

Clearing the Current

Managing Aquatic Invasive Species

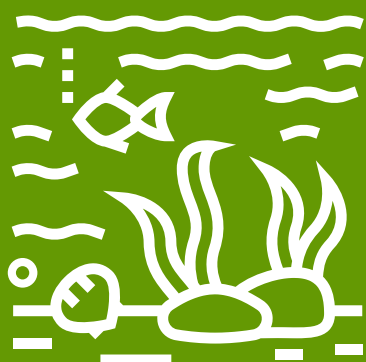
A Five-Year Plan for the Charles River

Like many urban rivers, the Charles River suffers from the rampant growth of invasive aquatic species, fast-growing non-native plants that are overtaking the river ecosystem. Six of the “sinister seven” aquatic invasive species are found in the Charles River: Eurasian watermilfoil, variable watermilfoil, curly-leaf pondweed, fanwort, spiny/brittle naiad, and water chestnut.

CRWA has partnered with the Department of Conservation and Recreation (DCR) to develop a 5-year management plan to control the growth of submersed invasive aquatic plant species in the Charles River’s Lakes District (Weston, Waltham, Newton) and Lower Basin (Watertown, Newton, Cambridge, Boston). The management program is being implemented in light of escalated concerns from the boating community and the rate at which aquatic plants have overtaken areas of the river.

The plan entails applying safe, low-dose herbicides to the Lakes District and Lower Basin each summer to eliminate invasive species growth and restore native plant species, habitat, and water quality to the Charles River ecosystem.

How do invasives threaten the Charles River?



- Pose recreational hazards
- Reduce biodiversity
- Limit habitat
- Degrade ecosystem health
- Outcompete native plants
- Impair water quality

Learn more about invasive species in the Charles River watershed & what you can do to help: crwa.org/invasive-removals

DCR Aquatic Vegetation Management Plan Timeline

2019

August - Vegetation Survey of Lakes District

2021

July - Vegetation Survey of Lower Basin
Summer - Permitting in Lower Basin

2022

Winter/Spring - Permitting in Lakes District
June - Pre-treatment survey
July - Low-dose, whole-river Sonar treatment
August - Sonar booster applications & spot treatment w/ ProcellaCOR
September - Post-treatment survey

2023

June - Pre-treatment survey
July - Low-dose, whole-river Sonar treatment
August - Sonar booster applications & spot treatment w/ ProcellaCOR
September - Post-treatment survey

2024

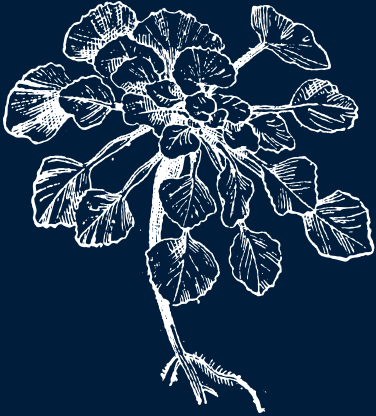
June - Pre-treatment survey
July/August - Spot treatments with procellaCOR and/or Sonar
September - Post-treatment survey

2025

June - Pre-treatment survey

Frequently Asked Questions.

Charles River Aquatic Vegetation Management Plan



What are the effects of aquatic invasive plants on the Charles River?

Environmental Concerns

Aquatic invasive plants are destructive to the Charles River ecosystem. By outcompeting native species, they reduce biodiversity, impair water quality, and threaten aquatic life. Biodiversity is critical to the Charles River because it supports the water quality and the structure of the aquatic food web. Additionally, like native species, invasive plants require oxygen to survive. An abundance of invasive plant growth decreases the availability of oxygen which greatly impacts the overall survival and health of aquatic life. When invasive plants flourish, the survival of all aquatic life is threatened.

Recreational Concerns

Certain invasive plants, especially Eurasian watermilfoil, are also a major hazard to recreational activities. Invasive aquatic species like Eurasian watermilfoil and water chestnut root in the sediment and grow to the surface, and quickly become densely populated in coves and along the riverbank. Dense plant growth like this is a hazard to recreation— invasive plants are known to catch the oar of a rower, increasing the risk of capsizing. Additionally, as they spread and choke the shores of the waterway, boaters are forced into the center of the river, increasing crowding and the chance of collision as boaters.

Why are herbicides being used for management?

Many options were considered when deciding which treatment method to use. Management techniques considered include diver hand-pulling, mechanical harvesting, benthic barriers, herbicides, and/or doing nothing. The possible effects on the environment and recreational activities were considerations when it came to choosing the treatment method. Herbicide management was chosen as the best treatment option for most of the aquatic invasive species in the Charles, mainly due to the nature and extent of the infestation. The one exception is water chestnut (*Trapa natans*), which will be and has been effectively treated with hand pulling and mechanical harvesting. When applied correctly, herbicides have been found to only affect target species and have a negligible effect on non-target species and wildlife.

What herbicides are being used, and are they safe?

There are many different types of herbicides on the market that treat different target species and function in different ways. When choosing the most effective herbicides to use in the Charles River, reducing potentially harmful environmental effects was prioritized.

Not Chosen: Diquat

Diquat was considered for this project, but was ultimately not chosen. Diquat is a contact herbicide, which is a more fast-acting treatment and typically provides season-long control of target species. Contact herbicides do not target the root system of the plant, allowing re-growth of certain target species. Diquat was also once applied on the Mystic River and application was associated with a toxic cyanobacteria bloom. Because of how it works and potential environmental hazards, CRWA does not support the use of Diquat for this project.



Frequently Asked Questions.

Charles River Aquatic Vegetation Management Plan (cont.)

What herbicides are being used, and are they safe? (cont.)

Chosen: Florpyrauxifen-benzyl (ProcellaCOR) and Fluridone (Sonar)

ProcellaCOR and Sonar are two systemic herbicides that are effective in targeting watermilfoil, which is the main concern in the Charles. Systemic herbicides incorporate themselves within the plant tissue and break down the structural integrity and eventually “dissolve” the plant. This form of treatment can control target species for multiple years and these two herbicides have been chosen to treat the Charles River. These products work at low doses and it was found that Sonar is better used for full-water body treatment, while ProcellaCOR was more effective in more direct and chosen locations. The state registration details of Sonar and ProcellaCOR can be found on the Massachusetts Pesticide Product Registration Information Portal.

Both of these herbicides have been deemed safe for drinking water and surface water. They are both registered aquatic herbicides with the U.S. Environmental Protection Agency (EPA). The evaluations performed by the EPA are diligent in ensuring that the herbicide treatment is safe for human and aquatic health. These herbicides are also registered for use in Massachusetts

and go through a rigorous evaluation process before the herbicides can be applied. Detailed safety and use evaluations of ProcellaCOR and Sonar (Fluridone) have been performed by the Massachusetts Department of Environmental Protection and the Massachusetts Department of Agricultural Resources, respectively. The Division of Marine Fisheries recommended applying the herbicides outside of fish migration timeframe, and the herbicides will be applied outside of that timeframe.

How will this affect my boating experience?

These herbicides will be physically applied for a few days each year. On those days, the river will still be open and safe to use. Over time, you may notice a more open and less dense spread of plants in the river. Oars, paddles, and motors will less frequently encounter the restraint of aquatic plants.

What if nothing is done?

The Charles is a highly modified river system. Through time, the River has been filled, dammed, and subject to pollution from surrounding lands. The growth of invasive plant species is one consequence of this history. If nothing is done to address the invasive species in the Charles, the environmental and recreational threats will become more prominent. The root cause of the flourishing of invasive plants can be attributed to the excess phosphorus within the water and sediment of the river. While CRWA is working with cities and towns to address this root cause, stormwater runoff from the heavily developed land around the River still flows into the Charles. In the Lakes District and Lower Basin, invasive plants are on the verge of taking over the ecosystem, and will thrive even more with the warmer temperatures caused by climate change. If we allow them to continue to spread, habitat space for native species will continue to decline, oxygen in the river will deplete, and recreational users of the river will be at increased safety risk. Due to dense development, especially around the Lakes District and Lower Basin, the Charles needs to be maintained as the human-made system it is.



See the full [Vegetation Management Plan](#). Questions? Contact Lisa Kumpf, River Science Program Manager, lkumpf@crwa.org