

Upper Somenos Creek Parrot's Feather Report
July 2021



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Figure 1: Upper Somenos Creek. Reaches 1 and 2 were surveyed for this report.

Executive Summary

The parrot's feather (*Myriophyllum aquaticum*) growth season is well underway in Somenos Creek, with the invasive aquatic plant already covering large swaths of the creek's surface. This survey was completed on July 20, 2021 and is considered "mid" season for parrot's feather growth. Peak parrot's feather coverage is expected in August, at the end of the growth season.

Cumulatively, in the two upper reaches of Somenos Creek, we currently have an overall parrot's feather coverage percentage of 65%. This can be broken down more specifically into 58% cover in Reach 1, and 91% cover in Reach 2.

The northernmost stretch of Reach 1 (234 m), near Somenos Lake has no parrot's feather present whatsoever. When this stretch is removed from the coverage measurement, the coverage of Reach 1 jumps from 58% to 69%. SMWS staff are currently investigating this phenomenon, since parrot's feather was previously observed at the mouth of the creek in years past. Future checks will include water quality (oxygen, phosphate, pH, depth) to see if it varies between this stretch and the rest of the creek. Other possibilities include suppression of its growth due to an algal bloom at the lake outlet and the possibility of smartweed, another aquatic plant present in Somenos Creek, that may be outcompeting parrot's feather.

The Somenos Marsh Wildlife Society (SMWS) will repeat this survey every month for Reaches 1 and 2 until the fall floods and subsequent parrot's feather breakup occurs (Reaches 1 and 2 are located within the Municipality of North Cowichan, or MNC). The Society will also survey reach 3 (Cowichan Tribes Land) again during peak season and again once high-water season begins in October. Results from all surveys will be compared in a "Summer 2021 Parrot's Feather Report".

July also marked the beginning of our experimental parrot's feather treatment for this year. This is year two of testing a technique that uses a rubberized pond liner to smother the parrot's feather. We hope to keep the liner in the experiment areas for a year or more, smothering both the above-water growth, and the plant's rhizomes.

Introduction

The Somenos Marsh Wildlife Society (SMWS), has been tasked by the Municipality of North Cowichan to assess, monitor, and control the spread of parrot's feather (*Myriophyllum aquaticum*) on Somenos Creek. Somenos Creek is the lone outflow of Somenos Lake, it exits the South end of the lake and drains South, emptying into the Cowichan River. Parrot's feather is an invasive aquatic species that originates in South America. While only introduced into the Somenos Creek within the last 10 years, the plant already dominates the system, with peak coverages being observed at over 80%. Parrot's feather is important to assess and monitor because it has many deleterious impacts on the water which it invades:

1. May alter timelines for salmon migration by affecting water quality parameters such as dissolved oxygen concentration
2. Impacts waterflow through the physical clogging of the creek system, especially around culverts and bridges
3. Outcompetes native aquatic vegetation and reduces waterway biodiversity

It is imperative that this plant is understood within the context of this specific system in order to create an eradication and/or management plan moving forward.

This is the second survey of the season and covers "Upper" Somenos Creek, which refers to Reaches 1 and 2. Monthly surveys of the upper section are to be completed until the fall breakup of parrot's feather. The next full-creek survey (Reach 3 included) will be completed in August 2021.

Methods

Two staff members of the SMWS were tasked with performing this survey. The survey was performed through observations from the streambank. The streambank-only survey method was necessitated due to the coverage of parrot's feather on the creek being absolute in certain areas, making paddling through it impossible.

The abundance of Parrot's Feather was determined by visual inspection and the percentage was recorded based length and width of channel. Channel widths were measured and averaged for area

calculations using a combination of Google Earth Pro and Gaia GPS. As the SMWS staff walked upstream from Tzouhalem Road to Somenos Lake, waypoints were taken (Gaia GPS Android app) when there was an obvious change in the amount of parrot's feather coverage observed. The survey was completed on July 20, 2021.

For the purposes of this survey, Somenos Creek was split into two reaches:

- Reach 1: Somenos Lake to Lakes Road Footbridge (MNC)
- Reach 2: Lakes Road Footbridge to Tzouhalem Road (MNC)

Results



Photo: an example of July parrot's feather coverage in July 2021. Photo By: Adam Dewar

In Reach 1, we recorded two different coverage percentages (both are presented in table 1). We measured the overall coverage of the entire reach as well as the coverage of the areas that had parrot's feather present. The discrepancy here is because the end of the reach near Somenos Lake had a substantial stretch (234 metres) with no parrot's feather present at all (Figure 2). The reason behind this open area is under investigation by the SMWS team.

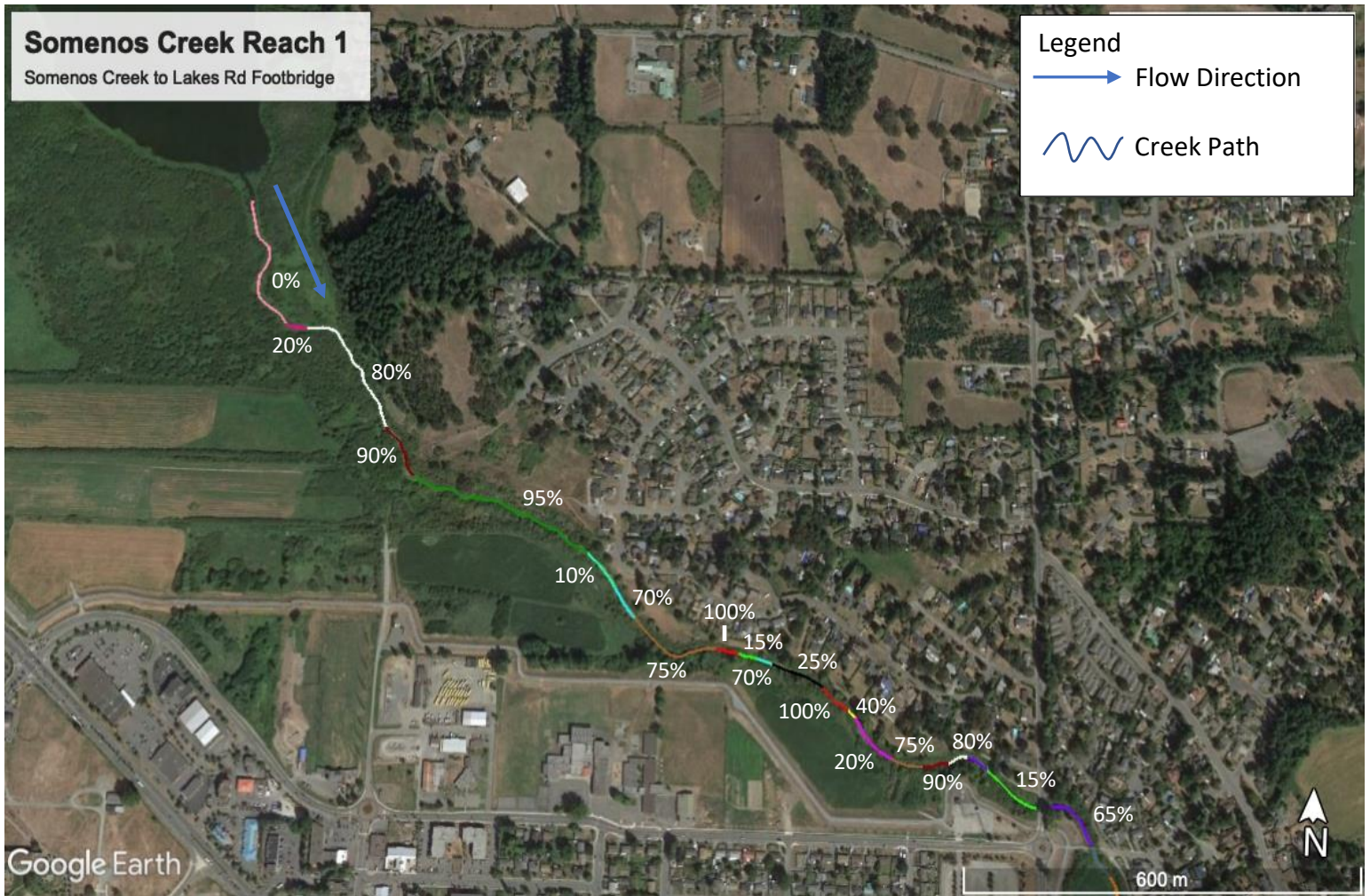


Figure 2: Somenos Creek Reach 1, Somenos Lake to Lakes Road Footbridge The colour breaks refer to changes in parrot's feather coverage as of July 2021. Actual percentages are presented below in table 1.

The total reach coverage of parrot's feather was 58%, and if the coverage of the open stretch by the lake was not considered it was 69%. In the June survey, the only percentage presented didn't include the open section and was calculated at 63%. Therefore, we have seen a considerable overall increase in the prevalence of parrot's feather, from 52% to 63% in this reach in the last month (whole reach inclusive).

Reach 1 continues to show great variance in the coverage percentages. While there are a couple sections of consistent coverage (314 m and 225 m), it was observed that coverage changes approximately every 100 m or less (Table 1). In this reach, there is some observed correlation between the shading of the riparian plants and the density of the parrot’s feather, however, the two measures are inconsistent, so this measure is inconclusive as of yet. The canopy cover information is included in Table 1.

Table 1: Reach 1 of Somenos Creek

| Reach 1: Somenos Lake to | length(m) | measured channel widths (m) - Google Earth, 2016 | | | Area (m ²) | PF Area (m ²) | % PF in entire reach | Canopy Coverage (%) |
|--------------------------------|-----------|---|------|-----|---------------------------|------------------------------|-------------------------------|--|
| 65% | 94 | 7.2 | 6.8 | 8 | 689.3333 | 448.0667 | 25% | |
| 15% | 35 | 7.3 | 10.5 | 5.3 | 269.5 | 40.425 | 40% | |
| 80% | 32 | 8 | 7.6 | | 249.6 | 199.68 | 45% | |
| 90% | 45 | 7.9 | 6.7 | 6.4 | 315 | 283.5 | 40% | |
| 75% | 56 | 7.1 | 6.4 | 7 | 382.6667 | 287 | 20% | |
| 20% | 79 | 6 | 7.5 | 9.2 | 597.7667 | 119.5533 | 20% | |
| 40% | 32 | 7.6 | 7.1 | | 235.2 | 94.08 | 20% | |
| 100% | 57 | 8.2 | 7.5 | 7.9 | 448.4 | 448.4 | 40% | |
| 25% | 86 | 7.1 | 5.2 | 6 | 524.6 | 131.15 | 40% | |
| 10% | 24 | 8.6 | 7 | | 187.2 | 18.72 | 70% | |
| 15% | 30 | 9.2 | 7.1 | | 244.5 | 36.675 | 20% | |
| 100% | 42 | 9.5 | 8.7 | 8.2 | 369.6 | 369.6 | 25% | |
| 75% | 152 | 6.9 | 7.4 | 7.1 | 1084.267 | 813.2 | 20% | |
| 70% | 52 | 7.2 | 7.9 | | 392.6 | 274.82 | 25% | |
| 10% | 68 | 7 | 6.8 | 6.9 | 469.2 | 46.92 | 20% | |
| 95% | 314 | 8.9 | 7.8 | 10 | 2794.6 | 2654.87 | 20% | |
| 90% | 90 | 8.9 | 9.1 | 9.9 | 837 | 753.3 | 10% | |
| 80% | 225 | 7.8 | 10.3 | 9.4 | 2062.5 | 1650 | 10% | |
| 5% | 52 | 8 | 7.6 | 7.7 | 403.8667 | 20.19333 | 5% | |
| 0% | 234 | 9.1 | 8.6 | 12 | 2316.6 | 0 | 5% | |
| Totals | 1799 | | | | 14874 | 8690.153 | 58% | % Coverage of total reach |
| | | | | | 12557.4 | 8690.153 | 69% | % Coverage of reach where PF is present |

In Reach 2, the density of parrot's feather coverage is far more consistent than it is in Reach 1 (Table 2). Although there are still several changes and breaks, over 3/4 of the length of the reach has a coverage of 95-100% (Figure 3). In this reach, there were very few open water sections, and no large areas open. Most areas with open water present were fractured, narrow, and minuscule. In Reach 2, parrot's feather is truly dominant, with a total coverage of 91%. When we compare this to the 78% coverage we had in June, it equates to a month over month increase of 13%.

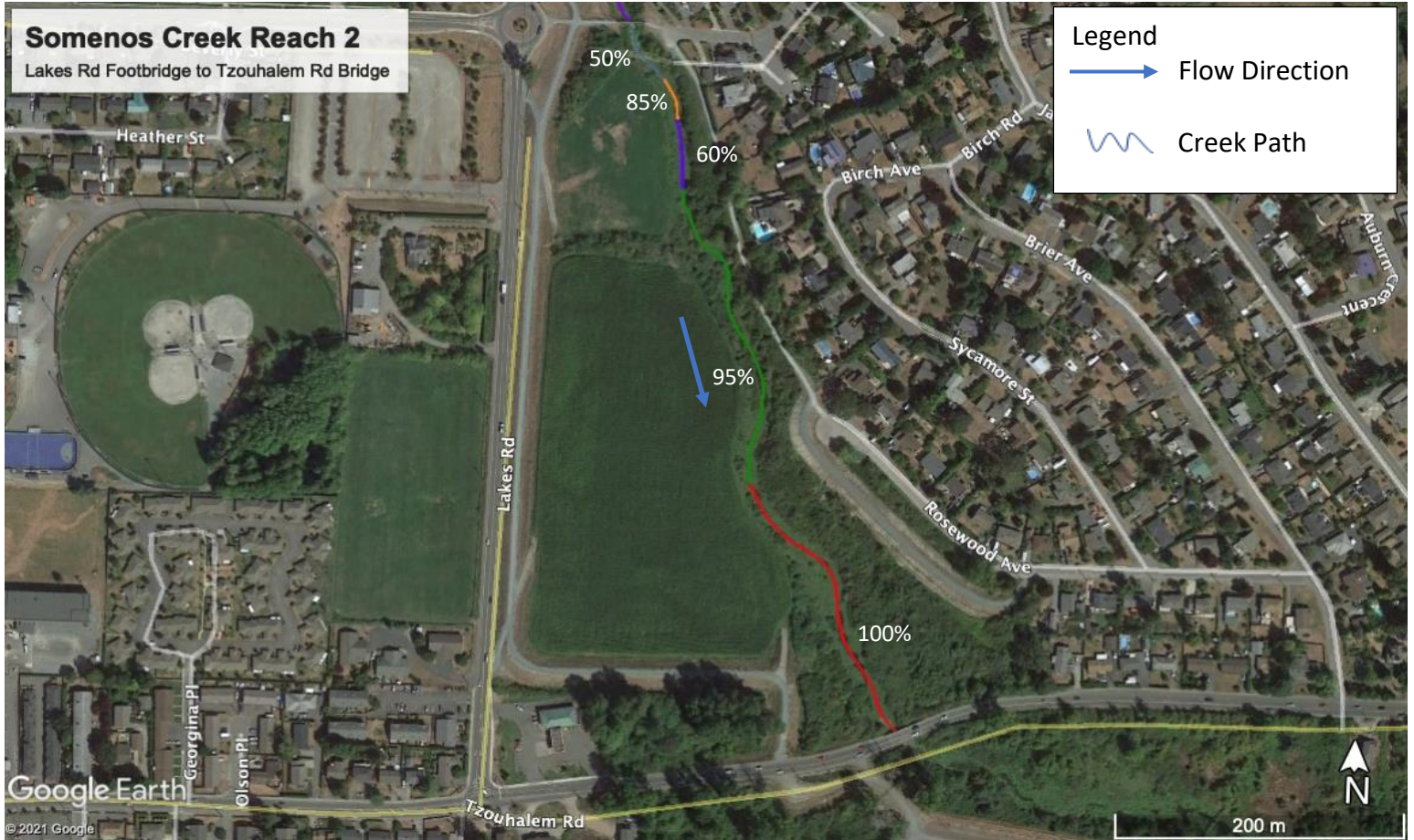


Figure 3: Somenos Creek Reach 2, Lakes Road footbridge to Tzouhalem Road Bridge. The colour breaks refer to changes in parrot's feather coverage as of July 2021. Actual percentages are presented below in Table 2.

This reach has very little overall canopy cover and is much more exposed to direct sun than Reach 1. In addition, this reach demonstrates a closer correlation between parrot's feather mat density and canopy cover. Most of the areas that do have open water also have slightly higher canopy cover percentages (Table 2). This is in line with what was anecdotally observed in this reach during the June survey.

Table 2: Reach 2 of Somenos Creek

| Reach 2: Lakes Rd Footbbridge to Tzouhalem Rd Bridge | length(m) | measured channel widths (m) - Google Earth, 2016 | | | | Area (m ²) | PF Area (m ²) | % PF in entire reach | Canopy Coverage (%) |
|---|------------|---|-----|-----|-----------------|---------------------------|------------------------------|-------------------------------|---------------------|
| | | | | | | | | | |
| 100% | 209 | 12 | 7.1 | 7.3 | 1839.2 | 1839.2 | | 15% | |
| 95% | 228 | 7.4 | 8.2 | 7.7 | 1770.8 | 1682.26 | | 10% | |
| 60% | 49 | 7.2 | 8 | 9 | 395.2667 | 237.16 | | 25% | |
| 85% | 32 | 6.1 | 7.7 | 7.6 | 228.2667 | 194.0267 | | 20% | |
| 50% | 46 | 6.2 | 5.6 | | 271.4 | 135.7 | | 35% | |
| Totals | 564 | | | | 4504.933 | 4088.347 | 91% | | |

Experimental Treatment

2021 marks the second year of experimental parrot’s feather treatment using rubberized pond liner to smother the plant. The experiment resumed in July, when the fish window opened for work within the creek. Federal permission was applied for and granted for this work.

The method behind this treatment is to place sheets of pond liner on top of the creek in the summer in order 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. 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.

The sheets that were placed last year unfortunately were not able to stay completely submerged during flood season and must be removed and re-set this summer. During the month of July 2021, the SMWS team and volunteers were able to remove all four (4) sheets that were placed during the summer of 2020. Upon removal the sheets were cleaned and repaired. Two (2) of the sheets so far have been re-set into the creek, at 400 square feet each, this gives us a current test-area of 800ft². The two remaining sheets will be placed in August, giving us a total treatment area of 1600ft² for the year.

The pond liner is carried and stretched out over an area of parrot’s feather coverage. Each edge is made rigid and weighed down with 10-foot lengths of rebar. Each corner is also anchored to the creek bottom

using heavy cement blocks. As the water level rises, the liner will be sunk using sandbags and more cement blocks. 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.



Photo: SMWS staff members install a sheet of pond-liner to be used as test treatment for the parrot's feather invasion. Photo By: Amanda McKinnon