

Littorally Speaking

Call to Action in Washington County

Responding to Maine's newest and northernmost invasive milfoil infestation



by Roberta Hill
LSM Invasive Species Program Director

Hi Roberta,

I received a plant sample from Brad Richard, a local State of Maine warden who has a camp on Big Lake. Keying it out is giving me variable water-milfoil:

- tightly packed whorls of leaves, under .5cm apart
- 9-12 leaflet pairs per leaf
- 4-6 leaves per whorl
- lance shaped bracts that are more than 2x as long as the flowers seem to be (flowers are gone at this point)
- bracts have some serration under a hand lens

So I'm going to send it along to you all for verification. Brad noticed the plant growing in front of his camp. His family has had the camp for years. He had never noticed this plant before.

I'll get the paperwork filled out and get this in the mail today.

Joe

The email from Joe Musante arrived on the second day of October—typically a time when plant identification inquiries are beginning to slow down around here. (Joe, a biologist with the Passamaquoddy Environmental Department, and LSM Regional Coordinator for the Passamaquoddy tribal lands, is a long-time LSM partner and friend.)



Emergent stems with whorls of finely-serrated, blade-shaped bracts are diagnostic for invasive variable water-milfoil.

As I read Joe's message, my heart began to sink. I tried to remain optimistic—some native milfoils would key out similarly, but the mention of 'bracts with serration' was definitely unsettling. I asked Joe if he could take a photo of the flower-spike before packing up the plant, and within less than an hour, the photo arrived in my inbox. I

opened the file and as soon as my eyes hit the image on the screen, I knew exactly what I was looking at. The serrated blade-shaped bracts arranged in whorls along the emergent stem were unmistakable: this was, without doubt, variable water-milfoil (*Myriophyllum heterophyllum*).

One week later, I was on my way to Big Lake with John McPhedran, Denise Blanchette and Doug Sutor from Maine Department of Environmental Protection (DEP). Our goal was to meet up with Joe and Brad at Passamaquoddy Environmental Department headquarters in Princeton, and then to travel, by truck then boat, to Clifford Bay at the southeast end of Big Lake, where Brad had first observed the patch of milfoil.

Big Lake is the second-largest lake in Washington County and, covering 10,444 acres, it is also one of the largest lakes in Maine. The lake is located in and around the town of Grand Lake Stream, near the border with New Brunswick, Canada, and is part of a sprawling and much larger—roughly 17,000 acre—system (basically constituting the west branch of the Saint Croix River), known for its remote, wilderness beauty and extraordinary fishing.

Though depths of up to 70-feet do occur in the waterbody, the mean depth of Big Lake is only 12 feet. This means that the littoral zone (parts of the lake that are shallow and sun-filled enough to support the growth of rooted aquatic plants) extends far out from shore along much of the lake's 70-plus-miles of shoreline. In addition to the vast shallows, the lake is rich in tributaries, coves and islands, (28 islands to be exact!), all of which further increases the potential for invasive plants to move about unseen, while steadily gaining ground.

The boats slowed as we approached the small island along the southern shore of Clifford Bay, where Brad's family camp is located. No sooner were the scopes in that water, than we began to see the snake-like plumes of milfoil—at first spotty, soon everywhere. Motor off, we paddled gingerly around the perimeter of the densest patch, sadly, way larger than any of us had expected—roughly the size of a couple of football fields. Some of the plants had recently flowered. And though the once-emergent flower stalks were now flopped over in senescence and the plants themselves eager to break into fragments at the lightest touch, the tall bottle-brush-like stems were still defiantly erect, vibrant, formidable, menacing.

The patch was clearly well-established, but could this possibly be the pioneer colony?



Approaching Brittany Island in Clifford Bay where Brad first noticed the suspicious plants.

Is it possible Brad had serendipitously come upon the site of the initial introduction? With this tiny thread of hope, our minds leapt forward—well if this is the pioneer colony, there might still be time this year to control and contain it. The only way to know for sure if the milfoil was contained to this area, was to widen the scope of our survey.

Splitting up into two units to maximize direct observation, the boats proceeded in opposite directions around the bay. The sky was cloudy but bright, the winds light, and the water clarity good; we were able to cover most of the perimeter of Clifford Bay and some of the shallower off-shore areas. Our findings were not good. Much of the nearshore perimeter was dotted with individual and clustered milfoil plants. The plants were not only abundant and widespread, but also vexingly mixed in among the natives. We also found several additional large patches including one that encompassed the greater part of one large cove. Here, senescing flower stems were everywhere. In a nutshell, our findings revealed that the invasive milfoil was not, as we had all so keenly hoped, contained to the area near Brad's camp. Rather, the infestation was quite extensive throughout Clifford Bay, indicating that the invader has been present in Big Lake for a number of years.



The tall bottle-bush-like stems of variable water-milfoil were still defiantly erect, vibrant, formidable, menacing.

Which begs the next question. . . if variable water-milfoil is well established here in Clifford Bay, where else in the Big Lake might it occur? This is the question that LSM has been called upon to help answer. It will be our job to assist with a comprehensive survey of Big Lake and its associated flowage, beginning early next season. We will be working in the coming months, with the DEP and area partners, to organize and support as large a team of experienced volunteer surveyors as we

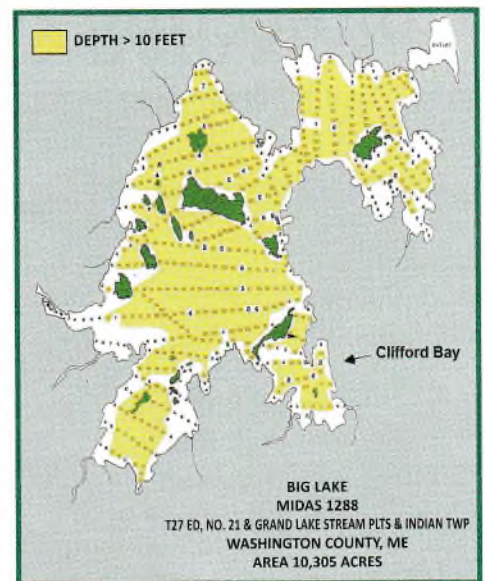
can muster. Our goal will be to complete the entire level-3 survey of Big Lake and associated flowage in 2020. This will require the careful scouring of roughly 100 miles of shoreline, plus a systematic search of vast shallow offshore expanses, zigzagging along an uncountable multitude of transects—the survey of Big Lake will be no easy feat.

Adding to the greater challenge of preventing the spread of this infestation to other area lakes, is the fact that Big Lake occurs in a part of the state where invasive aquatic species prevention and early detection programs are sparse to non-existent. On the prevention side, 91% of all lake groups with active Courtesy Boat Inspection (CBI) programs occur within Maine's 11 southernmost counties. Only 2 CBI programs occur in Washington County, 0.03% of the state's total. The statewide statistics for active Invasive Plant Patrol (IPP) programs is similar. Ninety-one percent of Maine's certified Invasive Plant Patrollers survey lakes in one of the eleven southern counties, and this, not surprisingly, is where over 95% of recent IPP surveys have taken place. As of 2019, less than 0.1% of statewide IPP activity has occurred in Washington County.

There are understandable reasons for the disparity. Most of Maine's known invasive aquatic plant infestations also occur in the south. Knowing aquatic invaders are nearby has a way of generating concern and inspiring action; believing one's local lakes may somehow be immune to such scourges tends to inhibit these motivating impulses. There are also simply more people in the southern counties, a larger pool from which enthusiastic lake stewards may leap into action. And of course, the lakeshores of more southerly lakes are more densely populated and more threatened by development, which has led over time to the growth of organized and engaged lake associations. Northern Maine is less accessible, with less economic opportunity; this often means fewer resources to devote to conservation programs.

And while all these factors add considerably to the challenge of responding swiftly and effectively to Maine's newest infestation, they also suggest some possible unique opportunities for moving forward:

- This new infestation in a remote, previously uninfested part of the state has



All areas in white on the map are littoral, capable of supporting rooted aquatic plants. The islands are shown in green; yellow indicates depths exceeding 10 feet. Depth analysis courtesy of Ross Wescott.

been a wake-up call for all of us. With that awakening comes new statewide energy and focus.

- By snuffing out in one fell swoop the notion that Maine's more-northerly lakes are somehow immune to the aquatic invaders, we have broken through a barrier. We now have a better chance than ever to put programs and partnerships in place and to build local resilience in this more remote but widely-cherished part of the state.
- Not enough people to do the CBI and IPP work? Maybe this is an excellent opportunity to try out some brand-new ideas for educating and engaging boaters in best prevention practices, and for attracting early detectors from previously untapped groups of conservation-minded people.

And we have much working in our favor. First, Maine now has two decades of experience with invasive aquatic plant prevention, early detection, rapid response and management, and especially with this particular invader. Thanks to the persistent efforts of the lake communities who have been on the front line of the effort to control variable water-milfoil in Maine, much of the trial and error is now behind us.

Communities facing new infestations are also now supported by steadily-strengthening legislation, funds made

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possible through the Maine Lake and River Protection Sticker program, a Federally-certified Invasive Aquatic Species Action Plan, and an excellent team of experienced invasive species professionals within the DEP. Free invasive aquatic plant manual control trainings are offered annually, as are networking events such as the Maine Milfoil Summit. Locally-powered infestation monitoring and mapping efforts, essential to the success of any management effort, are equally well-supported through Lake Steward of Maine's Invasive Plant Patrol (IPP) program.

And the best news of all, perhaps, is the fact that Big Lake has a number of deeply-rooted friends and allies, allies that provide historical and cultural perspective, strength, vibrancy and resilience. Big Lake is in the very heart of the Passamaquoddy Tribe's ancestral homeland. Passamaquoddy have lived and flourished within this homeland at the least since the time when the Laurentide glaciers melted away from this part of North America, from ten-to-fourteen-thousand years ago. The tribe still holds land along the northern shore of Big Lake, and the lake has long been central to Passamaquoddy life, providing fishing, hunting, boating, swimming, aesthetic values and supporting essential cultural and spiritual practices. Many of the tribe's most treasured archeological sites are concentrated around the shorelines of the waters in this region. LSM has been partnering with the Passamaquoddy Environmental Department on water quality monitoring efforts since 2004.

Downeast Lakes Land Trust (DLLT) is also a major stakeholder in the region. Founded by local residents in 2001, DLLT is dedicated to the long-term economic and environmental well-being of the Downeast Lakes region, working to conserve the region's woods and waters through land acquisition and sustainable forest management. In 2016, DLLT significantly expanded its land holdings in the region, adding nearly 22,000 additional acres to the 34,000 acres it already owned. The additional acreage, extending from West Grand Lake, east to Big Musquash Stream includes more than four miles of shoreline on Big Lake. DLLT partnered with the New England Forestry Foundation to purchase a

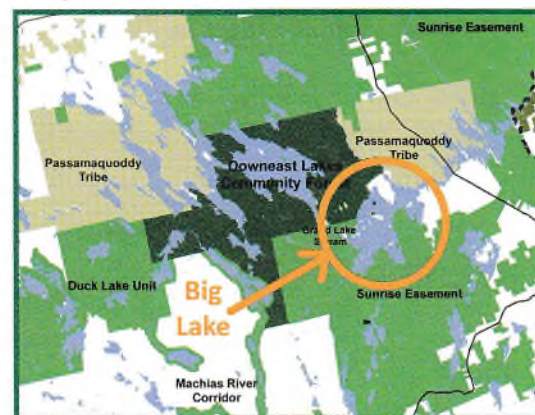
312,000-acre conservation easement that protects 70% of the remaining shoreline from development.

Given the tremendous investment the organization has made in the future well-being of this pristine area, DLLT will certainly be a valued partner in the effort to address this new threat to the ecological and economic health of the region. "This region of Maine is defined by its lakes and waterways," says DLLT President and CEO, David Montague. "The news of this infestation is deeply concerning for our communities, our local tourism economy, and the way of life that depends on healthy lakes and the fisheries they support. We feel very fortunate to have the support and expertise of Lake Stewards of Maine to help us address this new threat to our watershed. We have been lucky to avoid these issues in the past, but now we find ourselves at the start of what will, undoubtedly, require a long-term, sustained effort to protect the spectacular natural heritage of Big Lake and prevent the spread of aquatic invasive species to the other lakes in our region."

Part of a vast area known for its pristine water resources, the region surrounding Big Lake is also home to a number of thriving hunting and fishing camp establishments, a cadre of experienced Maine Guides, and a host of private camp owners, all of whom have a tremendous stake in the long-term health of Big Lake.

Add to all of the above the dozens of trained and experienced early detectors (IPPs) from the more-southerly counties who have already signed on to help with the Big Lake survey in 2020, and the dozens more we hope to train, mentor and engage, and one begins to see that we have ample reason for optimism!

In the weeks and months to come, LSM will participate in a flurry of planning meetings and outreach events, working in collaboration with all stakeholders to help develop a comprehensive plan for responding effectively to the Big Lake infestation. In addition to public meetings and strategy sessions, LSM will offer a series of IPP trainings in the Big Lake area next summer, with the goal of engaging and strengthening the capacity of the local community as they move forward



Downeast Lakes Land Trust and the Passamaquoddy Tribe are major stakeholders in the region.

to develop and carry-out their ongoing monitoring and management efforts. We also look forward to piloting some new strategies for establishing a vibrant survey effort in this more sparsely-populated part of the state.

There is no doubt that the Big Lake infestation is a game changer for Maine. To say that a well-established infestation in such a remote part of the state represents a challenge for our state, seems a glaring understatement. But there is also, as discussed earlier, much working in Big Lake's favor. LSM is committed to helping in every way that we can. This means, of course, that we too will need a great deal of help. In this time of need, we consider ourselves fortunate, indeed, to have all of you, our fellow lake stewards to turn to!

To learn more about how you can get involved in the Big Lake IPP Response, please contact Roberta Hill at Roberta@lakestewardsme.org or 207-783-7733. 🌿

IMPORTANT IPP UPDATE

In light of the sudden change in priorities for next year, we have made arrangements to postpone plans for the Eagle Hill course until 2021 or 2022. For those of you who were looking forward to this week-long aquatic plant extravaganza in 2020, we are truly sorry to disappoint. On the bright side, while we are searching for and mapping milfoil up on Big Lake next summer, we are sure to encounter (and enjoy getting to know) many native plants! Please consider joining us for a stint of what just may be the ultimate hands-on learning IPP experience!