THE IPA NEWSLETTER

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

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IN THIS ISSUE

IT'S TIME TO RENEW YOUR MEMBERSHIP AND PAY DUES

The only source of funding for our projects are your membership dues and donations. We consider the Newsletter to be fundamental to our mission as it is a vehicle for communicating all the issues in and around our three ponds that are relevant to the health of our ponds. While we are working on more on-line deliveries, postage is still a big expense. Our all-volunteer organization also maintains a database, our website and Facebook page. Our dedicated pond stewards sample all three ponds on a bi-weekly basis from May to October every year trying to stay on top of environmental changes in the three ponds. We have expanded our educational effort with both the Edward Schwarm Scholarship and new this year, the Emory and Geri Anderson Scholarship Fund. All of these efforts are made in the most cost-effective manner but still need funding to be effective.

So, it's time to renew your membership in the Indian Ponds Association (IPA) either as a resident member (if you reside within the area bounded by Race Lane, Route 149, Lovell's Lane, River Road, Bog Road, and Old Mill Road, including both sides of these bordering streets) or as a Friend of the IPA (FIPA) (if you reside elsewhere). The remittance envelope included with this issue of the newsletter can be used to renew your membership, to sign up for the first time, to pay the annual dues of $25 per household, and to make an additional donation to the Schwarm Scholarship fund, the Emory & Geri Scholarship Fund, or the Pond Restoration fund. You can also join the IPA, renew your membership, and pay dues and contributions by logging onto the IPA website (https://www.indianponds.org/) and clicking "MEMBERSHIP" at the top of the homepage, which will show options for "How to join", "Membership application form", and "Payment information".

Both the membership dues and any donations are tax-deductible as the IPA is a 501(c)(3) organization. We look forward to your support so we can continue our mission to protect and preserve the health of our three ponds.
Thank you.

Maurice (Butch) Roberts

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

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A WORD FROM THE PRESIDENT

In case you haven't heard, the Cape has a water problem: https://www.nytimes.com/2023/01/01/climate/cape-cod-algae-septic.html?te=1&nl=the-morning&emc=edit_nn_20230102 This article was published by *The New York Times* on January 1, 2023. *NYT* summarizes our wastewater problem that is becoming evident as a serious water problem. It has become clear to some of us that the Town of Barnstable does not have the financial and political willpower to confront this issue with the resources that are needed to resolve the problem. Barnstable has experienced years of rapid development without the necessary infrastructure to support that level of growth. The Town's Comprehensive Wastewater Management Plan does not address the phosphorus issue and even with its 30-year time horizon, it does not consider the septic systems within the groundwater flows that feed our three ponds. If this problem isn't effectively addressed, the quality of life on the Cape will be seriously impacted.

Because of the diligent efforts of the past Indian Ponds Association's Board of Directors and membership, we have managed to keep our three ponds in good condition. We know the problems and how to solve them without a massive tax increase or heavy burden upon our membership. Our bi-weekly water sampling and the pond studies that we have funded have allowed us to confront our problems as they have developed. And to be fair, we have had very good support from the Town of Barnstable in all our endeavors. But times have changed, and the Town is no longer able to provide us with the assistance that we are requesting and that science tells us is needed.

Today, we have a very enthusiastic and energized Board of Directors, determined as ever to carry out our mission to protect and preserve the quality of our ponds. Realizing that there is strength in numbers, we have established liaison members for the Town Council, the Conservation Commission, the Marstons Mills Village Association, the Marstons Mills Historical Association, the Barnstable Land Trust, the Association to Preserve Cape Cod, and the five homeowners' associations within our footprint. But all this work would be of no effect without your support. Please heed our call for your membership and submit your dues either with the enclosed envelope or online at www.IndianPonds.org.

Maurice (Butch) Roberts

TALE OF THREE PONDS

Introduction

This is a story of three ponds in Marstons Mills that are suffering from excessive phosphorous: Shubael Pond, Long Pond, and our Mystic Lake. All three ponds have been impacted by excessive phosphorus loading which has resulted in cyanobacteria outbreaks in varying degrees, from requiring warnings to outright bans of swimming and water contact. All three ponds are on the Town of Barnstable's priority list and each have undergone extensive scientific evaluations relative to their current conditions. However, the recommended solutions are different for each pond. This article will attempt to explain in laymen's terms why significantly different solutions are recommended and what might be next.

First, we need to explore how phosphorus gets into a pond and how it might exit the pond. This is called the "phosphorus budget". Essentially, there are internal sources and external sources. For ponds in our area, the external sources are surface water runoff, groundwater, and bird and atmospheric sources. The internal source is the decomposition of organic material (e.g. dead plants and animals) that has accumulated in the sediments over time. Phosphorus binds well with iron molecules in the sediments under aerobic conditions (oxygen present), but uncouples from the iron and enters the water column under anaerobic conditions (no oxygen present) where it becomes available to support the growth of algae such as cyanobacteria. So how does pond water become anaerobic? In very simplistic terms, plants and animals living in the water consume oxygen. Pond water oxygen is produced naturally by wave action, by connection with the air at the pond surface, and by aquatic plant photosynthesis. When water near the surface is at or below the temperature at the bottom of the pond, there is thermal mixing of the water. This mixing causes the water to have fairly constant oxygen levels from top to bottom in the pond. However, as the upper layer of the pond warms in the summer months, the water stratifies and mixing becomes less effective at replacing the oxygen in the lower levels of the pond. In deep ponds, little or no light penetrates to the lower depths making it impossible for green plants to grow there and produce oxygen via photosynthesis. Bacterial decomposition of organic material gradually uses up the available oxygen leading quickly to anaerobic conditions.

Whereas nitrogen, which is also needed for plant growth in a pond, can exit via groundwater (about 1 foot a day), outflow streams, or into the atmosphere as a gas through a process called denitrification. Phosphorous, on the other hand, moves very slowly through groundwater (about 3 feet a year), with very little exiting via an outflow stream (if one exists) in the form of plankton or detritus. In actuality, very little if any phosphorus can naturally exit a pond. Phosphorus residing in pond sediments will remain there indefinitely unless physically removed by mechanical dredging (which is highly disruptive and extremely expensive). Aeration can be used to accelerate the natural decomposition of organic material and help prevent the accumulation of excess phosphorus. Lastly, periodic chemical treatments with alum or Phoslock can neutralize the phosphorus in the sediments and make it less available to fuel the growth of unwanted algae. Now that we have had our brief lesson in pond ecology, I will discuss the three ponds in question as they each present different scenarios.

Relevant pond data

Surface area: Two of the three ponds are very similar in surface area, whereas Mystic Lake is threefold larger. Therefore, the phosphorus input from the surface area differs in the case of Mystic Lake.

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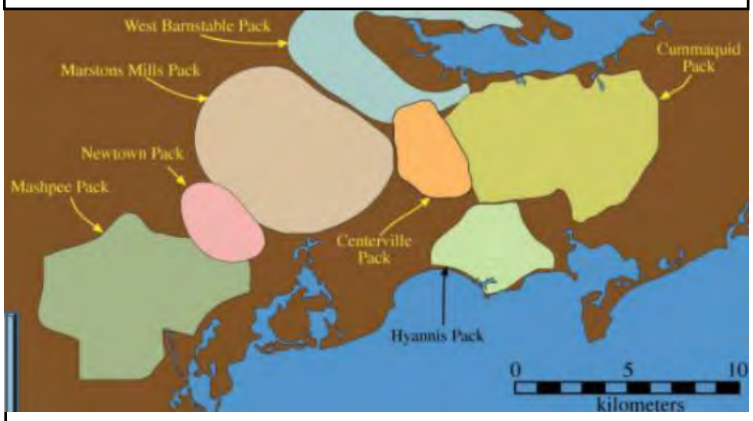
THE EASTERN COYOTES OF CAPE COD

The Eastern Coyote found on the Cape are hybrids. Biologists reckon dwindling wolf populations in southern Ontario caused them to breed with coyotes about 100 years ago, and with dogs about 50 years ago, resulting in the Eastern Coyote. In the northeast the coyote's DNA is roughly 60- 65% western coyote, 25-30% eastern and grey wolf, and 10% domestic dog. They typically weigh 30-50 pounds and are approximately twice the size of the western coyote. They prefer "edge habitat" areas (where one habitat type meets another such as where the tree lines of a forest meet an open area with an abundant food supply). Developed areas are also attractive as food is plentiful and there is less human hunting (though in Massachusetts it is apparently legal to shoot a coyote from your house in season). Their dens are located in secluded areas under the roots of trees, in caves, under boulders, dug into the side of a hill, and sometimes even under human structures like a deck or shed. Most coyote families dig multiple dens in advance, so they can switch quickly if needed.

A typical pack has 4 members: the breeding pair and two offspring. They mate mid-winter and deliver an average 5 pup litter mid-March to early May. The juveniles begin to disperse and find their own territory in mid to late fall. The population peaks in October through November.

The Indian Pond coyotes are part of the Marstons Mills Pack



Home range/territory: Home range means the area coyotes use versus territory which is the part of the home range they guard from others. They average 5-10 square miles in suburban areas, and 15-20 in more rural areas. They scent mark and use their scat to communicate and guard the perimeter of their territory. Their scat is rope-like and typically filled with hair and bones. They often move 10-15 miles per night.

Diet: Coyotes are opportunistic predators and omnivores who predominantly eat small mammals like mice, voles, rabbits, and woodchucks. They are also known to eat animals as large as deer and seals.

Activity patterns: Coyotes are largely active at night but can be active at any time of day. In summer when they are raising pups, they are the most active. In early summer they move from dens to "rendezvous sites" where they meet, forage, rest and train their pups. They like thick brushy cover near water and open areas so they can spot danger. Jonathan Way, a biologist and coyote researcher here in Barnstable, calls Cape Cod's cranberry bogs in summer 'coyote puppy-training centers.'

Culling; Coyotes were first spotted in the Northeast in the mid-to late 1940s. MassWildlife says the population has stabilized – that the uptick in sightings, and the attacks are linked to the coyotes having access to human associated food sources and becoming habituated to humans, and therefore more aggressive. However, they just granted Nahant permission to hire a sharpshooter to cull the coyote population. MassWildlife told WGBH, "it would require very high levels of lethal removal in order to reduce coyote populations: a removal of 70% or more of a coyote population year after year in order to see a decrease in the number of coyotes on the landscape."

I contacted Barnstable Fish and Wildlife to see if I could file a report on my dog's death by coyote. The woman said " Oh no, we don't track them. There's no need, it's just part of living on Cape Cod."

Wendy Bierwirth
Marty Roberts

FLOATING TREATMENT WETLANDS: A POSSIBLE CURE FOR POLLUTED CAPE COD PONDS?

The Town of Barnstable has announced that it is considering the use of an innovative technique, at least to Cape Cod, to assist in reducing the amount of phosphorus in a pond that, since 2018, has been plagued with cyanobacteria blooms that have resulted in closures for human usage. The pond in question is Long Pond in Marstons Mills where a recent study has determined that about 90% of the phosphorus entering that pond is coming from adjacent residential septic systems. Phosphorus is the principal nutrient which fuels the growth of cyanobacteria, other algae species, as well as all other aquatic vegetation found in freshwater ponds.

So, what are floating treatment wetlands and how do they help to reduce phosphorus in freshwater ponds? First of all, the use of regular wetlands containing dense aquatic vegetation to remove contaminants and nutrients from water flowing through them is widely practiced around the world. The nutrients are absorbed via the root systems of the wetland plants and thus are removed from the water. Recognizing the usefulness of plants in wetlands in removing both phosphorus and nitrogen, floating devices containing aquatic plants have been found to be equally effective in removing nutrients from the water bodies where they are deployed. Consequently, such devices, termed "floating treatment wetlands", have been widely used, and scientific studies have confirmed their effectiveness is reducing phosphorus from the water.

Floating treatment wetlands are small artificial floating platforms containing aquatic emergent plants which are allowed to grow in water that would otherwise be too deep for them. The plant roots spread through the floating platforms and down into the water creating dense columns of roots with lots of surface area. The plants thus take up nutrients, and the roots and platform material also provide extensive surface area for microbes to grow and form a slimy layer of biofilm where the majority of nutrient uptake occurs in the device. When the plants (e.g. cattails) are routinely harvested from the platforms, the nutrients are effectively removed from the pond.

Details are not available as to the size, number, or construction materials for the floating treatment wetlands proposed for Long Pond. Likewise, it is uncertain how much surface area of the pond would need to be covered by these devices to achieve the desired level of nutrient reduction. A pilot study of some duration will be needed to answer these questions. In addition to removing nutrients, these devices would also serve as habitat or cover for aquatic and terrestrial wildlife such as fish, waterfowl, and the like.

Of the three Indian Ponds, Mystic Lake has suffered the most over the years with cyanobacteria blooms and might possibly be a future candidate for floating treatment wetlands. However, Mystic Lake differs considerably from Long Pond in Marstons Mills. Whereas Long Pond is only 55 acres in size, has a maximum depth of 20 feet, and about 90% of its phosphorus load originates from septic systems, Mystic Lake is 150 acres in size, has a maximum depth of 47 feet, and, according to several scientific studies, only about 8% of its phosphorus load comes from septic systems (about 77% comes from internal regeneration of former agricultural input, e.g. cattle manure, crop fertilizer). Therefore, it is uncertain whether floating treatment wetlands would be the appropriate means for reducing the excessive phosphorus load in Mystic Lake.

As has been pointed out numerous times in this newsletter, the most cost-effective control measure for Mystic Lake would be an alum treatment. To be effective over the long term, such a treatment should ideally be administered every 15–20 years, which, from a municipal management perspective, should be viewed as infrastructure maintenance in the same way that municipal roads and other publicly owned structures and entities require periodic repair and upkeep.

Emory D. Anderson, PhD

TALE OF THREE PONDS *(Continued from Page 3)*

Parameter	Mystic Lake	Shubael Pond	Long Pond
Surface area (acres)	148	56	50
Maximum depth (meters)	14.3	11.8	7
Stratification	Yes	Yes	Yes
Refresh rate (years)	1.0	1.8	0.54–1.2

Depth and stratification: Long Pond is significantly shallower than the other two ponds. Because of this difference, Long Pond does not experience stratification of the water column as do the other two ponds in the summer months and, therefore, does not develop an anaerobic condition. This results in very little phosphorus coming from the sediment at the bottom of Long Pond.

Refresh rate: All three ponds have a very slow refresh rate, with the exception of Long Pond whose rate significantly increases in winter as the groundwater level rises. Because the Long Pond refresh rate slows dramatically in summer when the water temperature is highest, the environment is similar to the other two ponds in terms of being conducive to the conversion of the excess phosphorus into algae and cyanobacteria growth.

Sources of excessive phosphorus

Source of phosphorus	Mystic Lake	Shubael Pond	Long Pond
Wastewater	8%	59%	86%
Road and driveway	2%	6%	3%
Roof runoff	1%	1%	2%
Pond surface	12%	11%	9%
Internal sediment	77%	23%	0%

Mystic Lake: Unlike the other two ponds, wastewater contributes only 8% of the excess phosphorus, but Internal sediment is 77%[1] of this excess. As the existing wastewater systems age, this certainly might be a significant factor in the future, but not in today's environment. This lake is deep enough to experience significant stratification during most of the summer leading to an anoxic condition which causes the release of phosphorous from the bottom sediments. Because of dairy farming on the north end of Mystic Lake from the early 1920s until the early 1960s, a huge amount of phosphorous-rich manure and fertilizer found its way into the lake. Most if not all of that phosphorous still remains in the lake. With the warming of the water from climate change and the lake's slow refresh rate, the environment is ripe for cyanobacteria growth. This growth has been slowed in the last few years by an alum treatment in 2009. That treatment, however, is nearing its useful lifespan (15–20 years) and based on his 2020 pond study[2], Dr. Ken Wagner has recommended a second alum treatment as soon as possible.

Shubael Pond: This pond also has an anoxic zone due to late summer stratification. The anoxic area is much smaller in Shubael Pond than in Mystic Lake in large part due to the bathymetry of the pond. The pond is not as deep, and the deep part is smaller. Shubael Pond does, however, have a number of septic systems within the 300' border that have existed for at least 20 years or more. These systems are also upstream of the groundwater flowing into the pond. The recent pond study[3] determined that, on average, the pond's sediments contributed about 23% of the phosphorus load while septic systems were responsible for 59%. The study concluded: *"The only options that attain the TP threshold mass are those that address watershed wastewater TP reductions (i.e., sewering or innovative/alternative phosphorus-reducing septic systems). In-pond treatments to reduce summer sediment TP regeneration are insufficient on their own to achieve the TP threshold."*

[1] First Order Assessment of the Indian Ponds (Mystic Lake, Middle Pond, and Hamblin Pond) Final Report. March 2006. https://www.indianponds.org/_files/ugd/560e78_aea258f30cdc4153b27adad72d0e9f02.pdf

[2] First Order Assessment of the Indian Ponds (Mystic Lake, Middle Pond, and Hamblin Pond) Final Report. March 2006. https://www.indianponds.org/_files/ugd/560e78_aea258f30cdc4153b27adad72d0e9f02.pdf

[3] Shubael Pond Management Plan and Diagnostic Assessment Final Report. April 2022.

https://barnstablewaterresources.com/wp-content/uploads/2022/08/ShubaelPondManagementPlanRevandRecommendation_July2022.pdf

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TALE OF TWO PONDS *(Continued from Page 6)*

Long Pond: This pond is much shallower and, for the most part, does not develop stratification and a resulting anoxic zone. Furthermore, with the exception of the dry summer months, the refresh rate of this lake is much faster than the other two ponds. Lacking any outflow stream, no removal of phosphorus would be possible during these months. In summer, this refresh rate slows allowing cyanobacteria to grow at a much more rapid rate. The Town's pond study[4] determined that approximately 86% of the excess phosphorus comes from septic systems within the 300' boundary of the pond and upstream of the groundwater inflow. The study concluded: "*The planned sewering of the entire Barnstable portion of the Long Pond watershed is not necessary to attain acceptable water quality. Sewering a maximum of 18 to 21 houses, rather than all 26 to 29 currently adding TP to the pond, would be sufficient to attain the proposed TP target for acceptable water quality.*"

No solution in near future

We have three ponds with an excess phosphorus problem, each of which has been studied extensively and professionally. Because of the unique pond environments, different solutions are in the offing. Unfortunately, despite having answers to the problems in each pond, the Town is unable to solve all of these problems simultaneously.

Mystic Lake simply needs an alum treatment estimated at $200,000. While the Town does not dispute the findings of the pond study, it does not view conditions in Mystic Lake as being of sufficiently high priority to be included in its current capital budget.

Shubael Pond has a number of septic systems which, if addressed, would solve the excess phosphorus problem. The Town has determined that it would be feasible to include these systems in its Comprehensive Wastewater Management Plan and to include them in the Second Phase of the Plan slated for construction in the next 10–20 years. In the meantime, they have approved $95,000 to fund a small alum treatment which is hoped will provide some relief from the cyanobacteria blooms currently being experienced during the late summer months.

Long Pond's only recommended solution is sewering about two-thirds of the contributing houses. This could be done either with the municipal system or with alternative/innovative phosphorus removal on-site or community systems. The current Comprehensive Wastewater Management Plan provides for municipal sewering of these systems in its third phase, 20–30 years from now. In the meantime, the Town is looking at floating treatment wetlands, discussed in another article in this issue, and the Friends of Long Pond Marstons Mills are looking for grant opportunities to fund the installation of 23 alternative/innovative septic systems that would remove phosphorus from the effluent. There are currently four such systems that are approved for the piloting stage.

[4] Long Pond Management Plan and Diagnostic Assessment Final Report. September 2022. https://barnstablewaterresources.com/wp-content/uploads/2022/10/LongPondManagementPlanandRecommendation_Oct2022.pdf

Maurice Roberts
Emory Anderson
Bill Hearn

OVERVIEW OF POND TESTING AND WATER QUALITY

The annual testing of the water in the three Indian Ponds, done at roughly two-week intervals from spring to fall, was completed for 2022 on October 13. Data were collected over the deepest point of each pond including Secchi disk readings to gauge water clarity and measurements of temperature and dissolved oxygen from the surface to the bottom at 1-meter (m) intervals. These data, plus those for 2011–2021, can be found in spreadsheet format on the IPA website (https://www.indianponds.org/pond-testing-reports). The IPA also participated in the Cape Cod Pond and Lake Stewardship (PALS) program on April 27, May 5, and September 1 when, in addition to the above-mentioned measurements, water samples were collected at various depths for analysis of nitrogen, phosphorus, alkalinity, chlorophyll *a*, and pH at the UMass Dartmouth SMAST laboratory. Volunteers who assisted in 2022 with pond testing were Emory and Geri Anderson, Peter Atkinson, John Chiniara, Lindsey Counsel, Greg Cronin, Bob Derderian, Jim McGuire, Kristina Norgard, Peter Smith, Amber Unrah, and Cameron White.

Temperature. The results of the bi-weekly testing indicated that the ponds behaved much as they do every year transitioning from low surface temperatures in the spring, to high temperatures in mid-summer, and back again to low temperatures in the fall. The warmest surface temperature recorded this summer was 27.7°C (81.9°F) in Hamblin Pond on July 28, which was about the same as the warmest recorded in 2021. At the time of the first testing in April, each pond had nearly uniform temperatures from surface to bottom, which changed as the ponds warmed throughout spring and summer resulting in cooler temperatures at deeper depths. By the time testing concluded in October, water temperatures had transitioned back to fairly constant levels between 16 and 17°C (61–63°F) from the surface down to about 10–11 m in both Mystic Lake and Hamblin Pond, and all the way to the bottom in the shallower Middle Pond.

Dissolved oxygen was observed at all depths from surface to bottom in all three ponds in April (early May in Hamblin) and again in mid-October at the final testing, except in Hamblin Pond where, because of its greater depth, oxygen was essentially lacking at 14 m (46 ft) and below.

Water clarity, as measured by Secchi disk, provides a quick measure of general pond condition and is influenced by suspended material such as algae in the water column. Of the three ponds, Hamblin had the highest clarity, with readings averaging 5.9 m (19.4 ft) (compared to 6.4 m or 21.0 ft in 2021), with Middle Pond next averaging 4.4 m (14.4 ft) (4.5 m or 14.8 ft in 2021), and Mystic Lake the lowest averaging 3.2 m (10.5 ft) (less than the 3.4 m or 11.2 ft in 2021).

Cyanobacteria testing was done by the Town in collaboration with the Association to Preserve Cape Cod (APCC). Of the three ponds, only Mystic Lake tested positive for levels of cyanobacteria toxin several times in June sufficient to warrant pet advisories for about three weeks.

Summary. Taking into account water clarity, dissolved oxygen measurements, and presence of cyanobacteria, Mystic Lake again clearly exhibited the poorest water quality of the three Indian Ponds. In recent years, I have stated repeatedly that water clarity alone is a sufficient indicator of pond water quality. In the case of Mystic Lake, poor water clarity simply reinforces what has been verified by more detailed analyses of water samples: the lake contains excessive amounts of phosphorus that are readily available to fuel the growth of undesirable algae. In contrast, Middle Pond and Hamblin Pond are presently in good condition, the latter being so because of two alum treatments applied in 1995 and again in 2015. Because alum treatments are only effective for 15–20 years, and since the first such treatment for Mystic Lake was in 2010 (and was of a lower-than-recommended dosage), it is now time for a second treatment and at an appropriate dosage.

Emory D. Anderson, PhD

THE OLD COOT

Although I don't hear the term "Old Coot" being used in a derogatory manner as much any more as I used to, I still hear it once in a while. Nowadays, I wonder if the people I used to hear it from ever realized they were maligning one of the most wide-spread birds in the world. There are at least twenty sub-species of the Coot and they are located throughout North America (U.S.,Canada, & Mexico), and in Eurasia, from the west coast of Spain, France, and Great Britain, to the east coast of Asia and into Australia. My wife, Claire, and I have seen them in the canals of Florida near Miami, in Paracas in Peru and in Copenhagen on a pond near the statue of "The Little Mermaid". Recently I saw a flock of them on the Mill Pond in Marstons Mills.

They are quite recognizable. They are a plump waterbird with a white bill and a white plate on their forehead leading down to their bill, which is tipped with a ring of black. They have bright red eyes and a spot of red at the top of the white plate. They are not primarily divers and usually feed from the surface, but will occasionally dive. They are predominately a black or dark brown bird and may appear chickenlike when they are out of the water and walking around on land. Youngsters are pale grayish and have a pale bill. Right after hatching, chicks have bare red spots on their heads and a red bill.

Coots are most often found in ponds, marshes, along lake edges and in roadside ditches. They can most often be confused with Gallinules and Swamphens. They are awkward fliers and require long running takeoffs to get airborne. They often mix with ducks, but they are closer relatives of Sandhill Cranes and Rails than of Mallards or Teals. In the winter they can be found in large rafts of mixed waterfowl numbering up to several thousand individuals.

Although it swims like a duck, the Coot does not have webbed feet like a duck. Each one of the Coot's toes has broad lobes of skin that help it kick through the water. This lobe of skin folds back every time the Coot lifts its foot so that it doesn't hinder walking on dry land though it helps to support the bird's weight on wet or muddy ground.

The ecological impact of this bird can be impressive. One study from Virginia estimated that the local Coot population consumed 216 tons of vegetation per winter.

Dave Reid

LESSONS FROM BITSY
COEXISTING WITH LOCAL WILDLIFE - THE EASTERN COYOTE

Just because we don't see them, doesn't mean they aren't nearby or that we shouldn't check to be sure if they are not lurking in the bushes or just around the corner. As development increases on the Cape, local wildlife has had to learn to live with increasingly restricted space, and the eastern coyote, with a population over 1 million, is incredibly adaptable.

We learned the hard way at 7:30 p.m. on September 30, 2022 when a coyote snatched our 10 lb. papillon literally under my nose. I want to share what we've learned from her loss in the hope it might save others from a similar experience.

We were petrified when we first moved to the Cape with 3 small dogs, having been aware of the coyote population. With time we grew more lax, letting them loose to play fetch with us inside a 3 ft. fenced in area of the yard. I hadn't seen a coyote in over 2 years and never on our property during waking hours (had seen one around 2 a.m. on a camera a year or so ago). Just after dusk on 9/30/22, I took my two little Papillons out front at night. I stood on the 3rd step of our front stoop looking down at Bitsy as she sniffed 3-4 feet away. Just as I started to tell her to hurry, she morphed into a whirlwind swoosh of sable brown with a white middle, then just as suddenly the space on the lawn she'd occupied was empty. There had not been the tiniest sound. It took me a few moments to realize what had happened. I shouted at the top of my lungs and, slowed by the slippers I was wearing, ran after them into the darkness but they had already disappeared into the adjacent wood. Six of us searched the area to no avail.

I learned from one neighbor several doors down with 2 Great Danes, she had a standoff with an aggressive coyote who was threatening one of the dogs. She joined us in the search and after a while said, "She's gone, Bitsy's gone. You're not going to find her. You didn't hear anything because they grab the neck of their prey for an immediate kill. Bitsy didn't know what hit her. It was quick. "

They say not to beat yourself up about things like this. Easier said than done. I didn't have her on a leash. I had slippers on, not shoes to run unimpeded through the woods. I didn't have a good flashlight, and I was standing on the stoop, where, if the coyote approached close to or below the house's front landscaping it may not have even known I was there until it was right in front of me. I have learned much from Bitsy.

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LESSONS FROM BITSY *(Continued from Page 10)*

WHAT BITSY'S SNATCHING HAS TAUGHT US:

1. Be aware that changes in our environment affect wildlife as well as humans. The drought changed the Indian Ponds' environment. One can now walk around the entire shoreline of both Mystic and Middle Pond. Which means, the coyotes, foxes, and fisher cats can as well expand their hunting range.

2. When you take your dog out after dark, keep them safe by taking a few minutes to prepare:
   - Be shoed and dressed to be able to run if needed.
   - Have a really good flashlight. I bought one that is 120,000 lumens and has a strobe feature that coyotes don't like. We keep it charged by the front door.
   - At night, turn on all the outside lights and flicker them for a few seconds to get the attention of any unwanted creatures.
   - Go out alone first, it only takes a few seconds, make loud noises.
   - **MOST IMPORTANT:** *If you do see a coyote,* ***harass or haze them by using your body language to communicate that you're the dominant individual,*** *and that this is your territory. You're teaching it, using negative conditioning, that when you come into my territory — my home — something frightening is going to happen to you that could threaten your life.*

3. **DO NOT FEED OR LEAVE PET FOOD OUTDOORS.** Feeding will alter the animal's behavior, they will become dependent upon and less wary of humans. Habituated coyotes are more aggressive.
4. **DO NOT APPROACH or TRY TO PET.** Although coyotes do not pose an imminent threat to humans, do not provoke them by coming too close.
5. **SECURE YOUR GARBAGE.** Coyotes, like dogs & raccoons will knock over trash cans or tear open trash bags left in the open.
6. **DO NOT FEED WILD BIRDS OR CLEAN UP AFTER YOUR FEEDER.** Seed left on the ground can attract coyotes. Also bird feeders with standing water are targets for coyotes and other animals.
7. **SECURE YOUR PETS.** Coyotes and foxes view pets as potential food items. For the safety of your animals, pets should not be left outdoors unattended.
8. **CLOSE OFF CRAWL SPACES UNDER PORCHES AND SHEDS.** Coyotes use such areas for resting and raising young.
9. **CUT BACK BRUSHY EDGES IN YOUR YARD.** These areas provide cover for coyotes and their prey.
10. **PET FENCES** should be at least 5 feet tall (you can buy extensions to add to existing fencing. Check to be sure they cannot dig underneath.

Wendy Bierwirth
Marty Roberts

"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

INDIAN PONDS ASSOCIATION, INC.
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FORWARDING SERVICE REQUESTED