MUNICIPALITY OF NORTH COWICHAN SERVICE AGREEMENT WITH THE SOMENOS MARSH WILDLIFE SOCIETY

RIPARIAN RESTORATION REPORT 2024

Prepared for: Municipality of North Cowichan

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2 EXECUTIVE SUMMARY

In 2024, Somenos Marsh Wildlife Society (SMWS) initiated riparian restoration projects focused on improving the functionality of riparian zones. The plan was to remove invasives and introduce shrubs and tall trees to provide shade for Somenos Creek. This effort aimed to improve the riparian vegetation in depleted areas, and to curb the proliferation of the invasive parrot's feather.

The project encompassed two sites that had been previously planted that required maintenance, as well as two new locations situated at the municipal park greenway adjacent to Somenos Creek.

Significant achievements from the 2024 planting season included the removal of 967 m² of invasive plants, nearly twice the amount removed in 2023. A total of 577 volunteer hours were logged, reflecting an increase of over 200 hours compared to the previous year. Additionally, 902 native plants were planted in riparian zones, leading to the restoration of 4,138 m² of riparian area. This report describes the details of the project, challenges, and successful outcomes in 2024.

3 RIPARIAN PLANTING AND INVASIVE PLANT CONTROL

3.1 PURPOSE AND AREA OF PROJECT

Functioning riparian areas are imperative for healthy rivers and streams in many ways (Hilliard, 2020), such as: filtering runoff from agricultural zones and stormwater, providing wildlife habitat, shelter, and food, and most importantly for Somenos Creek, shading. The riparian zone along much of this creek is only a few meters on average and limited to small shrubs. In particular, the south-west side of the creek, between Lakes and Tzouhalem Roads, is impacted by sun exposure, due to a lack of tall trees providing shade.

Somenos Creek is impacted by an invasive aquatic plant called parrot's feather (Myriophyllum aquaticum) which, according to recommendations in the 2019 report by Dr. Preikshot (Preikshot, 2019), is best managed through shading, as it grows best in bright conditions (Wersal, 2013). In hopes of reducing the parrot's feather coverage in Somenos Creek, riparian areas were planted with a mix of shrubs and taller shading trees. The main goal of increasing the riparian vegetation is to limit sunlight exposure on the creek which will reduce parrot's feather growth rates and coverage.

Four locations were chosen in 2024 to provide riparian shading (Figures 1-2). They include:

1. The hayfield south of the Lakes Road footbridge (hayfield)
2. The cornfield north of Tzouhalem Road (cornfield)
3. The southwest side of the Haycroft Chase Strata Property and Municipality of North Cowichan (MNC) Right of Way (strata)
4. The north side of Somenos Creek along the municipal park between Lakes Road and Seine Road (greenway).

The strata and hayfield were planted in 2023 with additional maintenance planting in 2024. The cornfield and greenway were new planting sites in 2024.

Figure 1:Map of 2024 planting locations along Somenos Creek. Yellow zones are maintenance planting sites (strata, hayfield), white zones are new (cornfield).

Figure 2: Map of 2024 new planting locations along Somenos Creek on the Municipality of North Cowichan's Park greenway.

3.2 Acquisition and Storage of Plant Materials

Plants were purchased from Peel's Nursery and Streamside Native Plants and stored at the Cowichan Green Community's Cowichan Farm and Food Hub, where they were watered every other day with an automated sprinkler system during the dry season. On planting days, the trees were moved to site, planted and caged the same day. Nutrient 'tea bags', purchased from Spectrum Pacific Products, specifically the Defender – High Sulphur, Browse Deterrent Fertilizer and the Aquazorb – Water Absorbent Fertilizer were added to each plant. Additionally, tree plugs, donated by the Ministry of Transportation Infrastructure (MOTI), were planted along the MNC park greenway.

Maintenance plants were purchased from Peel's, to replace plants which were browsed heavily by beaver, and other pests at the hayfield, and to replace the plants along the strata that were accidentally mowed over. All plants were caged to ensure protection from future browsing and mowing.

Table 1: Overview of riparian planting projects along Somenos Creek.

Project	Volunteer Hours	Invasives Removed (m^2)	Number of Trees Planted	Amount of Habitat Restored (m^2)
Cornfield	227.5	17	330	1560
Municipal Park Greenway	368	840	426	1818
Hayfield	27	-	105	660

Strata	42	110	41	100
Total	**576.5**	**967**	**902**	**4138**

3.3 2024 New PLANTING SITES

The plan for 2024 was to continue planting along the cornfield municipal right of way, south of the 2023 planting area, but the adjacent landowner raised concerns that needed to be addressed by MNC and therefore limited planting to the shoreline side of the cornfield silt fence. This reduced the planting area by more than half and resulted in a revised planting plan for the east side of Somenos Creek along the municipal park greenway (see Section 2.3.2).

3.3.1 Cornfield

3.3.1.1 Purpose

The municipal right-of-way along Somenos Creek in this section has historically been farmed, resulting in little to no riparian vegetation and based on surveys done by the Society, is one of the areas of Somenos Creek that has the highest coverage of parrot's feather. The MNC hired Madrone Environmental Services Ltd. (Madrone) to provide a riparian restoration plan for the cornfield and hayfield to the north with the goal of improving riparian health and function and to increasing shading of the creek to reduce parrot's feather coverage (Howard, 2023).

Figure 3:Image looking north along cornfield planting area, April 4, 2024.

Figure 4:Image looking north along cornfield planting area, July 4, 2024.

3.3.1.2 Methods

Initially SMWS based the planting plan on the Madrone report and consultation with the adjacent landowner, which included a planting zone system: shorter, drought resistant shrubs and trees were to be planted closest to the cornfield (zone 1), tall trees planted in the middle (zone 2) and shorter wetland

plants were planted along the bank (zone 3). This planting system worked in the hayfield, however, due to the planting limitations in the cornfield, SMWS could only plant within the shoreline habitat (zone 3). The plan was modified to include only wet-tolerant trees and shrubs that were already growing well in the area. This included willow species, red alder, black cottonwood, and hardhack. Along the cornfield's silt fence where there were higher areas, red cedar and Sitka spruce were planted.

After initial site visits in the spring of 2024, planting locations were identified and flagged on the shore side of the silt fence. Between April 25 and July 23, volunteers and SMWS staff planted one plant per square meter following the common practice of a high-density riparian restoration planting regime. Plants were planted in accordance with the Madrone report's recommendations: appropriately sized holes were dug, nutrient 'tea bags' were placed at the bottom of the hole, plants were removed from pots and root balls loosened then placed in the holes, ensuring that the base of the plant was flush with the surrounding ground. The holes were then filled in with the excavated soil and compressed to ensure no air pockets remained. After being planted, taller trees and shrubs were caged with two stakes and plastic premade caging, see Figure 5. Once planted, the plants in the northern section of the cornfield were watered until the soil around each plant was saturated. Plants in the southern half of the cornfield were not watered as the ground stayed saturated all summer. Periodically, the newly planted plants in the northern section of the field were checked and watered when needed.

Figure 5: Photo series of the planting process.

3.3.1.3 Results

In total, 330 native trees and shrubs were planted (see Appendix G, Table 2 for full list of plants) in the cornfield's riparian area and invasives removed with help from the Cowichan Secondary School's Environmental Stewardship Program. The outcome of the cornfield restoration work resulted in:

- 330 native trees planted.
- 227.5 volunteer hours.
- 17m^2 yellow flag iris removed

3.3.2 Municipal Park Greenway

3.3.2.1 Purpose

The planting site, located within the riparian zone along the eastern edge of Somenos Creek, is on the MNC greenway, between Lakes Road and the end of Seine Road. The greenway is a regularly mowed grassy park with limited riparian vegetation. Previous restoration efforts by the SMWS aimed to enhance the riparian area's function and provide shade for parrot's feather and were largely successful. However, some beaver activity was observed in early spring 2024, affecting uncaged trees (Figure 6). The MNC approved the planting of native trees and shrubs within the existing riparian area, extending a few meters into the greenway. Which allowed the SMWS to slightly expand the riparian zone and fill in gaps in the existing vegetation with tall trees and a diverse range of shrubs (Figure 7).

Figure 6: Spring survey identified browsing of existing trees along the Greenway April 29, 2024.

Figure 7: Greenway planting on Oct 31, 2024.

3.3.2.2 Methods

The initial site visit occurred in the spring of 2024, where locations within the riparian zone were identified to receive the remaining trees from the cornfield and, after a meeting onsite with MNC staff in June, restoration areas were confirmed. Planting methods followed those used at the cornfield, described in Section 2.3.1.2, no watering occurred as the plants were planted in fall when rain was frequent, and plants were dormant.

3.3.2.3 Results

437 native trees and shrubs were planted in the fall (see Appendix G, Table 3 for full list of plants) with help from the Cowichan Secondary School's Environmental Stewardship Program. The outcome of the restoration work on the north side of Somenos Creek alongside the municipal park resulted in:

- 437 native trees planted.
- 288 volunteer hours.
- 840m2 blackberry removed

3.4 Maintenance Works Year 2

3.4.1 Hayfield South of Lakes Road Footbridge

3.4.1.1 Purpose

The municipal right of way in the hayfield portion of the riparian area was planted in 2023; however, monitoring revealed the need for some replanting due to browsing activity.

3.4.1.2 Methods

A comprehensive inventory of the plant health took place on March 21, 2024. Initial monitoring results showed browsing from beavers, and other animals on the taller trees (red Alder, black cottonwood, and red cedar). Pear slugs (Caliroa cerasi) were also observed on some of the hawthorns and crabapples. To curtail future browsing, caging was set around existing select trees, and to control the pear slugs the leaves were sprayed with high pressure water during watering to rid them of the slugs. Watering occurred through the summer of 2024 weekly when needed and SMWS re-planting from April to June 2024. The new trees were caged to prevent future browsing. Planting methods followed those used at the cornfield, described in Section 2.3.1.2, and they were watered on a weekly basis through the summer.

Figure 8: Image of a rodent hole which was using the reed canary grass as a winter nest. Chew marks around the base of the tree were observed.

Figure 9: Cedars survived flooded conditions; however, all were uncaged and were browsed by beaver.

Figure 10: Parrot's feather also covered many trees planted close to the edge of the creek where it was prone to flooding. This area was not replanted.

Figure 11: Image of hayfield replanted and caged looking north

3.4.1.3 Results

105 native trees and shrubs were planted (see Appendix G, Table 4 for full list of plants) with help from the Cowichan Secondary School's Environmental Stewardship Program. The outcome of the Somenos Creek Restoration work at the hayfield resulted in:

- 27 volunteer hours.
- 105 trees replanted and caged.

3.4.2 Municipality Right of Way and Haycroft Chase Strata Property

3.4.2.1 Purpose

2024 was the second year of site maintenance at this location. In 2022 SMWS gained permission from the MNC and the Haycroft Chase Strata to complete invasive removal and riparian planting to increase the riparian area's function and to shade out parrot's feather in Somenos Creek. Work was completed by early summer of 2022.

3.4.2.2 Methods

Monitoring of the site in the spring of 2024 indicated that survivability rates were good amongst the trees planted closest to the creek bank, including the Sitka spruce, hardhack, and red osier dogwood. The Himalayan blackberries that were removed in previous years had encroached once again into the planting area; however, the amount had been reduced. Unfortunately, all the plants planted in the drier, more rocky section of the bank were accidentally mowed over. They did start to grow back by summer; however, they were mowed over a second time and did not survive. It became apparent that extra protection was required for each tree to limit future mowing damage and for pest protection. In October 2024, the blackberries were trimmed back, the mowed area was replanted and trees caged to protected them from browsing and easier to see when mowing.

Planting methods followed those used at the cornfield, described in Section 2.3.1, and watering of the site was not required because the work was completed in the fall.

Figure 12: Image of Cowichan Secondary High School Students planting at the Strata.

Figure 13: Image of completed plantings with cages at the strata.

3.4.2.3 Results

41 native trees and shrubs were re-planted (see Appendix G, Table 5 for full list of plants) and invasives removed with help from the Cowichan Secondary School's Environmental Stewardship Program. The outcome of the restoration work at the Haycroft Chase Strata and MNC property on Somenos Creek resulted in:

- 110m^2 invasive plants removed.
- 34 volunteer hours.
- 41 native plants planted.

4 Conclusion

The riparian restoration projects undertaken by SMWS in 2024 focused on improving riparian area function by planting tall shrubs and trees to shade the creek to reduce future growth of invasive parrot's feather. Two of the four sites were previously planted sites that needed maintenance, and the two new sites were the cornfield and municipal park greenway alongside Somenos Creek. All this work was completed largely with the help from our wonderful community of volunteers.

The 2024 planting season resulted in:

- 967 m^2 invasive plants removed almost double from 2023
- 577 volunteer hours. This is an increase of over 200 more volunteer hours from 2023.
- 902 native plants were planted in the riparian areas
- 4,138m^2 of riparian area restored

Moving forward into 2025, the Society will have two principal areas of focus:

1) Monitoring:

a. Monitor survival rates of planted trees in early spring, and late summer at all project sites including browsing activities by animals or presence of other pests and respond where necessary, for example: caging, natural deterrent spray, direct removal.

2) Maintenance:
    a. Early spring trimming of invasive reed canary grass will be undertaken at the hayfield, and greenway to ease identification where trees are planted and survival success.
    b. After the initial spring monitoring is completed, replacement plants will be purchased and planted if needed.
    c. Watering will commence on all sites planted once the dry season begins and will continue one to two times a week, weather dependent until the dry season ends.

5 APPENDIX A - RIPARIAN RESTORATION: PLANTING INFORMATION TABLES

TABLE 1: THE WEST SIDE OF SOMENOS CREEK ALONG THE MUNICIPAL RIGHT OF WAY NORTH OF TZOUHALEM ROAD (CORNFIELD).

Species Common Name	Species Scientific Name	Number of Plants
Sitka spruce	Picea sitchensis	10
red Alder	Alnus rubra	79
black cottonwood	Populus trichocarpa	81
shining/pacific willow	Salix lucida	42
scoulers willow	Salix scouleriana	42
red osier dogwood	Cornus sericea	36
hardhack	Spirea douglasii	30
western red cedar	Thuja plicata	10

TABLE 2: THE NORTH SIDE OF SOMENOS CREEK ALONG THE MUNICIPAL PARK BETWEEN LAKES ROAD AND SEINE ROAD (GREENWAY).

Species Common Name	Species Scientific Name	Number of Plants
Sitka spruce	Picea sitchensis	25
western hemlock (MOTI)	Tsuga heterophylla	5
red Alder	Alnus rubra	72
black cottonwood	Populus trichocarpa	129
shining/Pacific willow	Salix lucida	40
scoulers Willow	Salix scouleriana	15
red osier dogwood	Cornus sericea	27
hardhack	Spirea douglasii	5
western red cedar	Thuja plicata	41
Nootka rose	Rosa nutkana	44
pacific ninebark	physocarpus capitatus	23

TABLE 3: THE HAYFIELD SOUTH OF THE LAKES ROAD FOOTBRIDGE (HAYFIELD).

Species Common Name	Species Scientific Name	Number of Plants
Sitka spruce	Picea sitchensis	25
red alder	Alnus rubra	15
black cottonwood	Populus trichocarpa	25
shining/Pacific willow	Salix lucida	10
Scoulers willow	Salix scouleriana	10
Red osier dogwood	Cornus sericea	15
Western red cedar	Thuja plicata	5

TABLE 4: THE SOUTHWEST SIDE OF THE HAYCROFT CHASE STRATA PROPERTY AND MNC RIGHT OF WAY (STRATA)

Species Common Name	Species Scientific Name	Number of Plants
Sitka spruce	Picea sitchensis	1
Black hawthorn	Crataegus douglasii	5
Oregon crabapple	Malus fusca	5
Nootka rose	Rosa nutkana	10
red alder	Alnus rubra	10
black cottonwood	Populus trichocarpa	10

6 APPENDIX B - REFERENCES

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