Lovell Invasive Plant Prevention Committee

Invasive Aquatic Plant

Screening, Marking & Mapping Survey

CUSHMAN POND

Milfoil- infested area adjacent public boat landing, Cushman Pond

Conducted September 9, 10 & 15, 2014 by

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This report summarizes the findings of the invasive aquatic plant screening, marking and mapping survey conducted on September 9, 10 and 15, 2014, by Lake and Watershed Resource Management Associates for the Lovell Invasive Plant Prevention Committee.

Background

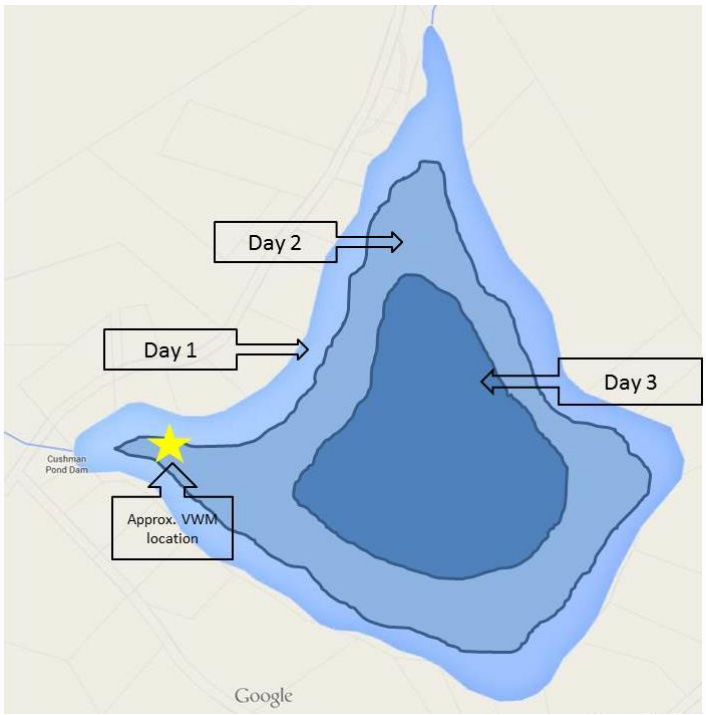
Cushman Pond in Lovell, Maine (MIDAS: 3224) is 32-acres in size. With a maximum recorded depth of 21 feet (according to DIFW depth map), it was assumed that the pond might be almost entirely littoral, i.e. shallow enough for sunlight to reach the bottom and thus support aquatic plant life.

Invasive variable water-milfoil (*Myriophyllum heterophyllum,* VWM) was first confirmed in Cushman Pond in 1995. Activity aimed at eventual erradication of VWM in Cushman pond ensued, and through hard work, persistence, and dilegence on the part of Cushman Pond residents and their allies, the VWM population has been substantially reduced over time, to the point where—in 2011 and 2012— divers were finding very few plants each time they surveyed. Surveys of the pond were conducted several times annually, with the surveys primarily focused on areas where known infestations had been. In 2013, somewhat by chance, a large, dense population of milfoil was discovered in the littoral zone area (~12' deep) of the western cove (near the outlet dam and public boat landing). The patch was 'happened upon' by one of the Cushman Pond control team divers as he was swimming from one target area to another. It was decided that, in order to provide the Cushman Pond control team with the best possible information concerning the current status of the infestation, a full, Level 3 survey of the entire pond was needed. This screening, marking and mapping survey was conducted in 2014 by Lake & Watershed Resource Management Associates.

Project Description

Day 1 - On September 9, 2014 a team of three LWRMA surveyors (two aquatic botanists working from the boat and one botanist SCUBA diving with battery-powered propulsion) carefully surveyed the near-shore littoral areas of Cushman Pond. The boat crew worked the shallower parts of this near-shore zone, with the diver surveying the outer (deeper) extent of this zone.

Day 2 - On September 10, 2014 a team of two LWRMA surveyors (one diving with propulsion and one providing surface support from the boat) surveyed what we now know to be the deepest part of the littoral zone. Exploratory probes into waters beyond this zone on day 2



This map shows the areas surveyed on each of the three days. The lighter blue areas (day 1 & day 2) are littoral (capable of supporting plant life). The darker blue area in the middle (day 3) is now known to be NOT littoral.

suggested that 1) depths in Cushman Pond exceed 21 feet in some areas; and 2) little if any plant life occurs in the central (deepest) portion of the pond.

Day 3 – On September 15, 2014 the same team of two LWRMA surveyors surveyed the deeper, central portion of the pond, working methodically across the area along spaced parallel transects. This survey confirmed the findings made during the exploratory probes on day 2, i.e., that the substrate in this region of the pond is largely unconsolidated muck, and that the area is devoid of plant life. Much of it deeper than 21 feet, dark and sterile, we now know that this part of the pond is *not* littoral.

FINDINGS

The level-3 survey resulted in the detection of variable water-milfoil in one area of the pond only. This area is in close proximity to the active control site in the western cove. These plants were apparently missed by the control team.

This map shows the approximate location of the infested area.
Coordinates: 44.22016722 N, -70.83514075W

Individual VWM plants and plant clusters were marked with numbered buoys. The table below characterizes the VWM growth found at each buoy.

Buoy #	Characterization of VWM growth at this location
1	1 plant with 2 stems: 1 stem 2 ft. tall; 1 stem 0.5 ft. tall
2	Cluster of 4 plants: 3 plants with 6-7 stems (2 ft. tall); 1 plant with 12 stems (3 ft. tall)
3	1 plant with 4 stems (all stems 1 ft. tall)
4	2 plants with total of 8 stems: 1stem 1 ft. tall (cropped); 7 stems 3.5 ft. tall
5	Cluster of 3 plants: 1 plant with 7 stems; 2 plants with 14 stems; all stems 3-4 ft. tall
6	Cluster of 3 plants: 1 plant with 2 stems (1 ft. tall); 1 plant with 7 stems (2.3 ft. tall); 1 plant with 16 stems (2.3 ft. tall)
7	Cluster of 5 plants: 2 plants with 4 stems each (1 ft. tall); 2 plants with 2 stems (6-7 ft. tall); 1 plant with 15 stems (3 ft. tall)

Several VWM stems were inadvertently detached during the survey. All fragments were retrieved and later disposed of.

In addition to screening for variable water-milfoil, the pond was thoroughly screened for other known aquatic invaders. **NO ADDITIONAL IAS WERE DETECTED.**

Additional data was collected in accordance with standardized protocols. LWRMA protocols are consistent with those developed by the Maine Volunteer Lake Monitoring Program and approved by the Maine Department of Environmental Protection, and are detailed in earlier documents provided to the Committee. Additional data includes: a) survey date/s and timeframe; b) names of the surveyors; c) general conditions encountered during the survey (weather and lake); d) whether or not an IAP was detected; e) additional observations of note. Additional data is recorded on standardized documentation forms; these forms are available to the committee upon request.

Additionally, surveyors conducted an inventory of native plants observed during the course of the survey. Twenty-two distinct aquatic plant species were noted. Below is a list of the native aquatic plants observed in Cushman Pond.

Cushman Pond Native Plant Inventory

American bur-reed (*Sparganium americanum*)
aquatic moss
brown-fruited rush (*Juncus pelocarpus*)
common arrowhead (*Sagittaria latifolia*)
creeping (common) spikerush (*Eleocharis palustris*)
dwarf water-milfoil (*Myriophyllum tenellum*)
floating leaf bur-reed (*Sparganium fluctuans*)
fragrant water lily (*Nymphea odorata*)
freshwater sponge
golden pert (*Gratiola aurea*)
large purple bladderwort (*Utricularia purpurea*)
needle spikerush (*Eleocharis acicularis*)
Oakes pondweed (*Potamogeton oakesianus*)
pale St. John's wort (*Hypericum elipticum*)
pickerel weed (*Pontederia cordata*)
spatterdock (*Nuphar variegata*)
St. John's wort species (*Tridenum spp.*)
three-way sedge (*Dulichium arundinaceum*)
water purslane (*Ludwigia palustris*)
watershield (*Brasenia schreberi*)
wool grass (*Scirpus cyperinus*)
yellow (earth) loosestrife (*Lysimachia terrestris*)

Conclusion and Recommendations

A decade of careful monitoring and control effort has substantially diminished the VWM infestation in Cushman Pond. The goal of complete eradication, however, remains elusive. Plants are destroyed here, even as other plants pop up there. Clearly the approach of monitoring discrete "known hot spots" is not adequate. If eradication is to be achieved and maintained, a new, more strenuous monitoring program needs to be adopted.

Specific recommendations pertaining to survey activity are as follows:

1. A full level-3 survey of Cushman Pond should be done annually, up until such time as there has been three consecutive years of "no VWM detected" (achievement of complete eradication, as defined by the DEP). Having determined that the central portion of the pond is not littoral significantly simplifies the process of conducting a level-3 survey.
2. All VWM found by surveyors should be marked, mapped, characterized and documented.
3. Near-shore areas should be screened by surveyors working from a boat or snorkelers; deeper areas should be surveyed by SCUBA divers.

4. The annual level-3 survey should be augmented with the continuation of periodic surveys of known hot spots.
5. Ideally all surveys should be done by individuals with training and experience in standardized survey & mapping protocols.

Thank you for choosing Lake and Watershed for this project. Over the past three decades LWRMA has assisted the Town of Lovell and local property owners in the ongoing effort to protect and preserve the beautiful lakes and ponds of your region. We are very pleased to have had this opportunity to continue our work with you.

Respectfully,

Scott Williams
Principal, Aquatic Biologist
Lake & Watershed Resource Management Associates