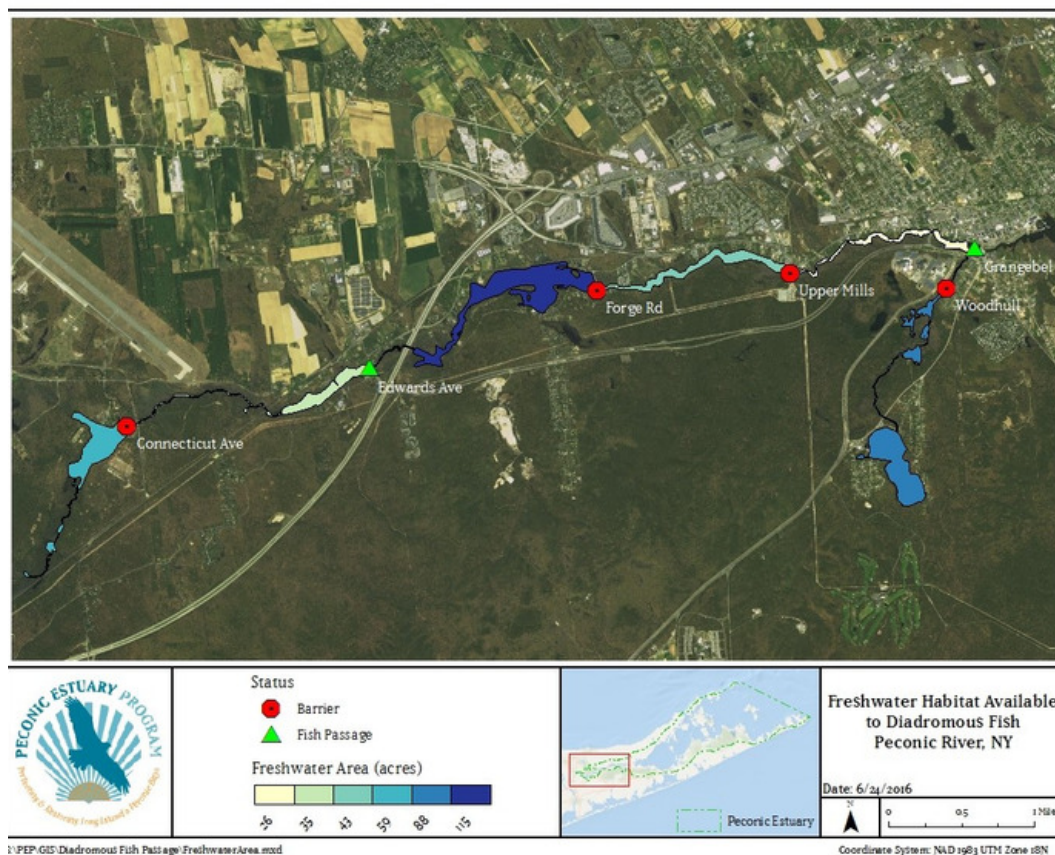
Internships are part-time and available for undergraduate students, graduate students and recent graduates. PEP's summer internships combine fieldwork and public education in a friendly environment. There is flexibility with a weekly schedule, however some weekend work will be required.

Internship announcements will be made in early spring. Be sure to check out Facebook page and website or sign up for our mailing list to receive internship and volunteer opportunities.



Progress on the Peconic River *(continued)*

Currently, a majority of the alewife population that uses the Grangebel fishway, 50,000-80,000 fish, ends up at the next major barrier to fish passage, Woodhull Dam, spawning below the dam each year in a stalled effort to reach upstream habitat. By providing passage through, or around, these barriers on the Peconic River, river herring and American eel will be able to access critical habitat, thereby promoting the recovery and sustainability of these diadromous fish species and improving biodiversity in the Peconic Estuary and marine ecosystem. River herring are a critical component of a healthy ecosystem. At all stages of their life cycle, river herring provide many vital ecosystem services: they filter and consume plankton from the water column; they export nutrients from the freshwater environment to the ocean, which reduces freshwater algae blooms and improves water quality in those freshwater systems. Increased river herring population enhances biodiversity of the Peconic River and Estuary by providing an excellent source of forage to freshwater, terrestrial, avian and marine predators offshore and nearshore, directly affecting migratory birds, predatory fish, and mammals that dependent upon them for survival. Restoring the river herring population is expected to increase populations of predatory birds such as Osprey and Bald Eagles and recreationally and commercially important fish such as Striped Bass and Bluefish; and river herring act as a prey buffer, which may allow for reduced predation on, and support the recovery of species such as the Atlantic salmon (*Salmo salar*).



Currently, there are three major barriers to fish passage on the main stem (Upper Mills Dam, Forge Road Dam, and Connecticut Avenue Dam) and one barrier on its tributary (Woodhull Dam). The Woodhull Dam fish passage is the next step in a larger effort to restore river connectivity to the Peconic River; all dams on the river are in some phase of river connectivity restoration. Efforts have been led by the PEP, partnering with NY State, Suffolk County, local governments, non-profit organizations and others.

Creature Spotlight: Benefits to the Great Peconic Bay ecosystem provided by the ventilating activities of the brittle star, genus: *Amphioplus*.

At the bottom of Great Peconic Bay lies a giant mud basin; it's fine grained, silty organic mud. If you could stand on it, you would sink deep into it and get stuck. Fringing this basin, the seabed is made of sands and mixed shell hash. The bottom of this illuminated periphery is where codium sways with the tides, where *Crepidula fornicata*, common Atlantic slippersnail, lay stacked together and where Peconic scallops are slowly recovering. Further from shore where the water deepens is the mud basin. On a skiff at the water's surface, you can hear and see the frenzy of the bunker chased by the bluefish from below at certain times of the year. On the seabed below, there's little light but scuba-diving you can make out a greenish brown bottom pockmarked by scattered holes and tubular protrusions of different sizes and carved with irregular sub-surface lines (Figure 1). The landscape is so different from any found on terrestrial Long Island, the overwhelming, unavoidable thought when you're diving in the basin is I might well be on another planet but Manhattan is just a train-ride away.



Figure 1. The image shows the seabed of Great Peconic Bay densely populated by a diverse group of burrowing organisms which excavate burrows of different sizes.

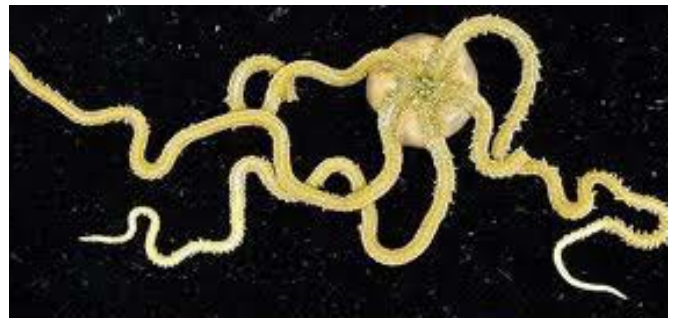


Figure 2. The brittlestar, *Amphioplus abditus* is one of several species of the family Amphiuridae, order Ophiurida which burrow in muddy sediments.

The benthic structures in the mud are the signs of a diverse and multi-tiered benthic ecosystem. The protruding tubes are constructed by different kinds of polychaetes (burrowing worms). The largest holes in the seabed are the burrows of *Squilla empusa*; these predatory mantis shrimp burrow over one meter into the sediment. In warm months, *Squilla* construct multiple chambers connected by tunnels; in winter, they hibernate in narrow single vertical burrows (Myers 1979). By irrigating their burrows, these animals circulate oxygenated water into oxygen-depleted zones of the sediments. Perhaps the dominant irrigators of mud sediments in Great Peconic Bay are brittle stars of the genus *Amphioplus*.

Dense populations of these brittle stars populate the upper ~ 15- 20 cm of mud in the central Great Peconic Bay basin. *Amphioplus* has 5 arms which radiate from a central disk which contains all the animal's viscera and a central orifice for consuming and excreting food (Woodlley 1975). While *Amphioplus* have no eyes, they are extremely sensitive to touch and can move rapidly through the sediment. These animals typically position themselves vertically in the mud with at least one arm extending into the overlaying bottom-water; the other arms act to stabilize the animal in the sediment. From this position, *Amphioplus* undulates the arm(s) extended into the overlaying bottom-water pumping oxygenated water down to its central disk thereby enabling the animal breath. The animal's arms are covered with tiny tube feet which also move food particles along its arms to the animal's mouth in its central disk (Woodley 1975). *Amphioplus* obtains particulate food from bottom-water, the sediment surface and from the sediments themselves. Arms can extend several centimeters out from the sediment either into the bottom-water or along the sediment surface to gather food-particles.

By undulating its arm(s), *Amphipus* effectively ventilates the sediments to at least 6 cm and thereby enlarges the surface area where oxic water borders anoxic sediments. When algae or other marine organic matter from senescent phytoplankton sinks to the seabed, it decomposes liberating ammonia from cell-proteins. Irrigation by burrowing organisms like *Amphipus* provides oxygen to sediments allowing indigenous microorganisms to oxidize (or 'nitrify') ammonia to nitrate. In the absence of such 'bio-irrigation' by burrowing animals, nitrification only occurs where oxygen can diffuse into the sediments; i.e., usually less than 1 cm. in coastal sediments. However, ventilation by burrowing animals allows greater oxygen penetration into the sediments and therefore enhances the transformation of ammonia into nitrate. Because this nitrification occurs in sediment surrounded by anoxic sediment, the nitrate produced can subsequently be 'denitrified' by bacteria in an enzymatic sequence which transforms nitrate to inert N₂ gas. Denitrification occurs in the absence of oxygen when bacteria substitute nitrate for oxygen. The entire process is referred to as coupled nitrification denitrification.

Presently many coastal ecosystems including those in western Long Island Sound and some parts of the Peconic estuary suffer from the effects of eutrophication. In marine environments, eutrophic conditions are brought about by high concentrations of reactive forms of nitrogen (i.e. ammonia and nitrate); eutrophication engenders algal blooms (both toxic and non-toxic) which subsequently die, sink and, in decomposing, remove oxygen from the bottom-waters leading to seasonal fish kills and seabed landscapes denuded of most life-forms. Burrowing organisms like *Amphipus* help the ecosystem in Great Peconic Bay to buffer nitrogen inputs by transforming ammonia from decomposing organic matter into the inert, unreactive form of N₂ gas. Instead of accumulating in the system and contributing to eutrophication of the bay, reactive nitrogen is shunted away to the atmosphere; inert N₂ gas forms roughly 80% of the Earth's atmosphere. The burrowing animals of the mud sediments in Great Peconic Bay provide valuable ecosystem services free of charge!

-Dr. Stuart Waugh, Stony Brook University

Homeowner Rewards Program

PEP will be continuing the Homeowner Rewards Program offering up to \$500 for Peconic Estuary watershed residents to install rain barrels, rain gardens or native vegetation gardens.

The program will have an updated website page ready by April, including a plant database, information on where you can buy native plants as well as the capability of apply online.



"I thought the Homeowner Rewards program was great. I installed two rain gardens in my front yard and I learned a lot about native plants in the process. The staff was very nice and helpful, and the reimbursement came more quickly than expected, which was awesome! It was really great to have financial and expert advice to help make my yard more environmentally friendly and help improve local water quality. Every little bit helps and I am glad to do my part!"

-Lily D.J of Greenport

Welcome PEP State Coordinator Elizabeth Hornstein to the team!



I started working with the Peconic Estuary Program in January 2017 and I am thrilled to join this amazing team. I am proud to work for a program that takes a holistic and collaborative approach to protect a nationally significant estuary. Over the next year I am excited to work with many stakeholders to update the PEP Habitat Restoration Plan and the Comprehensive Conservation and Management Plan. I look forward to collaborating with PEP partners to implement projects to restore Peconic Estuary habitats, improve water quality, and increase resiliency to climate change.

I have a background in marine science, conservation, and program management. I have a bachelor's degree in Marine Biology from the University of North Carolina at Wilmington and a master's degree in Marine Science from Stony Brook University. Previously, I held both Research Scientist and Sustainable Seafood Program Director positions at The Safina Center, a non-profit environmental organization on Long Island. At The Safina Center I researched how fishing affects marine/freshwater ecosystems, encouraged the public to make informed seafood choices, and worked on various policy initiatives to support the conservation of coastal and ocean ecosystems.

Since moving to Long Island in 2008, I have gained immense appreciation for the ecological, recreational and economic value of Long Island's coastal habitats. I am particularly fond of the eastern end of Long Island and I am eager to use my skills and knowledge to help preserve the Peconic Estuary for the benefit of everyone.

Join the Citizen's Advisory Committee (CAC)

If you want to learn more about the issues and challenges the Peconic Estuary is facing and would like to have a say in future restoration and management issues, join the Peconic Estuary Program's Citizen Advisory Committee. The CAC meets quarterly to discuss current water quality and environmental issues and gives members a

chance to express concerns and ideas about the health of our local waterways. Come join like-minded community members and learn how you can help raise public awareness about the benefits and importance to protecting the Peconic Estuary.

Next Meeting: Tuesday May 9th 6pm-8pm
25 Ponquogue Avenue, Hampton Bays

Suffolk County Awarded \$1.2 Million for Agricultural Stewardship in the Peconic Estuary

Suffolk County has been awarded a five-year \$1.2 million grant by the United States Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS). The grant, entitled "Reclaim our Water: Agricultural Stewardship in the Peconic Estuary", was awarded as part of the Regional Conservation Partnership Program (RCPP), and will provide much-needed funding and technical assistance to farmers on the East End of Long Island.

This project will enable the County to hire an agricultural specialist who is trained and certified in Nutrient Management Planning and Integrated Pest Management Planning at the Suffolk County Soil and Water Conservation District. The specialist will be responsible for developing, administering, and implementing a certified nutrient and pest management planning program tailored to the County's unique agricultural commodities and resource concerns, for the protection and improvement of surface and ground water resources. This specialist will help accelerate on-going efforts among farmers and RCPP partners to test, implement, and monitor the effectiveness of best management practices (BMPs) within the Peconic Estuary Watershed, an Estuary of National Significance. With certified nutrient management plans and pest management plans, farmers in the Peconic Estuary Watershed will also be able to access additional NRCS cost-share funding to implement the best management practices recommended in those plans.

The RCPP partners drafted an update to the Suffolk County Agricultural Stewardship Plan, which was accepted by the Legislature in April of 2016 and will be partially implemented by this RCPP Grant. Ten partner agencies and organizations will collaborate on this project including the Peconic Estuary Program (PEP), Suffolk County Soil & Water Conservation District, USDA-NRCS, Cornell Cooperative Extension of Suffolk County, Suffolk County Department of Economic Development & Planning, Suffolk County Department of Health Services, the Long Island Farm Bureau, the United States Geological Survey, American Farmland Trust, and NYS-DEC.

Contact Information

SCDHS- Office of Ecology
360 Yaphank Avenue Suite 2B
Yaphank NY, 11980
Phone: 631-852-8750
Email: peptalk@peconicestuary.org

PEP Staff

Dr. Alison Branco- PEP Director

Elizabeth Hornstein- State Coordinator

Sarah Schaefer- Office Coordinator

Christie Pfoertner- Outreach Coordinator

Spring Events

Seal Hike

February 25th 2:00pm-3:30pm



Join us on a guided hike to watch seals lounging on the rocks! Please dress warm as we will be hiking along the shore, gloves and hats are strongly recommended. There is a \$4 fee for this nature hike, all proceeds go to the Montauk Point State Park. Register: 631-668-5000

Alewife Monitoring Training

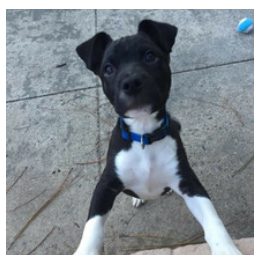
March 9th 5:30pm-6:30pm



Each spring Alewife return from the sea to our coastal bays and rivers to spawn in freshwater. Learn how you can help monitor the arrival of these fish for spring spawning season. 423 Griffing Ave, 1st fl. Riverhead, NY

Fido-Friendly Nature Hike

March 26th 1:00pm-3:00pm



Join PEP and Last Chance Animal Rescue (LCAR) for an easy Fido-Friendly hike at Indian Island County Park in Riverhead. You can sign up to walk an LCAR foster dog who needs adopting or bring your own pup! Rabies certificates must be sent to peptalk@peconicestuary.org

Alewife Pond Nature Hike

April 1st 10:30am-12:00pm



Alewife Pond is the only Alewife spawning run on the East End without any obstructions. This guided 2.5mile round trip hike will start in Cedar Point County Park. Parking fee may apply. Register at peptalk@peconicestuary.org

Peconic River Walking Tour & CleanUp

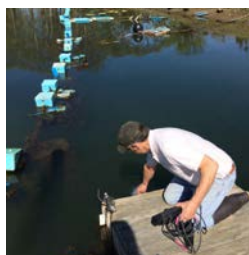
April 23rd 10:00am-11:30am



Spend Earth Day walking the Peconic River! We will stop by PEP projects including a fish passage, fishing line recycling station and our rain garden. As we walk, we will pick up any debris along the way. Meet in the Heidi Behr Way parking lot near Peconic Avenue in Riverhead.

Stormwater Stewardship Training

April 27th 4:30pm-6:00pm



Citizen Science training day! Learn how to collect water samples and test for important environmental factors. 3690 Cedar Beach Road Southold, NY Register at peptalk@peconicestuary.org

Native Plant Workshop

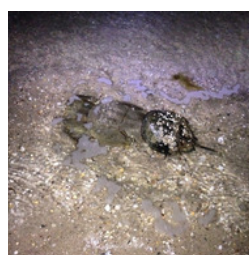
May 6th 10:00am-11:30am



Get your hands dirty and learn about the benefits of native plants and how your yard can be eco-friendly. Please bring gardening gloves and garden tools. The Big Duck Flanders Rt 24 Flanders NY. Register at peptalk@peconicestuary.org

Horseshoe Crab Monitoring

May 8th 11:00pm & May 23rd 10:30pm



Participants assist with the collection of scientific data that is used to determine the management of this important species. Bring a flashlight and shoes that can get wet! East Landing Rd, Hampton Bays