

Saugus River Watershed Invasive Aquatic Vegetation Assessment

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Prepared For:



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SECTION 1: AQUATIC VEGETATION ASSESSMENT

1.1 Introduction

Geosyntec Consultants (Geosyntec) was contracted by the Saugus River Watershed Council (SRWC) to conduct preliminary aquatic vegetation assessments at selected water bodies within the Saugus River Watershed. The purpose of the preliminary vegetation assessments was (1) to determine the presence of non-native, invasive species and (2) to identify water bodies where more detailed field investigations and/or efforts to control invasive plants are recommended.

1.2 Methodology

On August 1, 2007 and June 19, 2008, Geosyntec conducted field surveys to identify aquatic vegetation species within the following water bodies:

Water Body	Town	Other
Reedy Meadow Lower Pond	Lynnfield/Wakefield	
Reedy Meadow Upper Pond	Lynnfield/Wakefield	
Saugus River (downstream of LWSC Dam)	Lynnfield/Wakefield	
LWSC Diversion Canal	Lynnfield	
Pillings Pond	Lynnfield	
Hawkes Pond	Lynnfield/Saugus	Lynn Woods Reservation
Griswold Pond	Saugus	Golden Hills ACEC
Unnamed Pond south of Griswold Pond	Saugus	Golden Hills ACEC
Spring Pond	Saugus	Golden Hills ACEC
Silver Lake	Saugus	Breakheart Reservation
Pearce Lake	Saugus	Breakheart Reservation
Walden Pond	Lynn/Saugus	Lynn Woods Reservation
Flax Pond	Lynn	
Sluice Pond	Lynn	

The water bodies listed above were selected for assessment by Joan LeBlanc of the SRWC, who accompanied Bob Hartzel of Geosyntec during both the 2007 and 2008 field investigations. At each water body, aquatic vegetation was identified from the shoreline by visual inspection and by using an aquatic vegetation grappling hook to sample submersed vegetation.

1.3 Vegetation Assessment Results

The macrophyte species observed at each water body during the 2007 and 2008 field investigations are listed on the following pages. These results are not intended to represent a comprehensive inventory of all macrophytes growing within the water bodies. In general, the lists represent the species observed from a limited number of shoreline locations. Non-native species are noted in each table with an asterisk and red text.

REEDY MEADOW LOWER POND (Lynnfield/Wakefield)

Plant Species	Common Name
<i>Lemna sp.</i>	Duckweed
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed
<i>Ceratophyllum demersum</i>	Coontail
<i>Wolffia sp.</i>	Watermeal

Comments and Recommendations:

- No non-native species observed.

REEDY MEADOW UPPER POND (Lynnfield/Wakefield)

Plant Species	Common Name
<i>Lemna sp.</i>	Duckweed
<i>Wolffia sp.</i>	Watermeal
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed
<i>Ceratophyllum demersum</i>	Coontail
<i>Nuphar sp.</i>	Yellow Water Lily
<i>Elodea canadensis</i>	Waterweed
* <i>Trapa natans</i>	Water Chestnut



Water Chestnut

Comments and Recommendations:

- A small infestation of water chestnut observed, with a small number of floating rosettes observed on both the 2007 and 2008 survey dates. Control of this infestation should be a high priority. The prospects for control of this highly invasive plant are good if an infestation is caught in its early stage. This annual plant tends to produce seeds in July or August, so an effort should be made early each summer to pull out any new plants before they propagate. Seeds can remain in the sediment for several years before sprouting, so multiple years of control efforts will be required before the "seed bank" (seeds that have accumulated in the bottom sediment) in each water body becomes depleted.

For relatively small areas of infestation, such as those observed in the Reedy Meadow area, hand pulling can be an effective and low-cost control technique. The roots of water chestnut plants are typically quite shallow, making it possible to pull the entire plant and root structure out in most cases. A slow and steady pulling motion yields the best results and limits the number of plants that break off, leaving the roots and seeds in the sediment. All harvested plants should be disposed of or composted in an area well away from the water's edge.

Ongoing monitoring and harvesting (annually at a minimum) is strongly recommended for each infested area to prevent the water chestnut infestations from getting out of control.

LWSC DIVERSION CANAL (Lynnfield)

Plant Species	Common Name
<i>Sparganium sp.</i>	Bur-reed
<i>Typha latifolia</i>	Cattail
<i>Pontederia cordata</i>	Pickerelweed
* <i>Trapa natans</i>	Water Chestnut

Comments and Recommendations:

- A small number of water chestnut rosettes were observed in the canal during the 2007 survey. See Water Chestnut management recommendations above for Reedy Meadow Upper Pond.

SAUGUS RIVER (downstream of LWSC Dam, Lynnfield/Wakefield)

Plant Species	Common Name
* <i>Trapa natans</i>	Water Chestnut

Comments and Recommendations:

- A small number of water chestnut rosettes were observed in the area immediately downstream of the LWSC dam during the 2007 survey. See Water Chestnut management recommendations above for Reedy Meadow Upper Pond.

PILLINGS POND (Lynnfield)

Plant Species	Common Name
<i>Lemna sp.</i>	Duckweed
<i>Potamogeton pectinatus</i>	Sago pondweed
<i>Nuphar sp.</i>	Yellow Water Lily
* <i>Potamogeton crispus</i>	Curlyleaf Pondweed
* <i>Najas minor</i>	European Naiad

Comments and Recommendations:

- Small amounts of Curlyleaf Pondweed and European Naiad were observed along the pond's southern shoreline. No management of these species is recommended at this time. Macrophyte growth in general appears to be limited by poor water clarity and sediment substrate alterations due to the prior dredging project.
- Very turbid conditions were observed during both the 2007 and 2008 surveys, with high algal productivity. An apparent blue-green algae bloom was observed on the 2007 survey date. Abundant blue-green algae and filamentous green algae were noted during the 2008 survey.
- Water Chestnut was observed in Pillings Pond during a 2005 survey. See recommendations for Reedy Meadow Upper Pond.



European Naiad



Curlyleaf Pondweed

HAWKES POND (Lynnfield/Saugus)

Plant Species	Common Name
<i>Lemna minor</i>	Lesser Duckweed
<i>Spirodela polyrhiza</i>	Big Duckweed
<i>Elodea canadensis</i>	Waterweed
<i>Ceratophyllum demersum</i>	Coontail
<i>Utricularia sp.</i>	Bladderwort
<i>Nuphar sp.</i>	Yellow Water Lily
* <i>Potamogeton crispus</i>	Curlyleaf Pondweed
* <i>Najas minor</i>	European Naiad

Comments and Recommendations:

- Small amounts of Curlyleaf Pondweed and European Naiad were observed at shoreline sampling locations. No management of these species is recommended at this time.

GRISWOLD POND (Saugus)

Plant Species	Common Name
<i>Lemna minor</i>	Lesser Duckweed
<i>Utricularia vulgaris</i>	Common Bladderwort
<i>Elodea canadensis</i>	Waterweed
* <i>Cabomba caroliniana</i>	Fanwort
* <i>Myriophyllum heterophyllum</i>	Variable Milfoil



Variable milfoil

Comments and Recommendations:

- Very dense Fanwort with dense patches of Variable Milfoil observed.
- The options for effective control of both Fanwort and Variable Milfoil are quite limited. Mechanical control (e.g. mechanical cutting/harvesting) is not recommended because these species propagate by vegetative fragments. Although very short term control can be achieved, fragments created by mechanical harvesting tend to spread the infestations and result in a higher plant density when the plant grows back.
- Herbicides can provide control of these species for a relatively short duration. Fanwort is usually best controlled with fluridone, a systemic herbicide that will typically provide a season or two of control. However, fluridone is not effective at treating Variable Milfoil. Variable milfoil is usually best controlled with diquat dibromide, a broad-spectrum contact herbicide that works quickly on a wide range of submerged plants, but also typically has a short duration of effectiveness. Regrowth of some species has been rapid after treatment with diquat in many cases, often within the same year. (Massachusetts Final GEIR on Eutrophication and Aquatic Plant Management,



Fanwort

2004).

UNNAMED POND, SOUTH OF GRISWOLD POND (Saugus)

Plant Species	Common Name
<i>Elodea canadensis</i>	Waterweed
<i>Najas flexilis</i>	Bushy Pondweed
<i>Utricularia vulgaris</i>	Common Bladderwort
<i>Nymphaea odorata</i>	White Water Lily
* <i>Marsilea quadrifolia</i>	Water Clover
* <i>Potamogeton crispus</i>	Curlyleaf Pondweed
* <i>Najas minor</i>	European Naiad



Water Clover

Comments and Recommendations:

- A relatively small patch of Water Clover was observed from one of the shoreline monitoring locations. This plant uncommon in Massachusetts, but it is reported to have the potential for nuisance growth. This growth of this plant should be tracked carefully in future years, to determine whether or not it is spreading and if it appears to be outcompeting native species.
- Small quantities of European Naiad and Curlyleaf Pondweed were observed. No management of these species is recommended at this time.

SILVER LAKE (Saugus)

Plant Species	Common Name
<i>Utricularia radiata</i>	Little Floating Bladderwort

Comments and Recommendations:

- No non-native species observed. Very scant overall growth observed.

PEARCE LAKE (Saugus)

Plant Species	Common Name
<i>Utricularia radiata</i>	Little Floating Bladderwort
<i>Nuphar sp.</i>	Yellow Water Lily
* <i>Myriophyllum heterophyllum</i>	Variable Milfoil

Comments and Recommendations:

- Patchy growth of Variable Milfoil was observed at the northern tip of the lake during the 2007 survey. Spot treatment with diquat dibromide could be considered if the infestation appears to be spreading to beyond the lake's northern tip.

WALDEN POND (Lynn/Saugus)

Plant Species	Common Name
<i>Elodea canadensis</i>	Waterweed
<i>Potamogeton perfoliatus</i>	Claspingleaf Pondweed
<i>Potamogeton gramineus</i>	Variable Pondweed

Comments and Recommendations:

- No non-native species observed.

FLAX POND (Lynn)

Plant Species	Common Name
<i>Nymphaea odorata</i>	White Water Lily
<i>Ceratophyllum demersum</i>	Coontail
<i>Decodon verticillatus</i>	Swamp Loosestrife
* <i>Potamogeton crispus</i>	Curlyleaf Pondweed

Comments and Recommendations:

- Very scant overall growth observed.
- A small amount of Curlyleaf Pondweed fragments were observed at several locations. No management of this species is recommended at this time.

SLUICE POND (Lynn)

Plant Species	Common Name
<i>Nuphar sp.</i>	Yellow Water Lily

Comments and Recommendations:

- No non-native species observed.