

The Infestation of Fanwort, and Rapid-Response in Middle Bolton Lake



Northeast Aquatic Research

Abstract

Cabomba caroliniana is a bright green aquatic plant also known as Carolina Fanwort. While it is native to southeastern United States, in New England fanwort is invasive. It is assumed that fanwort was introduced to the waterbodies of New England through its use as an aquarium plant. The spread is attributed to “aquatic hitchhiking” on boats and trailers that move from one waterbody to another.

Fanwort’s natural habitat includes lakes and ponds with slightly acidic water, and low calcium content. It can also be found in low flow streams and rivers. Rather than spreading via seeds, fanwort has adventitious roots which allow any fragment of the stem with a node to grow a new plant. Fanwort also spreads via winter buds called turions. Turions detach from the tips of leaves and settle in the bottom sediment to wait out winter. In the spring each new turion can grow a new plant.

The negative impacts resulting from an infestation of fanwort include reduced light for other species, reduced species richness, clogged drainage, and difficulty boating.

In Middle Bolton Lake, fanwort was discovered in July of 2017. A full aquatic plant survey of the lake was then conducted to map out patches. During this survey, multiple locations had just single fanwort plants, which were hand-removed. Many locations had large fanwort fragments that had gotten caught in white waterlily beds. All noted fragments were removed on site. A scheduled treatment with the aquatic herbicide Reward took place to manage for another invasive plant, Variable milfoil (*Myriophyllum heterophyllum*). Reward can also be used to control fanwort, though it is not as effective as other herbicides. Following the Reward treatment, the lake was spot treated with the aquatic herbicide Flumioxazin (Clipper) in September. Prior to this second treatment, the Friends of Bolton Lakes, a local group of volunteers, were responsible for finding and removing any fragments along the shoreline during the 2017 season. This removal of fragments helped to limit the spread of the fanwort and the growth of new beds. Additionally, one more location of rooted fanwort was found and removed via diver hand-pulling.

In November 2017, a final inspection of the treatment area found some partially decayed fanwort with green winter buds. Fanwort was then predicted to re-grow somewhat in the following year, but surveys conducted in spring and late summer 2018 found only one small fanwort patch located at the boat ramp, as well as one fragment floating in the lake. While it’s possible that there is still a small patch of fanwort growing in deep water that was not found in 2018, the major beds appear to have been eradicated.

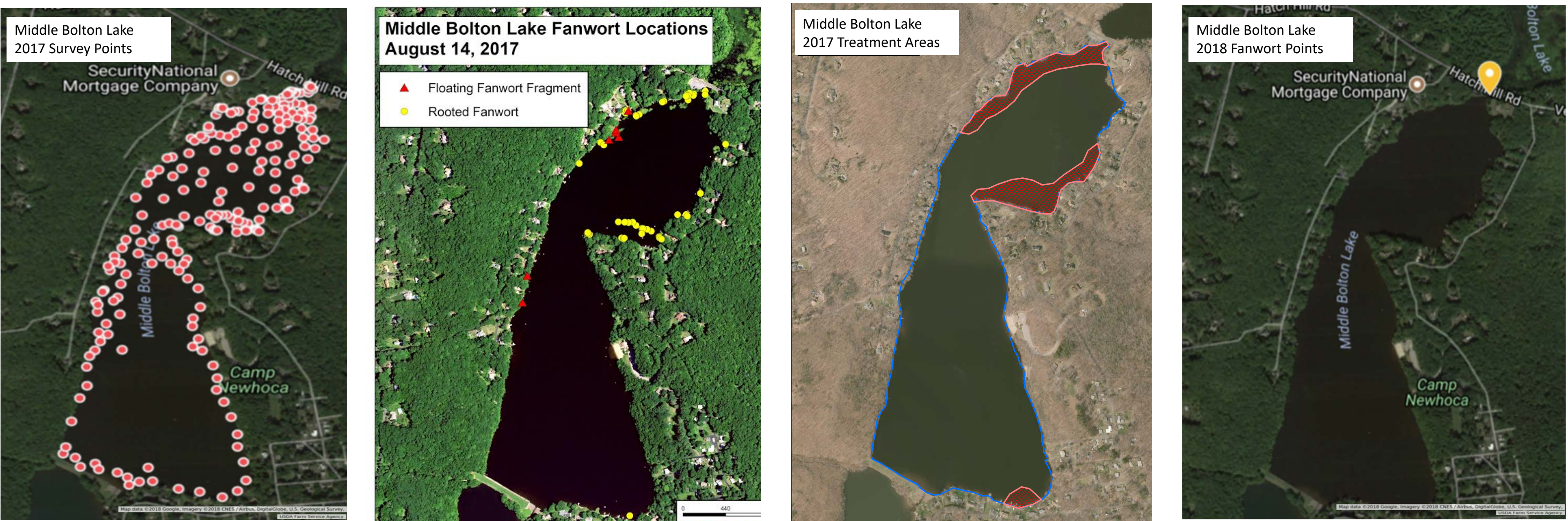
Fanwort in Middle Bolton Lake

July 27, 2017	August 3, 2017	September 12, 2017	October 4, 2017	July 2018	August 29, 2018
Fanwort discovery	Lake is treated with Reward	Lake is treated with Clipper	Divers hand pull fanwort	Fanwort plant is discovered near the boat ramp	NEAR hand pulls the fanwort

Survey Methods

1. On the first day of the survey we began by creating a species list. This included identifying each plant (scientific name), assigning it a number, and referring to the list for all note taking.
2. At each survey point we made a waypoint on the GPS and recorded the waypoint number, depth, species, percent cover, and growth. In the notes column we wrote any outstanding or important observations
 - Percent cover is an estimate of the density of each plant species in the area. It is possible to have over 100% total for all species per site because some plants cover the whole bottom, while simultaneously others grow in the water column
 - Growth is a number assigned to identify how tall the plant is in the water column. 1 is just above the bottom, 2 is a small plant typically less than six inches, 3 is growth the middle, 4 is 75% to the surface, and 5 is when flowers and inflorescence are above the water surface, or when plants are growing matted on the surface of the water.
3. Waypoints were made using a handheld GPS at a maximum of 200ft apart. Waypoints were made for all areas where invasive plants were spotted either visually or on the depth sounder (raked to view at surface).
4. The survey points followed the littoral zone, where plants are growing. Where the zone was narrow we hugged the shoreline. Where it is wide we drove zigzag transects to ensure you can see the transition of plants from shallow shore to deeper water.

Fanwort Map and Treatment Areas



Conclusion/Discussion

- In June of 2018 NEAR conducted a pre-treatment survey and was unable to locate any patches of fanwort. Another survey conducted in July of 2018 also did not find any fanwort.
- In mid August of 2018 a single plant was found at the boat ramp entering Middle Bolton. In the previous year no bed was discovered in this location so it could potentially be a new infestation likely brought in this year as an aquatic hitchhiker.
- Treatment of the lake has not been scheduled yet for this year, but the Town has secured emergency funding for a fanwort treatment in the future. Future surveys for fanwort in Middle Bolton are recommended, and if the lack of plants persists for at least three years, it can be considered eradicated.

Acknowledgements

