

# Pawtuckaway Lake Milfoil

## What is Milfoil?

Milfoil is an underwater aquatic plant that grows in a wide variety of ponds, lakes, and streams. There are many varieties of milfoil, some native and some invasive. Native milfoil, as the name might imply, is a welcome resident just like many other native plants we have in our lake. The native plants provide food and shelter for fish and other aquatic animals and they oxygenate the water to keep a healthy biodiversity in the lake. There are five varieties of native milfoil in New Hampshire although we have only found one variety so far in Pawtuckaway Lake. Native aquatic plants also help to reduce the likelihood of “weeds” establishing themselves in the lakebed just like a healthy carpet of grass on a lawn helps to reduce the growth of weeds. In the case of a lake, the “weeds” are invasive plants such as milfoil. There are two types of invasive milfoil present in New Hampshire lakes, variable and Eurasian. So far, we have only found variable milfoil.



Variable Milfoil Sample

## Why is invasive milfoil a concern?

Like most invasive plants, milfoil grows quickly and has no natural controls. Under optimal conditions milfoil can grow an inch or more a day. Left unchecked, milfoil quickly out competes native vegetation and develops into thick beds that reach the surface. In time milfoil will completely cover a lake surface wherever the water is shallow enough for the plants to root. That depends on the clarity of the water

since milfoil needs enough light to grow. In Pawtuckaway that means that milfoil can probably establish itself in water up to about 14 feet deep. Approximately 50% of Pawtuckaway Lake is less than 14 feet deep and, of course, 100% of the shoreline is as well. As soon as widespread milfoil develops it renders the lake nearly useless for swimming, boating, and fishing. Even though fishermen like weeds because it provides cover for fish, a thick bed of milfoil is difficult to motor through or cast into. In addition, ultimately, the massive amounts of decaying plant matter create a eutrophic environment in a lake, reducing the oxygen levels, encouraging algae, and suffocating the fish.



This is what an area infested with milfoil looks like



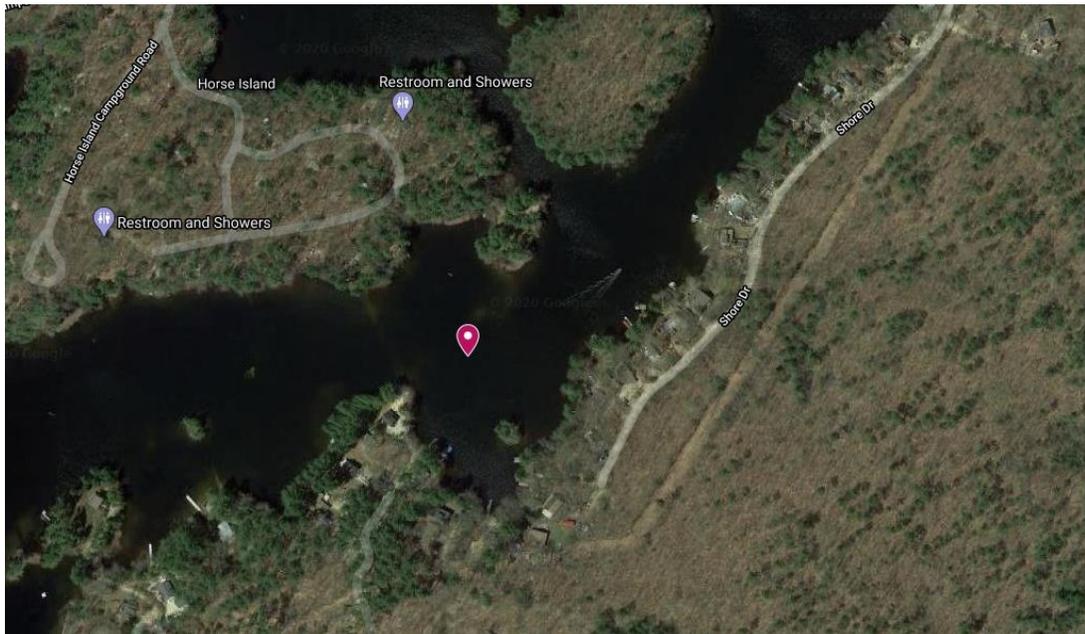
Close-up view of variable milfoil

Milfoil can spread through root runners but the primary means is by fragmentation. Milfoil stems are quite easy to break and will then float on or near the surface for up to 10-14 days before they sink and root. It only takes a few inches of stem to propagate into a new plant. Plants can be easily fragmented by the turbulence caused by a prop, a paddle, or even a duck passing nearby. They can also be fragmented by a fisherman casting into the area and catching a piece of milfoil on a lure. These fragments can easily float anywhere on the lake and take root. While variable milfoil is our current issue, there are other invasives in other lakes in New Hampshire and neighboring states such as Eurasian milfoil, fanwort, parrot feather, water chestnut, and many others so we need to be vigilant about more than just variable milfoil to keep the lake viable.

### History of Milfoil in Pawtuckaway Lake

Variable milfoil was first discovered in Pawtuckaway Lake in 2015 in the South Channel near the mid-channel markers. Since this is very close to the Horse Island boat launch we assume that the milfoil was introduced at that site on a boat or trailer. It was discovered by a passing stand-up paddleboarder and

had reached significant size before it was noticed. NH DES was called in to survey the areas and remove the plant.



Original Milfoil Location 2015

Soon after, the PLIA formed a Milfoil Team to do more detailed underwater surveys to find and mark any new growth so that it could be removed by certified divers from NH DES. In that year we did find additional milfoil in the general area of the Horse Island boat launch which was also removed. Since that first year we have continued to improve our search procedures and our capabilities to mark and remove milfoil. In 2016 and 2017 we continued to depend on a volunteer snorkeling team to locate milfoil and NH DES divers to remove it.

In 2018 we added SCUBA and hookah divers to the team to enable a more thorough and efficient search capability. We also expanded our search perimeter up and down the South Channel and, on occasion, searched other areas of the lake such as Fundy and Deep Cove. One of our resident divers also got certified as a Weed Control Diver so that we could remove milfoil without having to depend solely on NH DES divers.

In 2019 more resident divers volunteered to join the Milfoil Team. As of 2019 we had 8 members on the Milfoil Dive Team including four who are certified to remove milfoil

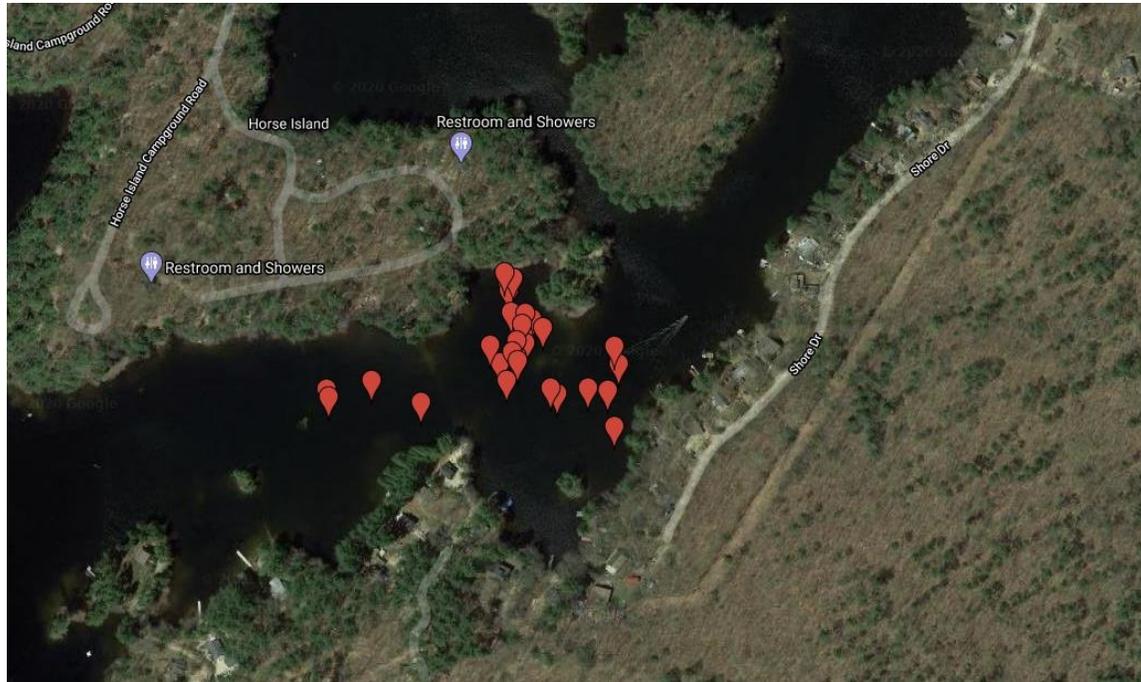
Eight people have also volunteered to act as support kayakers to assist the Milfoil Team in their searches. They provide safety for the divers, warning and directing boat traffic, supporting milfoil locating and removal efforts, and informing boaters about what we are trying to accomplish.

Over these years our main focus has been the South Channel. We have broken it up into zones for search purposes. We search one zone in each dive session. Normally the team dives once a week on Sundays but also sometimes during the week if people are available.



South Channel Search Areas

Despite the additional team members and capabilities and the increasing hours the team has volunteered, milfoil continues to spread in the lake. In 2016, we removed 25 gallons of milfoil, in 2017 we removed 15 gallons from the locations shown on the map below.



Milfoil Locations 2017

In 2018 the milfoil had spread further north in the South Channel and also into Gove's Cove. The Gove's Cove infestation is especially noteworthy since it shows how quickly milfoil can root far from the original area. This was probably caused by a fisherman who had a fragment on his lure which was deposited at the Gove's Cove dike location. We removed 11 gallons that year.

In 2019 we found milfoil in all the previous locations as well as in a small cove just north of the South Channel. This area was particularly bad and we removed over 20 gallons from that small cove alone. In 2019 we removed 129 gallons of milfoil. The increase is obviously alarming and demonstrates how difficult it is to eradicate milfoil but also reflects the increased search capability of the Milfoil Team and its effectiveness in locating and removing milfoil.



Milfoil Locations 2019

Keeping control over milfoil and other invasive species is a multi-pronged effort. In addition to the efforts of the Milfoil Team to locate and remove milfoil, we also maintain a very active Weed Watcher and Lake Host program.

Weed Watchers are volunteers who are assigned a portion of the lake to check and report any suspicious growth. They put in hundreds of volunteer hours a year searching. It is noteworthy that the original infestation, as well as those in areas at the north end of the South Channel and in Gove's Cove, were all found by Weed Watchers or other lake residents who kept a close eye on the water and reported unusual growth.

Lake Hosts are a team of paid and volunteer workers who put in thousands of hours every summer to perform checks of boats and trailers at the Fundy boat launch as well as inside the entrance of Pawtuckaway State Park. They are the first line of defense in keeping additional invasives out of the lake. In addition to finding and removing vegetation, they also serve a very important function in educating boaters about the need to "Clean, Drain, and Dry" their boats and trailers to prevent further spread of invasive species.

## Outlook

While the increasing amount and spread of milfoil is discouraging, we still have far less milfoil than many other lakes and it has not yet started to materially impact the use of the lake

So far we have been able to remove milfoil soon after we locate it through hand-pulling by our volunteer certified divers. This is the preferred method of dealing with milfoil. It costs the least, has the lowest impact on the lake ecology, and provides the lowest chance of regrowth or fragmentation. .

We hope that, through the multiple programs mentioned above, we can continue to keep milfoil under control.

If milfoil gets beyond this manual capability for removal, the next step would be DASH (Diver Assisted Suction Harvesting). This still involves divers hand pulling the milfoil but uses a large suction hose to more efficiently get the plants to the surface where they can be bagged rather than having the divers put milfoil in mesh bags underwater as we do now.

If that is not sufficient, the next step would be the use of herbicides. There are several choices of chemicals but all are expensive and have varying side effects on native plants and the environment. They also do not do a 100% job in killing milfoil and usually need to be repeated every few years. Just like weed killer on a lawn they are a suppression vehicle not a cure. Depending on many factors, including the specific herbicide and the area to be covered, herbicides cost between \$500 and \$1000 per treated acre. For reference, treating all the known locations of milfoil with herbicide would cost between \$30,000 and \$60,000.

## What can lake users do?

First and foremost, follow the same dictates that we have heard over the years, “If you see something, say something”. As mentioned above, all the initial findings of milfoil were noted by Weed Watchers or casual lake users. Do not be afraid to call someone if you see something odd even if it doesn’t appear to be milfoil. There are many other potential invasive plants that could infest our lake. We would rather have 100 reports that turn out to be negative than one patch of a potential invasive that is seen but unreported. You can contact any Weed Watcher you may know or contact the Co-Captain of the Weed Watchers (Steve Soreff [soreffs15@aol.com](mailto:soreffs15@aol.com) 603 895-6120 ) or the Leader of the Milfoil Team (Neil Santos, [neilsantos@comcast.net](mailto:neilsantos@comcast.net), 603 437-8468). Note carefully the location where you saw the growth.

Lake users should also use care when entering or leaving the lake to make sure that all vegetation is removed from trailers, boats, and gear so as not to further infect Pawtuckaway Lake or other lakes.

Try to avoid areas where milfoil has been found especially when you see the orange floats that mark existing milfoil plants. Getting near these could fragment the plant or accidentally cut the cord which holds the marker in place.

Finally, lake residents can be good ambassadors by helping visitors understand what is happening in the lake and advising them about how to assist in efforts to keep the lake healthy.