THE IPA NEWSLETTER

Mystic Lake, Middle Pond, and Hamblin Pond in Marstons Mills, MA

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NEW CAPE WASTEWATER PLAN INNOVATIVE AND PROMISING, BUT OVERLOOKS PONDS

Water quality management is a complex, long-term issue that directly affects everyone who lives, works, or visits here on the Cape. The first complete draft of the new Section 208 Cape Cod Water Quality Management Plan has just been released for public comment. Although many aspects are encouraging, in concentrating exclusively on reducing nitrogen in saltwater estuaries this plan fails to address the problems of the Cape's 1,000 freshwater ponds. The Indian Ponds Association has joined with others in composing a letter to the Cape Cod Commission to present reasoning for considering our freshwater ponds as an integral part of the water resources that need to be included in the final plan. Here's a rundown on the key issues, the IPA's position and how you can contribute to a successful outcome.

What is the Section 208 Cape Cod Area Wide Water Quality Management Plan, and how did it come about? The current draft Plan updates the previous 208 Wastewater Plan for Cape Cod, written in 1978, which laid down a 20-year framework to address the degradation of saltwater resources by excessive nutrients, primarily nitrogen. The 1978 plan linked population growth, increasing residential densities, and the proliferation of on-site septic systems to the degradation of saltwater quality. It anticipated growth in the Cape's inland areas as well as along the shores of the Cape's many freshwater ponds, and predicted such growth would lead to more serious groundwater contamination and increased eutrophication (excess nutrients) in surface waters. This prediction has come true.

While progressive for its time, the 1978 Plan proposed a 'one-size-fits-all' solution, namely, sewering the entire Cape at a cost of about $9 billion. This solution was rejected for being too expensive, so the practice of treating wastewater with on-site Title V septic systems continues across most of the Cape. Unfortunately, Title V does not prevent nutrients such as nitrogen and phosphorus from leaching into groundwater, so they ultimately end up in ponds and estuaries. *(Continued on page 4)*

IN THIS ISSUE

UNUSUAL FISH IN MYSTIC LAKE

Those who are interested in fish and perhaps catch them are accustomed to species such as largemouth and smallmouth bass, yellow perch, pickerel, and pumpkinseeds. Fishermen will also occasionally hook a white perch or brown bullhead. Most of us are familiar with the river herring (alewives and blueback herring) that make their annual spring migration from the sea up the Marstons Mills River and the herring run into Middle Pond and Mystic Lake to reproduce. But you may not be aware of some other fish species in the ponds that are rarely seen or caught. This writer had the opportunity to observe one such species this summer.

The common carp *(Cyprinus carpio)*

I am referring to the common carp (*Cyprinus carpio*), a species belonging to a group called "rough fish", a term used to describe fish that are not desirable or less desirable to anglers. Many species, depending on the region of the country, may be labeled as rough fish, but the carp is generally considered to be the king of the rough fish. *(Continued on page 3)*

IPA, Inc., P. O. Box 383
Marstons Mills, MA 02648

http://www.indianponds.org
info@indianponds.org

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HAMBLIN POND TESTING AND TREATMENT PLAN COMPLETED

The cyanobacterial bloom in Hamblin Pond this past summer persisted for over two months, from about July 11, when water clarity dropped from 4 meters to 2 meters, until September 26, when the Town Health Department lifted the advisory against swimming. During this period, water clarity in Hamblin ranged from less than 1 meter to no more than 2 meters in water clouded by algae. Although the species causing the bloom was identified as *Anabaena*, a toxin-producer, no toxic effects were noticed and, fortunately, no animals or people were harmed. It appeared that the alum treatment that was done in 1995 had finally lost the ability to suppress the excess phosphorus (P) in the sediments, and that only another intervention would save the pond.

To save time, the IPA Board voted to immediately fund the testing necessary to calculate the cost of a second alum treatment. This testing involves taking sediment samples from various places in the pond and having them analyzed in a lab for phosphorus concentrations and then treated to determine the amount of alum needed to inactivate that concentration of phosphorus. From this data, a treatment plan can be calculated. The sampling and treatment plan were done by lake management consultant Dr. Ken Wagner in September, and he reported the results the first week of November.

He took three sediment samples, one from the south end near the town beach, another in the center of the pond, and a third at the north end. On a scale where P concentrations in the range of 200 mg/kg are described as “a substantial threat’ and anything greater than 500 mg/kg is “pretty high”, anything greater than 1000 mg/kg is “very high”, and the all-time record is 2000 mg/kg, the Hamblin results were as follows:

Area of Pond	P conc. in mg/kg	Al to inactivate in g/m^2
South End	392	26
Center	823	54
North End	1144	76

He calculated that the total area to be covered would be about 60 acres, to include all sediments deeper than 25 feet.

As to the source of the phosphorus, Dr. Wagner said that it is “possible that P is migrating upward through the spent aluminum layer from old reserves not inactivated by the original treatment.” He mentioned that the old duck farm deposits are still there, and that alum only works in the top 2-4 inches of sediment. The gradient in concentration from the north to the south ends of the pond may be attributable to cranberry bog discharges at the north end. Although the bog may not have operated in every recent year it is very old, and cranberry bogs have been “a problem for many other Cape lakes.”

Dr. Wagner’s report has been submitted to the Town for review. We hope a second alum treatment will be approved for Hamblin Pond in next year’s Town budget.

--Holly Hobart

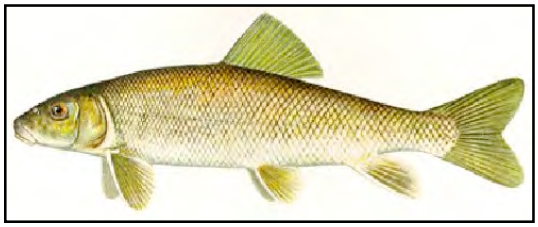
UNUSUAL FISH IN MYSTIC LAKE

(Continued from page 1)

The specimen that I saw last summer was lying motionless in water less than a foot deep along the north shore of Mystic Lake. A friend reports that he has seen and even caught one from the end of his dock. A similar rarely seen species in the lake is another rough fish, the white or common sucker (*Catostomus commersonii*). Although somewhat similar in size and shape, the carp has a thicker body, larger scales, and whiskers or barbels along the side of its mouth, which is forward facing. The sucker has a more elongated body, smaller scales, and a ventral mouth with thick lips for sucking up food from the bottom.

Contrary to the sucker, which is native to North America, the carp in an introduced species, originating in Asia and Europe, where it is a highly desired fish. It was brought to the US in the 1830s and, with the assistance of government agencies, was the focus of intense cultivation efforts and introductions to waters of many states. However, since the start of the 20th century, it has been considered a nuisance species in the US.

Carp lack teeth and are omnivorous (eat both plants and animals), eating mainly aquatic plants as well as insects, crustaceans, and worms. Their average size in the wild is about 15–30 inches and about 4–30 pounds, although they can reach much larger sizes when grown in captivity (e.g. 4 feet and 100 pounds). The most effective bait for carp is a doughball wrapped around a hook and fishing on or very near the bottom. The ingredients of a doughball may include bread, corn, cereal, or mystery flavorings kept secret by devout anglers.



The white sucker *(Catostomus commersonii)*

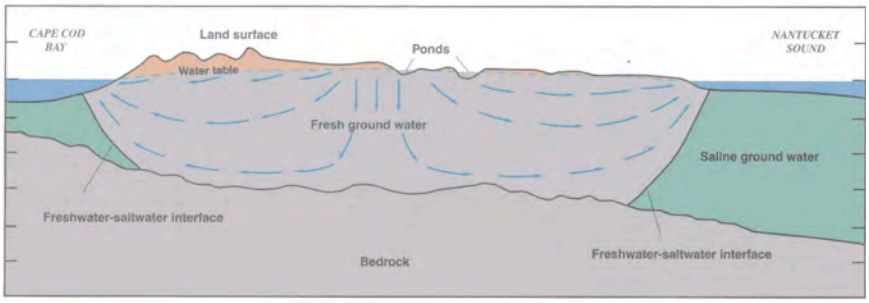
Worldwide, carp is the number one species in aquaculture production, with China the largest producer. In Asia and Europe (and in some societies in the US), it is highly desired as a food item. On Cape Cod, carp are obviously not very common. However, in most other parts of the US, they are quite prevalent to the point of being a nuisance subject to control measures in many states.

--Emory D. Anderson

PRESENT WATER LEVELS IN THE INDIAN PONDS

Residents living near any of the ponds or people who have been on the ponds in recent months are aware that water levels in all three of the Indian Ponds are a bit low. Some have noted that the present levels are lower than they have seen a few years. However, those who have lived here for longer periods of time will recall that the pond levels fluctuate, sometimes considerably, in response to the amounts of precipitation and to air temperature.

An important fact stated in the report of the "First Order Assessment of the Indian Ponds" completed in March 2006 by the Water Resources Program of the Cape Cod Commission is that the surface of the pond corresponds to the top of the aquifer. The Cape's groundwater system was designated by the US Environmental Protection Agency as the Cape Cod Sole Source Aquifer, which signifies that this single aquifer is the Cape's sole source of water. On average, the water levels of Mystic Lake, Middle Pond, and Hamblin Pond are 44, 44, and 41 feet, respectively, above sea level. Therefore, as changes in weather influence fluctuations in the amount of groundwater in the aquifer, the levels of the ponds on the Cape fluctuate similarly. Wells in the Indian Ponds area used for monitoring groundwater levels show the range between the highest and the lowest recorded groundwater elevations to be approximately 3.5–9.3 feet. According to the above report, based on these observations and the location of the ponds in the aquifer system, the likely maximum range in pond-level elevations would be 4–6 feet.



Generalized section of ground-water flow on western Cape Cod. Heights above and below sea level are indicated by lines at every 100 feet. North is to the left, south to the right.

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To see Newsletter photos and graphics in color, go to the IPA website, www.indianponds.org.

NEW CAPE WASTEWATER PLAN INNOVATIVE AND PROMISING, BUT OVERLOOKS PONDS *(Continued from page 1)*

What is the underlying problem? Cape Cod's waterways--including freshwater ponds and saltwater estuaries--are highly vulnerable to pollution and human activity. The key nutrient of concern for freshwater ponds is phosphorus; for saltwater estuaries, nitrogen. Excess nitrogen and phosphorus from controllable sources such as fertilizer, storm water and, particularly, from septic system wastewater have for decades been leaching into Cape Cod's watersheds and from there into our drinking water, ponds, saltwater estuaries and embayments. Nitrogen moves much faster through the ground than phosphorus, so its effects are felt sooner.

Although healthy coastal ecosystems need some nitrogen to support diverse native plant and animal life, too much nitrogen causes excess algae production in saltwater ponds and estuaries. The dying algae creates smelly and unsightly mats which suffocate eelgrass, destroy animal habitat, degrade recreational values, and if left untreated, will reduce property values across the Cape.

Why the urgency to update the plan now? The plan update is actually *mandated* by both the federal and state Clean Water Acts and other legislation and regulations which require the Cape's estuaries to meet certain water quality standards (see the draft plan Executive Summary pages 9-13, and Draft Plan Chapter 1). The standards themselves are Total Maximum Daily Loads (TMDLs) of nitrogen that have been calculated by scientists for each individual estuary under the Massachusetts Estuaries Project.

Which organizations have been involved in updating 208? The Cape Cod Commission (CCC) is the regional agency designated by the Commonwealth of Massachusetts to develop the plan. The CCC has developed the plan with input from towns, organizations, and interested citizens in all parts of the Cape. IPA members have participated in many meetings as part of the regional and sub-regional Working Watershed Groups.

What are the generally agreed goals and priorities? Specific goals of the 208 Plan Update, outlined in the Executive Summary, are:

- "To provide an unbiased evaluation of technologies and approaches that may be appropriate in each watershed;
- "To promote the use of sustainability criteria in decision making;
- "To work with state and federal partners on regulatory changes necessary to implement adaptive management plans, including the permitting of alternative approaches and appropriate enforcement mechanisms;
- "To develop cost effective management strategies for implementing pilot projects, targeted watershed plans, and watershed plans for shared infrastructure;
- "To identify ways to measure and control unanticipated growth made possible through the development of wastewater infrastructure."

A five point-based planning approach also distinguishes this plan from anything that has been done before, and is described in the Executive Summary as follows:

- "The plan is watershed based. The most effective and efficient solutions are found by beginning the consideration of solutions within the jurisdiction of the problem.
- "The plan leverages existing local plans by making use of the enormous amount of data and input already collected by towns as part of their comprehensive wastewater management planning to date.
- "All solutions are considered – everything has to be on the table. The plan takes into account all technologies and strategies that may be successful on Cape Cod. It evaluates each individually and then looks for appropriate places for its use as part of a watershed scenario.
- "The purpose of the plan is to set the parameters for the discussion of solutions on a watershed basis. The watershed scenarios developed represent a range of options. They do not suggest an optimal solution.
- "Cost is considered as part of every watershed scenario and the impact on individual homeowners is a primary concern. If a solution isn't affordable, it's not doable."

By adopting a range of both traditional and non-traditional technologies appropriate to the needs of each watershed (including a "checkerboard" of conventional sewering where appropriate), the overall cost of remediating the nitrogen problem can be reduced by at least half of what was estimated in the earlier plan. Implementation would be phased over time, with results monitored and reported. Pilot projects would be undertaken to determine the most promising technologies for each watershed.

Given the goals and approach outlined, the new plan proposes that the deterioration of estuaries can be curtailed by a range of cost-effective solutions that will restore the condition of our estuaries and improve our quality of life.

What is the key issue from the IPA's perspective? All of Cape Cod's waters are linked: the watersheds that terminate in saltwater estuaries contain the public drinking water wells and nearly 1,000 freshwater ponds. The draft 208 Plan offers a panoply of considered and promising approaches to address degradation of the Cape's saltwater estuaries by nitrogen in groundwater. However, as currently written, the plan would leave the next generation of Cape Codders with clean estuaries, but with hundreds of degraded ponds and lakes.

(Continued on page 5)

NEW CAPE WASTEWATER PLAN INNOVATIVE AND PROMISING, BUT IGNORES PONDS *(Continued from page 4)*

Where does the IPA's position differ significantly from the draft plan? The IPA broadly agrees with and applauds the approach taken by the new 208 Plan but would like to see freshwater ponds included in the planning process. All Cape water resources are linked, and our many coastal plain ponds are vital for their role in attenuating nitrogen in groundwater as well as for the unique natural habitats and recreational opportunities they provide. Many Cape ponds are impaired by excess phosphorus--some of it regenerated from pond sediments as a result of natural aging or bygone agricultural activities, and some from present-day septic systems, runoff, and/or fertilizers. Ponds, like estuaries, respond to excess nutrients by producing harmful algae blooms. Additionally, a few ponds are infested with invasive plants or animals.

This comprehensive a plan, should, we believe, recommend a pond and lake monitoring and technical services facility at the regional level. Since the new plan would already provide monitoring (and presumably testing) facilities for salt water estuaries, it should not be a major additional cost to test for phosphorus and identify algae blooms and invasive species, if only for a subset of larger ponds. Volunteer groups could continue to provide data collection as they have done in the past.

What is the IPA doing in response? In addition to actively contributing to the development of the draft 208 Plan, the IPA has joined other organizations concerned about the ponds by signing a letter written by Senior Water Scientist Dr. Ed Eichner, which asks the Cape Cod Commission to include specific planning steps to address pond problems. You can read the letter on the IPA website. Ed Eichner, as you may recall, was Project Manager for the First Order Assessment of the Indian Ponds, produced in 2006.

What if nothing changes? We can expect significant economic as well as quality of life impairment to increase with time and continued development. As the Cape Cod Commission points out, the Cape's water resources drive the regional economy. They attract visitors in the summer months and make the Cape a desirable place to live for year-round and seasonal residents. Degradation of water quality affects not only our environment but property values all over the Cape. For example, sophisticated financial modeling by the Cape Cod Triple Value Simulation (3VS) model identified a direct correlation between every percentage decrease in water quality and a decrease in average single family home sale prices, which in turn has consequences for assessed values and our tax base.

What are the next steps in this process? The draft plan has now been published for public review and comment: http://www.capecodcommission.org or www.cch20.org. A series of public explanatory and comment sessions is also underway.

How can you contribute to the outcome? Take some time to understand the issues, form your own views, participate and become part of the solution. Send your comments to the planners. The 208 Plan is well-written and easy to read. Everybody should read the Executive Summary, which is only 21 pages long. The draft Plan itself is many more pages, but is full of interesting details and well worth dipping into. From there, please follow the Plan's progress online, in the news media, and by taking part in public comment sessions.

-- *Maggie Fearn*

PRESENT WATER LEVELS IN THE INDIAN PONDS *(Continued from page 3)*

Composite photo showing the entrance to the inlet to the herring run adjacent to Middle Pond during winter 2002/2003 when water levels were extremely low.

About 11–13 years ago, all ponds on the Cape experienced severe drops in their water levels. This coincided with high summer temperatures and below-average precipitation. The IPA Newsletters from that time make mention of very low water levels in the Indian Ponds, indicating that this was first noticed in spring 2001. The September 2002 issue of the IPA Newsletter reported that "the midsummer water level now stands 27 inches below normal, with the lack of rain a contributing factor." During this time, each of the ponds was characterized by a wide dry zone around its perimeter exposing sand or rock substrate. The composite photo above, taken during winter 2002/2003, shows the entrance to the dried-up inlet leading to the herring run ladder at the southwest corner of Middle Pond. At the left-hand side of the photo, the measured distance from the Whistleberry Resident Association's wooden walkway, at the regular edge of the shore during normal conditions, out to the edge of the shore during this period of extreme low water level, was about 75 feet. During this time, residents often joked that you could have a four-lane highway around the edge of the lakes.

In summary, the water levels in our ponds fluctuate in tandem with the groundwater. At present, we are witnessing a slight decrease in the level. However, based on past experiences, the present drop in water level pales in comparison to what happened 11–13 years ago.

--Emory D. Anderson

BIRDING AT WASTEWATER TREATMENT SITES

Shoveler Duck

So, here I sit, in a dilapidated motel in Lockhart, Texas waiting for the interment ceremony for a well-liked relative in-law. His ashes were returned to the town he was born and grew up in until he left for the Naval Academy.

Now, as bad and boring as this all sounds, there is an absolute silver lining to this dark cloud. Lockhart is only about 30 miles from Austin so it makes sense to fly into and out of that city. Outside of Austin, at the city's wastewater treatment plant is the Hornsby Bend Bird Observatory. Hornsby Bend is a world class birding site and we hope we are not too late in the season.

As long as we are on the topic of birding sites at wastewater treatment plants, there are such sites all over the United States. We have been to one in Henderson, Nevada where we got twenty birds for our list. The site is beautiful. All the paths around the settling ponds are tree-lined, wide and well maintained. The trees surrounding the ponds provide food, roosting sites, and shelter.

Red-Headed Ducks

The next one we went to was in Port Aransas, Texas. This wasn't built around settling ponds. it was a small inlet that backed up to the ponds and had a long pier running out into the inlet. It was surrounded by lots of trees which were full of Warblers and Sparrows. The inlet had several little islands which were crowded with Blue- and Green-Winged Teals, Moorhens, Coots and Shovelers.

All in all, I think it is a very good practice for towns to build bird attracting facilities around their wastewater sites. It will be guaranteed to attract birders who will travel great distances to add to their list. California leads the way in number of wastewater birding sites but there are other places in most states across the continent. New York has several and even New Hampshire has a popular site. I don't think Massachusetts has any yet. That is mostly a function of us not having enough activists to get some established. They can also be good for the economy. The plant in Milwaukee dries their by-product and sells it as Milorganite. The one in Austin sells Dillo Dirt.

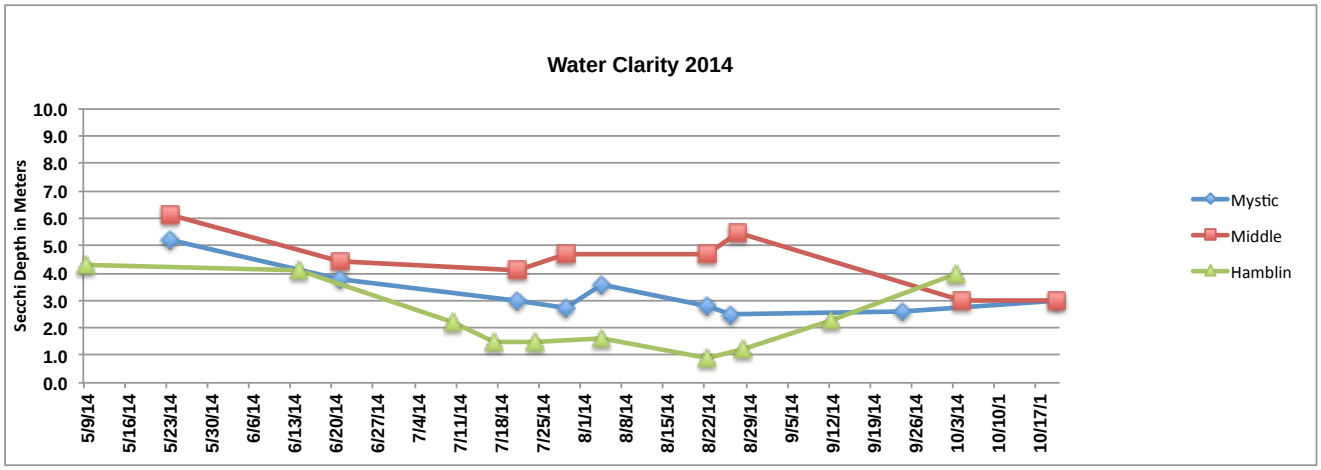
Well, we just came from Hornsby Bend and have checked into the hotel. Unfortunately, the birding was just about as bad as I suspected it might be. Most of the residents have gone south. We did see a small flock of Northern Shovelers and a few Red-Headed Duck which were in transit. We also saw a fairly large Grebe. The highlight of the trip was four Scissor-Tailed Flycatchers. They were in winter plumage instead of their dress white, breeding plumage. Their whole under-carriage is bright orange, really spectacular.

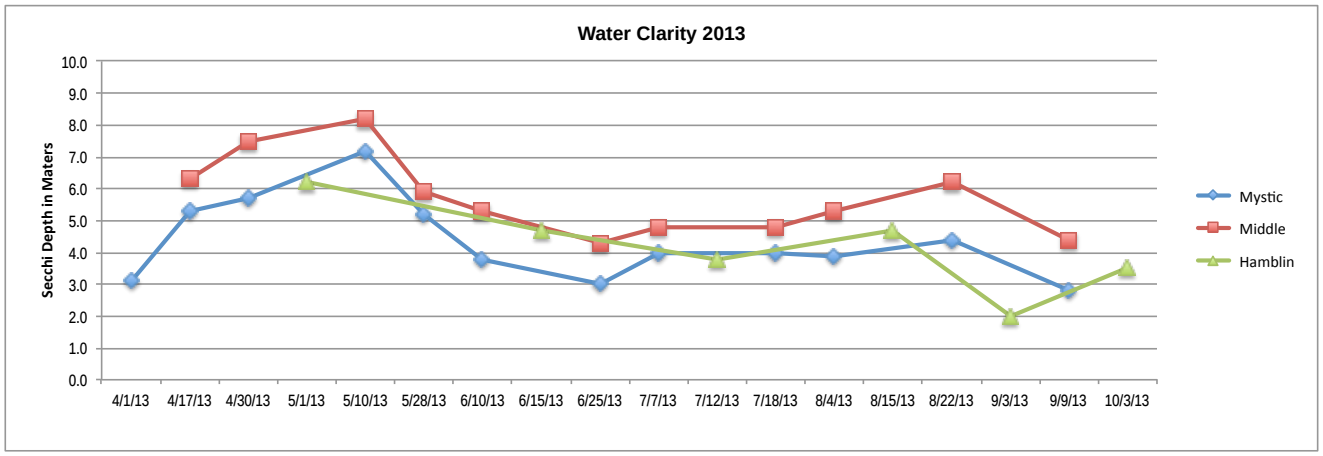
Scissor-Tailed Flycatcher in winter plumage.

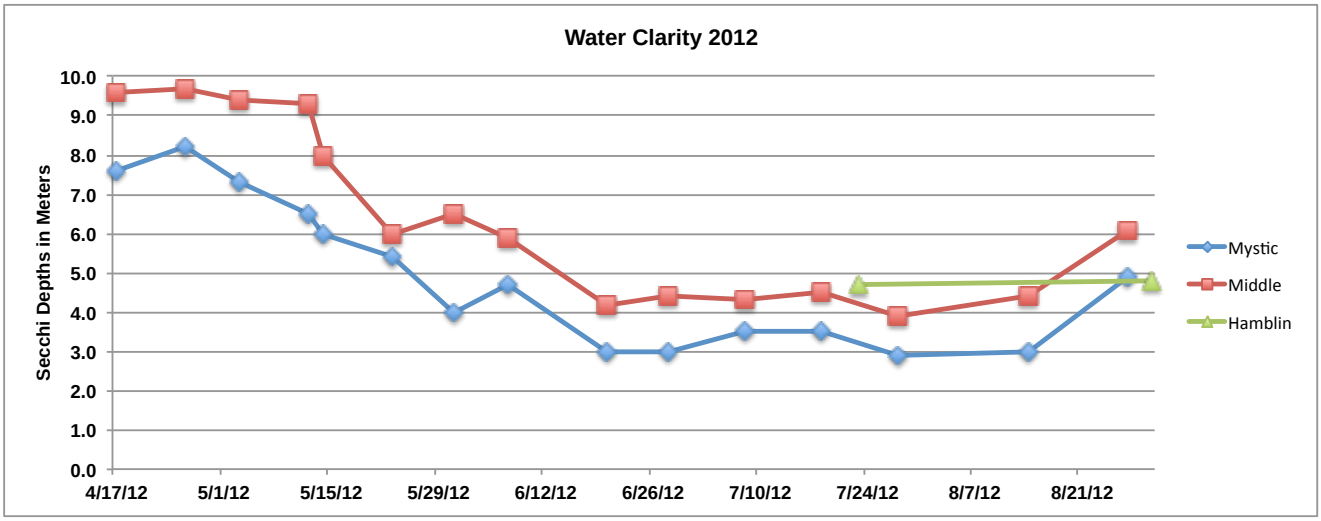
By the way, I don't know if I have ever mentioned it in one of these articles, but whenever you see a flock of Canada Geese you should, if you have the time, study that flock for interlopers. Several other types of Geese will flock with Canadas and you might get a good find. I was looking thru a flock of Canadas in the field in front of Cape Cod Animal Hospital the other day and I found a Greater White Fronted Goose of the Greenland subspecies. This was a new bird for me which just goes to prove that you can find birds to add to your list without ever leaving the Cape. *--Dave Reid*

Photo Credits: Cover: Betsey Godley; Pages 1, 3, and 5, Emory Anderson. Charts: Holly Hobart

Errata: The 2012 and 2013 charts below are corrections of charts we printed in the last Newsletter that had data errors. The 2014 chart was correct, but is reprinted here to include the most recent results from September and October.







One of our more observant readers wrote to inform us of another error in the Summer Newsletter. The MA Natural Heritage and Endangered Species Program (NHESP) is part of the MA Division of Fisheries and Wildlife, not the MA Department of Conservation and Recreation. Please address all comments and corrections to hhobart@comcast.net.

" To preserve and protect the natural environment and ecological systems of the Indian Ponds and surrounding parcels of land and watershed and to participate in studies and work with other agencies, individuals, and groups to educate the public, serve the community, and promote and preserve the Indian Ponds and surrounding areas."

INDIAN PONDS ASSOCIATION
P. O. BOX 383
MARSTONS MILLS, MA 02648

FORWARDING SERVICE REQUESTED