

Inventory Result

lance and/or further degradation. Within the study area, 41.9% was mapped as Sensitive Ecosystems (SE) and 7.9% fell into the Other Important Ecosystems category (see Legend). The inventory results indicated that wetlands, broadleaf woodlands, antelope-brush steppe, sagebrush steppe and oak forest ecosystems were extremely rare - covering less than 5% of the study area. Although areas of grasslands, coniferous woodlands, and mature forests remain, many have been altered significantly and therefore few high quality sites remain. The study found many SEs that have been degraded by fragmentation, human use, livestock grazing, and alien species.

The services and benefits SEs provide and the wildlife species they support are critically important to the quality of life in the Okanagan. With so few at-risk and fragile ecosystems remaining, it is essential that each site be carefully considered and all land use options be fully evaluated prior to initiating any changes in these areas.

Data Limitations

The SEI information is intended to alert local and regional decision-makers to the presence of sensitive and other important ecosystems and ecological features. The SEI mapping does not replace the need for on-site assessments.

have taken place since the photos were taken). It is recommended that digital data not be enlarged significantly beyond the scale of the photos, as this may result in unacceptable distortion and faulty registration with other datasets. The ability to see specific disturbances (e.g., invasive plants) is limited when interpreting air photos, and field sampling is needed to supplement the interpretation. It can also be difficult to delineate small sensitive ecosystems. In many cases these ecosystems are captured as a small component of a larger

Species at Risk

The large variety of ecosystems in the Okanagan Valley provide for diverse habitat needs of many wildlife and plant species, including a remarkable number of at-risk plant and animal species. Many of these species have very restricted ranges, and some occur nowhere else in B.C. or Canada. A high proportion of these species considered at-risk, either provincially or federally, rely on the habitat values found only in the at-risk and sensitive ecosystems of the valley.

Within the province, species are assessed by the B.C. Conservation Data Centre. Species at risk are identified on the B.C. Red and Blue lists. Red-listed species are extirpated, endangered, or threatened; blue-listed species are of special concern due to low or declining populations and are sensitive to human activities or natural events. Nationally at-risk species are ranked by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Endangered, Threatened, or of Special Concern. Endangered species face imminent extirpation or extinction; Threatened species may become endangered if limiting factors are not reversed. Species of Special Concern are

TFL 15: Bruhjiell, D. and S. Robertson. 1999. *Ecosystem Mapping of Weyerhaeuser Canada Ltd., Tree Farm License 15*. Prepared for Weyerhaeuser Canada Ltd., *Chaparral Falls*, in partnership with EDCO and

Ministry of Forests, Kamloops, BC. 1:20,000 Maps.

Vernon – Commonage: Iverson, Kristi. 2005. Sensitive Ecosystems Inventory: Vernon Commonage 2005. 1:20,000 maps.

Bella Vista – Goose Lake Range: Iverson, K. and J. Shypitka. 2002. Terrestrial Ecosystem Mapping Of the Bella Vista – Goose Lake Range. 1:20,000 maps.

Coaststream – Vernon: Iverson, K. and P. Uunila. 2008. *Sensitive Ecosystems Inventory: Coaststream – Vernon*. 1:20,000 maps.

Kelowna: Iverson, K. and P. Uunila. 2008. *Sensitive Ecosystems Inventory: City of Kelowna*. 1:20,000 maps.

South Okanagan: Iverson, K. and A. Haney. 2009. *Refined and updated ecosystem mapping for the South Okanagan and lower Similkameen Valley*. Unpub. report prepared for the Regional District of the Okanagan - Similkameen.

Joe Rich: Iverson, K. and P. Uunila. 2006. Sensitive Ecosystems Inventory: Central Okanagan Joe Rich. 1:20,000 maps.

British Columbia Conservation Data Centre (CDC). Ecosystems Branch. BC Ministry of Environment. www.env.gov.bc.ca/cdc/

[Related Publications and Links](#)

Infrastructure: www.greenbylaws.ca




The Toolkit contains practical examples of bylaw provisions currently in use in B.C., including model provisions for Regional Growth Strategies, Official Community Plans, Development Permit Areas, Zoning, Tax Exemptions, Environmental Assessment, Stormwater Management and other regulatory tools. It includes several examples and case studies of successful green infrastructure projects and bylaws.

Climate Change: Wilson, S.J and R.H. Hebda. *Mitigating and Adapting to Climate Change through the Conservation of Nature*. Available at www.landtrustalliance.bc.ca/research.html

Develop with Care: Environmental Guidelines for Urban and Rural Land Development in British Columbia. BC Ministry of Environment
www.gov.bc.ca/efda/development/develop.htm (2000) (visited with 2000

Taking Nature's Pulse: The Status of Biodiversity in British Columbia
Austin, M.A., D.A. Buffett, D.J. Nicolson, G.G.E. Scudder and V. Stevens
(eds.). 2008. Taking Nature's Pulse: The Status of Biodiversity in British
Columbia. Biodiversity BC, Victoria, BC. 268 pp. Available at:
www.biodiversitybc.org

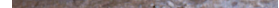
Alpine ecosystems are high-elevation alpine and parkland ecosystems including **herbaceous** ecosystems dominated by forbs or graminoid vegetation (AP_h), **parkland forests** where trees occur in distinct clumps (AP_{PF}), and **shrub** ecosystems dominated by dwarf shrubs such as heather (AP_{sh}). Alpine ecosystems are found at higher elevations in the South Okanagan (TFL 15) where there is significant snow cover for large parts of the year. Alpine ecosystems are sensitive to disturbance, as the shallow soils and cold temperatures slow vegetation recovery.

<p>Alpine Ecosystems provide the following services:</p> <ul style="list-style-type: none"> • Erosion control • Fresh water • Climate regulation • Nutrient cycling and maintenance of productive soils • Pollination • Food production • Soil formation 	<p>Some species associated with Alpine Ecosystems are:</p> <ul style="list-style-type: none"> • American Badger • Peregrine Falcon • Wolverine 	<p>American Badger <i>Taxidea taxus pfeifferi</i> (Monotreme, Endangered) Photo by Paula Canales W. Lynch</p>   
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Wolverine
Gulo gulo luscus
(Mammal, Special Concern)
Photo by Parks Canada/W. Lynch

Seasonally Flooded Agricultural Fields (FS):

Seasonally Flooded Agricultural Fields ecosystems are cultivated fields that flood annually, providing important migration and wintering habitat for birds. They provide important habitat for amphibians, waterfowl and other bird species, small mammals, and many types of predators. They are located along low-lying areas or former floodplains that have been isolated by channelization of creeks and rivers.



Seasonally Flooded Agricultural Fields Ecosystems provide the following services:

<ul style="list-style-type: none"> • Flood control • Drought resiliency • Storm protection • Drainage and natural irrigation • Fresh water 	<ul style="list-style-type: none"> • Carbon storage • Maintenance of productive soils • Pollination • Pest regulation • Food production
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Some species associated with Seasonally Flooded Agricultural Fields are:

<ul style="list-style-type: none"> • Great Blue Spadefoot • Long-billed Cootie • Peregrine Falcon • American Banger • Great Blue Goshawk 	 <p>Great Blue Spadefoot <i>Scaphiopus holbrooki</i> Amphibia, Anura Photo by Gary Hall - CalPhotos.org</p>
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F):

Mature Forest ecosystems are dominated by mature trees; including **broadleaf** (MF-bd) forests, **coniferous** (MF-co) forests, and **mixed** (MF-mx) deciduous and coniferous forests; however it excludes mature riparian forests, and mature coniferous and broadleaf woodlands. Mature Forests are an important buffer to sensitive ecosystems. They provide some of the same values associated with Old Forest ecosystems and can also be important recruitment sites for Old Forests. Mature forest ecosystems have many important structural attributes, including some remaining large, old trees.

Mature Forest Ecosystems provide the following services:


Some species associated with Mature Forest Ecosystems are:

Flamethroated Owl
 Olive backed Thrush
 Crested Shrike Thrush
 (Ext. Special Concern)



<ul style="list-style-type: none"> Carbon storage Air quality Erosion control Sediment retention Nutrient cycling and maintenance of productive soils 	<ul style="list-style-type: none"> Pest regulation Pollination Pollution control Food production 	<ul style="list-style-type: none"> Wolverine Williamson's Sapsucker Olive-sided Flycatcher Showy Phoenix Western Rattlesnake 	<ul style="list-style-type: none"> Flammulated Owl
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Photos by David Langford, M. A. P. 2018



Williamson's Sapsucker
Sphyrapicus flammeus
 (B.C. Endangered)
 Photo by David Hobbie

landscapes (NS): (Areas not mapped as sensitive or other important ecosystems are depicted in white)

Non-sensitive landscapes are modified areas not occupied by sensitive ecosystems, and include urban areas, disturbed rural landscapes, and young forests. Urban areas have human-influenced features or disturbances that are dominant across the landscape. Disturbed rural areas can be interspersed with forest, farmland and native vegetation, or cultivated crops. Young forests are clear-dominated stands with an age range between 1 and 60 years. Non-sensitive landscapes are shown in white in the areas that are not designated by a sensitive ecosystem. In addition, many sensitive ecosystem boundaries are not clearly defined and some disturbed areas may have a modified landscape interspersed with the sensitive ecosystem(s), in which the sensitive ecosystems are too small to map individually. These modified areas are depicted as NS (non-sensitive) on the map.