Littorally Speaking

Milfoil in Annabessacook Lake

a cautionary yet hopeful tale of prevention, early detection, and rapid response

ate in the summer of 2013, a vigilant Courtesy Boat Inspector (CBI) stationed on Annabessacook Lake spotted a single milfoil fragment floating near the public boat landing. DNA testing confirmed the plant to be variable water-milfoil (VWM, scientific name: Myriophyllum heterophyllum), the most prevalent invasive aquatic plant in Maine. Though Annabessacook Lake was not known to be infested, it is in fairly close proximity to several waterbodies that do have known VWM infestations. Were the wayward fragments left behind by a visiting boat, or did they originate from a new-as yet undetected-infestation in Annabessacook Lake?

The only way to answer this question with certainty was to conduct a comprehensive "level-3" survey of the lake's entire littoral zone (all shallow areas of the lake, anywhere that sunlight reaches the bottom and rooted plants may grow). Conducting a level-3 survey on a lake that is nearly 1500 acres in size, with over 17 miles of shoreline, can be challenging in the best of circumstances. In the case of Annabessacook Lake, the challenge was intensified by several factors: 1) DNA analysis of the milfoil fragment found by the CBI took longer than usual. When the results finally arrived in December 2013, it was too late to conduct even a cursory survey. This delay would significantly cut into greatly needed planning and preparation time. 2) Though invasive aquatic plant (IAP) screening survey activity was being done regularly on Annabessacook Lake, these surveys were generally limited in scope. Conducting a full level-3 survey would require a significant increase in survey capacity. The community elected to accomplish this by building a locally-sustainable volunteer Invasive Plant Patrol (IPP) team, an undertaking that would require a good deal of local outreach, and the development of a comprehensive training program. 3) Most



Is this invasive milfoil? Lacking the vibrant red stem that is often associated with this invader, none of the milfoil plants found in Annabessacook Lake looked glaringly suspicious; but neither did they present the features needed to confidently rule out the target invader. This "plain-Jane" milfoil specimen was indeed confirmed as VWM.

lake plants in Maine are fully mature and easiest to view and identify from mid to late summer. But in Annabessacook Lake, the growth of planktonic algae in late August can significantly reduce water clarity, and potentially impede survey visibility, thus shrinking the survey window of opportunity. In a nutshell, the local community had barely half a year to plan, gather the resources, and build the volunteer capacity needed to accomplish a high-quality, comprehensive survey within a very short (one-to-two-week) timeframe. A coalition of project partners quickly assembled and mobilized. The VLMP's role in the alliance, which included Annabessacook Lake Improvement Association (ALIA), Friends of Cobbossee Watershed (FOCW), Cobbossee Watershed District (CWD) and the Maine Department of Environmental Protection (DEP), was primarily to assist in informing, engaging, training, and activating a local team of trained citizen Invasive Plant Patrollers.

With Annabessacook Lake Improvement Association playing the vital role of workshop host—securing workshop venues, organizing food, publicizing the workshops locally, etc., the IPP training program was rolled out through the summer of 2014. The program was

by Roberta Hill VLMP Invasive Species Program Director

launched in June with an IPP Plant Paddle led by Friends of Cobbossee Watershed staff. This engagement-level event helped to spur local interest in the Annabessacook survey project and to encourage participation in the more extensive trainings to follow. The IPP Intro Workshop and IPP Survey Field Methods Workshops, which took place in July, were both well-attended, resulting in a formidable cadre of well-trained, certified, locally-based patrollers. The Annabessacook IPP team was born!

While VLMP and ALIA were busy with the trainings, Maine DEP staff began conducting preliminary surveys of the areas closest to the public boat landing. A local leadership team was formed, comprised of one representative from each of the local partners: CWD, FOCW and ALIA. This group took on the task of organizing the full, lake-wide survey, and working out the various logistics needed to ensure its success. The necessary survey equipment was gathered and/or constructed. A series of public and private launch sites were identified around the lake; in the case of the private launches, permission to launch was sought and obtained. Nine survey regions were delineated, each with its own launch site. Each region was divided into several smaller sectors, with



VLMP's Roberta Hill teaches Annabessacook Lake volunteers how to recognize an aquatic invader when they see it.

most sectors covering roughly 1000-feet of shoreline. As surveyors signed on to the new Annabessacook IPP Team, they either adopted, or were assigned, one or more survey sectors.

The preliminary survey activity by the DEP revealed yet another challenge. Annabessacook Lake was home to three native milfoil species, all similar in appearance to VWM. The presence of these and other native look-alikes would certainly complicate things, especially for novice patrollers. Survey planners addressed this challenge by teaming more experienced patrollers—acting as "region leaders"—with the novice patrollers in their assigned areas. The team had now grown to thirty-six members, the majority of whom were trained and certified IPP volunteers.



Training of the Annabessacook Lake IPP Team continued with on-the-water instruction and guided practice.

This story cannot be properly told without mentioning the vital role played by Maine's IPP Rapid Response Team: certified IPP volunteers who have agreed to be on-call should a new infestation be identified in Maine. Not only did many of these seasoned "IPPs from away" travel across the State to attend trainings and support the novice patrollers, they also signed on as volunteer region leaders, lending their considerable expertise, experience and mentorship skills to the survey effort. When members of Maine's IPP Rapid Response Team were introduced at the survey kick-off meeting, they were met with a resounding standing ovation. A palpable sigh of relief spread across the room and someone cheered, "The cavalry has arrived!"

Over the course of the next two weeks thankfully, with full cooperation from the weather—the level-3 survey of Annabessacook Lake was completed without a hitch. Several significant patches of milfoil were indeed encountered by surveyors. Was this invasive milfoil? None of the specimens looked glaringly suspicious; but neither did they present the features needed to confidently rule out the target invader. The patches were properly marked and mapped, and specimens were collected. Once again, we would have to rely upon DNA analysis.

A few weeks later, the DNA results arrived: two of the twelve specimens came back with a positive identification of *Myriophyllum heterophyllum*, invasive variable water-milfoil. One specimen had been taken from a growing patch in the northern inlet cove; the other was a floating fragment found near the boat landing, at the other end of the lake. Sadly, Annabessacook Lake was now to be added to the list of Maine lakes with known infestations.

The Maine DEP mobilized immediately upon receiving the DNA results, and on September 24 they deployed SCUBA divers who carefully removed the known VWM patch in the northern cove. They also investigated suspicious milfoil plants in the shallows beyond the public boat



The Maine DEP mobilized immediately upon receiving the DNA results, deploying SCUBA divers who carefully removed several large patches of VWM from the lake.



Maine's IPP Rapid Response Team played a vital role in the survey. Team Members participating in the Annabessacook survey included: Diane Clay, Bob and Sibyl French, Carol Fuller, Susie Wilding-Hartford, Marsha Letourneau, Dennis Roberge, Lea Stabinski, and Ross and Bunny Wescott. Pictured above are Diane (L) and Susie (R).

landing channel, a patch recently discovered by alert CWD staff during routine waterquality monitoring. DNA analysis later confirmed VWM in this area, as well. DEP and CWD returned to the boatlanding area on October 17, and a number of additional, well-established milfoil patches were found. The characteristics of these newly-discovered plants precisely matching those of confirmed VWM, they were also removed.

Despite this disconcerting result, it is important to note the good news here. The level-3 survey findings suggest that the rooted VWM population may very well be limited to two discrete areas in the lake. With luck, the process that began when the CBI spotted a suspicious plant floating near the boat launch in 2013, and continued with the activation of ALIA's Invasive Plant Patrol team, has resulted in a timely, early-detection of the infestation. We know from experience that early detection has been key to the successful management of variable milfoil in a number of cases in Maine. If the infestation in Annabessacook Lake proves to be as limited in scope as these early findings suggest; if actions are taken swiftly and deliberately; if the successful collaboration that began in 2013 continues, the prospects for successfully addressing the Annabessacook infestation are very good indeed.

Photos for this article were provided by The Cobbossee Watershed District.