



Northeast Aquatic Research

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To: Taconic Shores Property Owners Association

Re: Action Plan for The Management of New Cattail Growth in Robinson Pond

Introduction

In the summer of 2020, Northeast Aquatic Research (NEAR) was contacted by the Taconic Shores Property Owner's Association to develop a specific action plan for the monitoring and management of new cattail growth that has appeared in the north and northeastern sections of the lake. During the drawdown in the summer of 2020, there was significant expansion of cattails and other emergent plants into the shallow areas in the northern section of the lake adjacent to the Roeliff-Jansen Kill (Figure 1). Access in and out of this area was significantly reduced for boating due to the increased growth.



Figure 1. Area of increased cattail growth in 2020

October 27th Site Visit

NEAR inspected the entire pond with a special focus on the emergent growth in the northeastern section. In this section, we used a combination of field notes, GPS waypoints and photos to develop an acreage estimate for the emergent area. We estimated that there were ~14 acres of new emergent plant growth in this section (Figure 4). This may be an underestimate, as there was extensive management of this area via mechanical harvesting, which can make it more difficult to spot underwater stems. The densest and most recreation-impacting section of growth was along the shore of the northeastern section of Zone 6 (Figure 2; Zone map in appendix A). This area was completely overgrown with emergent plants and was difficult to navigate with a rowboat. We did find two small water chestnut plants in this area, which were pulled.



Figure 2. Northeastern Section of Zone 6, with extensive emergent growth

The remainder of the northeastern section has a lot of plant and algae growth, specifically filamentous algae, watermeal (*Wolffia* sp.), and sporadic emergent plant growth (Figure 3). The emergent growth extended to the southeast part of Zone 6 and into parts of Zone 5 (Figure 4).



Figure 3. Zone 6 extensive plant and algae growth.

Robinson Pond Management Areas

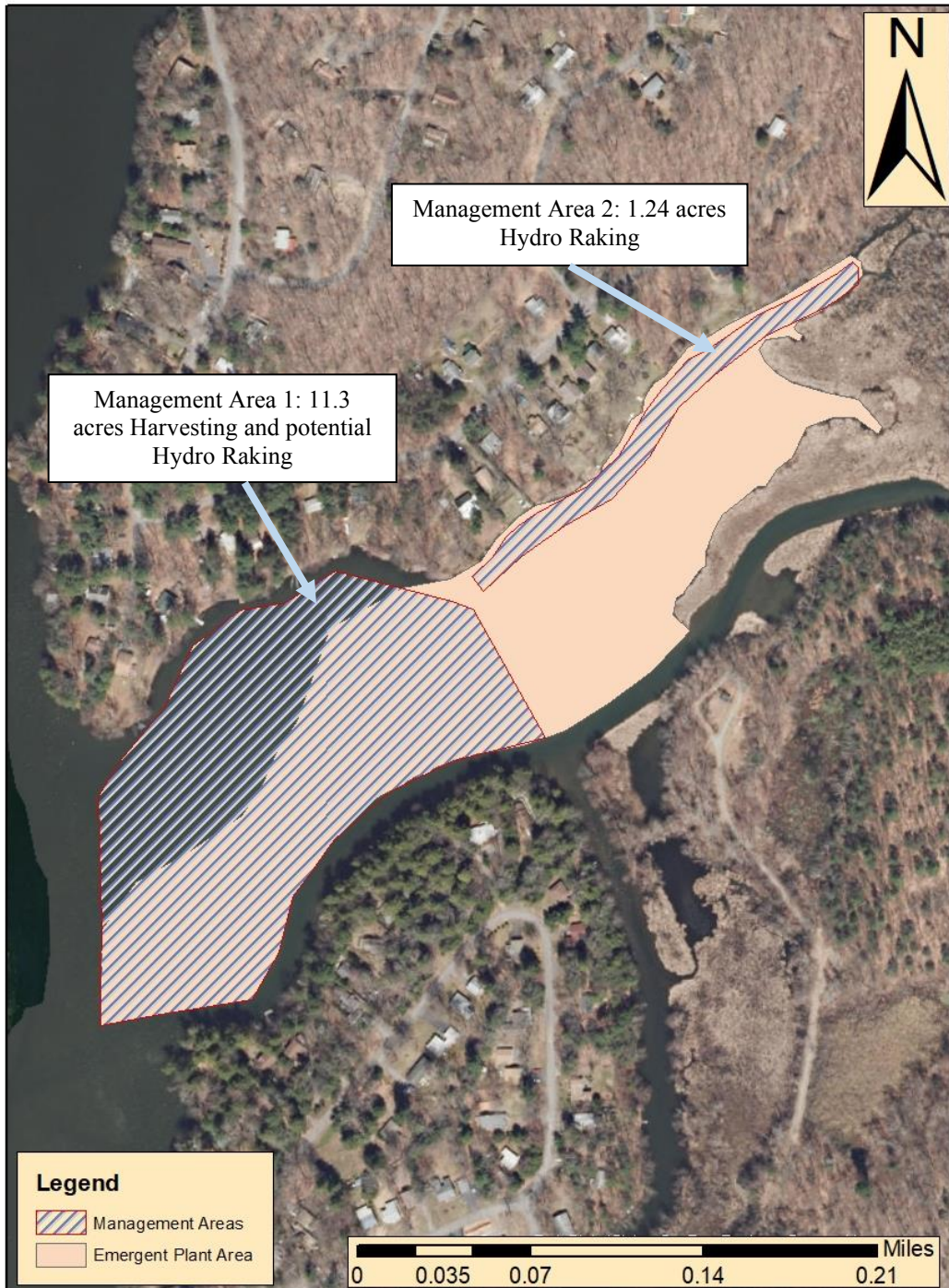


Figure 4. Robinson Pond management areas and emergent plant growth. The hash marked areas indicate areas where we believe that management should focus and the beige area is where we estimated the extent of new emergent growth.

Management Strategy

The drawdown during the summer of 2020 exacerbated conditions already present in the pond. The northeastern section of the pond, which has been receiving sediments and nutrients from the Roeliff-Jansen Kill for decades is extremely shallow and conducive for aggressive aquatic plant growth. The expansion of cattails and emergent plants into this area was to be expected with a summer of exposed, high nutrient sediment conditions. Since cattails normally do not grow in water deeper than 1.5-2.5 feet, we expect that a large portion of the cattails that have expanded will senesce when the lake reaches full pool in the summer of 2021. Most emergent plants observed in the southeastern section of Zone 6 were already under the water when the lake was at full pool. It should be acknowledged that this could be the result of extensive harvesting, which was done before the October 27th survey.

The impacts of the summer drawdown were most pronounced on the northern side of Zone 6, adjacent to the houses south of Lakeview Road. The drawdown allowed emergent plants to grow throughout the entire open water area, severely limiting access. Unlike the rest of Zone 6, the emergent plants were above the water at full pool. Due to the shallow nature of this area, the access may not be restored when the lake is at full pool in 2021.

Management Area 1: Mechanical Harvesting in the Northeastern Section

To control the increased cattail growth, mechanical harvesting should continue in the northeastern section (Zone 6). The goal of harvesting should be to cut the cattails below the waterline to drown out the plants. Harvesting should be done in the middle section of the lake on an “as needed” basis. It is not clear whether the cattails at the southernmost extent of zone 6 will continue to persist when the lake is at full pool. The shallow nature of this area will undoubtedly support future aquatic plant growth. However, it is unclear whether or not cattails can persist in these areas under normal water levels. A hydro raking operation may be needed in future years if certain areas have persistent cattail growth after the pond returns to full pool.

General Harvesting Guidelines

To limit the impacts of harvesting operations, a boom should be purchased which will collect the floating debris. This will help limit the number of cattail fragments that spread around the lake after harvesting. This boom can also be used during regular mechanical harvesting operations. The boom that NEAR recommends is the Anaconda Boom from pondservice.org.

Management Area 2: Hydroraking for Lake Access

The northeastern shoreline of Zone 6, specifically the properties on the south side of Lakeview Road, have had their access to the main lake severely restricted by excessive cattail growth. Navigation, even with oars and a rowboat, was incredibly difficult. Cutting a ~50ft path using a hydro rake instead of a harvester would ensure access to the main lake. The advantage of a hydro rake is that it can remove the roots of the cattails, leaving a longer lasting channel. The proposed hydro raking area is offset 20 feet from the shoreline, which allows residents to clean their shoreline areas.

General Hydroraking Guidelines

There are a few qualified companies who can perform these services listed below:

Aquatic Technologies
Contact: Chris Hanlon
aquaticnj@optonline.net

Solitude Lake Management
Contact: Jeff Castellani
JCastellani@solitudelake.com

Princeton Hydro
Contact: Fred Lubnow
flubnow@princetonhydro.com

To standardize bids, each company should be asked to bid on ~1.24 acres of plant removal. Each company should provide the TSPOA with an estimated day for completion and any special access needs. Ease of disposal will certainly influence the project cost, so the TSPOA should similarly arrange for plant material disposal as part of the mechanical harvester operation. Due to the fact that the distance traveled by the hydro rake to the harvesting disposal site (from 500 to 800 yards) can influence cost, using the mechanical harvester as a barge to offload plant material can reduce travel distance and cost.

Permitting Requirements

Based on experience with hydro raking and mechanical harvesting, we anticipate that the TSPOA will need to apply for three separate permit authorizations under the joint application form from DEC:

Freshwater Wetlands – under Article 24

Excavation and Fill in Navigable Waters – under Article 15, Title 5

Water Quality Certification – under Section 401 of the Clean Water Act (Appendix B).

The excavation and fill in navigable waters applies to the hydro raking operation, as it is disturbing the bottom of the lake when digging up plant roots. A short environmental assessment form may be needed as well (Appendix B). The Region 4 permit administrator should be contacted before application submission to confirm requirements.

Conclusions

The hydro raking of the impacted area south of Lakeview Road and the harvesting in Zone 6 should allow for lake access and recreation. It is important to realize that one of the underlying reasons that the cattail and emergent plants became so abundant was due to the shallow nature of this area, presumably exacerbated by nutrient inputs by the Roeliff-Jansen Kill and local non-point source pollution (runoff, onsite wastewater, unsustainable lawn practices). Looking at the historical Google imagery (Figure 5), the shallow nature of this zone has been evident since 2015. Shallow

lakes that have such an extreme watershed load (200:1 watershed to lake ratio) are going to be subject to increased sedimentation and decreased depths over time. The summer drawdown gave the TSPOA a unique look into the future of the northeastern arm if proper management action is not taken.



Figure 5. Historical imagery of the northeastern section of Robinson Pond

Thank you for taking the time to review this action plan. Feel free to email me with any additional questions/comments.

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Appendix A

Robinson Pond Zones

