



Millard Nature Park Vegetation Types and Disturbance: An Overview Survey

YER Phase II Project July 29 – August 2, 2024



**Tanis Gower, Fernhill Consulting
#210 – 2202 Lambert Drive
Courtenay, BC V9N 1Z8**

**Graham Hilliar, Youth and Ecological Restoration
5259 Stapley Road
Courtenay, B.C. V9J 1P5
<https://youthecology.ca>**

September 2024

Contents

- 1. Introduction 1
 - 1.1. YER Program 1
 - 1.2. Study area..... 1
 - 1.3. Millard Nature Park ecological values..... 2
 - 1.4. Park Planning 3
- 2. Methods..... 4
 - 2.1. Background Review 4
 - 2.2. Field Program 4
 - 2.2.1. Vegetation Survey 4
 - 2.2.2. Mapping 4
 - 2.3. Public Tour 4
- 3. Results..... 5
 - 3.1. Background review 5
 - 3.2. Summary of vegetation sampling 5
 - 3.3. Summary of mapping 5
 - 3.4. Public tour 5
 - 3.1. Summary of mapping 9
 - 3.2. Public tour 9
- 4. Discussion 11
- 5. Recommendations 11
- 6. Conclusion..... 11
- References 12
- Appendix 1: Vegetation plot data i
- Appendix 2: Plot photos..... i

Acknowledgements

This report describes the enthusiastic efforts of Brooklyn Dominey and Elwood Niskasari and their mentors. Youth and Ecological Restoration (YER) was created by Wendy Kotilla in 2004. This study was a YER Phase II project, initiated by Wendy Kotilla. It was organized by YER staff Wendy Kotilla and Graham Hilliar, Registered Professional Biologist Tanis Gower, and City of Courtenay Operations Department staff.

YER is primarily funded by the BC Ministry of Children and Family Development, Comox Valley Regional District, and Comox Valley School District #71. The majority of this YER Phase II project was funded by the Operations Department of the City of Courtenay. We thank Courtenay City Council, past Parks Manager Mike Kearns, current Parks Manager Stuart Carmichael, and Horticultural Supervisor Tyler Johns for their support of this project.

1. Introduction

The purpose of the study was:

1. To support Courtenay Parks staff to manage the ecological health of Millard Nature Park by providing a description of its plant communities, trail system, locations of invasive ivy and holly, and other anthropogenic impacts.
2. To provide a meaningful opportunity for vulnerable youth within the Comox Valley by providing them with hands-on opportunities to engage with nature and adult mentors.

This report summarises data collected in Millard Nature Park from July 29 to August 2, 2024. It also includes recommendations for future park management activities.

1.1. YER Program

Youth and Ecological Restoration (YER) provides youth aged twelve to eighteen with one-on-one work experience through ecological restoration methods, ecotherapy practices and mentoring support. Youth learn social, practical and communication skills to motivate them in becoming confident, respectful, and productive members of society.¹

All youth involved in the program begin with Phase I, where they work with a YER staff person and with environmental organizations and volunteers focused on restoring local watersheds and ecosystems. On program completion, youth give an oral presentation for a community group.

Some graduates of Phase I are accepted into Phase II. In Phase II, two youth, a YER staff person, and an environmental professional work on a project together. The focus is on a specific environmental project for advanced learning about ecological information, research techniques, and collaboration and communication.¹ The project is completed to a professional standard to provide useful information and assistance to land managers. YER II is five days, which consists of three days of field work, and two days of tour preparation and delivery. On the final day, the youth co-facilitate a public tour to complete the project.

1.2. Study area

Millard Nature Park is approximately 5.5 hectares in size and is bounded by Highway 19A to the east, Anfield Road to the north, Fraser Road to the south, and by the former E & N rail line to the west - see Figure 1.

Millard Creek runs through the property before crossing under Highway 19A and continuing another 600 meters to the ocean. Interpretive signage and the age of trees and logs on the site indicate that logging occurred approximately 100 years ago, in the early 1900's. A former road that may have been used for logging is still visible near the creek in the lower part of the property. In prior millennia, the site formed part of the ocean shoreline, and as a result, ancient middens can be found within the park.

The park is adjacent to a large shopping mall that was constructed in 2003. While full records of the park history are not available, the property may have been transferred to the City of Courtenay as part of the

¹ <https://youthecology.ca>

mall development process. A covenant may be in place on the property. More information will be available to the City of Courtenay through a search of records associated with the land title.



Figure 1: Location of Millard Nature Park. Satellite imagery from Esri.

The property immediately to the east across Highway 19A is also protected for conservation purposes and is also called Millard Nature Park. It is owned by the Nature Trust of BC and leased to the BC Ministry of Environment.

The park is often used for camping by unhoused people, including a large encampment in 2022. Large amounts of camping-related garbage were removed in 2022 and 2023 by the Millard-Piercy Watershed Stewards and other volunteers, in collaboration with the City of Courtenay. YER has also been involved with garbage removal within the park.

1.3. Millard Nature Park ecological values

The Millard Nature Park is within the Coastal Western Hemlock biogeoclimatic zone. This zone extends along the coast of British Columbia and is characterized by coniferous forests with high rainfall, cool summers and mild winters. Left undisturbed, “old growth” coniferous trees can grow to be many hundreds of years old. The wildlife in the Coastal Western Hemlock (CWH) Zone probably encompasses the greatest diversity and abundance of any zone in British Columbia (BC Ministry of Forests 1995).

The park is within the driest subzone of the CWH, classified as the Eastern Very Dry Maritime (variant 1) (CWHxm1). Sites within this subzone that are “zonal” (i.e., have average amounts of soil moisture and

nutrients based on their location in the landscape) are dominated by Douglas-fir and western hemlock trees, with smaller quantities of western redcedar. Typical understory plants include salal, Oregon grape, red huckleberry, sword fern and vanilla leaf. The CWHxm1 is associated with the adjacent Coastal Douglas Fir (CDF) biogeoclimatic zone, which is drier and occurs to the south and on nearby Gulf Islands. Both the CDF and the CWHxm have many rare ecosystem types and high development pressures, and thus have similar conservation requirements.²

A Sensitive Ecosystem Inventory of terrestrial plant communities was conducted for East Vancouver Island and the Gulf Islands in 1997 and was updated in 2002.³ The 1997 inventory catalogued the remaining intact riparian areas, mature forest, wetlands, and woodlands. The 2002 update improved the mapping as well as identifying sensitive ecosystems that had been lost to development. The inventory includes the riparian corridor surrounding Millard Creek, both within the park and in the adjacent properties to the west and east.

Millard Creek and the Millard-Piercy watershed support coho, chum and pink salmon as well as cutthroat trout. Coho salmon typically spawn upstream of the park and rear throughout the watershed, including within Millard Nature Park. Chum and Pink salmon typically spawn below Highway 19A, though pink salmon will extend much further upstream in years with high returns.

1.4. Park Planning

The Millard Nature Park is a “natural park” according to the City of Courtenay’s Parks and Recreation Master Plan (2023). It is one of several such parks for which a Park Management Plan will be prepared. Planning considerations are to “establish pathways and manage vegetation based on best arboricultural practices.”

The process to develop a Park Management Plan includes conducting an inventory of natural resources, preparing strategies for vegetation management (including weed/invasive species control and potential native plantings), identifying trail systems and supporting infrastructure to provide varied and interesting experiences to visitors while protecting environmentally sensitive areas and features, and protecting and enhancing fisheries values in riparian areas (City of Courtenay 2023). Information in these subject areas is found in this report and could be used to help develop the future park management plan.

² <https://www.cdfcp.ca/about-the-cdfcp/>

³ <https://a100.gov.bc.ca/pub/acat/public/viewReport.do?reportId=2124>

2. Methods

2.1. Background Review

Aerial imagery and historical maps were reviewed prior to the field program. A site visit on July 16, 2024, with Courtenay Parks staff member Stuart Carmichael and YER staff members Wendy Kotilla and Graham Hilliar confirmed the goals of the project. A follow-up site meeting with Graham Hilliar confirmed some of the sites within the park where vegetation sampling would be done.

2.2. Field Program

Over the first three days of the program the team collected vegetation data and mapped park features. In addition, Steve Williams, a board member from the Millard Piercy Watershed Stewards, visited the team on July 30th to speak about the salmon present in the watershed, and the salmon habitat and volunteer stewardship in the park. On July 31, City of Courtenay staff Stuart Carmichael and Tyler Johns visited the team and described their jobs to inform the youth about potential career paths. Wendy Kotilla was also present and discussed some park anecdotal history.

2.2.1. Vegetation Survey

Vegetation sampling was done at three representative locations with the park. Two plots described the upland vegetation (one in mixed forest and one in coniferous forest), and a third plot was done within a riparian (streamside) area. The vegetation data were collected on July 29, 30 and 31.

The vegetation sampling methodology was adapted from the relevant procedure in the Field Manual for Describing Terrestrial Ecosystems, 2nd Edition (Province of BC 2010). This manual provides a standardized methodology to describe vegetative cover and plant species according to the following vegetation layers: trees, shrubs, herbs, moss/lichen/liverworts/seedlings, and epiphytes. Based on the needs of this project and experience with past YER II projects (Ennis and Kotilla 2019, Gower and Kotilla 2022, Gower and Hilliar 2023) the methodology was simplified. The percent vegetative cover within a 400 m² circular plot was noted for each of the plots in the following categories: trees, shrubs, herbs, moss, and bare ground. Within these layers (as applicable), all species were noted and placed into one of four cover categories: 1: one or two plants 2: a few plants 3: many plants 4: dominant.

2.2.2. Mapping

The current City of Courtenay parks map does not accurately depict the existing trails. Thus, the team used a GPS to map the main trail network plus informal trails that cut between the main trails and that led to campsites. Piles of garbage were also mapped. Trail mapping was done every time the team moved between sites on July 29, 30 and 31, 2024.

The team used a 6th generation iPad and Avenza Maps 4.0.4 software paired with a Bluetooth enabled GPS (Garmin Glo II) to navigate, record tracks and waypoints, take photos, and make notes. These data were later imported into the GIS program QGIS to enable analysis and reporting.

2.3. Public Tour

The public were invited to a tour of the park at noon on August 2, 2024. The tour route was planned to educate attendees about the park and the study methods and results.

3. Results

3.1. Background review

Minimal information is available describing the historical land uses. The property is located between the E&N rail line and a former rail line built to transport logs to a log dump in the estuary at Royston. Historical maps show property boundaries the same as today. Interpretive signage at the Anfield Road park entrance describes logging that occurred in the early 1900's, based on evidence of springboards being used on some of the remaining larger stumps. Interpretive signage at the Fraser Road park entrance describes prior sea levels creating a shoreline along the site, as well as archaeological evidence dating from a former First Nations settlement occupied as early as 8,000 years ago.

3.2. Summary of vegetation sampling

Figure 2 shows the locations of the three vegetation plots. Plot 1 is on a level bench on the north side of the park. It was selected as representative of much of the mixed mature forest in the park. Plot 2 is in the riparian zone and extends to the creek bank on the north side of Millard Creek. It captures the floodplain vegetation found in the lower half of the park. Plot 3 is in a coniferous forest on a bench south of Millard Creek.

3.3. Summary of mapping

Figure 3 shows the formal and informal trails, the main locations of ivy and holly, unoccupied campsites, and locations with accumulations of garbage. Figure 4 and Figure 5 show former campsites with fire damage on adjacent trees.

3.4. Public tour

The tour was attended by 23 family members, friends and members of the wider community. The two youth successfully explained the project in an engaging and informative way. After the tour, the youth were presented with completion certificates, letters of reference, YER hoodies and a one-hundred-dollar honorarium.



Figure 2: Location of vegetation plots. Satellite imagery from Esri.

Based on the collected data, the mixed forest in Plot 1 is likely the “Cedar-Foamflower” community (site series CWHxm1/07). Despite the name, this site series is characterized by dominant Douglas-fir as are several other site series in this subzone (Green and Klinka 1994). More plots would be needed to confirm the site series.

The riparian plot (Plot 2) is a high bench floodplain, the “Sitka spruce – Salmonberry” plant community (site series CWHxm1/08), except for the disturbed former road on the edge of the plot.

The mainly Douglas-fir conifer forest in Plot 3 is likely the “Cedar-Sword fern” plant community (site series CWHxm1/05). This plot included one of the largest Douglas-fir in the park at the plot centre. More plots would be needed to confirm the site series.

Tree age and tree size were not sampled; however, the team counted the tree rings in a recently cut log on an informal trail. That tree lived to be 100 years old and was a similar size to many trees seen on site. This is in line with the known logging history of the area.

Table 1 summarizes the plants found in the three vegetation plots. More detailed information is found in Appendix 1.

Table 1: Plant species found in the three vegetation plots

		Plot 1	Plot 2	Plot 3	
Common name	Latin name	Mixed forest	Riparian	Conifer forest	Notes
TREES					
Douglas-fir	<i>Pseudotsuga menziesii</i>	x	x	x	
Western hemlock	<i>Tsuga heterophylla</i>	x	x	x	
Bigleaf maple	<i>Acer macrophyllum</i>	x	x*		*tree and shrub layer
Grand fir	<i>Abies grandis</i>	x*		x	*shrub layer
Sitka spruce	<i>Picea sitchensis</i>		x		
Red alder	<i>Alnus rubra</i>	x			
Pacific dogwood	<i>Cornus nuttallii</i>			x	
SHRUBS					
Red huckleberry	<i>Vaccinium parvifolium</i>	x	x	x	
Snowberry	<i>Symphoricarpos albus</i>	x	x	x	
Salmonberry	<i>Rubus spectabilis</i>	x	x		
Dull Oregon grape	<i>Berberis nervosa</i>	x		x	
Trailing blackberry	<i>Rubus ursinus</i>	x		x	
Saskatoon	<i>Amelanchier alnifolia</i>	x		x	
Baldhip rose	<i>Rosa gymnocarpa</i>	x		x	
Twinflower	<i>Linnaea borealis</i>	x		x	
Ocean spray	<i>Holodiscus discolor</i>	x		x	
European holly	<i>Ilex aquifolium</i>	x		x	non-native
Thimbleberry	<i>ubus parviflorus</i>	x			
Cascara	<i>Frangula purshiana</i>	x			
Red osier dogwood	<i>Cornus sericea</i>		x		
		Plot 1	Plot 2	Plot 3	
Common name	Latin name	Mixed forest	Riparian	Conifer forest	Notes
SHRUBS continued					
Red elderberry	<i>Sambucus racemosa</i>		x		
Stink currant	<i>Ribes bracteosum</i>		x		
Twinberry honeysuckle	<i>Lonicera involucrata</i>			x	
Pacific crab apple	<i>Malus fusca</i>			x	
Black hawthorn	<i>Crataegus douglasii</i>			x	
Salal	<i>Gaultheria shallon</i>			x	
HERBS					
Sword fern	<i>Polystichum munitum</i>	x	x	x	
Pacific trillium	<i>Trillium ovatum</i>	x	x	x	
Herb Robert	<i>Geranium robertianum</i>	x	x		non-native
Carolina bugbane	<i>Trautvetteria caroliniensis</i>	x	x		
False lily of the valley	<i>Maianthemum dilatatum</i>	x	x		
Lady fern	<i>thyrium filix-femina</i>	x	x		
Hooker's fairybells	<i>Prosartes hookeri</i>	x	x		

Western meadow rue	<i>Thalictrum occidentale</i>		x	x	
Wall lettuce	<i>Mycelis muralis</i>		x	x	non-native
Vanilla leaf	<i>Achlys triphylla</i>	x		x	
Bedstraw	<i>Galium species</i>	x	x	x	
Western star flower	<i>Lysimachia latifolia</i>	x		x	
Threeleaf foam flower	<i>Tiarella trifoliata</i>	x		x	
Bracken fern	<i>Pteridium aquilinum</i>	x		x	
Pathfinder	<i>Adenocaulon bicolor</i>	x		x	
Creeping buttercup	<i>Ranunculus repens</i>		x		non-native
Morning glory	<i>Convolvulus arvensis</i>		x		non-native
Fawn lily	<i>Erythronium revolutum</i>		x		
Crisp starwort	<i>Stellaria crispa</i>		x		
Fringe cup	<i>Tellima grandiflora</i>		x		
Dock	<i>Rumex spp.</i>		x		
Candy flower	<i>Claytonia sibirica</i>		x		
Nipplewort	<i>Lapsana communis</i>		x		non-native
Ivy	<i>Hedera helix</i>			x	non-native

3.1. Summary of mapping

Figure 3 shows the formal and informal trails, the main locations of ivy and holly, unoccupied campsites, and locations with accumulations of garbage. Figure 4 and Figure 5 show former campsites with fire damage on adjacent trees.

3.2. Public tour

The tour was attended by 23 family members, friends and members of the wider community. The two youth successfully explained the project in an engaging and informative way. After the tour, the youth were presented with completion certificates, letters of reference, YER hoodies and a one-hundred-dollar honorarium.

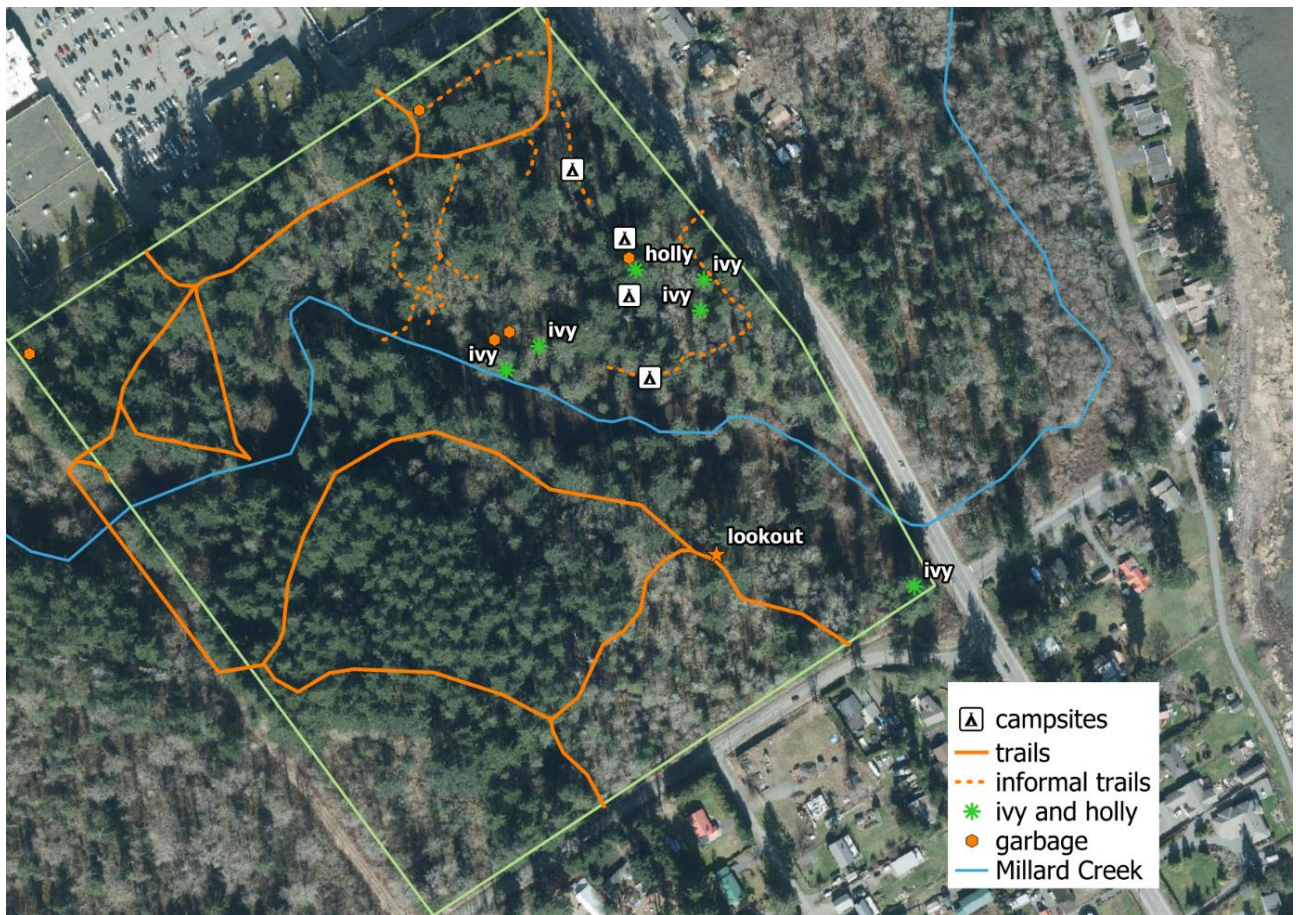


Figure 3: Locations of main trails and informal trails, unoccupied campsites, garbage and invasive species (ivy and holly)



Figure 4 This former campsite on the slope north of the creek experienced a fire that burned a large Douglas-fir tree and killed a smaller hemlock tree.



Figure 5: The campsite closest to Millard Creek. A fire ring was built next to this Sitka spruce, and a hook was placed on the tree for hanging a cooking pot. The tree bark near the fire ring is blackened.

4. Discussion

The East Vancouver Island and Gulf Islands Sensitive Ecosystem Inventory includes mature forest above 100 years in age. Since the last inventory, some forest stands in the Comox Valley have matured into this category. Recent mapping (in draft) by the Comox Valley Land Trust will be used to add these forest stands to the SEI. This will likely include the forest in Millard Nature Park, based on the date the park was logged.

5. Recommendations

The following recommendations were developed by the youth with support from their mentors:

1. Remove garbage from the identified sites.
2. Remove ivy and remove holly that is large in size or that is adjacent to the ivy removal locations.
3. Block off informal trails.
4. Regularly walk the creek to look for garbage build-ups.

Additional activities could include developing a Park Management Plan that more systematically addresses fire risk from campers, garbage accumulation, and removal of ivy and holly.

6. Conclusion

The project team collected valuable information for park management while providing a meaningful learning and mentoring opportunity to the two youth participants. The Millard Nature Park is very ecologically valuable, and the YER Program staff were pleased to assist in its management.

References

BC Ministry of Forests. 1995. The Ecology of the Coastal Western Hemlock Zone. Brochure 31.

<https://www.for.gov.bc.ca/hfd/pubs/docs/Bro/bro31.pdf>

City of Courtenay. 2023. Parks and Recreation Master Plan.

<https://www.courtenay.ca/EN/main/community/recreation/parks-recreation-master-plan.html>

Ennis, T and W. Kotilla. 2019. Ecological Inventory, Morrison Headwaters Nature Preserve. Prepared for the Youth and Ecological Restoration Program. August 31, 2019. <https://youthecology.ca/ecological-inventory-of-morrison-creek-headwaters-nature-preserve-2019/>

Green, R.N. and K. Klinka. 1994. A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Land Management Handbook Number 28. BC Ministry of Forests Research Branch, Victoria, B.C. <https://www.for.gov.bc.ca/hfd/pubs/Docs/Lmh/Lmh28.htm>

Gower, T. and G. Hilliar. 2023. Spike Road Regional Park Vegetation Types and Disturbance History: An Overview Survey. Prepared for Youth and Ecological Restoration, December 2023.

Gower, T. and G. Hilliar. 2022. Ruth Masters Greenway Stewardship: Mapping invasive species and measuring trampling. Prepared for Youth and Ecological Restoration, October 2022.

<https://youthecology.ca/wp-content/uploads/2022/10/Masters-Greenway-Invasive-Species-Mapping-and-Trampling-Measurements-2022.pdf>

Province of British Columbia, Ministry of Forests and Range and Ministry of Environment. 2010. Field Manual for Describing Terrestrial Ecosystems. 2nd Edition. Land Management Handbook No. 25. Province of British Columbia. Victoria, BC

Appendix 1: Vegetation plot data

Youth and Ecological Restoration Program - Site Description Field Form				
Date: July 29, 2024		Weather: cool, cloudy		
Crew: BD, EN, TG, GH,				
Site/plot name: Millard Park Plot #1 High bench north of creek			Site coordinates (center): E 357131 N 5503289	
Cover by Layer (%)				
Trees: 40	Shrubs: 5	Herbs: 90	Moss: 2	Bare Ground: 0
Cover categories by layer/species 1 = one or two plants; 2 = a few; 3 = many; 4 = dominant				
Species in Tree layer (>10 m tall)			Cover category	
Douglas-fir			2	
Alder			1	
Big-leafed maple			1	
Western hemlock			2	
Species in shrub layer (woody plants 0.15 to 10m including trees greater than 2 years old)			Cover category	
Dull Oregon grape			3	
Red huckleberry			3	
Trailing blackberry			3	
Snowberry			1	
Cascara			1	
Thimbleberry			1	
Saskatoon			1	
Grand fir			1	
Salmonberry			1	
Baldhip rose			1	
Ocean spray			1	
Holly			1	
Unknown plant #1			1	
Species in herb layer (including woody spp < 0.15 m)			Cover category	
Sword fern			4	
Trillium			3	
Vanilla leaf			3	
Bedstraw			2	
Herb Robert			2	
Carolina bugbane			2	
False lily of the Valley			2	

Western star flower	2
Lady fern	1
Three-leaved foam flower	1
Hooker's fairy bells	1
Bracken fern	1
Pathfinder	1
Species in moss lichen and seedling layer (including trees < 2 years old) Moss and lichen species were not identified. Trees under 2 years old were not present	Cover category
<p>Additional Notes (location description, slope, aspect, successional status, structural stage, types of disturbance, presence of invasive species, species names of any epiphytes, site and plot diagram and measurements):</p> <p>Plot is an open forest with a robust understory, in a flat area in the north west corner of the park There are 5-10 wildlife trees near the plot. The plot is in mature mixed forest. Disturbance history: Plot contained one large old stump and two smaller new stumps. Trees in the plot overstory were 1 alder 1 hemlock One large leaning maple rooted outside the plot 5 Douglas-fir 1 dead hemlock</p> <p>Understory trees were 3 hemlock (young), 1 grand fir (pole-sapling) 1 maple (pole-sapling)</p> <p>.</p>	

Youth and Ecological Restoration Program - Site Description Field Form

Date: July 30, 2024	Weather: cloudy 20 degrees C
----------------------------	-------------------------------------

Crew: EN, BD, TG, GH,

Site/plot name: Millard Park plot #2 riparian	Site coordinates (center): E 357378 N 5503288
--	--

Cover by Layer (%)

Trees: 40	Shrubs: 50	Herbs: 50	Moss: 10	Bare Ground:0
-----------	------------	-----------	----------	---------------

Cover categories by layer/species 1 = one or two plants; 2 = a few; 3 = many; 4 = dominant

Species in Tree layer (>10 m tall)	Cover category
Western hemlock	1
Big-leafed maple	1
Douglas-fir	1
Sitka spruce	1

Species in shrub layer (woody plants 0.15 to 10m including trees greater than 2 years old)	Cover category
Salmonberry	4
Snowberry	3
Big-leafed maple	3
Red-osier dogwood	2
Red huckleberry	1
Stink currant	1
Red elderberry	1

Species in herb layer (including woody spp < 0.15 m)	Cover category
Sword fern	4
Creeping buttercup	3
False lily of the valley	3
Herb Robert	3
Morning glory	3
Sedge species #1	2
Fawn lily	2
Crisp starwort	2
cleavers	2
Fringe cup	1
Western meadow rue	1
Lady fern	1
Hooker's fairy bells	1
Rumex spp #1	1
Trillium	1

Carolina bugbane	1
Wall lettuce	1
Miner's lettuce	1
Nipplewort	1
Species in moss lichen and seedling layer (including trees < 2 years old) Moss and lichen species were not identified. Trees under 2 years old were not present	Cover category
<p>Additional Notes (location description, slope, aspect, successional status, structural stage, types of disturbance, presence of invasive species, species names of any epiphytes, site and plot diagram and measurements):</p> <p>The plot was in mixed forest with sparse trees and vigorous shrubs. Trees within the plot were one mature Douglas-fir, one mature maple, and one wildlife tree of unknown species.</p> <p>The plot extended to the creek bank. The plot included an old road north of the creek, which had a different substrate and elevation from the rest of the plot, and few trees and shrubs. This is where the morning glory and other non-native vegetation was located.</p>	

Youth and Ecological Restoration Program - Site Description Field Form				
Date: July 31, 2024		Weather: cloudy 20 degrees		
Crew: EN, BD, TG, GH				
Site/plot name: Millard Park plot #3 drier forest south side			Site coordinates (center): E 357353 N 5503144	
Cover by Layer (%)				
Trees: 65	Shrubs: 40	Herbs: 15	Moss: 20	Bare Ground: 0
Cover categories by layer/species 1 = one or two plants; 2 = a few; 3 = many; 4 = dominant				
Species in Tree layer (>10 m tall)			Cover category	
Douglas-fir			4	
Pacific dogwood			2	
Grand fir			1	
Western hemlock			1	
Species in shrub layer (woody plants 0.15 to 10m including trees greater than 2 years old)			Cover category	
Dull Oregon grape			4	
Red huckleberry			4	
Salal			3	
Honeysuckle			3	
Trailing blackberry			3	
Snowberry			2	
Saskatoon			2	
Baldhip rose			2	
Twinflower			1	
Ocean spray			1	
Holly			1	
Crab apple			1	
Black hawthorn			1	
Species in herb layer (including woody spp < 0.15 m)			Cover category	
Sword fern			3	
Bedstraw			3	
Vanilla leaf			3	
Three-leaved foam flower			2	
Pathfinder			2	
Wall lettuce			2	
Western starflower			2	
Meadow rue			1	
trillium			1	
bracken fern			1	
ivy			1	

unknown grass #1	1
Species in moss lichen and seedling layer (including trees < 2 years old) Moss and lichen species were not identified. Trees under 2 years old were not visibly present	Cover category
<p>Additional Notes (location description, slope, aspect, successional status, structural stage, types of disturbance, presence of invasive species, species names of any epiphytes, site and plot diagram and measurements):</p> <p>Coniferous forest. Plot centre was the largest Douglas-fir tree which may be more than 100 years old. Plot contained 12 Douglas fir trees in the overstory, four of which were significantly larger in diameter.</p> <p>Younger overstory trees were two hemlock and one grand fir.</p> <p>2 old stumps were visible in the plot.</p> <p>Plot also contained 3 dogwood trees..</p>	

Appendix 2: Plot photos

Photos were taken in each cardinal direction at the three vegetation plot locations

Plot One Photos



Plot Two Photos



Plot 3 Photos

