S'ul-hween X'pey (Elder Cedar) Nature Reserve Management Plan Gabriola Island, BC

PREPARED BY
Madrone Environmental Services Ltd.
Duncan, BC

APPROVED BY
Islands Trust Conservancy Board on October 5, 2021 Resolution ITC-2021-040
Gabriola Land and Trails Trust on December 14, 2021
Nanaimo and Area Land Trust on January 26, 2022

Executive Summary

Islands Trust Conservancy acknowledges and respects that Gabriola Island is within the traditional territory of Coast Salish Peoples, Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation and Ts'uubaa-asatx (Lake Cowichan) First Nation. The historical relationship to the land, culture, and spirit of this place continues to this day. Islands Trust Conservancy is committed to honouring the rich history of Indigenous stewardship in the lands and waters of the Islands Trust Area and to building mutually respectful relationships between Indigenous and non-Indigenous partners in conservation. Therefore, this Management Plan for the S'ul-hween X'pey (Elder Cedar) Nature Reserve is a living document that will evolve as opportunities for knowledge sharing arise and understanding grows[1].

The S'ul-hween X'pey (Elder Cedar) Nature Reserve is a 65.36-hectare, square parcel of land of mixed-age forest that includes areas of old growth Coastal Douglas-fir habitat. The property possesses high biodiversity values due to a diverse range of habitats providing potential breeding grounds for a multitude of species, including those provincially listed to be of conservation concern. The property also has a rich First Nations history, as it was likely used by the Snuneymuxw First Nation (SFN) for foraging and freshwater resources. Islands Trust Conservancy (ITC) is the land holder, and the co-covenant holders are Gabriola Land and Trails Trust (GaLTT) and Nanaimo & Area Land Trust (NALT).

Wildlife species were assessed under the lens of potential critical breeding habitat. This provides management efforts with a focus toward areas directly related to the reproductive success of documented species of conservation concern. Species of conservation concern with confirmed, or future potential critical breeding habitat in SXNR include the Northern Pygmy-owl, *swarthi* subspecies (*Glaucidium gnoma swarthi*), Band-tailed Pigeon (*Patagioenas fasciata*), Evening Grosbeak (*Coccothraustes vespertinus*), Great Blue Heron, *fannini* subspecies (*Ardea herodias fannini*), Green Heron (*Butorides virescens*), Marbled Murrelet (*Brachyrampuhus marmoratus*), Northern Goshawk, laingi subspecies (*Accipiter gentilis laingi*), Olive-sided Flycatcher (*Contopus cooperi*), Townsend's Big-eared Bat (*Corynorhinus townsendii*), Northern Red-legged Frog (*Rana aurora*), and the Western Toad (*Anaxyrus boreas*).

Ecological communities were also assessed using vegetation mapping created in the previous management plan and refining the linework as needed. A total of 23 individual polygons were delineated in this latest revision, varying in site series within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone. Some of the polygons possessing old-growth habitats are provincially red-listed.

Currently, management efforts are directed at ensuring SXNR remains as undisturbed as possible, while permitting low-impact public access for the purposes of environmental stewardship. Remediation efforts are continuously being implemented where invasive plant

[1] First Nations/reconciliation content written by Lisa Wilcox, Islands Trust

species are present, and where public use has created ecological impacts (*i.e.*, construction of boardwalks to protect sensitive areas). Specific management recommendations include methods to eradicate an established patch of Scotch Broom (*Cytisus scoparius*) in the southwest corner of SXNR, and the construction of a clear span crossing over Stoney Creek where the existing stepping stones are creating a safety hazard to the public. These short-term management options, and other suggested long-term options listed in this report will be considered by ITC, and covenant holders, with the objectives of ensuring conservation of ecological and historical values, along with ensuring public safety.

Table of Contents

Tables and Lists

List of Tables

List of Figures

List of Appendices

Acknowledgements

Name	Position/Affiliation	Professional Accreditation or subject expertise	Contribution
Jennifer McEwen	Senior Biologist, Madrone Environmental Services	M.Sc., R.P. Bio.	Project Manager; Senior Review
Greg Howard	Project Ecologist, Madrone Environmental Services	B.Sc., A.Sc.T.	Project Ecologist; Technical Author
Harry Williams	Senior Vegetation Ecologist, Madrone Environmental Services	M.Sc., R.P.Bio.	Vegetation, ecosystems, and soils Lead; Senior Review
Kira Kristensen	Senior Archaeologist, Madrone Environmental Services	Member of the B.C.A.P.A.	Archaeological input and Traditional Lands research.
Lisa Wilcox	Senior Intergovernmental Policy Advisor	B.A. Psychology Indigenous Knowledge Holder	Reconciliation/Indigenous Knowledge Holder and editing
Nuala Murphy	Property Management Specialist, Islands Trust Conservancy (ITC)		Representative of the Landholder (ITC); draft review
Ava Breakwell	Nanaimo and Areas Land Trust (NALT)		Covenant Holder; draft review
Anne Landry	Gabriola Land and Trails Trust (GaLTT)	Local knowledge, Conservation Committee Chair	Covenant Holder; presenter at webinar, draft review

1. Introduction

Gabriola Island is situated within the territory of Coast Salish Peoples, who share a rich history of stewardship in the lands and waters of the Islands Trust Area that inspires the work of Islands Trust Conservancy and its partners.

S'ul-hween X'pey (Elder Cedar) Nature Reserve (SXNR) is a 65.36-hectare, square parcel of land of mixed-age forest that includes areas of old growth Coastal Douglas-fir habitat. The property possesses high biodiversity values due to a diverse range of habitats providing potential breeding grounds for a multitude of species, including those provincially listed to be of conservation concern. The property also has a rich First Nations history, as it was likely used by the Snuneymuxw First Nation (SFN) for foraging and freshwater resources. Islands Trust Conservancy (ITC) is the property landholder, and co-covenant holders Gabriola Land and Trails Trust (GaLTT) and Nanaimo & Area Land Trust (NALT).

1.1 Islands Trust Conservancy

Since time immemorial, the lands and waters between Vancouver Island and mainland British Columbia have been home to the Coast Salish People, whose ecological, cultural, and spiritual connections to this place continue to this day. In 1974, the Province of British Columbia recognized this region as a special place within the province where the unique beauty, cultural heritage, rural character and diverse ecosystems should be protected for future generations. Through the *Islands Trust Act*, the province established the Islands Trust, a special purpose government, with the following mandate (known as the Object of the Islands Trust):

> *"To preserve and protect the trust area and its unique amenities and environment for the benefit of the residents of the Trust Area and of British Columbia generally, in cooperation with municipalities, regional districts, improvement districts, other persons and organizations and the government of British Columbia." (Islands Trust 2020a)*

In 1990, through the enactment of a section of the *Islands Trust Act*, the Islands Trust Conservancy (originally called the Islands Trust Fund) was established as a conservation land trust to assist in carrying out the "preserve and protect" mandate. Part 6 of the Islands Trust Act establishes the corporate status, responsibilities, and governance structure of the Islands Trust Conservancy. The Islands Trust Conservancy is one of sixteen corporate entities[2] charged to uphold the Object of the Islands Trust and since 1990 has protected over 1,300 hectares (3,220 acres) of land as nature reserves and conservation covenants.

The vision of the ITC is for a network of protected areas that preserve in perpetuity the natural systems of the islands in the Salish Sea. The mission of the ITC is to protect special places by encouraging, undertaking, and assisting in voluntary conservation initiatives within the Islands Trust Area. ITC nature reserves are managed to maintain, preserve, and protect the natural features and values of ecosystems.

[2] The corporate entities charged to uphold the Object of the Islands Trust are the Trust Council, the Executive Committee, twelve local trust committees, one island municipality and the Islands Trust Conservancy Board.

1.2 Purpose of Islands Trust Conservancy Management Plans

ITC management plans provide background information and set out the direction of property management as follows:

- Provide general and descriptive information on the property, including location, history, and land use;
- Set out the conservation goals and objectives for the property;
- Identify the ecological and/or cultural values and features of the property;
- Describe the management issues associated with the property;
- Provide short-, medium- and long-term management recommendations (action items or tasks) on issues such as species at risk protection, ecological restoration, public access, educational and research opportunities, invasive species management, and signage needs; and
- Preserve and protect cultural, spiritual, and sacred locations.

Once the management plan process is completed, the ITC works to carry out the management actions or strategies identified in the plan, as resources allow. Following general practice and as outlined in the conservation covenant and statutory right of way, the ITC revises the Management Plan every ten years.

1.3 The Scope of Islands Trust Conservancy Management Plans

Consistent with the Islands Trust Reconciliation Declaration (Islands Trust 2020b), ITC recognizes that nature reserves may be places of great cultural and spiritual significance to First Nations. Cooperative management of these protected places will provide opportunities to establish and maintain mutually respectful relationships between Islands Trust Conservancy and First Nations, as well as upholding the guiding principles of United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)[3] and the Truth and Reconciliation (TRC) Calls to Action. Relationship-building, knowledge-sharing, healing, and establishment of trust take time. Islands Trust Conservancy is committed to developing a parallel *Management Plan for Areas of Cultural Heritage and Sacred Significance*. This parallel Management Plan will set out guiding principles for cooperative collaboration between ITC and First Nations with traditional and treaty territories and cultural interests in the area defined by one or more nature reserves. Moreover, the Management Plan defines the common vision, objectives, policies, and best management practices for the nature reserve(s) to ensure that its natural values and cultural heritage and sacred significance are maintained for future generations.

1.4 Protected Area Purpose

The purpose of the establishment and management of the S'ul-hween X'pey (Elder Cedar) Nature Reserve (SXNR) is to:

[3] The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) is an international instrument adopted by the United Nations on September 13, 2007, to enshrine (according to Article 43) the rights that "constitute the minimum standards for the survival, dignity and well-being of the indigenous peoples of the world." The UNDRIP protects collective rights that may not be addressed in other human rights charters that emphasize individual rights, and it also safeguards the individual rights of Indigenous people. Canada signed in 2010.

- Preserve and protect, in perpetuity, the natural, historical and scenic values of SXNR;
- To allow natural succession of SXNR's ecosystems to occur unimpeded; and
- To protect the site in accordance with the objectives of the Islands Trust and Islands Trust Conservancy.

1.5 Protected Area Objectives

The Islands Trust Conservancy objectives for the management of SXNR are as follows:

- Support and protect continued use of areas of sacred and cultural significance by First Nations as per Section 35 of the Constitution Act[4] and the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP);
- Preserve the natural features and functioning of SXNR;
- To allow for continued, low impact recreational use and enjoyment of SXNR;
- To protect, and enhance where necessary, the natural succession processes of the plant and animal communities at the site;
- To ensure that permitted uses do not negatively impact the ecological attributes of SXNR; and
- To provide for educational and research opportunities, where deemed appropriate.

2. Property Information

The S'ul-hween X'pey (Elder Cedar) Nature Reserve is a 65.36 hectare (161.5 acres) property located in central Gabriola Island, just south of the northern shoreline. Its northwestern and northeastern corners are approximately 300 and 130 metres from the northern shoreline, respectively. The southern border of SXNR follows the northern boundary of North Road.

2.1.Location

SXNR is located on Gabriola Island, one of the Gulf Islands in the Strait of Georgia directly east of Nanaimo. A short ferry trip from Nanaimo provides access to Gabriola Island. SXNR is located a short drive east of the ferry terminal on North Road, along what local residents refer to as 'The Tunnel', a stretch of scenic tree-lined road favored by drivers and cyclists.

2.2.Legal description

SXNR includes those lands described as:

- Parcel Identification Number 026-664-453
- Block A, Section 16, Gabriola Island, Nanaimo District, Plan 57324

2.3.Legal Access

Legal access is from the southern part of SXNR that abuts North Road. Access to the northeastern corner of SXNR is also available from Windecker Road. This trail does not connect to the official loop, and only allows the public to view a small portion of SXNR before the trail crosses into federally managed land.

[4] Section 35 of the Constitution Act, 1982 recognizes and affirms the existing aboriginal and treaty rights of the aboriginal peoples of Canada and the courts have stated that aboriginal rights include aboriginal title.

2.4.Landscape Context

SXNR is located in the Gulf of Georgia region (now known as part of the Salish Sea). This area has been traditionally occupied by several local groups primarily described as the Central Coast Salish (Suttles 1990). The Central Coast Salish are comprised of five distinct language groups known as the Halkomelem, Squamish, Nooksack, Northern Straits, and Clallam (Suttles 1990). Halkomelem speakers traditionally lived in an area ranging from Harrison Lake and the Fraser Canyon to the mouth of the Fraser River on the mainland, across the Gulf Islands, and along southeastern Vancouver Island (Suttles 1990: 453). Three different dialects of the Halkomelem language have been distinguished, dividing the group further into the Island Hul'q'umi'num, and the Upriver Halkomelem, and the Downriver Halkomelem. The Island Hul'q'umi'num speakers commonly occupied winter villages on southeastern Vancouver Island (Suttles 1990). SXNR is within the Traditional Territory of Snuneymuxw First Nation, speakers of Island Hul'q'umi'num.

SXNR is located on the northern shores of Gabriola Island (see Figure 1). Adjacent properties to the west and north are Federal lands under a Treaty Settlement with the Snuneymuxw First Nations (see Figure 2). This land extends west to where 707 Community Park intersects with North Road.

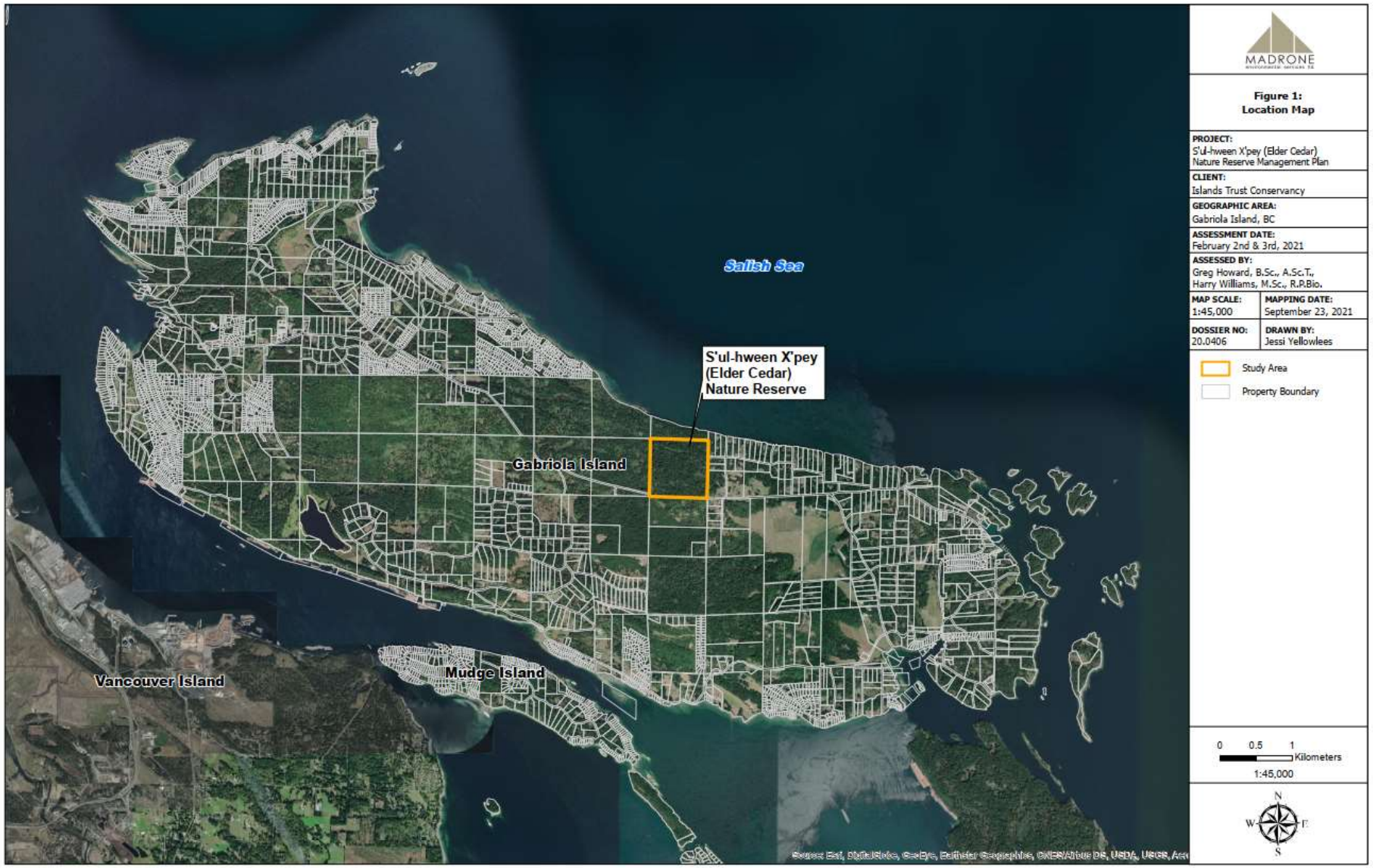
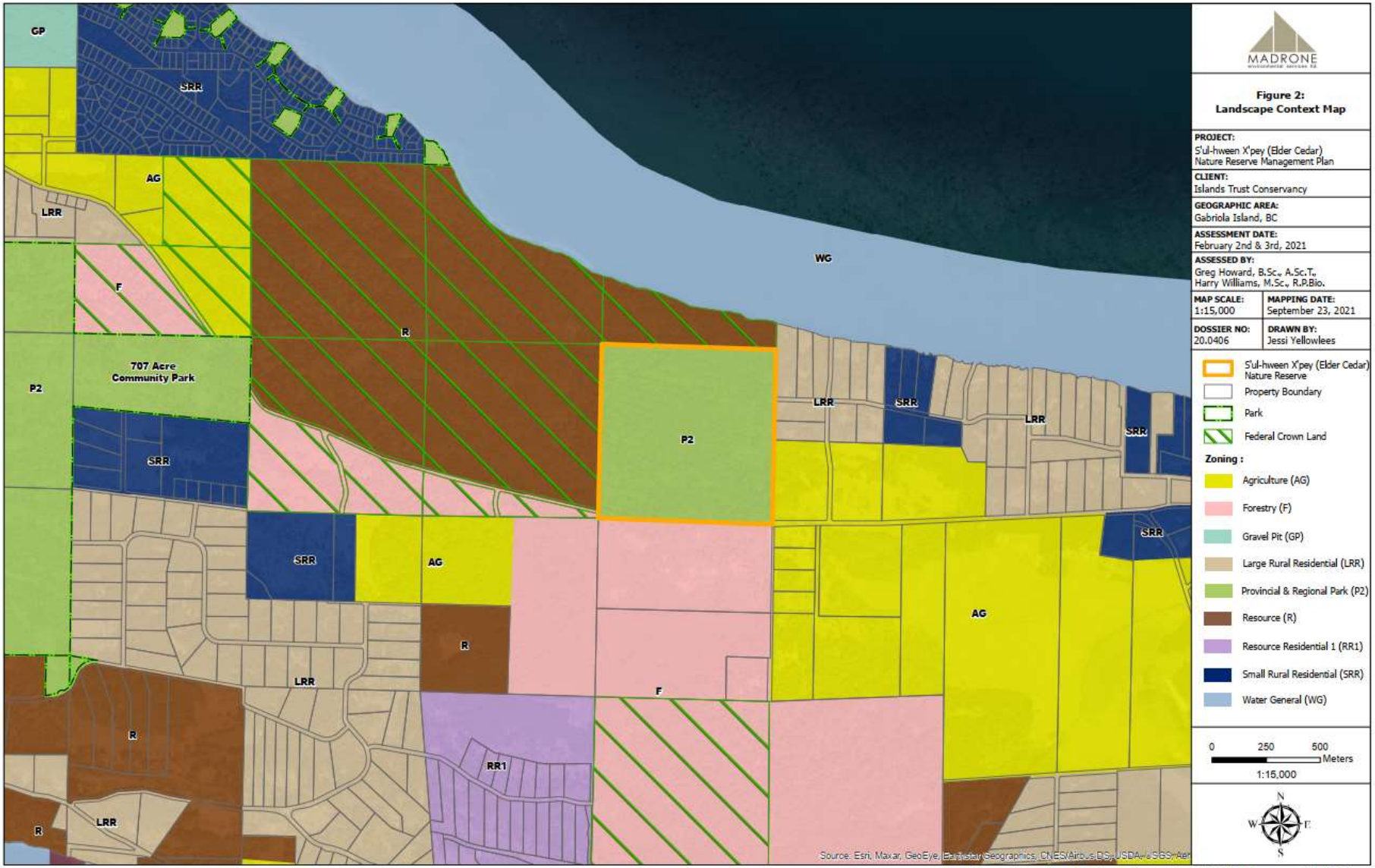


Figure 1. Location Map.



Zoning Information Obtained from: http://www.islandstrust.bc.ca/islands/local-trust-areas/gabriola/bylaws/

Figure 2. Landscape Context Map.

Lands to the south and southwest of SXNR are designated as forestry lands. Property along the east of SXNR includes multiple residential lots and agricultural land. Residential lots extend to the east along the island coastline, and agricultural lands extend to the east for approximately 1 km, and to the southeast for several kilometers.

2.5.Site History

Gabriola Island is within the treaty and territories of the Coast Salish People. The island has since time immemorial been the homeland and gathering place for First Peoples including the Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation and Ts'uubaa-asatx (Lake Cowichan) First Nation; this rich history and cultural heritage continues to this day.

The ethnographic information for this region states that there were five or six associated local groups living in the Nanaimo area (Barnett 1935-1936, 1955: 22-23): the *kwelsiwlh*, the *teytexen*, the *yeshexen*, the *enwines*, the *xwsol'exwel*, and the *tleltxw*. Although they are often referred to by their anglicized name, the "Nanaimo" First Nation, the groups are collectively known as the Snuneymuxw. These groups consisted of the household (established kin group) along with several dependent households or kin groups. The local group *tletxw* are identified as from a large and important village site called *Tle:ltxw* on Gabriola Island.

Tle:ltxw, located at False Narrow on Gabriola Island (approximately 2.7 km south of S'ul-hween X'pey), means "rich place" or "expensive dwellings" by the Snuneymuxw. *Tle:ltxw* was also known to be a burial place and regarded as a sacred site (Littlefield 2000: 2 – 4). In the spring, Snuneymuxw groups travelled to *Tle:ltxw* and other sites on Gabriola Island to collected camas, with each family having their own camas bed located along the bluffs of the island. Camas bulbs, usually slowly roasted in earthen pits filled with hot stones and dry foliage, were a staple food for people in the region, providing a substantial amount of carbohydrates and families usually owned and tended specific camas plots (Turner 1995). Early reports also noted that the False Narrows area was also rich in clam beds (Bouchard 1992: 11) and that the local groups visited Gabriola Island to obtain clams, a variety of fish species, eggs, vegetable foods, seal and sea lions. The importance of the False Narrows area as a clam digging location was also emphasized in recollections made by Snuneymuxw elders (Littlefield 2000: 3 – 4). The waters of False Narrows and Gabriola Passage were also known to be rich in salmon and cod and local groups often trolled in the vicinity of the shallow waters of False Narrows (Littlefield 2000: 5).

The forests of S'ul-hween X'pey (Elder Cedar) Nature Reserve were likely used by the Snuneymuxw to access the northern shoreline and for freshwater resources within SXNR. There is also potential for gathering of camas bulbs to occur in SXNR. The Snuneymuxw graciously excluded what is now known as S'ul-hween X'pey (Elder Cedar) from the Treaty Settlement on land to the north and west of SXNR to protect the ecological and historical values of the property. To recognize the rich First Nations history embedded within the site, the Islands Trust Conservancy with the assistance of Snuneymuxw linguist and elder Dr. Ellen White, named the Reserve "S'ul-hween X'pey" which directly translates to "elder cedar".

However, this name has a deeper meaning as it possesses connotations of unseen ancestors and guardians.

Logging events have occurred on Gabriola Island since the early twentieth century, which are evidenced in SXNR by remnant stumps dating back to that era. Fortunately, there are veteran Douglas-fir and western redcedar trees that survived these events and are still standing today. Heavy logging occurred on Gabriola island in the late 1980s, where the provincial forest lands tenure included what is now SXNR. Weldwood of Canada Ltd. acquired the harvesting rights for surrounding properties in the 1980s, but SXNR itself was not logged. In 1992, the Gabriola community recognized special natural features on the land and sought out, with the Gabriola Conservancy, to request that the Islands Trust Fund (now Islands Trust Conservancy) apply for the property to be transferred for conservation purposes due to its high ecological importance.

By 1993, BC Parks recognized the area as an 'important contribution needed in the ecological reserve system'. Triton Environmental Consultants conducted an ecological study of the property and additional woodlots in the area where provincially listed species and ecological communities were identified on the property. Ecological values were also confirmed by a provincial biologist in 1999 stating that the area contained 'very high biodiversity values.' Following these acknowledgements and observations, however, the area was never added to the BC Parks ecological reserve system.

In 2002, a resolution was passed by the Local Trust Committee for Gabriola Island supporting the property acquisition by the Islands Trust Conservancy. A revision in the Province's Free Crown Land Grant program in 2004 was the final mechanism to have the Islands Trust Conservancy's application to transfer the property for conservation purposes approved. Islands Trust Conservancy officially acquired the property in 2006. In 2012, a conservation covenant for SXNR was finalized between the Islands Trust Conservancy, the Gabriola Land and Trails Trust and the Nanaimo & Area Land Trust. The Gabriola Land and Trails Trust is the acting on-island management group on behalf of the Islands Trust Conservancy.

2.6. Anthropogenic Features

As due diligence, a query for known archaeological sites in or approximate to SXNR was conducted using the Provincial Database, Remote Access to Archaeological Data (RAAD). The closest known site is DhRw-14, an ancestral remains burial site located 760 m northwest. In addition to known archaeological sites RAAD also provides an archaeological predictive model for the region. SXNR does overlap with a small area of modeled archaeological potential on the northern boundary (Archaeology Branch 2021).

There are no buildings located on the property, as the land use designation and conservation covenant for SXNR prohibits the construction of buildings. The only constructed features observed on the property were the wooden boardwalks placed along the trail in seasonally moist areas, a directional sign at the north end of the trail loop, property boundary signs, a groundwater monitoring well, and the welcome sign at the trail loop entrance from North Rd. A summary of these features and land modifications are described below in Table 1 and are shown in Figure 3.

Table 1 Anthropogenic Features within S'ul-hween X'pey (Elder Cedar) Nature Reserve.

Anthropogenic Feature	Description	Condition	Photopoint Location
Boardwalks throughout the trail loop	Wooden boardwalk structures of varying length, approximately 36" wide.	Recent build (less than approximately 10 yrs old). In good condition.	P4, P6
Welcome sign	Large sign approximately 4' x 5' raised by two wooden posts.	Sign starting to fade and crack. Sign to be replaced with new design in the coming year.	None
Reserve Boundary Sign	Embedded metal pole signage at surveyed corners of the property boundary; approximately 1.5 m in height. Sign is metal and approximately 30 cm X 20 cm.	Good condition, no signs of vandalism or degradation.	P9, P31, P33
Stepping stones on Stoney Creek	Stepping stones have been placed in the Stoney Creek channel allowing people to cross.	Rocks are in good condition, but high winter water levels submerge the rocks and make the surface slippery.	P29
Groundwater Monitoring Well	Metal boxed structure mounted on a hollow metal pole feeding down into the groundwater aquifer	Good condition, no signs of vandalism or degradation.	P25
Trails	Walking trails for public use throughout property as mapped	60 cm average cleared width	P2, P7, P8, P9, P12, P13, P14, P30, P33

2.7. Undersurface Rights

The registered owner of charge for undersurface rights is the Crown in right of British Columbia.

Figure 3. Anthropogenic Features.

2.8. Notations, Charges, Liens and Interests

No legal notations, charges, liens and/or interests exist on the property at this time.

In 2012, a Section 219 Conservation Covenant and Section 218 Statutory Right of Way (CA2621977) for SXNR was finalized between the Islands Trust Conservancy (the Owner), the Gabriola Land and Trails Trust and the Nanaimo & Area Land Trust. Collectively the Parties entered the agreement whereas:

a) The Owner is the registered owner in fee simple of the Land;
b) The Land contains significant natural area values and amenities including flora, fauna and natural features of great importance to the Owner, the Covenant Holders and the public;
c) The Owner wishes and has agreed to grant the Convenant Holders a covenant pursuant to section 219 of the *Land Title Act*, to restrict the use of the Land, and a statutory right of way pursuant to section 218 of the *Land Title Act*;
d) A statutory right of way in favour of each Covenant Holder is necessary for the operation and maintenance of the undertakings of each Covenant Holder;
e) The Gabriola Land and Trails Trust has been designated by the minister under section 219(3)(c) of the *Land Title Act* and as a person authorized to accept statutory rights of way under section 218 of the *Land Title Act*; and
f) The Nanaimo & Area Land Trust has been designated by the minister under section 219(3)(c) of the *Land Title Act* and as a person authorized to accept statutory rights of way under section 218 of the *Land Title Act*

The intent of the agreement was stated as follows:

a) To protect, preserve, conserve, maintain, enhance and, if applicable from time to time, restore the natural state of the Land and the Amenities as described in the Report; and
b) To prevent any occupation or use of the Land that will impair or interfere with the natural state of the Land and the Amenities as described in the report.

This conservation covenant on SXNR is effective in perpetuity.

2.9. Local Planning Designations

The Gabriola Island Land Use Plan (Bylaw No. 177, 1999)[5] currently designates the property as 'Park 2' (Passive Recreation Community Park) and the parcel is designated as 'Park' in the Gabriola Island Official Community Plan (Bylaw No. 166, 1997)[6]. There is one Development Permit Area (DPA) on the property - DP-1, The Tunnel, located along the southern boundary of SXNR (See Figure 4). The purpose of this DPA is to maintain the natural values of the shrub and tree canopy along North Road by minimizing encroachment of subdivision roads, works/services, buildings, and structures.

[5] http://www.islandstrust.bc.ca/media/342215/blgb177-lub-consolidated-february-7-2017.pdf [Accessed July 4, 2020]
[6] http://www.islandstrust.bc.ca/media/350052/blgb166-ocp-consolidated-sept-2-2019.pdf [Accessed July 4, 2020]

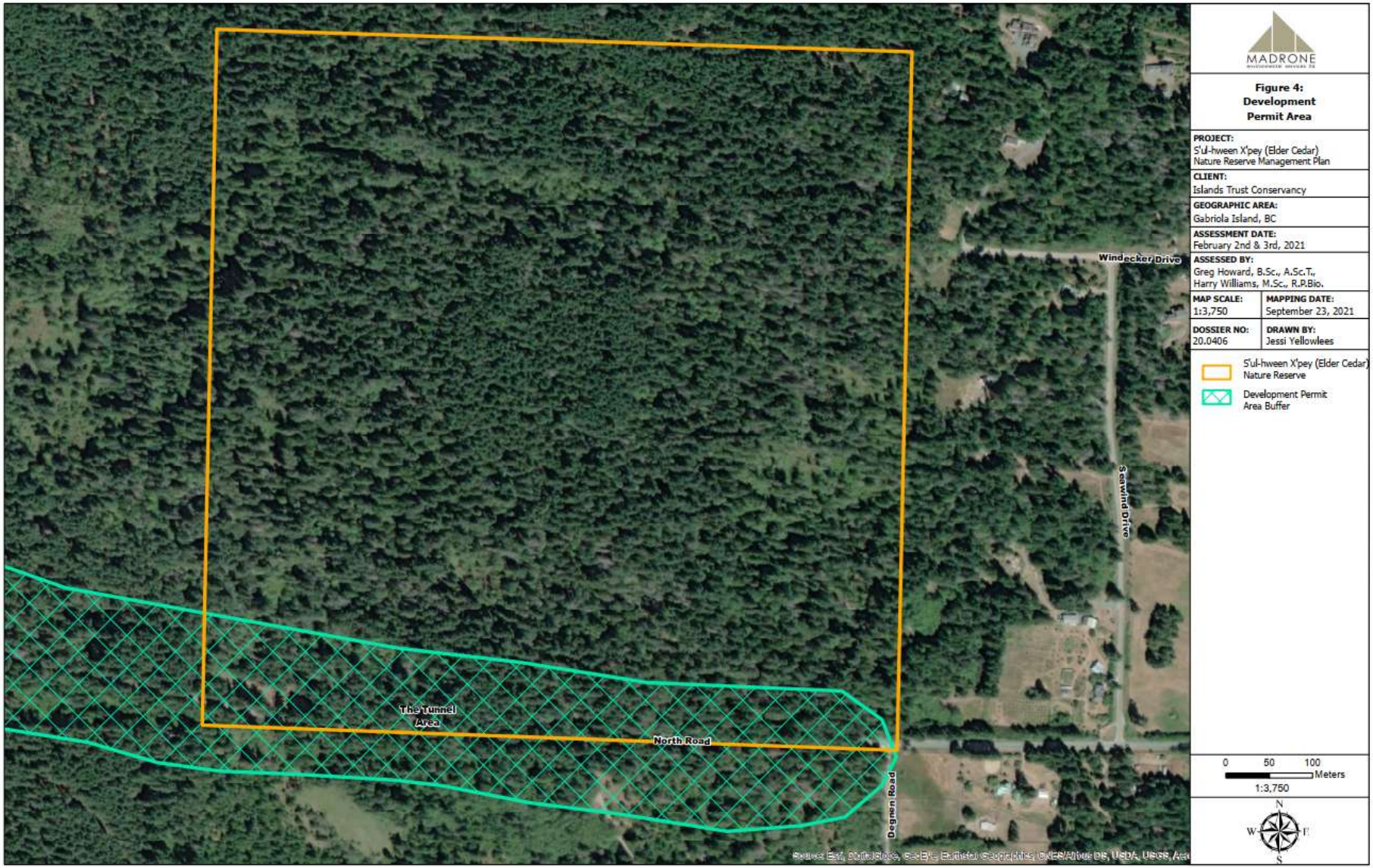


Figure 4. Development Permit Area.

DP-1 is consistent with the objectives specified in its Park 2 zoning where buildings are prohibited, and the only permissible development is for structures that would accommodate passive outdoor activities. There are wetlands and riparian areas mapped in SXNR, however, there are no Riparian DPAs designated within the property boundaries.

2.10. Existing Public and Other Use

Existing trail access public infrastructure feature locations are depicted in Figure 3 (Section 2.6). Currently there is one access point to the main trail loop, from a trail connected with North Road. An unpaved roadway leads from North Road, approximately 100 metres into SXNR where the main trail loop begins. Public access permits hiking, nature viewing, photography, and other low-impact activities that can be limited to designated trails. There is an access point located on the eastern boundary in the northern portion to the site, where there is a trail off Windecker Drive. This trail does not connect to the official loop, and only allows the public to view a small portion of SXNR before the trail crosses into federally managed land.

Multiple boardwalks have been constructed throughout the main trail loop, and the northern trail in SXNR to prevent soil degradation on seasonally flooded portions of the trail and to discourage trail braiding. These boardwalks, and the walking trails themselves have been maintained through efforts by the Islands Trust Conservancy and the Gabriola Land and Trails Trust. A groundwater monitoring well is also in SXNR, located in a disturbed area of land in the southwest corner.

3. Inventory by Ecological Community[7]

ITC acknowledges that there is a wealth of Traditional Ecological Knowledge and a long history of ecosystem stewardship among the First Nations whose territory encompasses SXNR. ITC will strive to work with First Nations knowledge holders to deepen its understanding, improve its stewardship practices, and, ultimately, support the transfer of Traditional Ecological Knowledge to younger generations within First Nations communities to ensure that it is not lost. At this time, the ecological information presented in this management plan was formed using systems that are based in foundations of Western science.

3.1. Ecological Significance

SXNR consists of a diverse forest taking on the characteristics of an old growth (>250 years old) forest in the Coastal Douglas-fir (CDF) Zone. Within the property boundaries, there are moisture-rich wetlands connected by a variety of streams/riparian areas with red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*); dry upland forests with arbutus (*Arbutus menziesii*); and temperate moist forests where several large veteran Douglas-fir (*Pseudotsuga menziesii*) and western redcedar (*Thuja plicata*) trees are observed throughout the property. Moist areas are covered by an array of mosses, herbs and shrubs that likely

[7] Ecological communities are used by the B.C. Conservation Data Centre and NatureServe to describe both forested and non-forested natural areas. More information about ecological communities, including descriptions of ecological communities in the Islands Trust Area, can be found on the B.C. Conservation Data Centre website.

provide food and shelter for invertebrates. Drier sites are located on the northern end, where the arbutus trees occur and vegetation growth is generally stunted due to the lack of soil nutrients. Several large Wildlife Trees are scattered throughout the property with cavities of adequate size for all cavity nesters with potential to occur in the area.

To check for documented occurrence of rare species and/or ecological communities, queries were made in the BC Conservation Data Centre (CDC), the Wildlife Tree Stewardship Atlas, the Sensitive Ecosystem Inventory, e-Bird, along with reviewing previously conducted field surveys (e.g., Triton Environmental). Table 2a and 2b show the documented occurrences of rare species and ecological community documented as occurring though this background review.

Table 2a. Documented Occurrences of Ecosystems at Risk within S'ul-hween X'pey (Elder Cedar) Nature Reserve.

Ecological Community Name		Status		
English	Scientific	Provincial	BC List	Global
Douglas-fir/dull Oregon-grape	*Pseudotsuga menziesii – Mahonia nervosa*	S1 (2018)	Red	G2

Table 2. Documented Occurrences of Species at Risk within S'ul-hween X'pey (Elder Cedar) Nature Reserve.

Species Name		**Status**				
English	**Scientific**	**Provincial**	**BC List**	**COSEWIC**	**SARA**	**Global**
Northern Red-legged Frog	*Rana aurora*	S3 (2016)	Blue	Special Concern	Special Concern	G4 (2015)
Band-tailed Pigeon	*Patagioenas fasciata*	S3S4 (2015)	Blue	Special Concern	Special Concern (2011)	G4 (2016)
Western Screech-Owl	*Megascops kennicottii*	S4 (2015)	Yellow	Threatened	Threatened	G4G5 (2016)
Western Screech-Owl, *kennicottii* subspecies	*Megascops kennicottii kennicottii*	S2S3 (2017)	Blue	Threatened	Threatened (2005)	G4G5T4 (2016)
Townsend's Big-eared Bat	*Corynorhinus townsendii*	S3S4 (2015)	Blue	N/A	N/A	G4 (2016)

3.2. Climate

Climatic normals were obtained from weather data collected at the Gabriola Island Weather Station by Environment Canada between the years 1981 and 2010. This weather station is at an elevation of 46.00 m above sea level (ASL), approximately 1.6 km east of SXNR. Mean annual precipitation (rainfall) at the weather station was 922.9 mm and mean annual snowfall was 34.7 cm (Government of Canada 2021). The monthly averages for daily average, minimum and maximum temperature and monthly averages for precipitation are shown in Figure 5, below.

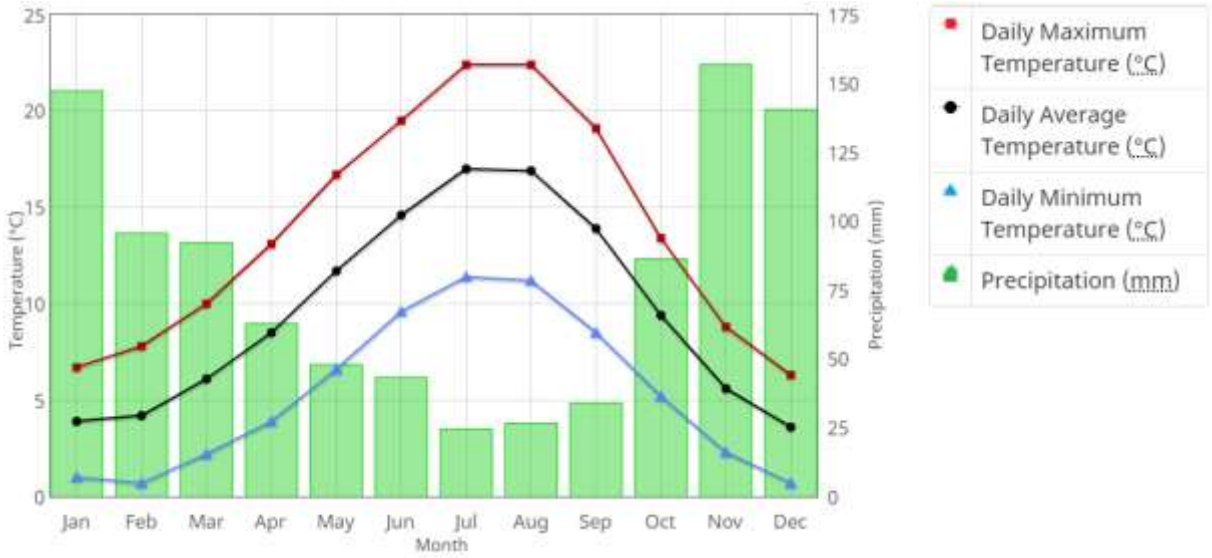


Figure 5. Maximum, average, and minimum monthly temperatures and average monthly rainfall from 1981-2010 at the Gabriola Island weather station monitored by Environment Canada.

A secondary source for historical climate modelling was consulted. A modelling program was developed by the University of British Columbia that incorporates historical climate data and uses it to model annual, seasonal and monthly variables at any given geographic point. This addresses differences in elevation and general location between the subject site and the weather station monitored by Environment Canada, which can sometimes be significant. This model provides a mean annual precipitation (rainfall) at SXNR of 1038 mm, and a mean annual snowfall of 46.0 cm (Wang et al. 2016).

3.3. Geology and Physiology

Bedrock mapping shows that SXNR, and the rest of Gabriola Island, is underlain by an Upper Cretaceous Nanaimo Group stratigraphic unit comprising of undivided sedimentary rocks[8]. The five uppermost formations that characterize Gabriola Island include the Gabriola, Spray, Geoffrey, Northcumberland and De Courcy formations.

Surficial geology reports have documented the north end of SXNR as underlain by the Geoffrey formation, comprised of arkosic arenite, sandstone and conglomerate. South of the Geoffrey formation is the Spray formation, comprised of mudstone, siltstone, sandstone and conglomerate. Mapped in the southeast region of SXNR is the Gabriola formation, comprised of arkosic arenite and conglomerate. The southern border of SXNR is characterized as a Quartenary formation, comprised of ice age sediments (glacial till, sand, gravel). (SRK Consulting 2013).

Only one geological fault line is present on the eastern end of Gabriola Island, approximately 2 km southeast of SXNR (BC Data Catalogue, 2011). This fault line does not present any concerns to SXNR due to the subdued topography and relative distance.

[8] https://maps.gov.bc.ca/ess/hm/imap4m/ [Accessed January 6, 2020]

3.4. Hydrology

SXNR is located on bedrock Aquifer 709[9], which is characterized with high vulnerability and low productivity. The geometric mean static water level is 5.6 m. The direction of groundwater flow has not been determined but is likely linear along fractures flowing towards the Strait of Georgia to the north.

Surface flows in the southern half of SXNR generally flow to the east, draining into Stoney Creek, which meanders eastward in the southern portion of the property. Wetland areas on the south side of Stoney Creek demonstrate seasonal connectivity. It is unclear whether the wetland north of Stoney Creek along the western Reserve boundary is seasonally connected, but it is likely that all seasonal precipitation in that area is absorbed into the groundwater. In the southeastern corner of SXNR, Stoney Creek flows turn northward, paralleling the eastern border where it eventually receives flow from a manmade ditch. This ditch begins at a roadside ditch on the north side of North Road and flows north paralleling SXNR's eastern boundary until discharging into Stoney Creek. Shortly after this confluence between Stoney Creek and the manmade ditch, Stoney Creek flows eastward off the property.

Surface flows in the northwest section of SXNR are captured by an ungazetted stream that crosses through the northwestern corner of the property and continues north into the ocean. The wetland area in the middle-northern section of SXNR likely drains into this watercourse, but surface flow connectivity was not confirmed. Surface flows in the northeast portion of SXNR flow east onto adjacent properties, and ultimately to the ocean.

3.5. Soils

This general description of the soils in SXNR is similar to what was described in the 2008 Management Plan (Taara 2008). As mentioned in that report, the soils of SXNR, and their respective moisture and nutrient regimes, support the various ecosystems that exist on the property. Soils on SXNR are loamy (sandy loam or loamy sand) with a fairly high sand content, as a result of developing in proximity to sandstone.

Sandstone bedrock occurs at the surface in the northern part of SXNR, especially in the middle and eastern parts. Pockets of shallow soil support trees such as arbutus, and areas with very shallow soil are covered by herbs and grasses.

Soils elsewhere on SXNR are generally deeper and are sandy and well-drained. In wetter areas more silts and clays are found in the soil profile resulting in richer soils – such as along Stoney Creek. Soils in the interior areas of SXNR are well-drained but have reasonable moisture retention due to deeper soil. The largest trees in SXNR grow on these soils. The soils in the centre of SXNR are quite rocky, resulting in drier soils, and slower tree growth.

The slough sedge wetlands in SXNR occur on slightly gravelly mineral soil, but also have clay at depth. These soils are inundated in the winter, and likely stay moist until the late summer.

[9] https://s3.ca-central-1.amazonaws.com/aquifer-docs/00700/AQ_00709_Aquifer_Mapping_Report.pdf [Accessed January 6, 2021]

3.6. Ecological Classifications

SXNR is within the Eastern Vancouver Island Ecoregion of the Georgia Depression Ecoprovince. This Ecoprovince is characterized by heavy fall and winter rains that reach extreme levels from October to February. These are from either warm subtropical systems from the southwest, or temperate systems from the northeast Pacific via the Strait of Juan de Fuca (Demarchi 2011).

The entire Reserve is within the Coastal Douglas Fir moist maritime (CDFmm) Biogeoclimatic Zone – which covers the Gulf Islands and occurs below 200 m in elevation on the east side of Vancouver Island and small pockets on the southern BC mainland coast. This zone is considered to have the mildest climate in Canada, with warm, dry summers and mild, wet winters (Green and Klinka 1994).

3.7. Ecological Communities and Site Series

Data was collected over two field days on February 2nd and 3rd, 2021. Weather conditions were mild, with partial cloud and minimal precipitation. Temperatures ranged from 2°C to 12°C throughout both field days. Forested ecosystems were mapped using the *Site Identification and Interpretation for the Vancouver Forest Region* (Green and Klinka 1994). Wetlands were classified based on the *Wetlands of BC: A Guide to Identification* (Mackenzie and Moran 2004).

The objectives of the ecosystem and vegetation sampling were to describe and collect data on the representative ecosystems and associated vegetation that occur on SXNR. Ecosystem sampling followed the protocols outlined in the provincial Land Management Handbook 25 – Field Manual for Describing Terrestrial Ecosystems (BC MoFR and BC MoE 2010). Data was recorded on the provincial Site Visit Form (FS1333). Sampling locations were chosen in representative areas (away from edges), and tree heights were estimated visually. Additional notes on management recommendations and to inform mapping were recorded on either paper or recorded with photos and GPS waypoints taken on an iPad.

All vegetation types specified in the previous management plan (Taara 2008) were sampled for in-field re-assessment. A total of 14 formal eco-plots (plots) were done using the methodology mentioned above. For each plot, the ecological classification of the forest was determined, and the observed plants were recorded. Most polygons have more than one ecological community present, so classification includes the dominant community, as well as the secondary ones, and other possible ecosystem types (not seen).

The map that was presented in the 2008 management report was refined to reflect the observations made in the field. The main edits were creating a new polygon along the length of Stoney Creek (polygon 20) and redrawing the lines of Polygon 10 so that the linework follows the wetland edges more accurately. Four new polygons were created for a total of 23 polygons, which are depicted in Figure 6.

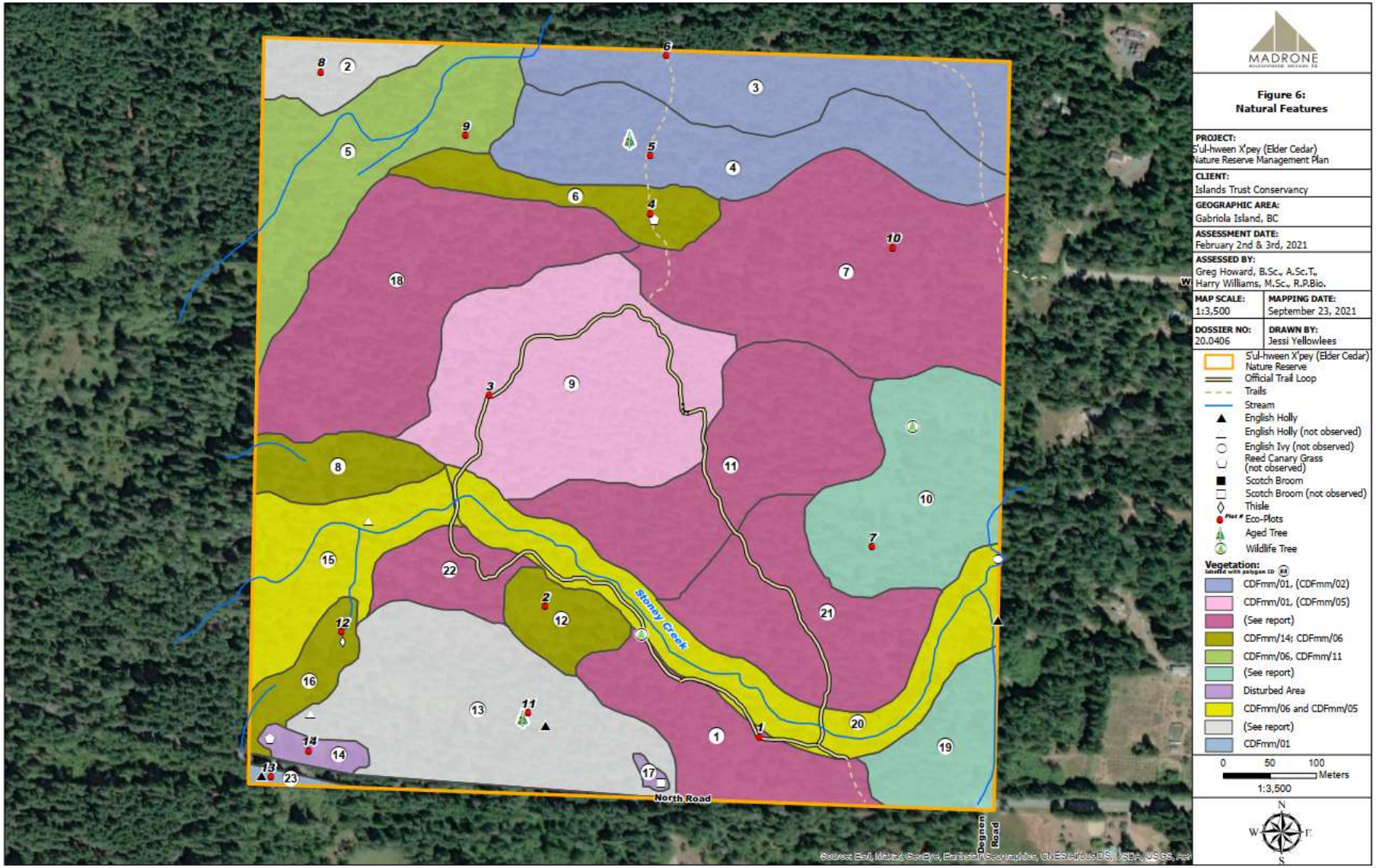


Figure 6. Natural Features.

Polygon 1

The dominant ecological community in this polygon is **Douglas-fir – Grand fir - Oregon Grape**, and includes trees of structural stages 6 (80-250 years) and 7 (>250 years). This is a **red-listed** plant community (site series CDFmm/04) (BCCDC 2021). Soils in this polygon are deeper than elsewhere in SXNR allowing for increased growth rates in all vegetation, as observed with large Douglas-fir and western redcedar trees.

Polygon ID	1
Madrone Eco-Plot #	1
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Douglas-fir – Grand fir - Oregon Grape
Ecosystem Classification	CDFmm/04
Structural Stage (SS)	7 – Old Forest, also many mature trees present (Structural stage 6)
Status (BC List)	Red-listed
Photopoint(s)	P2
Ecological Community Description	This polygon has an impressive forest dominated by mature trees and many large, old Douglas-fir vets – often over 40m in height. Other trees include western redcedar, grand fir, bigleaf maple, and several scattered western yew trees. The understorey is dominated by sword fern, dull Oregon-grape, Oregon beaked moss, and scattered herbs. Soils are a little deeper in this polygon (than elsewhere in SXNR) providing a good rooting medium for trees.
Disturbance Notes	Little disturbance was seen in this polygon, aside from the trail. There were signs of historical logging activity such as old stumps. Some windfall trees were seen.
Anticipated Change/Succession	With time the mature trees will become old trees. Old forest is by definition uneven aged, the result of gaps being created by windfall and younger trees growing up. The gaps also provide growing opportunities for herbs and mosses. Deer grazing may impact the growth of young cedar, Douglas-fir, deciduous species and herbs
Wildlife observations	Wildlife Trees observed with large cavities, likely made by a Pileated Woodpecker (*Dryocopus pileatus*); Deer browse; Bald Eagles (*Haliaeetus leucocephalus*) and Common Ravens (*Corvus corax*) flying overhead.

Polygon 1: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	30	20					MC: uneven aged with vets; 120-250yr, HT: 30-40m, DBH 60-105cm. SC: 40-120, HT 20-30, DBH: 30-60cm
big leaf maple	*Acer macrophyllum*		15					20-60yrs, HT10-25, DBH 15-45
red alder	*Alnus rubra*		5					20-55yrs, HT10-18, DBH 15-40
western redcedar	*Thuja plicata*	25	15	10				MC: uneven aged; 120-200yr, HT: 30-40m, DBH 60-110cm. SC: 60-120, HT 18-30, DBH: 30-60cm
grand fir	*Abies grandis*	5	10					MC: 80-120yrs, HT: 30-40m, DBH 60-95cm. SC: 60-120yrs, HT 18-30, DBH: 30-60cm
western yew	*Taxus brevifolia*			3				8 m tall, 70yrs, DBH 25 cm
red huckleberry	*Vaccinium parvifolium*			3				Growing on wood
salal	*Gaultheria shallon*			5				Growing on wood
dull Oregon grape	*Mahonia nervosa*			6				aka *Berberis nervosa*
bracken fern	*Pteridium aquilinum*				1			
wall lettuce	*Lactuca muralis*				1			
sword fern	*Polystichum munitum*				40			
thistle sp.	*Cirsium spp.*						1	
Grass species	*Poa spp.*				2			
orchard grass	*Dactylis glomerata*				1			
Groundsel sp.	*Senecio spp.*						1	
foamflower	*Tiarella trifolia*				2			
sweet-scented bedstraw	*Galium triflorum*							

coastal leafy moss	*Plagiomnium insigne*					5		
Oregon beaked moss	*Kindbergia oregana*					25		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					5		Growing on wood
Tree moss	*Climacium dendroides*					2		
rough moss	*Claopodium crispum*					2		
Totals		60	65	27	47	39	2	

Polygon 2

The dominant ecological community in this polygon is **Douglas-fir – Salal** and includes trees in structural stage 5 (40-80 years). Judging by the approximate age of the trees in this polygon, logging activities occurred sometime at least 40 years ago. Salal is dense in this area and is at a height of at least 1 m. Well-used trails run through this polygon.

Polygon ID	2
Madrone Eco-Plot #	8
Vegetation Type (as designated by the 2008 management plan)	1a
Dominant Ecological Community	Douglas-fir – Salal
Ecosystem Classification	CDFmm/01
Structural Stage (SS)	5 – young even-aged forest, no vets seen
Status (BC List)	N/A
Photopoint(s)	P13
Ecological Community Description	This polygon has well-drained soils on gentle slopes. The forest is an even-aged stand dominated by young Douglas-fir. Douglas-fir – Salal plant is the dominant plant community. Other species seen were young western redcedar and grand fir, and scattered arbutus. Salal cover is high, and moss cover is also high.
Disturbance Notes	Judging by the age of the trees, this polygon was likely logged about 40 years ago. A well-used trail runs through the polygon and deer browse is common in places.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this will continue to the dominant tree in this polygon, with a minor component of western redcedar and grand fir.
Wildlife observations	Deer browse; and Common Ravens (*Corvus corax*) flying overhead.

Polygon 2: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	45	15					MC: even aged; 35-50yrs, HT: 18-25m, DBH 12-20cm. SC: 20-35yrs, HT 8-18m, DBH: 8-18 cm
western redcedar	*Thuja plicata*		5	3				SC: 20-30yrs; HT: 8-15m, DBH 10-16cm.
red alder	*Alnus rubra*		5	3				SC: 20-35yrs; HT: 8-15m, DBH: 12-20cm.
grand fir	*Abies grandis*		5	3				SC: 15-30yrs; HT: 6-8m, DBH: 10-15cm.
western hemlock	*Tsuga heterophylla*		5	4				SC: 15-30yrs; HT: 5-8m, DBH: 10-15cm.
red huckleberry	*Vaccinium parvifolium*			2				Growing on old logs and stumps
evergreen blueberry	*Vaccinium ovatum*			2				
salal	*Gaultheria shallon*			52				Widespread on site
dull Oregon grape	*Mahonia nervosa*			5				aka *Berberis nervosa*
hairy honeysuckle	*Lonicera hispidula*			2				
ocean spray	*Holodiscus discolor*			4				
twinflower	*Linnaea borealis*				4			
sword fern	*Polystichum munitum*				4			
western fescue	*Festuca occidentalis*				1			In tiny openings
yerba buena	*Satureja douglasii*				1			In tiny openings
rattlesnake-plantain	*Goodyera oblongifolia*				2			In mossy areas
Oregon beaked moss	*Kindbergia oregana*					30		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					25		Growing on wood
broom moss	*Dicranum scoparium*					4		

electrified cat's tail moss	*Rhytidiadelphus triquetrus*					3		
TOTALS		45	35	80	12	62	0	

Polygon 3

The dominant ecological community in this polygon is **Douglas-fir – Salal**, with a secondary unit of **Douglas-fir- Lodgepole pine – Arbutus**. This forest includes even-aged trees in structural stage 5. Well-drained, shallow soils encapsulate this area, and in canopy gaps, arbutus trees are observed. Other areas with canopy gaps consist of grasses, mosses and herbs.

Polygon ID	3
Madrone Eco-Plot #	6
Vegetation Type (as designated by the 2008 management plan)	1a
Dominant Ecological Community	Douglas-fir – Salal; secondary unit Cedar – Douglas-fir- Lodgepole pine – Arbutus
Ecosystem Classification	CDFmm/01, (CDFmm/02)
Structural Stage (SS)	5 – young even-aged forest, no vets seen
Status (BC List)	N/A
Photopoint(s)	P9
Ecological Community Description	This polygon has well-drained shallow soils. The forest is even-aged and dominated by young Douglas-fir. Douglas-fir - Salal plant is the dominant plant community, however Douglas-fir – Lodgepole pine – Arbutus is also present on thin soils over bedrock and in gaps.
Disturbance Notes	This polygon has signs of logging activity dating from the 1980's or 1990's – judging by the age of the trees now growing. Deer browse is high in places. A trail runs through the polygon, and the polygon borders the property to the north which is used by the public.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this will continue to the dominant tree in this polygon, with a minor component of arbutus, cedar and grand fir.
Wildlife observations	Deer browse; and Common Ravens (*Corvus corax*) flying overhead.

Polygon 3: Vegetation data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	65	16					MC: even aged; 35-50yrs, HT: 12-20m, DBH 12-20cm. SC: 20-35yrs, HT 8-12m, DBH: 8-15 cm
western redcedar	*Thuja plicata*		5	3				SC: 20-35yrs; 8-12m, DBH 10-20cm.
arbutus	*Arbutus menziesii*		4					SC: 20-35yrs; 8-15m, DBH 12-20cm.
grand fir	*Abies grandis*		5	2				SC: 20-30yrs; 6-12m, DBH 10-20cm.
red huckleberry	*Vaccinium parvifolium*			4				Growing on wood
evergreen blueberry	*Vaccinium ovatum*			2				
salal	*Gaultheria shallon*			30				
dull Oregon grape	*Mahonia nervosa*			8				aka *Berberis nervosa*
hairy honeysuckle	*Lonicera hispidula*			3				
ocean spray	*Holodiscus discolor*			2				
falsebox	*Pachistima myrsinites*			1				
Pacific sanicle	*Sanicula crassicaulis*				2			
bracken fern	*Pteridium aquilinum*				2			
twinflower	*Linnaea borealis*				3			
sword fern	*Polystichum munitum*				3			

licorice fern	*Polypodium glycyrrhiza*				1			
western fescue	*Festuca occidentalis*				2			
rattlesnake-plantain	*Goodyera oblongifolia*				1			
prince's pine	*Chimaphila umbellata*				2			
Oregon beaked moss	*Kindbergia oregana*					30		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					28		Growing on wood
broom moss	*Dicranum scoparium*					5		
electrified cat's tail moss	*Rhytidiadelphus triquetrus*					6		
juniper haircap moss	*Polytrichum juniperinum*					1		
Totals		65	30	55	13	70		

Polygon 4:

The dominant ecological community in this polygon is **Douglas-fir – Salal**, with a secondary unit of **Douglas-fir- Lodgepole pine – Arbutus**. This forest includes trees of varying age, with the majority classified as structural stage 6 (80-250 years), with scattered old (>250 years) Douglas-fir trees. One Douglas-fir tree was cored in this polygon and aged to approximately 250 years old. Well-drained, shallow soils encapsulate this area, and in canopy gaps, arbutus trees are observed. Other areas with canopy gaps consist of grasses, mosses and herbs.

Polygon ID	4
Madrone Eco-Plot #	5
Vegetation Type (as designated by the 2008 management plan)	1b
Dominant Ecological Community	Douglas-fir – Salal, secondary unit Douglas-fir- Lodgepole pine – Arbutus
Ecosystem Classification	CDFmm/01, (CDFmm/02)
Structural Stage (SS)	6 – mature forest, with scattered old Douglas-fir vets
Status (BC List)	N/A
Photopoint(s)	P7
Ecological Community Description	This polygon has well-drained soils, but shallow over bedrock in places. The stand is an uneven-aged forest with a mix of young, mature, and old trees. Douglas-fir - is the dominant plant community, however Douglas-fir – Lodgepole pine – Arbutus is present on dry sites and near bedrock (however, no lodgepole pine was seen).
Disturbance Notes	This polygon has signs of logging activity dating from the 1960's or 1970's – remaining stumps are still visible. Deer browse is high in places. A trail runs through the polygon.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this will continue to the dominant tree in this polygon, with a minor component of arbutus, cedar and grand fir. Gaps occur on shallow soil over bedrock – these have a higher cover of grasses and herbs.
Wildlife observations	Common Ravens (*Corvus corax*) flying overhead.

Polygon 4: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	10	40	5				MC: un-even aged; 80-160yrs, HT: 15-25m, DBH 40-65cm. SC: 8-15yrs, HT 8-12m, DBH: 20-40 cm
western redcedar	*Thuja plicata*		10					SC: 35-55yrs; 12-20m, DBH 20-55cm.
arbutus	*Arbutus menziesii*		5					SC: 25-45yrs; 8-15m, DBH 15-25cm.
grand fir	*Abies grandis*		5					SC: 25-35 yrs; 8-12m, DBH 15-25cm.
red huckleberry	*Vaccinium parvifolium*			4				Growing on wood
salal	*Gaultheria shallon*			15				
dull Oregon grape	*Mahonia nervosa*			10				aka *Berberis nervosa*
hairy honeysuckle	*Lonicera hispidula*			5				
Pacific sanicle	*Sanicula crassicaulis*				2			
bracken fern	*Pteridium aquilinum*				2			
twinflower	*Linnaea borealis*				4			
sword fern	*Polystichum munitum*				5			
licorice fern	*Polypodium glycyrrhiza*				2			
western fescue	*Festuca occidentalis*				1			
Oregon beaked moss	*Kindbergia oregana*					15		aka *Eurhynchium oreganum*

stepmoss	*Hylocomnium splendens*					5		Growing on wood
Tree moss	*Climacium dendroides*					2		
rough moss	*Claopodium crispum*					1		
Totals	Totals	10	60	34	16	23	0	

Polygon 5

The dominant ecological community in this polygon is **Western redcedar – Grand fir – Foamflower** and includes trees of structural stages 6. This is an area of increased soil moisture, as it collects surface and subsurface flows from adjacent areas ultimately discharging into the stream flowing through it. Western redcedar - Grand fir – Foamflower is the dominant plant community, with small swampy areas close to the creek (western redcedar - skunk cabbage plant community).

Polygon ID	5
Madrone Eco-Plot #	9
Vegetation Type (as designated by the 2008 management plan)	5
Dominant Ecological Community	Western redcedar - Grand Fir – Foamflower, with western redcedar – skunk cabbage in smaller areas.
Ecosystem Classification	CDFmm/06, CDFmm/11
Structural Stage (SS)	6 – Mature uneven-aged forest, scattered vets seen
Status (BC List)	N/A
Photopoint(s)	P16
Ecological Community Description	This polygon has a stream running through it, with areas of moist forest adjacent to it. The forest is uneven-aged and dominated by large Douglas-fir, cedar, and grand fir. Western redcedar - Grand fir – Foamflower is the dominant plant community, with small swampy areas close to the creek (western redcedar - Skunk Cabbage plant community). Other species seen were big leaf maple, western hemlock, and red alder. The soils in this polygon are rich.
Disturbance Notes	Parts of the polygon have been logged – an old skid road was seen. However, some large trees are present, suggesting that the area was logged selectively.
Anticipated Change/Succession	With a forest dominated by Douglas-fir and Cedar, it is expected that these will continue to be the dominant trees in this polygon, with a minor deciduous component of maple and alder.
Wildlife observations	Deer browse; and Common Ravens (*Corvus corax*) flying overhead.

Polygon 5 Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	15	10					MC: un-even aged w. vets; 80-160yrs, HT: 25-35m, DBH 65-95 cm. SC: 30-80 yrs, HT 15-35m, DBH: 30-60 cm
red alder	*Alnus rubra*		8	5				SC: 30-45yrs; 12-16m, DBH 15-35cm.
western redcedar	*Thuja plicata*	15	15	4				MC: 80-120yrs, HT: 25-35M, DBH: 70-105cm. SC: 40-80yrs; 15-25m, DBH 30-70cm.
grand fir	*Abies grandis*	5		2				SC: 40-75 yrs; 20-30m, DBH 50-80 cm.
western hemlock	*Tsuga heterophylla*		2	2				SC: 40-70 yrs; 15-25m, DBH 40-60 cm.
red huckleberry	*Vaccinium parvifolium*			2				Growing on wood
salmon berry	*Rubus spectabilis*			2				
salal	*Gaultheria shallon*			35				
dull Oregon grape	*Mahonia nervosa*			4				aka *Berberis nervosa*
bracken fern	*Pteridium aquilinum*				2			
deer fern	*Blechnum spicant*				2			
sword fern	*Polystichum munitum*				12			
slough sedge	*Carex obnupta*				5			
common rush	*Juncus effusus*				2			
grass species	*Poa spp.*				2			
nodding wood reed	*Cinna latifolia*				2			
foamflower	*Tiarella trifolia*				2			
sweet-scented bedstraw	*Galium triflorum*				1			
coastal leafy moss	*Plagiomnium insigne*					4		

Oregon beaked moss	*Kindbergia oregana*					15		aka *Eurhynchium oreganum*
tree moss	*Climacium dendroides*					3		
Step moss	*Hylocomnium splendens*					10		
Totals		35	35	56	30	32		

Polygons 6, 8, 12, & 16

These polygons are all **Western redcedar – Slough Sedge** wetlands, and surrounding forests are classified as the Western redcedar – Grand fir - Foamflower community. Red alder and bigleaf maple are observed along the fringes of these wetlands. With fairly rich soils, these polygons could eventually have impressive forests of redcedar with a minor component of maple and alder.

Polygon ID	6, 8, 12, 16 (These polygons have similar ecological attributes)
Madrone Plot #	2, 4, 12
Vegetation Type (as designated by the 2008 management plan)	4
Dominant Ecological Community	western redcedar – Slough Sedge wetland; the adjoining community is Western redcedar – Grand fir - Foamflower
Ecosystem Classification	CDFmm/14; CDFmm/06
Structural Stage (SS)	2b – graminoid herb (wetland); 5- 6 young to mature (forested portions)
Status (BC List)	N/A
Photopoint(s)	P3, P6, P19, P23
Ecological Community Description	These 4 polygons contain Western redcedar – Slough Sedge wetlands as well as areas of moist open forest. The wetlands have fringes of small alder and maple trees, with the main portion of the wetlands dominated by slough sedge (*Carex obnupta*)
Disturbance Notes	These polygons have historical logging activity – some of the remaining stumps are still visible. Deer browse is common, and some windfall trees were seen.
Anticipated Change/Succession	Over time these wetlands should remain relatively unchanged, but the trees elsewhere in the polygon will develop into mature and old trees. With fairly rich soils these polygons could eventually have impressive forests of cedar with a minor component of maple and alder. Some of the forest gaps have young trees as well as herbs. Deer grazing may impact the growth of young cedar, Douglas-fir, and deciduous species.
Wildlife observations	Deer browse; Bald Eagles (*Haliaeetus leucocephalus*) and Common Ravens (*Corvus corax*) flying overhead.

Polygons 6, 8, 12, & 16: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
big leaf maple	*Acer macrophyllum*		5					Along perimeter of wetland; HT: 10-15, DBH:15-25
red alder	*Alnus rubra*		5					Along perimeter of wetland; HT: 8-15, DBH:15-20, alder snags present
western redcedar	*Thuja plicata*		4					Along perimeter of wetland: HT: 12-14, DBH 10-20
grand fir	*Abies grandis*			3				Along perimeter on raised areas
Pacific crab-apple	*Malus fusca*			3				Along perimeter in moist areas
Red huckleberry	*Vaccinium parvifolium*							Growing on wood
salal	*Gaultheria shallon*							On stumps
hardhack (Douglas spirea)	*Spiraea douglasii*			5				
salmonberry	*Rubus spectablilis*			5				
bracken fern	*Pteridium aquilinum*				2			
lady fern	*Athyrium felix-femina*				2			
slough sedge	*Carex obnupta*				60			
sword fern	*Polystichum munitum*				10			
thistle sp.	*Cirsium spp.*						2	
Grass species	*Poa spp.*				4			
orchard grass	*Dactylis glomerata*						1	
Common horsetail	*Equisetum vulgare*				5			
groundsel sp.	*Senecio spp.*						1	
coastal leafy moss	*Plagiomnium insigne*					15		
Tree moss	*Climacium dendroides*					5		
TOTALS			14	16	83	20	4	

Polygon 7

Similar to Polygon 1, Polygon 7 has a dominant ecological community of **Douglas-fir – Grand fir - Oregon Grape**, and includes trees of structural stages 7 (>250 years), with a minor assemblage of mature trees (structural stage 6). This is a **red-listed** plant community (site series CDFmm/04). Soils in this polygon provide a good rooting medium for trees, with loamy rich textures. Wet pockets exist in this polygon, where there are minor components of Western redcedar – Grand fir – Foamflower communities.

Polygon ID	7
Madrone Plot #	10
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Douglas-fir – Grand fir – Oregon grape
Ecosystem Classification	CDFmm/04, CDFmm/06
Structural Stage (SS)	7 – Old forest, with Mature trees present (uneven-aged forest)
Status (BC List)	Red-listed
Photopoint(s)	P17
Ecological Community Description	This polygon is similar to polygon 1 – a forest dominated by large old and mature Douglas-fir and cedar. Soils are loamy, rich, and well-drained, providing a good rooting medium for these trees. The forest is uneven-aged forest with the dominant plant community being Douglas-fir - Grand Fir – Oregon grape. There is a minor component of Western redcedar – Grand fir – Foamflower in wet areas. Other tree species present are big leaf maple, western hemlock, and red alder.
Disturbance Notes	Parts of the polygon have been logged – but many years ago. The trail from Windecker Road goes through part of the polygon. Deer browse is high in areas, which will impact herbs, wildflowers, and young trees.
Anticipated Change/Succession	With a forest dominated by Douglas-fir and Cedar, it is expected that these will continue to be the dominant trees in this polygon, with a minor component of grand fir, maple, and alder.
Wildlife observations	Deer browse; Bald Eagles (*Haliaeetus leucocephalus*) and Common Ravens (*Corvus corax*) flying overhead.

Polygon 7: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	15	10					MC: un-even aged w. vets; 120-250yrs, HT: 30-40m, DBH 75-95 cm. SC: 70-120 yrs, HT 20-30m, DBH: 45-75 cm
red alder	*Alnus rubra*		3					SC: 30-45yrs; 12-16m, DBH 15-35cm.
western redcedar	*Thuja plicata*	10	25					MC: 80-140yrs, HT: 25-35M, DBH: 70-105cm. SC: 40-80yrs; 15-25m, DBH 30-70cm.
grand fir	*Abies grandis*		5					SC: 40-75 yrs; 20-25m, DBH 55-80 cm.
western hemlock	*Tsuga heterophylla*		5	4				SC: 40-70 yrs; 15-25m, DBH 40-60 cm.
red huckleberry	*Vaccinium parvifolium*			2				Growing on rotting wood
salal	*Gaultheria shallon*			10				
dull Oregon grape	*Mahonia nervosa*			16				aka *Berberis nervosa*
sword fern	*Polystichum munitum*				30			
foamflower	*Tiarella trifolia*				2			
Columbia brome	*Bromus vulgaris*				1			
sweet-scented bedstraw	*Galium triflorum*				2			
coastal leafy moss	*Plagiomnium insigne*					5		
Oregon beaked moss	*Kindbergia oregana*					35		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					10		Growing on wood
wavy-leaved cotton moss	*Plagiothecium undulatum*					1		
rough moss	*Claopodium crispum*					5		
TOTALS		35	48	32	35	56		

Polygon 9

The dominant ecological community in this polygon is **Douglas-fir – Salal**, with a secondary unit of **Douglas-fir- Oregon Beaked Moss**. This area encompasses a young forest of structural stage 5, with sporadic mature trees. The majority of the polygon has well-drained, medium rich soils supporting the dominant community, and wetter soils encapsulate the secondary unit.

Polygon ID	9
Madrone Plot #	3
Vegetation Type (as designated by the 2008 management plan)	2
Dominant Ecological Community	Douglas-fir – Salal, Secondary unit Western redcedar – Douglas-fir- Oregon Beaked moss.
Ecosystem Classification	CDFmm/01, (CDFmm/05)
Structural Stage (SS)	5 – young forest (with a few scattered mature trees)
Status (BC List)	N/A
Photopoint(s)	P5
Ecological Community Description	This polygon has well-drained, and medium rich soils, which support an even-aged forest with a young Douglas-fir - Salal plant community. In wetter portions along the west side of the polygon there are some occurrences of the Western redcedar – Douglas-fir – *Kindbergia* plant community
Disturbance Notes	This polygon has signs of more recent logging activity (1960's or 1970's) – remaining stumps are still visible.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this will continue to the dominant tree in this polygon. There are few gaps in this even-aged forest.
Wildlife observations	Deer browse observed

Polygon 9: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	20	15					MC: uneven aged; 80-160yr, HT: 25-35m, DBH 55-75cm. SC: 40-80, HT 20-25, DBH: 30-55cm
red alder	*Alnus rubra*		5					SC: 25-45, HT 14-20, DBH: 15-30cm
western redcedar	*Thuja plicata*	15	20					MC: uneven aged; 80-120yr, HT: 25-35m, DBH 50-70cm. SC: 40-80, HT 12-25, DBH: 30-50cm
western hemlock	*Tsuga heterophylla*		15	6				SC: 25-45, HT 14-20, DBH: 15-30cm
red huckleberry	*Vaccinium parvifolium*			10				Growing on wood
evergreen huckleberry	*Vaccinium ovatum*			4				
salal	*Gaultheria shallon*			35				
sword fern	*Polystichum munitum*				15			
deer fern	*Blechnum spicant*				3			
foamflower	*Tiarella trifolia*				2			
large leafy moss	*Rhizomnium glabrescens*					5		
Oregon beaked moss	*Kindbergia oregana*					18		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					25		Growing on wood
rough moss	*Claopodium crispum*					4		
wavy-leaved cotton moss	*Plagiothecium undulatum*					2		aka flat moss; on wood
TOTALS		35	55	55	20	54		

Polygon 10

The dominant ecological community in this polygon captures 3 ecological communities of high-moisture regimes: **Western Redcedar – Grand fir – Foamflower, Western redcedar – Slough Sedge,** and **Western redcedar – Skunk Cabbage** This polygon was originally delineated in the previous management plan based on a variety of ecotypes including "young to mature forests, seepage areas, and well-defined wetlands". In this report, our map edits refined the linework so that some of the forested areas were merged with adjacent polygons – leaving the wetter portions to form a greater portion of the polygon.

Polygon ID	10
Madrone Plot #	7
Vegetation Type (as designated by the 2008 management plan)	6
Ecological Communities	Western redcedar – Grand fir – Foamflower; Western redcedar – Slough Sedge; Western redcedar – Skunk Cabbage
Ecosystem Classification	CDFmm/06 (CDFmm/14, CDFmm11)
Structural Stage (SS)	6 – mature trees present, 2b - graminoid
Status (BC List)	N/A
Photopoint(s)	P15
Ecological Community Description	This polygon was originally delineated based on a variety of ecotypes including "young to mature forests, seepage areas, and well-defined wetlands". In this report, our map edits refined the linework so that some of the forested areas were merged with adjacent polygons – leaving the wetter portions to former a greater portion of the polygon. The soils in the polygon are rich, and the plant communities seen were as mentioned above.
Disturbance Notes	In spite of field work being done in the wet season, there was no water in this area that appeared to be a wetland. It is possible that the drainage ditch connecting to Stoney Creek near this polygon has altered the hydrology of the area. There is also considerable windthrow in this polygon. Beavers may also be present although no signs were seen.
Anticipated Change/Succession	It is recommended to assess the hydrology of the area to see if the drainage ditch has contributed to the lack of water in this wetland. If so, restoring the original hydrology could be considered.
Wildlife observations	Wildlife Trees observed with large cavities, likely made by a Pileated Woodpecker (*Dryocopus pileatus*); Deer browse; Bald Eagles (*Haliaeetus leucocephalus*) and Common Ravens (*Corvus corax*) flying overhead.

Polygon 10: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
red alder	*Alnus rubra*		5					SC: 25-45, HT 14-20, DBH: 15-30cm
western redcedar	*Thuja plicata*	8	5					MC: uneven aged; 80-120yr, HT: 25-35m, DBH 50-70cm. SC: 40-80, HT 12-25, DBH: 30-50cm
salal	*Gaultheria shallon*			6				On dead wood
red elderberry	*Sambucus racemosa*			3				
Sitka willow	*Salix sitchensis*			3				
Himalayan blackberry	*Rubus armeniacus*						2	Aka *R.discolor*
sword fern	*Polystichum munitum*				8			On raised microsites
deer fern	*Blechnum spicant*				3			
foamflower	*Tiarella trifolia*				5			
common horsetail	*Equisetum arvense*				10			Growing on wood
reed canary grass	*Phalaris arundinacea*						2	
skunk cabbage	*Lysichiton americanum*				8			
common rush	*Juncus effusus*				2			
slough sedge	*Carex obnupta*							
coastal leafy moss	*Plagiomnium insigne*					5		
TOTALS		8	10	12	36	5	4	

Polygon 11

A formal vegetation plot was not conducted in this polygon, rather it was assessed and confirmed to be similar to polygons 1, 7, and 21. The dominant ecological community in this polygon is **Douglas-fir – Grand fir – Oregon grape**. This area encompasses a mature forest of structural stage 6, with sporadic old trees. Other trees observed in this area were western hemlock, red alder and bigleaf maple.

Polygon ID	11
Madrone Plot #	Polygon was visited but no formal vegetation data was collected.
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Douglas-fir – Grand fir – Oregon grape
Ecosystem Classification	CDFmm/04
Structural Stage (SS)	6 – Mature, uneven-aged forest
Status (BC List)	N/A
Photopoint(s)	None
Ecological Community Description	This polygon is similar to polygons, 1, 7, 21. The polygon has an uneven-aged forest dominated by mature Douglas-fir and cedar. Scattered Douglas-fir vets are present. The dominant plant community is Douglas-fir - Grand Fir – Oregon grape. Other tree species present are big leaf maple, western hemlock, and red alder.
Disturbance Notes	The only disturbances noted were the trail, and fairly high deer browse in places.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this species will continue to be the dominant tree in this polygon, with a minor component of western redcedar, grand fir, maple, and alder.
Wildlife observations	Deer browse; Common Ravens (*Corvus corax*) flying overhead.

Polygon 13

The dominant ecological community in this polygon is **Douglas-fir – Grand fir – Oregon grape**. This area encompasses a mature forest of structural stage 6, with sporadic old trees. One old Douglas-fir was aged in this area to be approximately 210 years old. Other trees observed in this area were western hemlock, red alder and bigleaf maple. English Ivy and English Holly were observed in areas of this polygon.

Polygon ID	13
Madrone Plot #	11
Vegetation Type (as designated by the 2008 management plan)	1c
Dominant Ecological Community	Douglas-fir – Grand fir – Oregon grape
Ecosystem Classification	CDFmm/04
Structural Stage (SS)	6 – Mature, uneven-aged forest
Status (BC List)	N/A
Photopoint(s)	P19
Ecological Community Description	This polygon has an uneven-aged forest dominated by mature Douglas-fir and cedar. Scattered Douglas-fir vets are present. Soils are loamy and well-drained, providing a good rooting medium for these trees. The dominant plant community is Douglas-fir - Grand Fir – Oregon grape. Other tree species present are big leaf maple, western hemlock, and red alder.
Disturbance Notes	Parts of the polygon have been logged – one patch close to polygon 16 harvested about 15 years ago. Deer browse is quite high in areas, impacting herbs, wildflowers, and young trees. A few occurrences of English ivy and English holly were seen.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this species will continue to be the dominant tree in this polygon, with a minor component of western redcedar, grand fir, maple, and alder.
Wildlife observations	Deer browse; Common Ravens (*Corvus corax*) flying overhead.

Polygon 13: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	15	25	2				**MC**: uneven aged with vets, 80-210 yrs, HT: 30-40, DBH 65- 105 cm. **SC** 30-80yrs, HT: 10-30m, DBH: 30-65cm
big leaf maple	*Acer macrophyllum*		5	5				**SC**: 25-55yr, HT 15-25, DBH 25-30
red alder	*Alnus rubra*		5					**SC**: 25-45yrs, HT 10-15, DBH 15-25
western redcedar	*Thuja plicata*		5					Age 60-160; HT 20-30, DBH 3-65-105
grand fir	*Abies grandis*			5				
English holly	*Ilex aquifolium*						2	Invasive plant
English Ivy	*Hedera helix*						2	Invasive plant
red huckleberry	*Vaccinium parvifolium*			1				Growing on wood
salal	*Gaultheria shallon*			15				Deer browse
ocean spray	*Holodiscus discolor*			5				
dull Oregon grape	*Mahonia nervosa*			10				aka *Berberis nervosa*
bracken fern	*Pteridium aquilinum*				2			Deer browse present on all herbs
sword fern	*Polystichum munitum*				35			
Columbia brome	*Bromus vulgaris*				2			
sweet-scented bedstraw	*Galium triflorum*				3			
coastal leafy moss	*Plagiomnium insigne*					5		On moist rich soil
Oregon beaked moss	*Kindbergia oregana*					35		aka E*urhynchium oreganum*

stepmoss	*Hylocomnium splendens*					10		Growing on wood
Tree moss	*Climacium dendroides*					2		
rough moss	*Claopodium crispum*					2		
TOTALS		15	40	43	42	54	4	

Polygons 14 & 17

These polygons did not receive a detailed vegetation assessment, as they are disturbed clearings with no young trees present. A few seedlings of Douglas-fir and grand fir were observed, by they are generally covered by grasses. Polygon 14 had significant densities of Scotch Broom, of which management recommendations are provided for in Section 6. Polygon 17 had no observations of invasive plant species. Photo points for Polygons 14 and 17 are P25 and P28, respectively.

Polygons 15 & 20

The dominant ecological community in these polygons is **Western redcedar – Grand fir – Foamflower**, with a secondary component of **Western redcedar – Douglas-fir – Oregon Beaked Moss** that is more common in wetter areas. This polygon is mixed in age, including trees of structural stages 5, 6 and 7. These two polygons that capture the flows of Stoney Creek. No formal vegetation data was documented for these polygons, as its intention was to delineate the dynamic ecosystems that surround the flowing water.

Polygon ID	15 & 20
Madrone Plot #	These polygons were visited but no formal vegetation data was collected.
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Western redcedar – Grand fir – Foamflower; secondary Western redcedar – Douglas-fir – Oregon Beaked Moss
Ecosystem Classification	CDFmm/06 and CDFmm/05
Structural Stage (SS)	6 – Mature, uneven-aged forest, some old Western red cedar and Douglas-fir
Status (BC List)	N/A
Photopoint(s)	None
Ecological Community Description	This polygon is an upstream continuation of polygon 20, similar in that Stoney Creek flows through both of these polygons. The flowing water creates dynamic ecosystems that can support healthy and diverse forests. Currently this polygon has an uneven-aged forest dominated by mature Douglas-fir and cedar. The dominant plant community is Western redcedar – Grand fir – Foamflower, but the Western redcedar – Douglas-fir – Oregon beaked moss plant community is also common, especially in wetter areas with imperfect drainage. Other tree species present are big leaf maple and red alder
Disturbance Notes	The only disturbances noted were the trail, and fairly high deer browse in places.
Anticipated Change/Succession	With a stand dominated by Douglas-fir and western redcedar it is expected that these species will continue to be the dominant trees in this polygon, with a component of grand fir, maple, and alder.
Wildlife observations	Deer browse; Common Ravens (*Corvus corax*) flying overhead.

Polygon 18

The dominant ecological communities in this polygon are **Douglas-fir - salal** and **Western redcedar – Douglas-fir – Oregon beaked moss**, both of which includes trees largely of structural stage 6. The latter ecological community is observed in wetter areas where subdued terrain prevents surface flows from rapidly flowing off the soils. Other species present in this area are western hemlock and red alder.

Polygon ID	18
Madrone Plot #	This polygon was visited but no formal vegetation data was collected.
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Douglas-fir – Salal, and Western redcedar – Douglas-fir – Oregon beaked moss
Ecosystem Classification	CDFmm/01 and CDFmm/05
Structural Stage (SS)	6 – Mature, uneven-aged forest
Status (BC List)	N/A
Photopoint(s)	None
Ecological Community Description	This polygon is similar to others within vegetation type 3, notably polygon 22. The polygon has an uneven-aged forest dominated by mature Douglas-fir and cedar. The dominant plant community is Douglas-fir – Salal, but the Western redcedar – Douglas-fir – Oregon beaked moss plant community is also common, especially in wetter areas with imperfect drainage. Other tree species present are western hemlock, and red alder.
Disturbance Notes	The only disturbances noted were the trail, and fairly high deer browse in places.
Anticipated Change/Succession	With a stand dominated by Douglas-fir, it is expected that this species will continue to be the dominant tree in this polygon, with a component of western redcedar, grand fir, hemlock, maple, and alder.
Wildlife observations	Deer Browse observed.

Polygon 19

The dominant ecological community in this polygon is **Western redcedar – Grand fir – Foam Flower**. This area encompasses a young forest of structural stage 5, with sporadic mature trees. The soils in this area appear to be moist, rich and deep. Other trees observed in this area were red alder and bigleaf maple. It is possible that the hydrology in this area is altered by the stormwater ditch in along the eastern boundary of the property.

Polygon ID	19
Madrone Plot #	no formal vegetation data collected
Vegetation Type (as designated by the 2008 management plan)	6
Dominant Ecological Community	Western redcedar – Grand fir – Foamflower
Ecosystem Classification	CDFmm/06
Structural Stage (SS)	5 – young forest, with scattered mature trees
Status (BC List)	N/A
Photopoint(s)	None
Ecological Community Description	This polygon was originally connected to polygon 10, however it is now a separate polygon in the SE corner of SXNR. The main ecosystem type is Western redcedar – Grand fir – Foamflower. The soils in this area appear to be moist, rich and deep. Currently this polygon has a young uneven-aged forest dominated by mature cedar, with some Douglas-fir and grand fir. The dominant plant community is Cedar – Grand fir – Foamflower. Other tree species present are big-leaf maple and red alder.
Disturbance Notes	The main disturbance in this polygon is a drainage ditch with may drain the wetland in Polygon 10, and possible Stoney Creek. There are also signs of historical logging activity.
Anticipated Change/Succession	With a stand dominated by western redcedar it is expected that this species will continue to be the dominant tree in this polygon, with a minor component of grand fir, Douglas-fir, maple, and alder.
Wildlife observations	Deer Browse observed.

Polygon 21

A formal vegetation plot was not conducted in this polygon, rather it was assessed and confirmed to be similar to polygons 1, 7, and 11. The dominant ecological community in this polygon is **Douglas-fir – Grand fir – Oregon grape**. This area encompasses a mature forest of structural stage 6, with old-growth veteran trees. Other trees observed in this area were western hemlock, red alder and bigleaf maple. As this area continues to age, it will develop into the **red-listed** plant community (site series CDFmm/04).

Polygon ID	21
Madrone Plot #	This polygon was visited but no formal vegetation data was collected.
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Douglas-fir – Grand fir – Oregon grape
Ecosystem Classification	CDFmm/04
Structural Stage (SS)	6 – Mature, uneven-aged forest with old growth vets
Status (BC List)	None, though approaching red-listed status
Photopoint(s)	None
Ecological Community Description	This polygon is similar to others within vegetation type 3, notably polygons, 1, 7, & 11. The polygon has an uneven-aged forest dominated by mature Douglas-fir and cedar. Scattered Douglas-fir vets are present. The dominant plant community is Douglas-fir - Grand Fir – Oregon grape. Other tree species present are big leaf maple, western hemlock, and red alder.
Disturbance Notes	The only disturbances noted were the trail, and fairly high deer browse in places.
Anticipated Change/Succession	With a forest dominated by Douglas-fir, it is expected that this species will continue to be the dominant tree in this polygon, with a minor component of cedar, grand fir, maple, and alder.
Wildlife observations	Deer browse; Bald Eagles (*Haliaeetus leucocephalus*) and Common Ravens (*Corvus corax*) flying overhead.

Polygon 22

A formal vegetation plot was not conducted in this polygon. The dominant ecological community in this polygon is **Western redcedar – Douglas-fir – Oregon Beaked Moss** with a secondary component of **Western redcedar – Grand fir – Foamflower**. The water table is close to the surface in this polygon, but drainage is imperfect, leading to slight stagnant conditions that favor species such as salal, red huckleberry and western hemlock.

Polygon ID	22
Madrone Plot #	This polygon was visited but no formal vegetation data was collected.
Vegetation Type (as designated by the 2008 management plan)	3
Dominant Ecological Community	Western redcedar – Douglas-fir – Oregon Beaked Moss; secondary Western redcedar – Grand fir – Foamflower
Ecosystem Classification	CDFmm/05, and CDFmm/06
Structural Stage (SS)	6 – Mature, uneven-aged forest
Status (BC List)	N/A
Photopoint(s)	None
Ecological Community Description	This polygon is close to Stoney Creek, as well as the wetlands in Polygons 12 and 16. The water table is close to the surface in this polygon, but drainage is imperfect, leading to slight stagnant conditions that favor species such as salal, red huckleberry and western hemlock. Currently this polygon has an uneven-aged forest dominated by mature cedar with hemlock and scattered Douglas-fir. The dominant plant community is Cedar – Douglas-fir – Oregon beaked moss.
Disturbance Notes	The only disturbances noted were the trail, and fairly high deer browse in places. Some windthrow was also seen.
Anticipated Change/Succession	With a stand dominated by redcedar, and some hemlock and Douglas-fir, it is expected that these species will continue to be the dominant trees in this polygon, with a component of grand fir, maple, and alder.
Wildlife observations	Deer browse; Common Ravens (*Corvus corax*) flying overhead.

Polygon 23

This polygon is a small sliver on the south side of North Road, directly adjacent to a wetland west of the area, dominated by Pacific crab-apple, that drains under North Road, through Polygon 14, and into the wetland area in Polygon 16. However, wetland characteristics are not within this polygon, only adjacent to it. The dominant community in this area is **Douglas-fir – Salal**.

Polygon ID	23
Madrone Plot #	13
Vegetation Type (as designated by the 2008 management plan)	10
Dominant Ecological Community	Douglas-fir – Salal
Ecosystem Classification	CDFmm/01
Structural Stage (SS)	5 – young forest
Status (BC List)	N/A
Photopoint(s)	P20
Ecological Community Description	This polygon is a very small sliver-shaped polygon on the extreme south-west corner of the nature reserve. It has an uneven-aged forest dominated by Douglas-fir, arbutus, and grand fir. Portions of the polygon overlap slightly with a swampy area dominated by Pacific crab-apple (*Malus fusca*).
Disturbance Notes	This polygon is immediately adjacent to the public road and has had some vegetation removal in the past as part of the road maintenance. There is an occurrence of English holly.
Anticipated Change/Succession	With a small stand dominated by Douglas-fir, it is expected that this species will continue to be the dominant tree in this polygon, with a component of grand fir, and arbutus.
Wildlife observations	Deer browse; Common Ravens (*Corvus corax*) flying overhead.

Polygon 23: Vegetation Data

Common name	Scientific name	Main Canopy	Secondary Canopy	Shrub Layer	Herb Layer	Moss and Lichens	Non-native	Notes
Douglas-fir	*Pseudotsuga menziesii*	5	15					MC and SC : 35- 40 yrs; HT: 8-14 m; DBH 10-20 cm
grand fir	*Abies grandis*		10					SC: 35- 40 yrs; HT: 6-10 m; DBH 8-15 cm
arbutus	*Arbutus menziesii*			4				SC: 35- 40 yrs; HT: 5-8 m; DBH 10-15 cm
western redcedar	*Thuja plicata*		5					SC: 25- 30 yrs; HT: 5-8 m; DBH 10-15 cm
Pacific crab-apple	*Malus fusca*			5				
red huckleberry	*Vaccinium parvifolium*			2				Growing on wood
Nootka rose	*Rosa nutkatensis*			2				
English holly	*Ilex aquifolium*						2	Invasive plant
common snowberry	*Symphoricarpos albus*			2				
salal	*Gaultheria shallon*			60				Dense
hairy honeysuckle	*Lonicera hispidula*			2				
sword fern	*Polystichum munitum*				2			
Oregon beaked moss	*Kindbergia oregana*					15		aka *Eurhynchium oreganum*
stepmoss	*Hylocomnium splendens*					10		Growing on wood
electrified cat's tail moss	*Rhytidiadelphus triquetrus*					5		
TOTALS		5	30	77	2	30	2	

4. Wildlife Species

4.1. BC CDC – Species and Ecosystem Explorer Query

A list of provincially listed species of conservation concern that were likely to occur in SXNR was compiled using the BC Species and Ecosystem Explorer tool10 provided by the BC Conservation Data Centre (CDC). A query for potential species was made by selecting SXNR area as the Area of Interest (AOI) on the query map. The output was then reviewed by a qualified environmental professional (QEP) and further reduced based on critical breeding habitat requirements and known ecological features in SXNR. This resulted in a Focal Species List that could be brought in the field. The Wildlife Habitat Assessments (WHA) were conducted for each selected species at locations that would encompass the variety of habitats in SXNR. The WHAs focused on the occurrence of potential breeding habitat for the Focal Species (Table 3).

Table 3. Focal Species List - Provincially listed vertebrates with potential to use S'ul-hween X'pey (Elder Cedar) Nature Reserve for breeding habitat; based on a reviewed output from the CDC database.

Species Name		Status				
Common Name	**Latin Name**	**Provincial**	**BC List**	**COSEWIC**	**SARA**	**Global**
Northern Red-legged Frog*	*Rana aurora*	S3 (2016)	Blue	Special Concern	Special Concern (2005)	G4 (2015)
Western Toad	*Anaxyrus boreas*	S4 (2016)	Yellow	Special Concern	Special Concern (2018)	G4 (2008)
Band-tailed Pigeon*	*Patagioenas fasciata*	S3S4 (2015)	Blue	Special Concern	Special Concern (2011)	G4 (2016)
Barn Swallow	*Hirundo rustica*	S3S4B (2015)	Blue	Special Concern	Threatened (2017)	G5 (2016)
Black Swift	*Cypseloides niger*	S2S3B (2015)	Blue	Endangered	Endangered (2019)	G4 (2016)
Common Nighthawk	*Chordeiles minor*	S4B (2015)	Yellow	Special Concern	Threatened (2010)	G5 (2016)
Evening Grosbeak	*Coccothraustes vespertinus*	S5 (2015)	Yellow	Special Concern	Special Concern (2019)	G5 (2016)
Great Blue Heron, *fannini* subspecies	*Ardea erodias fannini*	S2S3B, S4N (2018)	Blue	Special Concern	Special Concern (2010)	G5T4 (2016)
Green Heron	*Butorides virescens*	S3S4B (2015)	Blue	No Status	No Status	G5 (2016)
Marbled Murrelet	*Brachyramphus marmoratus*	S3B, S3N (2015)	Blue	Threatened	Threatened (2003)	G3 (2016)
Northern Goshawk, *laingi* subspecies	*Accipiter gentilis laingi*	S2 (2010)	Red	Threatened	Threatened (2003)	G5T2 (2016)
Northern Pygmy-owl,	*Glaucidium gnoma*	S3S4 (2018)	Blue	No Status	No Status	G4G5T3T4Q

[10] B.C. Conservation Data Centre. 2021. BC Species and Ecosystems Explorer. B.C. Minist. of Environ. Victoria, B.C. Available: https://a100.gov.bc.ca/pub/eswp/ [accessed Jan 8, 2021]

swarthi subspecies	*swarthi*					(2019)
Olive-sided Flycatcher	*Contopus cooperi*	S3S4B (2015)	Blue	Special Concern	Threatened (2010)	G4 (2016)
Western Screech-Owl*	*Megascops kennicottii*	S4 (2015)	Yellow	Threatened	Threatened	G4G5 (2016)
Western Screech-Owl, *kennicottii* subspecies*	*Megascops kennicottii kennicottii*	S2S3 (2017)	Blue	Threatened	Threatened (2005)	G4G5T4 (2016)
Townsend's Big-eared Bat*	*Corynorhinus townsendii*	S3S4 (2015)	Blue	N/A	N/A	G4 (2016)

*Occurrence confirmed through documents shared by the Islands Trust Conservancy (e.g., Triton surveys)

A comprehensive species inventory involving the necessary field surveys to confirm presence/absence in SXNR is not part of the scope of this management plan. Additionally, the time of year in which this management plan was created was also not during a period when these assessments could be conducted. However, a detailed ecological inventory was conducted in 1996 by Triton Environmental Consultants (Triton 1996), where a number of species in the Focal Species List were confirmed in SXNR. Confirmed presence from this inventory survey is designated accordingly in the Focal Species list. Protecting critical breeding habitat is an effective way to support conservation of wildlife species, as it directly impacts the reproductive success of the targeted species.

4.2. Field Assessment of Focal Species

To determine the potential wildlife quality within SXNR for each focal species, methodologies under Section 5, Wildlife Habitat Assessment of the *Describing Ecosystems in the Field* (*DEIF*), also known as BC Land Management Handbook #25 (LMH 25) (BCMFR and BCMOE 2010), were utilized. Each plot was assessed for suitability of critical breeding habitat for the species of consideration. Using the *DEIF* we provided a class quality for each focal species to establish a suitability rating for the various ecological communities in SXNR. Rating Schema according to the *DEIF* is shown in Table 4. Plot locations for wildlife habitat assessments were conducted in the same locations as plots 1 to 13 in the ecological community assessments discussed in section 3.7 (Figure 6). The results for each plot are shown in Table 5.

Table 4. Relative quality classes for assessing the plot type quality relative to the best in British Columbia (Adapted from Land Management Handbook 25: Field Manual for Describing Terrestrial Ecosystems 2010).

Class Quality	Suitability/Capability	Lower Limit (%)	Upper Limit (%)	
1	High	>75	≤100	Equivalent
2	Mod. high	>50	≤75	Slightly less
3	Moderate	>25	≤50	Moderately less
4	Low	>5	≤50	Substantially less
5	Very low	>0	≤5	Much less
6	Nil	0	0	Habitat or attribute is absent

Table 5. Summary of Wildlife Habitat Assessment Ratings for S'ul-hween X'pey (Elder Cedar) Nature Reserve.

Common Name			Wildlife Habitat Area Ratings											Observed Habitat Attributes
	WHA1	WHA2	WHA3	WHA4	WHA5	WHA6	WHA7	WHA8	WHA9	WHA10	WHA11	WHA12	WHA13	
Northern Red-legged Frog	4	2	5	3	5	6	3	6	4	6	4	2	3	Potentially perennial wetland habitat either in or adjacent to the plot.
Western Toad	4	2	5	3	5	6	3	6	4	6	4	2	3	Potentially perennial wetland habitat either in or adjacent to the plot.
Band-tailed Pigeon	4	4	3	4	4	4	4	4	3	3	3	4	4	Trees of sufficient size/structure for support of stick nests. Western redcedar and Douglas-fir stands with fruiting shrubs in understory.
Barn Swallow	5	5	5	5	5	5	5	5	5	5	5	5	5	No critical habitat present for breeding
Black Swift	5	5	5	5	5	5	5	5	5	5	6	6	6	No critical habitat present for breeding
Common Nighthawk	6	6	6	6	6	6	6	6	6	6	6	6	6	No critical habitat present for breeding
Evening Grosbeak	4	4	3	4	4	4	4	4	3	3	3	4	5	No critical habitat present for breeding
Great Blue Heron, *fannini* subspecies	3	4	3	4	3	4	5	4	3	3	4	4	5	Suitable larger trees to build nesting platforms that would support a rookery.
Green Heron	4	3	3	3	4	4	3	4	3	4	3	3	4	Suitable trees to build nesting platforms. Wetland areas nearby.
Marbled Murrelet	2	4	3	4	3	5	5	5	2	2	4	4	5	Suitable old-growth trees with mossy branches of a sufficient diameter to support a nest-platform.

Northern Goshawk, *laingi* subspecies	2	4	2	3	3	5	5	4	3	2	4	4	6	Suitable sized branches in understory to support stick nests; good quality flyways and habitat for mammalian and avian prey species.
Northern Pygmy-owl, *swarthi* subspecies	2	3	2	4	3	4	4	4	3	3	3	4	5	Mature Douglas-fir trees (>60 cm dbh) with suitable potential for nesting cavities.
Olive-sided Flycatcher	4	4	3	4	4	4	3	3	3	3	4	5	5	Mature second growth to old growth habitat. Adjacent to clearing areas along with wetlands and/or rocky outcrops for insect foraging.
Western Screech-Owl, *kennicottii* subspecies	2	4	2	4	3	4	3	4	3	3	4	4	5	Mature second growth to old growth habitat. Gentle slope grade, lower slope positioning, presence of wildlife trees, presence of prey species (insects, squirrels, small-medium sized birds).
Townsend's Big-eared Bat	3	5	4	5	4	5	5	5	4	3	5	5	5	Rated low overall due to lack of suitable critical habitat. Few areas with old growth trees where bark could be used, but unlikely hibernacula.

Moderate- to high-quality breeding habitats were observed in SXNR for a number of Focal Species. Forests maturing into the old growth stage possess a variety of unique niche environments suitable for a large diversity of species, which is why they are so ecologically valuable. Wetland habitats observed throughout SXNR have the capability of providing moisture rich habitats required for breeding of the two amphibian Focal Species: Northern Red-legged Frog and Western Toad. For the Great Blue Heron, areas throughout SXNR with adequate canopy structure for an established rookery were observed. Wetland areas and proximity to the ocean are also key factors in heron breeding habitat, which also resulted in moderate-quality ratings for the Green Heron.

Marbled Murrelet breeding habitat requires old growth Douglas-fir forests in close proximity to the ocean, where the trees have large-diameter branches with mossy platforms to lay eggs on. Several veteran Douglas-fir trees were observed throughout SXNR with adequate branch size and structure. Northern Goshawks also use old-growth Douglas-fir habitats for breeding. Suitable flyways providing access to foraging grounds along with a relatively closed canopy structure also factor into high-quality goshawk breeding habitat, which was observed in SXNR. Quality breeding/nesting habitat was observed for both the Northern Pygmy Owl and Western Screech-owl in areas with large cavities in wildlife trees surrounded by forest with a diverse canopy structure and significant amounts of large woody debris and shrubbery to support prey species (i.e., small mammals and birds). Olive-sided flycatcher breeding/nesting habitat was observed in the mature to old growth forest regions that provided tree top views over areas that facilitate large densities of flying invertebrates for food (i.e., clearings, wetlands). Band-tailed Pigeon and Evening Grosbeak breeding/nesting habitat was rated moderate in areas with adequate mixed-forest canopy structure along with understorey vegetation assemblages that provide fruiting shrubs for food. The Townsend's Big Eared Bat did not have a large amount of critical breeding habitat, as there were no rocky areas suitable for hibernacula (caves). However, it is possible that this species adaptively utilizes the complex bark structures found in SXNR's oldest Douglas-fir trees.

4.3. Avian surveys, E-bird, and other potential species.

E-bird[11] is an online database of bird observations providing scientists, researchers and naturalists with real-time data about bird distribution and abundance at global, national and regional scales. There are specific locations where observations can be added; Elder Cedar Nature Reserve is one of them.

Along with e-Bird data, avian surveys completed in 1996 by Triton and documented in the previous management plan have been incorporated into this updated plan. Data from these sources are summarized in Table 6.

[11] https://ebird.org/hotspot/L4822917 [Accessed January 8, 2021]

Table 6. Documented avian observations in Elder Cedar Nature Reserve from E-bird and the 2008 Elder Cedar Management Plan.

Common Name	Latin Name	Common Name	Latin Name
American Kestrel**	*Falco sparverius*	Northern Flicker***	*Colaptes auratus*
American Robin***	*Turdus migratorius*	Northwestern Crow**	*Corvus caurinus*
Anna's Hummingbird*	*Calypte anna*	Pacific Wren*	*Troglodytes pacificus*
Bald Eagle***	*Haliaeetus leucocephalus*	Pacific-slope Flycatcher***	*Empidonax difficilis*
Band-tailed Pigeon**	*Patagioenas fasciata*	Pigeon Guillemot*	*Cepphus columba*
Belted Kingfisher*	*Megaceryle alcyon*	Pileated Woodpecker***	*Dryocopus pileatus*
Black Swift**	*Cypseloides niger*	Red Crossbill**	*Loxia curvirostra*
Brown Creeper***	*Certhia americana*	Red-breasted Nuthatch***	*Sitta canadensis*
Bushtit**	*Psaltriparus minimus*	Red-breasted Sapsucker***	*Sphyrapicus ruber*
Cassin's Vireo**	*Vireo cassinii*	Rock Pigeon*	*Columba livia*
Chestnut-backed Chickadee***	*Poecile rufescens*	Rufous Hummingbird**	*Selasphorus rufus*
Common Nighthawk**	*Chordeiles minor*	Song Sparrow***	*Melospiza melodia*
Common Raven***	*Corvus corax*	Spotted Towhee***	*Pipilo maculatus*
Common Yellowthroat**	*Geothlypis trichas*	Steller's Jay***	*Cyanocitta stelleri*
Cormorant sp.*	*Phalacrocoracidae sp.*	Swainson's Thrush**	*Catharus ustulatus*
Dark-eyed Junco***	*Junco hyemalis*	Turkey Vulture***	*Cathartes aura*
Downy Woodpecker**	*Picoides pubescens*	Western Tanager**	*Piranga ludoviciana*
Glaucous-winged Gull*	*Larus glaucescens*	Western Wood-pewee**	*Contopus sordidulus*
Golden-crowned Kinglet***	*Regulus satrapa*	White-crowned Sparrow**	*Zonotrichia leucophrys*
Great Blue Heron*	*Ardea herodias*	Willow Flycatcher*	*Empidonax traillii*
Hairy Woodpecker***	*Picoides villosus*	Wilson's Warbler**	*Wilsonia pusilla*
Hermit Thrush**	*Catharus guttatus*	Winter Wren (Pacific Wren)**	*Troglodytes troglodytes*
Hutton's Vireo*	*Vireo huttoni*	Yellow Warbler**	*Dendroica petechia*
Loon sp.*	*Gavia sp.*		

* = from e-Bird; ** = from 2008 management plan; *** = observed in both

Other species that may occur throughout the site are shown in Table 7, below. This is not an exhaustive list but provides a sample of those that may transiently occur.

Table 7. Other terrestrial species likely to occur in Elder Cedar Nature Reserve.

Common Name	Latin Name
Columbian black-tailed deer	*Odocoileus hemionus columbianus*
Cougar	*Puma concolor*
Deer mouse	*Peromyscus maniculatus*
Little Brown Bat	*Myotis lucifungus*
Northern Pacific Tree Frog	*Pseudacris regilla*
Raccoon	*Procyon lotor*
Red squirrel	*Tamiasciurus hudsonicus*
White-tailed deer	*Odocoileus virginianus*

5. Expected Change Over Time

Over time SXNR will progress from the young and mature (structural stages 5 and 6) to the old growth stage (structural stage 7). Some forested areas in the northern section of SXNR have recently been classified as old (>250 years), based on coring of Douglas-fir trees. There are areas in the northern sections of SXNR where significantly variable age classes were observed. This is a result of logging that occurred in the 1960's and 1970's, which was evidenced by stumps. It is expected that over time, these areas in the north will continue to be dominated by Douglas-fir, with a minor component of western redcedar, grand fir, and in drier areas, arbutus. Gaps in forest cover where soil is shallow over bedrock will increase in cover of grasses and herbs.

Wetland areas observed throughout SXNR will remain relatively unchanged over time. Red alder and bigleaf maple trees will mature within, and along the edges of these areas as it transitions back into forests of western redcedar, grand fir and Douglas-fir. Soils richness in this area will allow for more rapid annual growth relative to the dry, shallow areas in the northern sections of SXNR. These areas will likely develop into a multitude of niche habitats for a variety of invertebrates and wildlife species that require moisture-rich habitat for breeding (*i.e.*, amphibians).

Most of the Douglas-fir and western redcedar dominated forests in the middle and southern portions of SXNR will continue to mature with the current species assemblages. Grasses and herbs will continue to dominate in areas where there are gaps in the forest canopy. No drastic changes in vegetation composition are expected in these areas. It is likely that the canopy cover in these forests will remain relatively similar over time, shading out the potential for a secondary canopy cover to develop. These areas will continue to provide quality habitat for species that favour old-growth Douglas-fir forests, and large-cavity nesters as older trees naturally perish and add to the congregations of larger Wildlife Trees in SXNR.

4. Threats

Table 8. Threats to Natural Values in SXNR.

Threats (examples below)	Coastal Douglas-fir Forest	Upland Douglas-fir, arbutus areas	Wetlands & Creeks	Overall Threat Rank
Recreational Activities: Areas that have not been historically disturbed in the form of designated trails are highly susceptible to negative impacts from recreational use. Moisture-rich areas (*i.e.*, wetlands) are susceptible to soil compaction, affecting hydrology and root structures. Other forested areas have understorey grasses, herbs and shrubs that are sensitive to mechanical disturbance. Trails can tolerate pedestrian disturbance, but anything more impactful (e.g., mountain biking, horseback riding, motorized vehicle use) would cause harmful disruption to the surrounding ecosystems.	Medium	High	High	High
Fire: Fires, both anthropogenically and naturally caused are a hazard to the ecological integrity of the site. Fire suppression has altered the fuel regime of the forest, along with clearing adjacent lands which create more wind-exposed areas. A more intense fire than what would naturally occur in Coastal Douglas-fir forests could significantly impact all ecosystems in SXNR.	Medium	Medium	Low	Medium
Water Management Ditches: Stormwater ditches can have an impact on the hydrological regime of a landscape. Altered surface and subsurface flows can affect the ecology of areas through shifts in soil moisture and nutrient regimes, which can then shift species composition. The stormwater ditch in the southeast section of SXNR that connects with Stoney Creek likely has some impact on the area's hydrology, but the degree of negative impact to ecosystems may be minimal.	N/A	N/A	Medium	Low
Invasive Non-Native Species: Presence of non-native, invasive plant species on SXNR is generally confined to small, disturbed openings. Old growth forests are resilient to invasive species due to a large canopy shading out more drought-tolerant non-natives (*i.e.*, Scotch Broom). English Holly and Thistle were observed in small quantities, and Reed Canary grass management efforts have proven to be effective in treated areas.	Low	Medium	Low	Medium
Deer Browsing: Browsing by deer was observed throughout SXNR during the site visit. This can stifle the proliferation of native plant and herb species and alter the understory vegetation composition. This can also lead to impacts on resident songbird species that use the understorey vegetation for nesting.	Medium	Medium	N/A	Medium
Overall Threat Status for Protected Area	**Medium**	**Medium**	**Medium**	**Medium**

Very High: The threat is likely to destroy or eliminate the biodiversity target.
High: The threat is likely to seriously degrade the biodiversity target.
Medium: The threat is likely to moderately degrade the biodiversity target.
Low: The threat is likely to only slightly impair the biodiversity target

4.1. Expected Change to Threats Over Time

These threats, particularly fires, deer browsing, and non-native invasive species management, will generally be persistent issues on the site that can be mitigated rather than eliminated. An old growth Coastal Douglas-fir site directly adjacent to developed lands will always be susceptible to anthropogenically derived fires, and increased risk of larger fires due to fire suppression. Forested areas in SXNR that are mature and/or old generally have established trees that will not create issues with regards to excessive fuel loading. Areas in the north portion of SXNR that are still in the younger structural stages may have increased fuel loading over time, which may require management attention in future decades as the area progresses into a more mature structural stage. In the future, it will be important to monitor fuel loads within the northern area of SXNR to ensure that risks to adjacent residential areas are not increasing.

Invasive plant species historically observed on SXNR (e.g., Scotch Broom, English Holly) will always be a threat since the property is directly adjacent to disturbed, developed land. Seeds from these species will always have the potential to blow into SXNR from disturbed areas where they are not properly managed. The only potential areas for non-native, invasive plants to become quickly established are the two disturbed clearings along the southern border of SXNR. These exposed areas will be susceptible to establishment until native species either fill in from adjacent forests or are artificially planted to shade out these areas. Continuing current invasive species monitoring and management practices will gradually reduce the level of threat to SXNR.

Deer browsing is a natural part of Coastal Douglas-fir forests, and to a certain degree, are not a high threat to mature/old forests. SXNR will be resilient to deer browsing in the future, but if deer populations continue to increase, browsing levels may also increase to the point of negatively impacting understorey vegetation. Monitoring the levels of deer browse in shrubs throughout SXNR will ensure management efforts can be implemented before threat levels increase. Any areas where future restoration efforts take place will be highly threatened by deer browsing, and planted areas should be adequately fenced to prevent failed restoration efforts.

Water management ditches are only present in the southeast corner of SXNR where roadside ditches drain into a ditch line that connects with Stoney Creek. It is unclear what degree of impact this drainage ditch has on the hydrology of the wetland areas in this portion of SXNR. The threats to adjacent ecosystems resulting from this ditch are likely not major but considering a hydrological assessment would be useful to determine if it is disproportionately draining the adjacent wetland areas. The progression of this threat in the future is unclear, and a preliminary hydrological assessment would allow for accurate evaluation, and appropriate management.

Allowing public access for low-impact recreational activities in SXNR is a critical part of environmental stewardship. Hiking, walking, photography, and other activities that can be conducted on-foot, and limited to already disturbed areas (i.e., designated trails), will not increase threat levels to adjacent ecosystems. Activities such as horseback riding and mountain biking, however, will increase the threat to the ecosystem as soil compaction and

general disturbance will affect root systems and seasonally inundated soils beyond natural recovery. Activities beyond designated trails (*i.e.*, off-leash dog walking) will also increase the threat to surrounding ecosystems from disturbing sensitive vegetation and potentially disturbing ground-nesting wildlife. Management efforts to limit recreational activities to those that are low-impact, and confined to designated areas, will ensure threats do not manifest into detrimental effects.

5. Community Engagement[12]

The Islands Trust Conservancy undertook a limited public consultation process as part of the development of this management plan. A dedicated page on the ITC website provided a brief summary of SXNR and provided a link to an online survey questionnaire (Appendix B). Responses for the survey were collected by the ITC until March 15, 2021. All information gathered through the survey was considered as part of this management plan. The webpage also provided information regarding registration for a public webinar hosted by the ITC on February 22, 2021. During the webinar, the preliminary results of the field assessments and proposed management recommendations were presented to the public. A member of the Gabriola Land and Trails Trust also presented some historical information about SXNR as well as some suggested future uses for the site. The webinar format allowed for members of the public to ask questions specific to SXNR, which were answered during the webinar.

5.1. Adjacent Landholders

Adjacent landowners were mailed a letter (Appendix C) to inform them that a management plan was in development for SXNR and to ask them to complete the questionnaire so that they could share their thoughts on the broad-scale management concerns of SXNR.

5.2. First Nations

The Lands Clerk of the Snuneymuxw First Nation (SFN) was contacted multiple times throughout the development of this report in 2021. Letters were mailed to the following First Nations on February 11, 2021 (Appendix D): Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation and Ts'uubaa-asatx (Lake Cowichan) First Nation.

A shelter-in-place order was in effect for the SFN due to the global COVID-19 pandemic and outbreaks within the SFN community. This prevented a formal response on input for this recent management plan to be provided, though the SFN have expressed interest in reviewing the management plan upon its completion.

5.3. Conservation Partners and Community Members

The Covenant holders were invited to participate in the webinar and provide feedback to be considered for the management plan. Other community members had the opportunity to participate and voice any concerns about SXNR during the public webinar by submitting questions or concerns in the chat section, or through the online survey.

[12] ITC staff usually contribute to Section 5 by providing contact details, questionnaires, letter to neighbours etc.

5.4. Engagement Results

A total of 87 individuals participated in the publicly available online survey. The results from the multiple-choice questions are shown below in Figures 7, 8, 9 and 10.

Q1: Are you a resident of Gabiola Island?

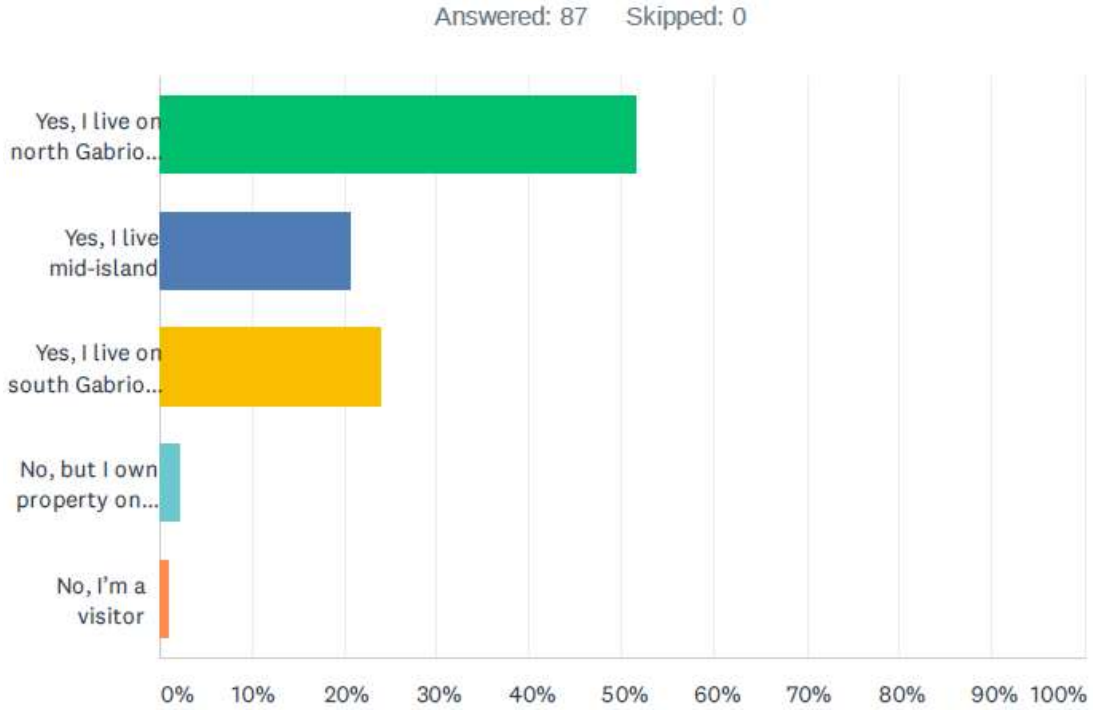


Figure 7. Survey results for Q1 of the public questionnaire

Q2: Have you ever visited the S'ul-hween X'pey/Elder Cedar Nature Reserve? If so, how often?

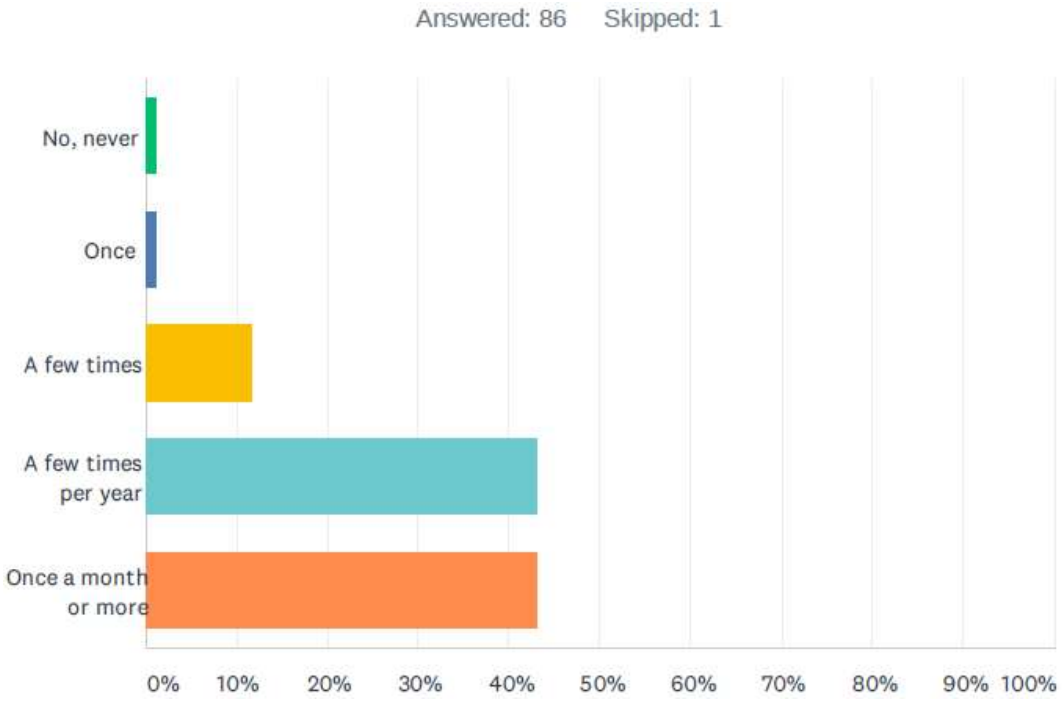


Figure 8. Survey results for Q2 of the public questionnaire

Q3: If you have visited S'ul-hween X'pey/Elder Cedar Nature Reserve before, what did you do there?

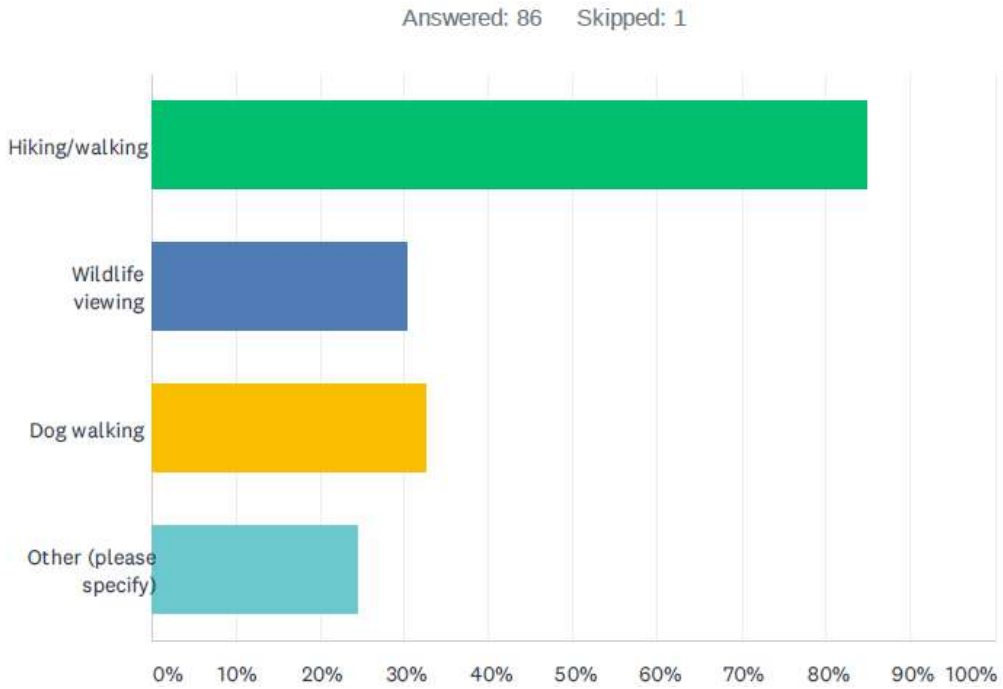


Figure 9. Survey results for Q3 of the public questionnaire

Q5: What do you believe to be the most important values of nature reserves? (choose three)

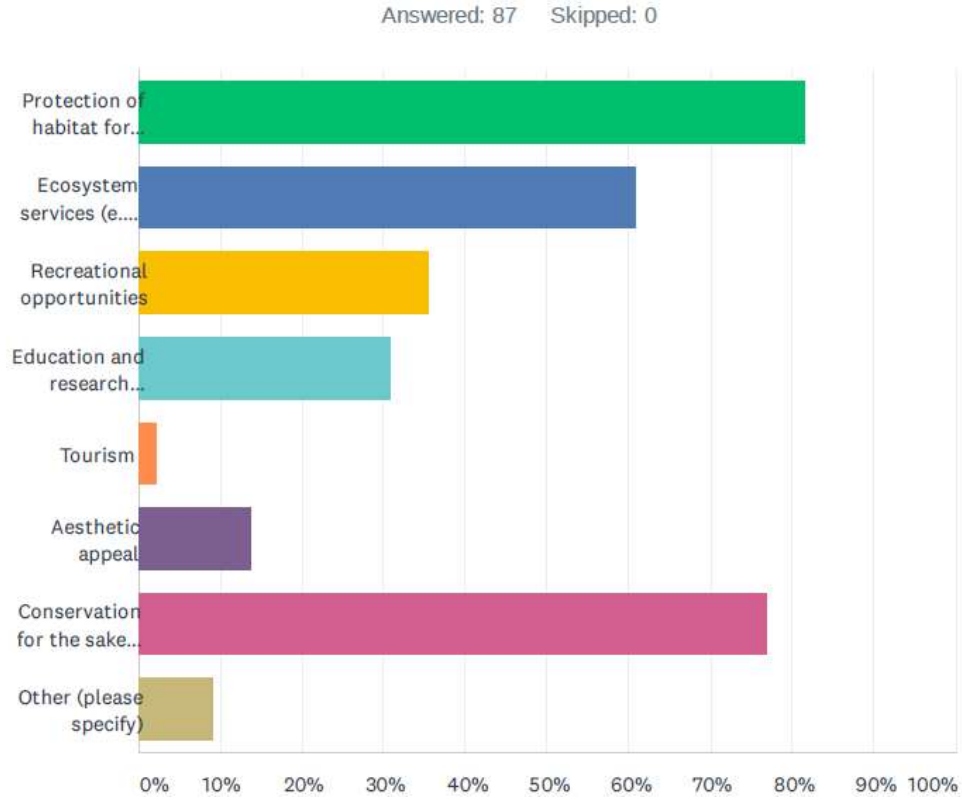


Figure 10. Survey results for Q5 of the public questionnaire

Based on the public input provided, it is apparent that the majority of visitors to SXNR are residents of Gabriola Island. Visitors regularly use SXNR for recreational activities with hiking/walking being the most popular one. The top three items selected as 'most important values for SXNR' were: Protection of habitat for at-risk species, ecosystem services, and conservation for the sake of the intrinsic value of nature.

Results from both the written survey questionnaire responses and the community engagement seminar were reviewed. The community engagement process demonstrated public concern for the following management issues:

- Off-leash dog walking and cleaning up after dogs
- Keeping to designated trails
- Motorized vehicle use
- Ensuring nearby developments do not encroach into SXNR
- Invasive plant species compromising the health of native ecosystems
- Horse use
- Camping
- Fire hazards – natural and anthropogenic (drought, smoking, campfires)
- Vandalism/dumping
- Bicycle use

6. Management Recommendations

6.1. Management Roles

Partner	Role
Island Trust Conservancy (ITC)	Landholder
Gabriola Land & Trails Trust (GaLTT)	Lead Co-covenant Holder
Nanaimo & Areas Land Trust (NALT)	Co-covenant Holder

6.2. Permitted and Prohibited Uses

Activities permitted on SXNR must be in congruence with the purpose and objectives of this management plan specified in sections 1.4 and 1.5 and the intent and restrictions set out in the conservation covenant. To that effect, certain low-impact activities are permitted for the public to appreciate conservation efforts put towards the various sensitive ecological attributes throughout SXNR. These activities were determined based on public input and consultations with local partners. Islands Trust Conservancy reserves the right to re-examine any of the permitted activities listed and prohibit use, if warranted, in the future. This section outlines all permitted uses in totality. Activities not listed in this section, therefore, are not permitted within SXNR boundaries and will be subject to penalty.

The following activities by the public are prohibited[13]:

- Hunting[14]

[13] ITC acknowledges the inherent rights of Indigenous Peoples under Section 35 of the Canadian Constitution
[14] Hunting under Section 35 of the Constitution Act, 1982 recognizes and affirms the inherent rights of Indigenous Peoples.

- Use of motorized vehicles
- Bicycling
- Horseback riding
- Camping
- Fires
- Forestry
- Livestock grazing
- Trail development
- Tree cutting
- Collection of plants, animals or fungi[15]

6.2.1 Northern Trail Access

As discussed in the 2008 Elder Cedar Management Plan, using SXNR as an access route to adjacent federal lands for horses and cyclists via the northern trail remains prohibited. The adjacent lands remain Treaty settlement lands for the Snuneymuxw First Nation, and this management plan does not promote, facilitate, or encourage trespassing onto these lands. The use of the northern trail system by cyclists and horses will be re-examined at the discretion of the Snuneymuxw First Nation with regards to public recreational use of their lands.

6.2.2 Pedestrian Use

One of the best ways to appreciate the values of ecological conservation is to experience it first-hand. Established trail systems have been developed throughout SXNR to allow for permitted public access while limiting the impacts that occur due to high-traffic soil compaction and vegetation disturbance. These mitigation practices are only effective when full compliance is met, therefore, access to areas of SXNR beyond designated trails is not permitted. It is important to be aware that natural hazards such as fallen trees or branches may temporarily prevent trail access to all parts of SXNR. Notwithstanding natural hazards or signage posting otherwise, pedestrian use of trails is a permitted activity.

6.2.3 Wildlife Viewing and Photography

A focal point of SXNR is the valued biodiversity found throughout the property. Wildlife viewing and photography is permitted, even encouraged. This activity can provide a sense of community on Gabriola Island as locals can significantly contribute to the knowledge of local plant and wildlife species in SXNR. As more information on the many plant and wildlife species in SXNR is gathered, management efforts can focus more on monitoring ecological changes and growth.

Wildlife viewing consists of activities such as bird watching, plant identification and insect observation. Nature photography is a growing field, as it has become a major tool in promoting conservation through social media and other news outlets. It is an excellent way to document the progress of SXNR as it matures into the old-growth stage – a forest age class that is becoming more and more rare. All these activities are considered low-impact, so

[15] Harvesting and gathering under Section 35 of the Constitution Act, 1982 recognizes and affirms the inherent rights of Indigenous Peoples.

long as they are limited to designated trails. Wildlife viewing and photography on designated trails is a permitted activity.

6.2.4 On-leash Dog Walking

Along with pedestrian use of SXNR, on-leash dog walking is also permitted. Conditions of this activity are strict to dogs remaining on a leash at all times within SXNR, and that owners must pick up their dog's feces and deposit them off site. The Islands Trust Conservancy has stated that if neither of these conditions are met, dog access will be prohibited in the future.

6.2.5 Traditional Gathering and Use

The use of SXNR by First Nations for traditional gathering of medicinal plants and other foods or materials will be permitted to continue.

6.3. Proposed Monitoring Program

GaLTT, NALT and ITC monitor SXNR annually. A monitoring report with recommendations is prepared by GaLTT and sent to both NALT and ITC. A signed Memorandum of Understanding (MOU) has been signed between NALT and GaLTT designating GaLTT as the lead co-covenant holder. During the year, members of GaLTT help clear the trails of fallen trees, conduct minor trail-trimming and check SXNR when there are reports of wrong-doing. During the annual monitoring, those involved have followed the monitoring route provided in the 2008 management plan. This route (Figure 7) is thorough and addresses all potential areas of concern. It is recommended that this continues to be the standard annual monitoring route for SXNR, but areas where old trails have grown in since this original monitoring route was done, do not need to be visited regularly. Monitoring should occur in the spring if possible and continue to involve representatives from ITC, GaLTT and NALT. Inclusion of all partners will provide opportunities for discussion on future management actions on observed areas of concern (e.g., requirement for boardwalks). Items that should be looked for in the annual monitoring include:

- Presence of any invasive plant species specified in section 6.10
- Areas along the trail that appear to be exceptionally high in moisture, and/or areas with increasingly exposed roots
    - These areas may require a boardwalk to protect from degradation
- Structural integrity of boardwalks
- Significant increases in deer browse throughout the understory vegetation
- Public use beyond the designated trails
- Evidence of littering and/or dumping of organic wastes

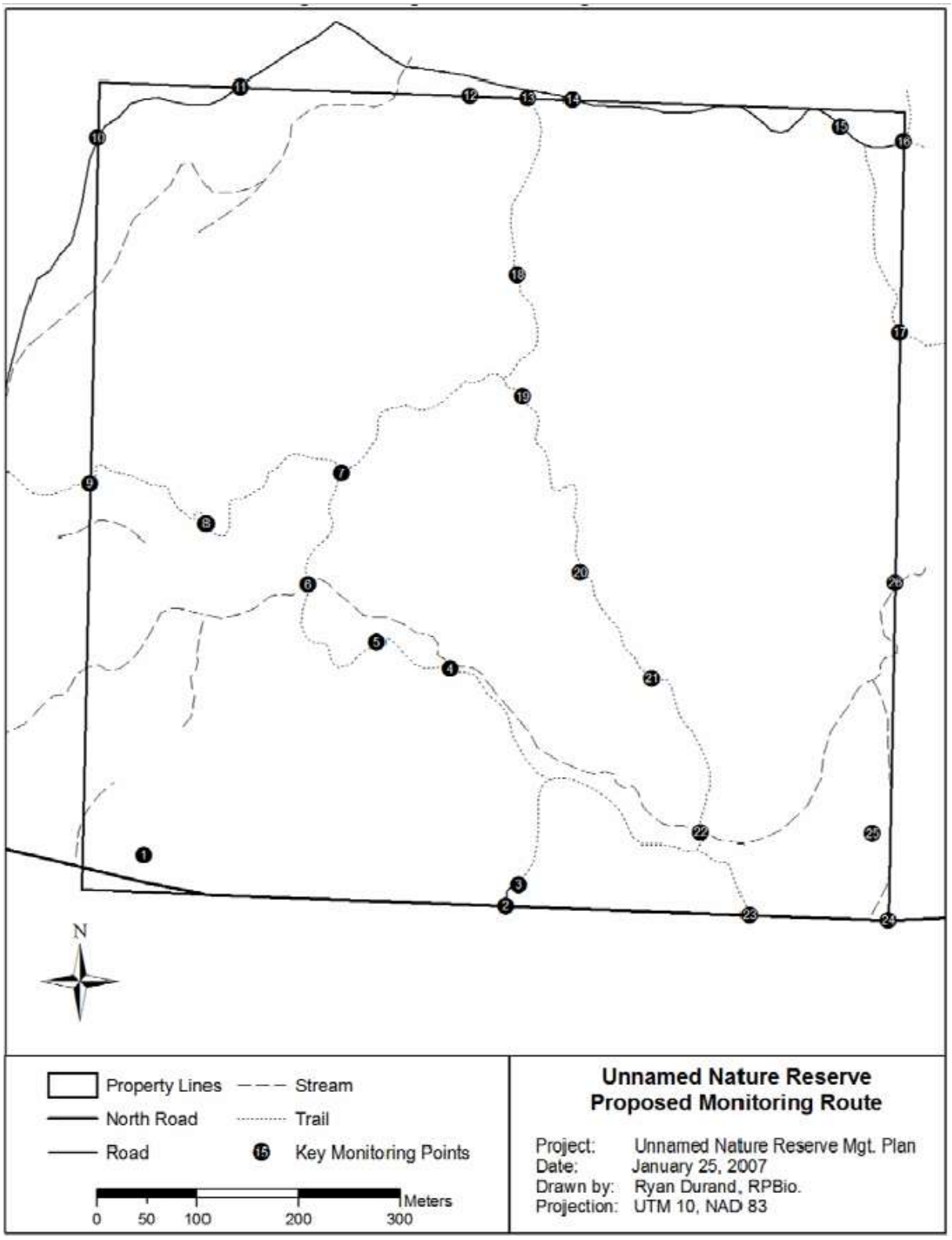


Figure 11. Monitoring route proposed by the previous management plan (Taara 2008).

- Evidence of cycling and/or motorized vehicle use within SXNR, particularly on the trail accessing Windecker Drive
- Evidence of horseback riding
- Efficacy of restoration efforts

6.4. Public Access

Public access to SXNR is limited to the Official Trail Loop, accessed off North Road. There is also access to the northern portion of SXNR via the north trail, connected to the north end of the Official Trail Loop. Another trail also provides access to the northeastern corner of SXNR through a trail extending from Windecker Drive. However, this northeastern trail does not provide access to the rest of SXNR and leads onto federally managed land. ITC does not condone trespassing onto any adjacent properties from SXNR. It is recommended that when the federally managed land is transfered to the Snuneymuxw First Nation public access along existing trails can be discussed.

6.5. Signage

Currently, signage within the park boundary is adequate, with a large welcome sign that is beginning to rot and will be replaced in early 2022) accompanied by an informative map of the designated trail loop, a directional sign at the northern trail loop intersection, and property boundary signs. This signage is sufficient to designate where public access is permitted within SXNR. No additional signage is recommended for management purposes at this time.

For educational purposes, increased signage could be added at the start of the Official Trail Loop. This signage could further discuss areas where Wildlife Trees have been observed (as noted in Figure 6), along with other interesting features about SXNR and its history. This is only a supplemental recommendation, and not considered imperative.

6.6. Trail Use, Maintenance and Development

For the past several years, GaLTT has had an annual contract with ITC for trail maintenance. This includes the building of boardwalks over areas with exposed tree roots, and seasonally inundated soils; addressing fallen trees on the trail; and minor trimming of overgrowth on the trail. The trail is also assessed for danger trees and a certified arborist would be acquired to evaluate any issues. Supplies have been funded by ITC, and labour provided by dedicated volunteers from GaLTT. Over 100 feet of boardwalk has been built in the western section of the Official Trail Loop, and most recently, 165 feet of boardwalk was constructed in the northeast corner. The priorities for boardwalks become apparent during the annual monitoring. General trail maintenance appeared appropriate during the assessment with consideration of both public safety and the surrounding ecosystems. Continued construction of boardwalks is recommended in areas where seasonally wet patches and/or increased exposure of tree roots is observed.

Since the establishment of the conservation covenant, a boardwalk surrounding an old western redcedar was constructed on the east side of the Official Trail Loop. GaLTT and ITC considered design concepts, and the chosen design was constructed by Chris Drake. Volunteers from GaLTT and the local Gabriola Scout Troop spread mulch following

construction to aid in restoration of the area. Tree plantings were also observed around this boardwalk. No further restoration efforts to this area are recommended, as the area will naturalize over time when surrounding flora encroaches inward.

At the small parking area accessed from North Road, GaLTT has arranged to have gravel added to help with winter water-filled potholes. Arrangements have also been made to place boulders in the parking area to prevent vehicular disturbance to roots and soils beyond the designated parking area. It is recommended that these activities occur in a time frame that is deemed appropriate by ITC and the covenant holders during the annual monitoring.

Stepping stones are currently being used to cross Stoney Creek on the eastern section of the Official Loop Trail (Photopoint P29). Although these stones are aesthetically pleasing, they present a safety concern when water levels increase above the stones. A clear span crossing is recommended to replace the stepping stones, and prevent public injury from slipping and falling. Specifications for the crossing can be discussed between stakeholders to determine feasibility and budget.

6.7. Protection Initiatives for Sensitive Ecosystems and Species and Ecosystems at Risk

SXNR is currently managed in a manner that prohibits harmful alteration, disturbance, and destruction of sensitive ecosystems and species at risk. Upholding the public to a high standard of compliance with regards to keeping on designated trails will allow for harmonious co-existence with species and ecosystems at risk in SXNR. Continued management with the primary objectives of conserving the ecological and historical values of SXNR is recommended.

6.8. Ecological Restoration Options

There are two areas on SXNR that would benefit from ecological restoration activities: the disturbed area in the southwest corner, where Scotch Broom is established, and a location approximately mid-way along the northern trail where braiding has occurred (see Figure 3, and Photopoint 8)

Restoration recommendations for the southwestern clearing are as follows:

<u>Removal of Scotch Broom</u>

- For stems less than the diameter of a pencil, pull by hand from the base of the stem
- For stems larger than the diameter of a pencil, cut at the base of the stem, approximately 1 inch below the surface, to avoid disturbance of soils.

Removal is recommended in the early spring, when the plants are in peak flower and their resources are allocated to above-ground structures as opposed to the roots. Following removal, annual removal of seedlings will be required until current vegetation grows to a height that will shade the area, or once planted native species have become established.

<u>Planting Native Species</u>

It is recommended to plant native species in this area once the large-scale broom removal has occurred. The trees will eventually create a closed canopy and prevent the re-

establishment of shade intolerant broom. Trees recommended for this area include grand fir (*Abies grandis*), Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*) and bigleaf maple (*Acer macrophyllum*). These should be planted as follows:

- The roots of plant stock must not be exposed to sunlight, must be kept moist and must be disturbed as little as possible.
- Planting holes must be dug at least 1.5 times wider than the diameter of the root-ball and several centimetres (cm) deeper.
- Holes must be backfilled with loose soil that covers the top of the root-ball with several cm of soil.
- Plants (especially the root-ball) must be fully supported when removed from containers.
- Plants should be set gently into place, with care taken not to crush or damage the roots by over compressing the soil.
- Each plant must be planted in a way that creates a slight depression around the plant to collect and retain moisture.
- Each plant must be watered thoroughly at the time of planting.

Bark mulch must be applied to a depth of at least 15 cm to cover exposed soil, with care taken to not cover shrubs that are regenerating naturally. Applied mulch will help to retain moisture and decrease the severity of invasive plant regeneration. Existing on-site woody debris can be chipped and used as mulch (avoiding cedar).

To combat deer browsing, 5-gallon pots are recommended for planted trees. This will allow for establishment to occur and the trees to grow beyond browsing height within a few years. Physical protection is recommended in the first 2-3 years after planting. This requires installing a ring of plastic or metal wire fencing around each tree – these must be 1.2 m high and the mesh spacing must be no larger than 5 cm.

Restoration recommendations for the braided section of the north trail are as follows:

- The western braid of the trail, where soils are seasonally inundated, should be closed off by selecting one (or more) of the following options:
    - Piling woody debris at the north and south entry points of the braid, discouraging public use;
    - Piling woody debris on the trail itself, allowing organic substrates to naturalize in the area; and
    - Planting shrubs (e.g., salal, sword fern) to promote regeneration of habitat in the affected area.

6.9. Scientific Research/Education Opportunities

SXNR is an old-growth Coastal Douglas-fir forest, which has become increasingly rare due to many pressures including forestry and agricultural use and urban development. This area has many opportunities for upper-level academic research, and public education for all ages. Education for younger demographics along the designated trails paired with discussions about environmental conservation have great value. This can be done for ages, from

preschool through to post-secondary. Depending on the age group, information provided during environmental discussions should be tailored appropriately.

There are several research opportunities that can be conducted in SXNR, all with varying budgets. A sample list of these opportunities include:

- Rare flower surveys during the spring;
- Butterfly surveys during peak flight windows;
- Audio recording surveys to determine presence, and nesting periods of specific birds/owls;
- Point-count surveys for breeding birds;
- Wetland/riparian surveys for presence and abundance of amphibians (breeding period); and
- Wildlife camera surveys (good for monitoring cavities in Wildlife Trees)

6.10. Exotic and Invasive Species Management

In general, invasive species are not well-established in many areas of SXNR. There are only two areas of concern on SXNR where significant densities were observed. One large English holly (*Ilex aquifolium*) tree was observed along the eastern boundary of SXNR. It was unclear with the accuracy of an iPad GPS whether it is inside SXNR boundary or not. If it is, then it should be removed before further establishment occurs in that area from its berries. The second area is the southwestern clearing where the groundwater monitoring well is found. Scotch broom (*Cytisus scoparius*) is found throughout this area, and restoration options to manage this area have been specified in Section 6.8. Other invasive species that have been historically observed on SXNR include tansy ragwort (*Jacobaea vulgaris*), Canada thistle (*Cirsium arvense*), and English ivy (*Hedera helix*). Observations of these plants have been documented in Figure 6, and the Ecological Communities tables in section 3.7.

It is impractical to document every single occurrence of invasive species in SXNR. There have likely been multiple undocumented occurrences of invasive plants that have been outcompeted by the well-established native species. Management efforts are to be directed at larger establishments of invasive species that become prevalent in SXNR's ecological communities. ITC, GaLTT, and NALT have made considerable efforts to annually monitor SXNR and address any prevalent establishments of invasive species. For example, the disturbed area in the southwest corner of SXNR was once covered by tansy ragwort, which has since been removed through volunteer efforts by GaLTT. These continued efforts will adequately manage invasive species in SXNR and prevent degradation of the native vegetation assemblages.

6.11. Wildfire Risk Management (if applicable)

Residential areas to the east of SXNR are at risk of exposure to potential wildfires. To prevent risk of wildfire, no fires of any sort are permitted within the boundaries of SXNR. Fire protection is also provided by the Gabriola Island Fire Department and the British Columbia Forest Fire Service. Over time, the trees in the northern portion of the property will mature and smaller branches will fall to the forest floor and accumulate. It is recommended that in

the next update of this management plan (approximately 10 years from now), the requirement for a fuel management prescription in this part of SXNR is evaluated.

6.12. Climate Change Impacts and Management

Climate change is a management consideration that is becoming increasingly prevalent with regards to ecological conservation. The impacts of climate change include altering averages and extremes in temperature, wind, and precipitation events. Historical climate data show that from 1900-2013, the average annual temperature in the coastal regions of B.C. warmed by 0.6°C to 0.8°C, and it is projected that by the 2080s this will increase by an estimated 1.7°C to 4.5°C (BC MOE 2016). Although these may seem like minute differences, an increase of 5°C was enough to melt the ice sheets covering earth in its latest glacial event 10,000 years ago. Temperature changes are intrinsically connected to precipitation and wind events, and therefore, can alter representative ecological communities in a given landscape. As changes in these variables occur, so will the ecological processes, and species assemblages that are encompassed by them.

Gabriola Island is entirely within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone. The effects of changing temperature and precipitation averages will vary across the region and over time, but SXNR will likely not experience any impacts that would warrant management considerations for a few decades. These impacts will likely be observed with changes in moisture regimes, and ultimately changes in the shape, and size of the polygons delineated in the ecosystem classification assessment. Signs of drought should be monitored for on a decadal basis in mature trees on SXNR, and if warranted, different or additional management actions may be implemented to address climate change impacts. No recommendations with regards to climate change are made at this time.

7. Action Items

7.1. Immediate Actions (1-2 years):

1. Support all partners, contractors and volunteers to complete cultural competency training in regard to reconciliation, knowledge and history of Coast Salish and Indigenous Peoples.
2. Engage with First Nations to ensure that the management plan is reflective of treaty, inherent rights, and the territories of each Nation.
3. Work in collaboration towards a Management Plan for Areas of Cultural Heritage, gathering and harvesting, and Sacred Significance with First Nations.
4. Conduct annual monitoring of SXNR to ensure covenant compliance and evaluate management considerations.
5. Conduct trail maintenance as required (*i.e.*, removal of fallen logs, minor overgrowth pruning)
6. Close off the western (seasonally wet) section of the braided portion of the North Trail.
7. Engage contractors to design a crossing to replace the stepping stones across Stoney Creek. Determine a budget for materials and labour.
8. Develop and implement an invasive species management work plan for the disturbed area in the southwestern corner of SXNR to ensure the establishment of Scotch broom is appropriately addressed.

7.2. Short term Actions (3-5 years):

1. Implement the work plan for construction of the Stoney Creek crossing.
2. Implement the work plan for Scotch broom removal in the southwestern corner of the property and begin restoration (*i.e.*, replanting) efforts.

7.3. Long term Actions (5+ years)

1. Seek cost estimates on a hydrological consultation regarding potential impacts of the ditch connecting to Stoney Creek along the eastern boundary of SXNR.

7.4. Ongoing or Annual Action Items

1. Conduct annual monitoring of SXNR to ensure covenant compliance and evaluate management considerations.
2. Conduct trail maintenance as required (*i.e.*, removal of fallen logs, minor overgrowth pruning)

8. Conclusion

S'ul-hween X'pey (Elder Cedar) Nature Reserve is an area of unique ecological and historical value. Many areas of SXNR are approaching maturity with a few areas noted as being or nearing 250 years old. Old growth forests (>250 years) within the Coastal Douglas-fir moist maritime (CDFmm) biogeoclimatic zone are red-listed in British Columbia. Multiple provincially-listed wildlife species have moderate- to high-class potential for breeding habitat in SXNR; the presence of some of these species has been confirmed in previous studies.

Currently, management efforts are directed at ensuring SXNR remains as undisturbed as possible, while permitting low-impact public access for the purposes of environmental stewardship. Remediation efforts are continuously being implemented where invasive plant species are present, and where public use has created ecological impacts (*i.e.*, construction of boardwalks in sensitive areas). The management options (short- and long-term) provided in this management plan will be considered by the ITC and covenant holders with regards to public safety and ecological conservation.

9. References

Archaeology Branch. 2021. BC Remote Access to Archaeological Data (RAAD). Victoria, BC. Accessed 2021-01-14. https://www2.gov.bc.ca/gov/content/industry/natural-resource-use/archaeology/systems/raad

Barnett, H. G. 1935-1936. Coast Salish field notebooks. Homer Barnett Papers, Special Collections Division, University of British Columbia library, Vancouver.

Barnett, H. G. 1955. The Coast Salish of British Columbia. University of Oregon Monographs, Studies in Archaeology 4 (reprinted in 1975 by Greenwood Press, Connecticut).

BC Conservation Data Centre. 2021. Species and Ecosystems Explorer. URL: https://a100.gov.bc.ca/pub/eswp/

BC Data Catalogue. 2011. Geology Faults. Published by the Ministry of Energy, Mines, and Low Carbon Innovation & BC Geological Survey. URL: https://catalogue.data.gov.bc.ca/dataset/c94e0c13-5385-49c1-9922-822e10135fc6

British Columbia Ministry of Environment (MOE). 2016. Indicators of Climate Change for British Columbia, 2016 update. p. 57. https://www2.gov.bc.ca/gov/content/environment/climate-change/adaptation/impacts

BC Ministry of Forests and Range and Ministry of Environment. 2010. Land Management Handbook #25, Field Manual for Describing Terrestrial Ecosystems- 2nd Edition. BCMFR Research Branch and BCMOE Resource Inventory Branch, Victoria, B.C. (Reprint with updates 2015).

Bouchard, R. 1993. Notes on Nanaimo ethnography and ethnohistory. In Public archaeological investigations at the Departure Bay midden DhRx 16 Vol. II. Permit 1992-029, Report on file at the Archaeology Branch, Victoria, BC.

Demarchi, D. A. 2011. *An introduction to the ecoregions of British Columbia – Third Edition*. Victoria, BC: Ministry of Environment – Ecosystem Information Section.

Islands Trust. 2020a. About the Islands Trust. Last updated Jan. 29, 2021. Accessed Feb 2021. URL: http://www.islandstrust.bc.ca/connect/about-us/

Islands Trust. 2020b. First Nations & Reconciliation. Last updated Oct. 22, 2020. Accessed Feb 2021. URL: http://www.islandstrust.bc.ca/trust-council/first-nations-reconciliation/

Turner, N. J. 1995. Food plants of Coastal First Peoples. Royal British Columbia Museum Handbook series. UBC Press.

Green, R.N., Klinka, K. 1994. A field Guide to Site Identification and Interpretation for the Vancouver Forest Region. Ministry of Forests Research Program. Victoria, BC., Land Manag. Handb. No. 28.

Government of Canada. 2021. Canadian Climatic Normals. Accessed January 2021. URL: https://climate.weather.gc.ca/climate_normals/index_e.html

Littlefield, L. 2000. The Snuneymuxw Village at False Narrows. SHALE 1, Pp.3-11.

Mackenzie, W.H. and J.R. Moran. 2004. Wetlands of British Columbia: A Guide to Identification. Res. Br., B.C. Min. For., Victoria, B.C. Land Manage. Handb. No. 52.

SRK Consulting. 2013. Water Budget Project RDN Phase One (Gabriola, DeCourcy & Mudge Islands), Appendix A, p. 10. http://rdnwaterbudget.ca/wp-content/uploads/islands_appendix_a.pdf

Suttles, W. P. 1990. Central Coast Salish. Handbook of North American Indians: Northwest Coast 7:453-475. Smithsonian Institution, Washington, D.C.

Taara Environmental. 2008. Management Plan for Elder Cedat (S'ul-hween X'pey) Nature Reserve, Gabriola Island, British Columbia. Revision approved by Trust Fund Board Resolution No. TFB 08/1001.

Triton Environmental Consultants and Huock Resource Consultants. 1996. Reconnaissance Level Ecological Inventory of Proposed Woodlot #1632: Gabriola Island. Ministry of Environment, Lands and Parks. Victoria BC

Wang T, Hamann A, Spittlehouse D, Carroll C. 2016. Locally Downscaled and Spatially Customizable Climate Data for Historical and Future Periods for North America. PLoS ONE 11(6): e0156720. doi:10.1371/journal.pone.0156720

Appendix A –Photographic Documentation

Photo Location Map

PHOTO STATION	LOCATION (UTM Coordinates [zone, easting, northing])	DIRECTION	PHOTO-GRAPHER	DATE YYYY-MM-DD	DESCRIPTION
P1a	10U 444739 5445130	NW	GH*	2021-02-02	Stoney creek – looking upstream.
P1b	10U 444739 5445130	SE	GH	2021-02-02	Stoney Creek – looking downstream.
P2a	10U 444710 5445116	E	GH	2021-02-02	Eco-plot #1 (WHA/Vegetation) – Douglas fir – Grand Fir- Oregon Grape Community
P2b	10U 444710 5445116	N	GH	2021-02-02	Eco-plot #1 (WHA/Vegetation) – Douglas fir – Grand Fir- Oregon Grape Community
P2c	10U 444710 5445116	S	GH	2021-02-02	Eco-plot #1 (WHA/Vegetation) – Douglas fir – Grand Fir- Oregon Grape Community
P2d	10U 444710 5445116	W	GH	2021-02-02	Eco-plot #1 (WHA/Vegetation) – Douglas fir – Grand Fir- Oregon

					Grape Community
P3a	10U 444478 5445244	E	GH	2021-02-02	Eco-plot #2 (WHA/Vegetation) – Slough Sedge wetland
P3b	10U 444478 5445244	N	GH	2021-02-02	Eco-plot #2 (WHA/Vegetation) – Slough Sedge wetland
P3c	10U 444478 5445244	S	GH	2021-02-02	Eco-plot #2 (WHA/Vegetation) – Slough Sedge wetland
P3d	10U 444478 5445244	W	GH	2021-02-02	Eco-plot #2 (WHA/Vegetation) – Slough Sedge wetland
P4a	10U 444384 5445376	S	GH	2021-02-02	Looking at slight erosion on north side of creek crossing
P4b	10U 444384 5445376	N	GH	2021-02-02	Looking at bridge crossing from the south side of the creek.
P5a	10U 444422 5445485	E	GH	2021-02-02	Eco-plot #3 –Douglas fir- Salal; Secondary: Cedar-Douglas Fir-Kindbergia
P5b	10U 444422 5445485	N	GH	2021-02-02	Eco-plot #3 –Douglas fir- Salal; Secondary: Cedar-Douglas Fir-Kindbergia
P5c	10U 444422 5445485	S	GH	2021-02-02	Eco-plot #3 –Douglas fir- Salal; Secondary: Cedar-Douglas Fir-Kindbergia
P5d	10U 444422 5445485	W	GH	2021-02-02	Eco-plot #3 –Douglas fir- Salal; Secondary: Cedar-Douglas Fir-Kindbergia
P6a	10U 444599 5445679	E	GH	2021-02-02	Eco-plot #4 (WHA/Vegetation) – Slough Sedge wetland
P6b	10U 444599 5445679	N	GH	2021-02-02	Eco-plot #4 (WHA/Vegetation) – Slough Sedge wetland; Boardwalk and Reed Canary Grass Remediation observed
P6c	10U 444599 5445679	S	GH	2021-02-02	Eco-plot #4 (WHA/Vegetation) – Slough Sedge wetland; Boardwalk and Reed Canary Grass Remediation observed
P6d	10U 444599 5445679	W	GH	2021-02-02	Eco-plot #4 (WHA/Vegetation) – Slough Sedge wetland
P7a	10U 444592 5445742	E	GH	2021-02-02	Eco-plot #5 Douglas-fir – Salal, secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P7b	10U 444592 5445742	N	GH	2021-02-02	Eco-plot #5 Douglas-fir – Salal, secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P7c	10U 444592	S	GH	2021-02-02	Eco-plot #5 Douglas-fir – Salal,

	5445742				secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P7d	10U 444592 5445742	N	GH	2021-02-02	Eco-plot #5 Douglas-fir – Salal, secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P8	10U 444592 5445727	E	GH	2021-02-02	Braided trail, western braid muddy, eastern braid dry.
P9a	10U 444608 5445851	W	GH	2021-02-02	Eco-plot #6 Douglas-fir – Salal; secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P9b	10U 444608 5445851	S	GH	2021-02-02	Eco-plot #6 Douglas-fir – Salal; secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P9c	10U 444608 5445851	W	GH	2021-02-02	Eco-plot #6 Douglas-fir – Salal; secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus
P9d	10U 444608 5445851	N	GH	2021-02-02	Eco-plot #6 Douglas-fir – Salal; secondary unit Cedar – Douglas-fir-Lodgepole pine – Arbutus. Reserve Boundary sign observed.
P10a	10U 444600 5445858	E	GH	2021-02-02	View of the road/trail along the northern boundary of SXNR.
P10b	10U 444600 5445858	W	GH	2021-02-02	View of the road/trail along the northern boundary of SXNR.
P11	10U 444469 5445859	N	GH	2021-02-02	Looking downstream from the north side of the northern trail.
P12a	10U 444323 5445867	E	GH	2021-02-02	Photo monitoring point, as per previous management plans.
P12b	10U 444323 5445867	N	GH	2021-02-02	Photo monitoring point, as per previous management plans.
P12c	10U 444323 5445867	S	GH	2021-02-02	Photo monitoring point, as per previous management plans.
P12d	10U 444323 5445867	W	GH	2021-02-02	Photo monitoring point, as per previous management plans.
P13a	10U 444236 5445834	E	GH	2021-02-02	Eco-plot #8 Douglas-fir – Salal – trail observed
P13b	10U 444236 5445834	N	GH	2021-02-02	Eco-plot #8 Douglas-fir – Salal
P13c	10U 444236 5445834	S	GH	2021-02-02	Eco-plot #8 Douglas-fir – Salal
P13d	10U 444236 5445834	W	GH	2021-02-02	Eco-plot #8 Douglas-fir – Salal – trail observed
P14a	10U 444177	E	GH	2021-02-02	Photo monitoring point as per

	5445828				previous management reports. Trail intersection.
P14b	10U 444177 5445828	N	GH	2021-02-02	Photo monitoring point as per previous management reports. Trail intersection.
P14c	10U 444177 5445828	S	GH	2021-02-02	Photo monitoring point as per previous management reports. Trail intersection.
P14d	10U 444177 5445828	W	GH	2021-02-02	Photo monitoring point as per previous management reports. Trail intersection.
P15a	10U 444836 5445322	E	GH	2021-02-03	Eco-plot #7 – Slough Sedge Wetland
P15b	10U 444836 5445322	N	GH	2021-02-03	Eco-plot #7 – Slough Sedge Wetland
P15c	10U 444836 5445322	S	GH	2021-02-03	Eco-plot #7 – Slough Sedge Wetland
P15d	10U 444836 5445322	W	GH	2021-02-03	Eco-plot #7 – Slough Sedge Wetland
P16a	10U 444395 5445763	E	GH	2021-02-03	Eco-plot #9 - Douglas-fir – Salal
P16b	10U 444395 5445763	N	GH	2021-02-03	Eco-plot #9 - Douglas-fir – Salal
P16c	10U 444395 5445763	S	GH	2021-02-03	Eco-plot #9 - Douglas-fir – Salal
P16d	10U 444395 5445763	W	GH	2021-02-03	Eco-plot #9 - Douglas-fir – Salal
P17a	10U 444853 5445644	E	GH	2021-02-03	Eco-plot #10 - Douglas-fir – Grand fir – Oregon grape
P17b	10U 444853 5445644	N	GH	2021-02-03	Eco-plot #10 - Douglas-fir – Grand fir – Oregon grape
P17c	10U 444853 5445644	S	GH	2021-02-03	Eco-plot #10 - Douglas-fir – Grand fir – Oregon grape
P17d	10U 444853 5445644	W	GH	2021-02-03	Eco-plot #10 - Douglas-fir – Grand fir – Oregon grape
P18a	10U 444462 5445144	E	GH	2021-02-03	Eco-plot #11 - Douglas-fir – Grand fir – Oregon grape
P18b	10U 444462 5445144	N	GH	2021-02-03	Eco-plot #11 - Douglas-fir – Grand fir – Oregon grape
P18c	10U 444462 5445144	S	GH	2021-02-03	Eco-plot #11 - Douglas-fir – Grand fir – Oregon grape
P18d	10U 444462 5445144	W	GH	2021-02-03	Eco-plot #11 - Douglas-fir – Grand fir – Oregon grape

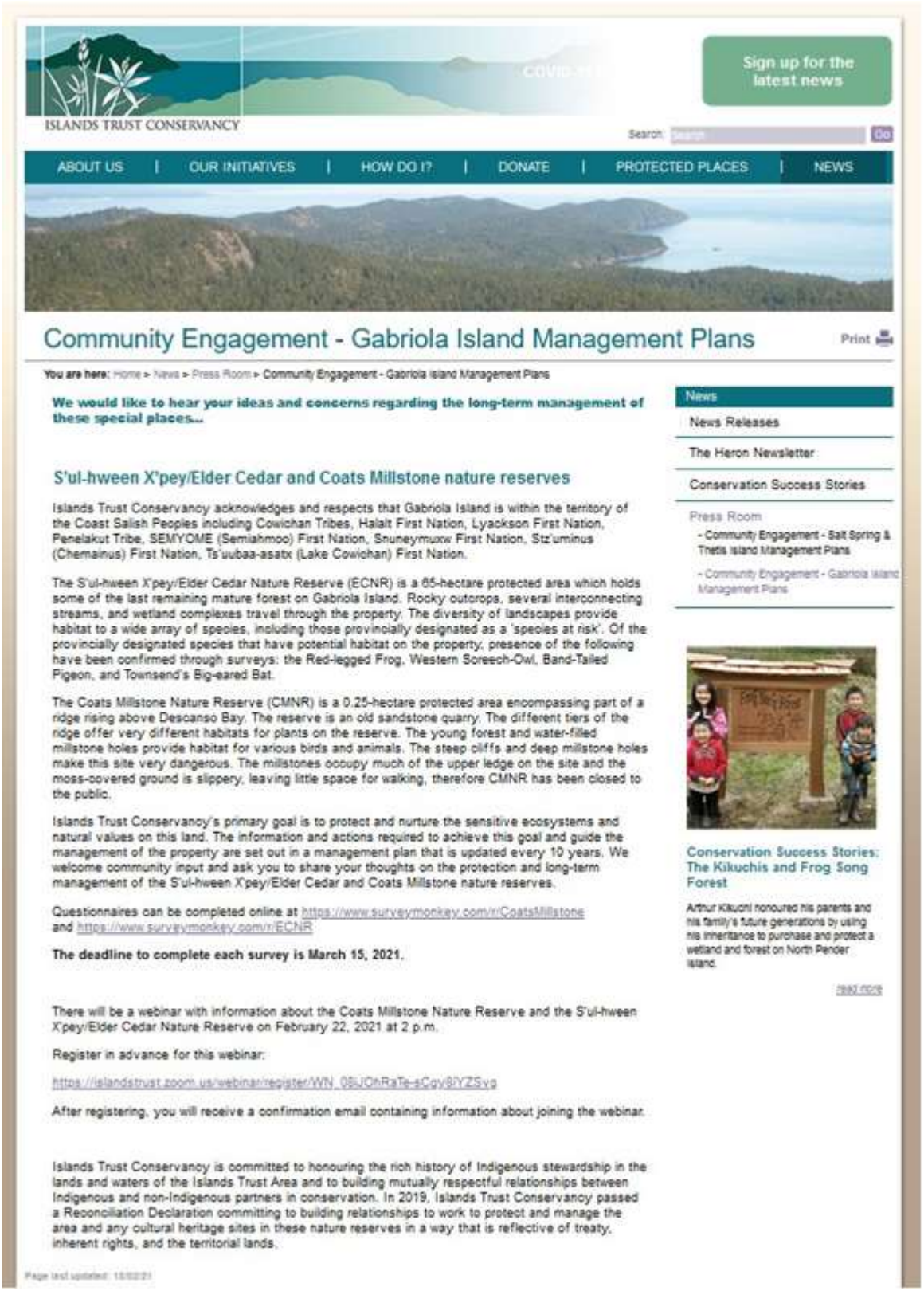
P19a	10U 444266 5445224	E	GH	2021-02-03	Eco-plot 12 - Slough Sedge wetland
P19b	10U 444266 5445224	N	GH	2021-02-03	Eco-plot 12 - Slough Sedge wetland
P19c	10U 444266 5445224	S	GH	2021-02-03	Eco-plot 12 - Slough Sedge wetland
P19d	10U 444266 5445224	W	GH	2021-02-03	Eco-plot 12 - Slough Sedge wetland
P20a	10U 444184 5445073	N	GH	2021-02-03	Eco Plot 13 – Douglas fir – Salal. Very small polygon. English Holly observed.
P20b	10U 444184 5445073	W	GH	2021-02-03	Eco Plot 13 – Douglas fir – Salal. Very small polygon.
P20c	10U 444184 5445073	W	GH	2021-02-03	Eco Plot 13 – Douglas fir – Salal. Very small polygon. This photo captures its entirety.
P21a	10U 444957 5445050	W	GH	2021-02-03	Photo monitoring point as per previous management reports. Stormwater ditches and culvert flowing into ditch; watercourse leads to Stoney Creek.
P21b	10U 444957 5445050	S	GH	2021-02-03	Photo monitoring point as per previous management reports. Stormwater ditches and culvert flowing into ditch; watercourse leads to Stoney Creek.
P21c	10U 444957 5445050	N	GH	2021-02-03	Photo monitoring point as per previous management reports. Stormwater ditches and culvert flowing into ditch; watercourse leads to Stoney Creek.
P22	10U 444981 5445234	N	GH	2021-02-03	English Holly tree. Unclear whether it is inside or outside SXNR boundary based on GPS accuracy.
P23a	10U 444268 5445421	E	GH	2021-02-03	Ecological polygon 8 – confirmed similar attributes to other Slough Sedge wetland areas
P23b	10U 444268 5445421	N	GH	2021-02-03	Ecological polygon 8 – confirmed similar attributes to other Slough Sedge wetland areas
P23c	10U 444268 5445421	S	GH	2021-02-03	Ecological polygon 8 – confirmed similar attributes to other Slough Sedge wetland areas
P23d	10U 444268 5445421	W	GH	2021-02-03	Ecological polygon 8 – confirmed similar attributes to other Slough Sedge wetland areas

P24	10U 444455 5445139	W	GH	2021-02-03	Mature Douglas fir (91 cm DBH) cored and aged at approximately 210 years old.
P25a	10U 444228 5445098	E	GH	2021-02-03	Ecological Polygon 14 – Disturbed Area with significant Scotch Broom establishment.
P25b	10U 444228 5445098	N	GH	2021-02-03	Ecological Polygon 14 – Disturbed Area with significant Scotch Broom establishment.
P25c	10U 444228 5445098	S	GH	2021-02-03	Ecological Polygon 14 – Disturbed Area with significant Scotch Broom establishment.
P25d	10U 444228 5445098	W	GH	2021-02-03	Ecological Polygon 14 – Disturbed Area with significant Scotch Broom establishment. Monitoring Well observed.
P26	10U 444587 5445227	W	GH	2021-02-03	A Wildlife Tree with several cavities of adequate size for a variety of owls.
P27	10U 444873 5445450	E	GH	2021-02-03	A Wildlife Tree with a large cavity suitable for secondary cavity nesters.
P28a	10U 444593 5445076	E	GH	2021-02-03	Ecological Polygon #17 – disturbed area, no invasive plants observed.
P28b	10U 444593 5445076	W	GH	2021-02-03	Ecological Polygon #17 – disturbed area, no invasive plants observed.
P29	10U 444783 5445123	N	GH	2021-02-03	Stepping stones crossing Stoney Creek.
P30a	10U 444899 5445830	NW	GH	2021-02-03	Photo monitoring point as per previous management reports. Trail through rock outcrop.
P30b	10U 444899 5445830	S	GH	2021-02-03	Photo monitoring point as per previous management reports. Trail through rock outcrop.
P31a	10U 444972 5445810	E	GH	2021-02-03	Photo monitoring point as per previous management reports. Old road that used to extend into private property that is now overgrown and fenced.
P31b	10U 444972 5445810	E	GH	2021-02-03	Photo monitoring point as per previous management reports. Old road that used to extend into private property that is now overgrown and fenced.
P31c	10U 444972 5445810	E	GH	2021-02-03	Photo monitoring point as per previous management reports. Old

					road that used to extend into private property that is now overgrown and fenced. Nature Reserve boundary sign observed
P32a	10U 444960 5445356	N	GH	2021-02-03	Photo monitoring point as per previous management reports. Looking downstream at Stoney Creek.
P32b	10U 444960 5445356	S	GH	2021-02-03	Photo monitoring point as per previous management reports. Looking upstream at Stoney.
P33a	10U 444970 5445623	E	GH	2021-02-03	Photo monitoring point as per previous management reports. Reserve boundary sign from Windecker Drive.
P33b	10U 444970 5445623	W	GH	2021-02-03	Photo monitoring point as per previous management reports. Reserve boundary sign from Windecker Drive.

* GH = Greg Howard

Appendix B – Community Engagement Survey Documentation



ISLANDS TRUST CONSERVANCY

Sign up for the latest news

Search Go

ABOUT US | OUR INITIATIVES | HOW DO I? | DONATE | PROTECTED PLACES | NEWS

Community Engagement - Gabriola Island Management Plans

Print

You are here: Home > News > Press Room > Community Engagement - Gabriola Island Management Plans

We would like to hear your ideas and concerns regarding the long-term management of these special places...

S'ul-hween X'pey/Elder Cedar and Coats Millstone nature reserves

Islands Trust Conservancy acknowledges and respects that Gabriola Island is within the territory of the Coast Salish Peoples including Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation, Ts'uubaa-asatx (Lake Cowichan) First Nation.

The S'ul-hween X'pey/Elder Cedar Nature Reserve (ECNR) is a 65-hectare protected area which holds some of the last remaining mature forest on Gabriola Island. Rocky outcrops, several interconnecting streams, and wetland complexes travel through the property. The diversity of landscapes provide habitat to a wide array of species, including those provincially designated as a 'species at risk'. Of the provincially designated species that have potential habitat on the property, presence of the following have been confirmed through surveys: the Red-legged Frog, Western Screech-Owl, Band-Tailed Pigeon, and Townsend's Big-eared Bat.

The Coats Millstone Nature Reserve (CMNR) is a 0.25-hectare protected area encompassing part of a ridge rising above Descanso Bay. The reserve is an old sandstone quarry. The different tiers of the ridge offer very different habitats for plants on the reserve. The young forest and water-filled millstone holes provide habitat for various birds and animals. The steep cliffs and deep millstone holes make this site very dangerous. The millstones occupy much of the upper ledge on the site and the moss-covered ground is slippery, leaving little space for walking, therefore CMNR has been closed to the public.

Islands Trust Conservancy's primary goal is to protect and nurture the sensitive ecosystems and natural values on this land. The information and actions required to achieve this goal and guide the management of the property are set out in a management plan that is updated every 10 years. We welcome community input and ask you to share your thoughts on the protection and long-term management of the S'ul-hween X'pey/Elder Cedar and Coats Millstone nature reserves.

Questionnaires can be completed online at https://www.surveymonkey.com/r/CoatsMillstone and https://www.surveymonkey.com/r/ECNR

The deadline to complete each survey is March 15, 2021.

There will be a webinar with information about the Coats Millstone Nature Reserve and the S'ul-hween X'pey/Elder Cedar Nature Reserve on February 22, 2021 at 2 p.m.

Register in advance for this webinar:

https://islandstrust.zoom.us/webinar/register/WN_0SiJOhRaTe-sCgv8lYZSvg

After registering, you will receive a confirmation email containing information about joining the webinar.

Islands Trust Conservancy is committed to honouring the rich history of Indigenous stewardship in the lands and waters of the Islands Trust Area and to building mutually respectful relationships between Indigenous and non-Indigenous partners in conservation. In 2019, Islands Trust Conservancy passed a Reconciliation Declaration committing to building relationships to work to protect and manage the area and any cultural heritage sites in these nature reserves in a way that is reflective of treaty, inherent rights, and the territorial lands.

Page last updated: 15/02/21

News

News Releases

The Heron Newsletter

Conservation Success Stories

Press Room

- Community Engagement - Salt Spring & Thetis Island Management Plans

- Community Engagement - Gabriola Island Management Plans

Conservation Success Stories: The Kikuchis and Frog Song Forest

Arthur Kikuchi honoured his parents and his family's future generations by using his inheritance to purchase and protect a wetland and forest on North Pender Island.

read more

Public information provided on the ITC website – (February/March 2021)

ISLANDS TRUST CONSERVANCY

S'ul-hween X'pey/ Elder Cedar Nature Reserve Management Plan Questionnaire

ECNR Questionnaire Open until March 15, 2021

Islands Trust Conservancy acknowledges and respects that Gabriola Island is within the territory of the Coast Salish Peoples including Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation, Ts'uubaa-asatx (Lake Cowichan) First Nation.

The S'ul-hween X'pey/ Elder Cedar Nature Reserve is a 65 hectare protected area which holds some of the last remaining mature forest on Gabriola Island. Rocky outcrops, several interconnecting streams and wetland complexes travel through the property. The diversity of landscapes provide habitat to a wide array of species, including those provincially designated as a 'species at risk'. Of the provincially designated species that have potential habitat on the property, presence of the following have been confirmed through previous surveys: the Red-legged Frog, Western Screech-Owl, Band-Tailed Pigeon and Townsend's Big-eared Bat.

The Islands Trust Conservancy's primary goal is to protect and nurture the sensitive ecosystems and natural values on this land. The information and actions required to achieve this goal and guide the management of the property are set out in a management plan that is updated every 10 years. We welcome community input and ask you to share your thoughts on the protection and long-term management of the S'ul-hween X'pey/ Elder Cedar Nature Reserve.

1. Are you a resident of Gabriola Island?

- ◯ Yes, I live on north Gabriola Island
- ◯ Yes, I live mid-island
- ◯ Yes, I live on south Gabriola Island
- ◯ No, but I own property on Gabriola Island
- ◯ No, I'm a visitor

2. Have you ever visited the S'ul-hween X'pey/ Elder Cedar Nature Reserve? If so, how often?

- ◯ No, never
- ◯ Once
- ◯ A few times
- ◯ A few times per year
- ◯ Once a month or more

3. If you have visited S'ul-hween X'pey/ Elder Cedar Nature Reserve before, what did you do there?

- ☐ Hiking/walking
- ☐ Wildlife viewing
- ☐ Dog walking
- ☐ Other (please specify)

4. Please list any wildlife and unique plant species you have seen in or near S'ul-hween X'pey/ Elder Cedar Nature Reserve:

5. What do you believe to be the most important values of nature reserves? (choose three)

- ☐ Protection of habitat for at-risk species
- ☐ Ecosystem services (e.g. clean water and air, erosion control, groundwater recharge, etc.)
- ☐ Recreational opportunities
- ☐ Education and research opportunities
- ☐ Tourism
- ☐ Aesthetic appeal
- ☐ Conservation for the sake of the intrinsic value of nature
- ☐ Other (please specify)

6. What activities do you believe are incompatible with the protection of natural features, and should not be allowed within S'ul-hween X'pey/ Elder Cedar Nature Reserve?

7. What do you feel could be the greatest threat to the health of this nature reserve, and should be the highest management priority for the Islands Trust Conservancy?

8. Please provide any other relevant information that will help us make the best management decisions for S'ul-hween X'pey/ Elder Cedar Nature Reserve.

9. Please share with us any history you know about this property or any knowledge you have about unique cultural or other special features on the property.

10. If you would like to receive periodic updates from the Islands Trust Conservancy on this and other conservation projects on the islands, please provide your name and email address:

Appendix C – Engagement Letter to Adjacent Landholders

ISLANDS TRUST CONSERVANCY

Protecting Islands in the Salish Sea

February 5, 2021

Dear Neighbour,

The Islands Trust Conservancy is updating the management plan to guide management of the S'ul-hween X'pey/ Elder Cedar Nature Reserve for the next 10 years and we are interested in hearing from you.

The S'ul-hween X'pey/ Elder Cedar Nature Reserve (PID: 026-664-453, Block A, Section 16, Gabriola Island Nanaimo District) is an 65.4-hectare (161.5-acre) protected area located in central Gabriola Island, just south of the northern shoreline. Islands Trust Conservancy acknowledges and respects that Gabriola Island is within the territory of Cowichan Tribes, Halalt First Nation, Lyackson First Nation, Penelakut Tribe, SEMYOME (Semiahmoo) First Nation, Snuneymuxw First Nation, Stz'uminus (Chemainus) First Nation, Ts'uubaa-asatx (Lake Cowichan) First Nation.

PHONE: (250) 405-5151 · FAX: (250) 405-5155 · 200-1627 FORT ST, VICTORIA, BC, V8R 1H8
ITCMAIL@ISLANDSTRUST.BC.CA · WWW.ISLANDSTRUSTCONSERVANCY.CA

The S'ul-hween X'pey/ Elder Cedar Nature Reserve holds some of the last remaining mature forest on Gabriola Island. Rocky outcrops, several interconnecting streams and wetland complexes travel through the property. The diversity of landscapes provide habitat to a wide array of species, including those provincially designated as a 'species at risk'. Of the provincially designated species that have potential habitat on the property, presence of the following have been confirmed through previous surveys: the Red-legged Frog, Western Screech-Owl, Band-Tailed Pigeon and Townsend's Big-eared Bat.

The Islands Trust Conservancy will work in partnership with the Gabriola Land and Trails Trust and Nanaimo Area Land Trust who hold a conservation covenant on the Nature Reserve. There are restrictions on the use of the property, outlined in the covenant, that have been put in place to protect the native plants and animals within the reserve.

Your input is requested for the development of the next Elder Cedar (S'ul-hween X'pey) Nature Reserve Management Plan. As a neighbour of the reserve, we would like to hear your ideas and concerns regarding the long-term management of this special place.

The enclosed questionnaire can be:

- completed online at https://www.surveymonkey.com/r/ECNR
  or through our website: http://www.islandstrustconservancy.ca;
- returned by mail to the Victoria office at 200 – 1627 Fort Street, Victoria, BC V8R 1H8; or,
- dropped off in person at the Islands Trust office on Gabriola Island at 700 North Road.

The deadline to complete the survey is March 15, 2021.

There will be a webinar with information about the S'ul-hween X'pey/ Elder Cedar Nature Reserve as well as the Coats Millstone Nature Reserve on February 22, 2021 at 2pm.

Register in advance for this webinar:
https://islandstrust.zoom.us/webinar/register/WN_08iJOhRaTe-sCgy8iYZSvg
After registering, you will receive a confirmation email containing information about joining the webinar.

Thank you for taking the time to share your ideas regarding management of the S'ul-hween X'pey/ Elder Cedar Nature Reserve. For more information, please contact me at the phone number or email listed below.

Sincerely,

Nuala Murphy
Property Management Specialist, Islands Trust Conservancy
250-405-5193
nmurphy@islandstrust.bc.ca

PHONE: (250) 405-5151 · FAX: (250) 405-5155 · 200-1627 FORT ST, VICTORIA, BC, V8R 1H8
ITCMAIL@ISLANDSTRUST.BC.CA · WWW.ISLANDSTRUSTCONSERVANCY.BC.CA

Appendix D – First Nations Engagement Letter

ISLANDS TRUST CONSERVANCY

Protecting Islands in the Salish Sea

February 11, 2021

Dear Chief and Council,

Re: Coats Millstone and S'ul-hween X'pey/ Elder Cedar Nature Reserve Management Plan

The Islands Trust Conservancy, through its work as a land trust, is drafting a management plan for the Coats Millstone and S'ul-hween X'pey/ Elder Cedar Nature Reserves on Gabriola Island.

The nature reserves are within your First Nations treaty and/or territorial lands and waters and we want to ensure that the direction of the management plans is reflective of both reconciliation and conservation goals. At this time, ITC would like to work with you to understand the cultural significance and use of the area so that these values can also be preserved and protected—now and into the future. We understand that the cultural significance of this land may be confidential and we would work with you to ensure that the management plan reflects this significance appropriately. Acknowledging the importance of naming and recognition, if there is signage, names, or place names that should be used for these areas please let us know.

Coats Millstone Nature Reserve (PID: 018-560-601, Lot 5, Section 20, Gabriola Island, Nanaimo District, Plan VIP57861) is a 0.25 hectare encompassing part of a ridge rising above Descanso Bay. Coats Millstone Nature Reserve (CMNR) is an old sandstone quarry with steep tiers on a cliff. The young forest and water-filled millstone holes provide habitat for various birds and animals, but the steep cliffs and deep millstone holes make this site very dangerous and CMNR has been closed to the public.

S'ul-hween X'pey/Elder Cedar Nature Reserve (PID: 026-664-453, Block A, Section 16, Gabriola Island, Nanaimo District) is an 65.4-hectare (161.5-acre) protected area located in central Gabriola Island, just south of the northern shoreline. S'ul-hween X'pey Nature Reserve holds some of the last remaining mature forest on Gabriola Island. Rocky outcrops, several interconnecting streams and wetland complexes travel through the property. The diversity of landscapes provide habitat to a wide array of species, presence of the following provincially designated species designated as a 'species at risk' have been confirmed through previous surveys: the Red-legged Frog, Western Screech-Owl, Band-Tailed Pigeon and Townsend's Big-eared Bat.

Islands Trust Conservancy would like to undertake an archaeological review or traditional use study in collaboration with you. Islands Trust Conservancy passed a Reconciliation Declaration, committing to building relationships to work with your Nation to protect and manage the area and any cultural heritage sites in these nature reserves in a way that is reflective of treaty, inherent rights, and the territorial lands of your Nation.

PHONE: (250) 405-5151 · FAX: (250) 405-5155 · 200-1627 FORT ST, VICTORIA, BC, V8R 1H8
ITCMAIL@ISLANDSTRUST.BC.CA · WWW.ISLANDSTRUSTCONSERVANCY.CA

Figure 1. Gabriola Island, Islands Trust Conservancy Nature Reserves

You may also be interested to know that Islands Trust Conservancy has developed a draft management plan template that includes cultural heritage and spiritual significance. I would be pleased to provide it to you, as a starting point if you would like to comment on it.

A questionnaire can be completed online at: https://www.surveymonkey.com/r/CoatsMillstone
https://www.surveymonkey.com/r/ECNR

The survey will remain online until March 15, 2021, and I can also be contacted at any time using the contact details below.

There will be a webinar with information about the Coats Millstone Nature Reserve and the S'ul-hween X'pey/ Elder Cedar Nature Reserve on February 22, 2021 at 7:00 pm. Register in advance for this webinar:

https://islandstrust.zoom.us/webinar/register/WN_08iJOhRaTe-sCgy8iYZSvg
After registering, you will receive a confirmation email containing information about joining the webinar.

PHONE: (250) 405-5151 · FAX: (250) 405-5155 · 200-1627 FORT ST, VICTORIA, BC, V8R 1H8
ITCMAIL@ISLANDSTRUST.BC.CA · WWW.ISLANDSTRUSTCONSERVANCY.CA

Thank you for considering our request to work together. Please contact me at the number or email listed below. Thank you for your kind consideration.

Sincerely,

N. Murphy

Nuala Murphy
Property Management Specialist
Islands Trust Conservancy
250-405-5193 | nmurphy@islandstrust.bc.ca

Islands Trust Conservancy's Victoria office is located in Coast Salish territory and we acknowledge with respect the BOḰEĆEN, Cowichan Tribes, Halalt, Homalco, K'ómoks, Klahoose, Ts'uubaa-asatx, Lək̓ ʷəŋən (SXIMEŁEŁ, Songhees, T'Sou-ke), Lyackson, MÁLEXEŁ, Penelakut, Qualicum, Scia'new, səl̓ilwətaʔɬ, SEMYOME, shíshálh, Snaw-naw-as, Snuneymuxw, Sḵwx̱wú7mesh, SȾÁUTW̱, Stz'uminus, Tla'amin, scaẃaθən məsteyəxʷ, We Wai Kai, Wei Wai Kum, W̱JOŁEŁP, W̱SIḴEM, and xʷməθkʷəy̓əm territories in which we live and work.

PHONE: (250) 405-5151 · FAX: (250) 405-5155 · 200-1627 FORT ST, VICTORIA, BC, V8R 1H8
ITCMAIL@ISLANDSTRUST.BC.CA · WWW.ISLANDSTRUSTCONSERVANCY.CA