



# Newsletter

Winter 2012

Volume 3, Issue 1

## Association Leaders

Brian Harrington,  
President  
Dave Clark, Vice  
President  
John Foye, Treasurer  
Ken Cannon & Kate von  
Goeler, Webmasters  
Paula Kuketz, Water  
Safety Committee  
John Foye, Membership  
Committee  
Sara Grady, Invasive  
Species Committee  
Geri Williams,  
Newsletter Editor  
Dave Clark, Government  
Liaison  
Lee Pulis, Education  
Committee  
Eb von Goeler, Water  
Quality Committee  
Marleen von Goeler,  
Program Committee

## Upcoming Meeting

May 21, 7:00pm  
New Testament Church  
Long Pond Rd.  
David Gould will discuss  
the Plymouth Carver  
Sole Source Aquifer and  
our Watershed

## Website

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

## Presidents Message

By Brian Harrington

While collecting runoff water samples during a heavy downpour last summer, Nelson Wilder turned to his fellow octogenarian, Eb Von Goeler, and somewhat rhetorically asked, "Why, at our age, are we doing this?"

I cannot answer Nelson's question for him, and sadly, he no longer can, at least in our world. But I have been pondering his question from a number of perspectives ever since it was relayed to me. Our Association is built upon volunteerism and financial support from our watershed neighbors. Our monitoring work includes trudging out, on very short notice, during heavy rain downpours with vials, bottles and other gear needed for sampling run-off waters. We also are reading stream water gauges at three locations twice weekly and sampling pond health at a dozen locations 5 or 6 times a year. All of this work aims to ensure that our watershed stays a healthy one. Meanwhile, too many other lakes, ponds and streams in our area towns, our state and our nation are slipping into sad and unhealthy condition.

We have no motto, but one might be "prevention is much cheaper than remediation". A healthy balance in our watershed can be upset by a single, inconsiderate or accidental act. Other ponds in our Town are having to spend huge numbers of dollars and work to restore minimal quality levels for pleasant living, while in our watershed we continue to happily enjoy our various recreations and quality living environment. This will not continue without careful monitoring and speedy

responses to anything that threatens to degrade our ponds and streams. This is what our Association spends a lot of its effort doing, and so it is understandable why two of our octogenarian volunteers would suit up and trudge out to sample during a violent storm.

So now, as President, I ask you, someone who shares living in our beautiful watershed neighborhood, whether you are contributing as well. Many of the people receiving this newsletter are members of the Herring Ponds Watershed Association and so help sustain us, but many others who receive this missive are not. Nevertheless we are 'in this together'. And like it or not, we share the same resource and have responsibilities to the resource and to our neighbors to sustain the great quality environment we share. If you have not done so, please join with your neighbors in helping to sustain our "watershed watch".



*Family of swans on Great Herring Pond contributed by Stephanie Clark*

## Safety Concern – Cold Shock

From Paula Kuketz, Water Safety Committee

MA State regulations require life jackets be worn between October 15<sup>th</sup> and May 1<sup>st</sup>.

Cold water removes heat from the body 25 times faster than cold air. Survival time can be reduced to minutes. Strong swimmers have died before swimming 100 yards in cold water.

Exposure of the head and chest to cold water causes sudden increases in heart rate and blood pressure that may result in cardiac arrest. Without a life jacket, a victim may inhale while under water (involuntary gasping reflex) and drown without coming back to the surface. This can only be prevented by wearing a life jacket at all times on the water in the off-season. There is no second chance.

## Dissolved Oxygen Measurements

By Eb von Goeler

Oxygen spells life!

Last year, we added something new to our water sampling: dissolved oxygen measurements. These data can tell us a lot about the health of our ponds. Oxygen is crucial for life. If our body is deprived of it, we die. We continuously have to breathe air, a mixture of a handful of gases, the second most abundant component of which is oxygen, at about 20% of the mixture. Our lungs are able to extract oxygen from this mix, and add it to our blood, which distributes it throughout the body. Now, there is a really curious thing, chemists tell us that water is a mixture of about 90% oxygen and 10% hydrogen. That's a far bigger percentage of oxygen than in air. Nevertheless, if we can't swim and fall into a pond, we drown; we die of a lack of oxygen. This is because the oxygen in water is so tightly bound to the hydrogen that our body can't extract it and use it.

However, there usually is some oxygen dissolved in water, just like salt can be dissolved in water. At room temperature, a quart of water can absorb about 1/4000 of an ounce of oxygen. Add any more oxygen, and it will form a gas bubble, rise to the surface and dissipate. Fish, shellfish, etc. have gills that allow them to access and live on this minute amount of oxygen. Their life is precarious, though, and can be made impossible by just small changes in the chemistry of water resulting in a drop in the amount of this life sustaining gas.

### The Data

For our oxygen measurements the Town of Plymouth has provided us with a probe suspended from a long cable. This probe also measures water temperature. We routinely take it to two of the deepest locations on the pond, one about 45 feet deep, the other 35 ft, and take data in 3 foot steps all the way from the surface to the lake bottom. What we find is that there are stark differences depending on the season. In Spring, and again in Fall, water temperature and oxygen levels are more or less the same everywhere; a bit warmer and richer in oxygen near the surface, a bit colder, with slightly less oxygen near the bottom. The oxygen level is near 100% saturation. This is an

indication of a healthy lake in which the frequent strong Spring and Fall storms churn the water all the way to the bottom, mixing top and bottom water thoroughly. Something startling happens in the summer. Near the surface, the water is warm, as expected, and stays that way down to about a depth of 20 ft. But then, at that depth, the temperature very abruptly changes within a couple of feet and becomes about 5 degrees centigrade colder. Then it stays at about that temperature all the way to the bottom. So there are two regions in which there is water mixing, separated by a thin layer not crossed by the water. The oxygen measurements show a very similar pattern. Near the surface during the day, there is often an excess of oxygen above 100% saturation, attributed to large amounts of algae releasing extra oxygen into the water.

This bloom of algae near the pond surface is stimulated by too much nutrients – mainly phosphorus. The abrupt change of temperature near a depth of 20 ft is repeated by an abrupt change in the oxygen level at the same pond depth, except below that depth the water becomes devoid of oxygen, all the way to the bottom - it is a dead zone. An explanation can be found by the abundance of algae. The life cycle of algae is a couple of weeks. Once they die, they start decaying and slowly sink to the bottom. Their decay consumes all the available oxygen in water near the bottom.

### The Conclusion

The depletion of oxygen near the pond bottom in the Summer probably is caused by heavy algae growth in the upper reaches of the pond. This algae growth produces unhealthy pond conditions and may lead to fish kills, odor problems, and allergic reactions when swimming. The cause is an excess of nutrients, predominately phosphorus. Actually, there is a vicious cycle at work during the Summer. Oxygen dissolved in the water prevents the phosphorus in the muck, accumulated at the pond bottom over the years, from changing into a form that can be released into the water. Once the water has lost its oxygen, the chemistry changes and the muck begins releasing phosphorus into the pond, adding to the nutrient problem. So the key to a healthy pond begins and ends with reducing nutrients, something every resident can help accomplish.

## Storm Water Runoff Sampling

It began very early, on the day before Thanksgiving. A fierce rainstorm moved across the area, flooding us with almost 2 inches of rain. When it started it was still dark, and at mid-morning it came to an end, but in between there were times when it seemed not just to rain but to pour. Would you believe it, among our members there were a few intrepid souls who thought: this is perfect, dressed early in their rain gear - some when it was still dark - and went out to brave the deluge. Their goal: to collect samples of the runoff rushing into storm drains or gushing directly into Great Herring Pond. All that to try and get a handle on the location and amount of pollution picked up by the rushing water and carried into the pond. The data collected are part of our effort to search for major points of pond pollution as a first step to possible mitigation, similar to what is already under way in the Pond Rd./Shore Rd. area of the pond. By 10 AM it was all over, our heroes had changed into dry clothes, and the samples had been delivered safely to the lab in Sandwich.

Association members who did this for the benefit of all of us: Tom Clarke, John Foye, Brian Harrington, Norman McLaughlin, and Eb von Goeler. The results of the water analysis from our runoff stormwater sampling just before Thanksgiving have been posted on our web site [theherringpondswatershed.org](http://theherringpondswatershed.org). You'll find e-coli, total phosphorus, total nitrogen all testing very high, and most locations showing high acidity, all of this indicating that runoff may cause significant pollution, which should give us good reason to clamor for mitigation. The next runoff sampling will be done in March or April, depending on a suitable storm showing up. If you are interested in participating, please contact Eb at 508-833-2136 or [e.vongoeler@neu.edu](mailto:e.vongoeler@neu.edu). It involves going to a storm drain or other near shore location where storm water discharges into GHP, and taking water samples in the middle of a storm that dumps a minimum of 1/2 inch water on the area.

## Winter Visitors

By Brian Harrington

This autumn we have had an extraordinary number of American Coots visiting our watershed, and especially Great Herring Pond where several hundred have been visiting since early November.



Coots are not ducks, but are a waterbird closely related to a group of birds called marsh rails. The rails typically are very secretive, but the coot is an exception.

A coot is about 16 inches long and will weigh about a pound to a pound and a half. The males tend to be a little bigger than the females. Coots eat a variety of foods, including vegetation, insects and mollusks. Most of the food I have seen them capture here has been pondweed and large pond snails caught by diving to the lake bottom. Some of the coots near the shoreline are catching the aquatic larvae of insects such as dragon-flies.

The coots visiting Great Herring Pond are tending to stay in large flocks far from shore, but some are staying in small groups close to the shorelines of the pond. There is a reason for their flocking, mostly related to defense against predators (if you are in a big flock the chances are better that a raptor will capture one of your friends rather than yourself!).

Sharp observers may have noticed that there often have been gulls scattered within or around the larger coot flocks. Most of these are Ring-billed Gulls who clearly are waiting/watching for a diving coot to come to the surface with a newly caught snail. The gulls then rush the coot,

hoping that it will drop its snail, so enabling the gull to snatch it up. A few times I have even seen one of the gulls try to 'rough up' a coot that would not let go of its snail.

Another and much larger gull, the Black-backed Gull, will sometimes 'loom' near the coot flocks when the flocks are at the north end of the lake. The water depth used by the coots here is more shallow than the spots they use at the south end, and this apparently is a situation that allows the gull a better chance to actually catch one of the coots. In November I watched (with an element of dismay) as one of these large gulls rushed at a coot that had become separated from its flock. The coot dove, but the water was so shallow that the gull could still grab it. It proceeded to drag the struggling coot towards shore to a fate I did not want to stay around to witness.

## Instruments From EPA

By Eb von Goeler

For several years, HPWA has been taking periodic water samples at a number of sites on the two Herring Ponds and the stream connecting them, and having them analyzed by a certified laboratory in Sandwich. By now a sizeable set of data on nutrient loading, e-coli contamination, and other information has been collected, and is available on the association's web site [theherringpondswatershed.org](http://theherringpondswatershed.org), as well as on the Town's Division of Environmental Management site.

Last summer, the Association applied for a longterm loan from the EPA (Environmental Protection Agency) for additional instrumentation to expand the amount of information available about the pond waters. In September we were told that our application had been successful. We are grateful and happy to have recently received the following: a precision GPS with which to locate sampling sites accurately, a pH meter, with which to measure water acidity, and a bottom water sampler to retrieve water from the deepest part of Great Herring Pond, at about 45 ft. depth. These instruments will be put to good use when Water Quality volunteers resume taking samples early this Spring. The total value assigned to the instruments by the EPA is about \$1,000.

## Septic System News

By Dave Clark

Now is a great time to think about having your old cesspool, or pre Title V system, upgraded. With the recession having its effect on the construction industry there are many good contractors looking for work. Prices should be competitive and the availability of engineers and contractors plentiful. Installation does not have to wait till warmer weather so this is a great time to upgrade before you want to utilize outside spaces.

Not only will you be aiding in the efforts to protect our groundwater; but you will be increasing the value and saleability of your property. Another important note; there are state tax credits available for upgrading your system.

## Volunteers Needed for 'Shed Faire' Fundraiser

We're planning a fun family day to raise awareness of the HPWA and our activities to maintain a healthy watershed. Hopefully we will also raise a few dollars to support our water quality testing and community education activities. Plans are still in the early stages, but we would like to hold a Shed Faire and Sale in June or July. We hope to reuse, recycle and repurpose items like garden tools, birdhouses and feeders, nature art, cottage crafts, native plant transplants, fishing tackle, and boating paraphernalia donated by watershed residents and supporting businesses. Along with these items we plan to sell some baked goods and crafts, as well as have games and nature crafts for children and educational information about our ecologically significant watershed.

If you can volunteer a little of your time to make this endeavor fun and successful, please contact Rali Pulis Esterman, event chairperson at [raliesterman@yahoo.com](mailto:raliesterman@yahoo.com). In the future we'll send out more detailed information, but start saving or creating things we might sell at our Shed Faire. Some ideas are: bird, bat, and butterfly houses, children's nature books and kits, natural history books and guides, binoculars, bird baths, composting bins, decorative porch or garden signs. Use your imagination to think of what you can contribute.

## Membership Committee

By John Foye, Chairman

Our ponds and watershed create a diverse habitat for wildlife and provide a home for hundreds of animals, including threatened species. It also provides us as residents of the watershed with:

1. Drinking and household water
2. Runoff mitigation
3. Aesthetic value
4. Recreation
5. Flood control

We need your help in asking your neighbors, friends, relatives and personal contacts as well as those who use our ponds on a regular basis to join our association.

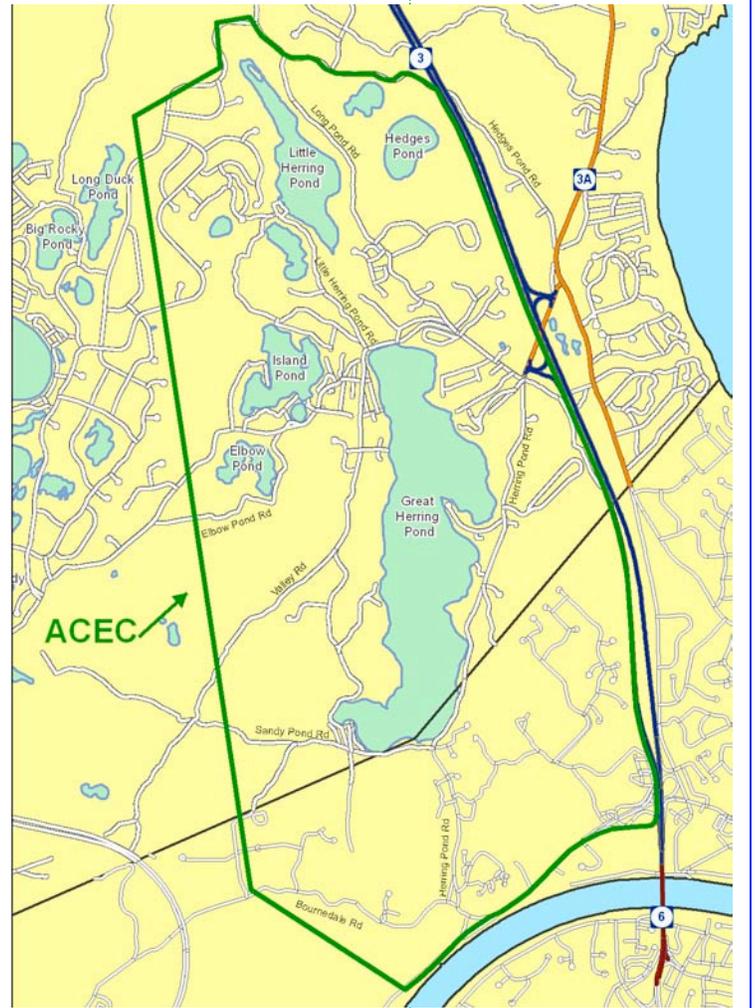
There are a number of reasons to join our association:

1. Help us keep our pond water, ground water and our watershed clean and healthy for future generations
2. Your meaningful involvement in an organization that is working for the good of your watershed and community.
3. Membership contributes to the strength of our association.

We look forward to our continued growth in the protection of our valuable resource. Protection through education is our goal and we need you, your neighbors and friends to help us.

Please use the application to help us improve our membership. Your membership dues will be used to provide extra water quality tests and much needed testing equipment for the collection of data for study and analysis.

Map of the watershed/ Area of Critical Environmental Concern



## Can you find your home?

Education and Outreach committee members and others have worked on a post card that will soon be mailed to residents of the watershed. The goals of the mailing are to create awareness of residents' locations within the state-designated Area of Critical Environmental Concern, to invite viewing the HPWA website, and to encourage joining with other members to help shape association activities.

The costs of printing and mailing the postcards has been provided by a grant from the Massachusetts Environmental Trust and a donation from an anonymous HPWA member.

Kim Tower, Town of Plymouth Environmental Technician, has helped tremendously in developing a street layer for a base map to help residents locate their own homes within the ACEC boundaries for our postcard and shown above.

Thank you, Kim!

Name \_\_\_\_\_

Address \_\_\_\_\_

City/Town \_\_\_\_\_

Phone \_\_\_\_\_

Email \_\_\_\_\_

- \_\_\_ \$15 Member, vote & communications
- \_\_\_ \$25 Family, 2 voting members & communications
- \_\_\_ \$55 Contributing Member, vote & communications
- \_\_\_ \$100 Sustaining Member, receive all of above

Make checks payable to **The Herring Ponds Watershed Association**

Mail to: Herring Ponds Watershed Ass.  
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Sagamore Beach, MA 02562