



# Great Pond Foundation

## Quarterly Newsletter

Volume 2, Issue 1

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## Oyster restoration project improves health of Great Pond

In 2011, the Edgartown Great Pond Oyster Restoration Project completed its fourth successful year of operation.

Under the direction of the MV Shellfish Group (MVSG) and ably assisted by two Foundation high school interns, millions of oysters were released in the Pond, to help rebuild the oyster population depleted from overfishing and "dermo" disease, (a parasite fatal to oysters, but harmless to humans).

The oyster's capacity to filter up to 15 gallons of water per day makes it one of our greatest allies in the effort to reduce excess nitrogen from the Pond.

MV Shellfish Group Director Rick Karney said, "Compared to previous years, the general health of the pond appeared much improved. There were no noxious blooms of algae. Local fishermen harvested a remarkable crop of soft shell clams and a large number of juvenile blue crabs were observed. It is possible that improved water quality and a healthier ecosystem also reduced environmental stresses on the oysters and lowered disease incidence."

The Town of Edgartown distributed 60 cu.yds. of crushed clam shell "cultch" for oyster attachment in selected oyster habitats in the Pond in 2011.



## Dredging continues as planned, despite seasonal setbacks

Fall and winter have been a mixture of good and bad, at least for our dredging efforts.

Maintenance issues, strong winds and strong flow from the winter opening limited our use of the dredge to just one week. While we did have the dredge in the Pond and at the ready, the lengthy winter opening negated our ability to work.

dredging program, resulting in optimal flushing of the Pond.

Because unseasonably warm weather resulted in little to no Pond ice this winter, we were able to launch the dredge during the last week of February and begin dredging on March 1<sup>st</sup>. We hope to dredge for the full month.

The winter opening lasted from December 12<sup>th</sup> until January 8<sup>th</sup>. This continues a pattern of lengthy openings since we began the

*(continued on page six)*





## Foundation President Tom Wallace offers encouraging words

The Edgartown Great Pond, the largest "Great Pond" on Martha's Vineyard, is a remarkably diverse habitat which has been

cherished by both the Island's indigenous community as well as the earliest of European settlers. Dating back to colonial times, the term "Great Pond" has held a unique definition and legal status by the community.

With the assistance of Federal, State, Town, riparian owners and numerous charitable and private sources, there is a remarkable cohesive effort to understand more fully and to help preserve this extraordinary resource.

While encouraged by the work that is being done, we continue to be amazed at what is yet to be learned about the diversity, strengths and weaknesses of this delicate habitat that we all find so enchanting.

Dredging of the shallow sandbar in front of the cut is substantially improving the effectiveness of openings to the sea, helping to mitigate the excess nitrogen in the pond.

A study last summer provides further insight as to the extent and patterns of circulation throughout the pond, of particular significance in the several more remote coves.

Our participation with the Martha's Vineyard Shellfish Group on the oyster restoration project is dramatically enhancing the pond's ability to restore and maintain improved water quality. The simple process of a single oyster cleaning 15 gallons of water a day may well be one of the most important factors in a healthy pond.

To an unprecedented degree, we are analyzing water quality, pond circulation, and other key factors that hopefully will enable us, working with many others, to preserve this pristine environment.

With a very active and involved Board of Directors, along with a dedicated group of volunteers and advocates, we are pleased with the accomplishments to date, yet are very aware that major challenges and unanswered questions remain.

We are hopeful that you will continue to support our broad economic, political, and scientific efforts to allow Edgartown Great Pond to be the model of the healthy environment that it so deserves.



### How to double the impact of your donations to GPF!

Many employers have matching gift programs in which they will match your donation to a charitable organization. The process is simple:

1. Find out if your employer has a matching gift program. Ask your Human Resource officer or visit [www.doublethedonation.com](http://www.doublethedonation.com), click on "Search Programs", and enter your company name.
2. If yes, ask for a Matching Gift Form, fill out your portion, and include it when you send in your tax-deductible donation.

Please send your donations to:

Barbara Conroy, Administrator  
Great Pond Foundation  
PO Box 2005  
Edgartown, MA 02539

*Thank you!*

### Treasurer Joseph Loughrey presents mid-year report



During the first half of this fiscal year, the Foundation received about \$109,315 in income while spending about \$55,649. This means that the

Foundation's cash on hand has grown to about \$248,704. We hold \$50,000 of that amount in a reserve account for future major maintenance and replacement costs.

During the second half of the year the most significant expenses will be for the late December/early January dredging, late February through March dredging, final payments for the circulation study, and some capital items to

improve dredging operations. We plan to put a similar amount of money as we did last fiscal year in the maintenance and replacement reserves as well.

Our budget for the full year is \$253,000, including reserves, so we still have some work to do raise the revenue necessary to fund this fiscal year's plan.

If you would like to support our efforts, please consider making a tax-deductible donation to the Great Pond Foundation this fiscal year. All donations will be wisely used and greatly appreciated!

## Circulation study of Edgartown Great Pond reveals solid data to support dredging projects

The Foundation's two-pronged approach of advancing scientific studies in the Pond, as well as increasing public awareness/education of the issues affecting the health of the Pond, continues to be a successful strategy.

### 2011 EGP Water Circulation Study in brief:

On August 5, scientists from the UMASS School for Marine Science and Technology (SMAST) began a circulation study of Edgartown Great Pond, under a contract from the Great Pond Foundation.

They deployed electronic instruments at 12 strategic locations in the Pond, gathering data at 15-minute intervals. Parameters included temperature, oxygen, salinity, turbidity, and chlorophyll levels. The plan was to gather data prior to the August 15 Pond opening, through to the end of the month, when the Pond would have exchanged "old" (warm, nitrogen enriched, less saline water), for "new" (cooler, low nitrogen, full salinity) water.

Hurricane Irene intervened and slightly truncated the time frame, requiring the instruments be retrieved on August 25 as the storm was approaching.

#### Goals of study to determine:

1. the rate of horizontal mixing of seawater with Pond water, following the cutting of the breach;
2. if any bottom contour restrictions slow flushing of tributary basins to main Pond; and
3. if "old" and "new" Pond waters stratified, resulting in low oxygen levels following the breach.

#### Results:

1. Dense, colder ocean water enters, and moves freely through the main basin of the Pond.
2. There is no significant impediment to the mass of water moving in the Pond.
3. All sub-basins (including coves) experience a significant time lag before "new" water enters.
4. Constrictions caused by higher elevations of cove bottoms (or shoals at their mouths), impede water flows in the coves.
5. The main water stratification occurs in the deeper basins in the main Pond.

Many of these findings were anticipated by the scientists. However, the study provides us with hard scientific data that will be useful as we explore possible dredging projects in the Pond where increasing circulation would improve water quality and environments for shellfish, fin fishes, and eelgrass.



## Everything you wanted to know about the oyster but were afraid to ask

*Crassostrea virginica* or the Eastern Oyster has been cultivated for over 2,000 years. It is a naturally occurring shellfish in areas ranging from the Gulf of St. Lawrence in Canada to the coast of Argentina. These oysters have been introduced on the west coast of North America and other parts of the world.

### Life cycle

Oysters spawn throughout the warmer months, when water temperatures are about 60 – 68 F, releasing eggs and sperm in a column of water.

There the eggs are fertilized and quickly become tiny, non-feeding trochophores.

After one or two days, the veliger stage begins where the larva now has a thin shell and feeds off minute algae.

Twelve to 20 days later its foot and eye spots are developed is now referred to as a pediveliger or “eyed larva”.

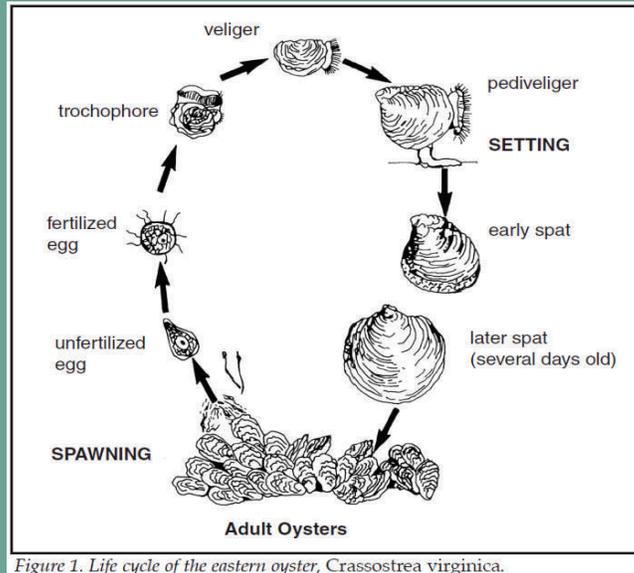


Figure 1. Life cycle of the eastern oyster, *Crassostrea virginica*.

After settling to the bottom, the pediveliger crawls a bit until it finds a suitable site on which to attach itself to a hard surface, where it will become a tiny oyster or “spat.”

The oyster reaches sexual maturity after four months and grows to a harvestable size (about 3 inches) in anywhere from one to three years. Most oysters are harvested at three years.

### Cultivation

The simplest method of cultivation involves the placing of cultch (shells and other hard surfaces on which the oyster larvae can attach and grow). Successful harvest can be further promoted by moving the small oysters to a more favorable location.



More intense cultivation can involve using larvae that were spawned in hatchery and fed specifically nutritious species of algae.

After about two weeks the larvae are put into mesh bags containing large oyster shells. They attach to the shells and grow in these protective bags until they are about one inch long. At that time they are released from the bags into the growing area.

*“As I ate the oysters with their strong taste of the sea and their faint metallic taste that the cold white wine washed away, leaving only the sea taste and the succulent texture, and as I drank their cold liquid from each shell and washed it down with the crisp taste of the wine, I lost the empty feeling and began to be happy and to make plans.”*

**Ernest Hemingway**  
**‘A Moveable Feast’**

### Fun facts about oysters:

- ▶ Oysters are invertebrate carnivores.
- ▶ Oysters can alternate genders. Usually they are male first, then change to female. Some have even been known to change back to male. Oysters bigger than 3 inches are usually female.
- ▶ Oysters actually clean the water they live in by filtering water they pump through their bodies for food. A healthy oyster can filter 50 gallons of water per day!
- ▶ Only one spat in 1.145 million survives to adulthood.
- ▶ Pearls can be found in local oysters but are usually of no value.
- ▶ The world record for eating oysters is held by Tommy Greene of Deale, MD, who ate 288 oysters in 1 minute 33 seconds.

## Pond resident Chris Carroll has the best vantage point for monitoring Pond water quality

Chris Carroll, formerly a surveyor with Vineyard Land Surveying (Vineyard Engineering), and currently caretaker for a family living on the Pond, has taken over the GPF water monitoring responsibilities.

Living at the Pond, Chris is in a unique position to do this important work for the well-being of the Pond. Before and after each Pond opening Chris collects water samples, and other measurements at 8 stations around the Pond.

The data is analyzed in a lab on the mainland and made available to stakeholders involved in management of the Pond. Data from 2011 indicate lower than normal nitrate levels, possibly related to the two openings in 2011 each of which lasted in excess of 60 days.

The ideal opening would last for about 11 days, the length of time it takes for a complete pond/sea water exchange to occur. Openings that are excessively long can have adverse consequences for the pond, such as the loss of oyster larvae in June.

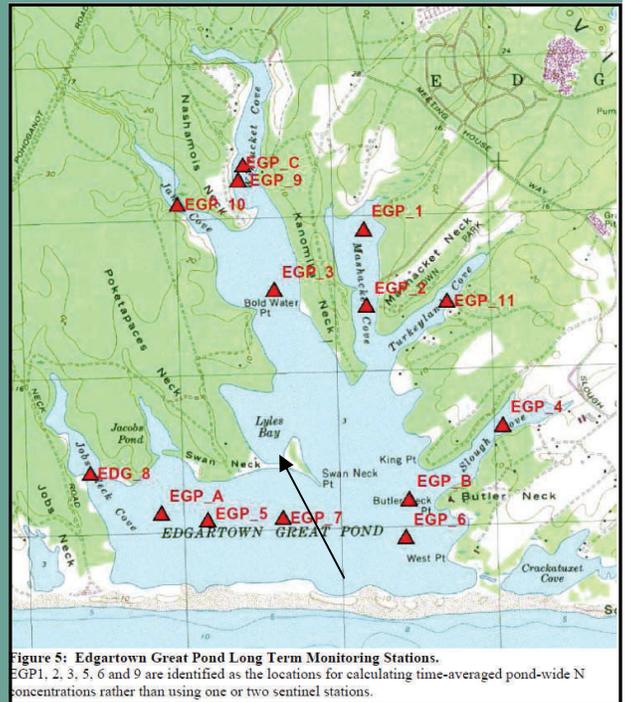


Figure 5: Edgartown Great Pond Long Term Monitoring Stations. EGP1, 2, 3, 5, 6 and 9 are identified as the locations for calculating time-averaged pond-wide N concentrations rather than using one or two sentinel stations.

## GPF plans a two-step approach to remove *Phragmites* from Swan Neck area of pond

Work is scheduled to begin this fall on management of the Swan Neck *Phragmites* stand, the largest on the Great Pond. The Conservation Commission approval is in place, and the first step will be to burn the area to help reduce the thatch and encourage native vegetation. [Arrow in illustration above points to Swan Neck.]



*Phragmites* is a non-native species of wetland grass that grows quickly, spreads aggressively, and ultimately overtakes native salt marsh vegetation. The invasion of *Phragmites* has several detrimental effects on saltwater environments like the Edgartown Great Pond.

Unlike the slower growing native vegetation, *Phragmites* provides little if any food or shelter for salt marsh wildlife. Marsh birds, mammals, including deer, cannot penetrate its dense growth. In relatively short time, the decomposing *Phragmites* causes an elevation in the surface of the marsh. This elevation in turn disrupts or prevents regular saltwater flooding that would normally provide nutrients and a level of salinity required of the native flora and fauna. Control of this non-native invader is crucial to help maintain the natural ecology of vital wetlands.



PO Box 2005  
Edgartown, MA 02539

[addressee]

**OUR MISSION:**

*The Great Pond Foundation was formed to enhance the health and beauty of the Edgartown Great Pond by supporting solutions to environmental problems affecting it. Our goals are to educate the public to the pond's value and condition, and assist the town of Edgartown in enhancing its recreational and ecological features. We work with the town to promote the pond's management.*

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**Dredging**

As has been the case with the most recent dredging projects, we'll be using the fan nozzle which works like a big vacuum. We shouldn't need to utilize the cutter head because our consistent dredging of the channel has removed most of the compacted material. It is now comprised of newer and "fluffier" material. This tool allows us to reduce maintenance and fuel costs for the Dredge.

The March dredging exercise will be followed by the spring opening in early April, a summer opening in August, and then the fall dredging exercise beginning on November 1<sup>st</sup> of 2012.

Thanks to our many friends and supporters, we are on the right track!  
We could not protect this great pond without your generous donations.

Please help us continue this important work by sending a donation to:

Barbara Conroy, Foundation Administrator  
Great Pond Foundation  
PO Box 2005  
Edgartown, MA 02539