The Watershed

Vol. 11, No. 2

The Oyster Pond Environmental Trust Newsletter **Summer 2007**

***OPET*, P.O. Box 496, Woods Hole, MA 02543-0496** **www.opet.org**

Please Join us for the

OPET Annual Meeting

Wednesday, July 25 2007

7pm Light refreshments

7:30 Short Business Meeting

Woods Hole Research Center

149 Woods Hole Road

A Botanical Slide Tour Of Zinn Park

with Mario DiGregorio,

Wetlands Scientist & Author of *A Vanishing Heritage: Cape Cod's Wildflowers*

Mario will present the results of last year's plant survey of Zinn Park.

A Modest Model Proposal

Oyster Pond is one of the most celebrated and studied ponds in the United States. The Pond has a long history of scientific endeavors, partly due to the happy accident of being near so many world renowned scientific institutions. (See inside for the most recent scientific activity). OPET has an opportunity to further this tradition. Working with the neighbors of Oyster Pond, OPET has developed a plan to return nitrogen levels back to amounts recommended by the Massachusetts Estuarine Project. This plan could serve as a model and scientific example to demonstrate the benefits of reduced nitrogen for other estuaries suffering from excess nitrogen.

In 1969, K.O. Emery published a book called "A Coastal Pond, Studied by Oceanographic Methods" documenting over 200 years of the history of Oyster Pond. Corings to determine the bottom sediments began in the 1940s. In 1963 he and Harold Edgerton (Papa Flash, the inventor of the strobe light) profiled the depth of the pond with an acoustic profiler. "The proximity of the pond to several marine institutions at Woods Hole has permitted it to serve a rather unique function - as a model environment for investigating processes...with modern techniques." (Emery, 1969).

In 1986 the Falmouth Town Meeting passed Article 79, which stated that "The town raise and appropriate the sum of $60,000 to be expended under the jurisdiction of the Planning Board to conduct investigations of the physical, chemical, and biological characteristics of the water body and associated watersheds of Oyster, Little and Green Pond and to prepare a comprehensive program for restoration, preservation and maintenance." Research was started but the restoration plan was never completed.

A special Salt Pond Committee received information from the scientific institutions of Marine Biological Laboratory (MBL) and Woods Hole Oceanographic Institution (WHOI) and set a maximum concentration of total nitrogen and developed a recharge zone for the pond, based upon rainwater recharge, runoff topography and estimated volume discharge. WHOI volunteered to set up a Sea Grant Program for pond sampling. Out of this with the help of Brian Howes and Dale Goehringer came the Pond Watchers volunteer program with John Dowling, Barry Norris, Bob Livingstone, Don Zinn and others participating to take samples at three main stations in the pond during the summer months for many years.

During the past 3 years, even more detailed investigations of pond elevation, quality, and plant life have been done during the full year by OPET (Wendi Buesseler) and WHRC (Ekatrina Bulygina). The dissolved oxygen values were used in the recent Massacusetts Estuarine Project to determine the Total Daily Maximum Load (TMDL) of nitrogen Oyster Pond can receive without suffering negative impacts. The Pond currently receives 6.4 kg total nitrogen from all sources per day. Of this, the present controllable load (eg. septic systems and land use) constitute 5.07 kg per day. The State would like to have this reduced to 2.8 kg total nitrogen sources per day, or 1.53 kg per day of the controllable nitrogen (MassDEP, April 11,2007).

By OPETs estimate, this can be accomplished by sewering Treetops and by requiring denitrifying onsite wastewater systems on the remaining residential housing in the Oyster Pond watershed upon sale or upgrade. Under such a program, up to 50% of the nitrogen load to northern Oyster Pond could be reduced in 10 years and the desirable level to the pond reached within a lifetime. This could serve as a State model for other estuaries suffering from excess nitrogen on how effective nitrogen control can be achieved on salt ponds.

by Bill Kerfoot

Oyster Pond continues to be a place of scientific interest. Scientists were busy at Oyster Pond this past year, where two major scientific investigations are underway.

Scientists from the US Geological Survey and the Woods Hole Oceanographic Institution collecting sediment cores through the ice on Oyster Pond on February 12, 2007. Photo by Dann Blackwood, USGS

Mercury Studies in Oyster Pond

By Dr. Michael H. Bothner, US Geological Survey, Woods Hole, MA

With the present summer weather, it's hard to recall the temperatures last February when it was cold enough to form 7 inches of solid ice on Oyster Pond. The ice surface provided a stable platform for scientists from the US Geological Survey and the Woods Hole Oceanographic Institution to collect sediments from the pond. The photograph shows the well insulated team preparing to lower a 20-foot fiberglass pipe through a hole in the ice to collect an undisturbed core of sediment about 3 feet long.

The goal of the research is to measure changes in the atmospheric deposition of contaminants to Oyster Pond over the last century. The main focus is mercury, an element that is present in many fresh water fish at concentrations above advisory limits for consumption by humans in many parts of the United States, including Cape Cod. There is some expectation that the rate of mercury deposition has decreased during the last decade in response to regulations set by the U.S. Environmental Protection Agency to reduce mercury emissions from combustion of municipal and medical wastes. Emissions from coal-fired power plants in the US are still a major source of mercury to the atmosphere, as are the growing number of power plants in developing countries like India and China.

The USGS-WHOI research team is also analyzing resident and migratory fish from Oyster Pond in order to evaluate the biological burdens of mercury in this coastal environment. The overall effort to understand more about the cycling of mercury between air, water, sediment, and living organisms is coordinated with programs conducted by the Massachusetts Department of Environmental Protection in ponds on the outer Cape and at other locations within Massachusetts.

Understanding the Impact of hurricane disturbance on coastal pine and scrub oak forests

Perhaps you saw this strange looking vessel zooming over the Pond in mid spring. It was IRIS (Independently (or) Remotely Influenced Surveyor) from the USGS Woods Hole Science Center scanning and mapping the Pond's surficial sediment distribution and thickness. Oyster Pond contains a very special sedimentary record of past hurricane strikes dating back about 2300 years.

Jeff Donnelly, of the Woods Hole Oceanographic Institute, is heading up a team studying this sediment record to look at the impact of catastrophic hurricanes and fire on New England's pine/scrub oak forest ecosystem. It is hoped that understanding how these ecosytems have historically responded to these events will help policy makers anticipate and plan for the major environmental changes hurricanes can cause to these land areas such as nutrient and sediment flux into adjacent water bodies.

So far IRIS has found some interesting things at the bottom of the Pond, possibly some evidence of trees. Tom O'Brien, of USGS, who is one of IRIS' operators and who also once worked with K.O. Emery, said K.O. if he were still around; would have said the things found by IRIS were "curious and interesting." More on the results of this study and the one above in the next issue of the newsletter. *by Wendi Buesseler*

Osprey Platform Raised at Oyster Pond

Oyster Pond Environmental Trust (OPET) fulfilled a long time wish on April 7th with the assembly of an osprey nest platform on Oyster Pond. For many years OPET has searched for a suitable location for an osprey pole, one that is accessible for building the platform, yet far enough away from trees that can harbor Great Horned Owls, the osprey's only predator. OPET settled on the Town owned conservation land at the southwest corner of Oyster Pond as the best spot, as not only is it away from trees, but the wet marsh will prevent raccoons from climbing the pole. The pole can also be seen by the public from Oyster Pond Road and the bike path.

After receiving permission from the Conservation Commission, OPET designed, constructed, and put up the osprey platform. The nest platform was designed and constructed by Barry Norris, Treasurer of OPET, while Bill Kerfoot, OPET Clerk, designed the base, pole, and the method for raising the platform. The challenge was to design a base to be stable in 6 feet of peat and be able to be lowered for periodic cleaning.

The base for the pole was constructed first on March 30th. The base consisted of a two-tined fork imbedded in a cylinder of concrete 3 feet wide and 3 feet deep. On April 7, the nest platform was added to a 16 foot long pole and raised into position. A pivot at the base of the pole allowed it to be pulled into an upright position by ropes. A bar at the base stopped the pole when it reached a vertical position. Once the pole was vertical, additional bolts were added above and below the pivot to prevent the pole from rotating. The last step was to add braces to stabilize the pole for the long run. A good omen was the osprey flying directly overhead as the platform was about to be raised. All that's needed now is for an osprey pair to take up residence.

Other board members helping with the project were Al Allenby, Michael McNaught, Dana Rodin, Lou Turner and Wendi Buesseler, Executive Assistant. Also helping were Steve Chalmers, Brian Turner, and George Costello, President of the Falmouth Fishing Association. *by Lou Turner*

We hope you will consider increasing your annual contribution to OPET so we don't have to cut back on our activities to protect our Pond. If you are not already a member of OPET we hope you will consider joining as a supporting member. If all of our Regular Members became Supporting Members, half of our shortfall would be covered. Our activities on the pond not only keep it a beautiful place, but also help to maintain your property values.

Regular Membership __ ($25.00)

Supporting Membership _ ($100.00)

Lifetime Membership____ ($5000.00 one-time donation)

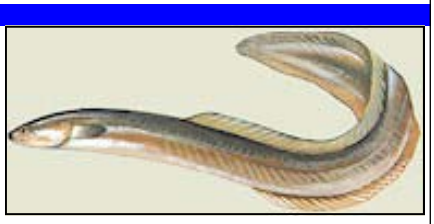
a 501 (c) 3 non profit

American Eels - Oyster Pond's Other Important Resident

Much of the focus for the pond's wildlife has centered on alewife herring, but there is another resident that makes Oyster Pond its home that is just as important - the American eel. Unfortunately like the herring, eel populations are dropping. Dams and other river obstructions, hydropower plants and over fishing are contributing to their population drop. Fortunately, Oyster Pond is home to a very healthy eel population.

One evening this past spring, Lou Turner, OPET President, saw an estimated 500 eels an hour migrating up Trunk River. Often while I'm digging out Trunk River to open it up for the herring I see eels wiggling out of the sand and rocks uncovered by my shovel.

Eels have an opposite life cycle from herring. While adult herring are entering Trunk River to migrate up to Oyster Pond in the spring to spawn, young eels or elvers are entering the pond to grow into adults. They were hatched in the far off Sargasso Sea, an area of becalmed ocean between Bermuda and the Bahamas surrounded by the Gulf Stream in the middle of the Atlantic. Unlike herring, elvers do not migrate back to a particular estuary or river. Rather, millions of small eels a few inches long drift along ocean currents migrating to where luck will take them to any fresh or marine waters.



They can spend up to 30 years in the juvenile yellow eel stage eating fish, crustaceans, insects, worms and frogs. In turn eels are meals for striped bass and other fish, gulls, ospreys and other fish eating birds.

When they reach adulthood they turn silver for the long migration back to the Sargasso Sea. As they prepare for the return journey, their bodies become fatter and thicker, their eyes larger for seeing in the ocean depths and their digestive tract degenerates. This is a one way journey; they spawn once then die.

Poaching is a problem at all the rivers on the Cape as there is a high international demand for glass eels and elvers. Fish farmers are still unable to propagate eels in captivity. They rely on "seed stock" of young elvers to grow into market sized eels. The demand for eels in the Asian market is especially strong. Poachers can fetch $100 to $300 a pound for young eels.

The Department of Natural Resources monitors the Asian market price for eels and know when the prices reach this level they need to be especially vigilant to protect our natural resources. *by Wendi Buesseler*

Thank You Americorps!

Many thanks to the Americorps volunteers who helped OPET remove invasive honeysuckle bushes from Zinn Park this past April. Its was difficult, dirty work, yet the volunteers cheerfully went about pulling the dozens and dozens of bushes and hauling them up to the burn pile at the top of the hill.

Bush honeysuckle was creeping in and smothering native vegetation near Mosquito Creek and at the base of a magnificent Linden tree. The majority of the honeysuckle is now removed and we are hoping native plants such as sheep laurel and low bush blueberries will return. Early next spring OPET will organize another work day and hopefully remove the remaining honeysuckle. *by Wendi Buesseler*

OPET Board meetings are open to all OPET members. Meetings are usually held on the third Sunday of the month, at 4:30 pm in the Treetops Clubhouse.

We'd love to have you come!

OPET does not have an official phone, but you can leave a message at 508-540-3263. We'll gladly get back to you!

Or email *lturns67@comcast.net* or *wbuesseler@comcast.net*

Please visit our website www.opet.org.

Board Member News

Many thanks to **Art Silverstein** for his tenure on the OPET board. Art was the Spohr Garden Board representative to OPET. He stepped down from the Spohr Garden Board this past winter and therefore from OPET. He was replaced by **Martin Monk** as the new Spohr Garden representative.