Slocan Valley
Sensitive Ecosystems Inventory

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for:

Slocan River Streamkeepers
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EXECUTIVE SUMMARY

Preliminary Sensitive Ecosystems Inventory (SEI) mapping of the Slocan Valley was completed during the summer of 2012. The project was initiated by the Slocan River Streamkeepers in order to map and describe the ecosystem of the Slocan Valley and to serve as a baseline layer for future stewardship and restoration projects. Funding was provided by the Columbia Basin Trust and the Regional District of Central Kootenay.

SEI mapping was created in 1993 by the Canadian Wildlife Service and the BC Conservation Data Centre. It was created in '*response to a need for inventory of at-risk and ecologically fragile ecosystems, and critical wildlife habitat areas on the east side of Vancouver Island.'* Since then, numerous projects have been completed on the Sunshine Coast, Bowen Island, and throughout the Okanagan, and portions of the Fraser Valley. The main purpose of SEI mapping is to describe the ecological diversity of a given area, and determine the type and extent of vulnerable and rare elements.

This preliminary report describes the type and extent of ecosystems occurring in the Slocan Valley. The mapping was used to develop regionally specific sensitive ecosystem classes and subclasses which will be refined in consultation with the BC Conservation Data Centre.

A total of 3,019 polygons were mapped for the project, encompassing 10,963 hectares. Polygon size ranged from <0.1 (37m^2) to 1,222 hectares. The most commonly mapped ecosystem types were not sensitive (24.8%, 2,716.9 ha), young conifer forests (15.8%, 1,728.8 ha), and mature conifer forests (15.3%, 1,678.9 ha), while 14 ecosystem types accounted for less than 1% of the study area. Overall, the Not Sensitive classes accounted for 56.9% (6,212.7 ha) of the study area, while Sensitive Ecosystems encompassed 22.9% (2,495.8 ha) and Other Important Ecosystems was 20.6% (2,254.5 ha).

ACKNOWLEDGMENTS

Numerous people and organizations were involved in this project. Jennifer Yeow, Colin Mackintosh and the rest of the Slocan River Streamkeepers were involved thought the project. Large portion so of the river and riparian line work were adapted from previous work completed by Peter Corbett (Mirkwood Ecological Consultants) and Tom Bradley (Woodlot Forestry Services) for the Slocan River Streamkeepers. Adrian Leslie assisted with field surveys and data collection. Tom Dool (Regional District of Central Kootenay) provided GIS base data, and Justin Robinson (Selkirk Geospatial Research Centre) assisted with map production. Walter Popoff (RDCK Area H Director) supported the project in numerous ways, including assisting with grants.

This project was funded by generous grants from the Columbia Basin Trust and the Regional District of Central Kootenay. In-kind contributions were made by the Selkirk Geospatial Research Centre (Selkirk College) and the Columbia Power Corporation.

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1.0 INTRODUCTION

1.1 Slocan River Streamkeepers

The Slocan River Streamkeepers was formed in 2003 as a member group of the Pacific Streamkeepers Federation. The society came together out of concern for the Slocan River, and to learn about our river's ecology, to help maintain it and, with help from riverside landowners, restore aquatic habitat. Their mission statement is:

> *"To work with the local community to promote awareness of the aquatic environment and engage in restorative and monitoring activities that benefit the Slocan River".*

In partnership with our funders, they carry out an outreach program at local schools and involve youth in monitoring and restoration projects. Their partnership with many local organizations enables them to carry out restorative projects on private land and address the issue of riparian conservation throughout the valley.

1.2 Project Overview

The goal of this project was to use Sensitive Ecosystems Inventory (SEI) methodology to map the lowland portion of the Slocan Valley from the outlet of Slocan Lake to the confluence of the Slocan and Kootenay Rivers. SEI mapping was created in 1993 by the Canadian Wildlife Service and the BC Conservation Data Centre. It was created in '*response to a need for inventory of at-risk and ecologically fragile ecosystems, and critical wildlife habitat areas on the east side of Vancouver Island.'* Since then, numerous projects have been completed on the Sunshine Coast, Bowen Island, and throughout the Okanagan, and portions of the Fraser Valley. In 2006 a *Standard for Mapping Ecosystems At Risk in British Columbia* was created by the Resource Inventory Standards Committee to promote a standardized process province wide (RISC 2006).

The main purpose of SEI mapping is to describe the ecological diversity of a given area, and determine the type and extent of vulnerable and rare elements (RISC 2006). The SEI standard describes an overview of the assessment process as follows:

> 'The SEI classification uses two primary groupings of ecosystems: ***Sensitive Ecosystems*** and ***Other Important Ecosystems***. Within each of these groups a series of classes and subclasses is defined that provides a general level of ecosystem description that is appropriate for public education and local planning exercises. Sensitive Ecosystem categories are generalised groupings of ecosystems that share many characteristics, particularly ecological sensitivities, ecosystem processes, at-risk status, and wildlife habitat values. Criteria for ecological sensitivity include: ***environmental specificity***, susceptibility to hydrological changes, soil erosion, especially on shallow soils, spread of invasive alien plants, and sensitivity to human disturbance. Other

> Important Ecosystems have significant ecological and biological values associated with them that can be identified and mapped, although they are not defined as Sensitive Ecosystems because they have been substantially altered by human use. Consideration of Other Important Ecosystems is critical to capturing key elements of biodiversity of some project areas; they sometimes provide recruitment sites for ecosystems at risk or important wildlife habitat requiring recovery or restoration.'

This report serves as the preliminary findings of the SEI project. It describes the type and extent of ecosystems found in the Slocan Valley.

1.3 Objectives

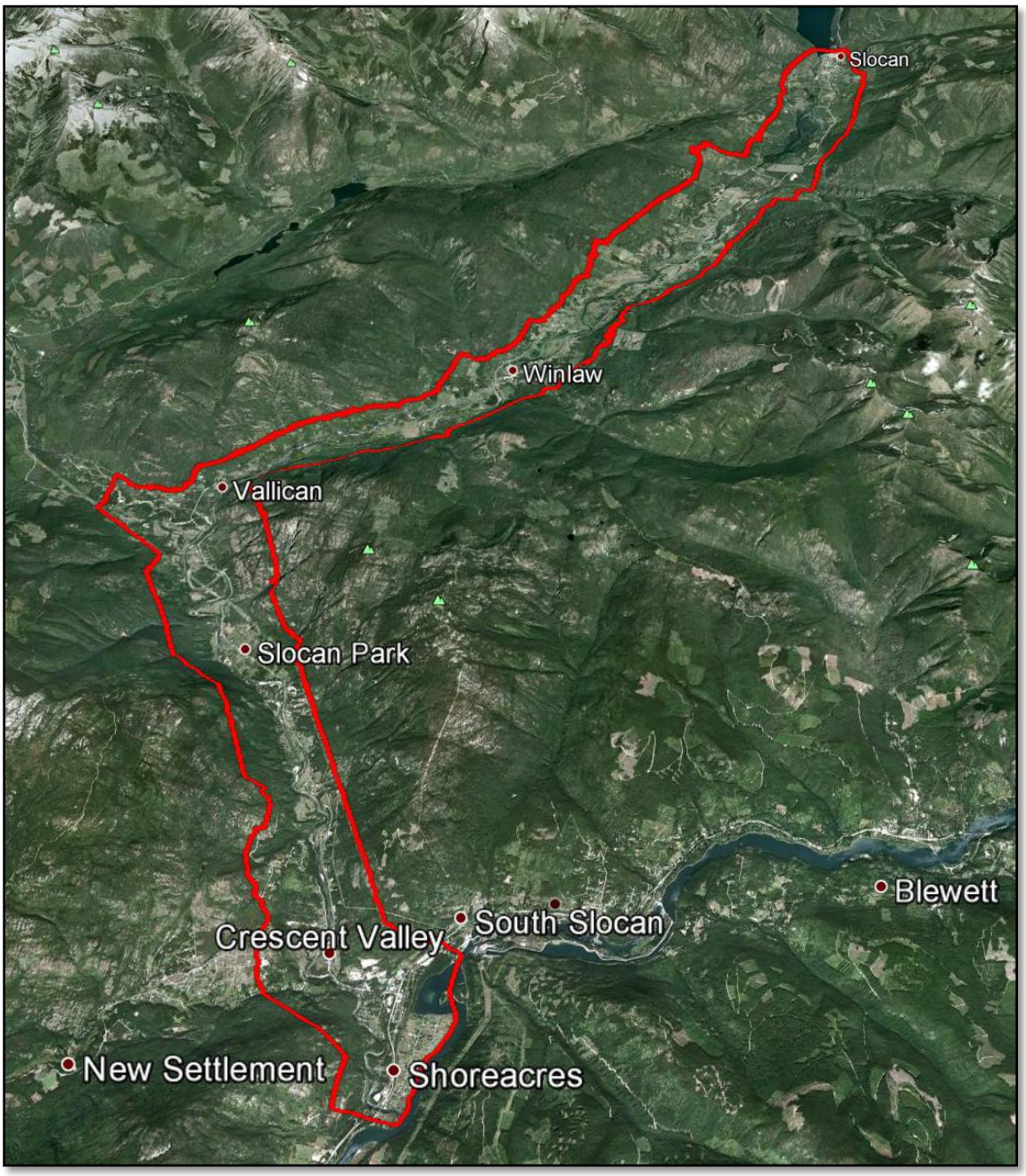
The objectives of this project were to:

- create an ecological baseline of the Slocan Valley that can be used by local government, non-profit organizations and the general public,
- increase the body of knowledge of ecosystem that occur in the Slocan Valley,
- create baseline data to assist with science based decision making; and
- develop a tool for the Streamkeepers to continue with restoration of riparian areas throughout the valley.

2.0 STUDY AREA

The project study area focused on the lowland portion of the Slocan Valley from the outlet of Slocan Lake to the confluence of the Slocan and Kootenay Rivers, with a focus on private land (Figure 2.0-1). Mapping boundaries were based on natural or anthropogenic features, orthophoto coverage, and steep slopes where ecosystems could not be accurately mapped due to the lack of stereo imagery.

Figure 2.0-1. Slocan Valley SEI Study Area



Adapted from Google Earth.

3.0 METHODOLOGY

3.1 Development of Sensitive Ecosystem Classifications

Preliminary SEI classes and subclasses were developed for this project from previous SEI projects in the Lower Mainland, Vancouver Island, Gulf Islands and Okanagan. As this is the first SEI project to be completed in the Kootenay region, SEI classification from previous projects were assessed and adapted as necessary. Table 3.0-1 presents the classification system used for this project.

Table 3.0-1. Potential SE Classes and Subclasses

SEI Class	SEI Subclass	Brief Description
OF: Old Forest		Forests > 140 yrs
OF	co: coniferous	Conifer > 75% of stand
OF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
MF: Mature Forest		Forests > 80 yrs, < 140 yrs
MF	co: coniferous	Conifer-dominated (> 75% of stand composition)
MF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
MF	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition), any size
YF: Young Forest		Patches of forest – stands > 30 yrs, < 80 yrs
YF	co: coniferous	Conifer-dominated (> 75% of stand composition)
YF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
YF	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition)
PS: Pole Sapling		Trees > 10 m tall, usually 10 - 15 yrs
PS	co: coniferous	Conifer-dominated (> 75% of stand composition)
PS	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
PS	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition)
WD: Woodland		Dry site, open stands with between 10 and 25% tree cover
WD	co: coniferous	Conifer > 75% of stand
WD	mx: mixed	Conifer > 25% and broadleaf > 25% of composition
HB: Herbaceous		Non-forested ecosystems; usually shallow soils, often with bedrock outcrops.
HB	hb: herbaceous	Non-forested, often shallow soils, lichens, moss, or grass/herb dominated.
HB	sh: shrub	Dominated by shrubby vegetation (<10m in height)
SV: Sparsely Vegetated		Areas with 5 – 10% vascular vegetation.
SV	cl: cliff	Steep slopes, often with exposed bedrock.
SV	ro: rock outcrop	Rock outcrops – areas of bedrock exposure.
SV	ta: talus	Dominated by rubbly blocks of rock.
SV	es: exposed soil	Any area of exposed soil that is not in other definitions.
RI: Riparian		Ecosystems associated with and influenced by freshwater
RI	fh: high bench	High bench floodplain terraces
RI	fm: medium bench	Medium bench floodplain terraces
RI	fl: low bench	Low bench floodplain terraces
RI	ff: fringe	Narrow, linear community along watercourses that generally lack

		floodplains and floodplain communities
RI	ri: river	River and creeks, including gravel bars
WN: Wetland		Terrestrial – freshwater transitional areas.
WN	ms: marsh	Graminoid or forb-dominated nutrient-rich wetlands
WN	sp: swamp	Shrub or tree-dominated wetlands
WN	ow: shallow water	Permanently flooded, water less than 2m deep at mid-summer
WN	mo: modified	Modified wetlands that still retain wetland functions and processes
FW: Lakes and Ponds		
FW	pd: pond	Open water > 2 m deep and generally < 50 ha.
FS: Seasonally Flooded Fields		Annually flooded cultivated fields, hay fields, range land, or old fields.
OD: Old Field		Large, old field ecosystems.
NS: Not Sensitive		Disturbed and permanently developed/modified areas.

3.2 Ecosystem Mapping

Ecosystem mapping was performed using a 10cm resolution orthomosaic of custom flown airphotos (July, 2011) of the Slocan Valley. Mapping was completed in ESRI ArcMap 9.3 using heads up delineation. As the goals of the project were to identify all ecosystem types, a minimum polygon size or mapping scale was not used, rather they were adjusted to fit natural features as needed. Mapping procedures generally followed the protocol for Terrestrial Ecosystem Mapping (RISC 1998) and Standard for Mapping Ecosystems At Risk in British Columbia (RISC 2006), but was limited by the lack of stereo imagery.

Each ecosystem polygon included attributes describing the type of ecosystem (SEI class and if applicable subclass) that occurred (up to 3 types per polygon) and the approximate area of each ecosystem type. For example, a polygon code may appear as follows:

5MF:co - 3YF:co - 2WN:sp

which can be broken down to describe the polygon as containing:

50% mature coniferous forest, 30% young coniferous forest, and 20% swamp.

3.3 Field Surveys

Field surveys were completed between June and August, 2012. 240 sample plots were established throughout the study area. The following data were collected at most plots:

- GPS location,
- Dominant vegetation,
- SEI class and subclass,

- Condition assessment,
- Disturbance assessment,
- Representative photos, and
- Additional notes as necessary.

Limited surveys were completed on private land due to time restraints to obtain landowner permission. The majority of the plots were situated on roads edges and crown land.

3.4 Final Sensitive Ecosystem Classification

As SEI has not been completed in a similar landscape, there are no existing criteria to use to determine ecosystems should be considered sensitive, and what the specific criteria should be for factors such as condition, disturbance, and size. Table 3.0-2 presents the SEI classes based on a preliminary designation as Sensitive Ecosystems, Other Important Ecosystems, and Not Sensitive, while the following sections provide a brief description of each SEI class.

Table 3.0-2. Final SE Classes and Subclasses

SEI Class	SEI Subclass	Brief Description
Sensitive Ecosystems		
OF: Old Forest*		Forests > 140 yrs
OF	co: coniferous	Conifer > 75% of stand
OF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
RI: Riparian		Ecosystems associated with and influenced by freshwater
RI	fh: high bench	High bench floodplain terraces
RI	fm: medium bench	Medium bench floodplain terraces
RI	fl: low bench	Low bench floodplain terraces
RI	ff: fringe	Narrow, linear community along watercourses that generally lack floodplains and floodplain communities
RI	ri: river	River and creeks, including gravel bars
WN: Wetland		Terrestrial – freshwater transitional areas.
WN	ms: marsh	Graminoid or forb-dominated nutrient-rich wetlands
WN	sp: swamp	Shrub or tree-dominated wetlands
WN	ow: shallow water	Permanently flooded, water less than 2m deep at mid-summer
FW: Freshwater		
FW	pd: pond	Open water > 2 m deep and generally < 50 ha.
FW	La: lake	Open water > 2 m deep and generally > 50 ha.
SV: Sparsely Vegetated		Areas with 5 – 10% vascular vegetation.
SV	cl: cliff	Steep slopes, often with exposed bedrock.
SV	ro: rock outcrop	Rock outcrops – areas of bedrock exposure.
SV	ta: talus	Dominated by rubbly blocks of rock.
SV	es: exposed soil	Any area of exposed soil that is not in other definitions.
Other Important Ecosystems (OIE)		

MF: Mature Forest		Forests > 80 yrs, < 140 yrs
MF	co: coniferous	Conifer-dominated (> 75% of stand composition)
MF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
MF	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition)
WD: Woodland		Dry site, open stands with between 10 and 25% tree cover
WD	co: coniferous	Conifer > 75% of stand
WD	mx: mixed	Conifer > 25% and broadleaf > 25% of composition
Not Sensitive (NS)		
NS: Not Sensitive		Disturbed and permanently developed/modified areas.
YF: Young Forest		Patches of forest – stands > 30 yrs, < 80 yrs
YF	co: coniferous	Conifer-dominated (> 75% of stand composition)
YF	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
YF	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition)
PS: Pole Sapling		Trees > 10 m tall, usually 10 - 15 yrs
PS	co: coniferous	Conifer-dominated (> 75% of stand composition)
PS	mx: mixed	Stand composition > 25% conifer and > 25% broadleaf
PS	bd: broadleaf	Broad-leaf dominated (> 75% of stand composition)
HB: Herbaceous		Non-forested ecosystems; usually shallow soils, often with bedrock outcrops.
HB	hb: herbaceous	Non-forested, often shallow soils, lichens, moss, or grass/herb dominated.
HB	sh: shrub	Dominated by shrubby vegetation (<10m in height)
FS: Seasonally Flooded Fields		Annually flooded cultivated fields, hay fields, range land, or old fields.
OD: Old Field		Large, old field ecosystems.

*The old forest classification was not found during the project, but is being maintained in the system as future ground truthing may discover it.

3.4.1 SENSITIVE ECOSYSTEMS

Five SEI classes are recognized as Sensitive Ecosystems in the study area. The classification is based on susceptibility to disturbance, high biodiversity and rare species potential, and the ecosystem services they provide.

3.4.1.1 OLD FOREST (OF)

Old Forests are stands that are greater than 140 years old. Two sub-classes are recognized; coniferous (OF:co) and mixed (OF:mx). This SEI class will be further described if mappable (in terms of extent) stands of old forests are found during future field work.

3.4.1.2 RIPARIAN (RI)

Riparian Ecosystems are associated with and influenced by freshwater, generally along rivers, streams, and creeks, but for SEI, also includes fringes around lakes. Ecosystems are influenced by factors such as erosion, sedimentation, flooding and/or subterranean irrigation due to proximity to the water body. Five subclasses are recognized in the study area: RI:ri, RI:ff, RI:fm, RI:fh, and RI:fl.

RI:fm are medium bench floodplains that flooded every 1-6 years for short periods (10-25 days). They contain deciduous or mixed forest dominated by species tolerant of flooding and periodic sedimentation. Typical RI:fm in the study area are extents of young to mature cottonwood floodplains that occur along the majority of the Slocan River. RI:fh are high bench floodplains that are periodically and briefly inundated by high waters, but contain lengthy subsurface flow in the rooting zone. They are less common then RI:fm, and often dominated by coniferous trees. RI:fl are low bench floodplains that are flooded at least every other year for moderate periods of growing season. They contain plant species adapted to extended flooding and scouring, typically low covers of shrubs such as willow (MacKenzie & Moran 2004, Metro Van Parks 2010)

RI:ff are fluvial fringes located along larger creeks and small ponds. These riparian ecosystems are highly variable in terms of vegetation and often do not appear significantly different adjacent areas. They may contain wetter soils and small fringes of vegetation adapted to high and/or fluctuating water tables (such as red osier dogwood), but more typically the vegetation does not strongly reflect the proximity to water courses. Riparian areas that are regularly or periodically flooded are generally classified in the preceding floodplain ecosystem classes.

RI:ri includes large river ecosystems, including gravel bars, and smaller creeks and streams. They are generally devoid of vegetation, or vegetation is sparse and susceptible to regular disturbance. Riparian ecosystems form a transition zone between aquatic and terrestrial ecosystems and encompass areas (often linear) along creeks, streams, rivers and lakes that have more soil moisture, and therefore often have noticeably different vegetation, than the adjacent upland. They are subject to fluctuating water tables and flooding and the soils are usually nutrient-rich. Riparian ecosystems are also generally more humid and have greater air circulation than surrounding areas, resulting in a slightly different microclimate.

3.4.1.3 WETLAND (WN)

Wetland ecosystems are found where soils are saturated by water for enough time that the excess water and resulting low oxygen levels influence the vegetation and soil. The water influence is generally seasonal or year-round and occurs either at or above the soil surface or within the root zone of plants. Wetlands are usually found in areas of flat or undulating terrain. Three subclasses are recognized in the study area: marshes (WN:ms), swamps (WN:sp), and shallow water (WN:sw). (Metro Van Parks 2010)

WN:ms are characterized by permanent or seasonal flooding by nutrient-rich waters. They are dominated by sedges, cattails and rushes, often with one or two species forming the majority of the thick vegetative cover. (MacKenzie & Moran 2004)

WN:sp are wooded wetlands dominated by 25% or more cover of flood-tolerant trees or shrubs. They are characterized by periodic flooding and nearly permanent sub-surface waterflow through mixtures of mineral and organic materials, swamps are high in nutrient, mineral and oxygen content. While swamps

occur in a variety of landscape positions, they are most often found in small depressions in level areas, and gently sloping toes along creeks and streams. They are highly variable, but typically contain thick shrub layers and an irregular tree canopy. (MacKenzie & Moran 2004)

WN:sw wetlands are characterized by still or slow-moving water less than 2 m in depth in mid-summer. They are often transitional between deep water bodies and other wetland ecosystems. Vegetation is general limited to a few species of floating aquatic species (such as yellow pond lily and duckweed) and/or submerged aquatic species. (MacKenzie & Moran 2004, Metro Van Parks 2010)

3.4.1.4 FRESHWATER (FW)

Freshwater ecosystems include bodies of water such as lakes and ponds that usually lack floating vegetation. Two subclasses are recognized in the study area ponds (FW:pd) and lakes (FW:la). FW:pd are naturally occurring, small bodies of open water (ponds), greater than 2 m deep and generally less than 50 ha, with little to no floating vegetation, while WF:la (lakes)are generally larger than 50 ha.

3.4.1.5 SPARSELY VEGETATED (SV)

Sparsely vegetated ecosystems contain a low cover of vascular species (less than 10%), with the remainder of the ground cover comprising of soil, rock, moss, or lichen. Four subclasses occur in the study area: cliffs (SV:cl), rock outcrops (SV:ro), talus (SV:ta), and exposed soil (SV:es). These ecosystem types provide important ecological niches for plant and wildlife alike and are often highly susceptible to disturbance.

3.4.2 OTHER IMPORTANT ECOSYSTEMS

Other Important Ecosystems (OIE) are mapped to identify important elements of biodiversity or recruitment sites for ecosystems at risk or important wildlife habitat requiring recovery or restoration. While these areas are not currently considered to be sensitive, they may evolve in the near future to sensitive classes. They also may serve as important landscape level linkages to allow for the flow of genetic material. As the SEI system for the Slocan Valley continues to be developed and improved, some of the OIE classes may be changed to sensitive.

3.4.2.1 MATURE FOREST (MF)

Mature forests are stands that are 80 to 140 years in age. Subclasses include coniferous (MF:co), mixed (MF:mx), and broadleaf (MF:bd). This forest type covers a large portion of the study area and contains significant wildlife habitat, floral diversity, landscape level linkages. The more sensitive elements of these stands are included in various classes of the Sensitive Ecosystems (such as floodplains). While not considered to be sensitive ecosystems, mature forests are classified as OIE due to the many ecosystem services they provide, and as recruitment stands for eventual old forests.

3.4.2.2 WOODLAND (WD)

Woodlands are classified based on an open canopy cover (less than 25%) and their occurrence on dry, water shedding sites, often with thin soils. Two subclasses are recognized; coniferous (WD:co) and mixed (WD:mx). WD forests are relatively common in the region, but often have limited extent. They have the potential to provide important ecological niches that other forest stands lack, may be inhabited by uncommon or rare species, and are generally sensitive to disturbance.

3.4.3 NOT SENSITIVE

Mapped areas that do not fall in the SE and OIE classes (primarily those with recent or permanent disturbances) are classified as Not Sensitive Ecosystems (NS). The following section provides a brief description of each NS subclass.

3.4.3.1 NOT SENSITIVE (NS)

Not sensitive includes any area with significant recent (such as logging) or permanent (such as roads, residential areas, etc.) disturbance. These areas are considered to have no ecological value in the landscape.

3.4.3.2 YOUNG FOREST (YF)

Young forests includes stands that are 30 to 80 years old. Subclasses include coniferous (YF:co), mixed (YF:mx) and broadleaf (YF:bd). In the study area, most young forests are the result of previous logging, clearing or forest fires. They are not considered to be sensitive ecosystems as young forest generally do not contain attributes that are required for wildlife habitat, have limited vertical structure, and are often comprised of early successional species (with low biodiversity in general). Over time and in the absence of disturbance, these stands will develop into mature forests and develop attributes that may lead to greater importance and therefore sensitivity.

3.4.3.3 POLE SAPLING (PS)

Pole sapling includes stands that are 10 to 15 years old and less than 10 metres in height. Subclasses include coniferous (PS:co), mixed (PS:mx) and broadleaf (PS:bd). Pole sapling ecosystem are an early successional stage that occurs as shrub and/or herb dominated areas begin to develop into forests. Biodiversity and wildlife habitat values are limited, and they typically had recent significant stand level disturbances. The pole sapling class is specific to this project, having not been previously used in other SEI projects.

3.4.3.4 HERBACEOUS (HB)

Herbaceous ecosystems are non-forested areas that are dominated by either herbs, grass, lichen or moss (HB:hb), or shrubs less than 10 metres in height. In the study area herbaceous areas are not a natural feature, with the exception of the previously described SV classes, and are the result of either recent disturbance (i.e. shrub dominated old cutblocks) or continual disturbance (i.e. road and rail

margins, range land, etc.). While they may provide suitable habitat for many avian species, they are not considered to be sensitive and generally have low biodiversity values.

3.4.3.5 SEASONALLY FLOODED FIELDS (FS)

Seasonally flooded fields are typically current or old agricultural or rangeland located on active floodplains. A portion of the area is expected to flood in any given year resulting in the potential for abnormal vegetation or wildlife communities to develop, or for temporary wildlife habitat to occur. These areas a not generally considered to be sensitive as they are typically highly disturbed or modified, but they are useful to separate as distinct ecosystem types for future analysis.

3.4.3.6 OLD FIELD (OD)

Old fields are generally dominated by a high cover of herbaceous species. These areas have persisted as fields for a significant period of time and may have higher than expected biodiversity and/or the potential for rare species. As such they are mapped as distinct ecosystem types, even though they are considered to be not sensitive.

3.5 STUDY LIMITATIONS

This study has the following limitations:

- Most polygons were not ground-truthed due to the project budget, difficult or unsafe access (steep slopes, cliffs, distance from roads, etc.), and private property access.

- Mapping was performed on 2D images resulting in a coarse interpretation of many ecosystem types. In particular, distinguishing between the structural stages (young, mature, old) of forest stands was difficult and may have inaccuracies.

- The imagery used for the mapping was taken during the summer of an abnormally high water year. As a result, the boundaries some ecosystem types (mainly wetlands and seasonally flooded fields) may contain portions of more typically terrestrial areas.

- Map and line work is considered accurate to 1:5 000; maps produced at larger scales may not provide an accurate representation of the classification.

4.0 RESULTS

A total of 3,019 polygons were mapped for the project, encompassing 10,963 hectares. Polygon size ranged from <0.1 (37m^2) to 1,222 hectares. Table 4.0-1 presents a summary of the mapped ecosystem types (SEI class and subclass), the frequency in which they occurred, and the area and percent of the study are they occupy. The most commonly mapped ecosystem types are not sensitive (24.8%, 2,716.9 ha), young conifer forests (15.8%, 1,728.8 ha), and mature conifer forests (15.3%, 1,678.9 ha). A total 14 ecosystem types accounted for less than 1% of the study area. It is important to note that the study area boundary is somewhat arbitrary (in terms of how far up the mountainsides the mapping extended) resulting in mapped areas and proportions relative to those boundaries, not the region in general.

Table 4.0-1. Summary of Ecosystem Mapping by SEI Subclass

SEI Class: Subclass	Frequency	Area (ha)	Percent
NS	277	2,716.9	24.8
YF:co	698	1,728.8	15.8
MF:co	466	1,678.9	15.3
RI:ri	97	823.8	7.5
YF:mx	361	581.9	5.3
PS:mx	104	381.0	3.5
SV:ro	42	370.2	3.4
RI:fm	257	351.5	3.2
RI:ff	374	318.8	2.9
HB:sh	642	302.0	2.8
WD:co	26	236.2	2.2
WN:sp	431	227.7	2.1
MF:mx	180	220.0	2.0
WN:ms	348	203.2	1.9
PS:co	77	157.2	1.4
OD	91	149.2	1.4
WD:mx	25	97.0	0.9
HB:hb	172	83.5	0.8
RI:fl	196	75.4	0.7
YF:bd	143	60.6	0.6
FS	19	49.6	0.5
FW:la	3	31.0	0.3
RI:fh	27	27.7	0.3
WN:ow	63	22.5	0.2
MF:bd	49	22.3	0.2
FW:pd	74	21.3	0.2

SV:ta	8	14.0	0.1
SV:cl	5	5.7	0.05
SV:es	22	3.0	0.03
PS:bd	9	1.9	0.02
Total	**5,286**	**10,963.0**	**100.0**

Table 4.0-2 presents a summary of the mapping by SEI class. The most common SEI class mapped in the study area was not sensitive (24.8%, 2,716.9 ha), followed by young forest (33.24%, 3,624.90 ha) and mature forest (22.59%, 2,463.05 ha). The most uncommon ecosystem types include Seasonally Flooded Agricultural Fields (0.5%, 49.6 ha) and freshwater (0.5%, 52.3 ha). Overall, the Not Sensitive classes accounted for 56.9% of the study area, while Sensitive Ecosystems encompassed 22.9% and Other Important Ecosystems was 20.6%.

Table 4.0-2. Summary of Ecosystem Mapping by SEI Class

SEI Class	Frequency	Area (ha)	Percent
Not Sensitive			
NS	277	2,716.9	24.8
YF	1,202	2,371.3	21.7
PS	190	540.1	4.9
HB	814	385.5	3.6
OD	91	149.2	1.4
FS	19	49.6	0.5
	2,593	***6,212.7***	***56.9***
Sensitive Ecosystems			
RI	951	1,597.2	14.6
WN	842	453.4	4.2
SV	77	392.9	3.6
FW	77	52.3	0.5
	1,947	***2,495.8***	***22.9***
Other Important Ecosystems			
MF	695	1,921.2	17.5
WD	51	333.2	3.1
	746	***2,254.5***	***20.6***
Total	**5,286**	**10,963.0**	**100.0**

Figures 4.0-1 to 4.0-4 show an overview of the SEI mapping, and several large scale examples of the maps. Due to the size and shape of the study area (roughly 46 km long by 3 km wide), a detailed map of the entire area was not included in this report. It is anticipated that in addition to the report, a series of large mapping products will be developed, and if possible an online interactive map will be created for ease of access and future updates.

Figure 4.0-1. Overview of the Slocan Valley SEI Mapping

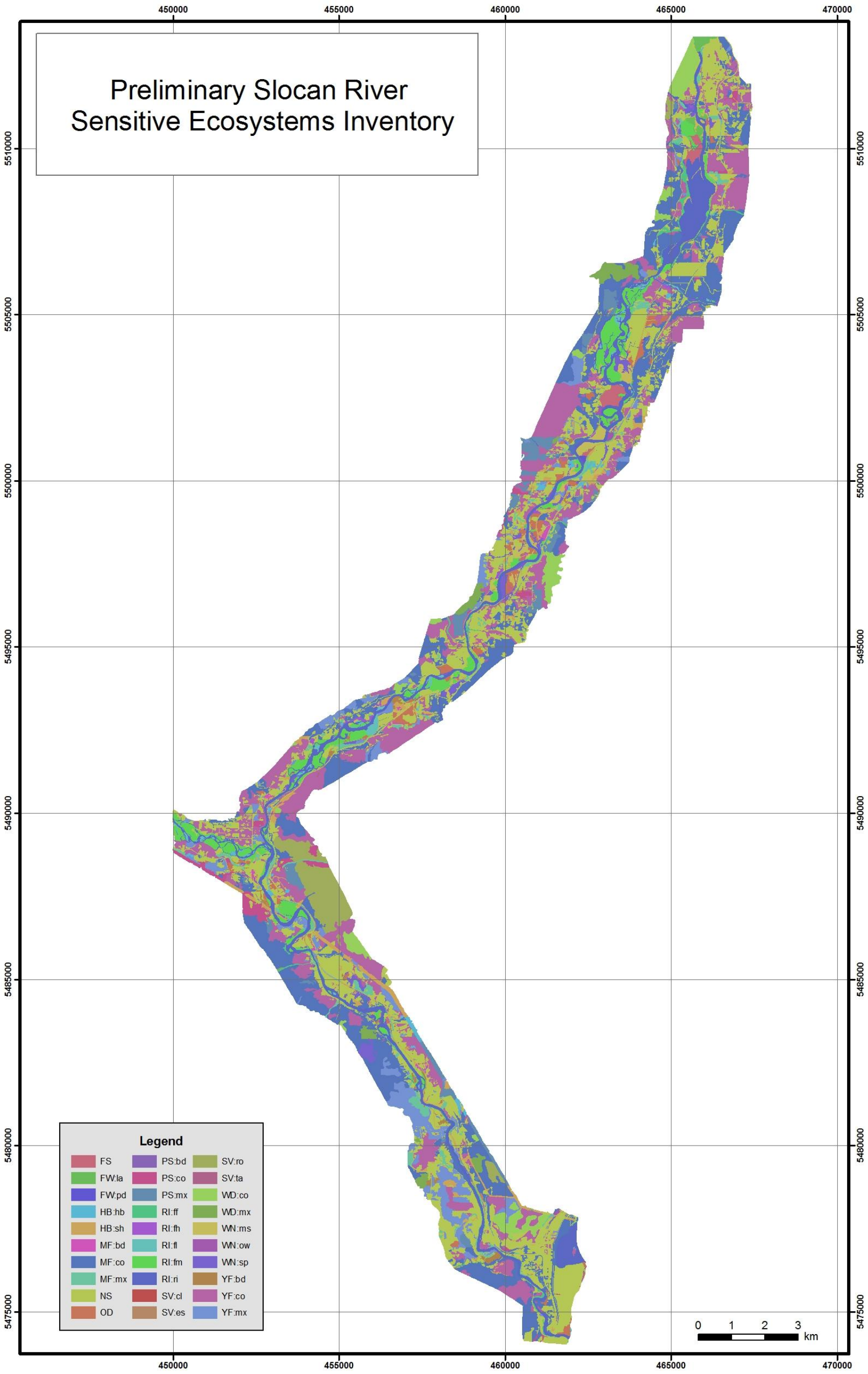


Figure 4.0-2. SEI Mapping Example 1

Figure 4.0-3. SEI Mapping Example 2

Figure 4.0-4. SEI Mapping Example - 3

5.0 Conclusion

This preliminary report describes the type and extent of ecosystems occurring in the Slocan Valley. The mapping was used to develop regionally specific sensitive ecosystem classes and subclasses which will be refined in consultation with the BC Conservation Data Centre.

A total of 3,019 polygons were mapped for the project, encompassing 10,963 hectares. Polygon size ranged from <0.1 (37m2) to 1,222 hectares. The most commonly mapped ecosystem types were not sensitive (24.8%, 2,716.9 ha), young conifer forests (15.8%, 1,728.8 ha), and mature conifer forests (15.3%, 1,678.9 ha), while 14 ecosystem types accounted for less than 1% of the study area. Overall, the Not Sensitive classes accounted for 56.9% (6,212.7 ha) of the study area, while Sensitive Ecosystems encompassed 22.9% (2,495.8 ha) and Other Important Ecosystems was 20.6% (2,254.5 ha).

The next stage of the project will involve meeting with landowners throughout the valley to further refine the mapping product and improve accuracy, and to work with the Conservation Data Centre to further refine criteria for the determination of sensitive ecosystems.

6.0 References

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