

Analysis of Four Parks in North Saanich



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Introduction

North Saanich parks are important public areas of education, recreation, and relaxation. They provide residents with spaces to exercise, enjoy nature, and socialize in an increasingly isolated world. Additionally, these green spaces provide important ecological services such as food production and corridors for wildlife, as well as other services such as stormwater management, temperature regulation, and oxygen production (Land Studies, 2017). Through better understanding of our neighbourhood parks, governing bodies can make better-informed decisions on policies for park management and adaptation in the face of climate change, development, and community wellbeing. This report focusses on four parks in the North Saanich neighbourhoods of Land's End and Deep Cove in an attempt to better understand the state of the parks in the region. The parks included in this report are Woodcreek Park, Sycamore Park, Highview Park North, and Highview Park South. This report has been created for the Friends of North Saanich Parks (FNSP), a local non-profit organization dedicated to sustaining the ecosystems in North Saanich (Friends of North Saanich Parks, n.d.). FNSP selected these four parks for analysis because this region of North Saanich will be the focus of their efforts in the near future. The report will analyze the plant communities found in all four parks, as well as a soil analysis and tree mensuration for three of the four parks in an attempt to better understand the physical and biological characteristics of this region of North Saanich.

Methods

The histories of the four parks in this report were collected from multiple sources online. Due to the small sizes of the parks analyzed, generalizations about the surrounding neighbourhoods of Land's End and Deep Cove were applied to the histories of the parks.

To describe the ecosystem types present in each of the parks, the Field Manual for Describing Terrestrial Ecosystems 2nd Edition by the B.C. Ministry of Forests and Range and the B.C. Ministry of Environment (2010) was used. Four hundred square metre plots were established for the parks large enough in size to do so, and the plant community, as well as physical characteristics such as slope, aspect, substrate and moisture were considered to determine the CDFmm (Coastal Douglas-fir Moist Maritime) site association, as outlined by Madrone Environmental Service LTD (2008).

The Manual also provides a form for soils analysis, whereby a soil pit was dug to a depth of roughly 50cm to 80cm. The soil form consists of but is not limited to, depth, width, colour, texture, percent coarse fragments, and biological characteristics of different horizons. Following the soil data collection, the soil types were determined using the Canadian System of Soil Classification 3rd Edition (Soils Classification Working Group, 1998).

Lastly, the Manual provides a tree mensuration form. This form was completed, noting but not limited to, tree species, diameter at breast height (DBH), height (based on calculations) and pathology. The mensuration plots were established to the best ability in areas representative of the natural ecosystem for each park, and a prism was used to determine which trees fell within the circular plot.

The above data collection was conducted in August of 2023, and as stated previously, soil analysis and tree mensuration were only conducted in three of the four parks, excluding High View Park South. It is important to note that the study takes place on the lands of the WSANEC peoples, and more specifically the BOKECEN (Pauqachin) and the WSIKEM (Tseycum) Nation's territory.

Limitations

The limitations of this report stem from the short time frame in which data was collected. This report only observed the parks described for the month of August 2023, during a period of extreme water stress (only 50mm of observed precipitation between the beginning of May until the time of sampling) (Government of Canada, 2023). To gain a more in depth understanding of the parks analyzed, further research should be conducted at different times of year. Additionally, soil analyses were conducted in the field in varying conditions of light and moisture, potentially resulting in imperfect data interpretation. Finally, due to restrictions on tree aging, the true age of the trees in these parks are unknown.

History

As stated previously, the Land's End and Deep Cove neighborhoods of North Saanich are located on the northern tip of the Saanich Peninsula on the lands of the WSANEC peoples consisting of the BOKECEN (Pauqachin) and the WSIKEM (Tseycum) Nations. The histories of

these nations who have inhabited the land well before European settler colonialism have been left out of this report due to a lack of knowledge on the topic, as well as the author's positionality. However, it is important to acknowledge that the WSANEC peoples still inhabit this region to this day, and their histories are none the less important.

The municipality of North Saanich is a product of the colonial expansion of the Hudson's Bay Company in 1852, whereby the company acquired the land from the WSANEC peoples (*History of Sidney / SET, TINES*, n.d.). In 1857, the first European settlers to North Saanich were John and Mark Coles, and following the Fraser River gold rush in 1858, much of the land in North Saanich was owned by miners, settler and speculators (*History of Sidney / SET, TINES*, n.d.). Cloake Hill, a significant topographic feature in the Land's End neighbourhood and the site of three parks within this report, is named after Isaac Cloake, an early settler to the region who owned the land adjacent to the hill in the 1860s (BC Geographical Names Office, n.d.). In 1913, the BC Electric Railway completed construction, connecting Victoria with Deep Bay (now Deep Cove), just to the West of Cloake Hill. At the time, Premier McBride suggested that this new line would spur a wave of development into the primarily agricultural Saanich Peninsula (Royal BC Museum and Archives, n.d.) However, development of North Saanich continues to face obstacles to this day due to 35% of land in North Saanich being part of the Agricultural Land Reserve (*Agriculture & Food Security*, 2023). Today, the municipality boasts a population of roughly 12,000 over its 4,015ha of land (District of North Saanich, n.d.). The municipality also hosts the Victoria International Airport and Swartz Bay Ferry Terminal, making it a transportation hub for the Saanich Peninsula (District of North Saanich, n.d.).

Today, the parks in this report are small and scattered amidst single family lots, and lack infrastructure such as parking lots, picnic tables, and playgrounds. They act as natural spaces surrounded by anthropogenically altered landscapes of private residences within North Saanich. Some of these small parks have paths for locals to enjoy, however, the size and shapes of Sycamore Park, High View Park North, and High View Park South suggest that these parks came to fruition as a result of being in marginal areas which would not be suitable for private property lots. Woodcreek Park, however, at 0.78ha and a relatively square shape would have been ideal for private development, but it is unknown why this never came to fruition.

Woodcreek

Site Description

Woodcreek park is a 0.78ha park located between Woodcreek Drive and Land's End Road ranging in 23m and 37m in elevation with a northwest aspect and an average slope of around 15% (North Saanich GIS). This park, on the lower northwest slope of Cloake Hill, has an ephemeral stream which runs from North to South parallel to a footpath. The CDFmm site association present at this site is RK_h6M. This site association was determined over the more commonly found RF site association due to the abundance of oceanspray and red huckleberry (*Vaccinium parvifolium*), as well as the presence of coarser soil (Madrone Environmental Services, 2008). The RK (Western redcedar—Douglas-fir—Oregon Beaked Moss) ecosystem type typically has more available moisture than the standard Douglas-fir – Salal ecosystem type of the CDFmm region and is often situated in moisture receiving sites on gentle slopes (Madrone Environmental Services, 2008). The canopy is dominated by Western redcedar (*Thuja plicata*) and Douglas-fir (*Pseudotsuga menziesii*) trees, with Big Leaf Maple (*Acer macrophyllum*) and Red Alder (*Alnus rubra*) also being present (Madrone Environmental Services, 2008). The understory of the park consists of patches of different shrubs; the upland areas are typically dominated by Oceanspray (*Holodiscus discolor*) and Snowberry (*Symphoricarpos albus*), whereas the lowland sites are typically dominated by Salal (*Gaultheria shallon*) and Western Sword Fern (*Polystichum munitum*). This site was quite hummocky, attributing the modifier “h”, and the stand is mature, consisting of a mix of deciduous and coniferous trees attributing the modifiers “6” and “M” respectively.



Figure 1: Map of Woodcreek Park, North Saanich, Canada.

Table 1: Common plant species found at Woodcreek Park.

| Common Name | Latin Name |
|-------------------------|------------------------------|
| Douglas-fir | <i>Pseudotsuga menziesii</i> |
| Western redcedar | <i>Thuja plicata</i> |
| Big Leaf Maple | <i>Acer macrophyllum</i> |
| Red huckleberry | <i>Vaccinium parvifolium</i> |
| Oceanspray | <i>Holodiscus discolor</i> |
| Salal | <i>Gaultheria shallon</i> |

| | |
|----------------------------------------------------------------------------------|------------------------------|
| Dull Oregon Grape | <i>Mahonia nervosa</i> |
| Osoberry | <i>Oemleria cerasiformis</i> |
| Western sword fern | <i>Polystichum munitum</i> |
| Note: This is not a complete list of the species found at Woodcreek Park. | |

Soil Analysis

The soil present at Woodcreek park have been determined as belonging to the Brunisolic order, as the soil did not meet criteria of the other two forest soil orders found in Canada (being the Podzolic and Luvisolic orders), though it should be noted that the precipitation and temperatures found at this site are sufficient for potential Podzol formation (Canadian Society of Soil Science, 2020). Specifically, the soil found at this site is a Sombric Brunisols, and has a dark Ah horizon greater than 10cm in thickness, and a B horizon thicker than that of Regosols (Soils Classification Working Group, 1998). The B horizon characteristic of a Brunisol is typically Bm, Bfj, or Btj, and signify minimal pedogenic alteration when compared to Podzols and Luvisols (Canadian Society of Soil Science, 2020). As a result of the eluviated Ae_j horizon found under the dark Ah horizon as well as a lack of mottling, this soil has been classified as an Eluviated Sombric Brunisol (E.SB) (Soils Classification Working Group, 1998).

Table 2: Woodcreek Park soil summary.

| Horizon | Depth | Texture | Coarse Fragments | Colour | Roots | Comments |
|-----------------------|----------|------------|-----------------------------------------------|---------------------|----------------------------------|------------------------------------------------------------|
| LFH | -2 to 0 | Type: Mull | | | | Abundant faunal droppings in the area, abundant moss cover |
| Ah | 0 to 13 | Sandy loam | 20% subangular gravel, 5% subangular cobbles, | 10 YR 3/2 exped dry | Plentiful medium, plentiful fine | Medium subangular blocky structure. No pores |
| Ae_j | 13 to 36 | Sandy loam | 10% subangular gravel, 7% subangular cobbles, | 10 YR 5/4 exped dry | | Medium subangular blocky structure, no pores. |

| | | | | | | |
|------------|----------|-----------------|---------------------------------------------|----------------------|----------------------------------|-------------------------------------------------------------------------------------------|
| | | | 5% subangular stones | | | |
| Bfj | 36 to 60 | Sandy clay loam | 10% subangular gravel, 8% subangular stones | 7.5 YR 5/8 exped dry | Plentiful coarse, plentiful fine | Medium subangular blocky structure. Abundant charcoal at boundary with underlying horizon |
| C | 60+ | Sandy clay loam | 2% subangular gravel | 10 YR 5/3 exped dry | None | Fine angular blocky structure. No mottling |

Note: The soil pit was located at the base of a rocky outcrop, towards the lower slope of the park. This location had a representative plant community and was located at the transition between upland rocky areas, and lowland shrub-dominated areas. The soil pit is located 25m above sea level.



Figure 2: Woodcreek Park soil profile.



Figure 3: Charcoal sample from Woodcreek Park soil pit.

Tree Mensuration

Four trees fell within the mensuration plot for Woodcreek Park consisting of two Douglas-fir trees, one Western Redcedar, and one Big Leaf Maple. Of these, only the Western Redcedar was co-dominant, and the remaining three trees were all dominant in the canopy. This plot is representative of the park as a whole, as Douglas-fir is the dominant tree species, followed by Western Redcedar and lastly Big Leaf Maple. The Douglas-fir and Western Redcedar heights and widths represent the average for their respective species, however, the Big Leaf Maple was larger than its counterparts of the same species.

Table 3: Woodcreek Park mensuration summary.

| Tree | Spp | DBH (m) | Height (m) | Comments |
|------|------------------|---------|------------|-----------------------------------------------|
| 1 | Western Redcedar | 1.180 | 20.0 | Dead top third |
| 2 | Douglas-fir | 2.060 | 29.8 | |
| 3 | Douglas-fir | 1.757 | 28.0 | Sweep at the base |
| 4 | Big Leaf Maple | 2.330 | 24.0 | Large fire scar on bottom third, fork at base |

Note: This mensuration plot is located at the base of a rocky outcrop, towards a lower slope position. This site was chosen due to it being having a representative plant community for the park.

Sycamore Park

Site Description

Sycamore Park is a 0.5ha park and picnic area located on the North side of Cloake Hill overlooking Satellite Channel and Mount Tuam on Saltspring Island (North Saanich GIS, n.d.). The Park connects Sycamore Drive to Westview Place, and ranges in elevation from 115m in its northeast to 140 metres above sea level in its southwest, and an average slope of 23.5% (North Saanich GIS). The CDFmm site association found at this park is DAK5iM. The DA (Douglas-fir—Shore Pine—Arbutus) site association is found on drier sites such as upper slopes or crests of hills and is typically dominated Douglas-fir and Arbutus trees (Madrone Environmental Services, 2008). The understory consists primarily of oceanspray, salal, and a great number of

mosses including Oregon Beaked Moss (*Kindbergia oregana*), step moss (*Hylocomium splendens*) and rough goose neck moss (*Rhytidiadelphus triquetrus*) (Madrone Environmental Services, 2008). While Big Leaf Maple, Alder, and Western Redcedar can be found at this site (atypical for this site association), since these species are found directly adjacent to developed pathways between private properties, their presence may be a result of recent disturbance and private plantings rather than being reflective of the undisturbed ecosystem.

The modifiers present on the site association describe the cool aspect of the slope (k), the young age of the stand (5), and the irregular mixed stand composition (iM), likely due to disturbance as stated previously.

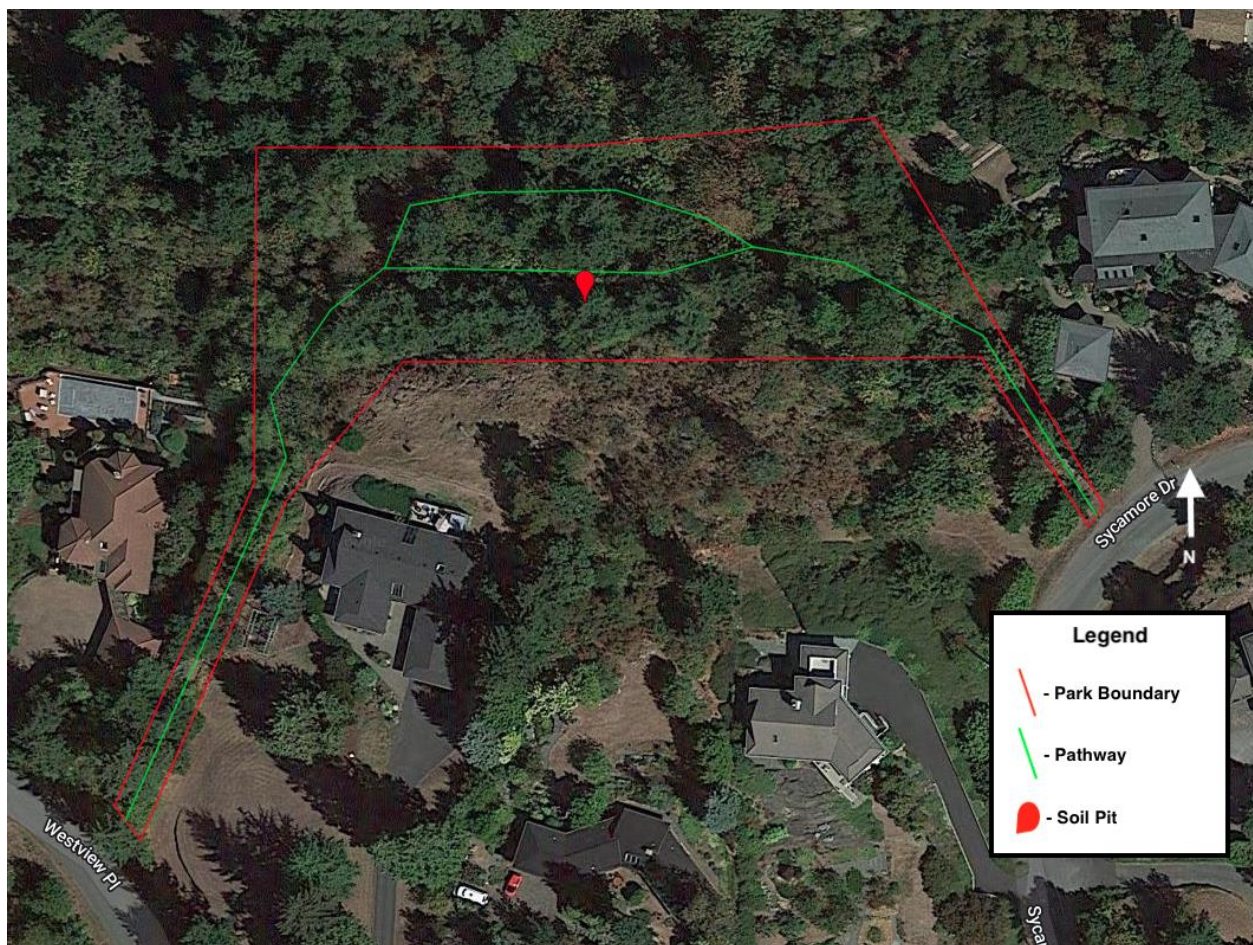


Figure 4: Map of Sycamore Park, North Saanich, Canada.

Table 4: Common plant species found at Sycamore Park.

| Common Name | Latin Name |
|---------------------------------------------------------------------------------|-----------------------------------|
| Douglas-fir | <i>Pseudotsuga menziesii</i> |
| Arbutus | <i>Arbutus menziesii</i> |
| Oceanspray | <i>Holodiscus discolor</i> |
| Trailing blackberry | <i>Rubus ursinus</i> |
| Herb Robert | <i>Geranium robertianum</i> |
| Oregon Beaked Moss | <i>Kindbergia oregana</i> |
| Rough goose neck moss | <i>Rhytidiadelphus triquetrus</i> |
| Osoberry | <i>Oemleria cerasiformis</i> |
| Red pine (introduced) | <i>Pinus resinosa</i> |
| Note: This is not a complete list of the species found at Sycamore Park. | |

Soil Analysis

The soil found at Sycamore Park fall under the Regosolic order due to the lack of a B horizon. Regosol soils are commonly found on hillslopes and form as a result of increased sediment transport during precipitation events. This lack of stability coupled with typically low moisture availability hinders soil development at these sites (Canadian Society of Soil Science, 2020).

Further, the soil found at Sycamore is classified as Orthic Humic Regosol due to the uniform colour and lack of mottles found in the C horizon. (Soils Classification Working Group, 1998). With increased stability due to vegetation growth, over time, Orthic Humic Regosols will eventually be classified into a different soil order due to organic materials and acids from the LFH layer penetrating through the A horizon and develop an eventual B horizon (Canadian Society of Soil Science, 2020).

Table 5: Sycamore Park soil summary.

| Horizon | Depth | Texture | Coarse Fragments | Colour | Roots | Comments |
|------------|---------|-------------------|------------------|--------|-------|-----------------------------|
| LFH | -2 to 0 | Humus Form: Moder | | | | Mixed deciduous and conifer |

| | | | | | | |
|-----------|-----------|----------------|----------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------|-----------------------------------------|
| | | | | | | litter, abundant moss covering |
| Ah | 0 to 13 | Clayey Loam | 35% angular and subangular gravel, 5% angular and subangular cobbles | 10YR 4/4 (exped dry) | Plentiful fine, plentiful medium | Abundant pores |
| C | 13 to 65+ | Clayey Loam | 7% angular and subangular gravel, 25% angular and subangular cobbles | 10YR 5/6 (exped dry) | Plentiful coarse | Abundant pores, lack of mottles |

Note: This soil pit was located at a lower meso-slope position along a pre-existing ditch on a northern-facing slope. The plant community where this site was located was representational of the meso-slope of the park. The soil pit is located 121m above sea level.



Figure 5: Sycamore Park soil profile.



Figure 6: Sycamore Park soil pit.

Tree Mensuration

Five trees fell within the mensuration plot for Sycamore Park; three Douglas-fir trees, one Arbutus (*Arbutus menziesii*), and one non-native Red Pine (*Pinus resinosa*). While not exactly representative of the trees found within the park, the dominant tree in this park is Douglas-fir, followed by Arbutus. Also within the plot were young trees with DBHs less than 25cm; these trees were excluded from the analysis due to their occurrence adjacent to the relatively new pathway, rendering them non-representative of the natural stand height and diameter.

Table 6: Sycamore Park mensuration summary.

| Tree | Spp | DBH (m) | Height (m) | Comments |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------|------------|-----------------------------|
| 1 | Douglas-fir | 1.166 | 18.6 | |
| 2 | Douglas-fir | 1.300 | 17.7 | |
| 3 | Arbutus | 0.650 | 14.9 | Slight sweep in lower third |
| 4 | Douglas-fir | 0.825 | 19.9 | |
| 5 | Red Pine (introduced) | 1.080 | 16.7 | De-foliated lower 2/3rds |
| Note: This mensuration is located at a meso-slope position with plant community representational of the majority of the park. | | | | |

High View Park (North)

Site Description

High View Park North is a small park consisting of 0.07ha on the upper north slope of Cloake Hill (North Saanich GIS, n.d.). The park is flanked by a private property in the west, and ditches and roads in the north, east and south. The centre of the park is notably higher than the surrounding roads, resulting in a very dry rocky outcrop dominated by mosses, Douglas-fir trees and oceanspray. The site association found at this site is determined to be DA5tM. The DA (Douglas-fir—Shore Pine—Arbutus) site association was chosen due to the large gaps in the canopy, the dominance of Douglas-fir and Arbutus trees, as well as the presence of the associated species Garry Oak (*Quercus garryana*). This site is dry as indicated by the abundance of oceanspray, however, the site also hosts several Scouler’s Willow (*Salix scouleriana*) trees in the periphery of the park along the ditch, suggesting that these trees are sustained by the runoff from the otherwise dry sections of the park. The site ranges in elevation from 144m at its highest to 137m above sea level at its lowest, and has an average slope of 27% (North Saanich GIS). The two High View Parks (North and South), are in very close proximity to the aforementioned Sycamore Park, resulting in similar development patterns.

The modifier “5” designates this site as a young forest, though some older Douglas-fir trees are present at the site, the exposed rock and discontinuous tree cover at the site indicates semi-recent disturbance to much of the park area. Additionally, the canopy is divided into two layers consisting of a mixture of broadleaf and coniferous trees, likely due to different intervals

of disturbance from either the surrounding residences, road development, or mass wasting. This attributes the modifiers “tM” (two-storied, mixed-stand composition) to the site association.



Figure 7: High View North (upper) and High View South (lower) map, North Saanich, Canada.

Table 7: Common plant species found at High View Park South.

| Common Name | Latin Name |
|----------------------------------------------------------------------------------------|-----------------------------------|
| Douglas-fir | <i>Pseudotsuga menziesii</i> |
| Arbutus | <i>Arbutus menziesii</i> |
| Oceanspray | <i>Holodiscus discolor</i> |
| Dull Oregon grape | <i>Mahonia nervosa</i> |
| Saskatoon berry | <i>Amelanchier alnifolia</i> |
| Scouler's willow | <i>Salix scouleriana</i> |
| Oregon beaked moss | <i>Kindbergia oregana</i> |
| Rough goose neck moss | <i>Rhytidiadelphus triquetrus</i> |
| Garry oak | <i>Quercus garryana</i> |
| Note: This is not a complete list of the species found at High View Park South. | |

Soil Analysis

The soil found at High View North is similar to Sycamore Park on the other side of Westview Place. The soil analysis found Orthic Humic Regosol soil due to similar reasons as Sycamore Park, however, the soil at High View North has a thicker Ah horizon. One notable difference at High View North was the increased amount of decaying wood on the surface, as well as an increased the concentration of deciduous leaf litter. The Ah horizon present at High View North is defined by a darker colour (though to a lesser degree than at Sycamore), lower cohesion, greater abundance of roots, and fewer coarse fragments than the underlying C horizon.

Table 8: High View North soil summary.

| Horizon | Depth | Texture | Coarse Fragments | Colour | Roots | Comments |
|------------|---------|-------------------|------------------|--------|-------|--------------------------------------------------------------------------------|
| LFH | -3 to 0 | Humus Form: Moder | | | | Mixed deciduous and conifer litter, abundant decaying wood and rocky outcrops. |

| | | | | | | |
|-----------|----------|-------------|-----------------------------------------------------------|----------------------|----------------|--------------------------------|
| Ah | 0 to 30 | Clayey Loam | 20% angular and subangular gravel | 10YR 5/4 (exped dry) | Plentiful fine | Abundant pores, low cohesion |
| C | 30 to 85 | Clayey Loam | 35% angular and subangular gravel, 10% subangular cobbles | 10YR 6/4 (exped dry) | Few medium | Lack of mottles, high cohesion |

Note: This soil pit was located on the southern edge of the park in an area with a representative plant community. This pit was dug at the top of a southern-facing slope. It should be noted that this park is subject to slumping and mass wasting events due to its small size and steep slope. The soil pit is located 143m above sea level.



Figure 8: High View North soil profile.

Tree Mensuration

Four trees fell within the mensuration plot at High View North, being three Douglas-fir trees, and one Arbutus tree. While there is a notable number of Scouler’s Willow trees found at this site, they are restricted to the periphery, only occurring adjacent to the aforementioned ditch found on the north, west and south side of the park. Due to this distribution pattern, the plot was located in an area which would exclude these marginal trees.

Table 9: High View North mensuration summary.

| Tree | Spp | DBH (m) | Height (m) | Comments |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|------------|----------------------------------------------|
| 1 | Douglas-fir | 1.800 | 23.8 | Sweep in the lower third |
| 2 | Arbutus | 1.530 | 11.9 | Forked at the base, and again in upper third |
| 3 | Douglas-fir | 1.880 | 25.9 | |
| 4 | Douglas-fir | 1.859 | 24.5 | |
| Note: This mensuration plot is located on the upper slope of the park to minimize edge effects from the ditches which encompass this small park. | | | | |

High View Park (South)

Site Description

High View Park South is slightly larger than its northern counterpart, consisting of 0.1ha of forested land on the southern side of Highview Place across from High View Park North (North Saanich GIS). Despite the proximity of these two parks, the plant community and structural stage differ significantly. The site series for High View South has been determined to be DS6mC. The DS (Douglas-fir—Salal) site series is typical for the CDFmm ecoregion, and occurs at elevations under 400m above sea level on gentle slopes (Madrone Environmental Services, 2008) While this site is located near the top of Cloake Hill (141m – 147.5m above sea level), it is located on a terrace as opposed to a rocky outcrop such as the one found at High View North (North Saanich GIS). The trees found at this site appear to be mature, attributing the modifier “6”, with a single dominant crown layer and relatively undeveloped understory, attributing the modifier “s”. This single-storied stand is atypical for DS ecosystem types,

however, with the advancement of human intervention such as forestry and fire suppression, denser successional canopies are seeing higher degrees of canopy closure (Madrone Environmental Services, 2008). Finally, unlike the mixed canopy of found in High View Park North, High View Park South is dominated by conifer trees, with broadleaf trees only occurring along the park edge, attributing the modifier “C”.

Only a brief overview of High View Park South was conducted, and further analysis into soil characteristics would be beneficial in understanding the park.

Table 10: Common plant species found at High View Park South.

| Common Name | Latin Name |
|----------------------------------------------------------------------------------------|------------------------------|
| Douglas-fir | <i>Pseudotsuga menziesii</i> |
| Western redcedar | <i>Thuja plicata</i> |
| Big leaf maple | <i>Acer macrophyllum</i> |
| Oceanspray | <i>Holodiscus discolor</i> |
| Dull Oregon grape | <i>Mahonia nervosa</i> |
| Saskatoon berry | <i>Amelanchier alnifolia</i> |
| Salal | <i>Gaultheria shallon</i> |
| Arbutus | <i>Arbutus menziesii</i> |
| Oregon beaked moss | <i>Kindbergia oregana</i> |
| Note: This is not a complete list of the species found at High View Park South. | |

Discussion

The four parks analyzed in this report give insight into the ecosystems and soil properties in the Land’s End and Deep Cove region of North Saanich. While not conclusive, this report has highlighted the diversity of ecosystem types ranging from the top of Cloake Hill to its lower slope. From the soil analyses conducted at Sycamore Park and High View Park North, we can see that disturbances such as mass wasting as a result of the steep slope, as well as lack of retained soil moisture likely hindered the soil formation towards the top of Cloake Hill, resulting in the Orthic Humic Regosol soil found at these sites. This is compared to the more developed Eluviated Sombric Brunisol soil present at Woodcreek Park, where a gentler slope and more available moisture aids in a higher degree of soil development. Through the soil analyses, we can

also begin to understand why the plant communities and ecosystem types are located where they are along this slope. The CDFmm site series located at Sycamore Park and High View Park North is that of the regionally drier DA (Douglas-fir—Shore Pine—Arbutus) site series (Madrone Environmental Services, 2008). This is likely due to the poorer soil conditions found here, as well as lack of retained soil moisture. When compared to the richer and moister soils of Woodcreek Park, we can see that the CDFmm site series shifts to that of the DS (Douglas-fir—Salal) site series. This site series is the most widespread in the CDFmm region and occur on sites with gentle slopes and more available moisture (Madrone Environmental Services, 2008).

The implementation of multiple techniques to understand ecosystem type and function is important to create more conclusive assessments of a specific area. For example, this report has analyzed three parks (Woodcreek, Sycamore, and High View North) to a higher degree than High View South. As a direct result of this deeper understanding, we are able to make more definitive assessments about the type of ecosystems present, their hydrology and site history. With this deeper understanding, we are better equipped to create more effective management objectives for these sites. This highlights the importance of continued, cumulative, and multi-faceted approaches to research pertaining to the highly dynamic systems found within our parks.

Recommendations

It is recommended that further research be conducted on the four parks within this report to better understand how climate change and human influence will affect these places. It is also recommended that this report be utilized as a starting point for future analyses to compare their findings, effectively creating an in-depth way to monitor temporal changes to the parks. Additionally, it is recommended that local, governing bodies create management objectives to include not only direct human interests, but also to preserve the ecological functions of undisturbed parcels of land. The stormwater management, temperature regulation, and oxygen production that these green spaces provide are often overlooked and easy to take for granted. However, they also serve as important corridors and food producing sites for wildlife. It is for these reasons, as well as countless others, that strategies be put in place to help protect local parks.

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