THE IPA NEWSLETTER

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

Summer 2011 A quarterly publication of the Indian Ponds Association, Inc. Vol.11 No. 3

BATTLE AGAINST *HYDRILLA* IN MYSTIC LAKE CONTINUES

Last September, IPA volunteers worked in four areas around Mystic Lake to remove all the known patches of *Hydrilla*. Benthic barriers of dark screen material were installed to prevent regrowth of those patches. See the Indian Ponds *Hydrilla* flyer at http://www.indianponds.org/wp-content/uploads/2011/04/IPA_Hydrilla_Flyer.pdf, which was distributed with the 2011 Spring Newsletter.

This summer, significant new growth of *Hydrilla* was discovered in the cove on the western shore where the largest patch (30 x 40 feet) was removed last year. This is likely the location where the plant was first established in the lake. The area of new *Hydrilla* growth outside the barriers extended for about 650 feet parallel to the shore, in depths ranging from 2 to 5 feet. The *Hydrilla* in this area ranged from widely scattered single plants to small patches up to 5 feet in diameter.

Also discovered this summer was a 5-foot diameter patch a few feet outside one of the barriers installed on the eastern shore. This patch was in water 5–7 feet deep, which is the deepest it has been found in the lake.

Fortunately, a $5000 item was included in this year's Town budget for *Hydrilla* management in Mystic Lake, along with a much larger amount for the continued management of *Hydrilla* in Long Pond. This $5000, along with a small, unused portion of the Long Pond budget, funded 4 days of hand-pulling by two SCUBA divers from Aquatic Control Technology. They removed 15 wheelbarrow loads of *Hydrilla* from the cove on the western shore and from the 5-foot diameter patch found on the eastern shore.

(Continued on page 2)

ANOTHER MUSSEL DIE-OFF IN MIDDLE POND

Dead floating mussels in Middle Pond were first reported this summer on Tuesday August 2. For the next several days, hundreds of dead mussels were observed throughout Middle Pond. In Mystic Lake, a single dead mussel was observed on July 30.

On August 3, several dozen dead floating mussels were collected in Middle Pond and frozen for possible future laboratory analysis. The photo below shows many mussel bodies accumulated by the wind blowing against a northeast-facing beach that same day. This was by far the most concentrated accumulation of dead mussels observed that day and is not representative of most of the Middle Pond shoreline.

Snorkeling in both Middle Pond and Mystic Lake on August 3 revealed some remaining live mussels in both ponds, but they appeared to be very lethargic or unresponsive. Five possibly live mussels were collected from Middle Pond and placed in an aquarium with well water. Three of these appear to have completely revived; the other two died.

Dead mussel bodies washed up on a Middle Pond beach on August 3, 2011.

This die-off occurred very quickly and with no obvious decline in water quality. The Secchi depth had been fairly constant over the prior two weeks in both ponds. Middle Pond had about 1 meter greater Secchi depth than Mystic, and Mystic was over 1 meter better than it was at the same time last summer.

The suspected cause of the 2009 and 2010 mussel die-offs in Mystic Lake and Middle Pond is accumulated toxins from the blue-green algae blooms that occurred. As part of the alum treatment follow-up, Dr. Ken Wagner has been periodically analyzing the algae in Mystic Lake. The samples for July 19 were overwhelmingly dominated by green algae, with only a very small amount of blue-greens.

(Continued on page 3)

– IN THIS ISSUE –

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

E-mail: info@indianponds.org

http://www.indianponds.org
Webmaster
Tamar Haspel

NEW BOARD MEMBER ALEX FRAZEE

Alex Frazee

Alex Frazee was elected to a two-year term as a Director of the Indian Ponds Association at the recent Annual Meeting. For the past year, she has been an Associate Director on the Board.

In 1995 she, her husband Bob, and children Erin and John moved to Marstons Mills from Barnstable Village. She has summered on the Cape her entire life and lived in various villages in the Town of Barnstable year 'round since 1975. That first summer on Wheeler Road, Rick Wheeler, a summer resident of Wheeler Road and a former IPA Director, introduced Barnstable Town employee Dale Sadd to the neighborhood in hopes of building a network to supplement the Town's limited local water sampling efforts. Thus started years of interest in the science behind the health of all three Indian Ponds, which continues as new issues continue to arise.

THINK TWICE ABOUT UNWANTED MEDICATION DISPOSAL

When you flush medications down the toilet or pour them down the drain, they flow into the Cape Cod community's underground source of fresh drinking water, as well as into our lakes, ponds, rivers, and coastal waters, where they can harm our populations of local fish and wildlife. To ensure proper disposal: (i) put medication into a sealable plastic bag, (ii) add cat litter, sawdust, coffee grounds, etc. to the plastic bag, (iii) seal the plastic bag and put it in the trash, and (iv) remove and destroy all identifying personal information from all medication containers before throwing them into the trash. For more information regarding safe medications and prescriptions disposal, (i) contact the Cape Cod Cooperative Extension at 508-375-6699, (ii) visit www.capecodextension.org, (iii) visit www.capecodgroundwater.org, or (iv) visit www.smarxtdisposal.net. The above information was obtained from the Barnstable County Hazardous Materials Program (800-319-2783 or 508-375-6699).

BATTLE AGAINST *HYDRILLA* IN MYSTIC LAKE CONTINUES

(Cont'd from page 1)

The remaining scattered *Hydrilla* in the main area of concern on the western shore is growing rapidly and becoming intermixed with native plants. In some places, it is partially covered with algae, making it very difficult to find and remove. Getting this area under control will be a significant challenge, but this is essential to prevent a full infestation of Mystic Lake.

At the present time, the primary need is for volunteers to hand-pull the widely scattered individual plants and small patches while snorkeling or SCUBA. Snorkel and SCUBA volunteers should contact info@indianponds.org to sign up. It is important that volunteers are comfortable working in the water to support this effort. If we do not deal with these small plants now, they will regrow and expand quickly next summer and become an unmanageable manual effort. The IPA has purchased a 100 x 6 feet fine-mesh seine net which will be used by IPA volunteers to surround significant patches before raking them out, thereby capturing all fragments that could start new plants.

The other areas in the lake where *Hydrilla* was removed and barriers installed last year have only had very minimal growth show up outside the barriers. Periodic inspection of these areas and the removal of any plants as they appear keep these areas under control.

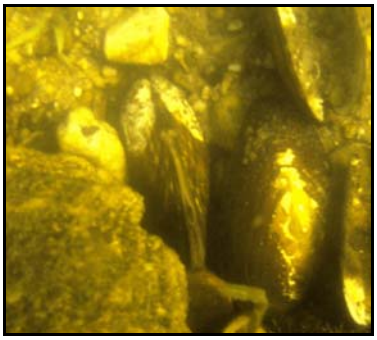
The resurgence of *Hydrilla* in Mystic Lake this summer illustrates the difficult and lengthy process we face in trying to eradicate it. Continued vigilance in all three Indian Ponds is essential to insure that any new outbreaks are caught at the earliest opportunity, when there is the best chance of preventing infestation.

Bob Nichols

ANOTHER MUSSEL DIE-OFF IN MIDDLE POND

(Cont'd from page 1)

The Indian Ponds Association has contracted Dr. Wagner to do some sampling of Middle Pond. In the June 26 Middle Pond sample, he found mostly diatoms and green algae, similar to the June 26 sample in Mystic, but less overall. Following the die-off, water samples were collected in both Mystic Lake and Middle Pond on August 6 and have been sent to Dr. Wagner for analysis. One of the Middle Pond samples was collected from a depth of 7 meters, corresponding to a bulge in the dissolved oxygen profile, which could indicate a concentration of algae.



A live Mystic Lake mussel on August 17, 2011.

Dr. George Zoto, a phycologist with the Mass DEP visited the ponds on August 8 and collected samples from both ponds for algal analysis. Dr. Zoto found that Middle Pond had more blue-green algae of several species than did Mystic Lake, but at levels much less than the 70,000 cells/ml state limit. The past two summers, both Mystic Lake and Middle Pond were closed for swimming for a few weeks due to blue-green cell counts exceeding this limit.

There are several issues to be considered in attempting to relate the die-offs to blue-green algal toxins. Blue-green algae can regulate its buoyancy and thereby move up and down the water column seeking favorable conditions. Therefore, Secchi disk readings, which are taken from the surface, may not indicate a deeper collection of algae. The blue-green algal toxins, if present, are released as the algae die and the cells break up. It is unknown how long mussels can survive when exposed to blue-green toxins. We also do not know how long it takes for a dead mussel to accumulate enough decomposition gasses to float it out of its shell, which is typically embedded, at least partially, in the pond substrate.

What we do know from observations this past couple of years is that the appearance of dead floating mussels in large numbers happens quickly and is not always correlated with the lowest Secchi disk readings. We also know that mussels die throughout the entire pond, but some mussels manage to survive throughout the pond each time.

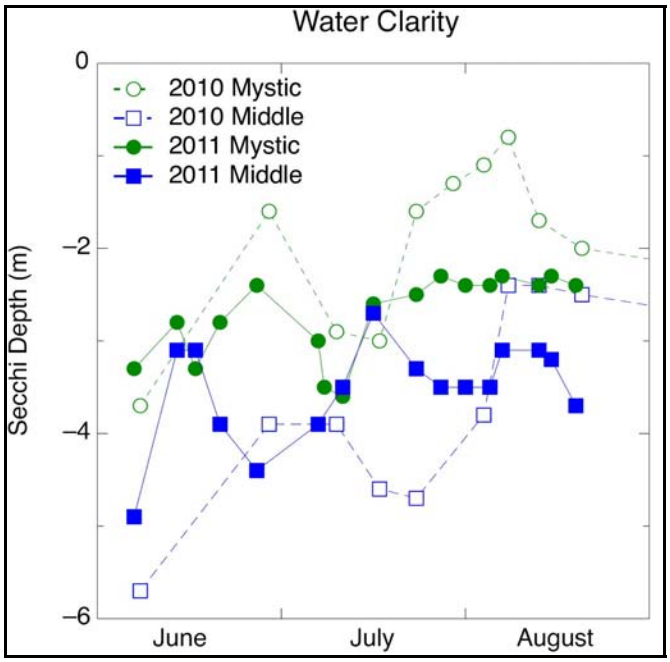
The die-off in Middle Pond appeared to subside within a week. Snorkeling in both ponds on August 18 and 19 revealed live mussels, which appeared to be more responsive than two weeks earlier. It's not clear if much of a die-off actually occurred in Mystic Lake, since only a single dead floating mussel was observed, but Mystic was starting this summer with a much smaller mussel population than Middle Pond, having suffered the devastating die-off in 2009 and another smaller die-off last year. Currently, it appears that both ponds now have a similar greatly reduced and widely scattered population of living mussels.

Bob Nichols

MYSTIC LAKE HAVING A BETTER SUMMER, SO FAR…

After turning almost pea-soup green the past two summers, Mystic Lake is having a comparatively good summer following the alum treatment last autumn. The plot shows water clarity, as measured by Secchi disk, throughout this summer (solid lines) and last (dotted lines) for both Mystic Lake and Middle Pond. The data points in the plot show how far down in the water column the Secchi disk can be seen (measured in meters).

From mid-July through mid-August, the Secchi depth in Mystic Lake was fairly constant, ranging between 2.3 and 2.5 meters. This is about 3 times better than the 0.8-meter minimum reached last year and the 0.7-meter minimum reached in 2009. Mystic Lake has also maintained a 1.5 meter greater depth of oxygenated water than last summer.



Summer 2011 Mystic Lake and Middle Pond water clarity compared to 2010.

Hamblin Pond has only been tested this summer: June 20 and August 18. **Hamblin has had very good clarity compared to Mystic and Middle**; the Secchi depth was 7.1 meters on June 20 and 4.9 meters on August 18.

Middle Pond has had consistently better water clarity than Mystic Lake, except for a few days in mid-June and again in mid-July, when it had similar clarity as Mystic. Compared to last year, Middle Pond was significantly worse this July, but better in August. In mid-August, Middle began to show even greater clarity.

Bob Nichols

ANNUAL MEETING REPORT

The Indian Pond Association's 56th Annual Meeting on Sunday July 17 gave approximately 70 members an opportunity to get together, learn about recent IPA news and activities, elect new directors, and mingle. Jon and Debby Halpert again provided the perfect setting; a wide lawn overlooking Middle Pond, under a huge, shady tree. The weatherman gave us a beautiful afternoon.

President Holly Hobart opens the 56th IPA Annual Meeting. All Annual Meeting photos courtesy of Annette Nichols.

IPA President Holly Hobart kicked off the business meeting with a round of **thanks to the Halperts** and appreciation for all who assisted with or contributed to the Annual Meeting arrangements **(Rev. Ernest Ryden**, sound system; **Cotuit Liquors**, wine; **Trader Joe's**, shrimp; **Board members**, food, chairs, and tables; and **Gay Rhue, Nancy Wong, and Jane Smith** for organizing and setting up the refreshments), and to the **many people who had contributed to the work of the IPA in the past year**. She introduced the Board of Directors, the Newsletter Editor, previous IPA Presidents, and special guests, and asked everybody who worked on IPA projects during the year to stand up and be applauded. She thanked **Bob Kohl, who was leaving the Board after three terms**, and made special mention of the vital contributions made by other specific individuals: **Geri Anderson**, the "indispensable" Newsletter Editor and Publisher, **Betsey Godley**, who manages the IPA database, and **Emory Anderson**, President Emeritus, who continues to provide invaluable advice and assistance to the Board despite being officially retired. She also mentioned **John Anderson**, who created the IPA website and supported it for many years, and **Tamar Haspel**, the present IPA Webmaster. Finally, Hobart thanked **all of the IPA members who so generously contributed time and money, maintained their memberships, and took the time to communicate with her about the ponds.**

Members approved the minutes of the 2010 annual meeting and accepted the financial report presented by Treasurer Carl Thut. Alex Frazee was unanimously elected to her first two-year term on the Board. Tamar Haspel and Betsey Godley were re-elected to their second two-year terms and Carl Thut, Lew Solomon, and Bob Derderian were re-elected to their third two-year terms.

In her President's Report, Hobart mentioned three situations critical to the ongoing health of the ponds and that will be her highest priorities during her final year as President: **(i) colonization by invasive plants, both aquatic and terrestrial, particularly in Hamblin Pond and Mystic Lake; (ii) water quality, particularly in Middle Pond; and (iii) the ongoing viability and vibrancy of the IPA as an organization**.

Hobart spoke of traveling by boat around Hamblin Pond this spring and being shocked at the extent to which its shoreline was being rapidly colonized by gray willow, phragmites, and purple loosestrife. She said that the IPA needed to discover new ways of attacking the problem of terrestrial invasives. She reported that the aquatic invasive *Hydrilla*, first found in Mystic Lake in the autumn of 2010, was being aggressively attacked under the leadership of IPA Vice President Bob Nichols. A recent appropriation of $5,000 by the Town of Barnstable will provide professional assistance in that effort this year.

Part of the approximately 70 IPA members who attended the IPA Annual Meeting.

On the subject of water quality, Hobart mentioned that noticeable amounts of green algae had been found so far this summer in Mystic Lake and Middle Pond, which may be the result of having lost so many water-filtering mussels in 2009–2010. She said that the IPA Board had agreed to fund a professional mussel study in Middle Pond this year and annual follow-up studies in Mystic and Middle for as long as the IPA can support them. She said that more intensive nutrient sampling was being conducted this summer in Middle Pond to monitor a worrisome decline in water quality there. She also mentioned that all water testing results are being published on the IPA website (www.indianponds.org).

The third priority is to maintain the vibrancy and viability of the IPA as an effective pond organization. This requires the constant effort of recruiting new Board members and officers to replace those who are retiring because of term limits.

According to the IPA By-laws, Directors (including officers) can serve a maximum of only three two-year terms, which is a good thing because it keeps new blood flowing into the organization and prevents it from becoming the private province of a small group of entrenched leaders. She said that one way of bringing new people in has been the creation of the position of Associate Director. Associates attend Board meetings and participate fully in all of the Board's deliberations and activities, but do not vote. The IPA is actively looking for people who care enough about the ponds to contribute some of their time and talent. She invited anyone in the audience who would like to attend an IPA Board meeting or is interested in becoming an Associate Director to please get in touch with any current officer or Board member.

Director Gay Rhue presents a $1000 Edwarm Schwarm Memorial Scholarship award to Sam Walcott.

Dr. Ken Wagner, guest speaker at the 2011 IPA Annual Meeting.

Gay Rhue, Chair of the Scholarship Committee, presented Edward Schwarm Memorial Scholarship awards of $1,000 each to Sam Walcott and Jamie Neelon, college-bound graduates of Barnstable High School who live in Marstons Mills.

Hobart then introduced the guest speaker, Dr. Ken Wagner, managing director of the Mystic Lake alum treatment, who gave a technically oriented, but understandable and entertaining, talk about the alum treatment and present conditions in the three Indian Ponds (see article on page 6).

Vice President Bob Nichols presented Ken with the Order of the Turtle, with warm words, recounting the tremendous job that Ken has done in Mystic Lake.

Bob Nichols presents Ken Wagner with the IPA's highest award, the Order of the Turtle.

The business meeting was then adjourned, and Hobart invited all to "mingle and enjoy the refreshments and this beautiful place and each other's company."

The social hour following the business meeting was enjoyed by all.

MARSTONS MILLS VILLAGE DAY SUNDAY SEPTEMBER 13

Don't miss your Village's annual celebration, which will begin this year at 12:00 noon with a special program commemorating the 10th anniversary of the 9/11 attacks. The day continues with food, music, children's activities, a dog show, and information booths. Local vendors will exhibit their wares. Be sure to visit the IPA's booth and displays across from Liberty Hall! A traditional chicken barbecue at 4:00 pm concludes the festivities.

DR. KEN WAGNER'S TALK AT ANNUAL MEETING

System history

The three Indian Ponds are kettleholes – left by the melting of stranded blocks of glacial ice. They have relatively small watersheds, moderate depth, long retention times – tend to be clean lakes, but if contaminated, are prone to adverse impacts. Water quality tends to be a product of long-term land use – few influences are big enough to make noticeable changes over a short period of time. Key land uses on the Cape – crop and animal farming (historic), cranberry bogs (less, but still present), housing, and waste disposal (increasing). Internal recycling becomes the dominant source of phosphorus (P) over time, at which point the watershed matters less. Accumulation of iron-bound P and loss of oxygen in deep water are two key processes. Condition in any year is a function of watershed activities, internal recycling, and weather.

Hamblin Pond situation

This pond was nice looking from the air in 1920 when the Hollidge family bought a lot of property. A duck farm started in 1924 and lasted until the 1950s. Known as an overly fertile pond for decades, there was a fight in the 1960s over whether to introduce trout, and a major water quality study was done in 1993. Treatment for internal P load control in spring 1995, minimal other sources of P, and clear ever since. There were issues with toxicity during treatment – inappropriate balance of chemicals.

Middle Pond situation

This pond is less studied and shallower than the other two ponds. It is connected to Mystic by a channel, and is subject to anything that affects Mystic. It is presently showing some signs of problems.

Mystic background Information

Mystic Lake has had deep-water oxygen issues since at least 1948, but the depth of anoxia has risen over the years. It has lost all oxygen below the thermocline for at least the last 6-7 years. The depth of thermocline formation is weather-dependent. Land uses included animal and crop farming (prior to the 1960s), cranberry farming (ongoing), and housing (abundant since the 1960s). The lowest clarity within the record was in 2005, 2009, and 2010. These coincide with what appears to be mixing of bottom waters into the upper water layer during summer, as evidenced by temperature/ dissolved oxygen (T/DO) profiles. Some diffusion may also be occurring. P from deep-water sediments reaching the upper waters fuels algal blooms. PALS chlorophyll data and T/DO data collected by Bob Nichols indicate that a band of algae forms near the thermocline. Several algae do this, but the cyanophyte *Planktothrix* is famous for it, can produce toxins, and was dominant in the 2009 bloom that coincided with the mussel kill. Dense algae at this depth level is using nutrients that accumulate in the deep water and light that extends down from the surface. There is a very fine balance that can be disrupted by weather or other factors. In clearer years (2008 is a great example), that band of algae is very dense, the boundary between upper and lower water layers is very sharp, but that boundary is deeper in the water, and the band remains in place through the summer monitoring period. In less clear years (2009 is the perfect example), the algae band does not last the summer, and sampling data suggest distribution upward in the water column. The algae can regulate their buoyancy to some degree, but mixing of some bottom waters into surface waters may also be responsible. This may be entirely weather-dependent, and 2009 was a fairly windy, stormy summer. Once in the upper water with more light and adequate nutrients, these algae can form a substantial and persistent bloom, which is what appears to have happened in 2009. Had the weather pattern been different in 2008, the same thing could have occurred that year.

There appears to have been some upward mixing or diffusion in 2010, more than in 2008, but not to the extent observed in 2009. A cyano bloom occurred in July, but did not last long into August. However, there was adequate nitrogen (N) in the upper waters to support green algae blooms from mid-August into the winter. Deep-water P is high in Mystic Lake (500–1000 ug/L), but is higher in the clearer years and lower in the less-clear years. Internal load generation is probably not that variable, so this suggests mixing of the bottom waters or diffusion (or both), and movement of P into the upper waters in the less-clear years, fueling surface algae blooms. This is consistent with the above observations. Surface P seems to vary from about 15 to 40 ug/L (<10 ug/L is a "safe" value, >20 ug/L will tend to support blooms, and >50 ug/L will almost guarantee blooms).

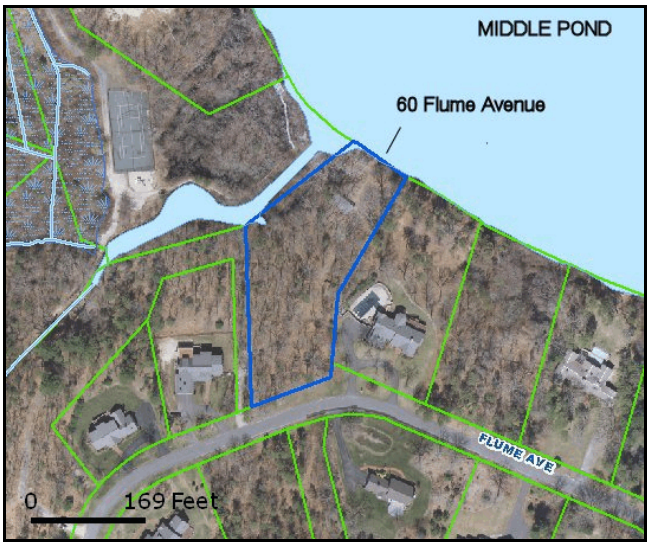
Nitrogen is rather high in Mystic Lake, especially ammonium nitrate in deep water (2–4 mg/L). Ammonium accumulates during decomposition without oxygen. Substantial ammonium and nitrate also enter with groundwater, especially where septic systems are abundant. Comparison to the other two ponds shows higher N in Mystic (0.6 vs 0.5 in Middle and 0.3 mg/L N in Hamblin). For N, <0.3 mg/L is a "safe" value, while >0.6 mg/L tends to support blooms. It appears that there has been a substantial rise in alkalinity in Mystic Lake over the last decade or so. Historic data suggest a background level of about 6 mg/L, with a pH of 6.3–6.5, about what would be expected. Higher deep-water alkalinity values have been observed. Since 2004, the surface alkalinity has risen to 15–20 mg/L, with a fairly gradual rise. Deep-water alkalinity is 40–60 mg/L. The pH is now in excess of 7.0 most of the time, partly from algal activity (photosynthesis raises the pH by removing carbon dioxide), but also as a function of higher alkalinity (which affects equilibrium of the water with the atmosphere). This may be related to mussel abundance in the lake (Hambin at 7, Middle at 13, Mystic at 16–20 mg/L). The mussel kill is still under investigation, but appears to be linked to blue-green algal toxins, not pH or oxygen levels.

Mystic treatment

The alum treatment was intended to inactivate most of the internal P reserves associated with iron. Doses varied from 30 to 50 g/m^2. *(Continued on page 7)*

BLT TO PURCHASE LAST LOT ALONG MIDDLE POND HERRING RUN

The heirs of Frances Pittendreigh, including Jane Smith, a former IPA Director, have reached agreement to sell their lot at the south end of Middle Pond to the Barnstable Land Trust (BLT). The goal is to keep the land in conservation. The lot consists of 1.17 acres at the north end of the herring run that connects to the Marstons Mills River. It currently has a boathouse and swimming platform. It abuts the location where water from Middle Pond enters the herring run and continues down to the Marstons Mills River. There is 100 feet of wooded pond frontage and 190 feet' along wetlands that abut the herring run.



Map showing the southwest portion of Middle Pond and the 1.17-acre lot at 60 Flume Avenue to be purchased by the Barnstable Land Trust and held in conservation.

The BLT sees the land as having a great deal of conservation value. It is the last undeveloped parcel along the herring run, it links up a trail system abutting Town-owned open space, would allow permanent access to the herring run by the Town for maintenance, and is in the Zone of Contribution to COMM wellfields. Also, conserving it would help to protect the water quality and the state-listed species of rare mussels and insects in Middle Pond.

The parcel abuts the Herring Run residential community on Flume Avenue and the Whistleberry community's common lot across the inlet to the herring run. It is within the community of Indian Lakes Estates. Many of the neighbors have welcomed the prospect that the land will be conserved. The Marstons Mills Village Association voted unanimously to support the effort to preserve the herring run land.

However, in a meeting with Jaci Barton, BLT's Executive Director, the Whistleberry Residents Association (WRA) Board expressed concerns. The Whistleberry common lot has experienced frequent trespassing and other problems in the past by groups and individuals.

Jaci assured them that the BLT would be a good neighbor and would address problems if they occur. BLT's plan is to encourage the regrowth of natural vegetation. The boathouse would be removed, the trail would be maintained, and access would be on foot only, except for periodic maintenance of the run. There would be one (maybe two) parking spaces at the current entrance to the land.

The BLT has until early 2012 to raise the $300,000 needed to purchase the parcel. They are looking for grants and funds from the Community Preservation Act to supply about half of the sum needed and are hoping to raise the remainder through private donations.

DR. KEN WAGNER'S TALK AT ANNUAL MEETING *(Cont'd from page 6)*

The two primary objectives were to (i) reduce the internal P load and (ii) not kill animals in the process. The actual treatment was from September 9 through October 5. A total of 21,002 gal of alum and 10,553 gal of aluminate were used. The targeted areas were >25 ft deep, mostly >30 ft deep. About half of the lake area was treated. Aluminum sulfate (alum) and sodium aluminate (aluminate) were used at a 2:1 ratio to cause no major shift in pH, while adding enough aluminum to bind the P, moving it from iron to aluminum complexes. There was some stripping of P from the water column; only about 2/3 of the water was treated, however, and it was done at the end of summer when P levels were at their highest. Careful attention was paid to chemical ratios and mixing. There was no mortality of fish or mussels. Reduced deep-water P is now evident, but the most important sampling results are not yet available. Clarity did not greatly improve right away, but this is consistent with the Long Pond (Brewster/Harwich) treatment, also done in the autumn. Clarity in spring increased, also consistent with Long Pond. But more recently, clarity decreased; some blue-green algae (*Microcystis*) have been observed, but there are more green algae and diatoms. Clarity is now better than in recent years, but not as good as expected/desired. Zooplankton was abundant in winter and early spring, but is nearly gone now, despite a low alewife run. More complete data collection is needed before more speculation can be done.

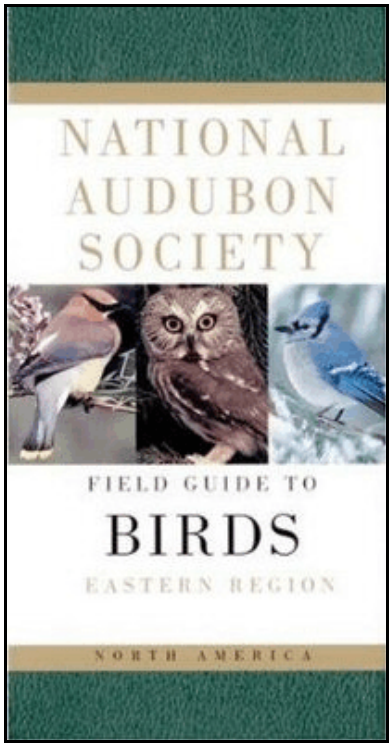
Mystic *Hydrilla*

Hydrilla was discovered in summer 2010 by Bob Nichols: 12 patches, 1 larger and 11 smaller. This is a serious problem weed, known only from a handful of lakes in New England. Quick action to contain and control the *Hydrilla* was taken by the IPA; areas were sequestered and harvested, and benthic barriers were applied and left in place. Only a couple of sprigs of *Hydrilla* were seen through spring of 2011. Regrowth from tubers was noted under and around barriers in late spring 2011. The plants appear to be minimal and controllable in the 11 small areas, but are spreading in the large patch area. Hand harvesting is being implemented, but continued vigilance is essential.

When does Mystic Lake catch a break?

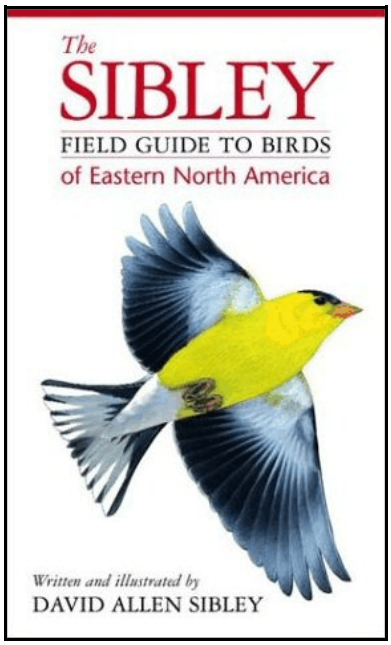
BECOMING A BIRDER

So, by this time, some of you may be wondering,"How do I become a birder?" Well, if you have read all of my articles in past newsletter, have gone out in your yard and neighborhood and looked for the birds I have talked about, and have gone down to Mill Pond to see the American and Eurasian widgeons return each September, then, as they say, "You is one." The question is, "Where do I go from here?" That obviously depends on where you want to go and how fast you want to get there.



National Audubon Society Field Guide to North American Birds: Eastern Edition.

Probably, the minimum equipment you need is a good bird book and a fairly good pair of binoculars. There are a lot of really good books on the market and as you stay involved, you will undoubtedly acquire many of them. As a beginner, you might consider the *National Audubon Society Field Guide to North American Birds*: *Eastern Edition*. This book has outlines of the types of birds first, then all of the color plates, and finally all of the write-ups. This allows you to look up the basic shape of the bird and then look at the plates that cover that shape of bird. The *Sibley Bird Guide* is supposed to be the best book out there. I have a Kaufman that I am rather partial to, and any time I go to a new area, I buy a book of birds that I am likely to see in that area. Most of these books come in both Eastern and Western editions, so be careful. Get both, just in case.



The Sibley Field Guide to Birds of Eastern North America.

Binoculars are a whole other story. These should be the best you can afford at the moment. They must be comfortable to hold up to your eyes for extended periods of time. They must gather enough light to let you see a bird at a hundred feet or more. Your best bet is to go to some retail outlet that can advise you. The Bird Watcher's General Store in Orleans is one of the best around. You can also get a feel for binoculars by studying the reviews on the internet.

OK. You've got your books and binoculars; what next? I rarely go on any birding trips that are not guided by someone far more experienced than me. There are several very good sources for these trips. Wings Birding Tours Worldwide at http://wingsbirds.com/, Road Scholar at http://roadscholar.org/ or the Massachusetts Audubon Society at http://www.massaudubon.org/ are some of the better ones locally available. They provide knowledgeable experts who can identify any bird you see. They can also provide foreign birding trips. There are over 1800 species in Peru and over 2000 in Ecuador.

If you really get into this, sooner or later you're going to want to keep a list of the birds you have seen. There is a lot of software for your computer out there to track your finds. You could just keep a hand-written journal. I use an Excel spreadsheet.

Dave Reid

TESTIMONIAL TO GRAY WILLOW REMOVAL

When my wife and I moved to our home on the eastern shore of Mystic Lake, our shore front was dense with both high- and low-bush blueberries, a native shrub called pepperbush or Indian soap plant, bayberry, and the fragrant and beautiful white *Rhododendron viscosum* or swamp azalea. Of course, there were also the usual mixes of oaks and mostly scrub pines.

As the years went by, those native plants gradually seemed to decline and I couldn't account for it. I thought I was trying too hard to preserve and care for these by removing some of the small dead growth. In spite of first a caring hand and then an intentional "hands off" attitude, the native plants declined.

Then we heard about the gray willow. When I surveyed the area, I realized that this invader had almost taken over the shoreline. We signed up to have them removed and the stumps treated, which was done very well.

Now, as we enter the third season after clearing them out, I notice that the blueberries are back, the bayberry and pepperbush are sprouting, and, best of all, the *R. viscosum* is coming back. We would encourage anyone who can do so (and we know there is an expense) to remove these invaders of the lake front and help bring back the beautiful native growth that once thrived along our shores.

Peter and Betsy Smith