



Parrot's Feather Management Report of Activities & Survey 2021



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Introduction

The Somenos Marsh Wildlife Society was tasked by the Municipality of North Cowichan to assist in the management of Parrot's feather (*Myriophyllum aquaticum*), an invasive aquatic plant native to South America, introduced to Somenos Creek in 2015 (Preikshot 2019). Parrot's feather (PF) is a popular aquatic garden plant that has spread in Somenos Creek by improper disposal of aquarium water, or intentional plantings. Floating plant fragments are also dispersed from one water body to another by water currents, animals, boats/trailers and fishing gear. It is limited to non-tidal, freshwater, slow-moving water bodies including tributaries, ponds, lakes and canals. It prefers good light, slightly alkaline and high-nutrient environments (APWG 2010).

Parrot's feather can cause major disruptions in the natural function of the Somenos Watershed. These disruptions may include and are not limited to:

- Alterations of water quality, specifically dissolved oxygen which affects fish habitat
- Alterations to substrate by collecting sediment in their root system by creating slow areas for sediment to deposit
- Reduce and limit fish rearing locations by forcing fish into smaller creeks with reduced cover and water levels outside of Somenos Creek
- Potentially blocking or delaying spawning salmon fall migration due to reduced dissolved oxygen
- Choking out native aquatic plants by altering the habitat and outcompeting for resources.

Parrot's feather has not moved out of this waterbody since it was introduced to Somenos Creek; however, it is spreading. In 2020 and 2021, the Municipality of North Cowichan hired SMWS to monitor it and complete experimental control measures using pond liner to suppress its growth. This year in 2021, SMWS plans to re-install the same pond liner for a second year of experimental control measures in Somenos Creek (July-August).

Methods

Control Measures

The delivery of Parrot's feather control strategies began in 2020 with the installation of pond liner to Somenos Creek as a smothering trial experiment. This is the second year of treatment using pond liner to smother the plant. This treatment began in July, 2021 in the fish timing window (MOECCS 2021) once a Water Sustainability Act, Section 11 Notification was approved.

The method behind this treatment is to place sheets of pond liner on top of the creek in the summer to smother the above-water growth of Parrot's feather. Once the top growth is killed and the water levels in the creek rise in the fall, the liner is sunk down to the bottom of the waterway and left for the winter, thus, also smothering the rhizomes keeping them from coming up in spring. In theory, the killing of the leafy growth and rhizomes for a year or two should preclude Parrot's feather from returning during the growth season following the treatment.

In June 2020, 1600 ft² of heavy duty ‘aquatic certified safe’ pond liner was installed over thick, aquatic mats of Parrot’s feather by the Somenos Garry Oak Protected Area, at “Station 3”. However, because the Parrot’s feather mats were already established by June, they needed to be sunk using sandbags to weigh them down. This was done in October, 2020 when water levels had risen, and the pond liner sunk to the bottom allowing water to flow freely in the creek. The liner was left in over winter, anchored to the bottom of the creek with the goal of smothering the new growth of rhizomes in the substrate as they emerge in spring.

In June 2021, SMWS observed the pond liners remained anchored in place throughout the winter and spring; however, Parrot’s feather started to grow over top of it and some air bubbles brought some of the liner to the surface. Therefore, we planned to re-install the pond liner at the same location, which also allowed us to inspect the growth of it under the mat and the pond liner’s structural integrity to ensure it could remain for another year. In mid-July to early August, 2021 a crew of SMWS staff and volunteers removed all four sheets of pond liner from Station 3 (Figure 1) and re-installed the liners.

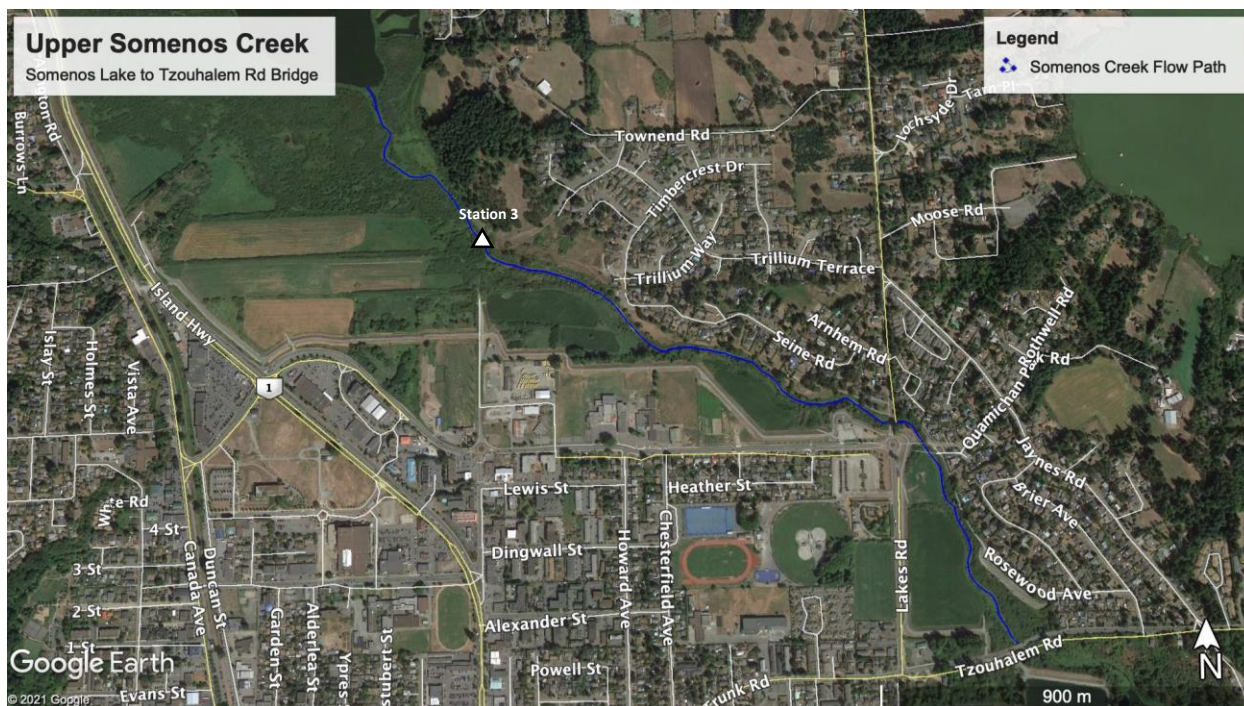


Figure 1: Location of the 4 pond liner re-installations at WQ Hobo MX2202 Station 3.

Removal

To remove the pond liner, the Parrot’s feather that grew overtop was cut and rolled back to reach the rebar and weights that held the sheets in place. The zip ties were cut to remove the rebar first, then the mats were hauled onto shore for inspection. Besides having some sediment and detritus on the mats, they were structurally sound and were prepped for re-deployment. Preparations required scrubbing and cleaning the pond liners clear of debris, algae and sediment to mitigate sedimentation when they are re-installed. Minor tears in the pond liner were patched and most of the rebar was re-used.

Re-installation

The four removed 20 x 20 ft pond liners were each laid out separately on shore. On each sheet, two 10-foot-long rebar were laid on each side edge to act as weights and were fastened with zip-ties. Only two opposite sides of rebar were installed on land so the pond liner could be rolled up and carried by SMWS staff and volunteers to the water. Here the liner was unrolled and stretched out over an area of Parrot's feather, where the final four rebar pieces were attached. Each corner was anchored to the creek bottom using heavy cement blocks and/or tied to the shore to keep it in place for the next year. As the water levels rise in the fall, the liner will be sunk using sandbags and more cement blocks, if required. Each site will be checked periodically to ensure the liner stays in place and doesn't bubble or bunch up, creating a possible downstream blockage hazard.

Water Quality

The Hobo MX2202 water quality data loggers that were recording over the winter were downloaded and reset in July 2021. They will record temperature and light intensity below the surface of the Parrot's feather mat growth over the next year. Every 3-6 months the loggers will be checked to ensure they are still working and download the data. SMWS plans to do this mid-September before the water levels rise to ensure we obtain the summer data.

Results

Prior to pond liner being re-installed, SMWS observed that Parrot's feather grew from the sides of the liner, overtop and covered most of it (Photo 1). Thus, during removal, the Parrot's feather had to be cut and rolled back to expose the liner (Photo 2). Once exposed, the pond liner appears to suppress some growth of the rhizomes underneath, and stolons from growing down and rooting. Photo 3 shows the open water after the pond liner was removed.

Each pond liner sheet had an area of 400 ft². In mid-July, the first two of the sheets were re-set into the creek at Hobo WQ Station 3. The last two remaining sheets were placed in early August, giving us a total treatment area of 1600ft² for the year.



Photo 1: Pond liner covered by Parrot's feather before removal of pond liner. The red buoy is recording temperature and light data logger at Station 3.



Photo 2: The Parrot's feather mat grew from the sides overtop the liner, not from underneath.



Photo 3: Station 3, after pond liner was removed in July 2021.

Summary

So far, the experimental control trial indicates minor results is Parrot's feather growth suppression under the pond liner, however it still grows up and over the sides of the liner and spreads on top of it. It is possible pond liner could serve as a viable control or eradication solution for Parrot's feather management when introduced very early in the contamination process, and in isolated locations where the Parrot's feather would not encroach from the sides over the treated area.

In year 3 of the treatment experiment we will measure the results again in effort to determine the treatment's success.

References

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