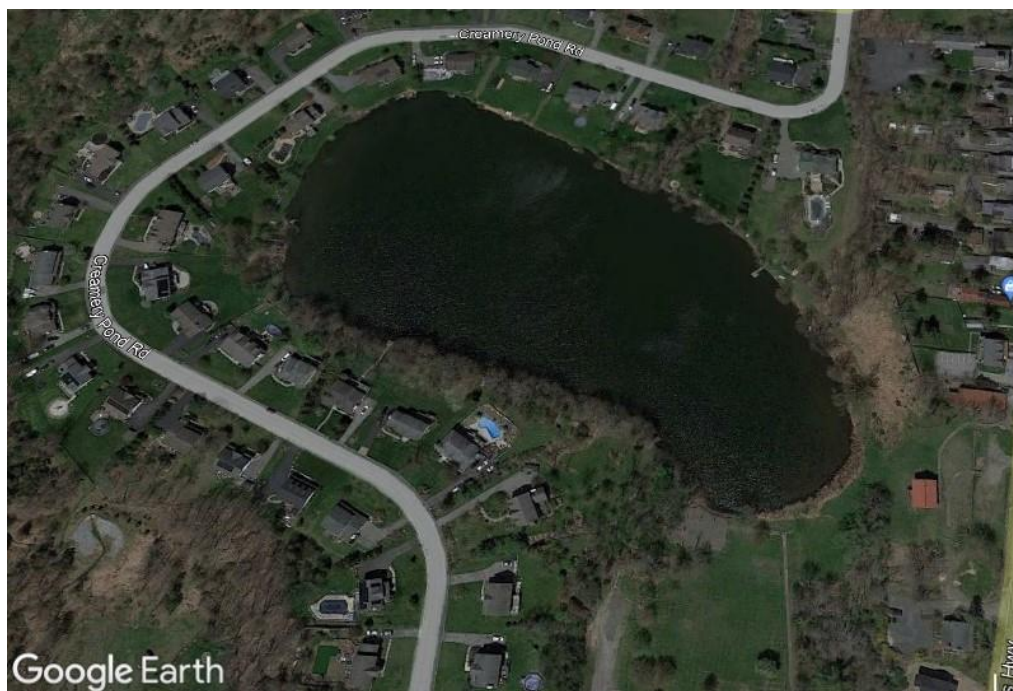


2022:
Final Report
Creamery Pond *Hydrilla verticillata* Management Project

Prepared for:
The Lower Hudson Partnership for Regional Invasive Species Management

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This final report summarizes the 2022 hydrilla management project completed at and for Creamery Pond in Sugarloaf, NY



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Background:

Hydrilla verticillata is a federally-listed noxious weed that is prohibited in New York (6 NYCRR Part 575). An extremely dense infestation within Creamery Pond has significantly impacted water quality in the pond and threatens downstream habitats including the unnamed outflow stream, which flows into Black Meadow Creek. Black Meadow Creek flows into Moodna Creek (a tributary of the Hudson River Estuary). The current infestation also threatens neighboring waterbodies, as hydrilla could be potentially transported by waterfowl, watercraft, and/or fishing equipment. Creamery pond has been stocked repeatedly with sterile grass carp (funded by both NYSDEC and private landowners) however, this method of biological control has been ineffective at controlling hydrilla in Creamery Pond. No other biological control methods exist for this species. Manual removal/harvesting for this species is not a long-term control method, as hydrilla can reproduce from small plant fragments, turions, and tubers in the sediment. An herbicide application was performed in 2008, but due to a lack of funding no further herbicide treatment has been performed through 2021.



Figure 1. NYSDEC hydrilla photo from 2020.

The hydrilla infestation at Creamery Pond remains the only known hydrilla presence within the LHPRISM area that was or is not the subject of ongoing management efforts. The Creamery Pond infestation is a source population of monoecious *Hydrilla verticillata*, a Tier 2 species. In 2021, DEC-ISCS documented hydrilla fragments escaping from Creamery Pond into the outlet stream and pulled rooted hydrilla established within the outlet stream and flows into to Black Meadow Creek. Black Meadow Creek feeds into Otter Creek which becomes Moodna Creek (a tributary of the Hudson River Estuary) when it joins with Cromline Creek. Black Meadow Creek is identified

as a “Biological Diversity Hotspot”¹ in both the “Orange County Open Space Plan” (2004) and the “Southern Wallkill Biodiversity Plan” (Miller et al. 2005). The Nature Conservancy’s Report “Identifying Conservation Priorities in the Hudson River Estuary Watershed” identifies the Moodna Creek watershed among a short list of priority watersheds within the Hudson River Estuary Watershed (Shirer and Tear, 2005). According to Smith et al., 2005 the area surrounding Creamery Pond was in the highest category for predicted species richness in the Hudson River Estuary corridor. The Black Meadow Creek Reservoir/Glenmere lands are located just a few thousand feet from Creamery Pond and are the largest and most robustly populated remaining habitat for the endangered Northern Cricket frog (*Acris crepitans*) in New York State². Black Meadow Creek is also home to 13 species of salamander. The Glenmere Lake/Black Meadow Creek marsh complexes are specifically under threat from the existence of hydrilla in Creamery Pond. Management of hydrilla once it has escaped to a higher flow system (i.e., Black Meadow Creek) would be much more difficult and expensive to control. The proposed management within Creamery Pond would not impact any protected species. Much of the outlet stream, Black Meadow Creek, and Glenmere Lake is New York State Regulated Freshwater Wetlands, and a proposed control project within these locations would be much more difficult.

Narrative:

Riparian landowners surrounding Creamery Pond have been seeking assistance with the hydrilla infestation since 2019. The proposed treatment that is the subject of this request will need to part of a multi-year control strategy. Riparian landowners have a vested interest in the eradication of Hydrilla from Creamery Pond. However, landowners are requesting funding and expertise from LHPRISM, SOLitude Lake Management, and NYSDEC in order to design and implement the proposed 2022 herbicide treatment and long-term control plan.

SOLitude lake management proposes an herbicide treatment in 2022 to control hydrilla biomass and prevent further tuber formation in Creamery Pond. Aquatic plant surveys, water quality monitoring, and a tuber survey will provide the baseline data for a long-term eradication plan. The proposed herbicide treatment would reduce hydrilla biomass and prevent tuber formation, involving application of the aquatic-approved herbicide Sonar® Q (fluridone). Pre-and post-treatment aquatic plant surveys will determine efficacy of the herbicide treatment and assess any impacts to non-target aquatic plant species within the pond. A fluridone treatment in 2022 is necessary to significantly reduce the risk of hydrilla spread from Creamery Pond. When started early in the growing season, fluridone treatment is expected to significantly reduce above-ground hydrilla biomass. In similar projects, tuber formation was impeded by treatment and hydrilla fragments from treatment areas showed significant injury are not expected to be viable for recolonization. Fluridone has been used successfully in New York and New Jersey in several large-

¹ <https://hudsonwatershed.org/wp-content/uploads/Moodna-Creek-Watershed-Plan-Final.pdf>

² https://www.dec.ny.gov/docs/wildlife_pdf/crickfrogrecplan15.pdf

scale monoecious hydrilla control projects.

The LHPRISM Steering Committee especially encourages projects which investigate methods for Tier 2 Species Control. While the herbicide fluridone, and particularly Sonar® products (Sonar® Genesis, Sonar® One, and Sonar® H4C) have successfully treated Hydrilla throughout NYS and NJ, this proposal would investigate the pelletized formulation Sonar® Q in this setting. Data from a Sonar® Q treatment in Creamery Pond may benefit other hydrilla treatment projects that have thickly accumulated soft-bottomed substrate (i.e., Connecticut River Hydrilla treatment). Sonar products have been proven safe and effective at controlling Hydrilla biomass and preventing tuber formation. However, thickly-accumulated soft-bottomed water bodies can often trap herbicides in sediment pore water. Sonar® Q was formulated to quickly release product from the pellets and maintain concentration within the water column. Water sampling events will be conducted following each treatment to ensure adequate concentration and assess plant response. Data collected regarding herbicide efficacy in this setting will be shared with the NYS Hydrilla Task Force and other regional stakeholders.

Goals:

The proposed treatment in 2022 will seek to achieve five major goals.

1. The first goal is to significantly decrease the hydrilla biomass within Creamery Pond. The Croton River Hydrilla Control Project saw hydrilla biomass decrease from 42.6% of sites pre-treatment to 15.25% of sites, with **no** “dense” sites remaining following the 1st year of Sonar® treatment. A significant reduction in biomass would immediately reduce the risk of hydrilla spreading to neighboring waterbodies.
2. The second goal of the treatment project is to ensure that remaining hydrilla biomass is too weakened to re-establish if relocated.
3. The third goal of the project is to prevent hydrilla tuber formation within Creamery Pond. Prior to NYSDEC’s Croton River treatment, hydrilla tubers were sampled at densities up to 2,082.6 tubers/m². Hydrilla tuber sampling efforts on the Croton River have *increased* each year since sampling began in 2016, yet **no** tubers have been found since 2018. This is evidence that fluridone treatment has effectively weakened hydrilla plants enough to prevent reproductive structures from forming and overwintering.
4. The fourth goal of the project is to provide riparian landowners with clear evidence that fluridone treatment is safe and effective, which will ensure that landowners will remain committed to funding treatment until the tuber bank can be exhausted.
5. The fifth and final goal of the project is to avoid impacts to native aquatic plant species within Creamery Pond. It is expected that the native species would be able to recolonize the available habitat once hydrilla is controlled. DEC-ISCS conducted a plant survey in 2020, which revealed 4 species of native aquatic plant; [spatterdock (*Nuphar advena*), American pondweed (*Potamogeton americanus*), watermeal (*Wolffia* spp.), and common

duckweed (*Lemna minor*)] none of which are anticipated to be susceptible to the Sonar® treatment.

Scope of Work:

SOLitude Lake Management in coordination with NYSDEC applied for a grant to perform the herbicide application at Creamery Pond in 2022 and on March 17th, SOLitude Lake Management received notification of Award of grant application for Hydrilla Management at Creamery Pond, NY. During the month of April SOLitude signed that subcontractor documents and on April 15th submitted the aquatic pesticide permit application documents to NYSDEC for review and approval. On May 25th, 2022 a site visit was performed by Bob Schindler of Solitude, Nicole White of NYSDEC and Devin DiGiacopo to visually assess hydrilla density and development, and survey for any hydrilla plant fragments immediately downstream of Creamery Pond.

As part of the permit review process Bureau of Ecological Health commented on concerns regarding potential impacts of fluridone to downstream wetlands that are known to support bog turtles. After a few weeks of discussion, the aquatic pesticide permit was approved on June 24th. The permit contained specific language regarding downstream fluridone fastest sampling and required a 5-ppb dose for the initial application instead of the proposed 15 ppb dose. Prior to each subsequent application, sampling was required to confirm that 5 ppb was not being exceeded downstream, and would permit subsequent herbicide treatment to be applied at 15 ppb. Due to the unforeseen increase in sampling requirement and site visits the scope of work was changed so that LHPRISM would perform the required post treatment survey.

On July 1st the required seven-day notice was submitted to NYSDEC notifying of the initial treatment that would be conducted on July 8th. The herbicide applications were executed by mobilizing a ten-foot jon boat and a licensed applicator using a small granular herbicide spreader to disperse the herbicide formulation evenly throughout Creamery Pond. The goal of the herbicide application program was to maintain greater than one part per billion (>1ppb) of fluridone for a minimum of sixty days of exposure time throughout the water column. The initial fluridone sampling event was performed on July 18th, but due to an error in sample bottles, the samples could not be processed and an additional sampling event was performed on July 22nd. The results of this sampling indicated a concentration of 2.7 ppb in the lake, with <1 ppb results downstream. Due to the lack of downstream herbicide concentration and late season start to the management program, the second herbicide treatment implementing 15 ppb was applied on August 5th. On August 17th, the second fastest sampling event was performed, and unfortunately, there was again an error in sampling bottles, but the error was realized prior to shipping, and the re-sampling was conducted two days later. The results of this sampling event indicated a lake concentration of 11.7 ppb, a concentration of <1 ppb at the outlet, and 2.4 ppb downstream. Due to the overall lack of rainfall from the beginning of the hydrilla management program, the concentration was higher

than would be expected from a granular application program. Given the relatively high concentration of fluridone in the lake for what is required of a hydrilla management program, the third herbicide application was postponed at this time.

Following the first two herbicide applications the monitoring of in-lake and downstream concentrations became the more important component to success of the overall program by maintaining a suitable target dose in the lake, while limiting downstream concentrations. On August 30th a third round of fastest sampling was performed to continue to document lake concentration as well as downstream concentration. On this date the in-lake sample result was 9.3 ppb, with <1 ppb concentrations at both downstream sampling locations. While postponing the third and final treatment was analyzed, due to early September rain events, and the late start to the herbicide treatment program, it was decided to perform the last application on September 13th. The time would also ensure regardless of weather and rainfall events, the program would secure no less than sixty days of greater than one part per billion of fluridone concentration.

Conclusion:

On October 20th a post treatment vegetation survey was performed by the Aquatic Invasives Strike Force, and their report was submitted on January 12th. The report provides exceptional detail on the results of the vegetation survey, and concluded that hydrilla was eradicated from the entirety of Creamery Pond in 2022.

While the success of the program is a great achievement toward hydrilla management, it is understood that the goal of long-term eradication will require several years of consecutive herbicide treatment to prevent new tuber formation and ensure that the existing tuber bank is exhausted leaving no viable tubers at what is considered the conclusion of the long-term management program.



Figure 2. 2022 NYSDEC Post treatment vegetation survey picture.