

THE IPA NEWSLETTER

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

Summer 2018 A quarterly publication of the Indian Ponds Association, Inc.

Vol. 18 No.3



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IPA ANNUAL MEETING RECAP

The 61st annual meeting of the Indian Ponds Association was held Sunday July 22 at the home of John and Deirdre Kayajan at 32 Heath Row in Marstons Mills. Over 50 attendees gathered on a warm afternoon under a large tent on the lawn overlooking beautiful Mystic Lake. The tent had been rented because of the possibility of rain, but that threat never materialized until after the meeting concluded. President Emory Anderson introduced the current board members and officers and also welcomed past directors in attendance: Curt Clayman, Dave Dawson, Jon Halpern, John Kayajan, and Lew Solomon. On behalf of the IPA, Emory extended thanks to Cotuit Liquors, Trader Joe's, and Stop & Shop for their donations of food and/or beverages for the meeting, and Rev. Ernest Ryden of Osterville for lending us the PA system. Lastly, he offered special thanks to John and Deirdre Kayajan for again hosting the event.



Participants register with Clerk Maggie Fearn

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WHAT IS A BRYOZOAN?

Some of the residents around the Indian Ponds have reported seeing strange glob-like substances in the water this summer attached to the bottom, a dead tree branch, or even a wooden dock. What they have seen is a harmless colony of bryozoans, which are filter-feeding invertebrates. There are several thousand species of bryozoans, most of which live in saltwater, but 19 species live in freshwater. Each colony consists of mi-



croscopic animals called zooids, sometimes referred to as moss animals, which make jelly-like tubes and attach themselves to objects in the water. These tubes attach together into colonies that can be as big as a volleyball. The animals themselves live in the tubes and extend their tentacles out to capture and eat microscopic organisms like algae. They are not toxic, venomous, or harmful and have been around for about 500 million years. Their life cycle includes both sexual and asexual reproduction. Sexually produced larvae undergo metamorphosis into adults, which grow new colonies by budding clones of them-selves. They also reproduce asexually by forming hard, round statoblasts, which function like seeds. In winter or during drought, the colonies die, but the dissolving zooids free the statoblasts, which can disperse widely and live to produce new colonies the next year. Their presence in a lake or pond usually indicates good water quality.

Emory D. Anderson

IPA OFFICERS AND DIRECTORS 2018-19

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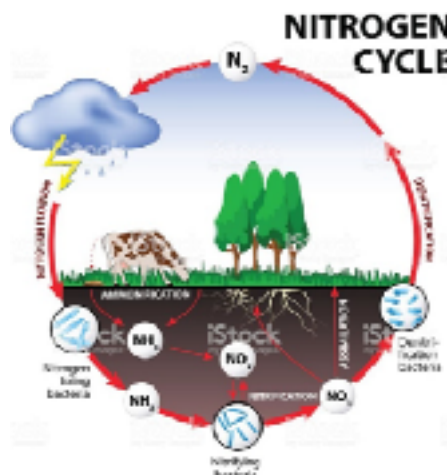


The IPA is a 501(c)(3) organization and a registered public charity. All dues and contributions are tax deductible. This newsletter, with a circulation of approximately 700, is a forum for the exchange of ideas on matters concerning the IPA's mission, and the views expressed by authors of articles do not necessarily represent official IPA policy.

NEW INNOVATIONS IN WASTEWATER TREATMENT

Since the mid-1990s when nutrients from septic systems were implicated in the impairment of recreational surface waters, Barnstable County Department of Health and Environment (BCDHE) has been investigating ways to improve the treatment from onsite septic systems. Two main contaminants, nitrogen (which impacts our marine environments) and phosphorus (which impacts our freshwater environments) are prevalent in wastewater and enter our leach fields, subsequently migrating through the groundwater to impact our surface waters. There, nature takes its course and nutrients grow algae at levels that sometimes choke

the water of oxygen causing fish kills or harmful algal blooms and other noxious conditions. The standard "Title 5" system efficiently disposes of the wastewater from your house making it go away, but disposal in our sandy soils performs only limited removal of nitrogen and phosphorus. To enhance the removal of these contaminants, technologies referred to as innovative/alternative or I/A septic systems described below are beginning to be employed.



Nitrogen – too much of a good thing in the wrong place

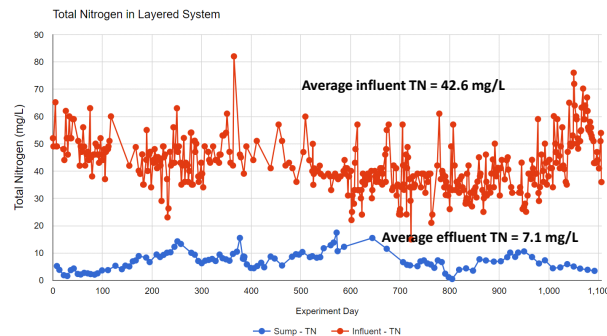
Nitrogen comprises nearly 80% of the air we breathe, but when its inorganic forms originating from wastewater enter our marine waters, they start the process of over-enrichment and degradation of water quality. To prevent this from happening, many I/A treatment units facilitate and speed up the natural cycling of nitrogen back into harmless nitrogen gas. The common way this is done is by actively aerating the wastewater from the septic tank (by blowing air into the solution) or more passively (by passing it over some media) which converts the ammonia to nitrate. After nitrate is formed, passing the solution through anoxic (absent air) conditions in the presence of organic carbon will return the nitrate to harmless nitrogen gas. Other less-common means of de-nitrification include membrane bioreactors, and there are even some passive processes being researched at the Massachusetts Alternative Septic System Test Center (MASSTC) operated by BCDHE. Septic systems that modify wastewater in this way are called denitrification I/A systems and, as the name implies, offer an alternative means to the standard "Title 5" septic tank-leach field. In short, in denitrifying I/A septic systems, the nitrogen from our wastewater exits the septic tank (or settling tank ahead of the processing tank) as ammonia, gets converted to nitrate, and then to nitrogen gas. That process is facilitated by directing the waste-water in various ways at various points in the nitrogen transformation to achieve that end.

The list of denitrifying septic systems that are generally or provisionally approved can be found on the Massachusetts DEP website <https://www.mass.gov/guides/title-5-innovativealternative-technology-approval-letters>. Over 2000 I/A systems are in use on Cape Cod, and BCDHE tracks the performance and operation of each one. You can see how each of the various technologies performs at <http://www.barnstablecountyhealth.org/programs-and-services/ia-septic-system-tracking>. You can look at the data only from your town or the entire Cape and Islands.

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NEW INNOVATIONS IN WASTEWATER TREATMENT

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Simple layered system after work done at the University of Waterloo by Dr. Will Robertson. Performance after 1,100 days

Recently, MASSTC has been experimenting with designs of septic system that use lignocellulose (sawdust, woodchips, and mixes of these with sand) to provide the carbon and conditions for denitrification. The simplest of these designs simply layer sand–sawdust beneath 18 inches of standard fill sand. The fill sand performs the nitrification step (conversion of ammonia to nitrate), while the sand–sawdust layer completes the denitrification process (conversion of nitrate to nitrogen gas).

This project copies what was done by the State Department of Health in Florida and others in hopes of determining its regional (we are a lot colder than Florida, and temperature controls the process) relevance. So far, there have been very promising results in the Test Center venue and a few residences where they have been installed. Since the designs use shallow pressure-dosed drain fields, there has been an added benefit of “reusing” the waste-water to maintain soil moisture and nutrients for lawns, and we have seen that many contaminants of emerging concern, such as endocrine-disrupting compounds, may also be dramatically reduced.

Phosphorus – No free ride

As opposed to nitrogen in wastewater that can be converted to harmless nitrogen gas and get a “free ride” back into the atmosphere, phosphorus, which poses challenges to our freshwater ponds, is not as easily removed. Only two I/A technologies have “Piloting Approval” in Massachusetts. Piloting is the allowance of highly experimental systems which must undergo extensive testing following their installation. Both of these Pilot Approval technologies bind the phosphorus in wastewater with iron and immobilize it, preventing its passage to groundwater and subsequently to our freshwater ponds. One of the systems electrochemically creates iron commensurate with the amount needed based on the flow from the house and was recently installed in the Town of Brewster. One additional technology, not yet in use in Massachusetts, operates by creating aluminum ions which bind with phosphorus and settle in the septic tank to be removed with the sludge. Even simpler means of attenuating phosphorus were outlined in a report MASSTC did and is available at <http://www.masstc.org/projects/evaluation-of-methods-to-control-phosphorus-in-areas-served-by-on-site-septic-systems-the-state-of-the-art>.

Wastewater nutrients – Why add them in the first place?

Any discussion of preventing the damage done by nutrients in wastewater would be incomplete without mentioning the obvious one – preventing the nutrients from entering the wastewater. This can largely be done with the use of composting toilets which keep the urine and feces separated and which composts the waste producing a few wheelbarrows of rich compost a year from the “inputs”. Although many folks have a visceral aversion to the thought of storing their waste in a composting unit, we have found that a 90% load reduction of phosphorus and nitrogen can be achieved. If the compost is handled properly, it poses no more risk than a standard toilet and is an inexpensive sustainable way to achieve meaningful reduction in groundwater contamination. Our studies have also shown, however, that despite this, there is little public acceptance of the concept. Perhaps someday, we may see the balance tip in favor of this sustainable means of nutrient diversion and indeed reclamation.

George Heufelder

Co-Director of the Massachusetts Alternative Septic System Test Center, a Division of Barnstable County Department of Health and Environment

ANNUAL MEETING RECAP

(continued from page 1)

The minutes of the 2017 annual meeting and the treasurer's annual report were both presented and approved without comment or correction. A recommendation by the board of directors for several changes to the IPA's By-laws was passed. One of the changes was to create a third category of membership entitled non-resident members in order to widen the pool of candidates eligible to stand for election to the board. Membership in this category, which would be at the discretion and invitation of the board, would allow qualified individuals living outside of the IPA area who have demonstrated an interest in and a willingness to participate in the work of the IPA to enjoy the same privileges as resident members, including voting and holding office. The second change was to create the category of associate director as a pathway to directorship, formalizing what for many years had been an informal position. Up to three individuals could be appointed by the board to serve two-year terms, after which time they could then be nominated as candidates to be directors.

The report of the Nominating Committee identified three candidates for election to the board of directors for new two-year terms [Bill Hearn, Jim McGuire, and Maurice (Butch) Roberts], four candidates for second two-year terms (Emory Anderson, Peter Atkinson, Holly Robillard, and Barry Schwartz), and one candidate for a third two-year term (Aaron Fishman). This slate of candidates was elected unanimously.

Roberta Gough, chair of the Scholarship Committee, presented a check for \$1,000 to Sophie Gibson. The IPA Scholarship Committee selected Sophie for her academic achievement, extracurricular activities, and community service related to the IPA's mission. Sophie will attend the University of Virginia as a Jefferson Scholar this fall and plans to pursue a career in law, specializing in Native American rights. In thanking the IPA, Sophie said she is amazed by and grateful for the work of people who strive to keep the Cape such a beautiful place amid the demands residents and visitors place on the natural environment. The Schwarm Memorial Scholarship honors the memory and contribution of former IPA director Edward Schwarm, who passed away in 2005.



Roberta Gough presents \$1000 check to Sophia Gibson

In his report, President Anderson summarized some of the IPA's recent activities.

Membership. Our membership is healthy, currently at 171 paying households and organizations. Financial contributions have been outstanding, and we appreciate the support. No major operational, structural, or financial problems confront the IPA. We will continue to keep both our membership and the wider community informed through our newsletter, website, and events.

Pond testing. As we do every summer, testing of the three ponds for clarity, temperature, and dissolved oxygen has been underway since May at two-week intervals.

Hydrilla in Mystic Lake. There would normally have been a treatment for *Hydrilla* by now, and as soon as the Town's contractor, SOLitude Lake Management, notifies us, we will advise residents. The Sonar™ treatment is harmless to people and pets, but we ask that anyone using the ponds on treatment day give the SOLitude staff room to conduct their work. (The first treatment actually took place a few days after the annual meeting on July 24.)

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ANNUAL MEETING RECAP

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Boat and debris clean-up. We rigorously did a derelict boat and debris clean-up on the ponds until a few years ago; a reconnaissance of the ponds on June 16 indicated a number of seemingly abandoned boats and dock parts, most likely due to the severe storms in February–April. Many of these items were photographed, and owners are now advised that items such as these that remain loose will be collected in early September for disposal by the Town DPW (see article on page 9).

Marstons Mills Village Day. The IPA will have a display table as usual at this event which takes place noon–3 pm on Sunday September 9.

Herring count and repairs to Middle Pond herring run. Some members participated in the spring count, which was among the poorest in the past decade. There are various theories on the reason for the low count, and this year's result on its own should not be extrapolated to a longer-term trend. As reported in our spring newsletter, the run will be rebuilt over the next two years, starting this fall, using government and Town funds, with breaks in spring and fall to accommodate migrating herring.

Condition of our three ponds. Hamblin Pond is in great shape following the alum treatment three years ago. Middle Pond looks pretty good, too, even though some invasive *Hydrilla* has found its way in, with those patches being treated together with those in Mystic. While both Middle Pond and Mystic Lake have improved dramatically from their state eight years ago, before the alum treatment of Mystic, we are watching carefully for signs of cyanobacteria, which could be the harbinger of serious problems. Dr Ken Wagner recently surveyed all three lakes for the Town and his report – summarized in our newsletter and posted in full on the IPA website – indicates that the effects of the previous alum treatment are wearing off. Our own testing of dissolved oxygen levels throughout the water column also suggests an algae build-up around the thermocline (6–7 meter level) of Mystic Lake. The most recent alum treatment in 2010 was insufficient and improperly applied, so its effects are subsiding well before the 15 years that would normally be expected. The state delayed the previous treatment for two years, fearing the effects of alum on the mussel population. After two consecutive mass mussel die-offs in 2009 and 2010, the state finally authorized an alum treatment in 2010, but at less than the recommended dosage, based on the amount of phosphorous present in lakebed sediments. Also, the alum was applied only in the middle section of the lake (so did not disperse into shallower waters), and the treatment took place in late summer – early fall rather than early spring, when phosphorous would have settled over winter near the bottom. The Town monitors



President Emory Anderson speaks during the business meeting.

all major lakes in Barnstable at least once a week for *E. coli* and cyanobacteria. Based on Dr Wagner's report and our own findings, it is possible that Mystic Lake will need another alum treatment in the next several years. The Town fully supported the previous treatment and will hopefully fund another treatment if needed.

Thanks to departing board members. Stepping off the board at the end of their third two-year terms are Greg Cronin (treasurer), Chris Bizinkauskas (annual meeting social hour organizer), and Roberta Gough (scholarship committee chair). Emory gave a huge thank-you for their tremendous efforts over their terms as directors.

The guest speaker was Prof. Jack Ahern, Professor of Landscape Architecture and Regional Planning, Vice Provost for International Programs, UMass Amherst. He began by saying it was great to speak to people who care about where they live. IPA members clearly do care, but need to do more, as do all communities on the Cape and Islands, for there is trouble in paradise. The Cape Wide Water Quality Plan confirms that more than two-thirds of the estuaries on the Cape are overly nutrient-rich, mostly from septic systems. For the vast majority of the Cape, these onsite systems do a good job of removing bacteria from our sandy soil, but not the nitrates or (in the case of freshwater) phosphorous, which eventually winds up in our watershed and embayments. Every locale is part of the larger watershed, so everything we do impacts it. Be it runoff, sewage, fertilizer, whatever, it all flows downhill to the Cotuit or Osterville cuts.

So, what can residents do about this "ticking time bomb"? Support our towns in thinking about how to pay for sewage systems, starting with prioritized areas. Our population is only going to increase, so give towns the political support to allocate what will be substantial

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ANNUAL MEETING RECAP

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sums of money to address this problem. Consider composting toilets or new technology that doesn't require such a change in lifestyle, such as denitrification septic systems, which remove carbon and nitrogen before they go into the soil. Thoughtful landscaping. Best practices for landscape management include:

Have less lawn, and better manage what you do have.

The UMass website posts best practice turf management advice, such as how often to mow, fertilize, and irrigate. These minor steps can greatly reduce a lawn's impact on our watershed.

In tandem, plant more native species, which don't need irrigation or fertilizer and will better connect your property with the wider Cape landscape.

Use less fertilizer. The state now regulates fertilizer application, recognizing its cumulative use effects. Regulations say no phosphorus should be applied unless a soil test indicates it's needed. In any legal bag of fertilizer, the first number is the percentage of nitrogen by weight, the second is phosphorous (which again is probably not needed – so test and create demand for non-phosphorous fertilizer), and the third is potassium.

Pay attention to drainage at scale on your property, street, and neighborhood. The UMass site lists techniques under "green infrastructure" to create systems that will capture nasty stuff in runoff such as human and dog waste, lawn chemicals, and salt.

Consider alternate landscaping incorporating green infrastructure. Jack's students explored some options for doing so, and what they might look like, including at Prince Cove marina. Among them was combining technology with oysters, which consume and filter water, and so can remove nutrients from the water. New York City is taking a similar approach in devising mechanisms to protect against future storm surges.

Looking ahead, Jack and his graduate students will take on a coastal resiliency project for the Town this fall. It's less about interior water and more about preserving the stability and safety of our coastlines in Barnstable. It's past time to start preparing for the impact of rising sea levels and more frequent and intense storms. Rather than the old school approach of piling rock on the coastline (rocks can only move and degrade over time), the Living Shorelines Bill currently before Congress takes a biocentric view to managing the coastline. Living systems can regenerate and continue to filter the water. This is one example of stretching our thinking to consider alternatives and deal responsibly with stormwater.



Professor Jack Ahern has attentive audience

Jack is currently writing a book encompassing the above points, entitled *Designing with Nature on Cape Cod, Martha's Vineyard and Nantucket*. He advocates an ecologically responsible approach to landscape design and management. It often seems that every new public and private sector project detracts rather than adds to our biodiversity. If projects used more native rather than exotic plants – just one simple change – we could reinforce the aesthetic and integrity of the Cape's landscape. Jack cited tangible examples of that philosophy in action, including the Quissett campus of WHOI, the International Fund for Animal Welfare center in Yarmouth, which was constructed on a brownfield site restored with native vegetation, demonstration gardens at the Association to Preserve Cape Cod on Route 6A in Dennis, the West Tisbury Library on Martha's Vineyard, and the National Seashore Visitors Center's longstanding showcase of native species and plants. Jack also mentioned the Mytoi Japanese Garden at Chappaquiddick Island, his favorite place on the Vineyard. This serene and beautiful spot set in a pitch pine forest defines character of place.

Jack finished by answering questions on alternative septic systems, use of well water for drinking, the Barnstable Clean Water Coalition's wastewater treatment project with the EPA, and the future of cranberry bogs, which have the potential to significantly help purify water in their post-agriculture lives. He invited members to feel free to get in touch with him at: jfa@ipo.umass.edu.

A social hour followed the meeting. The new board of directors also met briefly to elect officers. All incumbents were re-elected.

Maggie Fearn and Emory D. Anderson

Note: all photos in this article were taken by Elisabet Norgard



WAS THAT A CAT OR A BIRD?

The gray catbird can be found from the eastern seaboard to as far west as Idaho and as far south as Florida. Where it can find them, it prefers to live in wooded or thicket covered areas. To attract them to your yard, plant shrubs, hang suet or seed feeders, and you will soon attract a regular population of visiting catbirds. They even, occasionally, try to raid my hummingbird feeders, which are the only feeders I have out right now, at least until the chipmunks go into hibernation. They also like fruit so planting fruit-bearing trees and shrubs will help to attract them.

If you are trying to learn to recognize bird calls, the catbird would be one to start with. The catbird is a relative of the mockingbird and they share that bird's ability to copy the sounds of other birds and string them together to make their own song.

The gray catbird's song may last up to about ten minutes. He uses a loud song to mark his territory and a softer version of the song when he is on or near his nest. The female may also sing the softer song back to the male.

The oldest known gray catbird was at least 17 years, 11 months old when it was recaptured during a banding operation in New Jersey.

In summer, gray catbirds eat mainly ants, beetles and grasshoppers. When berries are available, they eat holly berries, cherries, and blackberries. They can be garden pests, eating raspberries, grapes, and strawberries.

Catbirds usually build nests at the center of dense shrubs or in vines. Nests may be within four feet of the ground or as high as 60 feet above the ground. The female builds the nest with males sometimes helping by supplying building materials. Nests take 5–6 days to build, and the final result is usually a bulky open cup made of twigs, straw, and sometimes pieces of trash. It has a softer, finely woven inner lining of grass, rootlets, and pine needles. When completed, the nests may be 5.5 inches across and 2 inches deep.

They may have 2–3 broods each season with 1–6 turquoise green eggs in each clutch. The normal incubation period is 12–15 days.

Catbirds sometimes destroy eggs and nestlings of several other woodland species including chipping sparrow and song sparrow.

Male catbirds are territorial during spring and summer. Males and females defend their own territories during winter when territoriality is uncommon in many species.

I always enjoy seeing the catbird when they come onto my deck even though they, like most species, are not above leaving little droppings just to remind me that they came to visit.



Dave Reid

**TO SEE NEWSLETTER PHOTOS IN FULL COLOR
GO TO THE IPA WEBSITE: www.indianponds.org**

THREE NEW BOARD MEMBERS



At the July 22 IPA annual meeting, three new directors were elected to two-year terms: Bill Hearn, James McGuire, and Maurice (Butch) Roberts.

Bill Hearn has been a full-time resident of Cape Cod since summer 2016, when he and his wife Beth moved from northern California back to their native state of Massachusetts. A retired fisheries biologist, Bill received an MS from UMass Dartmouth, and a PhD in Fisheries and Wildlife Science from UMass Amherst. No stranger to the Cape, he worked 12 months raising trout at the Sandwich fish hatchery on Rte 6A during the mid-1970s. Between 1984 and 1999, he was a senior scientist for two consulting companies where he served as lead biologist for dozens of projects concerned with the conservation of freshwater fisheries and wildlife. In 1999, he and his wife moved to northern California where he became a Supervisory Fisheries Biologist for NOAA's National Marine Fisheries Service. For 15 years, Bill focused on the protection and recovery of northern California salmon species listed under the federal Endangered Species Act. Now retired, Bill enjoys the recreational opportunities of the Cape's many ponds and extensive coastal habitats. He looks forward to helping the IPA to

preserve and protect the natural environment of the Indian Ponds and surrounding lands.

Jim McGuire and his wife Donna moved to Mystic Lake on the Indian Ponds almost 20 years ago. The move was prompted by the birth of their granddaughter Emma, now a sophomore in college. Jim and Donna wanted to be closer to and be an active part of their children's and grandchildren's lives. Donna recalled a lake the family had fished on when their sons were young and the family visited Jim's aunt and uncle in Dennis; so, the return to the Indian Ponds and the old fishing hole. Jim is a child and adult psychiatrist practicing part-time on the Cape. He is a board member of Cape Cod NAMI. He has a keen interest in storytelling, storytellers, and the vital role they have in our lives. This is Jim's second stint as an IPA director, having initially served in 2003-2008.



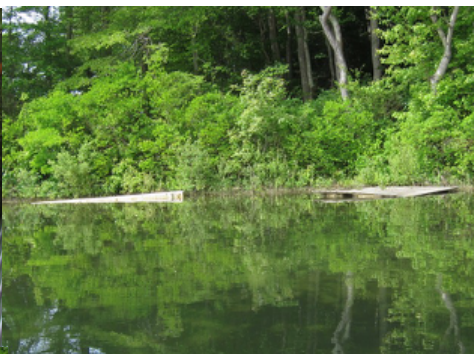
Having spent the last 40 years vacationing on Middle Pond, **Butch Roberts** and his wife Martha (Marty) have now chosen this as their year-round residence. He has had a varied career path, growing up in the restaurant business and running his own business for 25 years in New Hampshire. During that time, he was very active in local government as a member of the fire department, first-aid squad, planning board, and board of selectmen. After moving to Rhode Island, he spent another 20 years working in procurement at the family business, retiring in 2015. Butch is an avid Corvette fan and an occasional woodworker. He can often be found on the water with his dog Tsuzie in their canoe. It is very important for lake residents to be active stewards of the ponds to maintain the value of our properties, to ensure that future generations can enjoy the ponds as we have, and to continue the preservation of this natural habitat. He looks forward to working closely with the Indian Ponds Association to this end.

New IPA board. Front (l-r): Aaron Fishman, Holly Robillard, Kathy Bryan, Betsey Godley, and Maggie Fearn. Back (l-r): Maurice Roberts, Peter Atkinson, Bill Hearn, Emory Anderson, and Barry Schwartz. Missing: James McGuire



DERELICT DEBRIS REMOVAL

A survey of the Indian Ponds by some members of the IPA board on June 16 indicated several boats and a number of wooden floats/docks that appeared to be abandoned. Some of these items were photographed (see below). In various years in the past, debris such as this has been collected by IPA volunteers and removed by the Town DPW. Waterfront residents are hereby advised that items such as those shown below, if not claimed and moved by Labor Day (September 3), will be collected and hauled away. This clean-up effort will be done by no later than mid-September. Residents with boats, docks, floats, and other waterfront equipment are requested to attach identification labels to such items so that if they are displaced due to storms they can be returned to their owners.



**IF ONE OF THESE
ITEMS BELONGS TO
YOU, PLEASE REMOVE
IT OR YOU WILL LOSE
IT**



Note: all photos in this article were taken by Betsy Godley

MARSTONS MILLS 29TH ANNUAL VILLAGE DAY

"Marstons Mills Supports Public Safety"

Sunday September 9, Main Street, Marstons Mills: 12–3 pm

Activities for kids, display tables by Village vendors and organizations (including IPA)

LIVE MUSIC ALL DAY Mike Dumas and the Satellite Band

Hamburger and hotdog lunches for sale, Chicken BBQ at 4 pm at Liberty Hall

"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." IPA Mission Statement

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FORWARDING SERVICE REQUESTED

