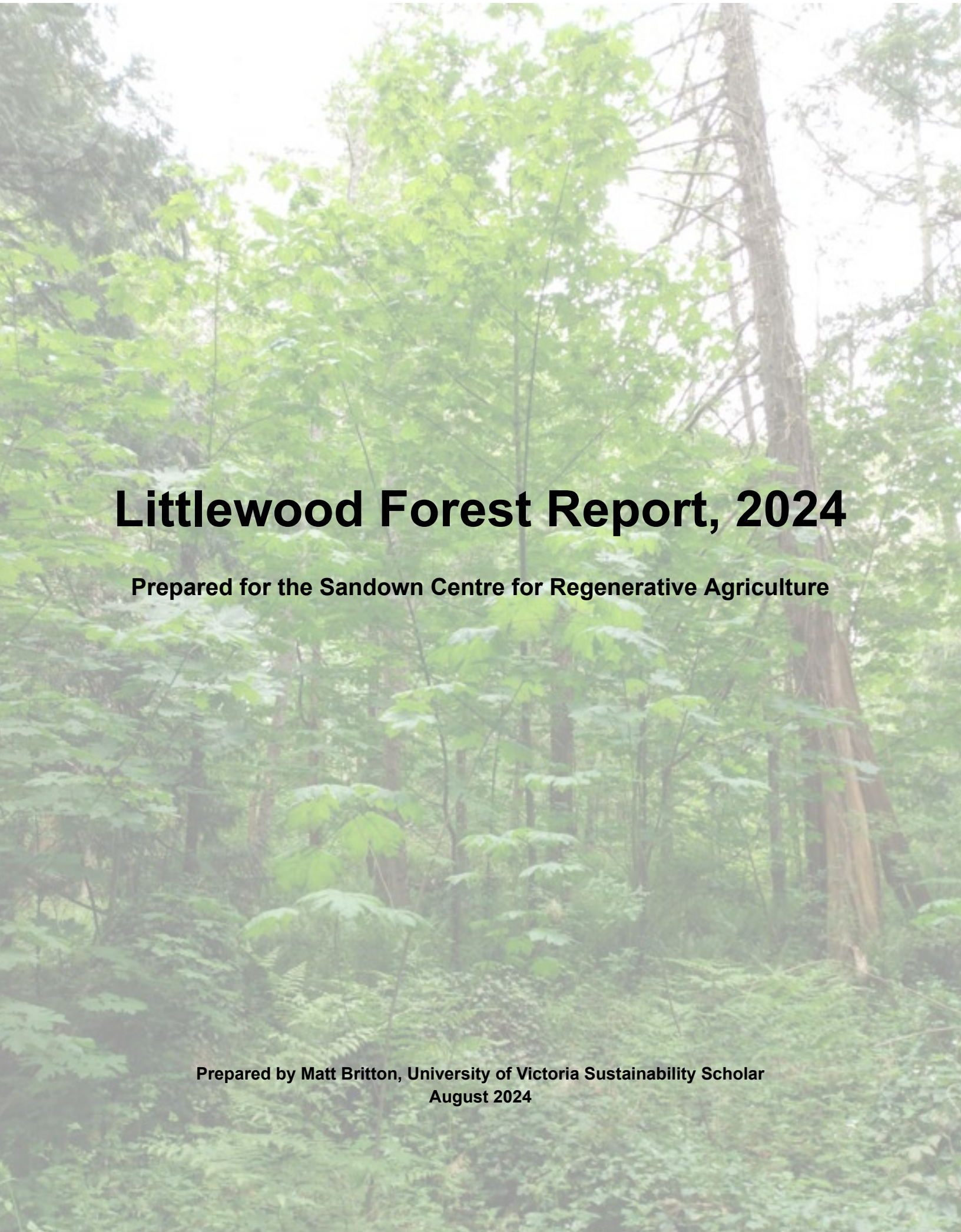

Littlewood Forest Report, 2024

Prepared for the Sandown Centre for Regenerative Agriculture

Prepared by Matt Britton, University of Victoria Sustainability Scholar
August 2024

Acknowledgements

The Littlewood Forest in the Sandown Agricultural Lands is located within the traditional, unceded territories of the W̱SÁNEĆ peoples who have cared for this land since time immemorial. The degradation of this forest area is largely a consequence of colonial practices that separated the traditional caretakers from the land and disregarded their time-honoured stewardship practices in favour of extraction and exploitation of it. Caring for this land and restoring it from years of neglect and degeneration is an important act of reconciliation with the peoples who have called this land their home for thousands of years. I am grateful for the perseverance of Indigenous peoples here and across the world who have shared their timeless wisdom, connections to the earth, and traditional ecological knowledge; we all have much to learn from them.

I am also grateful to the following individuals who have shared their knowledge, opinions, and resources to inform this report:

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the University of Victoria's Sustainability Scholars Program.

All uncredited photos throughout this report, aside from the aerial photos in Appendix A, are the author's own.

Table of Contents

1.0 Executive Summary

The 17-acre Littlewood Forest stewarded by the Sandown Centre for Regenerative Agriculture is a second-growth coastal Douglas-fir forest with a pond, natural springs, and a low-lying wetland complex, all of which have been heavily impacted by invasive species due to decades of neglect. Research for this report included field assessments of the entire forest, which were used to create a compartmentalized map to assist with stewardship of the space, as well as stakeholder interviews and analysis, a review of existing reports and relevant data, and creation of a list of recommended actions for restoration and conservation.

While most of the land around the Littlewood Forest was cleared for agricultural use in the 1800s, the area that comprises the forest area was left mostly intact, possibly due to the presence of a swamp and natural springs that occur in that area. In the 1950s, the land was converted into a horse racetrack, which operated until the turn of the century. It was eventually acquired by the District of North Saanich, subdivided, reclaimed through demolition of buildings, and leased to the Sandown Centre to manage restoration activities.

Part of the smallest and most threatened biogeoclimatic zone in British Columbia, the forest contains several small, unique ecosystems. Despite threats from invasive species, it has strong biodiversity, with a variety of trees, shrubs, and wildlife. The most significant threats to the forest come from Himalayan blackberry and English ivy, both of which outcompete native plants for resources and diminish the forest's biodiversity and overall health. Descriptions, locations, and treatment options for each invasive species are presented.

The descriptions accompanying the map of six management zones in this report detail species compositions, historical context, conservation concerns, relevant observations, sub-zones with unique characteristics, safety concerns, and physical descriptions of each section of the forest. This is followed by a review of stakeholder feedback that informed the development of four primary (left) and four secondary (right) values to guide and prioritize management actions within Littlewood Forest:

- Recreation (trails, birdwatching)
- Education (native plants/ecosystems)
- Restoration (invasives management)
- Biodiversity (protection/improvement)
- Wildlife (habitat conservation)
- Volunteers (engagement/management)
- Reconciliation (work with First Nations)
- Safety (hazard trees, woody debris)

Potential interventions are prioritized through the use of an impact vs. effort matrix and presented by zone to compartmentalize and streamline management options. Due to its complexity and numerous options, a process map for Zone 1 is presented to assist in sequencing actions, followed by a possible action plan for the entire forest. These findings are summarized in a stewardship plan designed for public dissemination.

Appendices include a presentation of historical photos of the forest area over the past century along with descriptions of visible changes to the site, a table of interventions/recommendations, and supplementary maps of water features, trails, landmarks, debris, and notable hazards.

2.0 Project Description & Goals

The Sandown Centre for Regenerative Agriculture (SCRA) is responsible for stewarding approximately 17 acres of diverse second-growth coastal Douglas-fir forest, which includes a low-lying wetland complex of western red-cedar/skunk cabbage swamp, pond, and natural springs. The forest has been heavily impacted by invasive species and decades of neglect. SCRA aims to restore this ecosystem in a way that ensures its health and vitality while addressing critical issues such as biodiversity loss, ecological degradation, and the impacts of colonization on the landscape.

With that in mind, the author was engaged to conduct a field survey, record observations, and map the forest into zones by major features and ecosystems; conduct and analyze stakeholder interviews; review existing reports and data relevant to the area; and develop recommendations for restoration and conservation actions for the space.

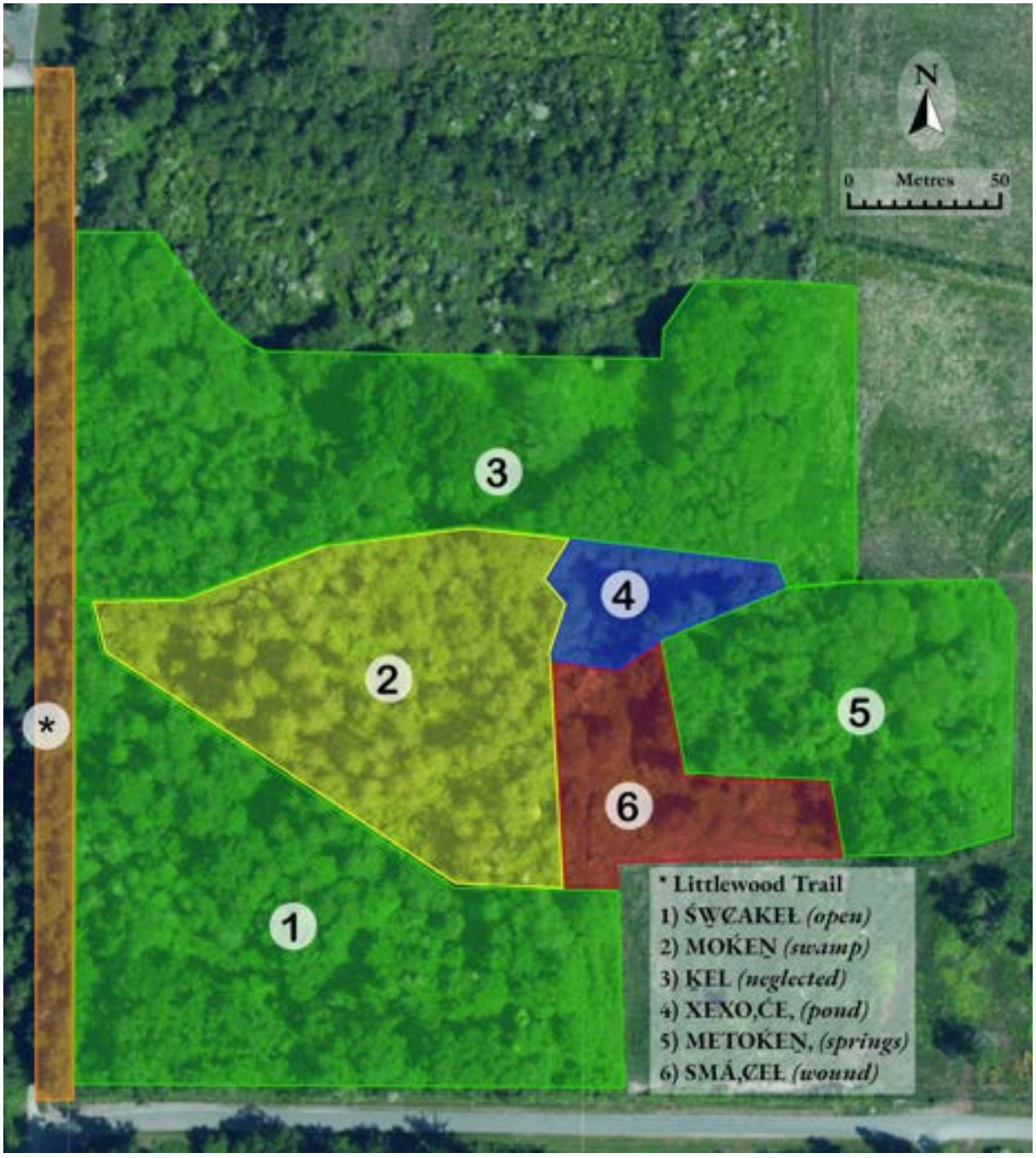
2.1 Research Limitations

I was asked to undertake the research for this report as one of University of Victoria's 2024 Sustainability Scholars due to my experience with synthesizing secondary research, engaging stakeholders, analyzing relevant information, and organizing and creating action plans. I am not an ecologist or a forester – my engagement with the environmental observation and analysis aspects of this project are as an amateur naturalist. As such, I recommend that SCRA or other entities referencing this report verify the information contained within with trained professionals and experts.

This report is based on consultations with local stakeholders, on-site observations, and analysis of prior reports and resources. These sources are subject to the following limitations:

- Field surveys of the forest were completed between May and July 2024, and the findings in this report reflect the information gathered during that time frame. This is a brief snapshot of a moment in time; further study is needed to validate the observations made during this period in the context of ecological development and change.
- Despite my best efforts, I was unfortunately unable to consult with the leadership of the W̱SÍḴEM(Tseycum) First Nation about their desires and plans for this land. With an active land claim on the Sandown lands, it is absolutely critical to consider their wishes and perspectives in developing a stewardship plan for the forest. In the absence of their input, I have relied on previous consultations with members of this Nation from previous reports. The Sandown Centre staff should continue to pursue this vitally important perspective before moving forward with the recommendations in this report.

3.0 Background & History



The management zones indicated on the map above are referenced throughout this report. An in-depth description of each zone is discussed in Section 5.

Location of Sandown Lands (in red) on the Saanich Peninsula. Image from Google Earth (2024).

Observation Site

Littlewood Forest is located in the southwestern corner of what is known as the Sandown Agricultural Lands on the Saanich Peninsula of southern Vancouver Island. This area is part of the ancestral territories of the W̱SÁNEĆ peoples who have cared for the land for millenia. While most of the Sandown Lands were once part of a large Garry oak ecosystem that was cleared for agricultural use in the 19th Century (Sandown Centre for Regenerative Agriculture [SCRA], n.d.), the Littlewood Forest area appears to have largely remained intact as a coastal Douglas-fir ecosystem, making it a distinct and unique part of the Sandown Lands (N. Hughes, personal communication, July 2024). The colonization of this land and abandonment of the traditional stewardship that had been practiced by the W̱SÁNEĆ peoples has had profound consequences on the forest, which will be discussed in detail later in this report.

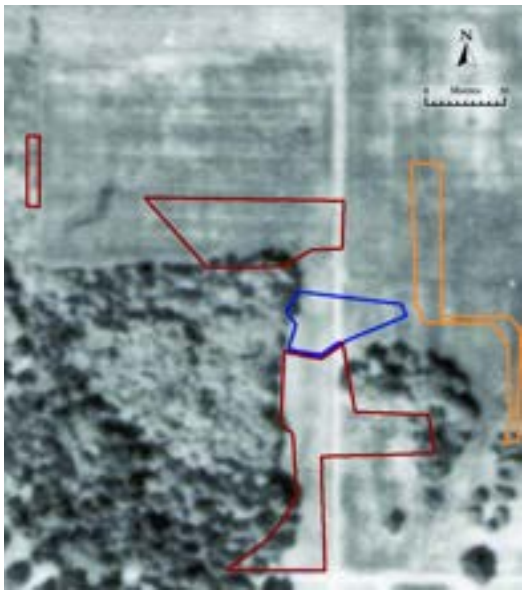
As part of the Glamorgan Farm, the land around the forest was cultivated until the 1950s, when it was sold and redeveloped into the Sandown Racetrack. The area north of the forest was turned into a smaller warm-up track (Elliot & Richard, 2016), which can be seen in aerial photos from 1952.

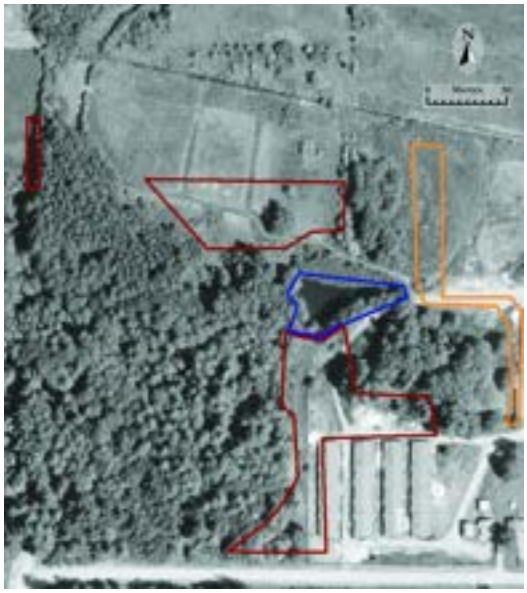
The racetrack opened in 1955 and operated until 2005, when it was decommissioned. The track's infrastructure was left to deteriorate until the owners negotiated a subdivision and sale of the property in 2014, at which time the District of North Saanich (hereafter referred to as "the District")–who currently owns the land–took over the property and demolished the structures in 2019 to reclaim the property for agriculture (District of North Saanich [DNS], n.d.).

The Sandown Centre for Regenerative Agriculture (SCRA) was founded in 2020 by the Circular Farm and Food Society and currently holds a Licence to Operate on the Sandown Lands from the District (SCRA, n.d.). Of the 83 acres of the site, approximately 17 acres in the southwest corner of the property are forested. While much of SCRA's land is being used for regenerative agriculture or for stormwater retention for the District (SCRA, n.d.), until now, the organization has not developed a plan for the forest section.

SCRA land use plan map (Mashari, 2024). Zone 5 (with slightly modified boundaries) is the subject of this report.

This historical context is important because the current state of the Littlewood Forest is closely tied to the past use of the land. In the photos below–from 1946 (left) and 1986 (right)–significant vegetation in the present is noted with coloured outlines: the rough outline of the Littlewood Forest pond is in blue, areas that are completely overrun with Himalayan blackberry are outlined in red, and orange lines indicate areas that are covered in a mixture of Himalayan blackberry and invasive grasses.



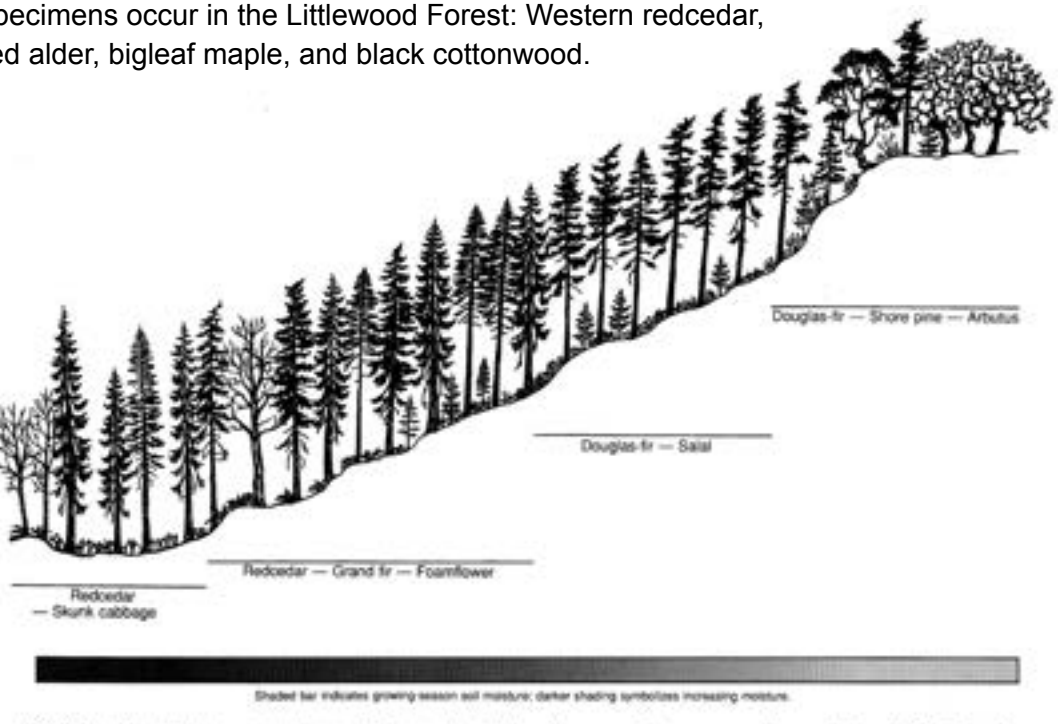


The consequences of decades of neglect are clearly evident; areas that had been cleared for agriculture and then neglected were colonized in some cases by trees, but in areas where other vegetation did not take hold quickly, the vacant land has been inundated with invasive species.

4.0 Natural Environment

Littlewood Forest is part of the Coastal Douglas-fir Moist Maritime Biogeoclimatic Zone (CDFmm), which is the smallest and most threatened biogeoclimatic zone in British Columbia; it only makes up 0.3% of BC's total land area. While it supports the highest number of at-risk species and ecosystems in BC, only 11% of CDFmm areas are protected in conservation areas (Urban Systems, 2024). The Province of British Columbia has noted that CDFmm zones host some of its most interesting and diverse ecosystems and that their mild climate supports some of the province's rarest vegetation, which is threatened by steady growth of human settlement (Islands Trust, 2018). They also "hold cultural significance for the WSÁNEĆ Nations, who have traditionally stewarded the lands and rely on the…traditional foods they provide" (Urban Systems, p. 18). And like many ecosystems, the forest also assists with carbon sequestration, water filtration, climate change mitigation and adaptation, and provides valuable habitats for wildlife, including pollinators and insectivores. Forests are important for wellbeing and mental health, providing important interactions between people and the natural world through recreation and educational opportunities to learn about the ecology and cultural importance of these environments (Urban Systems; Islands Trust).

The CDF is so named because the coastal variety of Douglas-fir (Pseudotsuga menziesii var. menziesii) is the most common tree species within this zone (Nuszdorfer et al., 1991). There are a number of other trees that frequently accompany Douglas-fir in the CDF; among them, the following specimens occur in the Littlewood Forest: Western redcedar, grand fir, red alder, bigleaf maple, and black cottonwood.



Simplified schematic diagram of topographic relationships among four common site associations of the Coastal Douglas-fir zone. Image from Nuszdorfer et al., 1991.

Although there are a good number of redcedars in Littlewood Forest (particularly in the downslope, swamp area), many of them are dying off due to climate change, and the forest is gradually transitioning to being dominated by Douglas-fir, which is more drought-tolerant than the other trees found in this zone (N. Hughes, personal communication, April 2024).

Some of the forest displays typical characteristics of healthy forests: multi-aged, diverse canopy cover with a variety of tree and understory species, including an understory with large woody debris such as fallen trees, nurse logs, and snags (Islands Trust, 2018). Much of the forest, however, is suffering from a variety of invasive species that outcompete the native vegetation, English ivy and Himalayan blackberry in particular.

The middle of the forest contains a swampy redcedar/skunk cabbage site association; this can even be seen in the aerial photo of the site from 1946 in the previous section. This area has a wet soil moisture regime with a rich nutrient regime in which Douglas-fir is not present (Nuszdorfer et al., 1991).

The highest elevation in the site is located in the far southwest corner, at the Littlewood Trail entrance at the corner of Glamorgan Road and Littlewood Road, at 24 metres above sea level. From there, the site slopes down toward the northeast, leveling off at 10 metres, where it drains into a canal that is part of Tseycum (W̱SÍḴEM) Creek.

Littlewood Forest elevation contours; yellow line is 20 metres. Image taken from the CRD Regional Map, accessed May 2024.

4.1 Observed Vegetation

The species listed in the following table were observed over the course of 50+ hours of field surveys in Littlewood Forest in May, June, and July 2024. The list is divided by forest layer and includes the common name, scientific name, and name of the plant in SENĆOŦEN, the language of the W̱SÁNEĆ peoples. All SENĆOŦEN names were sourced from the 2018 electronic edition of *SENĆOŦEN: A Dictionary of the Saanich Language* compiled by Timothy Montler with the aid of 26 W̱SÁNEĆ elders.

The locations of most of the species listed below are detailed in section 5. This list is not exhaustive–some species may not have been observed due to the timing of the site visits or because they were obscured by invasive species; grasses and aquatic plants are not listed.

Layer	Common	Scientific	SENĆOŦEN
canopy	bigleaf maple	*Acer macrophyllum*	ȾŁÁ,EŁĆ
canopy	black cottonwood	*Populus trichocarpa*	ĆEU,NEŁP
canopy	Douglas-fir	*Pseudotsuga menziesii*	JSⱥ,
canopy	grand fir	*Abies grandis*	DEW̱Á,IŁĆ
canopy	red alder	*Alnus rubra*	SḰOṈEŁĆ
canopy	western redcedar	*Thuja plicata*	XPⱥ,
understory	june plum	*Oemleria cerasiformis*	ȾEXEṈ,
understory	red-osier dogwood	*Cornus sericea*	ȻETXIŁĆ
shrub	baldhip rose	*Rosa gymnocarpa*	
shrub	bracken fern	*Pteridium aquilinum*	SEḴⱥN
shrub	coastal hedge-nettle	*Stachys chamissonis*	
shrub	giant horsetail	*Equisetum telmateia*	SXEM,XEM,
shrub	Nootka rose	*Rosa nutkana*	ḴELḴE,IŁĆ
shrub	oceanspray/ironwood	*Holodiscus discolor*	KÁȾEŁĆ
shrub	Oregon grape	*Mahonia aquifolium*	SENI,IŁĆ
shrub	red huckleberry	*Vaccinium parvifolium*	SꞰEḰĆES
shrub	salmonberry	*Rubus spectabilis*	ELILE,
shrub	skunk cabbage	*Lysichiton americanum*	ȾOQI,
shrub	snowberry	*Symphoricarpus albus*	PEPKÍOS
shrub	stinging nettle	*Urtica dioica*	ȾEXȾEX
shrub	sword fern	*Polystichum munitum*	SŦXⱥLEM,
shrub	thimbleberry	*Rubus parviflorus*	DEḰEṈ,
herb	alpine enchanter's-nightshade	*Circaea alpina*	
herb	false lily-of-the-valley	*Maianthemum dilatatum*	
herb	fringe cups	*Tellima grandiflora*	
herb	Pacific pea	*Lathyrus vestitus*	
herb	salal	*Gaultheria shallon*	DAḴE,
herb	slough sedge	*Carex obnupta*	
herb	trailing blackberry	*Rubus ursinus*	SꞰELÁLṈEW,IŁĆ
herb	water parsley	*Oenanthe sarmentosa*	

4.2 Invasive Species

As previously noted, a number of invasive species were observed throughout the Littlewood Forest during field surveys. The Invasive Species Council of BC (ISCBC) claims that invasive species are one of the greatest threats to biodiversity, second only to habitat loss; these plants can reduce soil productivity, alter natural fire regimes, degrade resources, and introduce disease by displacing native vegetation through competition for water, nutrients, and space (2023). The following invasive species were observed, in order of increasing magnitude of inundation, along with locations and possible interventions (notes: in alignment with SCRA's permaculture philosophy, herbicidal treatments are not covered here; this is not intended to be an identification guide for the species listed):

Spurge-laurel (*Daphne laureola*)

Description:
Introduced from Europe, this plant rapidly overwhelms native vegetation by forming dense thickets, creating a monoculture. It can be spread by seed or vegetative shoots; birds, which love its black berries, are common dispersal vectors (ISCBC, 2023).

Location & severity:
Spurge-laurel was only observed in a single small cluster (and removed during the field assessment) in the swamp (zone 2). It is not common in the Littlewood Forest, but SCRA staff and volunteers should be on the lookout for it.

Control & treatment options:
This plant's toxic sap can cause skin rashes, nausea, and swelling of the tongue, and it can even put someone in a coma. Removal should be undertaken with care and with protective equipment such as gloves, goggles, and a mask. Small plants can be pulled by hand; large plants that cannot be pulled easily should be cut below the soil line (ISCBC, 2023).

Cutleaf blackberry (*Rubus laciniatus*)

Description:
Cutleaf blackberry is a shade-intolerant shrub introduced from Europe. It colonizes open-canopy, immature forests and cutover/burnt sites and may hinder natural regeneration, especially of shade-intolerant conifers (Klinkenberg, 2020). Like the Himalayan blackberry, this variety reproduces vegetatively by root or by seeds dispersed by birds and other animals.

Location & severity:
This plant was only observed in a small patch in zone 6, near the path on the outer edge of the forest; it could be eradicated with moderate effort.

Control & treatment options:
Manual removal of large canes, preferably in fall or winter to avoid nesting season, followed by regular mowing to exhaust energy reserves. Replanting the site with trees (such as fast-growing cottonwood) can shade out blackberries, and allowing goats to graze can help prevent regrowth.

Canada thistle (*Cirsium arvense*)

Description:
This invasive thistle was introduced by colonizers centuries ago. It spreads vegetatively through roots very quickly once established and outcompetes native plants (ISCBC, 2019).

Location & severity:
Although this plant was only observed in zone 6 near the path on the outskirts of the forest, it is also the only plant on this list that is classified as a noxious weed in BC's Weed Control Act & Regulation. Per the Act, landowners "must control noxious weeds growing or located on land and premises" (British Columbia, 1996), making management of this species of particular importance. Fortunately, it is localized to a single area in the forest, but control will require sustained efforts.

Control & treatment options:
Regular mowing or tilling can help wear down the plant's reserves and reduce growth and spread, but it is not likely to completely kill it. Plants that are cut prior to flowering can be allowed to decompose on site, but when cut post-flowering, all plant parts should be bagged and disposed of at a landfill or green waste facility.

Creeping buttercup (*Ranunculus repens*)

Description:
This is a shade-intolerant, low-growing plant that prefers moist, disturbed sites. It tolerates flooding and fluctuating water tables and reproduces both by seed and vegetatively via long, branching stolons. Creeping buttercup is extremely aggressive and toxic to grazing animals (Klinkenberg, 2020).

Location & severity:
Fortunately, buttercup is only found in isolated patches in the moist areas of the forest, primarily in zone 3. Removal and control would be very difficult.

Control & treatment options:
Plants are resistant to mowing and cultivation. Manual removal by trowel can be effective if you are able to remove the full root system without spreading its numerous seeds (Mashari, 2024).

European holly (*Ilex aquifolium*)

Description:
Easily identified by its shiny, red berries and dark green, spiny leaves, holly is another European import that is aggressively invasive and can tolerate shade or sun. Its seeds, which are toxic to humans, are spread by birds (ISCBC, 2023).

Location & severity:
Holly trees are located sporadically throughout all management zones in the Littlewood Forest, but they are still manageable, particularly in zone 1.

Control & treatment options:
Small seedlings can be pulled by hand; large trees should be cut at ground level and monitored. Any suckers that re-sprout from the stump should be cut immediately (ISCBC, 2023). This may be a useful task for specialized forest volunteers.

Common hawthorn (*Crataegus monogyna*)

Description:
Once used as hedgerows, the common hawthorn is another European introduction that prefers moist sites that have been disturbed. Its red fruit, dispersed by birds, distinguishes it from native hawthorns, which have black fruits (Klinkenberg, 2020).

Location & severity:
The area to the north of zone 3 is completely overrun by hawthorns, which are also encroaching on zone 3 itself. Any attempts to prevent their spread in this zone would be futile, but there are also isolated occurrences of this tree in zone 1; their spread can be controlled in this area with minimal effort.

Control & treatment options:
Smaller trees should be dug out completely, including the entire root system. Established trees can be cut back in early summer when they are putting their energy into foliage growth; avoid cutting when full of ripe fruit, as they will be dispersed when moving the plant material. Hawthorns can regenerate from cuttings, so all cut material must be removed from the site. The roots must be removed or treated with herbicide to prevent resprouting; burning the cut surface may also reduce sprouting (Washington State Noxious Weed Control Board, n.d.).

Himalayan blackberry (*Rubus armeniacus*)

Description:
This is an aggressively invasive plant that is common throughout the Capital Regional District on disturbed sites. Himalayan blackberry prefers full sunlight but can survive in variable light, and it is tolerant of both periodic flooding and barren, infertile soil. It reproduces by both seed (spread by birds and other mammals that eat the berries) and vegetatively by rooting where canes touch the ground. Blackberry outcompetes low-growing native plants and forms dense, impenetrable thickets that limit the movement of large animals (ISCBC, 2019), including humans trying to manage other invasive species.

Location & severity:
Himalayan blackberry is widespread in the Littlewood Forest, primarily along the edges of the forest and in clearings that were neglected; section 3.0 includes two maps showing the primary locations of invasive blackberry superimposed over historical photos. It is the dominant

vegetation in management zone 6, an area that was cleared and then neglected for decades. It is also dominant in the central area of zone 3, mixed with giant horsetail. And it is common along the eastern edges of zones 3 and 5, interspersed with invasive grasses, and encroaching on zone 1 from the south and eastern edges of the forest.

Control & treatment options:
Mowing can be an effective mechanical control for areas with moderate infestation; areas with massive brambles like zone 6 will require much more aggressive tactics to control it. Prescribed burning may be an effective option, particularly if followed by grazing goats to remove regrowth. Minor incursions, such as along the edges of zone 1, can likely be controlled with manual removal of canes and roots. Whenever plants are cut, all plant material must be bagged and buried at a landfill, ensuring that plant parts are not distributed during removal (ISCBC, 2019).

English ivy (*Hedera helix*)

Description:
An evergreen climbing vine, English ivy is another colonial import–one that inhibits growth and regeneration of native trees and shrubs by shading, smothering, and hosting harmful pathogens. Its suppression of understory species makes it a serious threat to biodiversity and regeneration of the forest. It is adaptable to a range of soil and moisture conditions, and young plants are shade tolerant, allowing it to grow under dense stands of trees. Vegetative reproduction can occur from cuttings in contact with the ground (ISCBC, 2017). Ivy also reproduces via seeds spread by birds that eat its fruit, which is produced when it is allowed to climb (ivy on the forest floor does not produce fruit, so limiting its ability to climb reduces its ability to reproduce). The plant tends to form dense monocultures, outcompeting native plants on the ground and damaging trees as it climbs. Excessive weight and increased wind resistance of ivy on trees makes them more vulnerable to blowdown and disease, shortening their lifespan (ISCBC; Johnson, 2012). ISCBC also states that “it can serve as a vector for Bacterial Leaf Scorch (*Xylella fastidiosa*), a plant pathogen that is harmful to maples, oaks, elms, and other native plants.” Note that English ivy can cause skin rashes if handled without gloves/sleeves.

Location & severity:
English ivy is present throughout the entire forest, but there are areas that are holding their own against this aggressive species; dense patches of red-osier dogwood and trailing blackberries are able to withstand the onslaught of ivy in certain areas. Sustained efforts to girdle ivy from trees throughout the forest have produced positive results, limiting the plant’s ability to climb and disperse seeds. Ongoing efforts to remove ivy from the forest floor are also making improvements–in areas where the ivy has been removed, there is evidence of regrowth of native species. The ivy infestation is so thorough that management of this invasive plant throughout the Littlewood Forest is impossible; maximizing efficiency by continuing girdling in all

zones and ground-pulling in zone 1 will be the most effective method of controlling the ivy as much as possible.

Control & treatment options:
Controlling ivy requires a combination of girdling it on trees and pulling it from the ground – both efforts should be incorporated into management practices.Girdling ivy on trees will kill the climbing vines and stop them from producing fruit/seeds. This needs to be done methodically with follow-up visits to catch and prevent regrowth, and it should be accompanied by pulling ivy from the ground surrounding the trees to prevent it from climbing again. Cut and pulled vines need to be removed from the site – vegetation left on the ground can regrow (evidence of this happening was observed during field assessments of the forest). To girdle the ivy, use pruners, loppers, or a hand saw to cut all of the vines near the ground and again at chest height around the tree's full circumference. This gap prevents immediate regrowth from healing vines and makes follow-up inspections easier and more effective. Take care to not damage the tree bark and ensure that all cut or pulled vegetation is collected for removal. Pull all ivy from the ground within a metre radius of the tree to protect from future infestations (Tree Stewards, 2012).

Example of girdled climbing ivy (from New Urban Forestry).

The vegetative growth of ivy must also be controlled by hand-pulling vines from the ground. This is easier to accomplish in late summer or fall when plants are weaker. Try to remove as much of the root system as possible to inhibit regrowth. Plants must be removed from the site – they can regrow if "left to compost" (ISC, 2017). All removed vegetation can be left at the Littlewood Trail entrance on Glamorgan Road; it will be collected and moved to the adjacent green waste facility.

Note:
The effect of ivy on forests is somewhat controversial. Some stakeholders interviewed for this report indicated that they do not believe that ivy is a significant problem; some even said that trying to manage it was a waste of time or counterproductive. Research indicates that this is not a settled issue (see discussion in Larocque, 1999), but the general consensus from local invasive species councils and experts is that it is harmful to ecosystems and should be removed. Managing ivy and other invasives also goes beyond ecological considerations – in keeping with the principles of reconciliation with Indigenous peoples, ivy removal contributions to restoring natural environments and decolonizing the land.

4.3 Wildlife

Although the focus of this report is primarily on the Littlewood Forest vegetation, the presence of wildlife in the forest is an important consideration in its management that should also inform conservation and restoration efforts. This section contains a brief summary of the animal life in the forest, both observed and noted in external sources.

Black-tailed deer (a sub-species of *Odocoileus hemionus*) are the most abundant large ungulate in the CDF biogeoclimatic zone (Nuszdorfer et al., 1991) and the only large mammal present in the Littlewood Forest; there were multiple sightings of this species during field surveys in zones 3 and 5. Although not directly observed, scatalogical evidence indicates that raccoons (*Procyon lotor*) are also present in the forest; they are particularly fond of the blackberries in zone 6.

Many species of waterbirds overwinter in the CDF zone, but only a few species breed here, including the Great Blue Heron, Mallard, and non-migratory Canada Goose. Coniferous forests are important for birds that eat conifer seeds and wood-boring or bark insects; deciduous forests provide food for a number of species that feed on flying insects and seeds as well (Nuszdorfer et al., 1991). Active birdwatchers have identified 136 bird species in and around Littlewood Forest, with the 20 most commonly-sighted species as follows (eBird, retrieved August 6, 2024):

- European Starling (*Sturnus vulgaris*)
- Canada Goose (*Branta canadensis*)
- American Goldfinch (*Spinus tristis*)
- Pine Siskin(*Spinus pinus*)
- Green-winged Teal (*Anas crecca*)
- Cedar Waxwing (*Bombycilla cedrorum*)
- American Wigeon (*Mareca americana*)
- Mallard (*Anas platyrhynchos*)
- Dark-eyed Junco (*Junco hyemalis*)
- American Robin (*Turdus migratorius*)
- Turkey Vulture (*Cathartes aura*)
- Red-winged Blackbird (*Agelaius phoeniceus*)
- Brewer's Blackbird (*Euphagus cyanocephalus*)
- Violet-green Swallow (*Tachycineta thalassina*)
- Cackling Goose (*Branta hutchinsii*)
- Glaucous-winged Gull (*Larus glaucescens*)
- Barn Swallow (*Hirundo rustica*)
- House Sparrow (*Passer domesticus*)
- Savannah Sparrow (*Passerculus sandwichensis*)
- Golden-crowned Sparrow (*Zonotrichia atricapilla*)

In addition to some of the species listed above, the author also observed or heard the following species during field surveys:

- Killdeer (*Charadrius vociferus*)
- Anna's Hummingbird (*Calypte anna*)
- Pacific Wren (*Troglodytes pacificus*)
- Northern Flicker (*Colaptes auratus*)
- Red-tailed Hawk (*Buteo jamaicensis*)
- Great Horned Owl (*Bubo virginianus)*
- Barred Owl (*Strix varia)*
- Pileated Woodpecker (*Dryocopus pileatus*)

The following non-avian species were also observed on site:
Lorquin’s Admiral (*Limenitis lorquini*)
Pacific Chorus Frog (*Pseudacris regilla*)
Pacific Banana Slug (*Ariolimax columbianus*)
Northwest Hesperian (*Vespericola columbianus*)
Artist's Brackets mushrooms (Genus *Ganoderma*)
Western Tent Caterpillar Moth (*Malacosoma californica*)

5.0 Management Zones

To assist with management of the Littlewood Forest, the space has been divided into the six zones described below, compartmentalized based on major features and ecosystems observed during field surveys between May and July 2024. Each zone is named with a descriptive SENĆOŦEN word that reflects its main characteristic.

5.1 Major Zones

1) ŚW̱ȻAKEŁ (*open*)

2) MOḰEN̲ (*swamp*)

3) K̲EL (*neglected*)

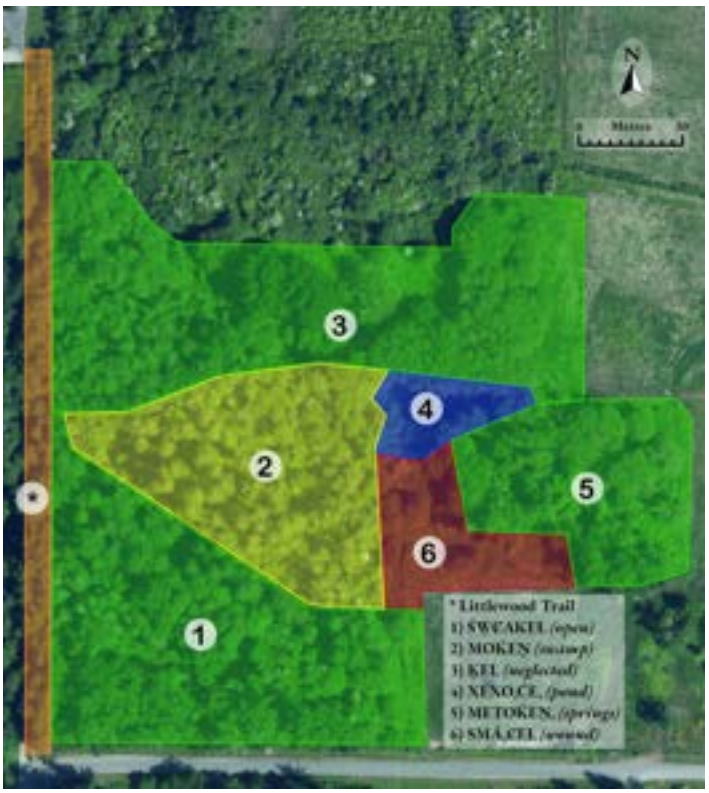
4) XEXO¸ĆE¸ (*pond*)

5) METOḰEN̲¸ (*springs*)

6) SMÁ¸ȻEŁ (*wound*)

See Section 5.2 for a map of sub-zones that are contained within the major zones listed.

Littlewood Trail (*) is managed by the District of North Saanich.



Zone 1: ŚW̱ȻAKEŁ (*open/unlocked*)

This area is roughly divided into two sub-sections that run east-west. The southern, upslope section (closest to the road) is a mix of deciduous trees, with an ocular species composition of 35% bigleaf maple, 55% black cottonwood, and 10% Douglas-fir. It is relatively open with a healthy, mixed understory; English ivy can be found throughout, but with some evidence of efforts at management both on the ground and on trees. Judging from historical aerial photographs (see Appendix A), this area was logged as recently as the mid-1950s, making most of the large trees around 70-90 years old. This history likely accounts for the decreased biodiversity in the canopy layer as compared to the area immediately north of it, which does not appear to have been logged at the same time.

The northern, downslope half of this zone is a healthy mix of deciduous and evergreens with an ocular species composition of 40% Douglas-fir, 20% bigleaf maple, 20% western redcedar, and 20% black cottonwood. It has the healthiest understory of the entire forest, which may be a result

of previous efforts at invasive species removal by Sandown volunteers through the "Adopt-a-Plot" program that ran in the early years of SCRA's management. Part of the understory is heavily dominated by swordfern (sub-zone 1.5). It has significant, localized ivy overgrowth, but there is evidence of management efforts in several places.

Per the forest assessment conducted by Concrete Jungle Urban Forestry (Johnson, 2012), this section of the forest contains trees that are 70-90 years old with heights ranging from 25 to 38 metres; this is confirmed by Registered Professional Forester, Neil Hughes, who estimated the age of the trees to be approximately 90 years (personal communication, July 11, 2024).

Due to its accessibility, relative health, distance from sensitive ecosystems, and previous/ongoing efforts at invasive species management, it is recommended that SCRA prioritize this zone for volunteer engagement and public access. The southeastern corner, which is overwhelmed with English ivy and Himalayan blackberry (sub-zone 1.7), is of particular concern. This bramble, which spread into the forest from an area that had been previously cleared for agriculture, is practically impassable and spreading into healthy sections of forest. This zone also contains a number of woody debris piles that were created by volunteers along the south end, near the road; this woody debris needs to be dispersed or chipped to allow for its natural decomposition to occur and to avoid creation of a fire hazard. Sub-zone 1.3, in particular, contains 5 woody debris piles in a clearing that needs attention.

North of that clearing, sub-zone 1.4 has an understory dominated by red-osier dogwood and is relatively free of English ivy – the native dogwood appears to block enough sunlight to suppress the ivy (see photo at right). Sub-zones 1.2 and 1.6 both contain a good amount of native trailing blackberry and thimbleberry, which may warrant some additional attention. Sub-zone 1.1, near the Littlewood Trail, contains a number of snags that pose a safety risk to individuals on or near the path. Although this opening is a natural part of the forest's regenerative cycle (N. Hughes, personal communication, July 11, 2024), it should be assessed by a qualified professional as soon as possible.

Zone 2: MOḰEN̲ (*swamp*)

The difference in vegetation in the swamp in the middle of the forest is visible as far back as 1946 (see photo in Appendix A). It is dominated by western redcedar and massive amounts of skunk cabbage and giant horsetail, with a higher proportion of dead trees (both fallen logs and standing snags) than the rest of the forest. Satellite photos from 2023 show a large number of defoliated trees, confirmed during field surveys. Johnson estimated an ocular species composition of 55% redcedar, 15% bigleaf maple, 15% red alder, and 15% Douglas-fir, with ages of 80-90 years and tree heights of 28-38 metres (2012). The soil appears to be wet year-round – damp and mucky with numerous small pools in the summer, and heavily inundated during winter – but does have a few isolated dry patches, such as sub-zone 2.2. It is heavily overgrown with salmonberry on the south and east sides (sub-zone 2.1) and has some intrusion by Himalayan blackberry on the north side (sub-zone 2.3). It is largely impassable due to very dense underbrush (salmonberry & Himalayan blackberry), downed trees, standing water, and thick mud; this helps make a natural boundary to keep people out of this unique and sensitive ecosystem, but it would be helpful to have additional signage to discourage traffic to this area.

Zone 3: K̲EL (*neglected*)

This area consists of a diverse group of several small, unique sub-zones; it creates a border between the older section of the swamp and forest to the south and the hawthorns and seasonal wetlands to the north. The portion on the west side, along the Littlewood Trail, is a damp deciduous mix with an ocular species composition of 40% red alder, 25% bigleaf maple, 25% black cottonwood, and 10% redcedar. Johnson (2012) estimated heights of 15-30 metres. Aerial photos show that the oldest trees (likely to be red alders, which tend to be among the first to colonize open areas) are approximately 65 years old; with a typical lifespan of 40-60 years, this explains why this area has a number of leaning and fallen trees and snags. Any work done in this area should be approached with caution, and it should be avoided completely during periods of high wind out of consideration for safety.

This area contains lots of ivy and has some intrusion by English hawthorns and Himalayan blackberry along the northern edge and in sub-zone 2.3. Although it is more damp than Zone 1, it is relatively well-drained, so it is not nearly as wet as MOḰEN̲, even though it lies downslope from Zone 2. There is a large patch of trailing blackberry–sub-zone 3.1– in this area that is thick enough to have prevented English ivy from taking hold thus far. Ivy, holly, and creeping buttercup are found in patches throughout this area, with some evidence of management efforts.

Moving east, K̲EL transitions into a damp section that is dominated by massive amounts of great horsetail mixed with Himalayan blackberry in open clearings (sub-zone 3.4, see photo at left); the shape of this area roughly follows the curvature of the abandoned warm-up track. There is a healthy stand of cottonwood trees (sub-zone 3.2) right in the middle, next to an older, dying clump of cottonwoods (sub-zone 3.3).

The blackberry/horsetail clearings give way to a dense stand composed almost exclusively of red alder (sub-zone 3.5), which is drained by the pond outflow that flows north through this section. It contains some ivy, lots of nettles, water parsley along the stream, and some creeping buttercup, but appears to be in relatively decent health. That said, aerial photos from the mid-1970s (when these trees appear) indicate that the trees are near the end of their typical 40-60-year lifespan. Despite seeming healthy, it is highly likely that the alders in sub-zone 3.5 will begin dying and falling within the next decade. The alders are not likely to regenerate in this area, as they prefer to colonize open space (N. Hughes, personal communication, July 11, 2024). To the east of the alders, there is a section of tall invasive grasses interspersed with Himalayan blackberry (sub-zone 3.6).

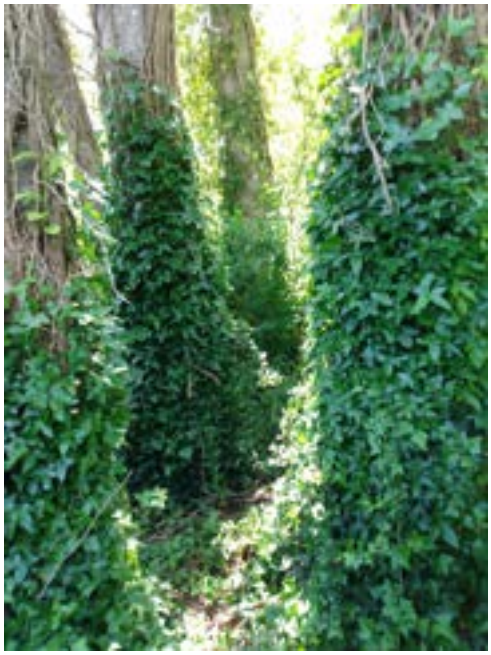
Zone 4: XEXO̱ĆE̱ (*pond*)

The man-made pond in the northeast portion of the forest was constructed on cleared land in the mid-1960s (see aerial photos in Appendix A) by building a berm along its northern and eastern edges. It drains at its eastern edge, but its outflow turns north almost immediately to flow through the alders in K̲EL. Analysis of this water feature is outside the scope of this report, but its presence is important for local wildlife and should inform conservation and restoration efforts within the forest.

Zone 5: METOḰEN̲̱ (*springs*)

This area grew from a small, outlying forest fragment that was separated from the main stand of trees that comprise ŚW̲C̓AKEŁ and MOḰEN̲ (zones 1 & 2). It features a diverse mixture of deciduous and coniferous trees, with an ocular species composition of 25% cottonwood (concentrated towards southeast corner), 30% red alder, 20% redcedar, 10% Douglas-fir, and 15% bigleaf maple. It has a number of natural springs that come up from the ground in the center of the area and drain towards the northeast. These streams seem to have once drained along the

same path that the pond outflow follows, but that drainage may have been disrupted by construction of a road for vehicles to access the pond (visible in satellite photos from 2013) and now pools in the northeast portion of this section, which is a mixture of tall invasive grasses and Himalayan blackberry (sub-zone 5.1) that extends to the southeast corner (sub-zone 5.3).



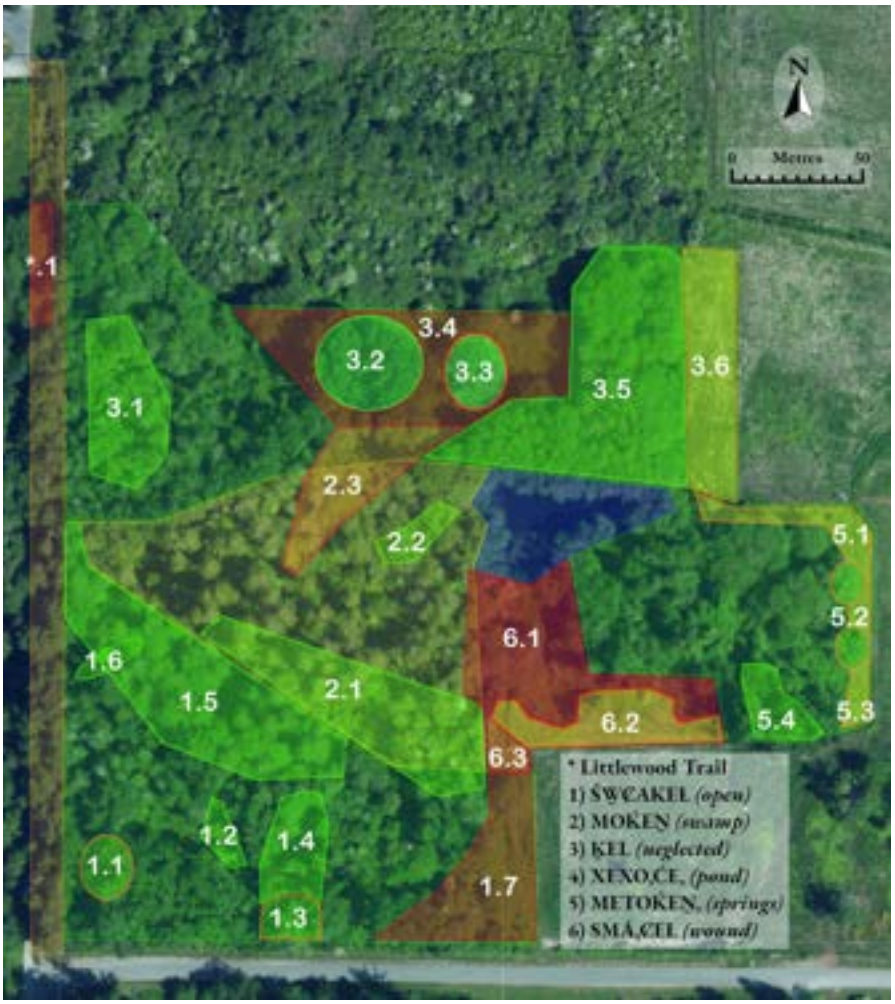
The wooded area has a dense, mixed understory of dogwoods, ivy, and salmonberry, with some Himalayan blackberry pushing in from the south and west sides. Johnson (2012) estimated canopy heights of 23-38 metres and ages of 70-80 years for trees in this section, but with a very low concentration of logs, there are certainly trees that are much older, as the original stand of trees is visible in aerial photos from almost a hundred years ago. There is less evidence of ivy management in this section (see photo at right) than in the zones closer to Littlewood Trail. This unique, diverse ecosystem is an excellent habitat for a variety of birds, making it a favourite location for local birdwatchers (N. Hughes, personal communication, July 11, 2024). Sub-zone 5.2 consists of two stands of dead, ivy-covered trees on the eastern edge of the forest – these are indicated as a safety concern. Sub-zone 5.4 is a clearing dominated by giant horsetail, somewhat unique in the METOḰEN̰ zone.

Zone 6: SMÁ̰ȻEŁ (*wound*)

Previously cleared (as can be seen in aerial and satellite photos in Appendix A) and subsequently neglected for decades, this area is the most degraded area of the forest; an attempt to clear the dense thickets of Himalayan blackberry will require significant investments of time, effort, and money and will require long-term management to restore it. With brambles almost three metres tall, it is nearly impassable, but there are a few clearings with tall invasive grasses and areas of salmonberry. On the southern side, the blackberry gives way to an area of mixed grasses (sub-zone 6.2) interspersed with Himalayan blackberry, cutleaf blackberry, English ivy, and Canada thistle (depicted in the photo at left, taken looking north from sub-zone 6.3). The Canada thistle and cutleaf blackberry are both largely contained to a small area (sub-zone 6.3) at present.

5.2 Sub-zones map

The sub-zones referenced in the zone descriptions above are indicated on the map below. Note that one area not covered previously is indicated as *.1 – it is a sub-zone of the Littlewood Trail (indicated in orange here and denoted with an asterisk on the zone map), which is managed by the District of North Saanich and technically not part of the lands leased to SCRA. This area is noted because it is heavily infested with Himalayan blackberry, which could spread into zone 3.



6.0 Stakeholder Synthesis & Analysis

The land encompassing the Littlewood Forest at Sandown was transferred to the District of North Saanich in 2017 to be used as a community asset. As such, an important component of developing a stewardship plan for the space is determining the community's desires and management objectives for it. For this purpose, semi-structured interviews were conducted with nine individuals who are extensively familiar and considerably engaged with the forest area, including volunteers, recreational users, and current and former SCRA employees. Although these stakeholders are very familiar with the space, the small sample size somewhat limits the

value of their contributions to the study, so further analysis of previous public engagement was conducted to supplement the stakeholder interviews.

One notable voice is missing from this synthesis: the Tseycum First Nation, who notified the District of their interest in the Sandown lands in 2020. As traditional rights- and title-holders to the land, it is vitally important to include the perspectives, priorities, and desires of the Tseycum First Nation when developing plans for the area. Unfortunately, the short timeframe for development of this report did not allow sufficient time to build a relationship with the Nation, and efforts to consult with the Nation's leadership were unsuccessful. SCRA staff should continue trying to develop relationships with the Tseycum First Nation as they consider the possible actions recommended by this report; their opinions and objectives for the land should take primacy when determining the path forward.

6.1 Summary of Stakeholder Interviews

The interviewed individuals expressed a variety of interests and priorities, usually in agreement with each other, but occasionally with conflicting views.

Several individuals, including the two Registered Professional Foresters who were consulted, expressed concern about the number of **hazard trees** and snags–upright dead trees that can pose a hazard to individuals in the vicinity when they fall. One of the RPFs recommended that SCRA mark off areas that are near hazard trees (a radius of twice the height of each tree, specifically) for safety. This is a concern that has significant repercussions for several of the land management objectives.

The most frequent subject discussed by stakeholders was **invasive species**, English ivy in particular; most of the people interviewed expressed concern about ivy's spread in the forest, but a few of them said that invasives removal should not be a priority. Those who were concerned were particularly worried about ivy's effect on the health of the trees, the understory, new growth, and biodiversity. However, some people thought that ivy was too difficult/costly to manage or that it should be less of a priority than wildlife habitat, particularly for birds.

The topic of **biodiversity** came up a few times, which is related to the invasives issue; a diverse forest is a healthy forest, and invasives such as English ivy and Himalayan blackberry tend to result in monoculture if left unchecked. Also related is the common expression by interviewees of a desire to "**clean up**" the forest. Some were focused on clearing out man-made detritus that is scattered throughout the site, while most specifically mentioned clearing out invasive species. Others mentioned the piles of woody debris that have been created by volunteers; in addition to being unsightly, these debris piles create a fire hazard and slow the natural decomposition process.

A desire for increased **public access**–particularly with a preference for more trails–was another common theme. A few people believe that increasing access to the forest area will increase the number of volunteers who are willing to work on restoration activities on the site. A couple people

specifically mentioned **equestrian access**, which could be provided through trail development. This access is closely linked to the desire, expressed by several individuals, to use the forest as an **educational tool**. They emphasized the need for signage for this purpose to explain the history of the land, its ecological significance, and the importance of conservation and restoration work.

A few less-common themes are worth mentioning briefly:

- A couple of people thought that protection of wildlife habitat should supersede management of invasive species and public access for recreation.
- Three people expressed great interest in volunteer opportunities; they would like to have more clarity and defined roles as volunteers.
- Two people expressed a desire to work with First Nations on the land, allowing wild gathering of traditional foods, medicine, and ceremonial plants, as well as incorporating Indigenous knowledge into educational signage and engaging in restoration work as an act of decolonization and reconciliation.

6.2 Previous Stakeholder Engagement

A few previous studies on the Sandown lands, and in North Saanich more generally, included much more robust public engagement than was feasible during the research phase of this study. Although these other reports were not specifically focused on the Littlewood Forest at Sandown, there are a number of relevant findings and themes that correspond to the stakeholder interview themes (listed above) in the following documents:

- Consultation Report for Restoration of Sandown's Northeast Wetlands in Conjunction with Stormwater Management for the W̱SÍḴEM Creek Watershed (Aida Mashari, April 2024)
- Vision Sandown: What We Heard (Capital Region Food and Agriculture Initiatives Roundtable [CRFAIR], March 2016)
- Draft Parks Master Plan (District of North Saanich, May 2024)

> "While the priority for the land is food and agricultural uses, **it is through recreational, community events and educational opportunities** that a large majority of the community will be involved at Sandown."
> – *Vision Sandown: What We Heard*, CRFAIR

Trails & Public Access

The public engagement that informed the *Vision Sandown* report revealed that many community members expressed interest in developing trails throughout the Sandown lands, including through the forested area; people want trails for health and recreation purposes, but also to provide educational opportunities through the use of interpretive signage. Although there was a clear consensus around the desire for trails, there was not consensus around trail usage except for not allowing motorized vehicles; CRFAIR received input that indicated community interest in trails for walking/running, cycling, and equestrian usage. The equestrian community was particularly vocal about their desires in both the *Vision Sandown* and the District of North Saanich *Parks Master*

Plan public engagement. Building a trail that allows horses may be a good way to involve a community that has not yet been connected to SCRA activities.

Although there was strong public support for trails, it is important to note that community members indicated that conservation of natural areas and wildlife habitats are equally as important to them; they expressed a desire to have trails constructed in a way that considers and minimizes impact on the environment. It is also worth noting that the District outreach indicated that the North Saanich community prioritizes improved management and upgrades to existing parks over the addition of new parks and amenities such as trails.

The District received several comments specifically about wanting trails at Sandown during their public consultations for the *Parks Master Plan*. In particular, several people expressed a desire for a trail connecting Littlewood Trail to the North perimeter of Sandown, which could create a full loop behind Canadian Tire and along Glamorgan Road; as one of the interviewed stakeholders pointed out, this trail would also provide more convenient access to Littlewood Forest from the pedestrian overpass across the highway.

Education & Signage

Closely connected to the desire for trails is public interest in using trails for educational purposes, which often includes educational signage. Vision Sandown consultations found that many community members believe interpretive signage would enhance their enjoyment of the natural environment and biodiversity around Sandown. People were particularly interested in signage about native plants and animals. The First Nations community members with whom Aida Mashari consulted expressed a desire for SCRA to involve them with regards to public education plans for the site; signage about native flora and fauna (including SENĆOŦEN names) could be an excellent opportunity to partner with local First Nations, which could also be eligible for grant funding.

The District's community consultations revealed many concerns about lack of wayfinding, interpretive, and regulatory signage throughout North Saanich trails. The public expressed a desire for more regulatory signage (rules about cycling speeds, sharing the trail with cyclists/equestrians, staying on the trail, cleaning up after dogs, and requiring dogs to be on leash) as well as interpretive signage that highlights natural, cultural, and historical significance.

Invasive Species

Aida Mashari's consultations with both Indigenous and non-Indigenous individuals had similar results with regards to invasive species: invasives management is an important consideration, and efforts should be made to restore Sandown to native ecosystems wherever doing so is viable. Participants in the *Vision Sandown* events also frequently expressed desires to restore native ecology by controlling invasive species and maintaining wildlife habitat; some suggested involving school groups in restoration work, and several people suggested working with and integrating Indigenous knowledge about the land and ecology into these activities.

Likewise, the District has identified invasive species management as a primary opportunity for environmental protection and enhancement. The District is particularly concerned that invasive species are harming habitats by "displacing native vegetation, limiting forage opportunities for wildlife, reducing biodiversity, interfering with ecological processes, and limiting Indigenous community access to traditional resources like foods and medicines." The comments they received from the public similarly expressed concerns about managing and removing invasive species, urging them to devote more staff resources to the efforts.

Wildlife Habitat
CRFAIR noted high community support for the retention of natural areas and wildlife habitat; they recommended conducting a wildlife inventory to guide conservation and protection efforts. The District noted that preserving stream and riparian environments is a primary opportunity for environmental protection. They also noted that North Saanich is part of the Pacific Flyway, an important migratory path for birds, and that a number of migratory birds that are protected under the Migratory Bird Convention Act and BC Wildlife Act pass through the area seasonally.

Mashari's community contacts asked Sandown to consider how species currently rely on the lands as habitat in their current state and to consider using management techniques that minimize impacts to existing species on site. Some suggestions were to replant native species after removing invasives and only pulling invasive species between July and January to avoid disturbing the avian population during nesting season .

Biodiversity & Natural Ecology
Both the District and CRFAIR received feedback from their respective public consultations about protecting and improving the biodiversity of the land, which applies directly to management of the Littlewood Forest. Participants in the *Vision Sandown* events shared that they felt that maintaining the natural areas at Sandown was important for ecological reasons as well as the recreational and cultural values that derive from access to the natural areas; the community strongly supports active management of invasive species, maintenance of wildlife habitats, restoration of native ecosystems, and mitigation of ecological impact of recreational activities.

The District's *Draft Parks Master Plan* notes that North Saanich has 227 parks and open spaces that total 296 hectares, of which 283.5 hectares (96%) are developed. The District also notes in the *Plan* that there is much public support for naturalizing parks and open spaces to protect the environment (as well as reducing maintenance costs). The fact that Littlewood Forest is undeveloped sets it apart as a unique public space in North Saanich – this should be considered in determining future management of the land.

First Nations
Some *Vision Sandown* participants noted that there are many plants that are native to the site that have food, medicinal, craft, and/or cultural uses and expressed interest in allowing wild harvesting for traditional uses. Some of Mashari's contacts recommended partnering with local First Nations to establish a harvesting site for Indigenous people to connect with each other and the land, taking advantage of these traditional resources. This aligns with the sentiments expressed to

An Indigenous participant in the *Vision Sandown* events said that this space was a place of refuge for W̱SÁNEĆ peoples when warring tribes came from the North. Other participants liked the idea of Sandown being a place of refuge: for wildlife, for people, for learning, and for community gathering.

CRFAIR – a number of individuals expressed interest in working with and celebrating First Nations' cultures and knowledge about the land, native ecology, and traditional uses of foods, plants, and medicines at Sandown. There is also interest in creating walking trails with information about native plants, their traditional names, and cultural uses. This aligns with the vision of the District, which sees Sandown as an opportunity for collaboration with First Nations to provide information on cultural significance of the area.

Role of Volunteers

Finally, participants in the community consultation for the Draft Master Parks Plan indicated both appreciation for and interest in volunteering to improve local parks and open spaces, expressing a wish to see a coordinated approach to enlisting volunteers to support native ecosystems and maintain parks and trails, primarily through environmental restoration and invasive species management. The District recognizes that in addition to the value that volunteer groups provide with regards to maintenance services, they also foster stewardship and community-building among North Saanich residents. They also note that "Collaborative efforts with volunteer groups, neighbouring municipalities, and various governmental bodies are vital for addressing this multifaceted challenge [environmental restoration and invasive species management] across jurisdictions." The District cautions, however, that "Despite their invaluable contributions, volunteers may…have differing agendas and values, which may not always align with the multifaceted priorities that District staff must balance." This is no less true for Sandown than it is for North Saanich in general; SCRA should be aware of volunteers' individual agendas and priorities, which may sometimes impede efforts by the organization to focus all stakeholders in the same direction.

6.3 Stakeholder Values for Littlewood Forest

Based on the stakeholder interviews conducted and an analysis of previous stakeholder engagement, it can be surmised that the local community is aligned around four primary values for management of the Littlewood Forest at Sandown:

1. **Recreation**, specifically in the form of trails and birdwatching
2. **Education**, particularly with regards to native plants and ecosystems
3. **Restoration** of native ecology through management of invasive species
4. **Biodiversity** protection and improvement

And although there is less alignment among stakeholders around the following themes, they are still important and should be considered as secondary values for stewardship:

5. **Wildlife** habitat conservation
6. **Volunteer** engagement and management
7. **Reconciliation** actions and consultation with local First Nations
8. **Safety**, particularly with regards to hazard trees and woody debris piles

These primary and secondary values can be used to guide and prioritize management actions in Littlewood Forest, as discussed in the following pages.

7.0 Potential Interventions/Actions & Prioritization

Based on the site's history, in-person observations, reviews of best practices, analysis of stakeholders' perspectives, consultations with conservation and restoration professionals, and the values and management objectives previously identified, the following list of possible interventions has been prepared for consideration by SCRA staff. Each action item was categorized as either high/low impact and high/low cost to place it into an impact vs. cost matrix to help prioritize potential actions. The full categorization table is included in Appendix B.

The action items are organized by management zone into four categories:

- **Easy wins** have a high impact with a low cost. These should be undertaken as soon as possible to capitalize on improvements that can be made with little/low investment.
- **Major projects** have a high impact, but also a high cost. These recommendations will require significant time and investment to accomplish; although they cannot be actioned right away, they are worth considering for longer-term management. These items may be good candidates for grant funding.
- **Minor projects** have a lower impact than the previous category, but also little to no cost. They can be implemented gradually as staff (or volunteers) have time to work on them.
- **Evaluate options** items have a relatively low impact for a relatively high cost, so they are not as advantageous as actions listed in other categories. Although they may be worthwhile projects/recommendations, SCRA staff may wish to consider alternative options or drop the recommendation altogether in light of the tradeoffs.

Entire Forest

Easy win (high impact, low cost):

1. Develop mutually beneficial partnerships – work with FNSP on native plant nursery, get ivy pulls listed on HAT calendar, consult with PH on possible collaboration, ask Tseycum FN what Sandown can offer of interest *(Relevant values: Education, Restoration, Volunteers, Reconciliation)*

Minor projects (low impact, low cost):

2. Define specific volunteer roles and boundaries – what is permitted (and not permitted), where, and when *(Relevant values: Volunteers, Safety)*

Multiple Zones

Easy win (high impact, low cost):

3. Continue to girdle ivy – cut from trees at base and chest height (do not pull off trees because of bird nesting and bark damage). (Zones 1, 2, 3, and 5; *Relevant values: Restoration, Biodiversity, Volunteers*)

Minor project (low impact, low cost):

4. Remove scattered detritus & large trash items (refer to map and legend in Appendix D). (Zones 1, 3, and 5; *Relevant values: Restoration, Volunteers*)

Zone 1: ŚW̱ȻAKEŁ (*open/unlocked*)

Easy wins (high impact, low cost):

5. Continue engaging volunteers to pull ivy from the ground in Zone 1. *(Relevant values: Restoration, Biodiversity, Volunteers)*
6. Create a half-kilometre loop trail through the priority zone – this will be useful for publicity (as part of it will be visible from road), ground-clearing ivy, access to bramble line in the southeast corner. *(Relevant values: Recreation, Education, Restoration, Volunteers)*
7. Hold the line on the southeastern bramble in Zone 1 where Himalayan blackberry and English ivy are encroaching on healthy forest areas. *(Relevant values: Restoration, Biodiversity, Volunteers)*
8. Remove holly & hawthorns whenever encountered in Zone 1 – they are aggressively invasive species, but can be managed relatively easily in Zone 1 because they have only colonized in isolated instances. *(Relevant values: Restoration, Biodiversity, Volunteers)*

Major project (high impact, high cost):

9. Use the large clearing near the fence line in Zone 1 as a native plant garden/nursery for outplanting into the rest of the forest. The existing woody debris piles can be chipped up for mulch, it has easy access for watering when needed, and signage on the fence can help keep dumpers away. *(Relevant values: Education, Restoration, Biodiversity, Volunteers, Reconciliation)*
10. Add signage at the entrance to explain the history, ecological significance, rules (no off-leash dogs, stay on path, no wild harvesting), volunteer opportunities, etc. *(Relevant values: Recreation, Education, Volunteers, Reconciliation, Safety)*
11. Replant native plants after removing invasives to encourage regeneration. *(Relevant values: Restoration, Biodiversity, Volunteers)*
12. Engage an arborist/hazard tree assessor to assess hazard trees near Littlewood Trail, potential loop trail, and potential equestrian trail; dead cedar at entrance is of particular concern *(Relevant value: Safety)*
13. Engage a qualified tree feller to remove hazard trees *(Relevant value: Safety)*

Minor projects (low impact, low cost):

14. Engage volunteers to develop a plant inventory in Zone 1, which can be useful for grant applications for restoration projects and for determining a baseline measurement to use for establishing restoration targets. *(Relevant values: Education, Restoration, Biodiversity, Volunteers)*

15. Clean up debris piles (chip, burn, or use to line new trail) – these can present a fire hazard, slow down the natural decomposition process, and also cause the forest to look neglected, which encourages further dumping in the area. *(Relevant values: Recreation, Restoration, Volunteers, Safety)*

Zone 2: MOḰEN̲ (*swamp*)

Easy win (high impact, low cost):

16. Keep people out of Zone 2 due to dangerous trees and sensitive riparian ecosystem. *(Relevant values: Biodiversity, Wildlife, Safety)*

Zone 3: K̲EL (*neglected*)

Major project (high impact, high cost):

17. Explore the possibility of a prescribed burn in parts of Zone 3 to clear out invasives. This area is furthest from the healthiest part of the forest (Zone 1), is steadily being colonized by Himalayan blackberry, has a high number of hazard trees, and has relatively easy access to the pond for suppression purposes. *(Relevant values: Restoration, Reconciliation, Safety)*

Minor project (low impact, low cost):

18. Monitor & protect the trailing blackberry patch in Zone 3 – remove invasives from around it when possible. *(Relevant values: Restoration, Biodiversity, Volunteers, Reconciliation)*

Evaluate options (low impact, high cost):

19. Plant redcedar & cottonwood in sub-zone 3.5. *(Relevant values: Restoration, Biodiversity)*
20. Longer-term – create equestrian trail through hawthorns and zone 3 (dry season only). *(Relevant values: Recreation, Volunteers)*

No actions were identified for Zone 4: XEXO̧ĆȨ (pond).

Zone 5: METOḰEŅ̲ (*springs*)

Easy win (high impact, low cost):

21. Preserve Zone 5, which is a valuable avian habitat and riparian ecosystem. Light interventions could include planting cedars and girdling ivy on trees. *(Relevant value: Wildlife)*

Evaluate options (low impact, high cost):

22. Restore natural drainage from the springs in Zone 5 to the pond outflow. This will make the grassy area of Zone 5 easier to mow/manage; this could allow for creation of a trail path when dry, if desired. *(Relevant values: Recreation, Restoration)*
23. Plant redcedar in Zone 5. *(Relevant values: Restoration, Biodiversity)*

Zone 6: SMÁ̧C̓EŁ (*wound*)

Evaluate options (low impact, high cost):

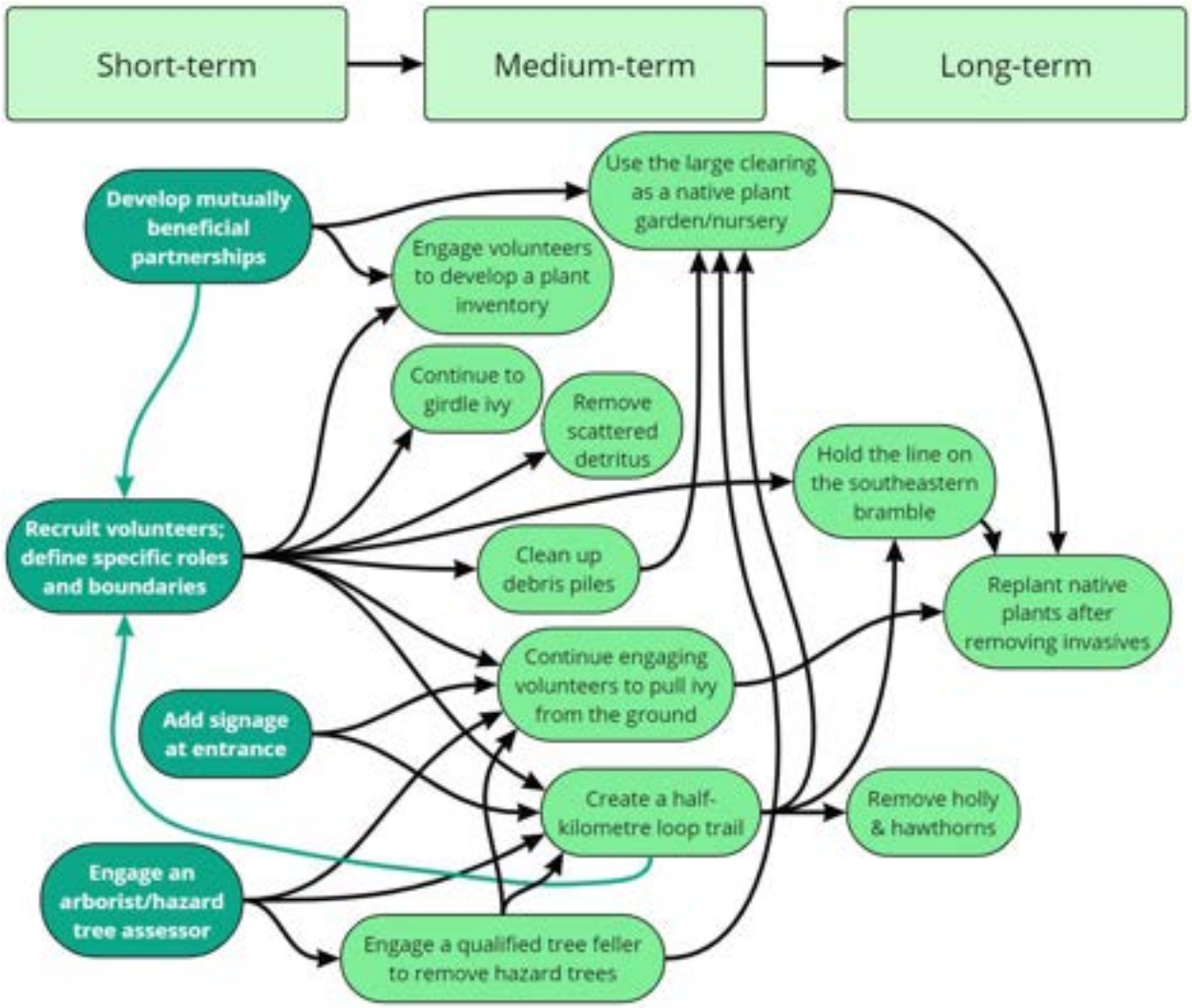
24. Explore the possibility of a prescribed burn to clear out invasives. This area is the greatest threat to the healthiest part of the forest (Zone 1), is completely colonized by Himalayan

blackberry, has easy access, and is accessible for suppression purposes. *(Relevant values: Restoration, Reconciliation)*

25. After removal of blackberry canes, allow goats to graze in a fenced enclosure to prevent regrowth. *(Relevant values: Restoration, Biodiversity)*

7.1 Sequencing in ŚW̱ȻAKEŁ (Zone 1)

Most of the management zones have only a few recommended actions, making sequencing those actions relatively simple. The ŚW̱ȻAKEŁ Zone, on the other hand, is much more complex with a total of 16 recommendations that apply to that area. Additionally, some of the actions are contingent on others taking place. For this reason, the action items were organized into a process map to assist SCRA staff with sequencing the actions.



7.2 Full Forest Action Plan

The following list a suggested sequencing of actions for the full forest:

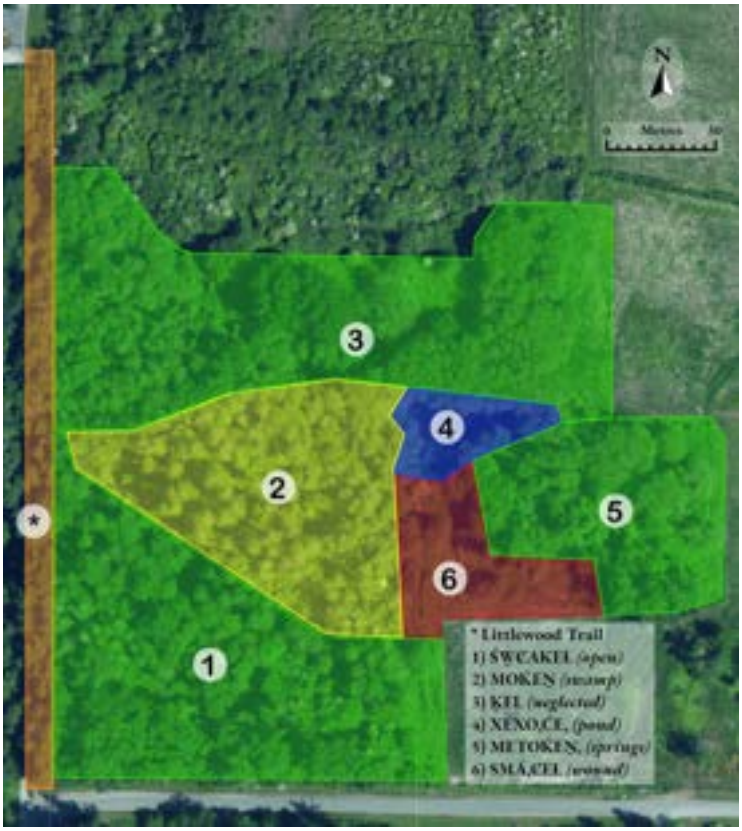
#	Action	Zone(s)	Matrix Quadrant
1	Develop mutually beneficial partnerships	ALL	quick win
2	Recruit volunteers; define specific roles and boundaries	ALL	minor project
3	Continue to girdle ivy	1, 2, 3, 5	quick win
5	Continue engaging volunteers to pull ivy from the ground	1	quick win
16	Restrict access to Zone 2	2	quick win
21	Restrict access to Zone 5	5	quick win
10	Add signage at the entrance	1	major project
12	Engage an arborist/hazard tree assessor	1	major project
13	Engage a qualified tree feller to remove hazard trees	1	major project
6	Create a half-kilometre loop trail through the priority zone	1	quick win
7	Hold the line on the southeastern bramble	1	quick win
8	Remove holly & hawthorns	1	quick win
4	Remove scattered detritus	1, 3, 5	minor project
18	Monitor/protect blackberry in sub-zone 3.1	3	minor project
14	Engage volunteers to develop a plant inventory	1	minor project
15	Clean up debris piles	1	minor project
9	Use the large clearing as a native plant garden/nursery	1	major project
11	Replant native plants after removing invasives	1	major project
19	Plant redcedar & cottonwood in sub-zone 3.5	3	evaluate options
23	Plant redcedar in Zone 5	5	evaluate options
20	Create equestrian trail (dry season only)	3	minor project
22	Restore natural drainage from Zone 5	5	evaluate options
17	Prescribed burn in Zone 3	3	major project
24	Prescribed burn in Zone 6	6	evaluate options
25	Goat grazing in Zone 6	6	evaluate options

8.0 Littlewood Forest Stewardship Plan

The 17-acre Littlewood Forest stewarded by the Sandown Centre for Regenerative Agriculture is a second-growth coastal Douglas-fir forest with a pond, natural springs, and swamp, all of which have been heavily impacted by invasive species due to decades of neglect. Based on field assessments of the entire forest, stakeholder interviews, and reviews of relevant research that were conducted in 2024, the Sandown Centre has developed this stewardship plan to guide restoration and conservation actions within the forest.

Background & History: While most of the land around the Littlewood Forest was cleared for agricultural use in the 1800s, the area that comprises the forest area was left mostly intact, possibly due to the presence of a swamp and natural springs that occur in the area. In the 1950s, the land was converted into a horse racetrack, which operated until the turn of the century. It was eventually acquired by the District of North Saanich, subdivided, reclaimed through demolition of buildings, and leased to the Sandown Centre to manage restoration activities.

Site Description: Part of the smallest and most threatened biogeoclimatic zone in British Columbia, the forest contains several small, unique ecosystems. Despite threats from invasive species, it has strong biodiversity, with a variety of trees, shrubs, and wildlife. The most significant threats to the forest come from Himalayan blackberry and English ivy, both of which outcompete native plants for resources and diminish the forest's biodiversity and overall health.

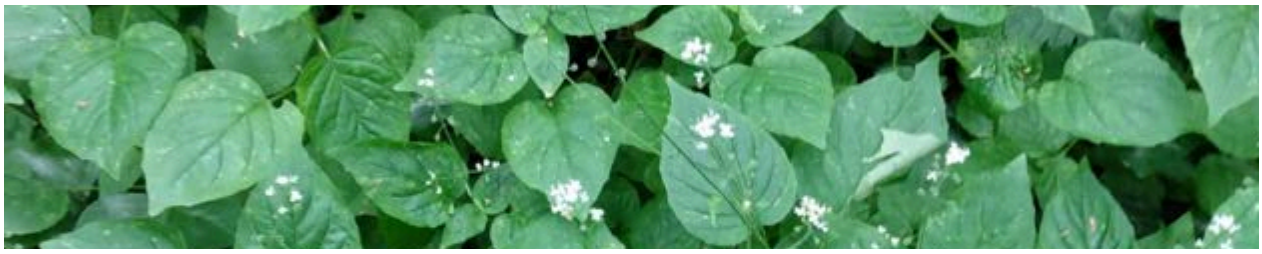


The forest has been divided into six management zones that correspond to their unique physical features and ecosystems. These zones, each given a SENĆOŦEN name, are:

- Zone 1: ŚW̱C̓AKEŁ (*open*)
- Zone 2: MOḴE̱N (*swamp*)
- Zone 3: ḴEL (*neglected*)
- Zone 4: XEXO¸C̓E¸ (*pond*)
- Zone 5: METOḴE̱N¸ (*springs*)
- Zone 6: SMÁ¸C̓EŁ (*wound*)

**Littlewood Trail is managed by the District of North Saanich.*

For a full overview of the species compositions, historical context, conservation concerns, field observations, sub-zones, safety concerns, and physical descriptions of each section of the forest, please see the *2024 Littlewood Forest Report* by Matt Britton, available from Sandown staff or through the UVic library.



Management Values: Informed by stakeholder interviews and previous community engagement, the following eight values (four primary and four supplemental) have been selected to guide and prioritize management actions within Littlewood Forest:

1. Recreation (trails, birdwatching)
2. Education (native plants/ecosystems)
3. Restoration (invasives management)
4. Biodiversity (protection/improvement)
5. Wildlife (habitat conservation)
6. Volunteers (engagement/management)
7. Reconciliation (work with First Nations)
8. Safety (hazard trees, woody debris)

Values 1-4 are considered primary values for the forest, with 5-8 being supplemental values.

Volunteer Roles: Dedicated volunteers are vital to efforts to restore and conserve Littlewood Forest! While Sandown appreciates the enthusiasm and passion that our volunteers bring to the table, it is important that all volunteers adhere to the principles and guidelines in this stewardship plan; it is necessary to have everyone "rowing in the same direction."

- **Ivy Extrication Specialist** (IES) volunteers will concentrate on pulling ivy from the ground in designated areas and removing it from the site. This can be done independently or during monthly volunteer events coordinated by Sandown staff, but all volunteers must follow the procedures outlined below.
- **Multiple Invasive Species Remover** (MISR) volunteers must receive special training and report regularly to Sandown's Manager of Land Stewardship. These volunteers will be tasked with girdling ivy from trees in a methodical manner, as well as removing invasive European holly, English hawthorn, and Himalayan blackberry in designated areas. This job is physically more demanding, requires usage of tools (not provided by Sandown), and necessitates close coordination with staff.
- **Special Projects** (SP) volunteers will be assigned to work on specific, short-term projects that will vary in complexity, under close supervision by Sandown staff.

General Guidelines: All activities in Littlewood Forest are subject to the following rules.

1. All volunteers, whether working with a group or independently, are required to sign a waiver of liability. All volunteer activities are conducted at your own risk, and Sandown encourages each person to be aware of the risks of working in the forest and decide which activities they are willing to undertake.
2. Wear appropriate protective clothing suitable for the weather and the nature of your activities. Protective eyewear, sturdy boots, thick work gloves, long pants, long-sleeve shirts, and waterproof outerwear are recommended for work in the forest.

3. Be aware of your surroundings at all times. Watch for head-level hazards (branches), overhead hazards (falling branches/vines), tripping hazards (vines), and occasional sharp debris (old fencing, glass bottles, etc.).
4. Ensure that you are familiar and comfortable using the appropriate tools for your assigned work.
5. Littlewood Forest is an active, regenerating forest; it contains a number of snags (upright or leaning dead trees) that provide food, perches, and habitat for wildlife, but can be hazardous in windy conditions. Volunteers should avoid working in the forest during times of strong wind.
6. Carry a first aid kit, plenty of water, and a cell phone for emergency calls.

7. If working alone, try to stay near the main trail so that you are visible to passersby. If you are unable to stay near the trail, ensure that someone knows your work plans, location, and the time you will return.
8. Do not–*under any circumstances*–cut either mature or dead trees or clear vegetation without express permission from Sandown's Manager of Land Stewardship. Hazard trees should be reported to the Manager of Land Stewardship or directly to the District of North Saanich. Removal of trees violates Sandown's lease with the District and is also against the law (see the District of North Saanich's Tree Protection Bylaw, No. 1548, 2022).
9. Smoking, drinking, drug use, and other turpitude is not allowed in the Littlewood Forest.
10. There are no bathroom facilities on site; the closest facilities are at the Fickle Fig café or Sandown's portable toilet near the greenhouse.
11. Dogs must be leashed and remain on the path at all times to protect ground-nesting birds and fledgling native plants. Bag and remove your pet's waste – do not leave it on the path, even if you plan to return for it.
12. If you find trash in the forest, please remove it if possible. It is helpful to carry a garbage bag in case you come across trash.
13. Unless specifically directed by the Manager of Land Stewardship, no one should be working in or accessing either Zone 2 (the swamp) or Zone 5 (southeast of the pond). Both areas are sensitive ecosystems and wildlife habitats that should not be disturbed.
14. Use caution and discretion when working in Zone 3 – due to the age of the trees in this section, there are a number of hazard trees at the end of their lifecycles. No work should be performed in Zone 3 during periods of strong wind under any circumstances.

Activities & Specific Guidelines: All volunteers must understand and adhere to the guidelines for each project with which they are engaged. Questions about procedures and policies should be directed to Sandown's Manager of Land Stewardship.

1. **Ground Ivy Extrication**
    a. Who: Anyone can become an Ivy Extrication Specialist with a little self-education and willingness to work!
    b. What: Ivy vines can be pulled from the ground by hand. Try to remove as much of the root system as possible to inhibit regrowth.
    c. Where: Designated locations within Zone 1.
    d. When: July-December (to avoid nesting season and work when the plant is at its weakest state); Sandown will organize monthly gatherings, but ivy-pulling can be done independently as well.
    e. Why: English ivy is an aggressive invasive species that inhibits growth and regeneration of native trees and shrubs by shading, smothering, and hosting harmful pathogens. Its suppression of understory species makes it a serious threat to biodiversity and regeneration of the forest.
    f. How (Guidelines):
        i. Learn to identify native species, such as trailing blackberry, that can be confused with ivy so that you can avoid damaging native plants while pulling ivy.
        ii. All extricated ivy must be removed from the site – it cannot be "left to compost" because pieces of ivy that are in contact with the ground are able to put down roots and regrow. Vegetation can be left at the Littlewood Trail entrance on Glamorgan Road; it will be collected and moved to the adjacent green waste facility.
        iii. Do not create piles of woody debris while working. Stacking sticks and branches inhibits the natural decomposition cycle needed to break these items down so that their biomass can be recycled into the ecosystem; woody debris should also not be removed from the forest for this reason. Woodpiles also create a fire hazard that is not present when it is scattered on the forest floor in its natural state.

2. **Girdling Climbing Ivy**
    a. Who: MISR volunteers must receive special training and report regularly to Sandown's Manager of Land Stewardship. Speak to Sandown staff if you are interested in performing this function.
    b. What: Girdling ivy on trees will kill the climbing vines and stop them from producing fruit/seeds. This needs to be done methodically with follow-up visits to catch and prevent regrowth, and it should be accompanied by pulling ivy from the ground surrounding the trees to prevent it from climbing again.

c. Where: Zones 1, 2, 3, and 5; confirm locations with the Manager of Land Stewardship to ensure that your efforts are methodical and targeted to the necessary locations.
d. When: July-December (to avoid nesting season and work when the plant is at its weakest state)
e. Why: English ivy is an aggressive invasive species that inhibits growth and regeneration of native trees and shrubs by shading, smothering, and hosting harmful pathogens. The plant tends to form dense monocultures, outcompeting native plants on the ground and damaging trees as it climbs. Excessive weight and increased wind resistance of ivy on trees makes them more vulnerable to blowdown and disease, shortening their lifespan.
f. How (Guidelines):
    i. To girdle climbing ivy, use pruners, loppers, or a hand saw to cut all of the vines near the ground and again at chest height around the tree's full circumference. This gap prevents immediate regrowth from healing vines and makes follow-up inspections easier and more effective (see photo at right for a before-and-after example).

    ii. Remove cut vines from the tree and place in a bag for removal – cut vines can regrow if left in contact with the ground.
    iii. Take care not to damage the tree bark – if needed, use a crowbar to pry thick vines away from the bark before cutting.
    iv. Do not pull vines above the chest-height cut off of trees. Doing so can damage the bark, making it more susceptible to disease, rot, and pest access, and it is also an overhead safety risk – pulling may cause limbs or other debris to fall. The overhead vines will die off eventually – once they are cut, they no longer pose a risk to the tree.
    v. Pull all ivy from the ground within a metre radius of the tree to protect from future infestations. Cutting ivy from the tree alone is insufficient, as adjacent ivy on the ground will immediately start climbing the tree again. Bag and remove the ground ivy from the ring around the tree so that it cannot regrow (vegetation can be left at the Littlewood Trail entrance on Glamorgan Road; it will be collected and moved to the adjacent green waste facility).

3. Holly Removal

a. Who: MISR volunteers must receive special training and report regularly to Sandown's Manager of Land Stewardship. Speak to Sandown staff if you are interested in performing this function.
b. What: Removal of European holly by pulling or cutting and monitoring for regrowth.
c. Where: At present, holly is only growing in isolated instances in zone 1; removing it there will prevent more dramatic infestations.

d. When: April-June, prior to ivy season during a period when the plants are putting their energy into foliage growth, but before they start producing berries.
e. Why: European holly is an aggressive invasive species that outcompetes native plants, decreasing biodiversity.
f. How (Guidelines):
    i. Small seedlings can be pulled by hand.
    ii. Large trees should be cut at ground level and monitored – mark your worksite on a map and return to it after a few months. Any suckers that re-sprout from the stump should be cut immediately.

4. Hawthorn Removal

a. Who: MISR volunteers must receive special training and report regularly to Sandown's Manager of Land Stewardship. Speak to Sandown staff if you are interested in performing this function.
b. What: Removal of English hawthorn and monitoring for regrowth.
c. Where: At present, hawthorns are only growing in isolated instances in zone 1; removing them there will prevent more dramatic infestations in this zone.
d. When: April-June, prior to ivy season during a period when the plants are putting their energy into foliage growth, but before they start producing berries.
e. Why: English hawthorn is an aggressive invasive species that outcompetes native plants, decreasing biodiversity. Once established, it is very difficult to eradicate.
f. How (Guidelines):
    i. Smaller trees should be dug out completely, including the entire root system.
    ii. Established trees can be cut back in early summer when they are putting their energy into foliage growth; avoid cutting when full of ripe fruit, as they will be dispersed when moving the plant material.
    iii. Hawthorns can regenerate from cuttings, so all cut material must be removed from the site.
    iv. The roots must be removed or treated with herbicide to prevent resprouting; burning the cut surface with a torch may also reduce sprouting
    v. It is important to monitor for regrowth, as hawthorns resprout aggressively when cut back – mark your worksite on a map and return to it after a few months. Any suckers that re-sprout from the stump should be cut immediately.

5. Blackberry Removal

a. Who: MISR volunteers must receive special training and report regularly to Sandown's Manager of Land Stewardship. Speak to Sandown staff if you are interested in performing this function.
b. What: Removal of Himalayan blackberry.

c. Where: Blackberry is encroaching on healthy areas of the forest from the southern and eastern edges of zone 1. Cutting it back now can prevent further spread.
d. When: April-June, prior to ivy season during a period when the plants are putting their energy into foliage growth, but before they start producing berries.
e. Why: Himalayan blackberry is an aggressively invasive plant that outcompetes low-growing native plants and forms dense, impenetrable thickets that limit the movement of large animals, including humans trying to manage other invasive species.
f. How (Guidelines):
    i. Try to learn to identify the differences between the native trailing blackberry and the invasive Himalayan blackberry so that you are targeting the right plants.
    ii. Cut canes and dig up roots, taking care to avoid the plant's large spines.
    iii. Whenever plants are cut, all plant material must be bagged and removed from the site to prevent regrowth.

6. Detritus Removal

a. Who: Special Projects volunteers will work under close supervision by Sandown staff; speak to the team if you are interested in this work.
b. What: There are a number of large trash items left over from previous land use in the forest, including metal barrels, bottles, tires, fencing, metal poles, etc.
c. Where: Items are scattered throughout the forest; locations of a number of items are noted on a map held by Sandown staff.
d. When: April-October – when the winter rains begin, removal of these items will become much more difficult and hazardous. Some items in grassy areas will be more easily accessed before the grass is fully grown.

e. Why: Restoration of the natural environment; some items may be hazardous to other visitors to the forest.
f. How (Guidelines):
    i. Ensure that you are up to date on your tetanus booster – some of the trash items are rusty and sharp.
    ii. Wear protective equipment and work in teams – some items will be difficult to extract alone.
    iii. Remove the items from the site; you will need a means of transporting the materials to the landfill.

7. Other Annual Projects

At present, Sandown does not have plans or funding for the following actions that have been recommended for the Forest Stewardship Plan; if funding becomes available, the following opportunities may be added to the list for Special Projects volunteers.

a. Trail-building in Zone 1 (April-June, before ivy season, after the winter rains, but before vegetation becomes too thick) – this will be useful for publicity (as part of it will be visible from road), ground-clearing ivy, access to bramble line in the southeast corner.
b. Replanting native plants in Zone 1 (November-February, before the growing season, while there is plenty of rain) – after removing invasive plants, replanting native species will encourage regeneration.
c. Tree-planting in Zones 3 & 5 (November-February, before the growing season, while there is plenty of rain) – additional trees in this area can supplement natural regrowth.
d. Mowing in Zone 5 & 6 (April-June, before thistle, blackberry, and grasses grow significantly) – mowing in designated areas can reduce growth of specific invasive species as part of a larger management plan.

8. Other One-Time Projects

At present, Sandown does not have plans or funding for the following actions that have been recommended for the Forest Stewardship Plan; if funding becomes available, the following opportunities may be made available to Special Projects volunteers.

a. Addition of signage at the entrance to explain the history, ecological significance, rules (no off-leash dogs, stay on path, no wild harvesting), volunteer opportunities, etc. (Relevant values: Recreation, Education, Volunteers, Reconciliation, Safety)
b. Development of a plant inventory in Zone 1, which can be useful for grant applications for restoration projects and for determining a baseline measurement to use for establishing restoration targets.
c. Removal of debris piles (chip, burn, or use to line new trail) – these can present a fire hazard, slow down the natural decomposition process, and also cause the forest to look neglected, which encourages further dumping in the area.
d. Creation of a native plant garden/nursery in the large clearing near the fence line in Zone 1. This project would support outplanting into the rest of the forest. The existing woody debris piles can be chipped up for mulch, the site has easy access for watering when needed, and signage on the fence can help keep dumpers away.

Annual Activity Calendar

Month/Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ivy management							■	■	■	■	■	■
Other invasives				■	■	■						
Trash removal				■	■	■	■	■	■	■		
Trail-building				■	■	■						
Planting	■	■									■	■
Mowing				■	■	■						
Special projects	■	■	■	■								

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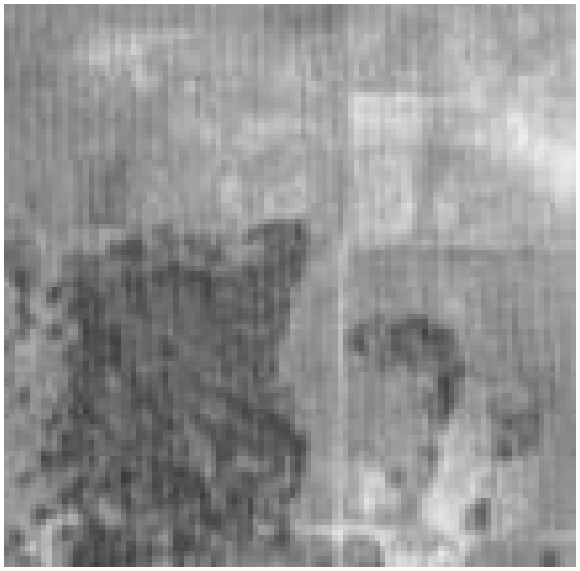
Appendix A: Historical photos, 1930-2023

All photos in this section are oriented with North at the top. Each photo is cropped to roughly the same view; Glamorgan Road is visible running east-west along the bottom of the photo; it turns south and becomes Littlewood Road in the bottom left corner.

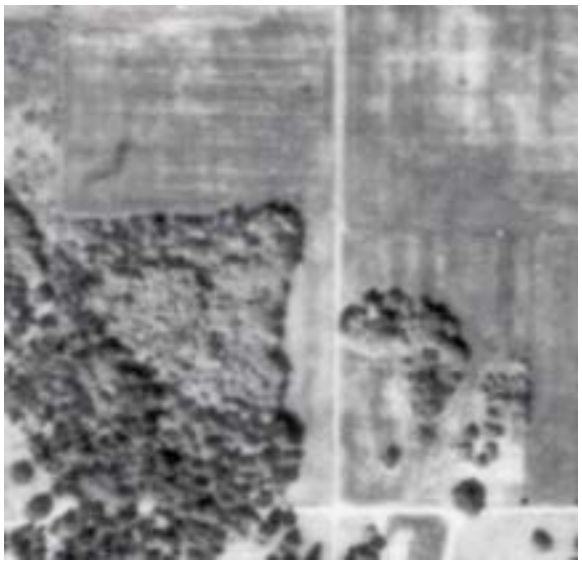


1930

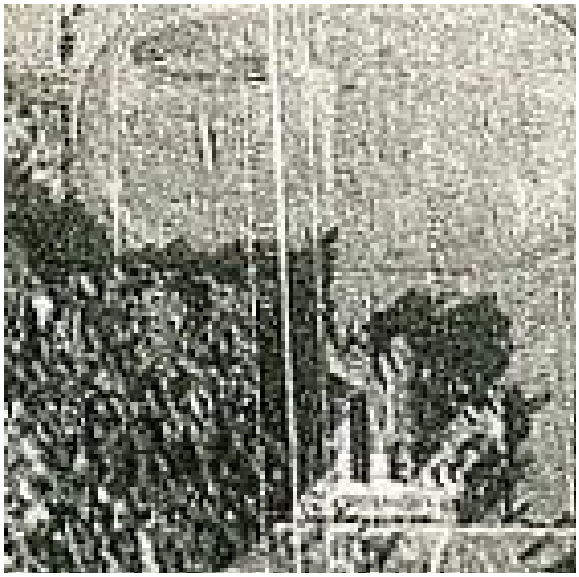
The forest appears relatively dense in 1930, with the majority of the land north and east of it having been cleared for agriculture. The small wooded section east of the main block may have been preserved because of the natural springs that originate in that area.

1938

1946



The difference in vegetation between the drier, upslope area of the forest (management zone 1) and the swamp (management zone 2) is evident in both photos. There is a possibility that the swampy ground helped preserve the main block of forest due to it being undesirable for agricultural purposes.



1952

The smaller racetrack has been laid out north of the forest, and the first few buildings have been constructed between the main block and the smaller stand of trees to the east.

Sandown's main track is located to the east (not visible in this cropped photo).

1964

The western racetrack appears to have already been abandoned by the time this photo was taken – note the trees that have colonized the southwest corner of the track. This is the beginning of the regrowth that will eventually become zone 3.

The smaller stand of trees that is now management zone 5 has expanded, despite the continued construction of buildings around it.

The upslope area of the main block of forest (now zone 1) was significantly thinned prior to this time, but the swampy area remains intact

1969

The pond has been completed by this point, and trees – likely red alders – have already grown up around it.

The northwest corner of the track is showing signs of regrowth, possibly from colonization of English hawthorns.

1972

1974

1978

The first growth in sub-zone 3.5 (the alders north of the pond) is evident in this photo. This allows us to confirm that the oldest trees in this stand of alders are approximately 50 years old, nearing the end of their lifespan.

The older stand of cottonwoods in zone 3 (sub-zone 3.3, which is mostly dead) is also visible in this photo. Since this stand is also about 50 years old (only a quarter of cottonwood's possible lifespan), it is puzzling that they are already dead in 2024.

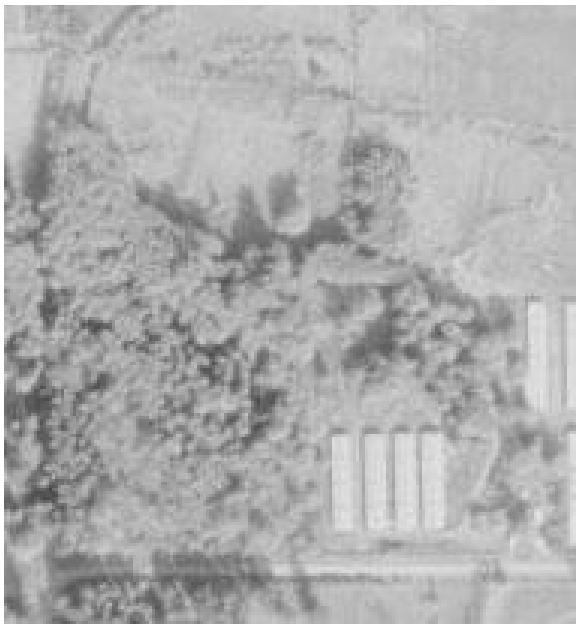
The areas of zone 1 that had been thinned in the late 50s/early 60s are showing good signs of regrowth here.

1980

1986

By the mid-80s, the English hawthorns north of zone 3 have begun colonizing the abandoned track area while trees in zone 3 continue to expand rapidly, completely obscuring the track.

1992



1997

2013

As the site lays abandoned, Himalayan blackberry has begun to colonize the center of zone 3 between stands of alder and cottonwood that have grown there. By this point, the blackberry has also taken hold south of the pond in zone 6, which was previously open ground that was kept clear through the 80s. You can also see the blackberries growing to the west of the buildings, just along the edge of zone 1.

2015

2017

2019

By the time the buildings were demolished and removed, zone 6 had already become impassable due to Himalayan blackberry overgrowth. The areas between tree stands in zone 3 were also heavily overgrown by this point, but the presence of standing water in this area for part of the year may have limited the blackberry growth somewhat.

A drainage ditch from the northeast corner of zone 5 to the main drainage canal was cut around this time, but it quickly becomes overgrown in following years.

2021

2023

Special thanks to Daniel Brendle-Moczuk at the McPherson Library, University of Victoria, and Geoff Hallett at the BC Aviation Museum Library for providing the photos from their archives from which these comparison photos were cropped.

Appendix B: Interventions & Recommendations

#	Action	Zone(s)	Value(s)	Impact (H/L)	Cost (H/L)	Matrix Quadrant
1	Develop mutually beneficial partnerships – work with FNSP on native plant nursery, get ivy pulls listed on HAT calendar, consult with PH on possible collaboration, ask Tseycum Nation what Sandown can offer	ALL	2, 3, 6, 7	H	L	quick win
2	Define specific volunteer roles and boundaries – what is permitted (and not permitted), where, and when	ALL	6, 8	L	L	minor project
3	Continue to girdle ivy – cut from trees at base and chest height (do not pull off trees because of bird nesting and bark damage). This is especially important in Zone 1, but Zones 2, 3, and 5 can benefit from this practice in whichever areas are accessible.	1, 2, 3, 5	3, 4, 6	H	L	quick win
4	Remove scattered detritus; locations of large trash items (barrels, tires, chainlink fencing rolls, metal stake and poles, etc.) will be noted on a supplementary map.	1, 3, 5	3, 6	L	L	minor project
5	Continue engaging volunteers to pull ivy from the ground in Zone 1.	1	3, 4, 6	H	L	quick win
6	Create a half-kilometre loop trail through the priority zone – this will be useful for publicity (as part of it will be visible from road), ground-clearing ivy, access to bramble line in the southeast corner.	1	1, 2, 3, 6	H	L	quick win
7	Hold the line on the southeastern bramble in Zone 1 where Himalayan blackberry and English ivy is encroaching on healthy forest areas.	1	3, 4, 6	H	L	quick win
8	Remove holly & hawthorns whenever encountered in Zone 1 – they are aggressively invasive species, but can be managed relatively easily in Zone 1 because they have only colonized in isolated instances.	1	3, 4, 6	H	L	quick win

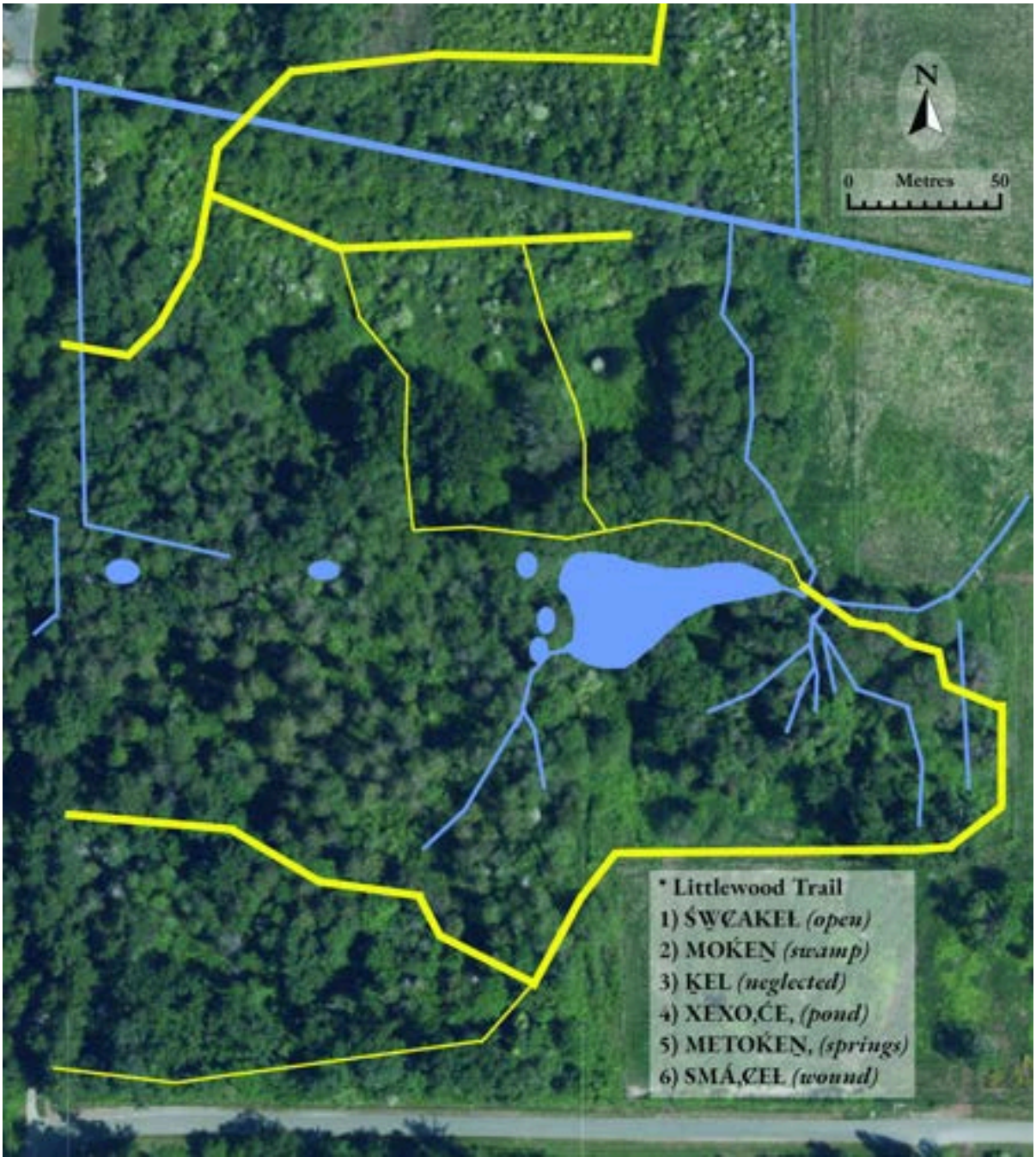
9	Use the large clearing near the fence line in Zone 1 as a native plant garden/nursery for outplanting into the rest of the forest. The existing woody debris piles can be chipped up for mulch, it has easy access for watering when needed, and signage on the fence can help keep dumpers away.	1	2, 3, 4, 6, 7	H	H	major project
10	Add signage at the entrance to explain the history, ecological significance, rules (no off-leash dogs, stay on path, no wild harvesting), volunteer opportunities, etc.	1	1, 2, 6, 7, 8	H	H	major project
11	Replant native plants after removing invasives to encourage regeneration	1	3, 4, 6	H	H	major project
12	Engage an arborist/hazard tree assessor to assess hazard trees near Littlewood Trail, potential loop trail, and potential equestrian trail	1	8	H	H	major project
13	Engage a qualified tree feller to remove hazard trees	1	8	H	H	major project
14	Engage volunteers to develop a plant inventory in Zone 1, which can be useful for grant applications for restoration projects and for determining a baseline measurement to use for establishing restoration targets.	1	2, 3, 4, 6	L	L	minor project
15	Clean up debris piles (chip, burn, or use to line new trail) – these can present a fire hazard, slow down the natural decomposition process, and also cause the forest to look neglected, which encourages further dumping in the area.	1	1, 3, 6, 8	L	L	minor project
16	Keep people out of Zone 2 due to the dangerous trees and sensitive riparian ecosystem.	2	4, 5, 8	H	L	quick win

17	Explore the possibility of a prescribed burn in parts of Zone 3 to clear out invasives. This area is furthest from the healthiest part of the forest (Zone 1), is steadily being colonized by Himalayan blackberry, has a high number of hazard trees, and has relatively easy access to the pond for suppression purposes.	3	3, 7, 8	H	H	major project
18	Monitor & protect the trailing blackberry patch in Zone 3 – remove invasives from around it when possible.	3	3, 4, 6, 7	L	L	minor project
19	Plant redcedar & cottonwood in sub-zone 3.5	3	3, 4	L	H	evaluate options
20	Longer-term – create equestrian trail through hawthorns and zone 3 (dry season only)	3	1, 6	L	L	minor project
21	Preserve Zone 5, which is a valuable avian habitat and riparian ecosystem. Light interventions could include planting cedars and girdling ivy on trees.	5	5	H	L	quick win
22	Restore natural drainage from the springs in Zone 5 to the pond outflow. This will make the grassy area of Zone 5 easier to mow/manage; this could allow for creation of a trail path when dry, if desired.	5	1, 3	L	H	evaluate options
23	Plant redcedar in Zone 5	5	3, 4	L	H	evaluate options
24	Explore the possibility of a prescribed burn in Zone 6 to clear out invasives. This area is the greatest threat to the healthiest part of the forest (Zone 1), is completely colonized by Himalayan blackberry, has easy access from the pig yard, and has relatively easy access to the pond and Glamorgan Road for suppression purposes.	6	3, 7	L	H	evaluate options
25	After removal of blackberry canes, allow goats to graze in a fenced enclosure to prevent regrowth.	6	3, 4	L	H	evaluate options

Appendix C: Water & Trails

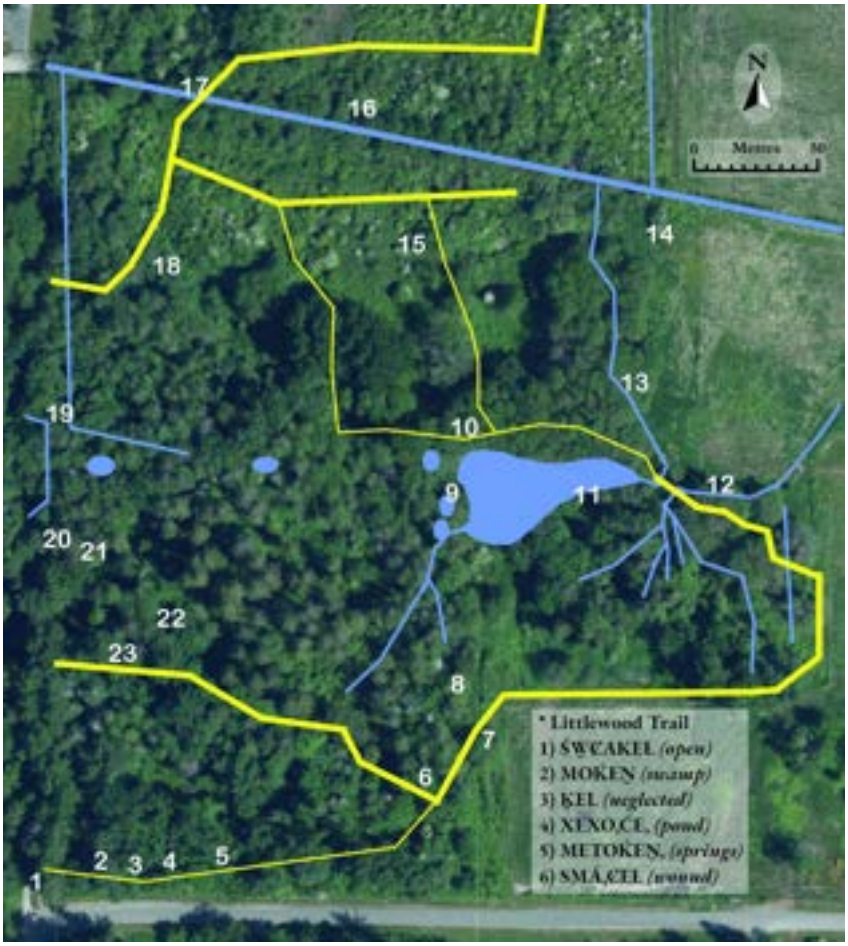
Straight blue lines indicate drainage ditches which may or may not be filled, depending on the time of year. The thick, blue diagonal line that terminates in the upper left corner (at Munro Road) is Tseycum (WSÍ,KEM) Creek. Smaller, branched blue lines are springs/streams. There are many more ponds in the swamp zone than can be accurately depicted here.

Thick yellow lines are man-made trails that are moderately used to navigate through the forest. Thin yellow lines are more similar to game trails that are more difficult to follow.



Appendix D: Landmarks, Debris, and Hazards

This map has been prepared to assist with management of the forest, particularly with regards to removal of trash and other detritus. Landmarks are indicated in bold text to distinguish them from hazards and debris.



1. Hazard tree: leaning, dying cedar at trail entrance

2-5. Woody debris piles

6. Rusted fencing roll
7. Chainlink fencing
8. **Cherry tree**
9. **Cement cistern**
10. Jerry can
11. Metal barrels (in water)
12. Tire
13. Metal barrel
14. **Bat box**
15. **Bat box**
16. Collection of glass bottles
17. **Small bridge over creek**
18. Metal pole
19. Gate frame and fence roll
20. Woody debris pile
21. **Floating tree**
22. Safety hazard: two leaning snags
23. **Stump circle**

#2-5 →

#6 →

#13 ↓

18 ↓

#19 ↓

#22 ↓