

# RARE & ENDANGERED SPECIES VEGETATION SURVEY

## Lake Massapoag Sharon, MA

**Report prepared for:**

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## INTRODUCTION

This report summarizes the survey for Toothcup (*Rotala ramosior*) and Resupinate Bladderwort (*Utricularia resupinata*) within the southern cove of Lake Massapoag. This survey was required by the MA Natural Heritage & Endangered Species Program (NHESP Tracking #02-10499) to determine presence of Resupinate Bladderwort and Toothcup within EH 660 and PH 836. The survey(s) took place within a pre-determined area of Lake Massapoag; henceforth called 'the South Cove' (Figure 1).

## SITE DESCRIPTION

Lake Massapoag is a 392-acre Massachusetts Great Pond. It lies in the town of Sharon in the county of Norfolk. The majority of the shoreline is residential homes. There are two town beaches: one in the northern-end called Memorial Beach and the second at the southern-end called Community Beach. There are also two summer camps for children: Everwood Day Camp and Camp Wonderland.

There are four aggressive non-native, invasive species within the South Cove: Fanwort (*Cabomba caroliniana*), variable water milfoil (*Myriophyllum heterophyllum*), brittle naiad (*Najas minor*), and purple loosestrife (*Lythrum salicaria*). Native submerged/emergent vegetation includes several pondweed species (*Potamogeton spp.*), bladderwort (*Utricularia spp.*), white waterlily (*Nymphaea odorata*), watershield (*Brasenia schreberi*), water primrose (*Ludwigia palustris*), arrowhead (*Sagittaria latifolia*), pickerelweed (*Pontedaria cordata*), cattail (*Typha latifolia*), burreed (*Sparganium spp.*), water willow (*Decodon verticillatus*), hedge hyssop (*Gratiola sp.*), bulrush (*Scirpus spp.*), and rush (*Juncus spp.*).

## METHODOLOGY

In compliance with MA Natural Heritage, the Lake Massapoag Survey Protocol and Methodology was approved on May 23, 2023.

### Resupinate Bladderwort

The MA-NHESP approved survey protocol was performed on August 15 and September 6. The habitat assessment was performed on August 15. The shoreline was toured by boat and foot to distinguish areas that could be appropriate habitat for Resupinate Bladderwort.

The south cove shoreline was snorkeled in a meandering fashion. GPS points were collected when the target species were identified (Table 1). At each GPS point, several parameters were collected, including depth, abundance of target species, overall percent (%) cover of surrounding vegetation, substrate type, and representative photos.

### Toothcup

The habitat assessment and MA-NHESP approved survey protocol was performed on September 5. The shoreline was toured by foot to distinguish areas deemed appropriate habitat for Toothcup.



Figure 1: The South Cove

Where appropriate habitat was defined, these areas were walked by foot by use of transects, spaced 5-feet in width. Transects began at the immediate shoreline (meeting of water and land) and continued inward (towards dry land) until the present environment no longer presented appropriate habitat for Toothcup.

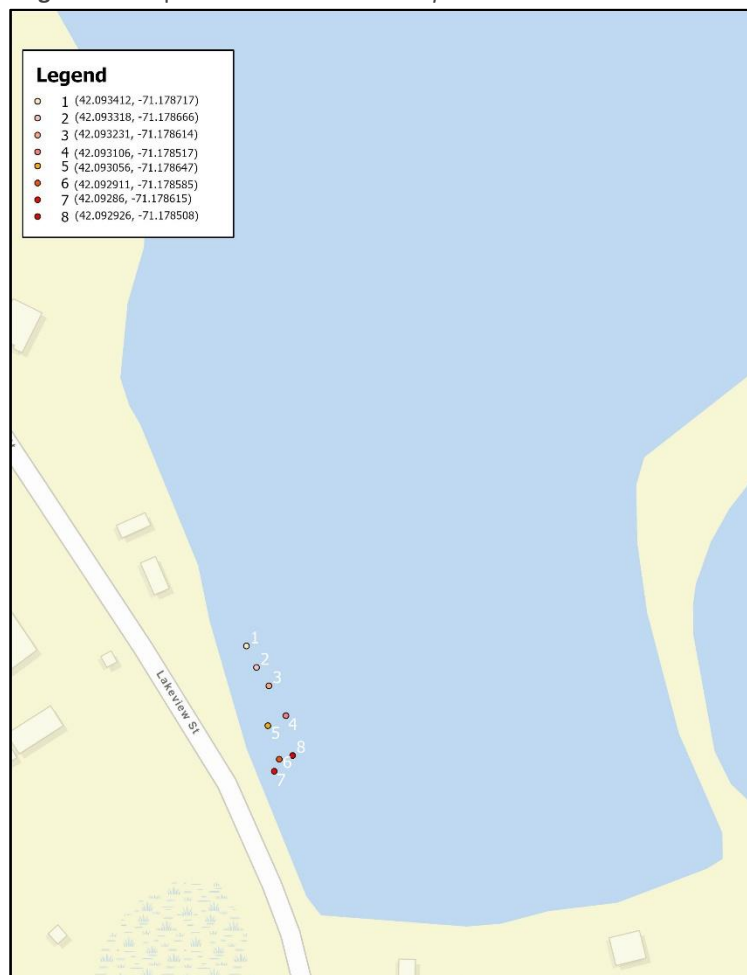
## RESUPINATE BLADDERWORT (*Utricularia resupinata*)

### SURVEY RESULTS

On the day of the survey, August 15th, the weather was somewhat unfavorable, with established temperatures in the 60s and an occasional rain shower. The wind was mild, between 5-10 mph. The South Cove's substrate is a mix of sand, silt, rock, organic matter, and leaf matter. During the time of the survey, the lake was experiencing a mild cyanobacteria bloom that primarily concentrated at the shoreline making visibility difficult. The general turbidity mixed with the active cyanobacteria bloom made capturing clear photographs of this small plant difficult.

The target species, Resupinate Bladderwort, was confirmed as present along the western shoreline of the South Cove. Resupinate Bladderwort was found in healthy abundance within this area, often mixed among other aquatic plant species, most notably, needle spikerush (*Eleocharis acicularis*), mud-mat (*Glossostigma sp.*), and slender water milfoil (*Myriophyllum tenellum*).

Figure 2: GPS points of observed *U. resupinata*





Observations of Resupinate Bladderwort were collected between depths of 5 inches and 2 feet. The substrate type(s) where present included a variety of sand, silt, and organic matter. The area where it was observed was between the two beaches of Everwood Day Camp. I often had to 'sweep' away the top layer of organic matter to expose the patches as the plants were often buried and difficult to see. It is probable that there are more patches present, but were likely hidden under the thick layer of detritus.



**Image 1/2:** Vertical branches of *U. resupinata*

**Image 2/3:** Flowering stems of *U. resupinata*  
Overcast by dying cells of cyanobacteria (white flecks)





**Image 4:** *U. resupinata* patch (red circle) with scattered mud-mat

**Table 1:** GPS points collected with present *U. resupinata* and associated data

POINT ID	LATITUDE	LONGITUDE	DEPTH (Ft)	SEDIMENT TYPE	PERCENT (%) COVER U. RESUPINATA	OVERALL PERCENT (%) COVER
1	42.093412	-71.178717	2.2	Sand	10	80
2	42.093318	-71.178666	2.3	Sand	5	75
3	42.093231	-71.178614	1.8	Sand	15	90
4	42.093106	-71.178517	2.8	Sand	5	100
5	42.093056	-71.178647	1.4	Sand	20	75
6	42.092911	-71.178585	1.5	Sand	10	65
7	42.092860	-71.178615	6in	Sand	15	45
8	42.092926	-71.178508	2.6	Sand	15	80

Similar look-a-like species did exist mixed among the areas of *U. resupinata*. Species included *Eleocharis sp.*, *Schoenoplectus subterminalis*, *Myriophyllum tenellum*, and *Isoetes sp.*

### IMPACT ANALYSIS

Overall, Resupinate Bladderwort displayed a healthy, established population on the western shoreline of the South Cove. Plant management measures such as hand-harvesting and diver assisted suction harvesting NORTH of the north-south line will NOT cause harm to the resupinate bladderwort. In consideration of the area SOUTH of the north-south line, specific measurements should be taken to avoid the immediate area where resupinate bladderwort was confirmed as present.

Plant management measures such as fluoridone or additional herbicide applications are more difficult to control due to its free-floating nature and could potentially cause harm to resupinate

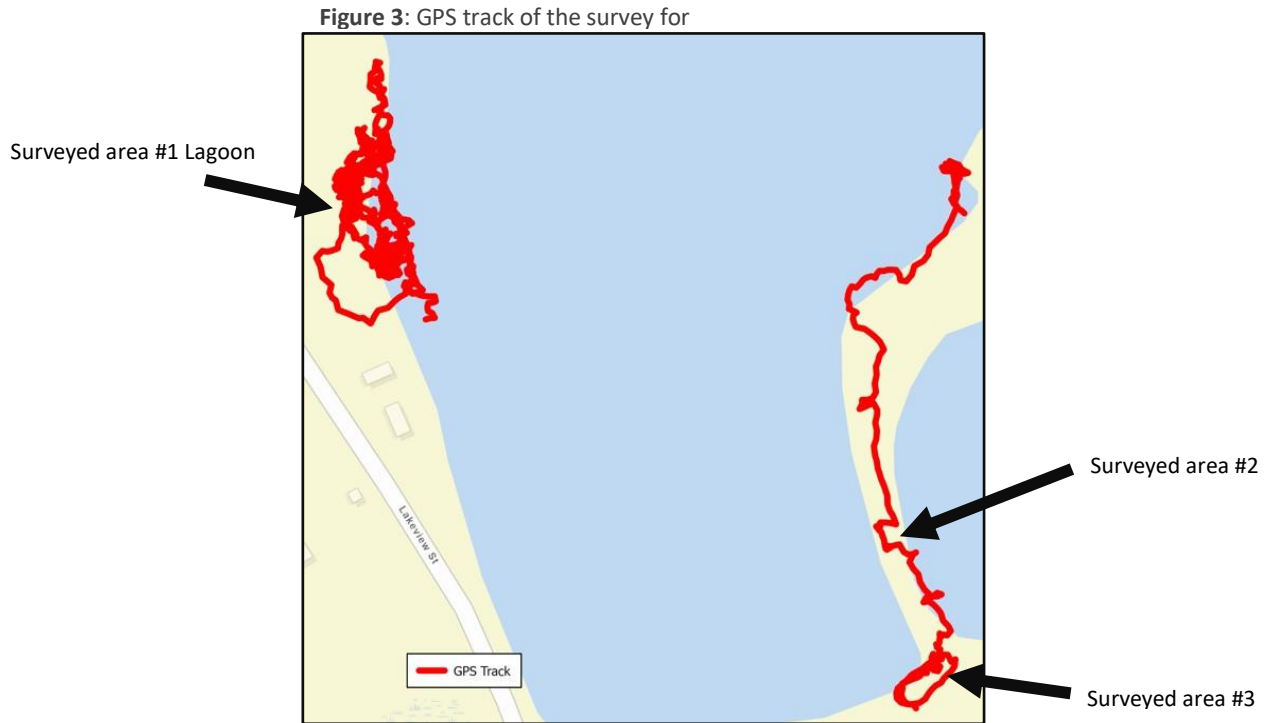


bladderwort. Herbicide applications to the area SOUTH of the north-south line should be carefully considered with astringent monitoring to ensure bladderwort populations are unharmed.

## TOOTHCUP (*Rotala ramosior*)

### SURVEY RESULTS

The survey for Toothcup was conducted on September 5. The weather was hot (88°F) with clear skies. The habitat assessment was performed same day. Figure 3 below shows the GPS tracks taken. Three areas were surveyed. The areas are directed below with Figure 3.



Surveyed area 1 is the lagoon found on the western shoreline.





Surveyed area 2 is on the western shoreline, roughly half-way north.



Surveyed area 3 is the southern corner of the western shoreline.





There were several species present that could be mistaken for Toothcup, including whorled loosestrife (*Lysimachia terrestris*), common water primrose (*Ludwigia palustris*), young swamp loosestrife (*Decodon verticillatus*), young purple loosestrife (*Lythrum salicaria*), and hedge hyssop (*Gratiola sp.*).

## IMPACT ANALYSIS

Although Toothcup was not identified at this time, it has been identified as present in the South cove in the past; specifically in the western lagoon. Herbicide applications could potentially cause harm to populations of Toothcup due to the aqueous, free-floating nature of this plant management technique. However, appropriate timing of applications, avoidance of the area(s), and an appropriate monitoring program, herbicide applications could be successful at managing invasive species and causing no harm to Toothcup populations. Diver assisted suction harvesting and hand-harvesting techniques will not cause direct harm to Toothcup if the area where Toothcup is found is avoided.

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