

Barrowsville Pond Water Chestnut Removal Plan

Barrowsville Pond is a man-made waterbody owned by the Conservation Commission (map 27, parcel 118). There is a small parking area on Power Street that is also owned by the Conservation Commission (map 27, parcel 110-05). Barrowsville Pond was formed by damming the Wading River in two locations closest to Barrows St. The pond is approximately 32 acres. Barrowsville



Pond is subject to protection under the Conservation Commission Act (MGL Chapter 40 Section 8C) and Article 97 of the Amendments to the (Massachusetts) Constitution. The pond also contains several wetland resource areas subject to protection under the Massachusetts Wetland Protection Act (MGL Chapter 131, Section 40) and its implementing Regulations (310CMR10.00). Band (10.54), bordering vegetated wetland (10.55), land under waterbodies and waterways (10.56), bordering land subject to flooding (10.57) and riverfront area (10.58) are all wetland resource areas protected by the Act.

In the Spring of 2008, Open Space Committee (OSC) members and Conservation Agent Jennifer Carlino observed Water Chestnut (*Trapa natans*) in the pond. Water chestnut is designated as an exotic, invasive plant by the IPANE (Invasive Plant Atlas of New England) project. Other invasive plants can also be found within Barrowsville Pond; however, they are perennial plants and would require extensive and costly plans to remove them from the pond. Variable water milfoil is one such plant that would require a drawdown of the pond, dredging, or a chemical treatment. The Town of Norton does not have the funds for permitting or implementation of such a project. Water chestnut is an annual and while labor-intensive, it can be removed effectively without cost to the Town. Water chestnut has not been located in any other waterbody in Norton. The OSC aims to prevent the spread of water chestnut to other waterbodies in Norton and to eradicate it from Barrowsville Pond.

Due to the nature of the Water Chestnut plant, removal projects will require a timeframe of at least five years from the point of removing all plants from the pond and assumes that all plants can be removed from the pond annually within the five-year timeframe. Otherwise, the time commitment would be extended.

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Plant Description

Water Chestnut (*Trapa natans*) is an exotic invasive plant from Eurasia. It is an annual herb transported mostly by geese when the 4-horned seed gets trapped in its feathers. One seed can produce 300 more seeds within 1 year and the seeds are viable for 5 years. This plant can outcompete our native plants and is a danger to Norton's biodiversity.



Water Chestnut photograph taken by Jennifer Carlino

This description is taken from the IPANE website. This website has information about most invasive plants and can be found at <http://nbii-nin.ciesin.columbia.edu/ipane/index.htm>.

“Trapa natans is an aquatic annual that grows as a rooted, floating plant. Its floating leaves are arranged in a rosette. Individually, the 2-4 cm (0.75-1.5 in.) long upper leaves are slightly rhombic to rhombic-ovate and are sharply dentate along the leaf margins. There are conspicuous veins on the lower surface as well as short, stiff hairs. The submerged lower leaves are alternate and feather-like and can reach up to 15 cm (6 in.) long. The petioles of the floating leaves are 0.6-1.8 m (2-6 ft.) long. The inconspicuous white flowers consist of four 8 mm (0.3 in.) long, white petals and four green sepals, and are located in the center of the rosette. Flowering begins in the northeastern United States in July and continues until the plants are killed by frost. The fruit is a four-horned nut-like structure about 3 cm (1.2 in.) wide that develops underwater. Fruits ripen in about a month and can remain viable for up to about twelve years. Each seed can give rise to ten to fifteen rosettes, and each rosette may produce as many as twenty seeds. Page References Bailey 734, Crow & Hellquist 209, Fernald 1050, Gleason & Cronquist 313, Holmgren 293, Magee & Ahles 768. See reference section below for full citations.”

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*“It has often been reported that waterfowl or water currents can move the seeds of *Trapa natans* long distances. However, the fruits weigh 6g and have been described as falling to the bottom of lakes “like sinkers,” making them unlikely to be carried in the feathers of birds or downstream by moving water. The empty husks of the fruits do tend to float, possibly leading to the belief that they could be moved in these ways. *Trapa natans* may also disperse by fragmentation. Plant fragments can be carried by water, waterfowl and boats to new locations.”*

*“Sometime before 1879, *Trapa natans* was intentionally planted by a gardener at the Cambridge botanical garden in Fresh Pond, Cambridge, MA. This gardener reported planting it in other ponds as well. It was also distributed up to Concord, MA, where it was planted in a pond near the Sudbury River. By 1899, it was extremely invasive in the pond and the river, and needed to be pulled out. There is an 1859 record from Concord, MA, but notes on the specimen and from the New England Botanical Club indicate that this date is in error, and that it was actually from 1879. By 1920, *Trapa natans* had reached western Massachusetts. Since then, it has spread into Lake Champlain in Vermont, the Nashua River in New Hampshire (1998) and most recently the Connecticut River in Connecticut in 1999. Any area that is downstream of these incursion sites is threatened.”*

Proposed Project

The OSC will conduct all activities in accordance with the Standard Operating Procedure: Using Hand Pulling and Benthic Barriers to Control Pioneer Populations of Non-Native Aquatic Species: A Guide for volunteers. MA DCR, Lakes and Ponds Program, January 2007. A wetland permit will be obtained at the beginning of 2009 to perform the removal project.

The OSC proposes to manually remove all plants in Barrowsville Pond on an annual basis. The OSC relies on volunteers to assist in the removal and cooperation with the Town of Norton Highway Department for access to the dump truck and the Hill Street Landfill site to stockpile materials.

Required Permits

Order of Conditions from Conservation Commission

The activities will take place in multiple wetland resource areas including bank and bordering lands subject to flooding. The project qualifies as a limited project under 310CMR10.53(4). Activities take place within wetland resource areas but do not actually alter them.

Bank

Approximately 20 feet of bank will be temporarily altered during the plant removal by people launching canoes and transporting plants to the parking area. This bank activity will be conducted within the existing canoe launch area. Any plants altered will be allowed unrestricted regrowth after the removal program.

1. The physical stability of the bank will not be altered since the bank is already void of plants.
2. The bank soil will not be altered and will not alter the water carrying capacity of the bank.

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3. The bank is relatively sandy with deposited silts and clays. Repeated walking on the shoreline (bank) will not create sedimentation of the pond. Typically the canoes pull up on the shoreline and one person removes the plants rather than every canoeist removing the plants themselves. This reduces the amount of potential sedimentation.
4. The area is currently void of plants and an existing canoe launch. It currently does not exhibit any characteristics of breeding habitat or provide escape cover. Food for fisheries is provided by the tree canopy and the project will not reduce the amount of leaf litter entering the pond.
5. The project does not contain an above-threshold alteration and does not impair the bank's ability to provide wildlife habitat.

BLSF (bordering lands subject to flooding)

Barrowsville Pond and the Wading River do contain a floodplain shown on the FEMA FIRM dated 6/18/87. The proposed project is within the floodplain but in the existing altered bank/canoe launch and parking lot area.

1. Flood storage volume shall not be lost since the project doesn't include a soil removal or a tree/shrub removal component. All activity in the floodplain consists of walking from the canoe launch to the parking lot in existing altered areas.
2. Flow of water is not restricted by the recreational use of canoes, or the launching of canoes.
3. The project does not contain an above-threshold alteration and does not impair the bank's ability to provide wildlife habitat. Activities to remove the invasive plants are likely located in the 10-yr floodplain; however, the removal of exotic, invasive plants will improve the aquatic ecosystem and not treated as a negative impact.

Methodology

Plants will be removed beginning in June with a target date of August for completion of the field season. Participants will kayak/canoe/wade portions of the pond and manually pick up the plants. Plants will be placed on the top of the kayaks or inside the canoes and brought to the shoreline where they will be loaded into the town's dump truck. Plants removed in August will be tipped upside down during retrieval to prevent the seeds from falling into the water. Participants will also search for floating seeds and collect them in small pails for disposal.

Proposed Timeline

The OSC has already begun its proposed project. Plants were removed by the OSC during the Barrowsville Pond Canoe Trip of July 19, 2008. Two follow-up canoe trips were planned specifically to remove the plant and were held on August 3rd and 17th, 2008. The OSC voted to make removal of this plant one of their priority projects and committed to ongoing removal projects.

Winter of 2008-09

- The OSC will apply for a permit from the Conservation Commission to remove the exotic, invasive plants (technically they are wetland plants and require a wetland permit to remove them).

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Spring of 2009

- The OSC will schedule workdays for the summer months through between when the plant will be in its vegetative state (June) and when the plants will produce seeds (August). All workdays will be advertised in the local newspaper and through the Conservation Commission's mailing list (people who request notification of conservation and open space events).
- Work out a better parking plan for the property. There are only four parking spaces at the designated boat launch area. Sometimes two cars/trucks will park in two spaces each. The OSC will need to prepare a sign for proposed workdays regarding parking in the spaces and locate additional parking for volunteers.
- In May-June the committee will perform a reconnaissance survey (transect) to document the extent of water chestnut plants in the pond and any other exotic, invasive species. Currently estimated infestation of water chestnut is shown on the map below.



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Summer of 2009

- The OSC will host the workdays on the weekends during June and July. Participants may bring their own canoes/kayaks or reserve a spot in one that is available through the OSC.
- The OSC will evaluate the success rate for removal of the water chestnut for the 2009 field season.
- The OSC will host an event for all volunteers and participants.

Workdays will take the OSC through the Fall of 2014. However, as the population is decreased by the seeds not being replenished the number of workdays and plants to be removed will decrease.

Evaluation of the Project

The success of the project will be measured annually in the percent cover of the pond remaining with water chestnut. Percent cover will gage the next season's activity level and approximate length of the overall project.



Volunteer Effort

Volunteer efforts will be measured in hours of service and donation of goods or time. The OSC will keep detailed records of the number of volunteers per workday and hours completed. This will allow the OSC to also measure the project by acreage removed by volunteer hours. This will assist in estimating the amount of time and volunteer labor needed for other projects of this type. The OSC will also keep track of the amount of water chestnut removed (# of filled dump trucks per event or season).

