

Lovell Invasive Plant Prevention Committee

# Invasive Aquatic Plant

Screening, Marking & Mapping Survey

CUSHMAN POND



*Milfoil- infested area adjacent public boat landing, Cushman Pond*

Conducted October 14, 15 & 20, 2015 by

LAKE & WATERSHED  
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This report summarizes the findings of the invasive aquatic plant screening, marking and mapping survey conducted on October 14, 15 and 20, 2015, by Lake and Watershed Resource Management Associates for the Lovell Invasive Plant Prevention Committee.

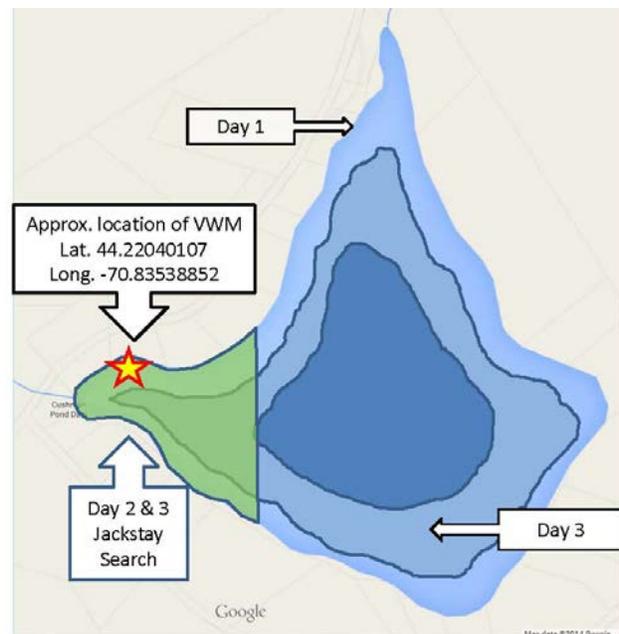
## Background

Cushman Pond in Lovell, Maine (MIDAS: 3224) is 32-acres in size. Invasive variable water-milfoil (*Myriophyllum heterophyllum*, VWM) was first confirmed in Cushman Pond in 1995. Activity aimed at eventual eradication of VWM in Cushman pond ensued, and through hard work, persistence, and diligence 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, a dense population of milfoil was discovered the western cove (near the outlet dam and public boat landing). 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. Such a survey was first conducted in 2014 by Lake & Watershed Resource Management Associates. During the 2014 survey, several additional VWM plants were found in the vicinity of the 2013 control area. This survey also determined that no plant life is supported beyond a depth of about 12 feet where the bottom is a thick layer of unconsolidated muck.

## 2015 IAS Survey Description

**Day 1**- On October 14, 2015, two LWRMA surveyors (aquatic botanists working from the boat) carefully surveyed the near-shore littoral areas of Cushman Pond, marking the outer edge of their survey zone with a line of buoy, to provide guidance for the diver survey to follow.

**Day 2 & 3** – Beginning on October 15, an intensive survey of the outlet cove was conducted by a team of two LWRMA surveyors using the *jackstay search method* (one surveyor diving and the other providing surface support from the boat). For more detail on the *jackstay search method* please see the attached addendum. The jackstay search was completed on October 20.



This map shows the littoral areas surveyed on each of the three days, and the location of the variable milfoil plant that was found and marked with a buoy. The darker blue area in the middle is NOT littoral and was not included in the survey.



**Day 3**– On October 20, 2015, after completing the jackstay search in the outlet cove area, the same team of two LWRMA surveyors (one diver, one surface surveyor) surveyed the deeper, outer portion of the shoreline littoral area.

## FINDINGS

**The level-3 survey resulted in the detection of one variable water-milfoil plant only.**

The milfoil plant was approximately 3 feet high and comprised of 4 – 5 fronds. It was located in 7 feet of depth in the general vicinity of the recently active control site. Coordinates for the location were recorded, and the plant was marked with a buoy.

***VWM SITE COORDINATES: (44.220440107 N; -70.83538852 W)***

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 (*Nymphaea odorata*)  
freshwater sponge  
golden pert (*Gratiola aurea*)  
large purple bladderwort (*Utricularia purpurea*)  
needle spikerush (*Eleocharis acicularis*)  
pale St. John's wort (*Hypericum ellipticum*)  
pickerel weed (*Pontederia cordata*)  
spatterdock (*Nuphar variegata*)  
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 diligent control activity has substantially diminished the VWM infestation in Cushman Pond. If the current strategy of conducting more comprehensive and intensive monitoring surveys will greatly enhance the possibility of complete eradication. 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).
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. *The use of the jackstay search method in areas of chronic VWM outcroppings is highly recommended.*
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

# The Jackstay Search Pattern

Adapted from Underwater Criminal Investigators website ~ [www.ucidiver.com/](http://www.ucidiver.com/)



Why is the jackstay so important? The jackstay underwater search pattern can be a true grid pattern. In land and underwater search and rescue/recovery, a grid pattern is the most accurate pattern when you want to find what you are searching for. In fact, if a grid pattern is used in the search and it is conducted properly and thoroughly by someone who understands the pattern and is comfortable in the conditions under which the pattern is being conducted, you can have up to a 99.9% chance of finding what you are searching for. To get your

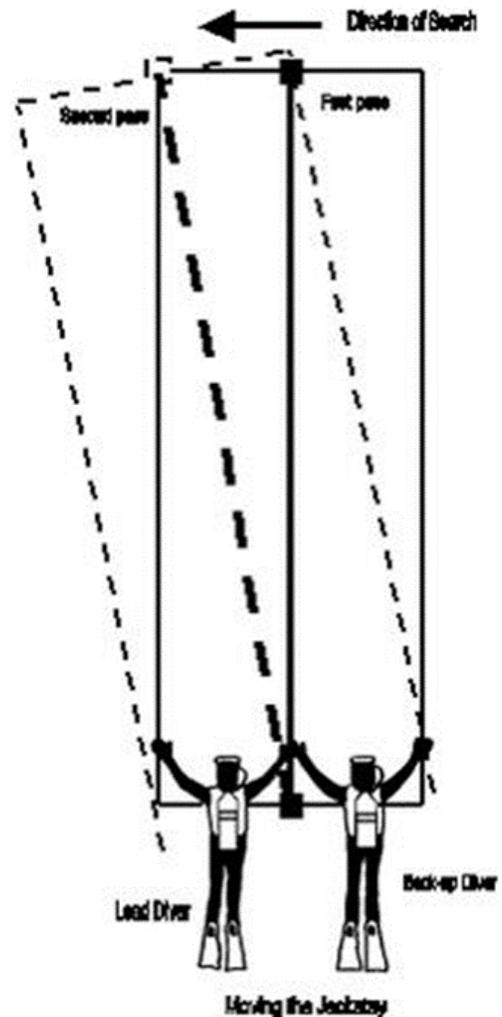
jackstay to produce a 99.9% chance of recovering the item it takes three things:

1. Knowing how to set up the pattern
2. Divers that know how to conduct the pattern
3. Divers that know the target and can stay focused while searching in the search environment

The jackstay search is indicated when you need to be precise and need to find what you are searching for. It's especially helpful when you are searching for small items but is great when you are searching for medium and large items as well. It can be used when you are close to shore or away from shore and it's the one search pattern that allows you to cover a large area with accuracy.

The three important features of the Jackstay search are:

1. The same area is being covered two or more times prior during the survey; the number of times each area is searched depends upon how far the pattern is moved each pass.
2. The diver is able to maintain constant contact and communicate with other diver and/or surface support person/s during the survey.
3. The complete pattern has up-and-down lines on both ends to assist in making ascents and descents, checking air gauges and bottom times, or for just allowing surface personnel to see the pattern (by its two surface buoys).



## Parts of the Jackstay

There are two main parts to the jackstay search pattern:

1. Up-and-down lines (ascent/descent lines) which include ropes, surface buoys, and downweights.
2. Search line (bottom line). Note: Never use rope that floats, like polypropylene rope. Your search line needs to be negative so it lies flat on the bottom.

## Equipment

**Surface buoys** – good to have a number of surface buoys available in different sizes and with different features depending on conditions and needs. In deep water, larger buoys or surface floats work best. In navigable waters and/or need a dive flag displayed, use surface floats (buoys) that have a dive flag attachment. In calm, relatively shallow water, can use water ski buoys because they are light weight and easy to work with.



**Downweights** - As with buoys, it is good to have a variety of downweights to choose from depending on conditions. If the bottom is deep mud, a light weight "mushroom" anchor (10-15 pounder) works well. Lay the weight down on its side and push it into the mud. The mushroom shape gets a good bite and holds it in place. If sandy/rocky bottom with little to no current, a heavier weight (15-20 pounder) may be needed, either a mushroom or a "can" downweight. When dealing with current or depth, use heavier downweight (25-30 pounder) so pattern is not moved by wave action or current.

**Ropes** - Having a number of different lengths of rope on site is expedient when dealing with different depths and conditions. Nylon rope of approximately 5/16" to 1/4" in diameter is recommended. It is good to have a variety of lengths, e.g. 50-foot lengths, 75-foot lengths, 100-foot lengths and 150 foot lengths. Shorter lengths may also be useful. At minimum you will need a couple of 75 foot and 100 foot lengths.

